

IUCN
Programme on
Protected Areas

The Urban Imperative

Urban Outreach Strategies for Protected Area Agencies

Edited by Ted Trzyna



IUCN
The World Conservation Union

The Urban Imperative

Urban outreach strategies for protected area agencies

*How those responsible for protected areas can
better serve people in large cities and
build stronger urban constituencies
for nature conservation*

Proceedings of a workshop at the Vth IUCN World Parks Congress,
Durban, South Africa, 8-17 September 2003

Edited by Ted Trzyna

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Foreword

JEFFREY A. McNEELY

With nearly half the world's population now living in cities, the relationship between people and the rest of nature is rapidly changing its character. When most people lived in close everyday contact with nature, alienation was not really an issue. But people living in cities often act as if natural resources come from a store rather than from nature.

Increasing urbanization is very much a double-edged sword for those concerned with conserving natural habitats, including through the mechanism of protected areas. On one hand, removing people from close contact with nature arguably reduces human pressure on natural habitats; the forests of New York State, only a short drive from Manhattan, are a good example. But on the other hand, this alienation also involves higher levels of material consumption, which increases pressure on natural habitats.

Urbanization also has significant psychological and cultural elements. For example, for people living in cities, nature may be reduced to a tourist destination, with protected areas being places one visits on weekends or vacations, often with special equipment. However we might lament this separation of people from nature, we also need to recognize its reality and find ways to turn this alienation into support for protected areas. As many papers in this volume point out, people living in cities are especially likely to call on protected areas to provide psychological well-being, finding a week in the wilderness of a national park to be an invigorating and life-sustaining respite from the pressures of living in crowded and impersonal cities.

It may seem strange to have a book coming out of a World Parks Congress on "The Urban Imperative." Yet many lines of evidence suggest that greater attention to people living in cities is

both an essential element for protected areas and a wise investment for conservation organizations.

The workshop put together by Ted Trzyna at the Durban 2003 World Parks Congress was part of a continuing effort to build a bridge between people living in cities and the natural environments contained within protected areas. The book that has resulted from the workshop makes some fundamentally important points: first, that protected areas provide significant benefits to cities, including water supplies, recreation, and various economic and other values; second, protected areas also depend on cities, for political support, a source of visitors, and ensuring a cultural link between urban people and their environment.

But perhaps more important, the book also provides some excellent advice on how this mutual dependency can be converted into both more effectively managed protected areas and stronger support from cities. Examples from many parts of the world demonstrate that protected areas can be located within cities and around them, thereby providing increased opportunities for urban people to relate to nature, or at least elements of nature. The benefits of doing so are so apparent that numerous strong partnerships have been formed with city dwellers to support protected areas. And in many parts of the world that are becoming increasingly urbanized, the importance of protected areas in city planning is becoming increasingly apparent.

The challenge before all of us now is to convert the experience gained to date into a significant global program that further strengthens the relationship between urban people and protected areas. Such a partnership is not only important; it may be essential to the well-being of urban peoples, and the protected areas upon which their welfare depends.

Reflections: Nature for people and people for nature

JUDY LING WONG

Looking through the window on a clouded night in the city, a father says to his child, “There is no moon tonight.” The child replies, “Let’s go down to the supermarket and get another one.”

All of us can offer similar examples representative of a generation of urban people who have lost their connections to nature. These are the people we ask to support the natural environment, and our urgent messages about the future of the world’s protected areas have little impact on them.

All over the world, people are pouring into cities. In Britain, 90 percent of our population is now in urban areas. There is a clear need for action to enable contact with protected areas for urban people, to help them to benefit from nature, laying down the basis for their awareness and committed support for nature.

All of us who work with nature know what it means to experience nature. We know nothing can replace the experience of standing in a magnificent landscape. No words are needed for a connection made in our hearts, for people to begin to love nature.

Groups taken into natural areas for the first time are always thrilled. They feel transformed. Sometimes they feel overwhelmed by a sense of a powerful spiritual and cultural reunion with nature.

This experience can’t be replaced by a few square meters of green space in the city. But after experiencing the wonder of a protected area, these small green spaces, and indeed every single tree in the pavement, become symbols of continuity with nature. This strong connection is maintained in day-to-day life.

The Urban Imperative workshop looked at how we can build connections between urban populations and protected areas. Our greatest motivations for action are the emotions of love and of fear. Our calls for action through messages of love for nature depend on enabling urban people to have inspired connections to nature. On the basis of this love for nature, we hope urban people, from politicians to

the unemployed, will be able to sit down long enough to listen to our more complicated messages of fear.

There are too many quick fixes to our economic problems which damage the environment. It is only through a deepened and informed understanding that we can get the right kind of support and action for protected areas from the urban powerhouses where most of the vital decisions are made.

Bringing together lessons from across the world

The Urban Imperative workshop brought together important initiatives from across the world to focus on urban outreach strategies for protected area agencies. Such a gathering generates an atmosphere of excitement, energizing all of us, because the mutual exposure to our work validates our commonalities and opens us up to the potential of approaches new to us.

Such comparative learning powerfully sharpens our awareness of the detail of our own methodologies and scenarios. It enables us to read our contexts more fully, and leap to new solutions through the insights and innovations of others. Such an occasion gives us all new beginnings and a strengthened working context, with our new partners in dialogue and practice playing a key role in all our futures.

A diversity of strategic approaches

At the workshop I was most impressed by:

The range of opportunities we have to engage urban people with nature. The characteristics of a protected area define the roles it can play in providing opportunities for engagement with urban people. This is as true of an embattled gem in a sea of urban concrete as it is for a haven at a distance from urban populations. Here, two things are especially important: (a) nurturing community champions, particularly young people, to stimulate interest and organize activities relevant to the needs of their peers; and (b) creating a range of green spaces, including urban farms, parkland, and

activity centers within neighborhoods that lack such amenities.

The barriers we must overcome. There are practical barriers, such as lack of information and peer group experience, sheer distance, and the cost of transport, entry, equipment, and activities. There are also barriers of perception. These often relate to prejudice against groups with different socioeconomic and/or racial characteristics. But they may also have to do with negative images among visitors of what a particular protected area agency actually does; or among agency staff of implications of increasing visitor numbers.

The potential of those who haven't yet benefited from engagement with nature. Those who haven't yet benefited will find the experience more powerful and meaningful than those who have taken it for granted. Once engaged, their motivation is similarly more intense, and their potential for contributing to the protection of nature is enormous.

The immensity of the resources we can unlock. By building awareness and commitment at higher political levels, and among leaders in urban contexts, the protected area community has the potential to unlock greatly increased funding and other resources. This requires forceful presentation to decision-makers of the benefits to cities of protected areas, and defining such benefits not only in terms of infrastructure (e.g., water supply), but in term of such social benefits as health.

Moving forward together

The power of a worldwide network of activists brought together to focus on cities and protected areas cannot be underestimated.

The members of IUCN's Task Force on Cities and Protected Areas have already begun to provide mutual support, expertise, and inspiration to each other. The World Parks Congress recommendation, "Cities and Protected Areas" (see the Appendix) offers a good framework for doing so.

The Urban Imperative is now on a world stage. We shall support each other around a common goal.

Introduction

TED TRZYNA

1. THE IMPERATIVE

The message of this book is that conservationists will be a lot more effective if they take cities and the people who live in them much more seriously.

Cities have a bad name in many quarters of the conservation community, even though conservationists live in cities for the most part and depend on urban people for political and financial support. Conversely, the conservation movement has a bad name among many who work on urban problems, even though protected areas safeguard the larger ecosystems on which cities depend. The truth is that protecting nature and improving city life are interdependent goals. Conservation and urban leaders are natural allies. The challenge is in making the right connections.

Innovative programs exist in a number of countries, but little has been done to exchange experience and ideas. The workshop on which this book is based was a small step in that direction.

2. TWO CRITICAL TRENDS

Two global trends have important implications for the conservation community: urbanization and separation of people from nature.

A rapidly urbanizing world

The distribution of the world's population between rural and urban areas is changing fast. Globally, the proportion of people living in cities rose from about 30 percent in 1950 to 47 percent in 2000, and is projected to reach 50 percent in 2007 and 61 percent by 2030. Contrary to a commonly held belief, the proportion of people living in "megacities" (urban agglomerations of 10 million inhabitants or more) is small, less than 4 percent. Most urban dwellers live in settlements with fewer than half a million inhabitants, and some of the fastest growing cities have relatively small populations.

The world regions show marked differences in the level and pace of urbanization. In the

Americas, Europe, and Oceania, the proportion of people living in urban areas is already over 70 percent. Although the figures for Africa and Asia are currently much lower, 38 and 37 percent, respectively, many cities in those regions will double their populations in the next fifteen years (UN 2004).

Almost all the global population increase expected during 2000-2030 will be absorbed by the urban areas of the less developed regions. Based on current trends, most of these new urban dwellers will live in overcrowded slums, often situated on marginal and dangerous land, without sanitation or easily accessible access to clean water. According to the Cities Alliance, a World Bank-based partnership of official development agencies and global associations of local authorities, "ignoring this policy challenge risks condemning hundreds of millions of people to an urban future of misery, insecurity, and environmental degradation on a truly awesome scale" (CA 2004).

Separation of people from nature

City dwellers gain appreciation for nature less through conventional education than through outdoor experiences. In fact, without direct experience of nature early in life, teaching about environmental issues can actually breed cynicism about the environment (Finger 1994; Schultz 2000; Schultz 2002). Growing scientific evidence indicates that direct experience of nature early in life is essential for healthy intellectual, emotional, and even moral development (Kahn and Kellert 2002).

Unfortunately, people in cities tend to be less and less familiar with nature and the benefits of natural resources. This phenomenon cuts across social groups. The urban poor often have no access to nature. The more affluent are experiencing what Bob Pyle calls "the rise of the virtual in place of the real," as television, computer games, the Internet and "other forms of second-hand entertainment have come to occupy an ever more

enormous portion of childhood's hours" (Pyle 2002, 317). As a consequence, not only does the quality of urban dwellers' lives suffer, they may behave irresponsibly toward the environment, albeit unknowingly, and over the long run may be less inclined to provide political support for conservation.

3. THE PAPERS

All but a few of the formal presentations given at The Urban Imperative workshop are represented in this volume. In addition, four papers are included that do not reflect formal workshop presentations: David Goode and Martin Storksdieck unfortunately had to cancel their trips to Durban at the last moment, and Judy Ling Wong and Todd Miller expanded on their informal workshop remarks in writing.

Authors were asked to submit their contributions after the workshop so they could benefit from discussions at the World Parks Congress. Some papers were revised just before the book went to press and include updates. Thus, technically speaking, *The Urban Imperative* is not a proceedings volume but part of an ongoing process of forming a community around a powerful set of ideas.

The book is directed primarily to people whose main focus is on conservation of hinterlands, or large-scale ecosystems that include cities. This includes most people in the traditional conservation movement and many of those involved in the succeeding but overlapping environmental and sustainability movements (Trzyna 2005). Those engaged mainly in "greening" cities may not be, or at least feel, part of any of these movements, but rather come from neighborhood activist, urban planning, architecture, landscape architecture, or other backgrounds. However, as I mention elsewhere, clearly both groups would benefit from working together more closely.

One question that often arises is: Where do you draw the line between urban natural areas and conventional urban parks? It is clear that sports fields are not urban protected areas, while wildlands abutting a metropolis are. In between these two extremes is a wide grey area. A more definitive answer may be needed in specific places for specific reasons, but for the purpose of international dialogue it is probably not necessary or even possible.

How cities and protected areas depend on each other

To conservationists, it is obvious that protected areas provide important benefits to city dwellers, ranging from education and healthy recreation to watershed protection, biodiversity conservation, food and fuel, and income from tourism. However, these benefits have rarely been cataloged or presented in clear terms, and urban residents generally have a poor understanding of them. Research documenting such benefits can be very useful in showing the value of protected areas to decision-makers, as the three papers in Part 1 of the book demonstrate.

In Part 1, *Cities Depend on Protected Areas*, Nigel Dudley and Sue Stolton show how many of the world's largest cities draw a substantial proportion of their drinking water from protected forests. In a world in which an estimated one billion city dwellers lack clean water, this is a powerful argument for preserving and restoring forests.

Nicholas Conner reports on an effort by the state government of New South Wales in Australia to develop quantitative indicators to assess the contribution of protected areas to the quality of life in an urban community. However, he sees this as only a first step toward a "broader approach to influencing communities and decision-makers to support protected areas and conservation."

Debra Roberts and her colleagues in the Durban city government in South Africa describe their effort to examine the economic value of ecosystem goods and services from the city's extensive open space system. This was in response to a need to realign environmental planning with new development goals emphasizing poverty alleviation and economic opportunity.

Less obvious to many conservationists is the other side of the coin: As cities depend on protected areas, urban dwellers are essential to building broader support for protected areas. Throughout the world, political power, opinion-makers, and communications media are concentrated in cities. It follows that protected area agencies need a presence there.

In Part 2, *Protected Areas Depend on Cities*, Brazilian diplomat and conservationist Pedro da Cunha e Menezes makes this point eloquently: "The fight for the conservation of the Amazon will not be won in the depths of the Amazon forest. It can only be won in Rio de Janeiro, São Paulo,

Brasilia, and the other large Brazilian metropolises. In democracies, no matter how obvious management decisions are, they must always be decided by the will of the citizens, and citizens will not decide or care about the unfamiliar.”

Fook-Yee Wong, who directs Hong Kong’s world-class system of Country and Marine Parks, describes how strong public support has made it possible for his city, where almost 7 million people live in an area of little more than a thousand square kilometers, to maintain 40 percent of its territory in well-protected areas.

John Reynolds, from the perspective of senior positions in the United States National Park Service, tells about a special relationship between California cities and Yosemite National Park, the birthplace of the national park idea that led to Yellowstone and thousands of other protected areas around the world. He concludes that throughout its history “Yosemite has needed cities – or, more accurately, the people who live in cities – to survive and evolve.”

Pamela Parker and Michael Punturiero, coming from different points of view (she a conservation biologist; he a citrus grower and local community leader), conclude that the main reason for the success of a partnership between a protected area in South Australia and the towns that adjoin it is transfer of skills from professional biologists and land managers to community volunteers through “learning by doing” and adaptive management. Their case illustrates two other points: First, urban institutions can have significant conservation roles in other countries, even at great distances: In this instance, the Chicago Zoological Society, which runs one of the world’s premier zoos, Brookfield, is a key player. Second, although The Urban Imperative workshop focused on large cities, people in smaller settlements often have a vital role in conservation.

Strategies: Making the right connections

Part 3, Strategies for Linking Cities and Protected Areas, consists of nine case studies of innovative approaches:

David Goode’s chapter on London’s Biodiversity Strategy deserves special mention for two reasons. First, the Strategy is an example of what can be accomplished by intelligence, imagination, and fortitude combined with enlightened political leadership. The document evolved out of work that Goode began in 1982 in local government and continued for many years in

an officially sanctioned NGO. Then, after Ken Livingstone was elected London’s first Mayor in 2000, he made Goode Head of Environment for the Greater London Authority and the Strategy became part of the official London Plan. Second, the Strategy is as much a social as an environmental document. As Goode states, “New approaches with a strong social dimension, that may at first have seemed a radical departure from traditional nature conservation, have now been adopted as an integral part of city management.” For example, access to nature for people living in disadvantaged or heavily built-up parts of London is often given priority even where sites are of relatively low ecological quality. Other goals are ensuring that more people know the location of their local green space and can get there easily, and helping people understand and enjoy contact with nature.

Mark Lellouch portrays Paris-Nature, a series of municipal initiatives that aim to make Parisians at large, and primary schoolchildren in particular, better aware of their natural urban environment. By showing how the different elements (air, water, soil, fauna, and flora) come together to form an integrated whole, Paris hopes to motivate its citizens to live in greater harmony with and preserve their natural surroundings.

Cape Town has long been a hotbed of innovation in nature conservation, and in recent years it has also become a laboratory for relating social to environmental issues in an urban context. Tania Katzschner and several of her colleagues in the city government describe Cape Town’s Biodiversity Strategy and challenges in implementing it. George Davis of the South African National Biodiversity Institute illustrates how biodiversity conservation can be a “social bridge,” even in places like the Cape Flats where many people live well below South Africa’s poverty line of U.S.\$45 per month and lack proper supply of water, electricity, or sanitation.

Jessica Memon relates how a project called Mosaic has succeeded in building links between ethnic communities and national parks in the United Kingdom. Mosaic is a partnership between two NGOs: the Council for National Parks and the Black Environment Network. The project originated at a conference held to mark the fiftieth anniversary of Britain’s national parks law. At that event, Judy Ling Wong, BEN’s UK Director (see her “Reflections” on page 7) stated, “People cannot care about what they have not experienced. Neither will they have much interest in paying the taxes or providing the political support which is necessary

to maintain viable national parks for the next 50 years.” Her listeners went away asking themselves, “Why are we not engaging ethnic communities already?”

I give a brief account of how an unusual protected area agency, California’s Santa Monica Mountains Conservancy, is creating “natural parks” in poor inner-city neighborhoods of Los Angeles well outside its traditional zone of activity.

John Senior and Mardie Townsend describe “Healthy Parks, Healthy People,” an initiative of the park agency of the Australian state of Victoria. The idea that protected areas provide substantial health and other social benefits to urban people is not a new one. However, only recently have these benefits started to be examined critically and systematically. Victoria compiled strong scientific evidence showing that access to nature in urban settings can reduce crime, foster psychological well-being, reduce stress, boost immunity, enhance productivity, and aid community cohesion and identity.

Bittu Sahgal chronicles Kids for Tigers, a program he founded as publisher of India’s leading wildlife magazines, with support from a major business corporation and the involvement of the Government of India ministry responsible for protected areas. In India, the tiger is a symbol for all of nature. Kids for Tigers aims at turning large numbers of urban children, and through them their parents, into “proactive defenders of protected areas.” As Sahgal puts it, “Our story was simple and direct and children understood it easily: ‘We cannot save the tiger unless we save its forests. If we save its forests we wind up saving the subcontinent’s most precious water sources. And if we save our water sources, we save ourselves.’”

Todd Miller describes the urban farmland protection program in Albuquerque, New Mexico, USA. Often overlooked as conservation opportunities, farms within city boundaries sustain the incomes of local farmers and their workers, conserve wildlife habitat and scenic landscapes, and provide opportunities for urban dwellers to connect with their agricultural heritage. Not incidentally, according to the UN Food and Agriculture Organization, 200 million urban farmers grow food for 700 million people worldwide.

Models of partnerships

Part 4, Making Partnerships Work, focuses on five models of partnerships that connect protected area agencies with urban institutions and people.

Although all the programs described in Part 3 rely to some degree on such partnerships, these five models offer lessons particularly useful to protected area agencies in connecting with city people. Moving from general to specific, they are: comprehensive environmental partnerships, metropolitan umbrella organizations, urban cooperating associations, nongovernmental initiatives leading to governmental action, and corps of volunteers.

I report on a British environmental partnership organization called Groundwork that has been highly successful in bringing together the governmental, business, and voluntary sectors in clearly defined geographic areas to achieve social and economic benefits at the same time as achieving conservation benefits. Groundwork concentrates on the poorest areas of the UK, primarily in urban and urban-fringe settings.

Lucy Hutcherson describes Chicago Wilderness, a metropolitan umbrella organization that promotes cooperation systematically in a broadly delineated urban region. Its over 170 members include local, state, and national agencies; zoos, museums, botanic gardens, and an aquarium; colleges and universities; and NGOs ranging from branches of major national associations to small neighborhood groups. Four teams carry out collaborative activities in science, land management, education and communication, and sustainability.

Brian O’Neill, General Superintendent of San Francisco’s Golden Gate National Parks, and Greg Moore, Executive Director of the parks’ cooperating association, the Golden Gate National Parks Conservancy, discuss how the nongovernmental conservancy “leverages” the role of its governmental partner by raising money, engaging volunteers, and raising public awareness. The conservancy’s goal is to “elevate parks to the same level of community importance as other civic assets: as basic as schools; as essential as libraries; as necessary as hospitals; as valuable as clean air and water; as culturally important as symphony halls, opera houses, and museums.”

Maria Virginia De Francesco relates how her NGO, the Argentine partner of BirdLife International, took the lead in assessing opportunities for government to do more with

urban nature reserves in metropolitan Buenos Aires, especially by involving leaders from neighboring communities.

Shin Wang of National Taiwan University depicts the sophisticated and extensive volunteer program at Yangmingshan National Park outside Taipei. Volunteers go through a formal training and certification program and receive substantial material benefits. They include many highly educated retired professionals.

At The Urban Imperative workshop, another interesting model came to our attention: the urban biosphere reserve. This concept is described in Note 1.

Evaluation

Part 5, Evaluation, consists of a single paper on this important subject. In the course of organizing The Urban Imperative workshop, I talked with many people involved in linking cities and conservation. Without exception, they emphasized how difficult it is to make a case for funding their activities. The main reason they gave is that funders increasingly want formal evaluations based on measurable objectives. In the case of involving urban populations in protected areas, results are hard to measure because they take place over years, and urban people are often mobile and hard to follow over time; also, results have to do with changes in people's values, which are not easy to calculate. In the case of acquiring land for natural parks in and near cities, usually a costly proposition, benefits occur over many decades, even centuries, and are not quantifiable in conventional terms.

Museums have pioneered in sophisticated evaluation of programs aimed at urban populations. Martin Storksdieck, Senior Research Associate at the Institute for Learning Innovation, which specializes in promoting and evaluating "free-choice learning" – defined as "the type of learning guided by a person's needs and interests" (ILI 2005) – kindly agreed to write about what the protected areas community might learn from museum evaluation. (My special thanks to Martin, who I met by happenstance on a museum visit with my grandson Tim.)

4. THE WORKSHOP, ITS ORIGINS, AND ITS OUTCOMES

World Parks Congress workshop

A few years ago, several people long active in IUCN – The World Conservation Union started talking seriously about the almost total absence of the urban dimension on the global conservation agenda. We were inspired by IUCN Chief Scientist Jeff McNeely, who gave a paper on cities, nature, and protected areas at a symposium in Barcelona in 1995 and then proposed and edited a special number of IUCN's *Parks* journal on "Cities and Parks" (McNeely 2001). We were also inspired by Adrian Phillips, who, as Chair of IUCN's World Commission on Protected Areas, presented a paper titled "Nature in an Urban Light" at a conference in Rio de Janeiro in 2000 (Phillips 2000). We found others had been thinking along the same lines, notably groups from Cape Town and Rio that started exchanging visits on urban protected areas in 1999.

Cities are on the agendas of national conservation organizations in some countries, and they are certainly given priority by many local conservation organizations, but we could not remember any major international conservation conference where urban issues had a prominent place on the program.

Our informal group took the opportunity of IUCN's Fifth World Parks Congress (IUCN 2003), held in Durban, South Africa, in September 2003, to organize a workshop on the subject. Our topic was especially appropriate for this Parks Congress, whose theme was "Benefits beyond Boundaries."

Held over three days, The Urban Imperative workshop was one of the liveliest and best-attended workshops at the Congress. It became an opportunity to discuss plans and recruit members for a proposed IUCN task force. Our informal group also secured approval of a World Parks Congress Recommendation that IUCN take cities seriously (see the Appendix).

An IUCN task force

In February 2004, IUCN's World Commission on Protected Areas established a Task Force on Cities and Protected Areas. The task force is concerned with the many links between human settlements and larger environments, focusing on the special role of protected areas.

The following month the task force held its first event, a four-day workshop in Malibu, California, to plan its overall program, as well as a theme on cities and conservation in the world's five Mediterranean-type regions (these regions are extraordinarily rich in biodiversity and many parts of them are threatened by urbanization). This resulted in the Malibu Declaration (IUCN 2004a).

In November 2004, at the Third IUCN World Conservation Congress in Bangkok, Thailand, the task force organized three formal events in cooperation with the IUCN Commission on Ecosystem Management. These were on links between coastal cities and large ecosystems, cities and conservation in Mediterranean-type regions, and the importance of the urban connection for the conservation movement.

In addition, the Bangkok Congress passed two motions resulting from the task force's work: Resolution 49 calls for reviewing the 2005-2008 IUCN *Programme* in terms of connections between cities and larger environments. Recommendation 22 calls for action to protect Mediterranean-type ecosystems in the face of rampant urbanization (IUCN 2004b).

The task force is drawing up a strategy that will likely include both IUCN activities and projects implemented by coalitions of IUCN members and other organizations. Its progress can be followed at www.InterEnvironment.org/pa.

5. NEEDED POLICIES

At the World Parks Congress and in subsequent discussions, several needed policies and actions have become clear.

First of all, two fundamental policy changes are needed to meet the needs of city dwellers and build stronger urban constituencies for nature conservation. These are: adopting an ecosystem approach to managing cities and their surroundings, and making a serious commitment to provide ways for urban people to gain access to nature.

Adopting an ecosystem approach to managing cities and their surroundings

The disconnections between cities and protected area systems are part of a bigger problem. What is needed first and foremost is an ecosystem approach to policy-making and policy implementation that recognizes the interdependence of cities and the larger environment. An ecosystem

approach to natural resource management treats a region as a system of interrelated parts – environmental, social, economic – and embraces the major governmental and other interests affected. In some places, the larger environment is simply the local watershed. In other places, cities reach much farther afield. Los Angeles, for example, receives its water supply from protected areas many hundreds of kilometers away.

The barriers to ecosystem management are mainly political. Responsibility for environmental matters is fragmented among levels of government and single-purpose agencies. Each agency acts within its own framework of laws, purposes, constituencies, and organizational culture. Highly effective tools are now available to support integrated decision-making. These include sophisticated methods of collaborative problem-solving, as well as geographic information systems that show the interrelationships in a region as never before possible (CIPA 2001). None of these methods will work, however, without the political will to change, and this depends on an informed public.

Making a serious commitment to provide urban dwellers with access to nature

All levels of government need to make a serious commitment to providing urban dwellers with access to nature, with particular attention to serving the needs of disadvantaged people. This commitment should be formalized in legislation and plans. An excellent example is the London Mayor's Biodiversity Strategy.

Many kinds of public agencies can contribute to this goal, ranging from traditional protected area and wildlife agencies to municipal park departments and schools. Much of this work can be done most effectively in partnership with NGOs. In addition, many activities can be carried out by NGOs on their own initiative. The private sector can also contribute, for example, in the way businesses landscape and provide access to their lands.

Many examples of ways of providing access to nature are given in this volume.

6. ACTIONS REQUIRED

Several kinds of actions are required to put these policies into place and implement them:

Educating the conservation community

Interest in cities is not widespread in the conservation community. One reason for this is that many people are attracted to conservation careers because they want to spend their lives in the countryside. Another reason is a feeling that involvement in cities detracts from what is perceived as the main task of conservation, protecting biodiversity, even though research in many parts of the world shows that urban and periurban areas are exceptionally rich in indigenous species, and that threats to such species are usually higher in these places. Another important barrier to getting conservationists more interested in cities may be resistance to becoming involved with urban social issues for which they are unprepared.

The conservation community needs to be educated about the “why” and “how” of links with urban institutions and city dwellers. This can be done most effectively by those who are succeeding in making those links. Some prominent examples are described in this book.

Bringing urban and conservation actors together

With few exceptions, separate sets of people and institutions work on urban issues and on conservation. At local, national, and international levels each side would benefit from better understanding the concerns of the other. Both would benefit from identifying common goals and working toward them together.

A good place to start is dialogue at international and local levels between conservationists on one hand and urban officials, managers, and planners on the other. At the global level, international conservation organizations such as IUCN could invite prominent mayors and leaders of the major associations of local authorities, city planners, and related professions to major events such the quadrennial World Conservation Congress. Conservation organizations could arrange for speakers and panels at conferences of city-oriented associations. These international activities should be complemented by meetings of local leaders from both sides of the conservation-urban equation, beginning with experiments in a few carefully chosen cities. All these discussions should be aimed at setting up and reinforcing partnerships.

In addition, IUCN, whose membership is dominated by traditional conservation organiza-

tions, should follow a recommendation of the World Parks Congress that it “recruit as members organizations engaged in urban environmental issues, and invite prominent leaders and experts in urban management to participate in the work of IUCN (IUCN 2004b).”

Training leaders

Leadership development is critical. This should include an international short course for leaders with high potential, as well as leadership forums in selected cities. In both cases, participants should come from urban institutions as well as conservation organizations. Participants would learn from local and international speakers, share experiences, and build networks of individuals and institutions.

Assembling a toolkit

A toolkit is needed for practitioners responsible for linking conservation and urban issues, and for instructors training those who want to engage in such activities. Toolkits typically include case studies and guidelines drawn from them, along with other material about specific methods.

Case studies and guidelines are widely accepted models for international sharing of experience among conservationists. They are usually very helpful to practitioners and educators. However, case studies are best written by people who have not participated in the cases being described, which is rarely so. And, as Martin Storksdieck points out in his paper on evaluation, it is from failures that we learn the most.

A toolkit for linking urban dwellers to protected areas, and promoting the larger concept of managing cities as parts of larger ecosystems, should also include advice on such methods as collaborative decision-making and use of such technical resources as satellite imagery and geographic information systems.

Conducting exchanges, study tours, and technical assistance

Although toolkits are useful, they are not a substitute for direct sharing of experience through exchanges, study tours, workshops, and technical assistance. Such sharing can be among cities within a country or world region, or by theme or language. An initiative on cities and conservation

in the world's five Mediterranean-type ecosystems is already underway (IUCN 2005).

Cities are particularly suited to international cooperation because they often have more in common with each other than with their hinterlands. Cities in industrialized countries have much to learn from those in developing countries, as well as vice versa. Examples of this are India's Kids for Tigers and South Africa's Cape Flats Nature project.

Reaching political leaders

More needs to be done to reach elected and senior appointed government officials. First of all, a better case must be made for connecting urban dwellers with nature. A substantial body of scientific evidence supports the value of nature programs in cities, but it is compartmented in different disciplines. This research should be synthesized and translated into points easily understood by busy decision-makers.

Second, it is important for conservationists to talk face-to-face with senior officials and show them how things work on the ground. Visiting places like the nature reserves on the Cape Flats in South Africa, or the Hawkins Natural Park in inner-city Los Angeles can be mind-changing experiences. For particularly important political figures, study tours in which they meet with counterparts in other countries and see what is being accomplished on the ground can be especially valuable.

7. CROSS-CUTTING THEMES

Although the general policies and actions outlined above seem clear, much remains to be understood about what works in different circumstances and, indeed, about the whole range of relationships among cities as places, urban people, and hinterlands. More analysis and synthesis are needed. Meanwhile, several cross-cutting themes have come up repeatedly before, during, and after the Durban workshop and deserve mention here:

Conservationists must move from urban outreach to urban engagement. As a matter of fact, I now believe "urban outreach" was an unfortunate choice of words for the workshop's subtitle. A key ingredient of success in almost every case described in this book has been maximizing citizen involvement. Pamela Parker and Michael Punturiero make this point forcefully

in their paper, referring to Sherry Arnstein's eight-rung Ladder of Citizen Participation. The Ladder starts at the bottom with manipulation, moves up through consultation and then partnership, and ends at the top with delegated power and eventually citizen control. There are many cases where lower levels of participation are appropriate, and certainly governmental agencies are often constrained in delegating authority. However, pushing toward higher levels of participation makes it much more likely that positive cultural change will occur.

Ideas are important, too. Citizen involvement without ideas of what is possible, and concrete examples, can be counterproductive or at best a waste of time for all concerned. In their classic book on city planning, *Communitas*, Paul and Percival Goodman wrote about the downside of such citizen participation: If you ask people what kind of town they want to live in, "the answers reveal a banality of ideas that is hair-raising, with neither rational thought nor real sentiment, the conceptions of routine and inertia rather than local patriotism or personal desire, of prejudice and advertising rather than practical experience and dream" (1960, 13). One of the roles of international networks is to help put practitioners in touch with a wide range of such ideas and experience, and make sense of them.

Conservationists can contribute to poverty reduction in cities as well as rural areas. As protected area agencies and their allies become more involved in cities, they soon realize that environmental, social, and economic issues are intertwined. One question they face is how far to go in meeting the needs of poor people in the neighborhoods where they work. In rural areas, especially in developing countries, conservationists routinely work to improve the circumstances of local people. This started mainly because it was understood that helping people would motivate them to cooperate in protecting wildlife and protected areas. Eventually, in many cases, it was done because it was the right thing to do. Now it is happening in urban settings like Cape Town, London, and Los Angeles. A separate series of workshops at the World Parks Congress examined opportunities and limitations for integrating protected areas and poverty reduction strategies, giving examples from rural settings (Scherl et al. 2004). These questions also need to be addressed in terms of protected areas in and near cities.

Local governments are important for conservation in urban settings. Rarely do national (or state or provincial) conservation agencies succeed in urban settings without working closely with local authorities. In addition, some local authorities have extensive natural park systems of their own. Unfortunately, local governments are rarely represented in international conservation forums.

Management of local protected areas is often not coordinated with national (or state or provincial) authorities. This is sometimes the case even when areas under different jurisdictions adjoin each other.

Local protected areas in urban settings are underreported. Locally run areas are not always included in listings of protected areas. A case in point, actually the key one, is the official World Database on Protected Areas maintained by the United Nations Environmental Programme's World Conservation Monitoring Centre (WCMC 2005).

There are three problems, and I will give examples of each from California, which I know best. First, there are some local areas that clearly meet all criteria for the database but are not included in it. This is because WCMC depends on one central source of information for each country, and in large countries with federal systems, areas can be overlooked. Good examples are several sizeable natural parks in California's East Bay Regional Park District, including the 3,700-hectare Ohlone Wilderness.

Second, substantial areas with de jure but unconventional protection are omitted from this database. An example is the California state regulatory regime that protects San Francisco Bay and its shoreline, the largest estuary along the Pacific Coast of the Americas (Trzyna 2001).

Finally, while many urban protected areas are too small to meet WCMC's formal criteria – criteria quite understandable given the large number of sites involved – these areas can be critical from the standpoint of biodiversity, let alone social and political benefits. And taken together in cities like Los Angeles or London, they can amount to sizeable pieces of territory. Underreporting of local protected areas can result in their being less visible to policy-makers and donors.

The term “protected areas” can give the wrong impression. For many urban residents, it implies these places are off-limits. “Conservation areas” might be a better choice of words.

City governments can be international conservation actors. The best example of this that has come to our attention is London, whose Biodiversity Strategy states: “The Mayor will promote London as a world centre for biodiversity conservation, working with London's world-class organizations for greater influence globally and to learn from experience at home and abroad.” See Note 2 for details.

Smaller cities and towns can be very important for conservation. Although The Urban Imperative workshop focused almost exclusively on large cities, Australia's Michael Punturiero argued that citizens in smaller settlements can have an important role in conservation. This is particularly so of small cities and towns adjacent to areas of high conservation value, especially seats of regional governments. I was reminded of this last year when asked to keynote the dedication of a new municipal nature park in La Paz, capital of the Mexican state of Baja California Sur. The long Baja California peninsula and the Sea of Cortés that divides it from the Mexican mainland are of great interest to Mexican and international conservation organizations. Although La Paz has well under a quarter-million people, it is a long way from the national capital, physically and psychologically, and important decisions are made there about the state's future.

The urban-rural distinction is becoming less meaningful. For centuries, city and country have been seen as opposites. Now, in much of the world, differences between urban and rural communities are becoming blurred as advanced technologies and the global economy penetrate areas formerly considered remote, and urban and rural areas become more linked and interdependent. Steve Bass, Chief Environment Adviser in the UK's Department for International Development, calls for “Ditching the Dichotomy” in terms of development strategies (Bass 2004) and points out that it has become hard to even define the terms “urban” and “rural.” David Hales, former Director of the Global Environment Center in the U.S. Agency for International Development, noted at the World Parks Congress that “Once the

wilderness surrounded us; now we surround the wilderness.”

Chances are it’s *not* “already being done.” An all-too-typical response to hearing about an innovative program is “we’re already doing that,” or “it’s already being done.”

Involving local citizens? “It’s already being done.” But a close look at the Parker-Punturiero (Australia) and De Francesco (Argentina) papers shows how thoughtful, sustained efforts are leading toward levels of citizen participation rarely found around protected areas.

Reaching out to poor people? “It’s already being done.” But look at the unusual strategies described by Goode (UK) and Davis (South Africa).

Nature experiences for children? “We’re already doing that.” But read the papers by Lellouch (France) and Sahgal (India) and learn how carefully designed and well-organized programs can reach hundreds of thousands of city kids each year.

Getting groups to cooperate? “No problem.” But read what Hutcherson (USA) says about a metropolitan umbrella organization that facilitates collaboration systematically.

And note these examples are from six continents, from countries that cover most of the global economic spectrum.

8. CONCLUSIONS

An urbanizing world poses new challenges for protected areas, but also new opportunities. Broad support from urban dwellers may be the most important goal conservationists can adopt to preserve and expand protected areas everywhere. However, building such support means paying more attention to the needs of city people and the places where they live.

For individual conservationists, this means changing long-established attitudes – without compromising core values – and acquiring new skills. For conservation organizations, it requires adopting an enlarged, but not radically different, perspective.

But change is imperative. As Groundwork cofounder John Davidson said at the World Conservation Congress, “This has to get into the bloodstream” of the international conservation movement; otherwise the movement “will struggle for relevance in the next decades. We are talking about the human race and its future on the planet.”

Urban pioneers in the conservation movement have strived toward this goal for many years. A new generation of leaders can move us much closer. Those more seasoned in this exciting new arena must do all they can to help them do so.

9. ACKNOWLEDGEMENTS

Although I took responsibility for putting together The Urban Imperative workshop, it was very much a collective effort. John Davidson, Jeff McNeely, and Adrian Phillips were involved from the earliest conceptual stages. The circle gradually widened.

The California Institute of Public Affairs, which I direct, received financial support for the project from the Santa Monica Mountains Conservancy, the Mountains Recreation and Conservation Authority, the Chief Scientist’s Office of IUCN – The World Conservation Union, and GTZ – Deutsche Gesellschaft für Technische Zusammenarbeit GmbH. The Institute provided additional support from its own funds.

The authors of the papers in this volume and their employers made substantial in-kind contributions. Mark Lellouch ably served as the project’s principal consultant. John Waugh and Frederik Schutyser assisted with workshop logistics.

John Davidson, George Davis, and Pedro Menezes now serve with me on the steering group of the IUCN Task Force on Cities and Protected Areas and it seems we are in touch almost daily. Along the way, many others have been involved. My great thanks to them all.

10. NOTES

Note 1: Urban biosphere reserves

In December 2003, several people who were at The Urban Imperative workshop participated in a small invitational conference in New York organized to discuss the concept of urban biosphere reserves.

Biosphere reserves are areas that are internationally recognized within the framework of UNESCO’s Man and the Biosphere Programme. They consist of a core protected area, or cluster of such areas, a buffer zone, and an outer transition area. Groups in several countries are taking the biosphere reserve concept, typically used in rural areas, and applying it to urban settings.

Under UNESCO guidelines, each biosphere reserve is intended to fulfill three complementary functions: (1) conservation of landscapes, ecosystems, species, and genetic variation; (2) local economic development that is culturally, socially, and ecologically sustainable; and (3) research, monitoring, education, and information exchange related to local, national, and global issues of conservation and development.

Biosphere reserves bring together stakeholders ranging from conservation agencies and scientists to economic interests and local authorities. In addition, one of their main purposes is to foster international exchange of information and experience. UNESCO has set up a network of committees for this purpose (UNESCO 2004).

Although several biosphere reserves exist in urban areas, their role has generally been limited to coordinating conservation activities. The idea of a distinct category of urban biosphere reserve is being considered in several countries. In October 2003, an international conference was held by Columbia University and UNESCO in New York to discuss the concept (CUBES 2004). Proposals for urban biosphere reserves are most advanced in Cape Town, New York, and Seoul.

The Cape Town Urban Biosphere Group has suggested that guidelines for such areas provide for cultural, as well as natural, cores; include protection of human and cultural, as well as natural, diversity; and allow for applying the zoning system (core, buffer, transition) “in a functional way, and not necessarily spatially specific as with traditional rural biosphere reserves” (CUBES CT 2003; Stanvliet et al. 2004).

The proponents of the new category of urban biosphere reserve are a lively and creative group. They offer a different perspective on the people-city-nature triad. Their ideas and energy could also help to invigorate the biosphere reserve concept, a good idea that has yet to reach its potential.

Note 2: Local governments as international conservation actors: The case of London

Although most organizations active in international conservation are based in large cities, few of them make connections between their international work and urban conservation in their own cities. And it is rare for local governments to become involved in international environmental matters, except in cases where transboundary issues affect them directly.

London is an unusual exception. One of the fourteen policies in its Biodiversity Strategy states that “The Mayor will promote London as a world centre for biodiversity conservation, working with London’s world-class organizations for greater influence globally and to learn from experience at home and abroad.”

This is elaborated as follows: “The Mayor will foster working links and exchanges with international bodies and organizations in other major cities, to give a lead in urban greening and biodiversity conservation. The Mayor will support enterprising new flagship projects for urban nature conservation and people’s enjoyment of the natural world, which may further London’s reputation as a World City. The Mayor will encourage the formation of a partnership for excellence in global biodiversity conservation, harnessing the skills and expertise of London’s centres of excellence.”

This partnership includes the Greater London Authority, the London Zoo, the Natural History Museum, the Royal Botanic Gardens at Kew, the Wildfowl and Wetlands Trust, and the UK Environment Agency (London, 2002).

Other major cities might well follow London’s example.

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The Congress, sponsors, and contributors

THE WORLD PARKS CONGRESS

The Urban Imperative workshop was part of the Vth World Parks Congress, held in Durban, South Africa, in September 2003.

The World Parks Congress is held every ten years by IUCN – The World Conservation Union, with leadership and support from its World Commission on Protected Areas. (IUCN defines a protected area as “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.”)

The Parks Congress provides the major global forum for setting the agenda for protected areas. Previous such events were held in 1962 (Seattle, Washington, USA); 1972 (Yellowstone National Park, USA); 1982 (Bali, Indonesia); and 1992 (Caracas, Venezuela).

With “Benefits beyond Boundaries” as its theme, the 2003 Congress focused on demonstrating how protected areas are relevant to the broader economic, social, and environmental agenda for humankind in the 21st century.

SPONSORS

IUCN – The World Conservation Union (www.iucn.org), founded in 1948, brings together states, governmental agencies, and a diverse range of nongovernmental organizations in a unique world partnership: over 1,000 members in all, spread out over some 140 countries.

As a Union, IUCN seeks to influence, encourage, and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

The World Conservation Union builds on the strengths of its members, networks, and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional, and global levels.

IUCN’s **World Commission on Protected Areas** (www.iucn.org/themes/wcpa) is the world’s leading global network of protected area specialists. Its mission is to promote the

establishment and effective management of a worldwide representative network of terrestrial and marine protected areas as an integral contribution to the IUCN mission.

The Urban Imperative workshop was also sponsored by the following organizations:

The California Institute of Public Affairs (www.cipahq.org). CIPA works to improve policy-making on complex issues. Founded in 1969, and an IUCN member since 1980, it concentrates on environmental policy internationally and in California. InterEnvironment is CIPA’s international program. CIPA has been a pioneer in promoting the concept of sustainability, defined as improving the quality of life while living within the carrying capacity of supporting ecosystems. Applying this concept requires a systematic, long-range view of public affairs that combines political, social, cultural, and economic, as well as environmental concerns.

Global Dimension Trust (www.global-dimension.org.uk). Based in the United Kingdom, Global Dimension works in close cooperation with organizations in India, Africa, and the UK in support of “education for sustainability,” defined broadly as “knowledge, skills, and attitudes for living successfully and responsibly in an interdependent world.”

Groundwork (www.groundwork.org.uk). This nonprofit environmental partnership organization in the United Kingdom is described at page 133.

The South African National Biodiversity Institute (www.sanbi.org). SANBI is a parastatal organization that works “to promote the sustainable use, conservation, appreciation, and enjoyment of the exceptionally rich biodiversity of South Africa for the benefit of all people.” Formed in 2004 as an extension of the National Botanical Institute, which had its roots in the early 20th century, SANBI has an expanded mandate related to the full diversity of fauna and flora. Its programs include conservation, research, education, and visitor services.

The *Santa Monica Mountains Conservancy* (www.smmc.ca.gov). SMMC, a unit of The Resources Agency of the California state government, is described at page 107.

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Part 1:
Cities depend on protected areas

The role of forest protected areas in supplying drinking water to the world's biggest cities

NIGEL DUDLEY AND SUE STOLTON

1. INTRODUCTION: THE GROWING WATER CRISIS FOR CITY DWELLERS

Water is a renewable resource. Yet, the carelessness and profligacy with which it has been used, the speed of human population growth, and the increasing per capita demands for water together mean that provision of adequate, safe supplies of water is now a major source of concern, expense and international tension. At the World Summit on Sustainable Development in Johannesburg in 2002, over 80 percent of the participating decision-makers identified water as a key issue to be addressed by heads of state from countries throughout the world (World Bank 2002).

Municipal water – the focus of this paper – accounts for less than a tenth of human water use, but is of critical importance to the growing proportion of the world's population who live in cities. An estimated one billion city dwellers still live without clean water or adequate sanitation. Annually, 2.2 million deaths, four per cent of all fatalities worldwide, can be attributed to inadequate supplies of clean water and sanitation (McNeil 2000). These problems will increase in the future as the rapid processes of population growth and urbanization continue. In India, for example, World Bank forecasts are that demand for water in the urban and industrial sectors is likely to increase by 135 percent over the next 40 years (Brandon and Ramankutty 1993).

Most of the world's drinking water comes from surface waters (rivers, lakes, or artificially constructed reservoirs) or from underground aquifers; an increasing number of countries are also investing in desalination plants. All sources face costs and problems, the latter including over-exploitation and pollution. Currently, most cities rely on the collection and diversion of existing freshwater sources, with minor amounts, on a global scale, extracted directly from rainwater or from the seas.

All major water supplies face problems. Some countries already have genuine shortages, although in many others the problems of supply relate more to access and transport. Withdrawal of water from transboundary sources, such as the Nile or rivers in the Middle East are creating political tensions and are causing rivers to dry up far from their outlets to the sea, with a range of ecological and economic consequences. Over-exploitation of groundwater resources is occurring in many developed and developing countries – for example in the American Great Plains, China, India, Mexico, and the southern states of Central Asia. Saline intrusion into groundwater sources is a problem for many coastal cities, such as Jacksonville, Florida; Dakar in Senegal; and several Chinese cities. Pollution of all water sources creates major health costs, with pollutants coming mainly from agriculture, sewage, industry, and activities such as mining.

Until recently, the main focus of efforts to improve urban water sanitation and supply have taken place within cities themselves, and have focused on better distribution systems, treatment plants, and sewage disposal. However, throughout the world, municipal authorities are now increasingly looking at ways in which improvements can be made at source through changing management practices in watersheds. This is the starting point for the study related below.

2. WHAT FORESTS CAN PROVIDE

There is a widespread assumption that forests help to maintain constant supplies of good quality water. Loss of forests has been blamed for everything from flooding to aridity and for catastrophic losses to water quality. In fact, the hydrological role of forests is complex and the precise impact on water supply varies dramatically between places and can also vary in one place depending on such factors as the age and composition of the forest.

Forests in watersheds generally result in higher quality water than alternative land uses, if only because virtually all alternatives – agriculture, industry and settlement – are likely to increase the amounts of pollutants entering headwaters. In some cases forests also help to regulate soil erosion and hence reduce sediment load, although the extent and significance of this will vary (Aylward 2000). While there are some contaminants that forests are less able to control – the parasite *Giardia* for example – forests usually reduce the need for treatment. Where municipalities have protected forests to protect water supply, it is issues of water quality that have generally been the primary driving force.

The situation with regard to quantity of water is more complex. The precise interactions between different tree species and ages, soil types, and management regimes are still often poorly understood. Many studies suggest that both in very wet and very dry forests, evaporation is likely to be greater from forests than from land covered with other sorts of vegetation, leading to a decrease in water from forested catchments as compared with, for example, grassland or crops (Calder 2000). Planting new forests, particularly of species with high evapotranspiration rates, can often lead to reduced water flow. The Food and Agriculture Organization of the United Nations concluded that eucalypts are likely to reduce water yield and that in the humid tropics, young eucalyptus plantations may consume more water and regulate flow less well than natural forests (Poore and Fries 1985).

This conclusion has been echoed by many other researchers. However, some natural forests appear to increase flow rates. The most significant example is cloud forest, where leaves collect water from clouds and this additional water may exceed transpiration losses. Recent work in northern Costa Rica suggests that the pattern of cloud formation above forested and cleared areas differs (Nair et al. 2000). In addition, some very old forests also apparently increase available water. For instance, research suggests that mountain ash (*Eucalyptus regnans*) of 200 years or more in Australia increases water flow (Langford 1976).

As important as total water is constancy of flow, both in terms of maintaining dry season flow and reducing flooding. There is little evidence that forests regulate major floods, although flooding was the reason for introducing logging bans in, for example, Thailand and China. One important exception is flooded forests, which do appear to have a role in regulating water supply, both

lowland forests such as the varzea forests on the Amazon and swamps in the uplands. Forested catchments can also have important local impacts in regulating water flow, for example for communities in upland areas. In addition, the undisturbed forest with its leaf litter and organically enriched soil is the best watershed land cover for minimizing erosion by water.

What forests provide depends to a large extent on individual conditions, species, age, soil types, climate, and management regimes. Information for policy-makers remains scarce, but the role of forests in the cost-effective protection of water quality is now generally accepted.

3. THE ROLE OF PROTECTION

As a result, natural forests are increasingly being protected to maintain high quality water supplies to cities. Protection within watersheds also provides benefits in terms of biodiversity conservation, recreational, social, and economic values.

Many municipalities and other users already cite maintenance of water supply as a reason for introducing forest protection or reforestation. Sometimes this is recognized and watershed protection has been a major reason for establishing the protected area: the cities of New York and Quito are also both famous for their use of protected forests to maintain their high quality water supply. Watershed protection has sometimes bought critical time for biodiversity, by protecting natural areas around cities that would otherwise have disappeared: for instance around Santiago in Chile and Singapore. Around 85 percent of San Francisco's drinking water comes from the Yosemite National Park (NRDC 2003). The Mount Makiling Forest Reserve, around a hundred kilometers south of Manila in the Philippines is a 4,244-hectare area of forest administered and managed by the University of the Philippines, and its forested ecosystem supplies water to five water districts and several water cooperatives (University of the Philippines 1999). However, in other cases, the watershed values of protected areas are largely unrecognized and the downstream benefits are accidental.

4. THE STUDY

Specific case studies linking forest protection and drinking water have been well documented and frequently repeated and created interest. But how representative are these of the situation in most

countries and most cities? We wanted to find some statistics about how important forests are to urban water supplies, and therefore looked at the world's top 100 cities and assessed how many relied on water from protected areas for a substantial proportion of their drinking water. (Actually, we looked at the top 105 by population, divided between the Americas, 25; Africa, 25; Europe, 25; Asia; 25, and Australia, 5.)

What appeared initially to be a fairly simple question became more complex in its unraveling. Finding the information proved a challenge and revealed many layers of complexity. What exactly constituted a forest protected area? We had assumed official protected areas, as designated by IUCN – The World Conservation Union, but found many other categories of protection, some specifically aimed at watershed protection and often with their wider values only poorly understood. In some catchments (for example around Beijing), “protection” actually means integrated management, with controls on the type of farming and other land uses. Not all forests set aside for catchment protection also have high biodiversity values. In some areas, governments recognize the need for restoration, or have reforestation projects already underway in important catchments.

The results should still be considered preliminary: we are well aware of the gaps and uncertainties in our data. Nonetheless, we found that around a third (33 out of 105) of the world's largest cities obtain a significant proportion of their drinking water directly from protected areas. At least five other cities obtain water from sources that originate in distant watersheds that also include protected areas. At least eight more obtain water from forests that are managed in a way that gives priority to providing water. Several other cities are currently suffering problems in water supply because of problems in watersheds, or draw water from forests that are being considered for protection because of their values to water supply. Some of these statistics are outlined below.

Cities drawing some or all of their drinking water from protected areas

Our study showed that the drinking water supplies from the following cities all had important links to forest protected areas:

- Mumbai (Bombay) India: Sanjay Gandhi National Park (Category II, 8,696 hectares)
- Jakarta, Indonesia: Gunung Gede Pangrango (Category II, 15,000 ha) and Gunung Halimun (Category II, 40,000 ha)
- Karachi, Pakistan: Kirthar National Park (Category II, 308,733 ha), Dureji Wildlife Sanctuary (Category IV, 178,259 ha), Surjan, Sumbak, Eri and Hothiano Game Reserve (40,632ha), Mahal Kohistan Wildlife Sanctuary (70,577 ha), Hub Dam Wildlife Sanctuary (27,219 ha) and Haleji Lake Wildlife Sanctuary (Category IV, 1,704 ha)
- Tokyo, Japan: Nikko National Park (Category V, 140,698 ha) and Chichibu-Tama National Park (Titibu-Tama) National Park (Category V, 121,600ha)
- Singapore: Bukit Timah (Bukit Timah and the Central Catchment Area, Category IV, 2,796 ha)
- New York, USA: Catskill State Park (Category V, 99,788 ha)
- Bogotá, Colombia: Chingaza National Park (Category II, 50,374 ha)
- Rio de Janeiro, Brazil: within the Rio metropolitan area there are several parks providing sources of water: Tijuca National Park (Category II, 3,200 ha), Tingua Biological Reserve, Pedra Branca State Park and Gericinó-Mendanha APA. In addition, the Atlantic Rainforest Biosphere Reserve and fourteen protected areas (covering a total area of 320,180 ha) also provide protection for the sources of the catchment areas supplying the city
- Los Angeles, USA: Angeles National Forest (Category VI, 265,354 ha)
- Cali, Colombia: Farallones de Cali National Park (Category II, 150,000 ha)
- Brasília, Brazil: Brasilia National Park (Category II, 28,000 ha)
- Santo Domingo, Dominican Republic: The Madre de las Aguas (Mother of the Waters) Conservation Area, Armando Bermúdez National Park (Category II, 76,600 ha), Juan B.

- Pérez Rancier (Valle Nuevo) National Park (Category Ia, 40,900 ha), José del Carmen Ramírez National Park (Category II, 73,784 ha), Nalga de Maco National Park and Ebano Verde Scientific Reserve (Category Ia, 2,310 ha)
- Medellín, Colombia: Alto de San Miguel Recreational Park and Wildlife Refuge (721 ha)
- Caracas, Venezuela: Guatopo National Park (122,464 ha, Category II), Macarao National Park (15,000 ha, Category II) and Avila National Park (85,192 ha, Category II)
- Maracaibo, Venezuela: Perijá National Park (Category II, 295,288 ha)
- São Paulo, Brazil: Cantareira State Park (Category II, 7,900 ha), Guarapiranga Ecological Park, Morro Grande State Reserve, Itapeti Ecological Station, Juquery and Alberto Loefgren State Parks
- Salvador, Brazil: Lago de Pedra do Cavalo Environmental Protection Area (Category V) and Joanes/Ipitinga Environmental Protection Area (Category V, 60,000 ha)
- Belo Horizonte, Brazil: Mutuca, Fechos, Rola-Moça, Taboões, Catarina, Bálsamo, Barreiro, Cercadinho, Rio Manso, and Serra Azul (17,000 ha)
- Madrid, Spain: Natural Park of Peñalara (15,000 ha) and Regional Park Cuenca Alta del Manzanares (Category V, 46,323 ha)
- Vienna, Austria: Donau-Auen National Park (Category II, 10,000 ha)
- Barcelona, Spain: Sierra del Cadí-Moixeró (Category V, 41,342 ha) and Paraje Natural de Pedraforca (Category V 1,671 ha)
- Sofija, Bulgaria: Rila National Park (Category II, 107,924 ha), Vitosha National Park (Category IV, 26,607ha) and Bistrishko Branishte Biosphere Reserve (Category Ia, 1,062 ha)
- Ibadan, Nigeria: Olokemeji Forest Reserve (7,100 ha) and Gambari Forest Reserve
- Abidjan, Cote d'Ivoire: Banco National Park (Category II, 3,000 ha)
- Cape Town, South Africa: Table Mountain National Park (29,000 ha) and Hottentots Holland Nature Reserve (Category IV, 24,569 ha)
- Nairobi, Kenya: Aberdares National Park (Category II, 76,619 ha)
- Dar es Salaam, Tanzania: Udzungwa Mountain National Park (Category II, 190,000 ha), Selous Game Reserve (Category IV, 5,000,000 ha and World Heritage site), Mikumi National Park (Category II, 323,000 ha) and Kilombero Game Controlled Area (Category VI, 650,000 ha)
- Durban, South Africa: Ukhahlamba-Drakensberg Park, (Category I [48 per cent] and II [52 per cent], 242,813 ha, World Heritage Site, Ramsar site)
- Harare, Zimbabwe: Robert McIlwaine Recreational Park (Category V, 55,000 ha) and Lake Robertson Recreational Park (Category V, 8,100 ha)
- Johannesburg, South Africa: Maluti/Drakensberg Transfrontier Park: Ukhahlamba-Drakensberg Park, (Category I [48 per cent] and II [51.5 per cent], 242,813 ha, World Heritage Site, Ramsar site)
- Sydney, Australia: Blue Mountains National Park (Category II, 247,021 ha), Kanangra-Boyd National Park (Category Ib, 65,280 ha), Dharawal Nature Reserve (Category Ia, 341 ha) and Dharawal State Recreation Area (5,650 ha)
- Melbourne, Australia: Kinglake National Park (Category II, 21,600 ha), Yarra Ranges National Park (Category II, 76,000 ha) and Baw Baw National Park (Category II, 13,300 ha)
- Perth, Australia: Yanchep National Park (Category Ia, 2,842 ha)

Cities managing forests for drinking water

In addition, there are a number of other major cities where a proportion of forest is managed specifically for watershed protection while not being officially within protected areas, and key examples are listed below (note that some of these cities also have forest protected areas for watersheds as noted above).

- Seoul, Republic of Korea (South): Nakdong watershed, has government-established special protection zones including riparian buffer zones to restrict commercial activities around the river basins.
- Tokyo, Japan: Tokyo Metropolitan Government Bureau of Waterworks manages the forest at the source of drinking water in the upper reaches of the Tama River, to: increase capacity to recharge water resources; prevent sedimentation in the Ogochi reservoir; increase water purification capacity; and conserve the natural environment.
- Beijing, China: Watersheds above the Miyun reservoir, the principal source of surface water for Beijing, are managed for water protection.
- Yangon (Rangoon), Myanmar: The forested watershed of the two dams, Gyobu and Phugyi, which supply drinking water to Yangon, are managed by Forest Department of Myanmar who carry out forest conservation activities, i.e., restoration, in the watersheds.
- Santiago, Chile: The Santiago Foothills have been classified as an “Ecological Conservation Area,” to be “preserved in natural condition, in order to ensure and contribute to environmental balance and quality.” The forests are the source of potable water for Empresa Metropolitana de Obras Sanitarias, which supplies potable water for part of the municipal district of La Reina – about 20 percent of potable water in requirements for Santiago.
- Stockholm, Sweden: Lake Mälaren and Lake Bornsjön, supply Stockholm’s water. Stockholm Vatten controls most of the 5,543-hectare watershed of Lake Bornsjön, of which 2,323 hectares, or about 40 percent, is productive forestland certified by the Forest Stewardship Council. Management is focused

on protecting water quality and areas are left for conservation and restoration

- Munich, Germany: Since the foundation of the Munich waterworks in circa 1900, forest management has been focused on ensuring good water quality. Currently an area of 2,900 hectares is managed primarily to maintain water quality and an additional area of 1,900 hectares is under long-term contracts with local farmers, who commit to certified ecological/organic agriculture
- Minsk, Belarus: A green belt around the city of about 80 km and protective zone around the Minsk reservoir play an important role in ensuring water quality. The protective regime in these zones is quite strict, for example, logging is prohibited. Thanks to these restrictions, the forest around Minsk city has not been destroyed
- Sydney, Australia: The Sydney Catchment Authority manages and protects Sydney’s catchments. Around 25 percent of the catchment is managed within ‘Special Areas’, which act as a buffer zone to stop nutrients and other substances that could affect the quality of water entering the water storage areas
- Melbourne, Australia: Ninety per cent of Melbourne’s water supply comes from uninhabited forested mountainous catchments to the north and east of Melbourne. The government owned company Melbourne Water manages the water collection from these forests and has some legislative backing to protect water resources. Fifty one percent of the water catchments are not within protected areas. Management priorities include to the protected forested catchments against the threat of bushfires

The study shows, we believe fairly conclusively, that protection of forests for drinking water is not a minor or a special-case issue, but one that relates to a high proportion of urban dwellers around the world.

5. IMPLICATIONS – FINANCIAL

Those who manage forests typically receive little or no compensation for the services that these forests generate for others. Recognition of this has

encouraged the development of “payment for environmental services” (PES) systems, which propose mechanisms for compensating those who provide environmental services. This means that if particular management systems are needed in watersheds to maintain the quantity or quality of water supply, the users – like drinking water or hydropower companies – should pay for these.

These benefits are known to be enormous. A team of researchers from the United States, Argentina, and the Netherlands has put an average price tag of U.S.\$2.3 trillion on water regulation services from the natural environment (Costanza et al. 1997). Recent studies calculated that the presence of forest in Mount Kenya National Park saved Kenya’s economy more than U.S.\$20 million through protecting the catchment for two of the country’s main river systems, the Tana and the Ewaso Ngiro (Emerton 2001). The issue for policy-makers is how to translate these values into money that can help to support particular types of land management in catchments and thus address some of the potential social issues outlined in the previous section. Projects using water resources as a springboard for PES schemes have been most thoroughly developed in Latin America. In Costa Rica, for example, the government has been involved in a scheme to help users such as hydropower companies to pay farmers to maintain forest cover in watersheds, while in Quito, Ecuador, water companies are helping to pay for the management of protected areas that are the source for much of the capital’s drinking water.

PES has raised great hopes that protected areas can be supported through the environmental services that they provide. Although this is clearly possible, and there are some successful examples, it is also no universal panacea to the questions of support for protection. Schemes only work when conditions are right: ideally when a relatively small amount of money used to support a particular management regime results in major economic benefits to a small group of users – like a water company. But users have different needs; for example a hydropower company will be interested in quantity and freedom from sediment while a water company will have much wider quality interests. It may be difficult to identify and hence negotiate with people upstream. There are risks of a few users paying for services enjoyed by many. Clumsy use of payment schemes can create perverse incentives, for example, by raising hopes of payment in other areas and hence blocking other ways of reforming management. Nonetheless, such

schemes are already working in several places and are receiving a high level of attention from governments and from donor agencies.

6. IMPLICATIONS – SOCIAL

Water catchment management offers benefits to people living downstream, including millions of city dwellers who rely on water from forested watersheds. But what of the people living in the catchments themselves? Setting aside an area of land for forest protection or restoration might be good for water, but could have severe implications for the lives of people who live there and who have their own ideas about what it should be used for. For example, Mount Elgon National Park in Uganda is an important source of drinking water and water services were a major incentive for protection. But this caused conflict with local people who had used the forests for generations and abruptly found themselves excluded, creating problems that required considerable efforts to address (Scott 1998).

Because urban interests are more politically powerful than rural interests, watershed protection has often ignored rural people’s rights, with negative impacts for millions of people. At worst, watershed protection has been a thinly disguised excuse for resettlement or social control of politically and culturally marginal groups. This has caused resentment and many programs that established strict forest reserves or attempted to reforest farm and grazing lands have failed to achieve watershed objectives.

If watershed protection is going to benefit urban dwellers, it must therefore be practiced in ways that do not further disadvantage the urban poor. In some urban watersheds, protecting or expanding forest cover will be essential for water management. Here, every effort should be made to embed biodiversity conservation and livelihood benefits into forest protection. Multiple-use community forestry can provide local income, and communities and landowners can be paid to conserve resources and monitor water quality. Planting or regeneration can focus on the most critical sites for watershed services. Local people can identify sites producing unusual levels of sediment or contamination, or areas of compacted soil or barriers to water flow, that may not show up through remote sensing. They can also identify areas where there are strong community motivations to increase forest, such as around local water sources or cultural sites.

While natural forest can often provide these functions most effectively and at a low cost, well-designed mosaics of other land uses may also do much the same. Where the “opportunity cost” of protection is very high for local people, alternatives should be explored. Timber and non-timber forest products can be produced commercially, under standards of certification. Crops may be produced using good erosion control or in agroforestry or organic systems. Rules can require wide strips of natural vegetation be left at intervals on contours on steep slopes. Examples of all these approaches already exist and can help decisions in other cities.

7. IMPLICATIONS – BIODIVERSITY

This study started with issues of protected areas and then deliberately moved away, to look at the wider implications of drinking water and forests. But to return to our starting point: the use of protected forests for drinking water is also a perfect opportunity to combine utilitarian needs with good biodiversity protection. At a time when protected areas rightly need to justify their designation and management more and more, combining watershed and wildlife management can provide an excellent argument for protection, and one whose need is likely to increase further in the future.

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Some benefits of protected areas for urban communities: A view from Sydney, Australia

NICHOLAS CONNER

1. INTRODUCTION

Protected areas (PAs) are defined in this paper as relatively large areas of green open space managed by state agencies for natural and cultural heritage conservation, passive recreation, and amenity.

These areas are variously categorized as national parks, regional parks, state parks, and other types of state-funded public open space. This definition does not include small municipal local parks, sports grounds, and open areas.

In addition to their role in protecting natural and cultural heritage, PAs contribute economic and social benefits to urban communities. The type and level of benefits a particular PA contributes to individuals, businesses and the wider community relates to its geographical and financial accessibility (e.g., is it expensive to get there? Is there a high entry charge? How much will visitors spend in the local economy? What restrictions are there on the use of the PA and its products?). The nature and type of benefits provided by PAs will also be affected by the way they are managed.

Some types of benefits will be obtained from areas that can be accessed by urban residents using public or private transport for day trips or shorter visits, for walks, picnics, and sightseeing. Other types of benefits relate to longer trips, such as weekend or school holiday trips to places further away, which can include longer periods in PAs, including staying in park accommodation or in nearby towns. Some types of benefits do not depend on actual visitation, but rather the knowledge that particular values of PAs are being protected. Different types of benefits are discussed below.

2. DEFINING BENEFITS

Individuals, businesses and communities derive socio-economic benefits from PAs in a variety of ways. These include using the products of PAs, obtaining recreational experiences from visiting PAs, obtaining direct and indirect income from

goods and services sold to visitors, benefiting from the biophysical services provided by PAs, and obtaining health benefits from environments protected by PAs. These benefits arise from the provision of “private” goods and “public” goods as discussed below.

Supply of private goods

PAs provide a range of goods which can be used directly by individuals and businesses, e.g., for food supply, for sale, or as an input into the production of saleable products. In economic terms, such goods can be classified as “private” goods, as they have the characteristics of being “rival” and “excludable.” Such goods are “rival” in that their consumption by one party precludes their consumption by anyone else, either because they are used up entirely, or are monopolized at any particular time by the first party. They are “excludable” in that it is possible for the supplier or potential consumer to restrict their supply or consumption to particular parties (e.g., through pricing strategies which exclude particular groups, allocation of quotas, etc.).

Supply of public goods

PAs also provide types of goods and services which directly and consequentially accrue to individuals but have no immediate commercial value and cannot readily be transformed into tradable commodities or services.

Unlike private goods, these goods are non-rival and non-price excludable, in that they cannot easily be appropriated by individuals or made into private assets and withheld from others, and their use by one group does not necessarily reduce their use by other groups. These types of goods and services can be defined as “public” goods.

Although individuals benefit from the provision of public goods, the supply of such goods is not restricted to specific individuals and deliberately withheld from others, and their consumption by

one individual does not necessarily preclude their value to another.

Direct and consequential benefits

Benefits which individuals, businesses and communities obtain from the provision of private and public goods can be both direct and consequential.

PAs provide direct benefits through supplying a range of goods which have a commercial value for individuals and businesses, and could be translated into income generating activity e.g., the commercial value of species hunted or collected, or income received by businesses operating tours in PAs. Individuals also obtain direct benefits from the knowledge that PAs are safeguarding natural and cultural heritage for posterity.

PAs also provide consequential benefits. For example, local businesses will benefit from spending made by visitors who have been attracted to their area by the presence of a nearby PA. Local communities may benefit from rehabilitation of juvenile offenders through skills training programs operated in PAs by welfare agencies. Examples of some direct and consequential benefits of private and public goods and their benefits to individuals, businesses, and communities are summarized below.

3. BENEFITS TO INDIVIDUALS AND BUSINESSES

Direct use of PA products

In some locations, individuals and businesses derive direct economic benefits from operating guided tours in PAs, or harvesting or collecting the resources provided by PAs such as flowers and seeds, for subsistence use or sale. In developed countries, and particularly in urban and peri-urban areas, if such harvesting activity is permitted by park agencies it is likely to be strictly regulated.

The supply of these types of goods would generally be managed through licences, quotas, permits or some other allocation system which enabled their consumption to be restricted by PA managers to prevent degradation.

Purchases from local businesses and flow-on effects

PA agencies can stimulate local businesses and commerce by purchasing local goods and services

for park management. This expenditure results in flow-ons to other local businesses as they supply goods and services to the businesses dealing directly with the PA agency.

Flow-ons to other business sectors also occur when the households directly employed in PA management spend their income on locally supplied goods and services. The business activity generated by this spending leads to incomes for, and spending by, the households employed in producing these goods and services, further stimulating local business activity.

Expenditure on major capital works such as the upgrading or construction of roads and infrastructure in PAs can also generate local economic activity when local contractors and/or locally purchased goods and services are used.

PAs attract visitors into the areas where they are located. While in the area, these visitors may purchase a range of goods and services such as accommodation, food and beverages, shopping, motor vehicle needs and other recreational activities. This expenditure has a positive direct impact on local businesses, producing flow-ons to other sectors of the economy, and creating new jobs. Local businesses may also operate concessions within parks selling food, souvenirs, recreational activities, etc.

Recreational benefits

PA visitors obtain a variety of psychological and physical benefits from the use of PAs for passive and active recreation. The economic value of these benefits for visitors can be estimated by using the costs that visitors are willing to incur in the park, plus any park entry fees, as a proxy for the value of the benefits they obtain there.

Real estate values

Crompton (2003) provides an extensive discussion of the influence of attractive park and open space environments on property values. In many countries, the higher price of residential properties close to PAs, relative to more distant properties, indicates the value individual purchasers place on the quality of the surrounding environment. The higher value of these properties results in their owners paying higher property taxes to governments. Thus public sector agencies receive benefits in the form of rate revenue as a consequence of the amenity values provided by PAs.

Ecosystem services

Natural environments provide a range of biophysical functions which provide economic benefits to businesses and communities in urban and non-urban areas. These functions include natural regulation of water flow and water quality, modification of microclimates, and assimilation of wastes. In many countries, the creation of protected areas helps to safeguard these biophysical functions (ecosystem services), and thus to maintain the economic benefits they contribute.

The role of PAs in safeguarding the natural regulation of water quality and water flow is recognized by water utilities in major cities such as New York and Sydney, where drinking water supplies are derived from strictly protected water supply catchments.

For example, the City of New York has invested U.S.\$1.8 billion in the protection of the Catskills watershed which supplies the city with drinking water, instead of spending U.S.\$6-8 billion on a proposed new water filtration plant (Postel 2002). Investing in catchment rehabilitation also saves the city government U.S.\$300 million per year in operating costs which would have been incurred if the water filtration plant had been constructed (Stroud Water Research Center 2000).

Existence benefits

Many of the benefits that urban communities obtain from PAs relate to physically visiting these areas. However, urban residents may also obtain benefits from the knowledge that particular values are being safeguarded by PAs in locations that are remote from urban areas and which they are unlikely to ever visit. For example, urban communities in developed countries can obtain benefits from the knowledge that PAs in different, often developing, countries are currently safeguarding natural and cultural heritage, and will do so for future generations.

Personal health

Medical research from developed countries (e.g., the USA and England) indicates that when people visit, or otherwise observe, natural environments they experience particular physiological and psychological effects such as lowered heart rate, lower blood pressure, stress reduction, and feelings of relaxation. These effects are in addition to the

more direct effects associated with exercise and recreation in PAs and other natural environments. (See Countryside Agency 2003a for a list of medical studies on the health benefits of activity in natural environments). In addition, many people enjoy the aesthetic qualities of open space and find this adds a further psychological benefit to their experience (Hamilton-Smith 2001).

Interest in the health benefits of PAs has tended to focus on the physical and mental health effects of walking. Agencies in the USA and England, for example, are promoting the idea of using natural environments such as PAs for physical activity. The U.S. National Park Service has signed a Memorandum of Understanding with the U.S. departments of the Interior, Agriculture, and Health and Human Services, and the Army Corps of Engineers, to promote physical activity on public lands, through their Rivers and Trails Program (National Park Service 2002). Similarly, the Countryside Agency, which manages access to the countryside in England, and the British Heart Foundation sponsor and coordinate the "Walking the Way to Health" program, based on the use of local walking tracks and countryside footpaths (see Countryside Agency 2003b).

Several studies have described the physical health benefits for older and more sedentary groups of walkers, especially in natural environments such as PAs (see Countryside Agency 2003b). A recent study of bush walking, power-walking, walking groups, and other organized recreational walking in Australia identified the following characteristics of participants: In 2000, an estimated 77,880 people over the age of 18 participated in organized walking activities. Participants were predominantly female, aged over 55, married, and resident in capital city regions of New South Wales and Victoria. Whereas women make up 45 percent of participants in all sports and physical activities, over 67 percent of walkers are women. The majority of walkers do not participate in other sport and physical activities. Unlike the majority of other organized sports and physical activities, participation rates do not start to decline until old age (Active Australia 2003).

4. BENEFITS TO LOCAL COMMUNITIES

PAs provide benefits to communities through providing opportunities for community interaction. Such interaction can promote community cohesion and the quality of life of the members of these

communities. This in turn can lead to a reduction in anti-social behavior and delinquency, and reduced need for policing and legal enforcement. These effects will also provide consequential benefits to individuals in terms of reduced personal and property offenses.

Community quality of life

Hamilton Smith (2001) has identified a range of benefits which national parks and other forms of protected open space can provide for local communities; including the following:

- Enabling public access to “green space” (especially in high-density cities, with little green environment and high costs of other forms of recreation);
- Providing opportunities for activities (e.g., organized and informal sport and exercise, and educational activities);
- Providing opportunities for socializing (e.g., picnics, family gatherings, and club outings);
- Providing opportunities for spiritual connection with nature and a sense of place;
- Developing personal and community identity (e.g., rehabilitation and development of self-esteem and identity after life crises);
- Providing opportunities for productive open space (e.g., for school programs, and demonstration projects in wetland management and sustainable land management);
- Strengthening the community (e.g., increasing contact with other community members, contributing to local knowledge and pride of place and heritage, and providing opportunities for contribution to community action through volunteer work in parks on environmental improvement schemes).

The New South Wales Department of Environment and Conservation (DEC) is currently collaborating with staff from the University of Western Sydney on a four-year research project to assess the contribution of PAs to community quality of life. This project will develop quality of life indicators in conjunction with a case study community, and identify the role of PAs in contributing to community quality of life aspirations in this community. Local perceptions of the value of PAs will then be compared and contrasted with the values attributed to these areas by external “experts,” and management initiatives sought to bridge differences in perceptions. It is intended that

this research will provide information for PA managers to help to improve the effectiveness of their planning and delivery of park management to the community (Bushell, Staiff, and Conner 2002).

Cultural heritage

Protected areas provide community benefits through supporting cultural heritage, by protecting environments that have cultural value, and by providing venues for communities to meet to carry out cultural activities.

Historic heritage

National parks around Sydney provide benefits to urban communities through their role in protecting examples of the history of colonial settlement and development in Australia since 1788. The Blue Mountains National Park west of Sydney (now part of the Greater Blue Mountains World Heritage Area), for example, has considerable value as a record of the European exploration and settlement of New South Wales (NSW). This followed the first successful European crossing of the Blue Mountains in 1813. The park is also associated with the development of the environmental conservation movement in NSW (as the focus of campaigns to establish PAs, including wilderness from the 1920s). The park contains large areas of land identified as Wilderness; the existence of these areas provides benefits to communities in terms of the value they attach to knowing that such special areas are being protected.

Indigenous cultural heritage

PAs also provide community benefits through protecting aboriginal cultural heritage for indigenous and non-indigenous communities. Aboriginal places of cultural significance in the Sydney region include cave shelters, axe grinding grooves, middens, rock engravings and art sites in Ku-ring-gai Chase National Park in the north of Sydney, and red-hand caves in the Blue Mountains National Park.

PAs can also play a role in improving community understanding of indigenous heritage through their educational activities. For example, DEC conducts an Aboriginal Discovery program as part of its state-wide community education program of guided walks, talks and tours in national parks. This program aims to foster appreciation and

understanding of Aboriginal cultural heritage by non-indigenous participants, and to build capacity in aboriginal communities to gain social, economic and environmental benefits through cultural education and tourism. During 2001-02, 41 Aboriginal discovery rangers were employed throughout NSW and conducted over 1,000 activities with aboriginal components with more than 17,500 participants (National Parks and Wildlife Service 2002). Around Sydney, Aboriginal Discovery Tours include bush tucker and bush medicine tours at Botany Bay National Park with Aboriginal discovery rangers, and Discovery Tours at Bradleys Head in Sydney Harbour National Park which explore how local aboriginal people and European settlers made use of the local environment in the past (National Parks and Wildlife Service 2003).

Multicultural heritage

Parks and other protected areas in and around Sydney are used by a wide range of different visitors for a variety of purposes, whether for education, passive or physical recreation and enjoyment, social gatherings, ceremonies, or cultural events. DEC has an ongoing program of research into the relationship between ethnicity and landscape and the ways different cultural groups perceive the natural environment and PAs. Research includes a study of the Macedonian community in Sydney (Thomas 2001), and the experiences of Vietnamese people with PAs around the Georges River in South Sydney (Thomas 2002).

The first of these studies examined how national parks and other open spaces around Sydney played a unique role for Macedonian migrants in consolidating the feeling of being Macedonian in Australia. Picnics and barbecues in national parks provided occasions when they could be together en masse as Macedonians. Since the Second World War, the tradition of a Christmas Day picnic in Royal National Park in the South of Sydney has provided a way of welcoming new arrivals into the Australian Macedonian community (Thomas 2001, 93).

The second study examined the perceptions of Vietnamese Australians towards national parks. Many Vietnamese people see national parks as peaceful contrasts to the stresses of working lives and cities, but also perceive the areas beyond picnic sites as isolated and potentially dangerous (from snakes, spiders, etc.). As well as being used

for recreation and leisure, national parks provide an important venue for religious activities and scouting activities, and often provide a sense of national belonging and pride in being Australian for many Vietnamese Australians. However, visits to national parks generally require a “cultural mediator” (either a non-Vietnamese friend or a younger Vietnamese person who had previously visited national parks) to suggest, initiate, and plan the visit (Thomas 2002, 126).

The above research illustrates the valuable role that protected areas can play in the maintenance and reinforcement of cultural networks, and is providing information to help park planning and management.

Community services

As well as providing quality of life and cultural benefits to communities, protected areas can support the services provided by government community service agencies.

Education

One of the objectives of many PA agencies is to encourage learning about natural and cultural heritage through the use of national parks and other protected areas. For example, DEC has a number of field studies centers in PAs, run jointly with, or solely by, the Department of Education and Training (DET), e.g., at Royal National Park, Botany Bay National Park, and Barren Grounds Nature Reserve. Around Sydney, DET uses PAs for running a number of their Technical and Further Education programs which include the statewide “Streamwatch” water monitoring program for schools, and helping students develop school environmental management plans.

Many PAs provide valuable venues for higher education. DEC is currently collaborating with a number of universities, with students working on projects managed jointly by DEC. This gives park agency staff the opportunity to explain the importance of cultural and natural heritage conservation to students, and to assist students who wish to work on conservation related projects of practical value to their course and educational development.

For example, DEC is participating in a research partnership with the University of Western Sydney and the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) to examine a wide range of biophysical, economic,

and cultural issues relating to park and visitor management in PAs on the NSW South Coast. This project has been running for five years, with students and academic staff collaborating with DEC officers on a number of research projects. These include an analysis of the current park entry fee system, development of principles for a visitor impact monitoring system, and establishment of effective interpretation and education processes for a PA visitor center south of Sydney.

Welfare

As well as being used by individuals and social groups for various activities, community service agencies in Sydney and Melbourne use PAs as a venue for providing a range of services such as sport and recreational programs, environmental education, health care, and skills development for target groups (see Section 6 below). The U.S. National Association of State Park Directors also identifies the positive value of state parks in reducing antisocial behavior by providing a venue for recreational opportunities (National Association of State Park Directors 2001).

Protected areas can play a role in utilizing the labor and skills of people on Community Service Orders. In NSW, juveniles and adults placed on Community Service Orders by courts are required to work on community service programs. DEC recently completed a two-year project involving juvenile offenders performing community service activities. This program involved young offenders working two days per week, for up to eight months, on outdoor tasks such as weed eradication, fence construction, maintenance of facilities, and other similar projects. Although the program has been deferred due to the need to allocate resources to fighting bush fires, local DEC staff are keen to reintroduce this program in the near future.

Thus PAs and other open space environments can play a role in the delivery of community programs, which provide benefits to community service agencies, to the wider community, and consequently to individuals.

5. VALUING PUBLIC OPEN SPACE FOR COMMUNITY SERVICE PROVISION: A CASE STUDY

Background

State-funded public open space in Sydney comprises relatively large areas of green open

space managed by state government agencies for natural and cultural heritage, amenity, and passive recreation. Examples include the Blue Mountains National Park and Royal National Park, Centennial Park, Western Sydney Regional Park, and Sydney Olympic Parklands. Several state government community service agencies regularly use these areas as part of their programs, including the NSW Department of Health (e.g., as part of its Public Education Program), the Department of Education and Training (e.g., through Environmental Education Centres), and the Department of Tourism, Sport and Recreation. The existence of such areas provides benefits for these agencies, as it enables them to avoid the additional costs of having to use alternative venues for delivering their programs.

Assessing the benefits of public open space

The Sydney Urban Parks Education and Research Group (see Appendix 1) commissioned a study of these benefits for community service agencies (SUPER Group 2001). The aims of the study were to:

- Identify state government agencies which depend on state-funded public open space for delivery of their programs;
- Undertake interviews with agency representatives to collect information on trends and issues, and financial information on specific program costs and benefits; and
- Estimate the economic benefits of public open space for community service agencies for three case study locations, and for the Sydney and Melbourne metropolitan regions as a whole.

Data collection

Interviews were carried out with representatives of NSW and Victorian government agencies identified as having programs using public open space, to collect information on:

- Public open space venues used by community service agencies;
- Specific agency programs using public open space;
- The role of public open space in these programs;
- The annual cost of identified programs for 1999-2000;

- Alternative arrangements in the absence of public open space; and
- Estimated additional costs to implement these programs without public open space.

Estimating the economic benefits of public open space

The economic benefits of public open space for the provision of community services were estimated by considering the programs delivered, and the expenditure that would be incurred “with” and “without” public open space being available. This is known as an Avoided Cost approach. In this study, avoided costs consist mainly of additional time and extra transport costs. Avoided costs are calculated as the additional amount that the agencies would have to pay for their programs to be delivered if public open space areas were not available. In this way, an avoided cost represents an economic benefit.

Results

Interviewees in community service agencies saw public open space contributing to the provision of community services through:

- Decreasing health care costs, due to physical activity;
- Reducing capital investment through avoiding the need to develop facilities already provided;
- Providing additional program flexibility, through the provision of a wide range of resource choices;
- Providing opportunities for public agencies such as universities and non-government organizations, to undertake educational, sporting and religious events; and
- Reducing or avoiding crime, through the use of public open space for the rehabilitation of minor offenders.

The interviewees also saw public open space as providing:

- Opportunities for activity for older people;
- Supervised childcare;
- Health improvement and fitness motivation;
- Education in sport, environment, and other topics;
- Individual development;

- Space for students of all ages to learn about the natural environment; and
- Conservation of remnant vegetation.

The economic contribution of public open space to community service provision was estimated through examining two case studies in Sydney and one in Melbourne (see Appendix 2), and deriving estimates of avoided costs for metropolitan Sydney and Melbourne as described below.

Avoided costs (savings) for metropolitan regions

Data was obtained from community service agency representatives on program costs with, and without, access to public open space. Avoided costs for the Sydney and Melbourne metropolitan regions as a whole were estimated by adding all the individual additional program costs that would be incurred without access to public open space.

The total avoided cost in the Greater Sydney region was estimated as between Australian dollars (AUD) 10.6 million–14.6 million per year. (As of this writing, one AUD was equivalent to about U.S.\$0.7.) Avoided costs for the Greater Melbourne Region were estimated as being between AUD4.4 million and AUD4.5 million. Representatives of Sydney and Melbourne community service agencies surveyed for this study estimated that the current costs of delivering programs using open space would increase by 50 to 75 percent if they were unable to use public open space and had to make alternative arrangements.

6. ISSUES IN DELIVERING BENEFITS

Establishment of a PA will not necessarily lead to the provision of the benefits described above. Park managers who wish to promote such benefits should be aware of the following factors which can influence the delivery and uptake of these benefits.

Types of socio-economic benefits

The nature of visitor infrastructure and facilities provided in a PA is likely to influence the category of visitor traveling to the area, the type of benefits visitors obtain, and the type of goods and services they would be looking to purchase in the area (which would generate private consequential benefits for local businesses). PA managers considering expenditure on visitor infrastructure

and facilities in their parks should be aware of this effect.

PA managers and agencies need to understand the potential socio-economic benefits of different PAs and to consider the optimum mix of benefits they wish to promote for individual PAs, and across the range of PAs in their estate.

Organizational culture

Protected area agencies have traditionally seen their role as managing natural resources or providing venues for public access. Agencies which wish to encourage the provision of socio-economic benefits from their PAs will need to foster an organizational culture which supports the role of PAs in delivering socio-economic benefits.

This will involve building organizational links between social science and natural science researchers, policy-makers, and park managers, and adopting strategic planning processes which incorporate the use of socio-economic issues and concerns in corporate planning, as well as protecting natural and cultural heritage.

Park management plans and other planning instruments used by the park agency will also be needed to ensure that PAs can effectively deliver the socio-economic benefits in question over time. This will help to ensure that activities which deliver benefits are appropriately resourced.

Relationships between communities and PA agencies

The extent to which the potential benefits of PAs accrue to local communities depends on the economic and social culture of the community. This culture includes the willingness of local firms to provide goods and services to PA managers and visitors. It also concerns the willingness of local government authorities, progress associations, and other community groups to interact with PA managers to examine how the benefits provided by PAs can be captured by the local community.

In their turn, PA managers may need to decide whether to obtain goods and services needed for PA management from larger regional businesses, or from smaller local firms where the required goods and services may be more costly, but where such local patronage may encourage community support for the presence of the PA.

Equity issues

The benefits provided by PAs accrue to a wide range of individuals and businesses and to the wider community. Not all these groups will benefit equally from the presence and management of PAs. In some cases, certain management approaches may impose costs on particular individuals and groups (for example, where upgrading park tracks and trails leads to conflicts between different users and the unintentional displacement of one group by another). PA managers need to be aware of these potential impacts, and should attempt to ensure that park establishment and management does not unintentionally create benefits for some groups at the expense of others.

Coordinated planning and management

PA managers need to be aware of programs being carried out in the community by other government agencies, and the extent to which the objectives of these programs coincide with, or are incompatible, with the objectives of the PA.

Discussion and liaison with representatives of other government agencies can be helpful in identifying and achieving mutually compatible objectives and developing coordinated strategies. For example, where a range of tourist attractions exist in a particular area, PAs can promote tourism by acting as an additional visitor attraction, and by providing information on other venues to park visitors.

Such examples of coordinated interagency approaches help to demonstrate to politicians and the public that PAs contribute to the economic and social welfare of the community. This can help to generate valuable public and political support for PA agencies in seeking resources for conservation from funding agencies.

7. CONCLUSIONS

This paper has described some of the benefits of protected areas for urban constituencies and suggested a number of issues that PA managers need to consider in providing such benefits. Identifying and valuing the benefits of conservation is a first step in obtaining support for conservation from urban constituencies and decision-makers.

PA managers will also need to enhance the level of public awareness of the benefits of PAs

through promoting the natural and cultural heritage values of PAs and providing information to potential beneficiaries. This will encourage greater community awareness of the attributes of individual PAs, and the objectives of PAs in general. This, in turn, will lead to increased public benefits through higher existence values, higher private benefits from more visits to PAs (in terms of recreational experiences), and greater private benefits for local businesses from increased visitor expenditure.

Information about these benefits will also need to be communicated to decision-makers and stakeholders through education and information dissemination, and involvement projects such as volunteer schemes and fundraising. These issues are discussed in other papers in this volume.

Note: The views expressed here do not necessarily reflect those of the New South Wales Department of Environment and Conservation.

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APPENDIX 1: Sydney Urban Parks Education and Research Group (SUPER Group)

The Sydney Urban Parks Education and Research (SUPER) Group was established in January 1998 to provide a strategic integrated approach to urban park research in Sydney. SUPER Group members are: NSW Department of Environment and Conservation, Centennial Park & Moore Park Trust; Parramatta Regional Park Trust; Sydney Olympic Park Authority; Sydney Harbour Federation Trust, NSW Department of Infrastructure Planning and Natural Resources, and the University of Technology, Sydney (School of Leisure, Sport and Tourism).

The key objectives of the SUPER Group are to:

- Facilitate information exchange between Greater Sydney urban park managers;
- Undertake joint research projects in urban park management;

- Develop and promote other opportunities for research and educational excellence in urban parks management; and
- Develop an understanding of the values and benefits of open space in government and the leisure industry.

APPENDIX 2: Case study locations

Centennial Parklands

Centennial Parklands, in Sydney's Eastern Suburbs, comprises a total area of over 354 hectares. The parklands has more than five million visitors per year, who carry out a wide range of activities including golf, barbecues, picnics, walks, sporting pursuits, and bike riding. Facilities include gardens, a wetland, nature trails, bush tucker trails, birdwatching, and food outlets. Major users of the area are the NSW Department of Tourism, Sport, and Recreation, and NSW Department of Education and Training (Schools). Local schools actively use the parkland's facilities and open spaces, with an average school week having over 200 sports oval bookings, for an average time of two hours. This represents an important sporting facility for local schools. School environmental programs also use the parks, with around 100 field excursions per year. The study identified Centennial Parklands as providing an annual avoided cost for community service agencies of AUD4.0 million.

Western Sydney Regional Park

Western Sydney Regional Park is located 30 kilometers from the Sydney central business district at Horsley Park, and when fully developed

will cover 1,000 hectares. Recreational facilities in the park include playgrounds, walking and cycling paths, extended tracks for long-distance walkers, horse riding trails, open space, and kickabout playing surfaces. The park contains the Fairfield City Farm, the Sydney International Equestrian Centre, and the Olympic Mountain Biking Course. Park rangers assist Fairfield City Farm in an environmental education program for schools. School groups from the region use the park for environmental education field trips (tree planting, nature walks, etc.), cross-country races, and general excursions. Disability groups frequently use the park's facilities, as does the NSW Department of Juvenile Justice for skills development classes for young offenders. The study identified this venue as providing an annual avoided cost for community service agencies of AUD0.25 million per year.

Wattle Park

Wattle Park in Melbourne is a 60-hectare recreation area that encloses a nine-hole golf course; a chalet used for weddings, meetings, and conferences; a cricket oval; walking tracks; natural bushland; and a playground area. The park receives approximately 500,000 visitors per year. Local people use the park for walking and picnicking; other regular users include university groups who use the area for environmental studies, and school students who use the playground and activity areas. The main state government agency depending on Wattle Park for the delivery of its programs is the Victorian Department of Education. The Department estimated that the annual avoided cost of using the park would be AUD0.2 million per year.

Resource economics as a tool for open space planning in Durban, South Africa

DEBRA ROBERTS, RICHARD BOON, PENNY CROUCAMP, AND MYLES MANDER

1. INTRODUCTION

Durban is the largest port and urban area on the East Coast of Africa. The city covers an area of 2,297 square kilometers and has an estimated population of just over 3 million people. Topographically the municipal area is very diverse, ranging from steep escarpments in the West to a relatively flat coastal plain in the East. Given that South Africa is the third most biologically diverse country in the world, it is not surprising that Durban's diverse landform supports a wide variety of terrestrial, freshwater, and marine natural ecosystems. The high level of biodiversity in the city is primarily due to its location within a broader biogeographic subtraction and transition zone, which consists of three distinct elements:

- A tropical complex entering from the North and becoming less prevalent to the South;
- A warm temperate complex entering from the Southwest and becoming less evident to the North;
- A relatively small transitional complex indigenous to the area (Poynton 1961).

2. HISTORY OF OPEN-SPACE PLANNING

Over the last three decades, open-space planning in Durban has provided an important vehicle for protecting biodiversity within the city. It has also helped mainstream conservation issues within the planning and decision-making processes of local government. The approach to open-space planning in Durban has evolved from a focus on the protection of conservation-worthy areas in the early 1980s, to a more holistic understanding that emerged in the mid-1990s which focused on the contribution of open space to sustainable urban development. This change in approach was driven by two factors: the democratization of South African society, and the global prioritization of sustainable development (e.g., through the United

Nations Conference on Environment and Development held in Johannesburg in 1992). In Durban, the emergence of political leadership that prioritized poverty, economic development, and meeting basic needs over less tangible ecological and conservation needs, was a particularly important driving force in this paradigm shift. As a result, open-space planners began to interrogate the role of the open-space system in contributing towards the new, broader development objectives of the city.

The search for a new understanding of the role of nature in the South African city was particularly influenced by the international research undertaken by Costanza et al. (1997). This focused on the range of goods and services provided "free of charge" by the world's natural ecosystems, seldom considered in traditional economic accounting. In Durban this concept was used to demonstrate that the open-space system is in fact a significant service provider, and that it provides "goods" (e.g., water for consumption) and "services" (e.g., waste treatment) that are important in meeting people's basic needs and improving quality of life. This contrasted with previous popular perceptions of the system as an elitist resource focusing on plant and animal requirements rather than human needs. Using the research done by Costanza et al. (1997), seventeen different open-space service types were identified for the Durban area.

Although there is much debate (Scott et al. 1998; Serafy 1998; Pearce 1998) regarding the Costanza et al. approach to estimating the value of ecosystem goods and services, it does facilitate an "orders of magnitude" estimate of the financial value of ecosystems. In the urban environment this is useful as it highlights the value of the natural resource base and the potential replacement costs of ecosystem services that are currently enjoyed "for free." The nature of these benefits includes:

- Direct benefits: Direct consumption or use of goods or services (e.g., use of water in

industrial production, wood for fuel, plants for traditional medicines);

- Indirect benefits: Indirect use of services to provide a cost saving to residents (e.g., ability of floodplains to reduce flood damage; trees as windbreaks);
- Option benefits: Reserving resources for future use (e.g. the attractive inshore ocean can be used to promote tourism growth in the future);
- Existence benefits: The existence of a resource (such as a forest, a river, or a beach) may give residents a feeling of well-being simply because it is there.

These environmental services are essential to all communities, but are particularly important in contributing to meeting the basic needs (such as water, firewood, food, etc.) of poorer communities that do not have access to adequate infrastructure and services.

3. SUPPLY OF ENVIRONMENTAL SERVICES IN DURBAN

Given that different ecosystems have varying abilities to supply environmental services, the first step in designing an open-space system for Durban able to secure a sustainable supply of these services, was to identify the main ecosystems and open-space types within the city. Sixteen generic and forty-six specific open-space cover types were used when classifying the natural areas included in open-space system. Terrestrial, vegetated cover types were adapted from Low and Rebelo (1996), Cooper (1985), and Florida Department of Transportation (1985). This relatively simple classification system was used in order to facilitate consistent recognition of cover types on the 1: 5000 aerial photography used for the classification process. The classification exercise was undertaken by members of the Environmental Management Branch who used their field knowledge and ecosystem, habitat, and land use categories to classify all the open spaces within the municipal area.

Because it was not possible to directly relate the global ecosystem values of Costanza et al. to the open-space cover types for Durban, a workshop was held in 1998 to rank the *relative* ability of the various open-space types in the city to supply environmental services. The workshop was attended by officials from the city's Environmental Management Branch and Parks Department, who were supported by a team of private consultants

assisting with the project. Again this process was based on the field knowledge and experience of those present. This initial assessment of the ability of the various open-space types in Durban to supply environmental services has helped inform all subsequent revisions of the open-space system plan. In designing the system it was assumed that in order to protect a sustainable supply of environmental goods and services it would be necessary to protect an ecologically viable network of open-space types. For this reason obvious priority was assigned to large, biodiverse, and well-connected open-space areas for inclusion within the system.

Certain open-space cover types such as floodplains, wetlands, and forests have a greater potential to supply a wider range of environmental services than other types of open space such as sandy beaches, rocky shores, and alien plant infested areas. The varied ability of open-space types to supply environmental services has implications for open-space protection, development, and management, and suggests that open spaces that supply environmental services in high demand by city residents should be a priority for management and protection. This would mean that wetlands with their broad range of services (e.g., flood attenuation, pollution reduction, water provision) would be prioritized because of their high level of functionality, while sandy beaches (with a lower relative ability to provide services) would be prioritized because of their singular importance in terms of the tourism/recreational sector in the city.

4. DEMAND FOR ENVIRONMENTAL SERVICES

The importance of open space depends not only on the ability to supply environmental services, but also on the demand for environmental services. An urban area with a large number of users of a particular open-space service will have a greater need or demand for the type of open space that supplies the required service. For example, if a catchment contains extensive informal settlements that extract water from local streams, then the rivers and wetlands that supply water and improve its quality would be a priority open-space type. In trying to understand which environmental services, and consequently which open-space cover types, are important to sustainable development in Durban, it is necessary to identify the users of the environmental services in the city. For this

purpose, a number of key open-space *resource user* categories have been identified:

- Low-density formal residential
- High-density formal residential
- Low-density informal residential
- High-density informal residential
- Peri-urban/rural settlement
- Commercial and institutional – retail, tourism, and major public facilities
- Industrial – manufacturing and service industries
- Extractive – mining and quarrying
- Transport – road and rail reserves and major public transport facilities
- Agriculture – sugar cane, market gardening, and mixed farming

These resource user or land-use categories have different needs with respect to environmental services supplied. Environmental services are used *directly* as an input for consumers (e.g., household water) and for production processes (e.g., water for industry) and also *indirectly* by land users to ameliorate their impacts on the environment. For example, an industry releasing effluent into the river system will indirectly rely on the water in the river to dilute the effluent and will also rely on the river and estuary ecosystem processes to break down waste products. These ameliorative actions are essential to other service users downstream of the pollution source.

Different resource users have different needs in terms of environmental services. A ranking of these needs was also developed at the 1998 workshop and as such is based on the workshop participants' knowledge and understanding of the demand generated by different land-use types for environmental services in the Durban area. For example, an urban area with a large number or percentage of high-density informal residential settlements will have a high demand for a number of different environmental services, including flood avoidance, food production, natural products, etc. This highlights the fact that environmental services are important in meeting the basic needs of communities that do not have access to high levels of utility services or infrastructure.

5. ECONOMIC VALUE OF ENVIRONMENTAL SERVICES

The value of the work done by Costanza et al. is that it quantified, for the first time, the financial

value of the goods and services provided by the world's ecosystems. This is important to open-space planning, as decision-making regarding the use of urban open space or the allocation of resources occurs through economic and political processes which compare the value of open space to the value of alternative land uses (e.g., housing, landfills, and industry). In most cases, the value of open space (outside of its aesthetic and recreational appeal) is not understood, while the benefits of the alternative land uses appear explicit and quantifiable. In cities, this situation has resulted in open spaces being significantly undervalued because of the general failure of society to recognize the value of a resource when it is not expressed in monetary terms or cannot be owned, or where the services provided are not immediately obvious. Consequently, the identification and economic valuation of environmental services is a critical tool in helping ensure the appropriate planning, management and resourcing of open spaces in urban areas.

The economic valuation of environmental services is, however, still in its infancy and is a complex exercise. Because of the lack of locally specific data, the value estimates for the environmental services provided by the open-space types in Durban were obtained and/or generated from international research such as that of Costanza et al. As this research is not comprehensive, values for some environmental services are not available and, as a result, the overall consolidated value of the open-space asset can only be regarded as conservative. For example, while some of the open-space types in Durban fit neatly into the biomes used in Costanza et al., e.g. croplands, grasslands, wetland, and freshwater and marine environments, in other cases it was necessary to extrapolate the global figures. As an example, the assumption was made that local forests in Durban are more similar to tropical forests than boreal forest types. On this basis local vegetation types dominated by woody elements were assigned a variable proportion of the tropical forest values given in Costanza et al. based on biomass and diversity. It was assumed that in general the greater the biomass and biodiversity, the greater the value of the open-space type.

Despite these approximations, the values calculated for the open-space types in Durban are still sufficient to underline the significance and value of environmental services and the magnitude of the costs that would be incurred if they had to be replaced because of short-sighted, unsustainable

development. Key points that emerge from this analysis are:

- There is a wide range in the economic value per open-space type, ranging from estuaries, with a value of South African rand (R) 237,453/hectare/year to grasslands, with a value of R2,413/ha/yr. (As of this writing, the rand is equivalent to about U.S.\$0.16.)
- No data were available for open-space types such as rock outcrops, sand and rock quarries, and urban settlements (the latter having mainly recreational and cultural values not yet quantified).
- Natural open-space types with the greatest replacement cost (highest value) appear to be, in decreasing order, estuaries, floodplains and swamp forest, mangrove forests, water bodies, rocky shores and beaches, forests, near shore ocean, wooded grassland, and grassland.
- Transformed open-space types such as alien vegetation, agriculture, and utility grasslands have a much-reduced value as they are not able to provide the broad range of environmental goods and services provided by the more natural open spaces.
- The near shore ocean contributes 27 percent of the total value of the open-space system.
- Forty-three percent of the value of the terrestrial component of the open-space system is provided by floodplains, which occupy only 7.6 percent of the land surface.
- The dominant natural land cover type in Durban, dry valley thicket/broad-leafed woodland, occupies 29 percent of the land surface and provides 12 percent of the value of the terrestrial component of the open-space system.

The total replacement value of the environmental services delivered by open space in Durban is conservatively estimated to be R3.1 billion per annum and excludes the value of Durban's tourism sector. If tourism turnover for Durban is assumed to be largely related to the fact that a majority of tourist visits are because of the sea, sun, beach, and overall sub-tropical environmental quality of Durban, then a significant portion of the annual tourism-related turnover - of around R3.3 billion - can be added to this figure.

6. LESSONS LEARNED IN DURBAN

Reinterpreting Biodiversity

The use of resource economics made it possible to convert the somewhat elusive value of biodiversity into something understandable to the majority of urban stakeholders (i.e., a monetary value). This approach has helped increase political support for biodiversity protection and has impacted on policy development within the city. Despite this, tensions still exist between the short-term time lines, which govern most political decision-making, and the longer-term considerations that influence biodiversity planning. As a result, political expediency continues to pose a potential threat to the implementation of the city's open-space plan.

Conceptual Flexibility

The mainstreaming of biodiversity issues that has occurred in Durban is largely the result of open-space design remaining responsive to changing development and political pressures. It is likely that the need to ensure an alignment between socioeconomic and biodiversity priorities will be a continuing feature of open-space planning in the city for the foreseeable future. In the early stages of the open-space planning process in Durban, the focus of attention was on the protection of conservation-worthy areas and subsequently the creation of an ecologically viable open-space system. This mirrored existing global environmental priorities (e.g., protection of rare and endangered species). A more holistic understanding of the role of biodiversity emerged in the 1990s as a result of the Rio Earth Summit which highlighted the need for development that balanced ecological, social, and economic concerns. This was supported in South Africa by a process of democratization and the increased priority placed on meeting people's basic needs. The shift from a "conservation" to a "sustainable development" focus has necessitated a change in the tools required for open-space planning, e.g., botanical surveys are now supplemented by the use of resource economics. This process has highlighted the need for biodiversity initiatives to remain responsive to changing political and ideological pressures.

Need for Education

Although the use of resource economics helped provide a realignment between the ecological priorities of environmental planners and the human upliftment priorities of political decision-makers, this approach has not ensured an unchallenged implementation of the Durban's open-space system framework plan. This suggests that education programs that help develop a deeper understanding of sustainability issues must support the mainstreaming of biodiversity issues in cities. In the long term this will avert situations where a lack of understanding of the interrelated nature of social, ecological, and economic concerns results in ecological (and hence biodiversity) concerns being marginalized when social and economic pressures are high.

The Need for Appropriate Tools

The use of resource economics in open-space planning implies that the non-human world is only of value when it provides goods and services to the human world. Many of the services provided by open spaces are, however, intangible (e.g., aesthetic and cultural values) and are difficult to quantify in economic terms. Many people also consider these services to be irreplaceable or priceless. This means that in the instances where the value of open areas cannot be identified, or where their economic value is not viewed as sufficiently substantial, areas will be treated as valueless. There is clearly a need to develop planning tools that ensure real sustainability and biodiversity protection.

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Part 2:
Protected areas depend on cities

Raising the priority of urban areas in protected area systems in Brazil and beyond

PEDRO DA CUNHA E MENEZES

1. TIJUCA: THE MOTHER OF ALL URBAN PROTECTED AREAS

When, in a conversation between two friends, someone mentions he would like to spend the weekend in a national park, what comes straight to mind is a remote natural area of astonishing beauty, where wildlife and vegetation are forever protected. The knowledgeable will immediately dream of Yellowstone, Chitwan, Serengeti, Galapagos, the Great Barrier Reef, or Iguazu Falls. Most people will think of a protected area in a remote region within a 300 km range of their homes. Very few will even remember the national parks that, more often than not, exist within the great metropolises of the world, at the doorstep of hundreds of millions of city dwellers.

The majority of people – including most environmentalists – perceive protected areas (PAs) in urban areas as mere fragments of bushland, far too small, degraded and impacted to deserve a high priority within any public nature-conservation policy. The past history of environmental protection, however, is intimately linked to the establishment of urban PAs. For that matter, in the future as well, the basic goals of nature conservation as a whole will not be achieved unless we change the way we have currently been regarding and (mis)managing the many urban PAs throughout the world.

Let us take the Brazilian case as an example. One could say the history of nature conservation in Brazil started in 1861 with the legal decree that established the Forest of Tijuca on the outskirts of Rio de Janeiro, then the national capital.

Tijuca was created to protect the severely logged and degraded watersheds from which Rio sourced its drinking water. A vigorous expropriation of private lands was followed by a very successful reforestation scheme, which mostly utilized native species.

In those times, management plans were still an unheard-of concept but, in its first 30 years, Tijuca was so well managed that today, 150 years later, its

early programs of reforestation, environmental education, recreation, and governance can still be successfully applied in any park, anywhere in the world.

The achievements of Tijuca were the result of an intellectual exercise undertaken by a tiny élite of the Brazilian Imperial Government. The members of a kind of think tank led by Minister Bom Retiro saw far ahead of their own time. They understood it would be impossible to conserve such a vast forest at the doorstep of Brazil's most populous city, unless common citizens did not see a reason for it to be preserved. According to Bom Retiro's view, Tijuca was to be managed as the main water catchment for Rio, but not only for this purpose. Tijuca was also to be geared up for recreation and botanical research. Instead of preventing the public from visiting it, the administration actually encouraged the establishment of hotels and restaurants within Tijuca, or in its immediate vicinity.

Although the idea that a forest should be preserved for its scenic, botanical, and recreational values was completely attuned to contemporary European and American cultural trends, it was something absolutely new in Brazil. Indeed, it was the first time in Brazilian history that nature was not regarded as a hindrance to development, to be erased for the betterment of civilization.

Overseas, this line of thought originated, in 1872, from Yellowstone, the first national park in the world. Seven years later, in 1879, the Royal National Park was created in Sydney, Australia. The then New South Wales Premier, John Robertson, regarded its establishment as the fulfillment of “a need for a Park where the Sydney inhabitants could escape from the pressures of urban living and enjoy recreation facilities in a natural setting.”

For its creators, however, Tijuca meant more than just providing recreation for Rio's inhabitants. Recreation was viewed as a tool to help the government maintain the integrity of a highly impacted natural area. The fight to expropriate land

from powerful farmers to guarantee the reforestation of Tijuca had been a hard and expensive one. Bom Retiro soon understood he would need allies to keep the integrity of the newly replanted forest as a public reserve. Therefore, under his supervision, there was a conscious effort to blaze and maintain a network of more than 100 kilometers of recreational trails. The government also encouraged the best Brazilian novelists to set some of their stories in and around the woods of Tijuca, and thus create an aura of public ownership over it.

It was essential to build a feeling of respect and love for this urban forest among the common citizen. As part of this strategy to enlarge the group committed to protecting Tijuca and its watershed, Emperor Pedro II himself would often show his appreciation of the forest, where he would take his entire family for picnics and outings.

Bom Retiro, however, envisaged a Tijuca that could provide more than recreation and water. Under his ministry, Tijuca's mission was expanded. In 1875, Brazil opened its first school of forestry. Its grounds were located in the Imperial Botanical Garden on the doorstep of the Tijuca Forest. Bom Retiro knew what he was doing: In placing the school there, he took advantage of the country's best professors and scholars, who either taught at the capital's universities or were researchers at the gardens. It was the best of both worlds. The students had access to the finest academics the empire could offer, as well as a fantastic experimental site, provided by Tijuca, a Forest largely replanted by man.

With the fall of the empire in 1889, however, the balance of power changed and Bom Retiro lost his influence. Coincidentally, around the same time, conservationist thinking all over the world was beginning to change direction. The trend now was to foster the protection of large tracts of wilderness and conserve the habitat of endangered species. In this sense, most urban protected areas tended to be relegated to their original mission of providing drinking water and recreation for populous cities.

2. MANAGEMENT OF URBAN PROTECTED AREAS UNDER THE NEW CONSERVATION PARADIGM

In the 1940s, amid a movement that had already created Brazil's first national parks, Raymundo de Castro Maya, the then director of Tijuca, struggled to see it elevated to the category of a Park. His

efforts were in vain. Indeed, his ideas seemed absolutely out of place, when most of the country's vast Amazon, Cerrado, and Pantanal regions were still completely lacking any protection. According to the new paradigm, national parks were devised to protect large and pristine tracts of ecologically relevant terrain. Definitely not the case with Tijuca.

Tijuca would only be elevated to National Park status in 1961, in a political gesture devised to commemorate the centenary of the beginning of the reforestation scheme that gave life to it.

Paradoxically, Tijuca's elevation to park status was detrimental to its users. The conservationist mainstream ideas of the time in Brazil induced a management that refused to recognize a complementarity between the park and its adjacent metropolis. Around that time, federal and state conservation agencies started to run their urban parks in a similar fashion to the way they managed their more remote and less-impacted protected areas. Recreation was perceived to be a serious environmental impact. There were even attempts to close off many highly used trails.

The reasoning for this is based on the consensually agreed primary objective of a national park as protection and preservation of nature's integrity. Recreation is highly impacting: The proximity to big cities generates pressures such as arson, encroachments, and widespread introduction of exotic species, among other problems. In this context, man is a potential enemy that must be kept at bay. Recreation must be closely monitored and uncontrolled visitation totally forbidden.

That was just the surface of a problem that has ever since affected Tijuca and all other Brazilian urban protected areas. The fact that urban PAs were now perceived to be threatened by their proximity to large cities – and, to an extent, seemed too impacted to be relevant in terms of nature conservation – lowered them in the priorities of conservation agencies.

In this sense, when compared to larger and better-preserved protected areas, where biodiversity is significant, where one can still find large mammals or endangered species, and whose boundaries are not subject to as much pressure, urban parks undeniably lose relevance. In other words, in a context of budgetary constraints, small, fragmented, encroached, often isolated, urban PAs do not have much of a case against their wilderness or more remote counterparts. Human pressure, arson, the epidemic occurrence of exotic species,

both fauna and flora, pollution – which in some cases even contaminates water catchments – and garbage turn urban PAs into management nightmares.

From the point of view of a global nature conservation strategy, it seems justifiable to prioritize larger and better-preserved protected areas. However, when we look at the whole system of protected areas in the context of the wider perspective of government decision-making processes, planning, and spending, it might just make sense to think slightly differently.

Ultimately, who are conservation agencies protecting areas from? The answer, as tough as it might sound, is: people and the damage people are capable of causing. In this regard, there are two ways of enforcing such protection: (1) perceiving people as the enemy, and sealing off PAs from them; and (2) educating people for a cause that does make sense, when well explained, and turning the majority of people into allies of that very same cause. History has proven that the first option, while sometimes effective, is just a temporary containment only achieved with the deployment of force and police measures. Conversely, the second alternative, although slower to achieve results, in the end bears lasting and enduring fruits.

The way Brazilian and, for that matter, most urban PAs throughout the world have generally been managed until now, nevertheless does not seem to have taken into account their obvious vocation to reach out and interact with a large cross-section of citizens. Brasília National Park, at the heart of the country's capital, is typical of this senseless reality. It has been sealed off to the public for most of its forty-odd years of existence. In fact, out of its 28,000 hectares, only a tiny area welcomes visitors. The site features a network of mineral-water public swimming pools. These pools are heavily used but, overwhelmingly, bathers do not know they are in a national park. Indeed, the vast majority believes the pools are a public aquatic centre, named simply "The Mineral Water." Despite its high level of use and strategic location within the country's political decision-making center, until recently, there never was a commitment by the national agency whose responsibilities include national parks, IBAMA (the Brazilian Institute of Environment and Renewable Natural Resources), to take on this unique opportunity to raise awareness of the larger cause of protecting nature.

In Rio de Janeiro, the cultural capital of Brazil, a similar process has occurred. Tijuca National

Park, the most-visited protected area in the country, had its visitor center completed many years after Itatiaia and Serra dos Órgãos National Parks which, together, do not receive a third of Tijuca's visitors. Even today, Brazil's most visited monument, the towering statue of Christ the Redeemer on Corcovado Mountain, which is within Tijuca National Park, does not have its own visitor center. In fact, its area is so poorly signposted that 90 percent of its visitors don't even know they are inside a national park.

The most startling case, however, is that of Belém, the largest urban center of the Amazon, with close to 2 million inhabitants. As Brazil struggles to fight the deforestation of the Amazon Forest, Belém's tourist brochures bring visitors' attention to the mango trees that provide shade in its main avenues. Meanwhile, in the heart of Belém lies, forgotten and abandoned, Utinga State Park, a rich example of Amazonian jungle. Its headquarters, built less than a decade ago, is already falling apart. The park is riddled with garbage and remnants of stolen cars. Apart from fishermen and poachers of small mammals, no one goes there.

It is a sad and unfortunate reality. Urban protected areas, while small and under heavy pressure, very often provide the only opportunity for contact with nature for a significant percentage of the population. In that sense, they are the representatives of the protected areas system.

3. CONSTRUCTING A NEW PARADIGM FOR THE MANAGEMENT OF URBAN PROTECTED AREAS

In democratic countries, the budget is decided according to voter pressure. In the context of an increasingly urbanized world, urban protected areas should incorporate in their mission statements the task of serving as focal points for environmental education. Urban PAs are the recipients of the overwhelming majority of visitors to protected areas throughout the planet. Each well-catered-for visitor, given the right programs of environmental education, guided by intelligent signage, and met by well-trained staff will almost certainly become an ally of the greater cause for protected areas. The urban national park or other protected area located at the visitors' doorstep in a major city will be his reference. It will set the standard. Such visitors will expect all other PAs to have the same level of management as "their" urban PA. They will tend to support park agencies

in their struggle to get the funding that will allow them to meet these expectations.

As was stated at the beginning of this article, the battle for the conservation of the Amazon will not be won in the depths of the Amazon Forest. It can and will only be won in Rio de Janeiro, São Paulo, Brasília, and the other large Brazilian metropolises. From the populous cities come the news and cultural trends. This is where the opinion makers live and preach. Urban protected areas must be structured to cater for their neighbor, the urban visitor. More than that, they must be one step ahead of public policies that include good environmental practices. They must conquer the user through the examples they set. In environmental education, as in all other fields of life, words that are not matched by deeds become meaningless.

An urban PA must be managed as a huge open classroom for environmental education. Visitors must be induced to ponder about the conservation challenges of our times and be given the tools to reflect on the best direction for society to steer its long term conservation policies. They must always be aware that they are in a protected area and must understand at all times that this protected area is only one small piece of a complex system of PAs.

We can only dream of halting the deforestation process that runs wild throughout Brazil (and many other parts of the globe) when a significant part of the citizenry is sufficiently educated about the harmful consequences of such actions. Only then will they exert enough political and social pressure to reverse this process. Given that 81 percent of Brazil's population lives in urban areas, it is easy to conclude that the importance of urban PAs in this struggle is in inverse proportion to their comparatively small geographical area.

However, from where will such an ambitious scheme derive its funding? How should environmental education, recreation, and visitors' facilities be accorded a higher priority when there are so many "real conservation issues" to attend to? As we know, urban PAs are seriously impacted by pressure from neighboring cities. Encroachments, arson, and dogs and cats are just a few of an endless string of seemingly unsolvable problems posed by large human settlements on protected areas. These are by themselves very expensive and difficult problems to solve.

However, conversely, if cities are the main cause for pressure on urban PAs, they also provide an incredible source of opportunities.

A first premise of good management of urban PAs is to establish a responsible partnership with local governments. Frequently, urban PAs represent for their neighboring cities more than an environmental asset. In fact, often they carry within themselves social and economic components of great value to urban settlements. Such value might be found in the drinking water they supply, the privileged heights they offer for the pitching of telecommunications antennas, and the leisure facilities they provide for local residents and tourists alike. There is also the less tangible economic value provided by the scenic backdrop they make for otherwise dull and polluted metropolises. Let us take Cape Town as an example. How much is the landscape provided by Table Mountain worth in terms of tourist-generated income? How many tourists do not climb Table Mountain at all, but are enticed into visiting the city by the dramatic pictures of Cape Town with Table Mountain as a backdrop? Would they have come anyway if the scenery was not so pleasant for the eyes?

In this sense, it is worth mentioning a study regarding Tijuca National Park, presented at the Second Brazilian Congress of Protected Areas, in 2000. It reflected on the "Plano Maravilha," the strategic plan devised by the Municipality of Rio to attract new tourists. The plan singled out 40 main tourist attractions in the city, of which four, or ten percent, were located inside Tijuca National Park. After the implementation of the plan, the yearly influx of tourists into Rio went up by 2 million. Therefore, in a simplistic view, Tijuca would have been responsible for attracting ten percent of this influx, that is, 200,000 new tourists each year. Drawing a parallel with the example of Cape Town, isn't it simplistic to assume that only the visitable attractions of Tijuca contribute to its luring tourists into coming to Rio? How much is it worth to Rio, as a tourist destination, that its image is associated with the Tijuca Forest, the granite mountains, and the statue of Christ the Redeemer atop Corcovado? Without these icons, would Rio de Janeiro deserve the epithet "Marvelous City"?

Local governments have access to sources of funding that can be instrumental in helping the management of urban PAs. They also have, within their administrative structure, a whole range of agencies whose equipment and workforce can be used to assist park managers. Tasks such as garbage collecting, road and building conservation, law enforcement, and even fire fighting can be shared between urban protected areas and local

authorities for their mutual benefit. More than that, a good relationship between park management and education authorities, with reference to local schools, can produce a legion of environmentally conscious citizens just with the growing up of a single generation. In that regard, it is highly recommended that urban parks and education authorities work closely together. Education departments should second teachers to work in urban PAs. Urban schools should have their curricula adapted to include periodical, at least yearly, visits to neighboring PAs, where practical classes should be given.

Tijuca National Park has for some years been running a successful program with seconded teachers. Tijuca's example, however, has not gone very far. Less than 30 kilometers away, many schoolchildren living within a stone's throw of Pedra Branca State Park have never been inside the park's boundaries and still call it by the derogatory word "mato" ("the bush").

Naturally, a partnership between local authorities and conservation agencies must contemplate sharing management decisions to allow each party to achieve its own long-term goals. Nonetheless, maximum emphasis should be placed on issues of common interest. In that regard, residents' associations, hiking clubs, and other NGOs with a history of volunteer work in the protected area should also be called upon to have a say in the management decision-making process. However, in putting in place a process of shared management decisions, duplication of tasks and added layers of authority should be avoided. Ideally, cooperation should occur at decision-making levels. Extreme care should be taken to ensure that only one institution has responsibility for managing each park. If necessary, a new management institution, subject to a board of directors including national, regional, and local agencies, as well as NGOs, could be created. Experience has shown that this new agency should have its own personnel and its own institutional culture.

On a related issue, it should be noted that large urban settlements tend to be the headquarters for the most relevant agencies of national, regional, and local governments. This would allow urban PAs to raise their profile through simple administrative decisions. The case of Dunas State Park, in the Northeastern Brazilian city of Natal, is paradigmatic. Instead of demolishing existing empty buildings within that PA, it was decided to use them as barracks for the environmental

protection unit of the local police force. Only a small fraction of that battalion is actually deployed in the Dunas Park, but the mere fact that a whole battalion has the park as its headquarters improves park protection and security. Conversely, being stationed inside a protected area also gives police officers a stronger love and understanding for the cause of conservation, which ultimately is their job. Finally, it increases the visibility of environmental law enforcement, and facilitates the dialogue between park users and rangers.

Empty buildings are indeed a common feature of urban PAs. In many cases they are demolished or left to decay, while the headquarters of the park or responsible PA agency is often only a few kilometers away in the midst of the most urbanized part of town. Using these buildings for conservation-friendly organizations would make more sense. That, regrettably, is not always the case. In Rio's Pedra Branca State Park, for instance, there are a dozen buildings lying idle and in decay, while at the same time the Police Protected Areas Battalion, one of the State's Bush Fire Brigades, and the State Parks Agency itself are all located in the heart of densely built-up areas.

If for no other reason, park managers should consider turning idle buildings into laboratories and classrooms. These would be a great asset for graduate students of forestry, biology, environmental management, even tourism in the many universities that exist in any of the large metropolises of the world.

In many countries, the serious problem posed by the lack of qualifications of park managers, rangers, and other protected area staff could be solved by the establishment of a protected area academy. Again, urban PAs could be used as training grounds for these students. As Bom Retiro envisaged almost 150 years ago, it makes sense to locate such an academy close to an urban PA. Proximity to major airports and accommodation facilities is a plus. More importantly, however, is the fact that such an academy could have professors and researchers at local universities as lecturers. In addition, urban PAs offer onsite practical learning. After all, they face some of the worst and hardest to manage pressures faced by PA managers. Among other issues, students would have the opportunity to learn in the field the demanding tasks of fighting the spread of exotic species, mitigating effects of over-visitation, negotiation skills needed to deal with the different

– and often opposing – stakeholders of an urban PA, and managing encroachments.

Another unique aspect of urban PAs is their obvious commercial visibility, which facilitates partnerships with the private sector. The headquarters of the largest private enterprises tend to be located in the most important urban centers. This makes it easier for urban PAs – in comparison to their more remote counterparts – to find sponsors and partners for relevant projects. Here, again, the recent costly renovation works at the statue of Christ in Tijuca National Park, substantially paid for by private companies, and the support given by the Brazilian oil giant Petrobras to Dunas State Park are examples to be followed. It must be understood that private sponsorship does not necessarily mean selling out the environment or transforming PAs into “nature theme parks.” On the contrary, it would be senseless for park managers not to explore the possibilities offered to them by their proximity to large companies. The challenge, difficult but achievable, is to find a compromise where the outcome of the partnership is beneficial for all parties involved.

Along the same lines, if over-visitation poses a serious problem to an urban PA, it can also be tailored for its wellbeing. Managers must learn to make use of the huge volunteer workforce that large metropolises are able of mobilizing. Trail maintenance, environmental education, and bush restoration are only a few of the tasks where willing volunteers can help. It is not only about work, however. Above all, it is about educating urbanites on how to keep the environment healthy.

In conclusion, it is a fundamental task of managers of urban PAs to turn the visitor into an ally of long-term conservation goals. As distinct from more remote PAs, where most visitors are familiar with national parks and therefore are more likely to be aware of the fragility of PAs, urban protected areas are more likely to receive less-educated recreation seekers. Every recreational activity in an urban park should take the environmental education component into account. All management activities should be visible and should be explained in a didactic way. For instance, in the planning of a long-distance trail, managers should try to use it to link isolated patches of forests. The trail, consequently, could become a living educational instrument used to introduce and explain concepts such as narrow corridors, border effect, and so on.

In this sense, it is encouraging to see that the application of some of these simple measures can bring good results. Sydney, Australia, is one major urban center where such results can be easily perceived. There, even tiny local council reserves tend to be managed with great environmental care. Exotic species are visibly managed, educational signage is abundant, volunteers contribute with a fair share of the work, the public is called upon to provide their views on management processes, trails are planned to link otherwise isolated PAs, empty land is acquired in order to diminish edge effects, local and regional authorities coordinate their work. As a consequence, public awareness of conservation issues is probably one of the highest in the world. Nowadays, Sydneysiders (as residents of Sydney are called) give their support for the larger conservation objectives: Conserve 10 percent of each biome, save threatened species, create corridors, etc. The results can already be seen: In the last two state elections, a Labor candidate won with a pro-conservation platform. His votes came overwhelmingly from the large urban centers. In four years in office, in response to this mandate, he created scores of new PAs, acquiring land for them and turning state forests into national parks, most of them in non-urban areas.

In Brazil, a handful of managers and NGOs are already looking in that same direction and are applying many of the concepts discussed above. Kátia Mazzei, former Manager of Cantareira State Park, situated in the heart of the city of São Paulo, has published an excellent essay defending the incorporation in Cantareira of all natural spaces that surround it. Since 1999, IBAMA, the national conservation agency, and the Municipality of Rio de Janeiro have jointly managed Tijuca National Park, with already-obvious benefits. In Niteroi, a major suburb of Rio, pressure exercised by local residents and conservation NGOs led to the creation of Tiririca State Park.

This change has only been possible because urban PA managers have stopped looking solely towards remote protected areas for guidance and examples, because the realities they faced are far different.

A good consequence of globalization is that, now, urban PAs in different parts of the world can compare their realities and exchange their experiences. Through this exchange, new and better ways of managing this unique category of urban protected area can be agreed upon. This

certainly will benefit the broader goals of nature conservation around the globe.

4. CONCLUSION AND RECOMMENDATIONS

It is of paramount importance that urban protected areas adopt a new paradigm. They should be managed according to their urban reality, and no longer as the “ugly ducklings” of PA systems. To achieve this goal, they should be capable of involving visitors, the press, and the public in general. They should be agile and flexible enough to be make use of all available government infrastructure located in the same urban area; and they should be geared to succeed in their unique environmental education role.

Urban protected areas are the visitor cards of protected area systems. They should demonstrate in a credible way the message that “a single standing tree holds more value than a whole forest logged.” It is a mission that can be accomplished.

Ten recommendations for urban protected area managers:

- Understand that urban protected areas must be managed differently from remote PAs; but always take into account the fact that urban PAs are part of a larger system.
- Recognize the role of urban PAs as a recreational *focus* (in this case, much more so than more remote parks). Have an extensive recreational program, but plan recreational activities to maximize environmental education gains.
- Maximize the use of volunteer work and include in it a substantial environmental education component.
- Establish a strong partnership with local government. Be prepared to share decision-making. Where necessary, create a new joint institution (between different levels of administration) to manage the urban PA.
- Create a special partnership with local schools and the nature-related faculties of universities. Make sure regular curricular visits become a part of the routine of urban schools.
- Make intelligent usage of idle buildings. Use them to attract relevant partners into the park

(nature-related university faculties, headquarters for environmental agencies, etc.).

- Prepare urban PAs to be on-site training grounds for new conservation agency rangers and officers.
- Maximize fund-raising opportunities through responsible partnerships with NGOs and private enterprise.
- Employ a press officer, and create a positive agenda with the media. Publicize the park and its importance to the neighboring metropolis whenever possible. Always emphasize to journalists that urban PAs, although unique, are part of a larger system.
- Acknowledge that urban PAs are unique and must be managed differently from PAs in remote areas. Identify and exchange expertise and know-how with other urban PAs around the world.

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In writing this essay, the author took into account the following reports about the state of some key Brazilian urban protected areas. These reports were prepared in early 2003 under the auspices of the Brazil Region of the IUCN World Commission on Protected Areas. On behalf of that Commission, I would like to acknowledge the quality of the reports and thank the authors for their outstanding efforts and personal commitments.

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A city defends its natural heritage: Hong Kong's Country and Marine Parks

FOOK YEE WONG

1. INTRODUCTION

In Hong Kong, where almost 7 million people live in an area of little more than 1,000 square kilometers, some 40 percent of the land is in protected areas. This percentage is one of the highest in East Asia. Despite keen demand for land for other uses, Hong Kong has been able to maintain a large portion of its territory as well-protected areas.

Hong Kong has 23 country parks and 15 special areas designated as terrestrial protected areas (PAs), totaling 41,582 hectares. In addition, there are four marine parks and one marine reserve designated as a marine PA, totaling 2,430 hectares. These areas are reserved for nature conservation, countryside recreation, outdoor education, ecotourism, and scientific studies.

Natural and cultural resources in these areas are protected by such legislation as the Country Parks, Marine Parks, and Forestry and Countryside ordinances. Protective measures comprise fire control; law enforcement including daily patrols; and such habitat enhancement measures as installation of bird nests, planting of native species, and creation of artificial reefs.

The richness of Hong Kong's natural assets is remarkable for such a small place. It has some 3,100 species of vascular plants, 57 mammals, 452 birds, 78 reptiles, 23 amphibians, 2,300 insects, 84 stony corals, and some 96 freshwater fish. New records of birds and insects are constantly added to the list, indicating that there may well be more species of plants and animals. For this reason, the Agriculture, Fisheries, and Conservation Department has been conducting ecological surveys. These include a "reef check," studies of the Chinese white dolphin and finless porpoise, and baseline surveys of birds, insects, mammals, and amphibians. The results have been very encouraging. All these efforts provide information for the designation of new PAs and illustrate the effectiveness of conservation measures in existing such areas.

2. RECREATIONAL USES

In each of the past five years, over 11 million people have visited Hong Kong's country and marine parks. They come for hiking, barbecuing, picnicking, exercise, camping, diving, boating, fishing, and nature study. Country parks serve people of different age and other social groups. All can find something interesting and attractive in them. A wide variety of facilities and services have been provided, including visitor centers, nature trails, long distance hiking trails, camp sites, picnic sites, play areas, nature education centers, morning walkers' gardens, fitness equipment, and on-site interpretation materials (Wong 1996).

The value of PAs was underscored in April and May of 2003, when Hong Kong residents were prohibited from traveling abroad because of an outbreak of severe acute respiratory syndrome (SARS). Thousands of people flooded into the country and marine parks seeking fresh air, natural scenery, a clean environment, and escape from urban congestion. SARS served as a timely reminder to the people of Hong Kong of how relevant PAs are to their well-being.

3. COMMUNITY INVOLVEMENT AND EDUCATION

Community involvement and participation are keys to the success of any nature conservation policy. Indeed, without the wider community "taking ownership" of the natural environment, it is difficult for any conservation effort to succeed. To the general public, conservation is often remote, something meant only for "nature lovers." To counteract this attitude, substantial resources have been invested in the last decade to boost community awareness of the natural landscape, habitats, and the need for environmental protection. This has started to bear fruit, especially during the outbreak of SARS.

In recent years, five kinds of initiatives have been used to enhance public understanding of, and participation in, nature appreciation and protection:

Developing community ownership

Love of nature is a precondition for developing a sense of community ownership of PAs. Fostering love of nature requires a human touch. The Agriculture, Fisheries, and Conservation Department encourages its staff members to learn to love nature themselves. This sets a good example when they lead activities or organize events. When staff lead with zeal and passion, participants feel their genuine involvement and enjoyment. The department has organized with great success such public involvement projects as community tree planting, a hiking festival, coral appreciation, guided walks, and community clean-up days. However, we do not stop at these activities but develop further support by organizing citizens in voluntary groups for community projects.

Initiating community projects

Community projects are mainly targeted to those who want to go beyond mere physical activities and contribute and learn about nature conservation. We encourage the formation of community groups for deeper nature appreciation and involvement. We assist the Friends of the Country Parks, hiking groups, a Country Parks Adoption Scheme, the Morning Walkers' Association, the Nature Conservation Leaders Club, the Youth Adventure Group, and similar associations. These self-motivated groups organize activities and training for their members, and support country parks programs. They have been actively involved in anti-mosquito and fire-prevention campaigns, as well as in keeping the country parks clean. The department provides channels for internal and external communication, and also offers assistance for training and opportunities for field studies.

Involving NGOs

Nongovernmental organizations are very important to conservation of PAs in Hong Kong. They are essential in forming and leading public opinion and in mass education. Very often these groups have a broader range of expertise than is available within the government or wider networks. They are skilled in public education and publicity

campaigns. Leaders of NGOs are often appointed to statutory and non-statutory advisory bodies of the government on specific areas relating to nature conservation. Over the years, we have expanded collaboration with NGOs and developed joint programs targeted at children, students, and the aged.

This partnership with NGOs also extends to sharing of information and facilities. We provide a Web site, www.HKNature.net, that provides "one-stop" access to information on green groups and other information resources. There is frequent formal and informal contact between leaders and members of NGOs and department staff. Many NGO members have been appointed to the department's advisory bodies, giving them a formal channel of communication.

There are also joint conservation projects in PAs. The government gives subventions to the Conservancy Association in support of its community education on wetland conservation; to the local branch of the World Wide Fund for Nature for conservation work in the Mai Po wetland, a Ramsar Site designated under the international Ramsar Convention on Wetlands; and to Friends of the Earth for guided tours for schools.

Improving communication

Information is power. In the 21st century, nothing is more important than good communication. In Hong Kong, we use the Internet to provide up-to-date, accurate information to both domestic and overseas users. The department maintains several Web sites, including the official home page of the Agriculture, Fisheries, and Conservation Department (<http://parks.afcd.gov.hk>), where detailed information about country and marine parks is posted; [HKNature.net](http://www.HKNature.net), mentioned above; the Nature Conservation Award Scheme Net (www.ncas.org.hk) for university students; and the Hong Kong Walkers Net (www.hkwalkers.net). We encourage exchange of views through e-mails and Web sites.

In addition to e-information, on-site information is provided in the form of maps, signage, and interpretative materials. These are widely installed within country and marine parks, particularly at park entrances and visitor information centers. Materials are presently bilingual in English and Chinese, with some information in Japanese.

Supporting publications

We have found that books about nature are important in promoting understanding of nature appreciation. With the support of the Friends of the Country Parks, we have managed to publish over 50 books on the parks, as well as on landscapes, birds, insects, marine habitats, and hiking routes. There are also children's stories, reference books for field studies, and guides to nature photography, bird watching, and nature painting. All these publications are well illustrated with photographs and drawings. They are so attractive that some of them have been at the top of best-seller lists for long periods. Most have been written and illustrated by members of our own staff, who have derived great satisfaction from producing them.

Other initiatives

The department is committed to keeping its parks clean and tidy. Educational facilities have been upgraded, emphasizing more opportunities for hands-on experience. Special areas have been established near nature centers where multiple habitats have been created for easy viewing and learning.

Community building must be established on a wide and solid basis; otherwise public support for PAs will not be strong enough to resist pressure for abuse, especially in such a highly urbanized place as Hong Kong, where land is scarce. The department has established strong connections with hiking groups, universities, medical associations, district councils, schools, the commercial sector, and the general public through regular meetings and joint activities. As a result, Hong Kong has been able to conserve over 40 percent of its territory in PAs. Although this accounts for only about 41,000 hectares, the message behind it is clear and strong: *The people of Hong Kong recognize the benefit of protected areas!*

4. CONCLUSIONS

Hong Kong's status as a world-class city will not be sustained without a world-class system of protected areas. To maintain and strengthen this system, we need public support. Lessons learned from Hong Kong are simple but important:

- We need the public to "take ownership" of PAs. This takes time.

- We should try to build good relations with representatives of all possible sectors of the community. Only when we build up broad and wide support will we be able to defend PAs against pressures, especially in a rapidly developing city like Hong Kong, where land resources are scarce and precious.
- We must communicate directly and effectively with the public, the media, decision-makers, and environmental groups in disseminating the message of the benefits of PAs.
- A team of dedicated and committed staff is indispensable to working with the community.
- Pooling of information and expertise, and sharing of experience, are essential. Such meetings as the IUCN World Parks Congress provide opportunities to make connections for international and cross-disciplinary cooperation and mutual support among managers, scientists, and decision-makers.

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California cities and the protection and restoration of Yosemite National Park

JOHN J. REYNOLDS

1. INTRODUCTION

Yosemite National Park is the birthplace of the national park idea that led to Yellowstone and thousands of other protected areas around the world. It is a World Heritage Site. It is one of those few protected areas that enjoy special recognition in conservation and preservation annals worldwide.

Yosemite Valley and the Mariposa Grove of giant redwood trees, now part of Yosemite National Park (USNPS, 2004a), were the first places in the world protected by the action of a national government on behalf of all the people of that nation. In 1864, President Abraham Lincoln signed a bill ceding federal land to the state of California as an inalienable public trust. From the beginning, the fight to preserve Yosemite Valley, and ultimately all of what became Yosemite National Park, has been a tale of pursuing a dream. It is also a tale of special attachment to the people of San Francisco and its neighboring communities, and to other metropolitan areas within California.

Yosemite has charmed people from the very beginning. It reaches inside virtually all of them, to their hearts and souls. It becomes a part of their personal heritage, attached to it in unusual personal depth. Many become willing to put prodigious amounts of personal time and energy into making sure that “their” park, and especially “their” valley, are made “pure.”

It happened to John Muir, a city man who became the progenitor of what has become an enduring passionate, personal, and yet democratic struggle to decide what is “right” for Yosemite. He began the San Francisco connection that has led the intellectual, heartfelt, and often expertly political struggle for the future of the park. He formed the Sierra Club, the world’s first national conservation advocacy group, first and foremost to protect Yosemite. And so Yosemite’s need for the people of the cities began in earnest.

Over the years, millions of people have visited Yosemite from the San Francisco area. Billions of family and childhood memories have been made. Hearts and minds of city dwellers have become

unwittingly and unswervingly devoted to Yosemite.

2. THE CONTEXT: A PARTICIPATORY PLANNING PROCESS

In the mid 1970s, the United States National Park Service, faced with a powerful concessioner who seemed more concerned with resort-type activity than with the park itself, had no long-range plan. As the people of California’s cities found out that resort-like development might be coming to Yosemite, they rose up en masse and spoke out in unprecedented numbers. The many previous draft plans were “rejected” as a result. A new planning team was formed and began work in 1975. The team was trained in the philosophy and techniques of public involvement. Over the next two years the number of people, mostly city people, on the official mailing list and involved in the struggle for the park’s future grew to 65,000. Five years later, in 1980, a historic plan for Yosemite was approved (USNPS 2004b).

In the introduction to this plan, the National Park Service stated:

“Today, the Valley is congested with more than a thousand buildings – stores, homes, garages, apartments, lodging facilities, and restaurants – that are reflections of our society; the Valley floor is bisected by approximately 30 miles of roadway which now accommodates a million cars, trucks, and buses a year. But the foremost responsibility of the National Park Service is to perpetuate the natural splendor of Yosemite and its exceedingly special Valley.

“The intent of the National Park Service is to remove all automobiles from Yosemite Valley and Mariposa Grove and to redirect development to the periphery of the park and beyond . . . the essence of wilderness . . . will be preserved.

“Implementation of this . . . plan will be the first big step in carrying out this intent . . . The plan describes immediate actions that will achieve five broad goals:

- Reclaim Priceless Natural Beauty;

- Markedly Reduce Traffic Congestion;
- Allow Natural Process to Prevail;
- Reduce Crowding;
- Promote Visitor Understanding and Enjoyment.”

The National Park Service, led by thousands of city people, had historically committed to restoration of the natural grandeur and sublimity of Yosemite as the path to visitor enjoyment in the future.

Sixteen years later, in 1997, a flood roared through Yosemite Valley taking with it virtually all the roads, lodging, employee housing, and campsites in its floodplain. In those 16 years, the public, again most vocally from the San Francisco area, had come to two conclusions: first, that the “broad goals” of the 1980 plan were still completely valid, and second, that details of how to get there needed to change with the times. As the Park Service moved to replace facilities lost in the flood, a pair of lawsuits by citizens against the Service’s processes brought deliberate sense to the situation. New plans that looked at the Valley holistically were produced after great public discourse. These plans reaffirmed the broad goals from 1980 and created an updated vision of the park’s future. Restoration of natural processes was the basis upon which all other decisions were reached (USNPS 2004b).

The foregoing is but a brief history of the tumult resulting from deep public caring for Yosemite. Two things are important here:

- That public perception of what is appropriate and important in Yosemite evolves over time. It evolves quickly and passionately, and often faster in the public mind than in the minds of administrators charged with the complexity and demands of daily management.
- That the enormous numbers of people and organizations that care so much about this place will become deeply and passionately involved. They freely give of their own time, both as advocate critics and as volunteers. They also often give freely of their own money, whether to support lawsuits challenging agency decisions they feel are improper or in philanthropic giving to accomplish goals government budgets cannot cover.

These people who care so much live mostly in the cities of California, illustrating a quotation in the introduction in the concept paper for The Urban

Imperative workshop: “The fight for conservation . . . will not be won in the remote depths of the forests and mangroves. It will be won in the large metropolises . . . It is there that we will . . . win the cause for protected areas” (Cunha e Menezes 2001).

Perhaps no place is the truth of this statement more clearly demonstrated than in Yosemite. The connection between the park and the citizens of the major metropolitan areas of the state of California and especially of the San Francisco Bay Area is long, deep and intense. The questions at hand are:

- Are these connections demonstrable, both in the past and now?
- If so, how did they happen?
- Why do they persist?

3. YOSEMITE AND URBAN PEOPLE: DEEP AND LASTING CONNECTIONS

The first question, “Are these connections demonstrable?” requires a little analysis of the record.

In order to do this, we need to have a little more history. I have already mentioned the John Muir tie to the San Francisco area. His leadership to get the park established in 1890 was not the end of his work. His second battle not only tied San Francisco to the park in a different way, but was also the biggest conservation battle in history to that time. It was the battle for Hetch Hetchy Valley, another valley comparable in size and beauty to Yosemite Valley itself. In the early 20th century San Francisco saw the need to establish for itself a reliable source of water, and saw this second high-walled valley as necessary for water storage. John Muir and the Sierra Club, based in San Francisco but growing ever stronger in the rest of California’s cities, decried the loss that was to come.

The fight was finally waged in the Congress of the United States, where power politics won and Hetch Hetchy Valley was lost to a city’s thirst. Perhaps as John Muir’s tombstone, O’Shaughnessy Dam rises today at the end of the valley. To some it signifies assured water for San Francisco. To others it signifies the absolute solidification of the public abhorrence of dams in national parks worldwide. This loss created a lasting resolve in city conservationists that Yosemite would never be so ravaged again.

In 1913, cars were first officially permitted to enter the park. By 1925, adverse impacts were becoming apparent. Visitation skyrocketed. It hit

one million in 1954, and doubled over the next two decades to 2 million in 1976, when the first long-range plan, described above, was begun. Two more decades later, visitation had doubled again to 4 million, proving that the connections between Yosemite and its urban constituents were not only real, but also powerful.

Drives to respond to visitation increases in the traditional manner of increasing facilities within the park and especially in Yosemite Valley resulted in a massive outcry by the public centered in California's urban areas, but reflected throughout the nation.

The resulting planning effort in the 1970s, which I referred to earlier, conducted over 48 public meetings throughout California and in six cities across the nation. The outpouring of caring about what should happen in Yosemite was intense. Over 65,000 people asked to be placed on the mailing list. Over 32,000 of these participated regularly in the ensuing process which led to adoption of the plan.

Where were most of these people from? The largest group was from the San Francisco area. Other major identifiable groupings were from the Los Angeles metropolitan area and emerging cities of California's interior Central Valley.

The public response was overwhelmingly consistent from these urban dwellers in one regard. Although they varied some in what specific actions they would take, they believed virtually as one that Yosemite was a special place, and creation of more lodging and other new buildings should not occur inside the park. And they concurred en masse that restoration of natural conditions and de-urbanization of the park were essential to experiencing Yosemite in the future.

The approved plan was basically a compact with urban America, led by urban California. Nearly two decades passed. Following the 1997 flood and its massive destruction of facilities in its path, the public spoke again. They said that facilities lost to the flood should not be replaced in kind, but that reconstruction should be guided by the goals of the 1980 plan. For both legal reasons and to ensure that the Park Service understood the public mind, detailed planning to implement these goals in light of the new conditions was undertaken. Final plans were approved in late 2000 and early 2001. Once again the ties between the people of the metropolitan areas of California and Yosemite were vocal, persistent, and remarkably consistent in their vision of Yosemite and its restoration after the flood.

Over 10,000 comments came from all over the United States and 13 other countries. Seventy-six percent of them came from within California. Of the California commentaries, 68 percent came from the major urban centers, divided as follows:

- San Francisco Bay area: 28 percent
- Interior Central Valley metropolitan areas: 32 percent
- Greater Los Angeles area: 19 percent

The evidence is overwhelming that this park needs and is cared about by the people of the cities, and that the special original tie between San Francisco and the park still exists. But inherent in these figures is a clue to park managers about who must receive more concerted attention than in the past. As population growth has skyrocketed in the interior Central Valley cities, which lie closer to Yosemite than San Francisco, the people in these cities are beginning to express what they think Yosemite's future should be more strongly than ever before.

Metropolitan areas, especially San Francisco, are where the political power that most affects Yosemite's future is based. It is also from these same people that the philosophical base for what constitutes an appropriate future for the park grows, and from which opposition to or consensus for agency actions is born and matures.

The answer to the first question, "Are these connections demonstrable, both in the past and now?" is without a doubt "Yes."

4. HOW DID THEY HAPPEN?

The answer to the second question, "How did they happen?" is relatively straightforward. Historically, San Francisco was the closest major city to Yosemite. San Francisco was the only port and rail terminus from which transportation could be easily arranged. It was the cultural and media center of California, and adopted Yosemite as a part of the culture of those in the city wealthy enough to get to and enjoy the place. Later, in the 1950s and 1960s, facilities in Yosemite were modernized. Cars became ubiquitous and the middle class discovered Yosemite. The population of California has continued to grow and spread. The people who can easily get to Yosemite now live not only in the San Francisco area and the growing cities of California's interior Central Valley, but in Los Angeles and the rest of Southern California as well

– and in other cities around the United States and the world.

These are trends that happened to a generally passive National Park Service, one responding primarily to increased demand for facilities at first. But as the 1970s hove into view, the National Park Service did indeed begin to pay attention to and value public opinion about the conditions of the park. The explosive reaction to the behind-the-scenes politics of the concessioner in the early 1970s led directly to an acceptance and unprecedented inclusion of the public in decision-making processes related to the park.

The first permanent connection as a result was commitment to open, inclusive public processes, especially in California's urban areas.

Two other phenomena began to emerge quickly. The first was the idea that philanthropy could benefit the park. The second was that connecting children to the park for educational purposes was not only possible but also desirable. Both took root in Yosemite in the mid-1980s. And so were born two non-profit official partners of the park, both dependent on city dwellers and both resulting in enduring connections to the park.

The philanthropic path resulted in the formation of The Yosemite Fund, dedicated to raising funds and volunteers to assist in the management of the park. The Fund began as a largely San Francisco Bay Area-based institution. Many of the first officers and the current long term executive director came from the Bay area and had long personal histories associated with the park. The Fund headquarters has always been in San Francisco. Historically, the majority of fund raising has taken place there, though in later years the ties have expanded to other cities in California.

The education path grew virtually simultaneously. The Yosemite Institute, dedicated to educational programs that connect children to Yosemite, was formed. It brings children from schools all over the state to the park as part of their school experience. The success rate is overwhelming. The Institute now brings over 13,000 kids a year from more than 250 schools to the park. Over half of them come from the San Francisco Bay area.

Preceding all of this, from the earliest times in Yosemite's history and up through the last quarter of the 20th century, another influence tied Yosemite to the hearts and souls of urban America, especially California's city folk, and most passionately the people of San Francisco. From the very beginning, famous painters such as Thomas

Moran and Albert Bierstadt captured the grandeur and sublime character of Yosemite in art displayed around the U.S. and Europe. Photographers were similarly enchanted, and one in particular, Ansel Adams, made it his life and his passion. A native of San Francisco, he perhaps did more than any other single person to capture the essence of Yosemite on film and infect countless individuals with first a desire to come see for themselves and then a memory of an experience beyond simple verbal description.

In more recent times, and in color, the late Galen Rowell's photographs continue to make this connection. Others, like the poet Gary Snyder, use words to create it. Contemporaneously, television, film, and a myriad of artists and photographers not so famous continue the tradition. These bonds between park and the arts and letters grow more deeply through time, and they all connect the park to the cities.

There are also other avenues that exist that create enduring relationships between the park and the people of cities. One is scientific research of all kinds from universities. The University of California at Berkeley has had a long, deep relationship with the park. That relationship has spread hither and yon through the university systems of California, and is now being formalized in two ways. The first, which includes all national park areas in California, is through an agreement between the University of California and the National Park Service and other federal government agencies called a "Cooperative Environmental Study Unit." This agreement will facilitate the relationships between university students and the parks in many ways, most particularly in accomplishing studies and research of all kinds beneficial to the parks. The second is the establishment of a direct relationship between the new University of California campus in Merced and Yosemite and Sequoia/Kings Canyon National Parks. In both instances, students, primarily from urban areas, will be exposed to the parks and develop enduring connections with them.

An increasingly important way in which the relationships between Yosemite and its urban visitors are developed is through volunteer service programs. People, again primarily urban people, gather in organized groups to perform volunteer service in order to give back something to their country. Invariably, after laboring for a day or more in Yosemite, they have formed a bond with the place that endures for the rest of their lives.

5. WHY DO THEY PERSIST?

And so, the third question: “Why do they persist?”

These connections happen one person at a time. They always begin with a very personal experience, one that in some (usually indecipherable) way is personally special. Strongest, and I think most compelling, is an experience in the park. Often seen in letters to the park and always in conversation with people about why they feel so strongly about the place, is a very personal expression of connection. Most often it is simple, straightforward, and perhaps only implies what the experience really is. When asked, people say things like, “Well, I camped there as a kid,” or “My dad and mom took me skiing there the first time when I was just two years old,” or “I was married there,” or “The water; it’s so beautiful, and comes in so many forms, big falls, little falls, gentle river, little creeks, rushing cataracts.” And to those fortunate enough to have worked and lived there, “Yosemite . . . it is my home.” There is always awe, reverence, and many times a puzzled tone that says, “I don’t really know; it’s just there and always will be.”

Other times, and increasingly important in our expanding and diversifying urbanized citizenry, are connections that come from images, whether they be picture or prose. As is evidenced over and over by surveys about why people in cities want wilderness areas to exist, it is not always because they will go to use them. In increasing numbers they just want to know they are there, and that nature is real or has been restored. Yosemite draws on this need in people, and thus a connection is made. Often, this results from photographs, art, prose or poetry.

In terms of organizations that grow up to foster these connections and take advantage of them, such as the Yosemite Institute and the Yosemite Fund, again the connection begins with some kind of deep caring and personal commitment. In the case of the Institute, personal desire to tie Yosemite to the larger good through education coincided with compatible park goals, and a new organization was born. The same is true for the Yosemite Fund, which draws on the individual connection of primarily city dwellers to give back to Yosemite and be part of ensuring its future for generations yet to come through philanthropic giving.

In the end, all of the connections between city and park begin with some experience that creates a personal connection. In some way, the park

becomes personally cherished and a sense of personal stewardship and responsibility grows. In many this sense results in a need to give back something that is personally theirs. For example, the “give back” may be participation in public processes, volunteering time, philanthropic giving, artistic creation, or educational endeavor. These people live mostly in cities, both near and far.

6. CONCLUSIONS

Yosemite both now and throughout its history has needed cities – or, more accurately, the people who live in cities – to survive and evolve.

To many, Yosemite may seem to be an anomaly, an interesting story, but perhaps not one applicable elsewhere, back home in a different culture.

However, if we look a little more deeply the basic lessons seem to apply more universally.

First must be an acceptance by park managers that parks need cities, and the people who live in them.

That accepted, then a thoughtful analysis of which cities are important to your park is next. Who comes to this park? Who could come but does not come now? Who could benefit? Where are the people who have experienced this place and have fallen in love with it so much that they will give of their personal time and energy? The answers will vary.

Learning these three things is essential:

- Where those people who love your park the most come from;
- Where the people who could care or benefit most from knowing your park are from; and
- Knowing where the people are who are important in your political system.

The answers can lead to connections similar in kind to the ones to which the restoration of Yosemite owes its support. The key always is connecting the unique nature of your park to the minds, hearts, and souls of people who will support what you are committed to do.

Perhaps the history and experience of Yosemite, the birthplace of the national park idea, can continue to serve as a source of inspiration and thoughtful deliberation as the relationship between parks and cities full of the people they are meant to serve continues to evolve.

What a wonderful legacy that would be!

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Community-driven stewardship of an Australian government protected area

PAMELA PARKER AND MICHAEL PUNTURIERO

1. INTRODUCTION

At Calperum and Taylorville stations in South Australia, a combination of fortuitous circumstances has provided an unusual opportunity to link local community needs and conservation requirements in a badly degraded but biologically important ecosystem. The elements that have come together are community commitment, private-sector support, government policy, political leadership, and the willingness of all parties to take risks.

Calperum and Taylorville stations are north of the Murray River near the town of Renmark, which has a population of around 8,000 and is about 250 kilometers by road from Adelaide, South Australia's state capital and largest city, and 750 kilometers from Melbourne. ("Station" is an Australian term for a large cattle or sheep ranch or farm.)

The dominant natural ecosystem is mallee, a form of semiarid woodland found only in Australia that contains a remarkable and largely endemic biodiversity. Mallee is dominated by several species of multi-stemmed *Eucalyptus* and has other plants and animals of national significance. More than 80 percent of Australia's mallee has been cleared in the past century and a half. Calperum and its environs have the largest remaining expanse of intact mallee in Australia.

Wetlands are another important ecosystem within Calperum Station. In 1987 the 30,600-hectare Riverland Wetland was designated a Wetland of International Importance under the 1971 Ramsar Convention (Ramsar 2004).

2. HISTORY

In the early 1990s, environmental challenges in the lower Murray Darling Basin of South Australia commanded the attention of many Australians. This basin covers about a seventh of Australia and accounts for around 80 percent of the country's inland agricultural production. Like many dry

areas of the world that have irrigated agriculture, this region has been experiencing large-scale environmental change. This includes loss of biodiversity, declining quality and availability of water, rising saline ground water, altered patterns of rainfall, climatic warming, diminished productivity, and the legacy of past unsustainable uses of natural resources. Collectively, these changes threaten the future of land in primary production and land in the conservation estate, as well as the quality of life of the community.

Along with several other Australian and American organizations (see below), the Chicago Zoological Society has played a key role at Calperum Station. CZS operates one of the world's premier zoos and has been an international leader in relating zoos to conservation. The Society started investing in Australian biodiversity with a land acquisition in 1971, and its staff and volunteers supported activities of Australian conservation organizations throughout the 1980s and 1990s. This included assistance in research and monitoring, and expertise in care of infrastructure in semiarid protected areas.

In 1992, CZS was engaged by the Australian government to review the status of its biosphere reserve program. Biosphere reserves are areas that are internationally recognized within the framework of UNESCO's Man and the Biosphere Programme. They consist of a core protected area, or cluster of such areas, a buffer zone, and an outer transition area (UNESCO). The review reported a problem that is widespread internationally: The conservation functions of biosphere reserves are generally well-served, because they fit comfortably within the framework of the legislation, culture, and budgets of governmental agencies that manage protected areas. However, the more innovative components of biosphere reserves – engagement of the local community and pursuit of sustainability – are often difficult or impossible to implement, largely due to the form of land tenure outside the core.

In 1991, CZS, with the support of the McCormick Foundation, approached the Australian government with a challenge gift toward the purchase of Calperum Station (approximately 250,000 hectares). This area was proposed to serve as an outer zone of an established biosphere reserve, Danggali Conservation Park, so the complex could function as a “full-service” biosphere reserve with core, buffer, and transition areas. Calperum’s land tenure as a pastoral lease allowed for a variety of activities incompatible with a strictly defined, conventionally managed protected area.

In 1992, the Australian government contributed the additional funds required to purchase Calperum Station. CZS carried out the mechanics of the purchase, converting the land title into a trust deed specifying the purpose of the purchase. The Australian government accepted the deed with its attendant responsibilities. Calperum Station was cleared of sheep in 1993, and a formal partnership commenced between the Australian government and CZS to deliver the program. At about this time, The Ian Potter Foundation joined as a third partner. As the Potter Foundation’s involvement deepened, it chose to facilitate its work by establishing a new organization, the Australian Landscape Trust (ALT). Unlike the foundation, ALT was designed to engage directly in managing a program and appointing staff.

Next, the government and the private sector explored how to merge their cultures, discharge responsibilities for land and wildlife, restore a degraded property, engage the community, and finance the program. The traditional national park management structure is “top down.” The cultural elements required for building community capacity are “bottom up,” which is the method of service delivery used by the private-sector professionals in the program. Staff from government and the private sector found it difficult and often impossible to merge these operating styles.

This impasse was broken in 1998 by the Australian Environment Minister, Robert Hill, who decided to create a buffer between the private and public sectors while retaining the government’s firm control over publicly owned land. The minister enabled ALT to contract for the management of Calperum. The contract specified standards of care, thus safeguarding the legal responsibilities of government. ALT served as guarantor of performance and advisor to community participants. The initial five-year contract provided for an annual review by a team

composed of representatives of the government and ALT, and an independent chairman agreed to by both parties. However, based on performance during the first five years, the formal review has been dropped.

The length of the contract provided sufficient certainty for community volunteers to engage fully in the program at a personal, emotional level. Minister Hill’s investment thrived. ALT, in partnership with the Australian government, purchased adjacent land in need of protection, Taylorville Station (approximately 100,000 hectares). The program was endorsed by a succeeding Minister, Dr. David Kemp.

3. PARTNERS

The partners in this project have included a local community, brave politicians, government staff, and business leaders, as well as Australian and American conservation and philanthropic organizations. Pivotal individuals have been:

- Patricia Feilman, an Australian civic leader with a lifelong commitment to sustainability who founded the Australian Landscape Trust;
- George Rabb, an American scientist and international conservation leader, longtime president of the Chicago Zoological Society and chairman of the IUCN Species Survival Commission;
- Michael Hill, former deputy director of the Australian government’s park service, who rendered these experimental concepts and goals into forms that were workable within the Australian government;
- American philanthropists and conservation leaders William Rutherford, of the Forest Park Foundation, and Brooks McCormick of the Chauncey and Marion Deering McCormick Foundation, who provided challenge grants;
- Australian trustees of The Ian Potter Foundation, who made possible major operational support as well as capital to purchase land;
- South Australian Member of Parliament Karlene Maywald, and Renmark Paringa Mayor Rod Thomas, who have devoted their efforts to the needs of the program in its local context; and, as mentioned,
- Two successive Australian government environment ministers, Robert Hill and David Kemp, who provided essential political and financial support.

Investors in this program shared concern about the future of the Murray Darling Basin, its biodiversity, and its people. CZS and ALT were committed to developing models of sustainability that achieve security for regional biodiversity over the long term. Citizens of the area aspire to maintain their quality of life, their livelihoods in irrigated horticulture, and their environmental amenities. The Australian government seeks to achieve goals in conservation across multiple land tenures. Members of Australian civil society wish to contribute to community capacity and the democratic process so people can support environmental policies that address long-term needs.

These partners also share values, goals, and a culture of accomplishing tasks. ALT and CZS brought professional skills and networks to the program, as well as monetary resources. The local community contributed leadership, vision, skills, long-term commitment, and many volunteer hours. The Australian government brought legitimacy, financial and other resources, supportive policy, willingness to accept risks, and political protection for a program often under siege, sometimes for no reason other than that it was driving change. The business and philanthropic community contributed leadership, financial resources, management direction, political savvy, experience, dedication, and accountability. The good fortune of appropriate timing and cultural readiness was another significant asset – the program probably would not have succeeded if it had started before 1990.

4. MANAGEMENT STYLE AND COMMUNITY INVOLVEMENT

Empowering volunteers

To give scope to the biosphere reserve program, land tenure was needed that did not invoke statutes for conventionally managed protected areas. In addition, the culture of the professionals needed to change: Rather than serving as traditional guardians of the land and enforcers of centrally established policies, staff needed to support the involvement of community members in the areas of greatest concern to individual volunteers. Staff members do this by serving as cheerleaders, coaches, and teachers, and by responding to the priorities of volunteer leaders. Many such leaders are not immediately recognizable as such, so the role of staff is to facilitate leadership and open up

new networks for volunteers. The working style of staff must blend in with the culture of volunteers. This often means working evenings, weekends, and holidays, just as volunteers do.

John Davidson, in discussing community involvement in Britain's Groundwork organization at The Urban Imperative workshop, referred to a version of Sherry Arnstein's (1969) widely used Ladder of Citizen Participation:

- Rung 8: Citizen control
- Rung 7: Delegated power
- Rung 6: Partnership
- Rung 5: Placation
- Rung 4: Consultation
- Rung 3: Informing
- Rung 2: Therapy
- Rung 1: Manipulation

This analysis resonates with experience in implementing the biosphere reserve program in South Australia. To achieve meaningful, long-term involvement of the community, enfranchisement must take place at Level 7. Beyond that, the program must continually push toward Level 8 until community members are able to create and carry out independent programs on other land tenures – the performance measure of cultural change.

In the past, the management of most public protected areas was incompatible with community involvement much beyond Level 3. Constraints were due to statutory and other factors.

An example of a Level 3 activity is when park managers invite community volunteers to help plant trees that are provided on site at a particular time and place. At Level 7, this activity starts with a collective decision to undertake revegetation of a particular area. Community members with skills and interest in revegetation join staff in researching species that could be expected to grow in the targeted area and in determining the cash cost of the project. A team would be formed to collect seed from appropriate sources, germinate them, propagate seedlings, choose the most effective ways of planting in the site to be revegetated, and provide ongoing care. The team would then need to design and carry out a monitoring and reporting program to provide guidance for the future.

These contrasting approaches, those at Level 3 and those at Level 7 and beyond, attract volunteers with different interests. Both types of volunteers must be served.

Such principles of community involvement, which were explored throughout The Urban Imperative workshop, focus our collective analysis on the “technology of investment” in building and maintaining essential linkages with those who care about protected areas and their on and off-site benefits to society. Political support for protected areas is not the least significant byproduct of these investments.

Mechanics of delivery

Calperum and Taylorville stations are both “pastoral leases,” a designation under South Australian state law. As the leaseholder, the national Australian government provides protection under national law that is more effective than the state government can offer.

Pastoral use of mallee country usually results in degradation. This is due, in part, to the sale price of land. Capital costs of land exceed considerably the income the land can produce from grazing sheep. The requirements of servicing debt reinforce the too-familiar cycle of increasing stocking rates that deplete vegetation palatable to stock. Loss of this vegetation decreases capacity of the land to support grazing, and drives loss of biodiversity and degradation of the landscape.

The area of Calperum and Taylorville stations remains subdivided into fenced paddocks, a legacy of pastoral use. However, the paddocks have now become units of conservation management. Each paddock is available for “adoption” by a community volunteer, a family, a group of friends, a service club, or a special-interest group. Each paddock has its own list of tasks to be accomplished annually. These tasks are determined by the nature of the land and its condition. Flood-plain wetlands have different needs from dry mallee areas. Examples of tasks are road and fence maintenance, feral animal and weed control, biological surveys, species restorations, landscape repair, and revegetation. Some tasks fulfill contractual requirements; others are initiated by volunteers.

Not surprising is some friendly competition among those caring for individual paddocks. In 2002, volunteers in land management alone donated over 14,000 hours. Some volunteers are retired from paying jobs, but spend normal working hours at Calperum Station on many days. Others still in the work force participate on weekends, evenings, and holidays. Many volunteers have been with the program for five

years or more, some since the program commenced in 1993.

The professional staff at Calperum and Taylorville stations are broadly trained biologists and experienced land managers. Community members interested in land-management or conservation issues are always welcome to join staff in their open-plan office. Equipment such as computers, vehicles, and live traps are used on an equal basis by staff and volunteers. However, staff must ensure that the government contract is met, conditions are safe, and skills are transferred from staff to volunteers.

Restoration of the lakes in the Ramsar wetland has attracted many volunteer hours. Two lakes have been returned to conditions that once again are able to support waterfowl: over 24,000 birds used them in 2002. In 1992, when Calperum Station changed hands, the lakes were virtually sterile due to their exclusive use for irrigation water storage.

Other activities of volunteers include revegetation, monitoring bird populations, and working with young people in weekend camps that immerse city dwellers in the natural history of the region.

Community Land Management, Inc.

One of the most exciting of the community initiatives has been the establishment of Community Land Management, Inc. (CLM). This group was formed by committed local community leaders who have driven aspects of the program for over a decade. Led by Michael Punturiero, a citrus grower, they see themselves as investors. They are codifying their knowledge on everything from fire prevention and pest control to revegetation and habitat protection. This information is being assembled in notebooks that will allow newcomers to learn and others to refresh their skills. Community Land Management, Inc. also offers its services to other communities with similar goals.

5. REVEGETATION

Revegetation of overgrazed land has been a key goal. The Murray River floodplain was part of an overland stock route for sheep from western New South Wales to markets in Adelaide in the late 1800s. Later, the floodplain was a mainstay for grazing because of the presence of permanent water.

The legacy of high grazing pressure is reflected in examples of progressive desertification, soil loss, soil compaction, loss of palatable species, and – in places – gully erosion. Because of a harsh and erratic climate, revegetation efforts carry a high risk of failure if rains do not follow the planting. Rainfall averages 230 millimeters per annum and evaporation rates are high. Droughts are frequent. Climate change indicators suggest that winter rains are diminishing, average annual rainfall is diminishing, temperatures are rising, and hence evaporation is rising also.

Revegetation is labor-intensive, and volunteer care is essential to its success. Fenced plots are planted with a variety of species that are likely to have been found in the area as a means of restoring diversity, especially of highly palatable species that have disappeared. The plots are small enough to be watered by hand during dry years and allow natural recruitment outside the plots when the rains happen to come. Seed is collected from plants in the general area, dried, cleaned, sorted and propagated. Laser-leveled contours are scored into the earth and plants are put into the sides of the troughs. Wind contributes more soil. Rain collects in the troughs. Eventually, with luck, growing conditions are enhanced.

6. FACILITIES

Calperum Station has offices, a laboratory, and accommodation for residential professional staff and long-term volunteers. There are camping facilities, and a former woolshed hosts lectures, workshops, and social events. Students of all ages, researchers, educators, participants in government employment programs, vulnerable young people with community service obligations assigned through the judicial system, handicapped people, and many other groups have been accommodated at Calperum Station and have contributed to its programs.

Another major achievement has been construction of the McCormick Centre for the Environment, a state-of-the-art public facility for environmental education built with foundation and national government funds. Local government also contributed to it as an investment in community participation in good management of natural resources.

7. PERFORMANCE MEASURES

Many performance measures have been used for this program. They include hours contributed, tasks accomplished, increased species diversity, discovery of new taxa, prospering wildlife populations, hectares revegetated, discovery of new knowledge, and completion of specific projects.

However, the most significant outcome is education, specifically the transfer of skills from ALT and CZS professional biologists and land managers to community volunteers through “learning by doing” and adaptive management. Thus empowered, trained volunteers have helped others undertake conservation work outside this program.

Another very significant outcome is the founding of Community Land Management, Inc., which is already involved in projects some distance from Calperum and Taylorville stations and is beginning to work on private land as well.

Core to the success of this program is the good faith demonstrated by the Australian government in providing ALT with a second five-year management contract. The ultimate test will be the ten-year review of this inclusive approach to conservation on public land, and outreach to those who manage private land. When that ten-year review is in hand, the partners will know whether they should invest in similar opportunities elsewhere. We hope they are not discouraged.

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Part 3:
**Strategies for linking cities and
protected areas**

Connecting with nature in a capital city: The London Biodiversity Strategy

DAVID GOODE

1. INTRODUCTION

Over the past twenty years, an innovative program for nature conservation has been developed and implemented in London. Its purpose is to protect and enhance London's natural areas and their associated species, and to make it possible for Londoners to have greater contact with nature in their everyday lives. The program has involved many different players, including official agencies and voluntary bodies, supported by a groundswell of public opinion. Together they have generated a new consciousness and a very effective program of action. New approaches with a strong social dimension, that may at first have seemed a radical departure from traditional nature conservation, have now been adopted as an integral part of city management. The overall program has now been formalized by the Mayor of London in his statutory Biodiversity Strategy for the capital.

The program has five main elements. At its heart is the social dimension, the objective being to enable all who live or work in London to have greater contact with nature in their own locality. This concept is imbued throughout all aspects of the program. Second, but fundamental to the whole approach, is the system for protecting London's important wildlife habitats. This has resulted in over 1,500 sites being scheduled for protection through the statutory planning process. These represent about one fifth of the area of Greater London. The system also enables districts that are deficient in accessible wildlife sites to be identified. These are parts of London where special action needs to be taken to create new wildlife habitats that will enable people to maintain daily links with nature.

Habitat creation is the third main element of the program. This includes ecological enhancement of public parks and open spaces, or creation of entirely new wildlife habitats for public enjoyment and environmental education. It also includes design for biodiversity within the fabric of the built environment. Mainstreaming biodiversity as an

element of urban design is crucial as London moves into a renewed phase of growth and development. The fourth element is education, encouraging provision of facilities for environmental education and opportunities for all sectors of society to be actively involved in environmental projects. Fifth is partnership. The program could not be achieved without a wide range of organizations and individuals working together to a common goal. This has been formalized through the London Biodiversity Partnership, which has identified key issues now being addressed through specific action plans.

This paper describes the approach adopted in London, explains how the overall strategy has been implemented through strategic planning and land management, and also considers some of the factors which have contributed to successful adoption of the whole process.

2. EVOLUTION OF THE STRATEGY

Greater London Council program, 1982-86

In 1982 the Greater London Council (GLC) instigated a major new program to cater for nature conservation in Greater London. The object was to develop an ecological perspective in all aspects of the Council's work. The programs developed by the GLC over the period 1982-1986 are described elsewhere (Goode 1989). Details of the new initiatives were first published in Ecology Handbook 1, *Ecology and Nature Conservation in London* (GLC 1984), which was the first in a long series of ecology handbooks.

One of the main objectives was to ensure that nature conservation was built into the strategic-planning process in London. At that time there was no reference to nature or wildlife in the strategic development plan for London. Although provision was made for protection of open space for public enjoyment, the emphasis was largely on landscape and visual amenity rather than the natural environment or ecology. A first task for the GLC,

therefore, was to produce a set of policies on ecology and nature conservation for use by London boroughs in their local plans. These were published in Handbook 1. One of the key policies recommended the identification and protection of sites of nature conservation value. It was recognized from the outset that this would require a systematic survey and evaluation of habitats of potential value throughout the 1,580 square kilometers of Greater London. The GLC therefore commissioned such a survey of wildlife habitats in 1984. The results provided the basis for the first comprehensive strategic nature conservation plan for Greater London. The GLC also set the scene for innovative habitat creation projects, such as Camley Street Natural Park, which demonstrated the social value of such a resource in one of the most deprived parts of central London.

London Ecology Unit, 1986-2000

After the Greater London Council was abolished in 1986, the London Ecology Unit was established as a London-wide body to continue this work. A new joint committee of local authorities and other public bodies, known as the London Ecology Committee, was formed to oversee and fund the Unit's work. The Unit adopted a twin track approach involving protection of habitats through planning; and provision of detailed advice on habitat management, including new approaches to habitat creation and design. From its inception, the Unit was a leader in the philosophy and practice of urban nature conservation, recognizing the importance of everyday nature to town and city dwellers and seeking ways of maximizing the variety of wildlife in the capital. The Unit was particularly successful in promoting ecology in urban planning through further development of the London-wide conservation strategy, working closely with borough planners and providing practical advice on many hundreds of planning cases.

During the 1990s, the Unit continued to develop and refine the overall strategy which, despite its non-statutory status, became firmly established as the basis for nature conservation planning in London. By 1995, the system provided the basis for nature conservation planning in most London boroughs, and had been successfully tested at numerous public inquiries. It was endorsed in 1995 by the London Planning Advisory Committee and was recommended as the basis for nature conservation planning in the Government's

Strategic Planning Guidance to London boroughs in 1996. The original wildlife habitat survey was substantially revised and updated on a borough-by-borough basis, for publication of a series of detailed nature conservation strategies for individual London boroughs. Systematic surveys and assessments were completed for 29 of the 33 London boroughs. Most London boroughs used the recommendations of the LEU as the basis for the nature conservation content of their Unitary Development Plans.

Over the same period, the outcome of several planning inquiries set precedents in favor of nature conservation within the urban context. Examples included disused railway land and industrial sites, as well as long established habitats such as woods, meadows, and marshland. In many cases it was the value of these places to local people that won the day, rather than scientific arguments about rare habitats or species. Such cases were important in illustrating newly emerging values and helped to establish the validity of nature conservation in heavily built-up urban areas.

Strategic planning was only part of the process. The Ecology Unit also published guidance on other elements of the overall strategy, including the social agenda, and ecology within the built environment. Notable examples are *Nature Areas for City People* (Johnston 1990), *Building Green* (Johnston and Newton 1993), and *Nature Conservation in Community Forests* (Marsh 1993). Progress in the development of the strategy is summarized elsewhere (Goode 1993, 1996).

The mid-1990s also saw the emergence of another agenda that greatly influenced the course of events in London. This was the development of Local Biodiversity Action Plans, which were part of U.K. government policy for implementation of the Biodiversity Convention following the Rio Earth Summit of 1992. Such plans were seen as a means of delivering national targets for biodiversity at the local level. They were also a means of broadening the constituency of players involved in this task, by including representatives from the business and development community alongside specialist wildlife agencies. It was argued that such *Action Plan Partnerships* would have more influence and be able to deliver real change through the actions of their wider membership. The London Biodiversity Partnership was launched in 1996 with the aim of implementing key elements of the overall strategy for London. This brought together all the main

players with an agreed set of objectives (London Biodiversity Partnership 1996).

But other, more profound, changes were underway with the establishment in 2000 of a new Greater London Authority with an executive Mayor. One of the requirements of the GLA Act 1999 was that the Mayor must produce a Biodiversity Action Plan as one of a series of London-wide strategies, alongside those dealing with strategic planning, economic development, and transport. The London Ecology Unit was absorbed into this new authority to provide specialist input on biodiversity. As its last act the London Ecology Committee made a series of recommendations to the future Mayor, in particular that the procedures it had put in place for conserving London's habitats and wildlife should form the basis of his statutory strategy; and that the Mayor should lead and co-ordinate the London Biodiversity Partnership as an important element of this strategy (London Ecology Committee 2000).

3. THE MAYOR'S BIODIVERSITY STRATEGY

In the event, the first Mayor of London, Ken Livingstone, has gone further, not only adopting those procedures as an integral part of strategic planning, but also reinforcing the social agenda. His Biodiversity Strategy emphasizes this in its title *Connecting with London's Nature* (Mayor of London 2002).

The Mayor's strategy sets out how London's biodiversity can be protected and maintained. It aims to make it possible for everyone to enjoy and learn about the natural world within the capital. Its success depends on a partnership between many organizations to help carry out the proposals, such as borough councils, community groups, businesses, and conservation organizations, as well as the support of individual Londoners. Working together, people will shape the future of green London, having a far greater effect than any single organization acting alone.

The Biodiversity Strategy sets out 14 main policies, with 72 proposals for their implementation, and identifies the main partners in each sphere of activity. It also provides an overview of London's wildlife and the places where it is to be found. The new London government and its associated bodies dealing with transport and economic development have a crucial role to play. Other major partners in the

implementation of the Strategy are the London borough councils, English Nature, the Environment Agency, and the London Wildlife Trust. The London Biodiversity Partnership, a consortium of all the most important organizations working in biodiversity in London, brings all these players together. The Partnership has drawn up a Biodiversity Action Plan for London which identifies priority actions regarding important wildlife habitats and a number of key species. This Action Plan complements the Mayor's Strategy and provides the basis for implementation of some of the policies. The GLA currently chairs the Partnership.

The Mayor must produce seven other strategies alongside that for biodiversity, one of which is the overall London Plan which provides the strategic planning framework for the capital. These strategies together set out an integrated social, economic, and environmental framework for the future development of London. All are statutory strategies, and the London Plan contains policies to protect, manage, and enhance London's biodiversity.

4. LONDON'S WILDLIFE HABITATS

The types of habitat of value for wildlife conservation in London fall into three broad categories:

- Encapsulated countryside;
- Unintentionally wild areas, developed on derelict or disused land;
- New habitats created or enhanced for nature conservation.

Encapsulated countryside includes a wide range of different types of habitat, such as woodland, heath, marsh, herb-rich grassland, lakes, ponds, and river corridors. Such areas vary in size from tiny fragments less than one hectare to significant tracts of semi-natural habitat over 500 hectares, mainly restricted to the outer parts of London.

Unintentionally wild areas include a great variety of habitats, a large proportion of which are of recent origin, having developed on derelict or disused industrial or other open land. One of the characteristic features of urban areas is the remarkable diversity of species associated with "urban wastelands." Other habitats falling in this category include those along railway corridors and a variety of rather specialized habitats associated

with derelict cemeteries, mineral workings, and even disused sewage works.

The third category includes all those habitats that have been intentionally created to enhance nature within the urban context. This includes everything from small nature gardens in school grounds, to larger ecological parks, or more extensive areas of habitat such as Community Forests and wetlands. Some of these are specifically created for environmental education. Also included in this category are areas within urban parks that have been converted to naturalistic habitats.

5. HABITAT SURVEY AND NATURE CONSERVATION EVALUATION

When the GLC took the first steps in developing a nature conservation strategy in 1984, knowledge of London's ecology was patchy and incomplete. The first priority, therefore, was to undertake a comprehensive survey of wildlife habitats. The strategy required detailed ecological information for all places of potential significance, including information on the kinds of habitat and an assessment of their importance. At that time, priority was given to areas of open land of potential significance for nature conservation. Formal parks and cemeteries, private gardens, playing fields, and open areas with little wildlife interest, such as arable land, were all excluded from the survey. An initial desk study using air photography resulted in over 1,800 "sites" being selected for survey, totaling about 20 percent of the land area of Greater London. For each site information was collected on the types of habitat and dominant species, overall richness of plant species, presence of rare or unusual species, current land use, and accessibility.

This survey provided the starting point for selection of Sites of Importance for Nature Conservation in London. A standardized set of criteria was used for comparing and evaluating sites. Although many of these criteria are similar to those developed by U.K. government agencies for selecting sites of national importance (such as species richness, and size and presence of rare species) there are some essential differences. Public access and value for environmental education are examples.

The data have since been substantially updated through more detailed surveys of each individual London borough. The resulting database has been invaluable. Over the past twenty years it has

provided a vital tool in strategic planning and for advising on the ecological implications of proposed new developments. Probably the most detailed ecological database of any part of the U.K., it now provides essential information for implementing the Mayor's biodiversity strategy for the capital. Over the years it also provided the basis for the London Ecology Unit to produce its popular series of handbooks on London's natural history, which assisted in raising public awareness of nature conservation issues (e.g., Yarham and Game 2000).

The procedure for selecting sites for protection was first described in *Nature Conservation Guidelines for London* (Greater London Council 1985). This contained a series of ecological policies for use in strategic planning in London, and set out the rationale to be used for deciding which areas are important for nature conservation. It provided the basis for the system used by the London Ecology Unit in its subsequent series of publications (London Ecology Unit 1994). Although some changes have occurred in the detailed approach, the rationale remains much the same as that developed in 1985, and it has been widely accepted as the basis for nature conservation planning in London. Although non-statutory, it was endorsed by the London Planning Advisory Committee for use in Unitary Development Plans for all London boroughs in 1995 (Goode 1996). The same policy, criteria, and procedures for identifying nature conservation sites were adopted by the Mayor of London in 2000, and are set out in full in his Biodiversity Strategy (2002). Details of the survey methodology and use of criteria for evaluating the nature conservation importance of sites are discussed elsewhere (Goode 1999).

6. CATEGORIES OF PROTECTED SITES

From the outset, the London Biodiversity Strategy has recognized a hierarchy of sites at three levels. Those of London-wide strategic significance are called Sites of Metropolitan Importance for Nature Conservation. They include nationally protected sites, such as National Nature Reserves and Sites of Special Scientific Interest, together with many other sites which together represent the full range of habitats in London. Other sites are of significance to individual London boroughs, and a third category of Local Sites are those important at neighborhood level.

The use of these three different levels of importance is an attempt not only to protect the best sites in London but also to provide each area of London with accessible wildlife sites so that people are able to have access to nature within their local neighborhood. This hierarchy means that sites of London-wide importance are chosen in the context of the geographical area of Greater London. Sites of borough importance are chosen from the range of sites in each individual borough. Sites of local importance are those which are valued by local residents, schools or community groups at the neighborhood level.

At the London-wide level, 136 Sites of Metropolitan Importance are identified. They are distributed throughout London and vary in size from only a few hectares to over 1,000 hectares. Most (90 sites) are less than 100 hectares, of which 55 are less than 50 hectares. A few Sites of Metropolitan Importance have been lost to development since the London Ecology Committee first endorsed the list (London Ecology Committee 1988). Most of these were wasteland sites already scheduled for development. Additional sites have been added to the list over the years as individual boroughs have been surveyed in greater detail. The Mayor endorsed the list of Metropolitan Sites in 2002 and these are given statutory protection by policies in his London Plan (Mayor of London 2004), which now provides the strategic planning framework for London.

As a result of the detailed surveys for individual boroughs, the overall strategy for London has now identified over 1,500 sites. This includes all categories of protection, i.e., Metropolitan, Borough, and Local. A significant number of the sites designated through this process are also protected as statutory Local Nature Reserves. This is a designation made by the boroughs to give a greater degree of protection to these important areas in the long term and to promote greater public access. About 75 Local Nature Reserves are now designated in London, compared with only two in 1980.

Sites of Metropolitan Importance

Sites of Metropolitan Importance for Nature Conservation are generally the best examples of London's habitats, and may also contain particularly rare species. Some are sites which are of particular significance within otherwise heavily built-up areas of London. They are all sites of London-wide significance and are of highest

priority for protection in the capital. The identification and protection of Metropolitan Sites is necessary, not only to support a significant proportion of London's wildlife, but also to provide opportunities for people to have contact with the natural environment.

The best examples of London's habitats include the main variants of each major habitat type, for example oak woodland, wet heathland, or chalk downland. Habitats typical of urban areas are also included, e.g., various types of abandoned land colonized by nature ("urban commons"). Those habitats which are particularly rare in London may have all or most of their examples selected as Metropolitan Sites. Rare species of importance in selecting these sites include those that are nationally scarce or rare, species listed in the *Red List of Threatened Species* (IUCN 2004), and species that are rare in London.

A small number of sites are selected that are of particular significance within heavily built up areas of London. Although these are frequently of less intrinsic ecological quality than the best examples of habitats on a London-wide basis, they are outstanding oases and provide the opportunity for enjoyment of nature in those parts of London which are extensively built-up. Examples include St James's Park, Nunhead Cemetery, Camley Street Natural Park, and Sydenham Hill Woods. In some cases (e.g., the Royal Parks in inner London) their function in providing public access to nature is the primary reason for their selection. For sites of higher intrinsic interest this may be only a contributory factor. Only those sites that provide a significant contribution to the ecology of an area are identified as Sites of Metropolitan Importance. It is fair to say that if one of these sites were to be lost or damaged this would represent a significant loss to Londoners. Something would be lost which may be unique, or restricted to very few other places in London.

The definition of this category of site was approved by the London Ecology Committee in September 1988, along with a list of such sites which has been updated regularly since then (London Ecology Committee 1988). The Mayor adopted an updated list in 2002.

Sites of Borough Importance

These are sites that are important in a borough context in the same way that Metropolitan Sites are important to the whole of London. Although sites of similar quality may be found elsewhere in

London, damage to these sites would mean a significant loss to a particular borough. As with Metropolitan Sites, while protection is important, management of borough sites should encourage their use and enjoyment by local people and their use for education.

Identifying sites of importance at borough level is particularly relevant because the 33 London boroughs are the individual planning authorities for London. U.K. government guidance on strategic planning in London (Government Office for London 1996) included reference to the need for boroughs to take local nature conservation interests into account, and referred to the LEU hierarchy as the basis for selecting nature conservation areas within the boroughs. Most boroughs have used the Sites of Borough Importance as the basis for identifying important nature conservation areas in the borough context.

Sites of Local Importance

A Site of Local Importance is one which is, or may be, of particular value to people nearby, such as residents or schools. These sites may already be used for nature study or run by management committees mainly composed of local people. Sites of Metropolitan or Borough Importance may act as Local Sites if they are accessible to local people in this way. However, specific sites are given this designation in recognition of their particular role. Local importance means that these sites also deserve protection in planning. Local sites are particularly important in areas otherwise deficient in nearby wildlife sites, and one of their purposes is to alleviate such areas of deficiency.

7. AREAS OF DEFICIENCY

Areas lacking accessible wildlife sites within reasonable proximity are referred to as *Areas of Deficiency*. They are defined as built-up areas more than one kilometer from an accessible Metropolitan or Borough Site. Detailed maps defining such areas of deficiency have been produced for most of the London boroughs. These maps assist boroughs in identifying priority areas for provision of new habitats, and aid the choice of Sites of Local Importance which are chosen as the best available to alleviate this deficiency. Such sites need not lie in the area of deficiency, but should be as near to it as possible. Where no such sites are available, opportunities should be taken to provide them by habitat enhancement or creation, by negotiating access and management

agreements, or by direct acquisition of land capable of fulfilling this function.

Efforts to reduce this deficit need not be confined to places such as parks and school grounds. Land under local authority control will normally be the priority for action, but this should not preclude other approaches. This may include enhancing biodiversity within the built environment through landscaping of hard open spaces, creating greenspace associated with such locations as housing projects and hospital grounds, or through provision of green roofs, or roof gardens, and planting of climbers on walls. Another option is to encourage controlled public access to private open spaces, such as some of the private garden squares, or land along rail corridors.

8. IMPLEMENTING THE STRATEGY THROUGH STRATEGIC PLANNING

The Mayor's Biodiversity Strategy published in 2002 includes specific policies and proposals to protect and enhance biodiversity through strategic planning. These policies are also contained in the statutory London Plan (Mayor of London 2004). Protection of Sites of Importance for Nature Conservation is covered by two major proposals, as follows:

- Proposal 1. The Mayor will identify Sites of Metropolitan Importance for Nature Conservation. Boroughs should give strong protection to these sites in their Unitary Development Plans. The Metropolitan Sites include all sites of national or international importance for biodiversity.
- Proposal 2. Boroughs should use the procedures adopted by the Mayor to identify and protect Sites of Borough and Local Importance for Nature Conservation. The Mayor will assist and advise them in this.

The effect of these proposals is that the hierarchy of designations in London is now subject to statutory planning procedures. But it goes further than that since the Biodiversity Strategy states that the Mayor will measure the success of his strategy primarily against two targets, to ensure firstly, that there is no net loss of Sites of Importance for Nature Conservation, and secondly that the Areas of Deficiency in accessible wildlife sites are reduced. Monitoring of these targets is addressed in the Mayor's *State of the Environment Report* (Mayor of London 2003). For the precise wording

of the policy for nature conservation in the London Plan, see the Appendix.

9. CONNECTING PEOPLE WITH NATURE

London's many high quality spaces make it one of the most pleasant of world cities to live in for many people. Accessible, local, green places are not only important to people where they live, but also for enterprises seeking a suitable environment for their workforce. These green spaces act as a magnet which attracts businesses to London. However, some parts of London are poorly provided with access to such places. People living in these areas should not be denied the health, cultural, and recreational benefits provided by access to nature and open spaces.

During the past twenty years there have been changes in attitudes to nature conservation taking place in London which have led to natural areas being saved from development primarily because they were important for local people. In addition, many new "natural parks" and nature reserves have been designed using ecological principles which have, over the years, become much valued by local people (Goode 1986). Many of the proposals in the Mayor's Biodiversity Strategy are intended to extend this process within a renewed phase of urban regeneration.

It is argued that connecting people with nature should:

- Enhance everyday opportunities for people to have contact with nature through the creation of new greenspace and through enhancements to existing space;
- Ensure that more people know the location of their local greenspace and can get there easily; and
- Help people to understand and enjoy contact with nature.

To meet these needs, the following policies are included in the Biodiversity Strategy.

The Mayor will:

- Encourage and promote the management, enhancement, and creation of green space for biodiversity, and promote public access and appreciation of nature.

- Seek to ensure that opportunities are taken to green the built environment within development proposals and to use open spaces in ecologically sensitive ways. This is particularly important in areas deficient in open spaces and in areas of regeneration.
- Promote local opportunities for regular direct contact with the natural world, through a variety of types of open space (such as allotments, community and cultural gardens, school grounds, environmental education centers and city farms, as well as informal wildlife areas).
- Promote environmental education, participation and training for all ages and across all sectors of London's society

10. HABITAT CREATION

In parallel with the work on planning, considerable progress has been made in creating new wildlife habitats. This is central to the Mayor's strategy and is particularly important in the context of urban regeneration in East London. Guidance for developers on how to incorporate biodiversity within new developments was recently published by the London Development Agency (2004), and several new business parks have demonstrated these opportunities, especially through the use of green roofs. The capital also boasts one of the most exciting urban nature conservation projects in Europe. This is the London Wetland Centre, a purpose-built wetland of over 40 hectares with a high-quality visitor center only six miles from the center of London.

11. CONCLUSIONS

Successful development of a nature conservation strategy for London has depended on a number of very different factors. These include the clarity of the overall objectives and methods adopted, relevance to strategic planning, degree of public and political support, and effectiveness of consultation and partnerships.

The objectives were clearly defined from the outset, and the whole approach has been geared to achieving these objectives. A systematic approach was developed, using a well-tested methodology for survey and assessment, which could be easily understood and accepted by planners. Throughout this process, there was a need to ensure effective integration with the planning process. This required considerable consultation with

professional planners on the development of ecological policies, and for progressive refinement of the rationale for site protection. Success was dependent on ensuring its acceptance as a normal part of the statutory planning process, even though the system had little statutory basis. In the absence of statutory powers, it is extraordinary how much was achieved. Compared with the position in the early 1980s, when the words “ecology” and “nature conservation” did not figure at all in strategic planning in London, there was a sea change in the attitude of London boroughs and the level of professionalism increased enormously.

Fundamental to all of this was the need for both political and public support for the program. The series of ecology handbooks was crucial to gaining such support. The first ecology handbook (Greater London Council 1984) set the scene and was instrumental in gaining political support within the Greater London Council. Subsequent handbooks for individual London boroughs, published by the London Ecology Unit over a period of fifteen years, maintained the public and political support necessary to ensure long-term success of the program. These handbooks were progressively refined and improved over the years. As well as providing professional input on nature conservation for each borough plan, they provided a popular account of London’s natural history, which assisted in raising public consciousness of biodiversity issues. Some of the later examples included a series of walks for people wishing to visit natural areas in different parts of London (Yarham and Game 2000).

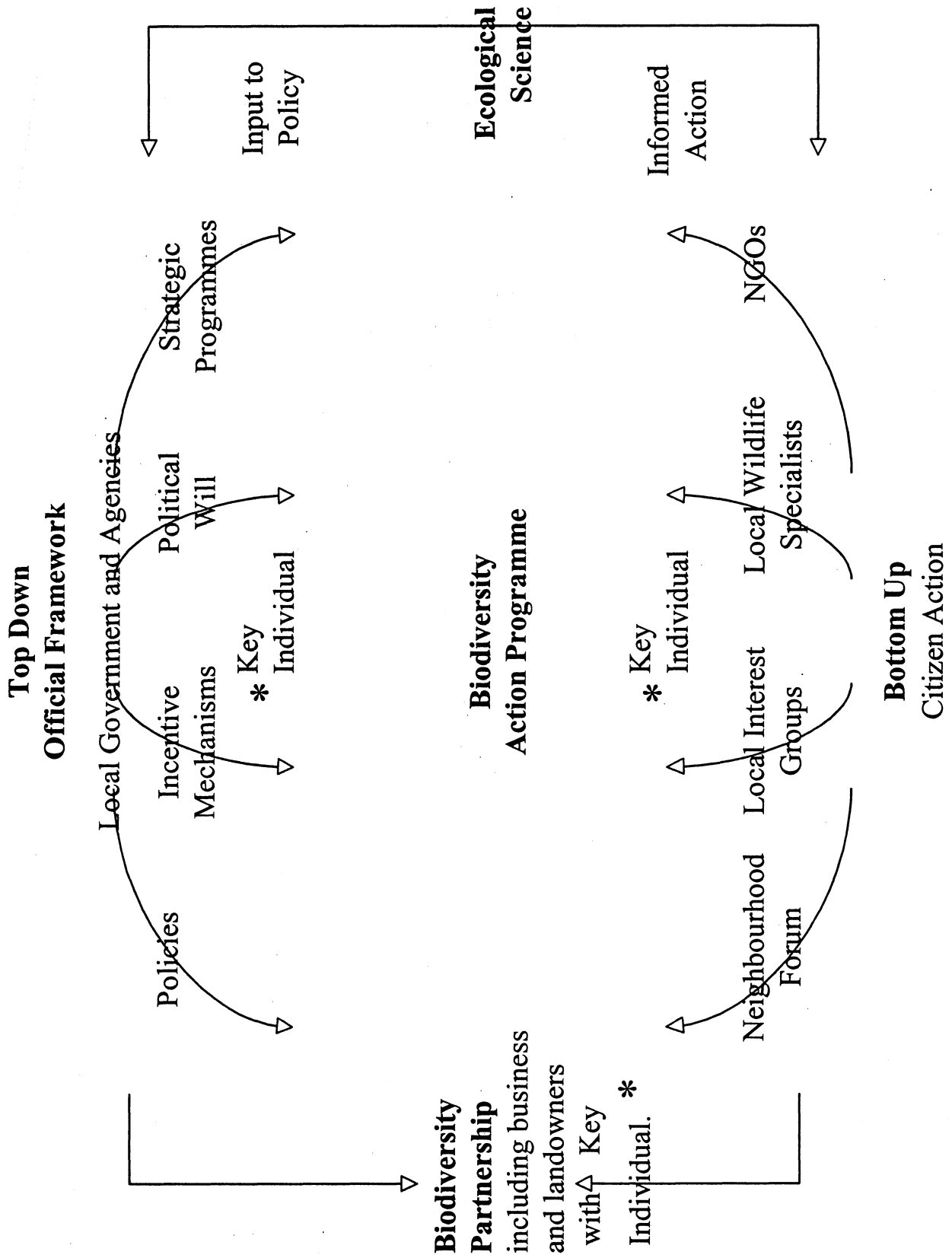
Effective consultation with a wide range of stakeholders at each stage in the process has helped to ensure that the strategy has a broadly-based sense of ownership. The LEU undertook extensive consultation with individuals and organizations with knowledge of London’s ecology and natural history. These included local naturalists, voluntary organizations, landowners, statutory authorities, council officers, and elected officials. Further public consultation was undertaken prior to publication of each borough handbook. Where advice from the LEU was incorporated into statutory Local Plans or Unitary Development Plans, this was subject to the wider public consultation accorded to such plans. More recently the Mayor’s Biodiversity Strategy was subject to lengthy public consultation prior to its adoption. There has, therefore, been considerable public consultation in developing the nature conservation

strategy and this has undoubtedly contributed to its successful implementation.

Finally there is the issue of an effective partnership. Experience in London suggests that there are several crucial ingredients for successful implementation of a Biodiversity Strategy. Effective progress depends on adequate policies being formulated and implemented through local government and statutory agencies. At the same time, new ideas are frequently initiated through a bottom-up approach involving “citizen action.” In London, this has included voluntary bodies, such as the London Wildlife Trust, and many neighborhood groups. Local interest groups have a clear role to play in this process. However, experience shows that neither the top-down nor bottom-up approach can work in isolation. The enthusiasm and energy of local people can only go so far in the absence of an official policy framework. Equally, the development and adoption of effective policies for nature conservation depends on having sufficient political support. Very often this is generated as a result of lobbying by environmental and neighborhood groups. Some of these relationships are indicated in the figure opposite.

The need for key individuals in both sectors is emphasized. Such people are vital to success, acting as interpreters of ecological knowledge and as catalysts for the whole process. An effective program will also require a committed partnership, including organizations capable of delivering the detailed targets. To be effective, this needs to include local businesses and landowners in addition to the official agencies, scientists, and local activists. Key individuals from the business community have a particularly important role to play in raising awareness of biodiversity with those who have most direct influence on urban development.

The overall process illustrated in the figure will fail if any part of the picture is missing. Top-down strategic processes provide the political and policy framework which enable long-term progress to be made. Bottom-up partnerships of NGOs and community groups generate the energy and action for change. These two groups, working together through the London Biodiversity Partnership, drive forward and deliver much of the action, drawing on the knowledge and information held by specialist ecologists and naturalists. The overall package is delivering a radical agenda to ensure that London retains its ecological quality and that Londoners have access to it.



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APPENDIX: Extract from the *London Plan: Spatial Development Strategy for Greater London (2004)*

Policy 3D.12 Biodiversity and nature conservation

The Mayor will work with partners to ensure a proactive approach to the protection, promotion and management of biodiversity in support of the Mayor's Biodiversity Strategy.

The planning of new development and regeneration should have regard to nature conservation and biodiversity, and opportunities should be taken to achieve positive gains for conservation through the form and design of development. Where appropriate, measures may include creating, enhancing and managing wildlife habitat and natural landscape. Priority for habitat creation should be given to sites which assist in achieving the targets in Biodiversity Action Plans (BAPs) and sites within or near to areas deficient in accessible wildlife sites.

Boroughs, in reviewing their Unitary Development Plans and in considering proposals for development, should accord the highest protection to internationally designated and proposed sites, and to nationally designated sites, in accordance with government guidance and the European Habitat Regulations, 1994.

The Mayor will identify Sites of Metropolitan Importance for Nature Conservation (SMIs), which, in addition to internationally and nationally

designated sites, includes land of strategic importance for nature conservation and biodiversity across London. Boroughs should give strong protection to these sites in their UDPs. Boroughs should use the procedures adopted by the Mayor in his Biodiversity Strategy to identify sites of Borough or Local Importance for nature conservation and should accord them a level of protection commensurate with their borough or local significance.

The Mayor will and boroughs should resist development that would have a significant adverse impact on the population or conservation status of protected species or priority species identified in the London Biodiversity Action Plan and borough

BAPs. Appropriate policies for their protection and enhancement, and to achieve the targets set out in Biodiversity Action Plans, should be included in UDPs.

Where development is proposed which would affect a site of importance for nature conservation, the approach should be to seek to avoid adverse impact on the nature conservation value of the site, and if that is not possible, to minimize such impact and seek mitigation of any residual impacts. Where exceptionally, development is to be permitted because the reasons for it are judged to outweigh significant harm to nature conservation, appropriate compensation should be sought.

Paris-Nature: An innovative urban ecology program

MARK LELLOUCH

1. INTRODUCTION

How can a large city such as Paris transform its citizens, many of whom are cut off from nature, into “eco-citizens”?

In other words:

- How can citizens become increasingly aware of the impact of human activities on the (urban) environment?
- How can they learn to participate in its protection?

The answer Paris has developed, illustrative of how culture shapes our approach to nature education, is both Cartesian and top-down. Parisians, the municipality believes, need to (1) acquire knowledge and (2) develop specific behaviors.

Paris-Nature, launched in 1985, is a series of initiatives that aim to make Parisians at large, and primary schoolchildren in particular, better aware of their natural urban environment. By showing how the different elements (air, water, soil, fauna, and flora) come together to form an integrated whole, Paris hopes to motivate its citizens to live in greater harmony with and preserve their natural surroundings. This approach can easily be transposed to other large cities in the world without the need for a Table Mountain or a Tijuca National Park in their midst or a Yosemite Valley nearby.

2. OVERVIEW

What do these natural surroundings consist of? Paris has some 3,000 hectares of green spaces including two woods (1,841 hectares), 20 cemeteries (422 hectares), 426 public parks and gardens (380 hectares), and 91,000 trees along the city streets and riverbanks. The Directorate of Parks and Gardens (DPG 2004), of which Paris-Nature is a part, employs some 2,600 gardeners and woodcutters and produces 2,900 trees and 3 million other plants annually.

The first step was to carry out an inventory of Paris’ biodiversity, something that few ecologists had thought of doing beforehand because the urban natural environment is generally taken for granted. A comprehensive list of Paris’ fauna and flora was developed and made public through posters, brochures, and walking guides that describe itineraries in all neighborhoods along city streets, through public parks, along the Seine River, and throughout the two large wooded areas adjoining the city. The inventory revealed:

- 700 species of plants
- 120 species of birds, including 52 nesting species
- 25 species of mammals
- 23 species of fish
- 7 species of amphibians
- 1 species of reptile
- as well as various insects, arachnids, mollusks, crustaceans, etc.

Over the past 18 years, a dozen facilities have been built or converted in appropriate locations to underline particular characteristics of the natural urban environment (e.g., the House of Air is located on one of the highest points in Paris, the Paris Farm on a former working farm just outside of the city).

3. EDUCATIONAL PHILOSOPHY

Paris-Nature is based on the underlying belief that as urban dwellers, especially children, gain a deeper knowledge of their natural environment, even in an urban setting, they develop an emotional connection, awe, and respect for nature that leads them to actively participate in its protection.

Direct contact with nature “right down the street” is key. Paris-Nature teaches citizens how to actually *see* the animals and plants that are all around them that they typically would not notice.

Lynn Fonfa, the Education Specialist at the Golden Gate National Parks in San Francisco put it

very nicely: “Education is about relevance: students learn best when their environment becomes the context for learning. Integration into daily life is essential if there is to be a transfer of skills” (Fonfa 2003).

In addition to showing the ordinary that goes unnoticed, educators put an emphasis on what is beautiful, rare, and fragile to make an impression on children’s souls. Children need beauty, perhaps even more than adults do, and to have them care for their surroundings we need to allow them to develop emotional ties, a complicity with the environment. It’s easier for them to bond with nearby places than faraway ecosystems.

Paris-Nature’s educational philosophy is: “*Connaitre pour aimer, aimer pour agir et protéger.*” (“To know in order to love; to love in order to act and protect.”)

Facilities are open to all, but programs focus more particularly on primary schoolchildren ages 6 to 12 – what David Sobel in *Beyond Ecophobia* (1996) calls the “exploration” phase vs. the earlier “empathy” or the later “social action” phases.

Paris-Nature’s methodology includes instruction, direct observation, and hands-on experimentation, and its approach is much more participative than that of typical French primary schools. Children are encouraged to observe, explore, experiment, and manipulate things in hands-on workshops that are adapted to their age group and focus on specific themes (e.g., observing birds in their natural environment, making bread at the Paris Farm, experimenting with organic agriculture).

Until recently, participating children received a “passport” that got stamped as they completed activities, allowing program educators to follow their environmental development and ensure that they acquired the knowledge and behavior to make them increasingly responsible eco-citizens.

4. FACILITIES

Paris-Nature runs several facilities spread across the city, each with a specific theme.

Nature-Buses

One of the most innovative initiatives of the Paris-Nature program are its Nature-Buses, specially equipped buses that bring 9-11 year-old schoolchildren to parks and gardens in their neighborhoods while educating them along the way.

There are two types of Nature-Buses: Video-Buses project nature documentaries, while Lab-Buses allow children to conduct experiments based on their observations in the field. Paris-Nature runs six such buses throughout the city in coordination with primary schools.

Clos des Blancs Manteaux

This facility includes a garden, an exhibit hall, and workshop areas that highlight the responsibility each one of us has to protect the environment. Observations in the garden, which contains over 250 species of plants, mainly herbs and vegetables, allow young visitors to see how simple ecosystems work and then begin to understand the functioning of the more complex urban ecosystem. In the workshop, children make recycled paper, herb pillows, bat boxes, potpourris, herbal tinctures, etc. Learning daily “eco-behaviors” such as the sorting of trash and recycling shows them how they can become active in the protection of their own environment.

The exhibit shows a typical Parisian apartment with a distinctive 1950s feel with one playful twist that makes all the difference: most of the furniture hangs down from the ceiling and common household objects bulge out of the walls. This surprising setting and lighthearted approach is intended to get people to consider changing their ingrained daily habits without hitting them over the head with overbearing ecologically-correct orthodoxy. In each room, the information provided shows how individual actions, no matter how small they may seem, combine on a global scale to have a powerful effect on the planet (think globally, act locally).

In the living room, visitors are asked to check whether the wood used for the furniture comes from sustainable sources. How about using energy-efficient fluorescent bulbs for lighting? Computers or TVs left running in the background consume as much electricity as two large French cities. In the office area, the emphasis is on using recycled papers.

In the kitchen, visitors are encouraged to use energy-efficient appliances, and a pile of plates and bowls stacked high in the sink reminds them to save water when doing the dishes. Where was the food that they eat grown? The idea of fair trade is introduced. Urbanites are taught how to separate their trash from glass and other recyclables and told that one ton of plastic requires 700 kg of crude oil, most of which needs to be imported. Paris only

began recycling its household waste in the last decade or so and the green point system used for packaging helps finance separation at the source.

In the bathroom, visitors are reminded not to waste water unnecessarily as fresh water represents only 3 percent of all water on earth. Baths use a lot more water than showers and leaks can represent up to 20 percent of the household's water consumption. When it comes to washing clothes, people are asked to choose their detergents with care.

In the bedroom, the exhibit suggests giving away unneeded clothes to charitable organizations, keeping the thermostat at no more than 19°C (66°F) during the day and 17°C (63°F) at night and recycling used household batteries. Outside, why not use public transportation or a bicycle? Paris has one of the best bus and metro systems in the world and bicycle lanes are becoming more frequent and safer.

The challenges that the Clos des Blancs Manteaux faces are twofold. The first is to get more people to visit: there were only 10,000 visitors last year (30 percent of which were children) because the facility (and its playful exhibit) are only open to the general public on weekends. The second is to move to the next step in terms of sustainable development: not only teaching Parisians daily eco-behaviors, but creating a citizens' movement that can put pressure on the state water, electricity, and gas monopolies to conserve and encourage citizens to conserve resources on a large scale. Electricité de France and Gaz de France, the electricity and gas companies, put out a brochure, but it doesn't appear to be widely distributed.

House of Air

Located on a hill overlooking the city, the House of Air offers a beautiful panorama of the city and is an ideal location to observe Paris and its (often-clouded) sky. The 500-square-meter exhibit hall covers topics such as the role of air in carrying sounds and odors, and in enabling flight for seeds and insects, as well as birds and planes. It also discusses meteorology, air pollution, and actions citizens can take to improve the quality of the air they breathe. The aim is to increase people's understanding of the importance of air in our urban environment and for life on earth, and to raise awareness of air and sound pollution and their perils. The message is: "It's in our hands."

School programs in the 120-square-meter workshop area follow the scientific method (observation, hypotheses, manipulations, and conclusions) using air blowers, vacuum pumps, and meteorological instruments. A weather station and air pollution equipment are located outside. Classes are typically divided into two groups and teachers are given pre- and post-visit materials to help their students prepare.

The challenges faced by the House of Air, besides those of security (it's located in a poor neighborhood and drug dealers frequently use the surrounding park) are, again, to publicize the exhibit given limited advertising budgets (annually, 9,000 Parisians take guided tours and 6,000 children participate in workshops). More importantly, the city needs to confront head on the pollution caused by motor vehicles. Separating Parisians from their cars is something that will take time in spite of the excellent public transport system.

House of Gardening

This facility welcomes gardeners and would-be gardeners with exhibits, tips for people living in apartment buildings (the great majority of Parisians) who may have nothing more than planters on their balconies, a well-stocked library open every afternoon, and trained professionals who can answer questions. During the school year, children visit the vegetable and herb garden nearby at least twice to follow the growth of various plants. Activities in the garden and the workshop depend, of course, on the season. As caretakers, they strengthen their emotional ties with nature. As the fox tells the Little Prince in Antoine de Saint-Exupéry's book of the same name, "You become forever responsible for what you have tamed; you are responsible for your rose."

On Saturdays, the facility offers gardening classes to the general public. In addition, Paris-Nature is helping citizens to develop community gardens in several neighborhoods and offers workshops for people who want to learn how to garden.

The House of Gardening welcomes an estimated 80,000 visitors per year, including 5,000 children. More employees are needed to increase the number of schoolchildren who can visit and gain experience working in the garden and participating in hands-on activities in the workshop.

Natural and Wild Gardens

These two gardens, located in lower income neighborhoods in the North and East of Paris, represent a radical departure from traditional French gardens and parks. Here, nature is practically left to its own devices: the city uses no pesticides or fertilizers, limits cutting, trimming and mowing, waters only infrequently, and allows fallen leaves to decompose on the ground. By presenting and protecting a bit of the region's original ecosystems (woods, prairie, and a pond), the goal is to get Parisians to experience unkempt gardens, perhaps for the first time, and demonstrate the importance of developing biodiversity, even in the midst of a large city.

The Natural Garden is located alongside the Père-Lachaise cemetery, the largest in Paris, famous not only for its illustrious dead (e.g., Jim Morrison) but also for its abundant birdlife. Spreading over 6,500 square meters, it was planted with over 200 plant species and welcomes a growing fauna. Open to the public daily, as are other public parks and gardens, it organizes school visits during the week and activities for adults and families on four Sundays during the year (guided tours, natural treasure hunts, workshops, and slide presentations). Five thousand visitors per year participate in activities (many more visit on their own), including 3,500 children. Paris-Nature was careful to incorporate a playground but separate it from the garden by locating it across the street.

In the Wild Garden of Saint-Vincent, nature took over a piece of undeveloped land on its own, attracting numerous insects and birds around its pond. Here, children identify the plants and small fauna typical of a humid environment and marvel at nature's resiliency and colonizing prowess.

Because these gardens represent such a departure from the manicured parks and gardens typical in the city, authorities were afraid initially that the gardens might not be understood or accepted by the public. These fears ended up being unfounded as Parisians welcomed these unkempt natural spaces from the start.

Paris-Nature Center

This is the headquarters for the program, housing a large exhibit space and a library with over 10,000 books on the environment, including Paris-Nature's own publications. Recent exhibits have included "Communication among Animals in

Paris" and "Seine of Life," an ecological journey through the city down the Seine River.

Butterfly Pavilion

This greenhouse pavilion, open from late spring to early autumn, invites visitors to admire the region's native species of butterflies, many of which are threatened, in a setting propitious to their development. These will survive only if their natural environment is protected.

House and Garden of the Five Senses

Located in a lower-income neighborhood, this facility is aimed at 5-8 year-olds. They typically start out in the garden, exploring with their senses, e.g., caressing artichokes and rosemary, examining the shapes and colors of tomatoes and cucumbers, and listening to the sound of the wind through the grasses. In the house itself, these sensorial explorations are used as a starting point for other activities such as making teas or soups using plants found in the garden. These activities leave strong impressions on the children and create an emotional connection that facilitates learning.

Paris Farm

Parisians are sentimentally attached to their country roots. This former five-hectare working farm, just outside of Paris, has meadows, cultivated fields, and animals (cows, pigs, goats, chickens, etc.) to show urban dwellers who have forgotten their rural origins what life is like on the farm and remind them where the food that ends up on their plate actually comes from. This understanding allows them to become more responsible consumers.

Barge of Water and Life

This boat, due to cruise the Seine at the end of 2003, will illustrate the role played by the river in shaping the natural urban environment and in addressing the city's residential and industrial water needs.

House of Birds

Surprising though it may seem, Paris, with its labyrinth of buildings, is home to some 120 species of birds. This facility, due to open in 2004, will show how they've adapted to urban conditions.

Bird Sanctuaries

These small reserves (two-to-three hectares), located in the two wooded areas on each side of the city, are nesting areas for many species of birds that had previously left the region. The observatories allow visitors to observe the birds without disturbing them.

House of Stone and Quarries

Located in an abandoned underground quarry, this center, whose opening date has not been set yet, will focus on Paris' mineral resources.

5. RESULTS

Paris has a population of 2.1 million and the metropolitan area 11 million. Through its various programs and facilities, Paris-Nature now welcomes approximately half a million visitors per year, up from a mere 30,000 in 1989.

Forty thousand schoolchildren, or a third of all children in primary school, participate in Paris-Nature environmental education programs every year. The Ministry of Education selects the participating schools and classes.

Paris-Nature does not currently survey visitors to measure the effectiveness of its programs. Schoolteachers (a third of them) fill out post-visit questionnaires and the feedback is generally very positive, although usually not precise enough to make specific changes to the programs.

Financial and Human Resources

- Operating budget: approximately €800,000 in 2002 (excluding salaries and capital expenditures).
- Investments in plant and equipment: €6.25 million over 18 years.
- Personnel: 111 employees, of which 52 are environmental educators, 15 are technicians, and 6 are administrative personnel.

6. CONCLUSIONS

Paris-Nature is an urban ecology program with a broad scope and ambitious goals: to help create eco-citizens who will appreciate their natural urban environment and develop responsible environmental behaviors that can begin to put the city on a path towards sustainable development.

City leaders appear to understand how all the different elements (air, water, soil, fauna, and flora) come together in an urban environment; they see that the whole is more than the sum of the parts. That's something that will take time with the public at large, given that they may only come in contact with Paris-Nature at special events or visit facilities in their neighborhood.

As in the Kids for Tigers program, parents are often reached and educated through their children.

All in all, Paris-Nature is a comprehensive and innovative program that is definitely replicable in other large cities around the world given (1) dedicated individuals within city government, and (2) some political and financial support from the city, especially for infrastructure.

Paris-Nature benefited from significant investment in infrastructure by the city, mainly refurbishing of existing facilities, but in other societies that are less centralized, this support can be substituted or complemented by fundraising; using volunteers; and partnerships with NGOs, private companies, and other government agencies.

This paper is based largely on interviews of Paris-Nature staff and visits to facilities during September 2003, as well as program publications.

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The City of Cape Town's Biodiversity Strategy

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1. INTRODUCTION

Cape Town, South Africa, is located on the southwestern tip of the continent. The geographic area of the city is approximately 2,477 sq km, with an estimated 3.15 million people living within its boundaries, and an annual population growth rate of about 3.5 percent. The city experiences high immigration, especially from rural areas of Eastern Cape and Western Cape provinces.

Cape Town is one of the most beautiful cities in the world, as well as one of the most biologically and culturally diverse. The city government aims to ensure that these qualities are enhanced for present and future generations, and that residents live in a safe, healthy, and caring environment.

Cape Town's unique landscape, biodiversity, culture, and heritage are its key economic assets. The city has good infrastructure and services. Tourism and a broad range of tertiary-sector economic activities and investments are built upon and utilize the characteristics that set Cape Town apart from other cities and make it a leading global tourist destination.

Nevertheless, Cape Town faces pressing social and environmental challenges, including unemployment, expanding informal settlements, an HIV/AIDS explosion, increasing levels of crime and tuberculosis, and other aspects of social disintegration.

2. CAPE TOWN'S EXCEPTIONAL BIODIVERSITY

Ecologically, Cape Town is located within an area of globally significant biodiversity and unique conservation value. This is the Cape Floral Kingdom, the smallest of the world's six floral kingdoms, covering only 0.04 percent of the earth's land surface, and the only one contained within a single country. The Cape Floral Kingdom has approximately 9,600 species of indigenous plants, of which 70 percent are endemic and 1406 are listed in the *Red Data Book*. It is one

of Conservation International's Global Hotspots of Biodiversity, placing an international responsibility on our government to ensure its conservation.

A particular conservation focus is needed on Cape Town's low-lying areas (referred to as Lowlands), which support more than 1,466 plant species, and which is also home to the majority of the population and the most disadvantaged people of Cape Town. The Lowlands are under-conserved and highly threatened.

Cape Town is a global urban biodiversity "hotspot" without parallel. It has fifteen vegetation types specific to the unique mix of soil, climate, topography, and oceanic influences found here. These vegetation types include high levels of species diversity and endemism, and unique ecological gradients found nowhere else in the world.

Cape Town is also unusual in that an entire national park, Table Mountain, is situated within its boundaries. In addition, the city is bordered by, and overlaps with, two biosphere reserves (Kogelberg and Cape West Coast). The city government administers 22 protected areas. Of these, only five are currently managed to appropriate standards due to a lack of capacity and resources. However that may be, significantly more conservation and multifunctional protected areas are needed within the City to protect a minimum representative sample of Cape Town's biodiversity.

The key regional conservation initiative, Cape Action for People and the Environment (C.A.P.E.), a government program funded largely by the UN's Global Environment Facility, has recommended protecting all remaining habitat types found on the Cape Town Lowlands. Further, among the Broad Habitat Units C.A.P.E. has identified in its regional conservation planning program, four exist only within the city's boundaries.

Some Biodiversity Facts

- South Africa has the second highest number of plant extinctions in the world;
- Cape Town contains remnants of the threatened *renosterveld* vegetation of which only 3 percent remains of its original extent, making it one of the most endangered vegetation types in South Africa, if not the world;
- 70 percent of the Cape Floral Kingdom's 9,600 plant species are found nowhere else on earth;
- The Cape Town Lowlands have the highest concentration of threatened plants per area of remaining vegetation in the world;
- The Cape Town Lowlands support more than 1,466 plant species in 1,874 square kilometers, of which 76 are endemic and 131 are *Red Data Book* species;
- The Cape Peninsula mountain chain supports 2,285 plant species in 471 square kilometers, of which 90 species are endemic;
- 41 mammal species remain in Cape Town, with six recently extinct;
- 250 bird species live in Cape Town, of which 10 are endangered, and with at least three becoming extinct in recent years;
- There are approximately 111 endemic invertebrate species on the Cape Peninsula mountain chain alone;
- There are 18 amphibian species in Cape Town, of which four are listed in the *Red Data Book*;
- There are 48 reptile species in Cape Town, of which four are endangered, with two locally extinct;
- 24 fish species are dependent on Cape Town's estuaries.

3. TAKING STRATEGIC ACTION: THE BIODIVERSITY STRATEGY

Recognizing the importance of conserving biodiversity and its responsibility on behalf of the global common good, the city government has committed itself to developing, implementing, and actively promoting a citywide Biodiversity Strategy.

The Biodiversity Strategy is one of six priority strategies of the city's Integrated Metropolitan Environmental Policy, adopted in October 2001 (City of Cape Town 2001). These strategies are

designed to support each other, especially where there are significant areas of overlap.

The Biodiversity Strategy demonstrates long-term thinking and planning, and a significant commitment by the city government to ensure that current and future generations have access to healthy and vibrant biodiversity.

Institutional framework

Conservation has a vague legal and financial mandate within Cape Town's city government. The role of the city in relation to the Western Cape provincial and South African national governments is not clear. In the context of large-scale poverty and unemployment, and with the city hard-pressed to keep up with delivery of basic services, nature conservation is often perceived as something nice to have, rather than core business.

South Africa is governed by three spheres of government, each with defined roles and areas service delivery. Chapter 3 of the Constitution outlines the relationships between the spheres of government, introducing the concept of co-operative governance. The Local Government: Municipal Structures Act (Act 47 of 1999) introduced a system of "wall-to-wall" local government in South Africa. The executive and legislative authority of a municipality is vested in its Municipal Council. Municipalities must structure and manage their administration and budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community and must participate in national and provincial development programs. The national government and provincial governments, by legislative and other measures, must support and strengthen the capacity of municipalities to manage their own affairs, to exercise their powers and to perform their functions.

Part B of Schedule 4 and Part B of Schedule 5 of The Constitution assign specific functions to local government. These functions are either distinct to local government or concurrent with the provincial or national spheres of government. With regards to environmental management, certain aspect overlap between spheres of government and others fall through the gap. The conservation of biodiversity is one example where the function is not clearly described or ascribed to a particular sphere of government. Although the Environment and Nature Conservation (excluding national parks, national botanical gardens and marine

resources) are functional areas of concurrent national and provincial legislative competence, the Constitution is silent on the scope of the functions and specific administrative competence of the various spheres of government on these issues, and particularly the conservation of biodiversity in the broader sense.

Since local government restructuring in 2000, every action to conserve biodiversity takes place with the jurisdiction of a local municipal or district council. Municipal planning, building regulations, storm water management, municipal public works, water and sanitation services, municipal parks and recreation, and collection of rates are functions of municipalities that impact on the conservation of biodiversity. However, to date, conservation and biodiversity programs have remained focused at national and provincial level, with little attention given to enhancing the role of local government in the long term sustainability, health and vibrancy of South Africa's biodiversity. This is particularly relevant in the Cape Floristic Kingdom where high levels of endemism and diversity occur in small geographic areas.

Another institutional problem in promoting an integrated approach to conservation of biodiversity in Cape Town is that the main city officials concerned, the Director of Planning and Environment, and the Director of Open Space and Nature Conservation, report to different executive directors.

The Biodiversity Strategy offers a unique opportunity to introduce a paradigm shift, including:

- A coordinated and integrated approach to conservation and biodiversity from a citywide perspective across line functions;
- Biodiversity goals based on citywide biodiversity targets;
- Equitable distribution of, and access to, biological wealth;
- Improved and redistributed benefits to disadvantaged communities arising directly from the conservation of biodiversity;
- Participative, open, and transparent approaches to conservation of biodiversity, rather than restrictive ones;
- Creative approaches to protection and enhancement of biodiversity;
- Partnerships with external and donor organizations.

The Strategy therefore includes:

- Identifying the need for a multi-faceted task team;
- Specific roles and functions of the task team;
- Integration of current biodiversity initiatives.

A City Biodiversity Task Team has been established to oversee and implement the Biodiversity Strategy. It is made up of representatives from different service delivery units within the city government, as well as key partners.

For each of the seven strategic objectives described below, working groups composed of representatives of different line functions are responsible for developing action plans. These action plans will be implemented through line functions, area managers, partners, partnerships, and project managers.

A Biodiversity Forum has been convened by the city as a mechanism for communication, partnerships, and coordination around biodiversity issues in Cape Town. The forum will include biodiversity stakeholders citywide. This will ensure alignment with regional plans and initiatives, and will facilitate formal partnerships and working relationships.

4. STRATEGIC OBJECTIVES

The Biodiversity Strategy identifies seven strategic objectives that must to be met to adequately conserve the unique biodiversity found in Cape Town. These seven objectives are the core of the Biodiversity Strategy. Unless all of them are met, biodiversity in Cape Town will remain under pressure and is likely to be lost in the long-term.

The seven strategic objectives are as follows:

a. Primary biodiversity (conservation areas and biodiversity nodes). This strategic objective refers to the establishment and effective management of a network of biodiversity areas and nodes that are actively managed with the primary function of conserving biodiversity. These include all local government nature reserves; possible public-private partnerships; and any other areas, including privately owned land, that are managed for the specific purpose of conserving and protecting biodiversity. The Biodiversity Network must be aligned with regional conservation efforts, and integrated with other conservation programs working in the city, such as the Western Cape

Nature Conservation Board and Table Mountain National Park.

b. Secondary biodiversity (conservation through corridors, links, and mixed-use areas).

This objective refers to areas that are not specifically managed with conservation and protection of biodiversity as a primary function, but which connect the primary biodiversity areas and nodes into a complete and functional Biodiversity Network. Secondary biodiversity includes mixed-use areas, as well as areas that act as corridors, links, and stepping-stones for wildlife and natural ecosystems. Recognizing the urban context within which the conservation of biodiversity will take place, the importance of open space is acknowledged, although it is recognized that it may serve other primary functions. Such open space includes, among other areas, rivers, ecological buffer zones along rivers, areas forming part of the storm water management system, linear parkways, parks, scenic drives, road verges, and transport routes.

c. Conservation of biodiversity in freshwater aquatic systems. This objective refers to managing freshwater aquatic systems in a manner that maintains or enhances biodiversity while ensuring effective functioning for other purposes. Cape Town's rivers, wetlands, vleis, dams, and estuaries form important "green corridors" between the mountains and the coastline, and provide habitats for a rich diversity of terrestrial and aquatic life. These freshwater aquatic systems are essential components of the Biodiversity Network. Further, they moderate floods, purify water, and generate and renew soil fertility. In addition to these natural ecosystem services, they form a vital component of the city's storm water management system, are key recreational nodes, and are used for conveyance and disposal of wastewater effluents.

d. Invasive alien species management. This objective refers to formulating and implementing a City Alien Invasive Species Management Programme. Invasive alien species pose one of the greatest threats to biodiversity in Cape Town. They compete with indigenous species for habitat and, in the case of vegetation, increase intensity of fires and have a negative effect on water quantity and quality.

e. Biodiversity legislation and enforcement. This addresses the need for relevant legislation to provide protection to, and guidelines for, the management and utilization of species, habitat, and ecologically sensitive areas accommodated within the Biodiversity Network and elsewhere. This objective further refers to ensuring that existing and new legislation, as it relates to biodiversity, is enforced and made effective. Legislation is a key tool for protecting and enhancing biodiversity across the city. In addition, the city is a signatory to the C.A.P.E. memorandum of understanding, and it is therefore essential that appropriate measures be put into place to meet the commitments made.

f. Biodiversity information and monitoring system. Up-to-date and detailed information is needed to implement the Biodiversity Strategy. The system called for in this strategic objective is a central database where high-quality information is stored, interpreted, and made available to policy- and decision-makers at all levels. In addition, the system will be the foundation for detailed and accurate monitoring of the state of the city's biodiversity.

g. Biodiversity education and awareness. The Biodiversity Strategy relies on buy-in and ownership of biodiversity by the people of Cape Town and sharing of responsibilities between local government and environmentally educated residents. This objective refers to empowering the citizens of Cape Town through education, as well as informing city leaders and staff about the city's biodiversity responsibilities. Education, training, and awareness are pivotal to the success of the Strategy.

5. PROCESS AND PROGRESS TO DATE

A rigorous conservation planning analysis has been completed that identifies the minimum areas needed to conserve an ecologically representative set of Cape Town's unique biodiversity. These comprise 261 sites totaling 32,262 hectares and are proposed to form part of the city's Biodiversity Network (City of Cape Town 2002). In addition, a network of corridors and links were identified using a friction analysis model.

The development of the biodiversity database has come a long way. Biodiversity information is being disseminated to internal users, and will soon be provided to external users via the Internet and

related technologies for use in land-use decision-making at strategic and project levels. Partnerships are being formed with organizations involved in similar database work, such as C.A.P.E., the South African National Biodiversity Institute, and the Botanical Society of South Africa.

Currently, the Biodiversity Network is being widely publicized and workshops are being held to discuss it. The aim is to integrate the Network with all relevant city government initiatives and programs, particularly those related to spatial policies and plans.

Formulation of the draft Biodiversity Strategy was initiated in March 2001 with appointment of an interim Biodiversity Steering Committee. The first draft Strategy was produced in March 2002 and circulated to city officials for comment. A revised draft was presented at the World Summit on Sustainable Development in Johannesburg in September 2002, where it received wide support.

Following a thorough public and stakeholder consultation and participation process, the City of Cape Town's Biodiversity Strategy was adopted in November 2003 (City of Cape Town 2003).

6. CHALLENGES

Cape Town faces pressing socio-economic needs: More than 20 percent of its residents are unemployed and many live in abject poverty without adequate basic services. It is within this context that biodiversity conservation needs to be sustainable. This requires conservation to be closely integrated with social and economic development, as well as general environmental improvement.

The key challenge is changing how biodiversity is perceived by different sectors of society. The housing sector, for example, sees biodiversity as competing for land. Many people in poor and disadvantaged communities see it as irrelevant. The tourism industry thinks of biodiversity mainly in terms of traditional African wildlife tourism.

Another critical challenge is the widespread feeling that the privileged classes believe animals and plants are more important than people. This is reinforced by the insensitivities of a previous political era that accompanied the creation of many parks and protected areas.

Major changes in Cape Town's political and administrative structure over the past several years have made it difficult to introduce integrative ways

of thinking and working. Fragmentation of environmental responsibilities within the city government, and among the city, provincial, and national governments, further complicates matters.

Finally, the city government is under financial pressure and such priorities as public security and health, upgrading informal settlements, and addressing service backlogs take precedence over nature conservation and environmental management. It is not often recognized that synergies exist between biodiversity conservation and poverty alleviation, that conservation is not a luxury but a fundamental building block for sustainable development.

7. CONCLUSION

The City of Cape Town's Biodiversity Strategy is a systematic plan of action for the protection and enhancement of biodiversity that has foresight and commitment and acknowledges social and economic realities.

Cape Town wishes to lead by example and learn from other cities' experiences. We invite other cities to become our partners by sharing good practices. We are especially interested in sustainable financing mechanisms for the city's Biodiversity Network; social and economic opportunities associated with biodiversity; examples of business plans for implementing biodiversity strategies; mixed-use conservation models such as "green developments"; case studies of, and guidelines for, functional biological corridors; and alternative service delivery mechanisms for nature conservation.

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Biodiversity conservation as a social bridge in the urban context: Cape Town's sense of "The Urban Imperative" to protect its biodiversity and empower its people

GEORGE DAVIS

1. INTRODUCTION

This paper follows a few particular threads in the growth of a vision for biodiversity conservation in metropolitan Cape Town. It focuses on some remnant ecosystems on the Cape Flats, the eastern part of the city where poverty and the alienation of people from civic well-being are serious challenges to the establishment of viable protected areas. We talk about a history that provides a backdrop to the current challenges, we explore some of the initiatives that seem to offer hope, and we extract some of the lessons learned during the course of the work. There are many other initiatives pulling in the same direction, driven by dedicated individuals and agencies. And there are many communities anxious to incorporate biodiversity conservation in their lives as a lever for a better future. We hope that Cape Town can contribute to a movement that can find the synergy of a win-win collaboration between biodiversity conservation and sustainable urban development. The real challenge will be to extract the principles that can be applied to other situations and other cities that do not have the advantage of legendary natural beauty and a national park at their core.

The options are reduced

It was really only in the latter half of the 20th century that the notion of conserving our natural environment through establishing protected areas took hold (Dixon and Sherman 1990). For the pioneering decision-makers, this was probably driven more by the value of rarity than by a need to be cautious about the environmental underpinnings of human existence. For most of historical time, managers of the human environment have been reasonably confident about the collective technical skills available to manipulate and enhance nature for sustainable provision of resources such as food, water, and other essential services. This confidence

is nowhere more evident than in cities, where the skills of planners, architects, and engineers have long been regarded as the appropriate reference set for decision-making in maintenance of the urban human environment.

Although we might never know exactly how dependent we are on the deep workings of nature and the biophysical components that comprise its systems, there is a growing human respect for the complexity of nature that even science is hard-pressed to explain. Over the past couple of decades a new understanding has emerged about human impacts on the global dynamics of climate systems, and on the resilience of dryland systems to the process of desertification. In a later flurry of introspection, we now also start to see reasons for adopting a precautionary approach to the protection of biodiversity.

A danger that we face, however, is that the wisdom emerging at this late stage may not find the appropriate place to take root. Cities are now where the bulk of humanity lives, and they have for decades, centuries, and even millennia, been where the rich and powerful reside. They are where decisions are made about human economies, and they are where debates about governance occur. Leaders in these fields are not traditionally people with much exposure to concepts of biodiversity and its possible role in sustainable human environments. With the growth of modern cities, and the increasing pressures of people on urban environments, it is likely that biodiversity will become an ever-receding and quaint concept in the minds of future-decision makers. In the developing world there is an additional problem of poverty. If direct evidence of nature is absent in any influential way from the lives of the well-off, then the poor are even more prone to this blind-spot. And for Africa it is the state of poverty where the bulk of its citizens are trapped, where the majority of voters subsist, and from whose ranks the future leaders must arise.

Cape Town, South Africa: A city of opportunities and challenges

Cape Town is known as South Africa's Mother City. It is the oldest European settlement in the country, and is blessed with a diversity of nature and humanity that make it an exciting place to be. In addition, it is one of only a few cities in the world to boast a national park within its metropolitan boundaries. It is, in general, a city that is very difficult to separate from its natural environment on the Cape Peninsula. For those who know it, the park at its heart is based on Table Mountain, a significant sandstone mountain of 1100 meters altitude, surrounded entirely by metropolitan land and the trappings of city life. The city also has coastal features that are a constant reminder of the natural world and the marine resources that contribute to its economy. And accessible to most Cape Town residents, it is the rich floristic biodiversity that has caught the imagination of many commentators, including the economists who see nature-based tourism as a significant point of economic growth for the city. For the biologist, indigenous plant biodiversity on the Cape Peninsula is measured at more than 2500 higher plant species.

Socially the city is a blend of races and cultures that combine the vibrancy of Africa, the contemplative prayers of Islam, and the *savoir faire* of Mediterranean Europe. But it is also a place where people have suffered the privations of colonialism and apartheid, and where it is almost impossible not to confront abject poverty on a daily basis. While the pristine uplands of Table Mountain and other well-preserved areas of Table Mountain National Park are a strong draw-card for tourists, the lowlands to the east of the city are in far worse shape. These are the Cape Flats, once an interesting mosaic of dunes and wetlands, but now highly fragmented by a wide range of pressures associated with the footprint of a developing-world city. However, in spite of the impacts of industry, farming, and high-density living – 20 percent of Cape Town's residents live in informal settlements without proper supply of water, electricity, or sanitation – there remain some 1800 indigenous higher plant species, 76 of them endemic to the area, growing in a broken patchwork of remnant ecosystems. This fragmentation, unfortunately, means that 131 of these species have been listed as rare and endangered, setting an onus for protection on the agencies of conservation. The pressures that undermine their protection are immense.

Of the 3.5 million people who live in metropolitan Cape Town, the poorest live on the Cape Flats. Unemployment rates are upward of 40 percent, and even where bread-winners find jobs, they are relatively insecure, and pay very poorly. Up to 75 percent of residents in these poorer areas live below the poverty datum line of 352 South African Rands (around U.S.\$45) per adult per month. Breadwinners in the poorest third of such communities may bring in less than R100 per month (about \$13). For Cape Town as a whole, the poorest 40 percent of the population earn less than 4 percent of the total income generated, while the wealthiest 20 percent command 70 percent of this amount (SALRDU 2003).

In this paper we will concentrate on the very special lowland areas of the Cape Flats, and will attempt to address this paradox of biodiversity wealth and human poverty on the Cape Flats in a positive way.

2. A SHORT HISTORY OF CAPE TOWN'S EMBATTLED PEOPLE AND THEIR BIODIVERSITY HERITAGE

In order to move forward with collective self-knowledge, it is helpful to recognize the history that has delivered us to our current position. The Cape Town conservation ethic has a particular bias in its origin. It has emerged from a caring sector of middle-class society, more recently linked to a Victorian perspective of the role that nature plays in the quality of human life. The value of this perspective, which has also accompanied important scientific endeavors (such as Darwin's evolutionary model), is not in dispute. The challenge, however, is to extend the conceptual ownership of biodiversity heritage to include the numerous other perspectives that are embedded in the extreme diversity of Cape Town society.

European scientific interest in the unique biodiversity of the Cape goes back a long way, to include contemporaries of Linnaeus. Its history is peppered with eminent explorers and botanists whose mission it was to catalog the biota of the globe and so contribute to a complete knowledge of the natural world. But of course that is not where human interest in (what was to become known as) the Cape Floristic Kingdom began. South Africa's first people, the hunter-gathering Khoi San, were using and managing the flora and fauna of the region long before Latin binomials started being attached to the Proteas, Ericas, and Restios of the Fynbos vegetation (Davis and

Wynberg 1998). With time, however, access to these resources became limited for these hunter-gatherers. Between about 2000 and 1500 years ago the Khoi-khoi pastoralists arrived in the area with their livestock, and proceeded to displace their forerunners. Nevertheless, until the first substantial European settlement was established in the mid-17th century by the agents of the Dutch East India Company, life around Table Mountain was heavily dependent on indigenous biodiversity, and was probably eminently sustainable.

A colonial history

With the establishment of produce gardens to supply ships plying the trade route between Europe and the Far East around the southern tip of Africa, the real impacts of human occupation started. Fruit and vegetable gardens were established by the Dutch East India Company on the better shale-based soils at the foot of the mountain, and where intrusive granite outcrops provided the right substrate, vineyards were planted. The area destined to become metropolitan Cape Town was progressively transformed into a colonial city, catering for European needs and tastes. It is true that not all indigenous biodiversity was dismissed as irrelevant by the settlers. A number of local herbs became part of the medicine cabinet, and even some of the indigenous plants joined the list of species used for dietary input, such as the nectar collected from *Protea repens*, and the “bitter-almond” fruit of *Brabejum stellatifolium*. Timber of the slow-growing yellow-woods (*Podocarpus* species) was favored for building, and these species were the first to be offered protection against over-exploitation as early as 1658 (Karsten 1951). As European colonial history was being written during the Dutch occupation of the 17th and 18th centuries, indigenous people and their custodianship of the local biodiversity were displaced by the settlers and the slaves they imported from Asia. By the time the British took over in the late 18th century, there was little to be seen of the original stewards of the land. Natural land on the mountain and around the city was slowly incorporated into the economic base of Cape Town, with considerable effort going into establishing timber plantations, building dams, clearing land for farms, and developing industrial and civic infrastructure. Fortunately, the middle-class Victorian interest in natural history played its part in slowing the attrition of natural systems, and an underlying appreciation for the spectacular

biodiversity of the Cape Town area kept the way open for the emergence of a number of protective actions.

This was some of the background to the establishment of the Kirstenbosch National Botanical Garden in 1913, a scientific repository for living plant specimens that were of interest to botanical scholars of the nearby University of Cape Town. Enthusiasm for the natural history of the Cape Town area was also reflected in the founding of the Cape Natural History Club in the early 1930s by a botanist, Edith Stephens, who was later to ensure the survival of a significant piece of wetland on the Cape Flats by purchasing it and donating it to Kirstenbosch for safe-keeping (more of this later). And countless other actions by citizens with both an intellectual appreciation of biodiversity and access to the corridors of decision-making, contributed to the conservation of the city’s natural heritage.

The broader Cape Town population may not have been specifically excluded from partaking in some of these activities that supported the protection of biodiversity for its own sake. In reality, however, the culture of class-based segregation offered the poorer sectors of society very little access to most of it, and in any case they usually had more pressing survival issues to deal with.

The advent of apartheid and dumping of people on the Cape Flats

Further alienation of the poorer citizens from the city’s natural heritage came during the era of apartheid, a race-based separatist system instituted by the National Party when it came to power in 1948. Colonial-style segregation then became part of the statute book, and in 1950 the Group Areas Act was promulgated, dictating where people of different ethnic origins may or may not live. The main impact of this legislation on Cape Town was translocation of so-called “Coloured” (people of mixed race) communities away from the mountain where centuries of organic city growth had placed them, and onto the lowlands of the Cape Flats. Formerly, the Cape Flats had been a naturalist’s paradise with its dunes, wetlands, and richness of plant biodiversity. By the time that it became an apartheid dumping ground, much of its natural condition had already been lost to farming, and to land “reclamation” through dumping of builder’s rubble. Invasion by alien vegetation (most notably the Australian Port Jackson willow, *Acacia*

saligna, and in later years by kikuyu grass, *Penisetum clandestinum*), also played an important role in this degradation. As we will see, there were some remnant systems worth saving, but economic hardship, political disempowerment and a burgeoning crime rate on the Cape Flats left little appetite for local communities to become involved in the appreciation and protection of this nature.

Another piece of apartheid social engineering covered the control of people's movements through legislation of "influx control." This regulated very tightly the movement of Black people into the area, mostly people from rural Xhosa communities in the Eastern Cape. Cape Town was designated a "Coloured preference area." A small number of Black townships were permitted to be established on the Cape Flats for the sake of providing cheap labor where expedient. All in all there was very little incentive for the second and third class citizens of the Cape Flats to feel inspired about their natural environment.

When the apartheid machinery started falling apart during the 1980s, the Cape Flats became a veritable war-zone. Influx control was abandoned, and masses of job-seekers came flooding into the city in search of work in an attempt to escape the rural poverty that had developed in the apartheid homelands of the Eastern Cape. Informal settlements sprang up on all available land, and at the same time the violent struggle for liberation moved into top gear. Civic needs like housing, education, and even employment often took second place to the political struggle. The conservation of biodiversity was not remotely a contender for the people's agenda of the eighties.

The turning point in planning

But as the structures of apartheid crumbled under the combined impacts of civil unrest and economic impracticality, the way was opened for better planning in the city. Thoughtful and dedicated urban planners started to see some light, and gained the confidence to start building a more strategic vision. The die-hard conservationists also hadn't given up. In a joint effort between the University of the Western Cape, the Botanical Society of South Africa, and the City of Cape Town, a survey of conservation priorities on the Cape Flats was undertaken (McDowell and Low 1990). This was a comprehensive survey of 35 sites, which laid the groundwork for a subsequent study undertaken by the Botanical Society and the City of Cape Town (Maze and Rebelo 1999). This

latter report has contributed immeasurably to an exciting new era of conservation planning within what was to become the city's Integrated Metropolitan Environmental Policy (IMEP). In turn this policy has provided the basis for an ambitious metropolitan biodiversity network that puts protected areas right at the heart of civic awareness (Maze, et al. 2002).

For all South Africans, 1994 marked an almost miraculous turning point away from a course of social meltdown, to a direction in which almost anything seemed possible. That was the first general election in which all South Africans were given the opportunity to vote. Now, a decade later, the magic solutions to poverty, housing, education, and crime remain elusive, but it has been a period of some extraordinarily creative thinking and planning. From the perspective of oppressed communities, biodiversity conservation during the apartheid era was seen largely as an elitist plaything, characterized by trendy bush gear, expensive 4x4s, and White supremacy. But with the return of a democratic voice, claims for a stake in the South African natural heritage are now being articulated, ranging from economic use of exploitable resources to the protection of cultural landscapes. The work done during the dark era by dedicated amateur and professional conservationists also rapidly fell back into perspective, and has become part of the instrumental legacy for the protection of a common biodiversity heritage.

3. SOME ACTIONS TAKEN TO BRIDGE THE DIVISIONS

A history of practical approaches

Education has long been seen as a key to the long-term success of environmental protection. A major player in environmental education in Cape Town has long been the Kirstenbosch National Botanical Garden, now part of the South African National Biodiversity Institute (SANBI, which has succeeded the National Botanical Institute, NBI, and has a broader brief). Although in earlier times it served more as an adjunct to curriculum-based Nature Study, Kirstenbosch picked up the challenge during the 1980s to provide a broader experience for environmental understanding. An ever-increasing number of schools were encouraged to visit the botanical garden for this first-hand experience and, in the mid-90s, SANBI launched a dedicated Outreach program. The two

key elements to this were: (a) a bus that would annually shuttle up to 20,000 disadvantaged learners to the garden; and (b) an outreach horticulture initiative. In the latter, trained horticulturists engaged with schools in poorer communities to establish indigenous gardens in their grounds, and provided the training for learners, staff and parents to manage these, as well as to take the ethos of greening further into the communities.

This program continues, and is now linked to many other initiatives to extend horticultural skills to other fields. The general movement now includes collaboration with NGOs and community-based organizations busy with the development of food gardens, the propagation of medicinal herbs, and even the establishment of gardens that demonstrate the wide range of useful indigenous plants that could be cultivated on a domestic level. The culture of valuing biodiversity for the economic benefits it can provide plays an important part in its protection. Some of this action is taking place at the Edith Stephens Wetland Park, an amalgamation of city-owned land with the gift that Edith Stephens made to Kirstenbosch in the mid-1950s (see above, and more below, about this site).

The economic divide

South Africa's economy is not yet strong enough to lift its citizens out of under-development and the hole dug by colonialism and apartheid. Situations of dire poverty are likely to persist for some time to come. One of the primary challenges of the new South African democracy has been to put measures in place that might find the starting point to break this cycle of poverty and disadvantage.

In an early and ground-breaking initiative, the national Department of Water Affairs and Forestry established a program that created jobs, raised environmental awareness, and alleviated poverty, while at the same time addressing one of the most pressing problems threatening the national water supply – the invasion of water catchments by alien invasive plants. This was the Working for Water program. It was launched in 1995 with the aim of creating 18,000 jobs nationally every year for previously disadvantaged and unemployed individuals, allocating 60 percent of these jobs to women, 20 percent to youth (persons under the age of 23 years), and 2 percent to disabled persons. An outgrowth of this program is the Working for Wetlands program, which operates along the same

lines of job creation, training, and environmental restoration. Local communities on the Cape Flats are now able to assist with the restoration of endangered wetlands while generating some much-needed income. At the Edith Stephens Wetland Park, engagement in this program has provided work for approximately 20 people for a 3-year period, accompanied by skills training and awareness-raising in local conservation issues. This particular project, implemented by SANBI, is only one of a growing number of similar initiatives in the city to extract economic benefit from actions linked to the maintenance of biodiversity.

Environmental tourism

In a statement promoting tourism as an arena for economic growth in South Africa, it has been asserted that for every eight foreign visitors, a permanent job is created in the hospitality industry. Cape Town is fortunate to be a prime destination for visitors for a number of reasons. One of these is the highly appealing natural beauty within and adjacent to the city, including the Table Mountain National Park inside its boundaries. The appeal of the Cape Flats might not be as strong for visitors as a cable-car ride to the top of Table Mountain, or standing at the edge of a cliff looking at the pounding surf at the tip of the Cape Peninsula. Nevertheless, the subtleties of finding rare and endangered plant species in remnant wetlands, engaging with traditional healers about the indigenous herbs that are part of their pharmacopoeia, or bird-watching in the dune slacks of the Cape Flats, present real opportunities for a community-driven tourism industry targeting niche-market travelers. These components of a local biodiversity-based economy are starting to emerge as possibilities in experimental tourism routes.

4. CAPE FLATS NATURE: A CAPE TOWN INITIATIVE IN BRIDGE-BUILDING

Over the years that local government, the NGO sector, and various other bodies have attempted to establish systems to protect urban biodiversity, a number of tools was set in place for a concerted and synchronized effort. In this section we will tell you about the emergence of a project called Cape Flats Nature, which addresses some of the issues in a creative way, and which provides optimistic lessons for a new approach. The project took shape in response to many efforts that came before it, but

most significantly it was enabled by the City of Cape Town's shaping of its Biodiversity Network (see the discussion above for a profile of the project).

Cape Flats Nature (originally called "Mainstreaming Biodiversity on the Cape Flats" to denote the intention of making biodiversity everybody's everyday business) could only be launched once a number of items were in place. Its main objective was to set in place a mechanism for the protection of Cape Flats biodiversity by engaging with people rather than erecting fences. It was therefore necessary to have some clearly identified sites of high biodiversity value, as well as some well-motivated local communities who would be willing to provide champions for the cause. The Biodiversity Network provided the former, while the activities of the SANBI Outreach program (and other similar initiatives) had started drawing people into the realm of conservation awareness. The initial scope of the project was to focus on four pilot sites, strategically chosen from the biodiversity network. For sustainability, it was also recognized that a solid institutional basis was necessary. Initially this presented a problem. Differences between potential players and their mandates for either conservation or community development varied so widely that it was difficult to find a starting point. A final mix – and probably not the only combination that would have worked – was influenced by people and organizations involved in the steering and project development process. This process comprised local government (the Environmental Management and Planning Department of City of Cape Town), a conservation NGO (the Botanical Society of South Africa), a conservation funder (WWF-South Africa's Table Mountain Fund), and an implementing partner (NBI, now SANBI). Since then the project has also aligned itself with a bioregional planning and funding agent (Cape Action for People and the Environment, or C.A.P.E.). This combination of partners has provided a very useful level of synergy, which reaches into a diverse set of institutional corners, and can often circumvent barriers that are bureaucratically impenetrable to insiders.

The project team initially comprised only two people: a project manager and a communications manager. Their first objective was to bridge the people-related gaps that had frustrated many conservation efforts in the past. They were to concentrate on: (1) ensuring that the institutional mix remained in neutral territory and that no issues

of turf undermined the common vision; (2) building a forum which allowed communities adjacent to the pilot sites to interact meaningfully with the partners and other public service institutions; (3) finding ways of encouraging communities to enter the forum and assume leadership roles in decision-making about conservation issues; and (4) building bridges for communication about conservation issues between communities still disabled by the impacts of apartheid.

Project-based action

Cognizant of the need to seed community involvement in output-related action, the first exercise by Cape Flats Nature was to conduct a series of participative planning workshops with communities and stakeholders at all of the four pilot sites. During these sessions community ideas and needs were articulated and used as the basis for action plans. The approach appeared to work, and a realistic program of action was drawn up by the project in collaboration with community champions. The plan included all pilot sites, and local organizations were tasked with making things happen.

While the outcome was by no means serendipitous, the modus operandi does reflect, to some extent, grasped opportunities and the harvesting of some "low-hanging fruits." The principle of "starting with what is available and what is possible" was a filter against getting caught in the quagmire of existing problems that were found to sink similar initiatives in the past.

The work done in bringing together the institutional elements of development and conservation may have been a largely systematic process, but the harnessing of community energy was perhaps something that was facilitated by the social renewal following a long and hard-fought liberation struggle. It is also likely that the intervening years of democracy had allowed the negativity of apartheid rule to dissipate, and offered people the opportunity to be more creative about assuming control and responsibility. The process has been both inspiring and productive.

5. LESSONS LEARNED FROM CAPE FLATS NATURE

Cape Flats Nature, because of the pivotal role that it is currently playing in facilitating the convergence of city planning and conservation

management, is able to provide a yardstick for a number of assessments. Here we provide an analysis of the process under the three headings that have been most meaningful to date.

Lesson 1: Action attracts further action

During the consultation phase, local communities often pointed out that meetings were well known to them, but that little had happened in the past to provide tangible outputs. Over the years considerable effort had been put into the setting up of task teams, committees, and working groups, yet little other than the production of reports and meeting minutes had been achieved. The partnership structure of Cape Flats Nature, and accessibility of seed funding not tied to local government budgets, allowed for the flexible initiation of small but specific activities that focused on public involvement in biodiversity conservation actions. The approach was to start small and keep up the momentum of action, devolving decision-making and planning as much as possible to the community stakeholders. For activities to have an impact and carry forward to further action, they must fit in with agendas set by the community forums. Clear parameters also need to be set to keep activities within the critical realm of biodiversity appreciation and conservation, and not to lose focus by being subsumed in other important development priorities. Flexibility and openness to opportunity are also key factors to maintaining momentum. It is proving to be true that action can also attract further action, and that funding and economic opportunity is often associated with this approach. This principle of leverage is well known in other sectors, and could play an important role in bootstrapping economically viable conservation action in marginalized communities.

Lesson 2: Building honest partnerships

With the well-known history of political struggle on the Cape Flats, and the depth to which communities were involved in that often-violent struggle to regain basic human rights, there is a fundamental need in development to concentrate on the most pressing issues of health, housing, employment, and education. The conservation of biodiversity, as has been pointed out, was mostly seen during the struggle years as an elitist issue with little bearing on the immediate goals. Cape Flats Nature has adopted the approach that the time

is now right for an open and honest setting of conservation agendas, and to engage community participants by inspiring them to adopt the protection of biodiversity for their own reasons. This could include it being a vehicle for education, an opportunity for involvement in nature-based tourism, job-creation through environmental maintenance, or merely improvement of the natural environment for a better quality of life. From this, an appreciation of biodiversity itself is seen to emerge and take its place in the community dialogue.

Another important aspect of setting agendas is for communities to adopt a problem-solving approach. By clearly identifying environmentally related problems, and then engaging the range of expertise available via Cape Flats Nature, action plans are more easily arrived at than if there were no specific problem to solve. Crime is a problem on the coastal dunes of False Bay, unsustainable use of medicinal herbs is a problem, invasive alien vegetation is a problem for the natural systems, lack of inspiration in the classroom is a problem that exacerbates under-achievement and the hold that gangsterism has over learners. Communities know what they want, and conservation of biodiversity can sometimes provide a starting point for a more complete solution. But the plan must be based on community-made decisions.

Lesson 3: Building local leadership

Perhaps the most critical lesson learned to date is the importance of developing leadership within local communities, and at all levels. Endeavors that are important for local community life require both inspired champions and efficient managers. If biodiversity conservation is to become a self-sustaining enterprise on the Cape Flats, then it is not sufficient to elicit the gasps of wonder at parasitic plants growing in the dunes, mole-snakes slithering through the grass, or plovers' eggs camouflaged on little islands in the wetland. Leaders must be supported, trained, and encouraged to initiate action that will ensure the security of those species and their habitats, and to provide community groups with the option of stewardship. It is a long and many-stepped process, involving capacity building, education, and training, at the most fundamental levels. But it also means putting in place systems that can transfer the knowledge and enthusiasm that will provide the necessary popular support-base for leaders to do their work. Establishment of accessible

conservation information and environmental education centers are essential, as are youth and teacher training programs supported by public and private foundations. And an open space system maintained by local government is the spatial framework within which this must happen. All of these are necessary investments to secure a future for biodiversity on the Cape Flats.

6. CONCLUSIONS

Many areas important for biodiversity conservation lie beyond the boundaries of protected areas. Biodiversity, apart from its role as a key functional component of the environmental matrix, biodiversity can also be of immense benefit as an agent for reconnecting people to their living environment and to their social responsibilities for its maintenance. An important challenge to the agencies of environmental protection – official, NGO, and informal – is to bridge the gaps in understanding, and to drive the empowerment of local communities for participation in the process. The remnants of natural systems in urban areas are often those most at risk of attrition into a state of unrecoverable degradation, and people can be the most effective buffer.

The ongoing suite of Cape Town initiatives, of which only a few strands are referred to in this paper, is providing a number of lessons from which conclusions can be drawn.

It may seem an unfair advantage that Cape Town has over most other cities, but its natural beauty and the obvious value that its biophysical attributes provide are perhaps object lessons for urban conservation in general. The underlying truth is that people appreciate nature for many reasons, and – given the opportunity – will find many ways to draw on it. This includes drawing on it as a resource that generates income for the local economy and enhances the quality of the local environment. The key is the community-engagement process. This needs to fit in with the appropriate social dynamic, and must draw community-controlled structures into the process of stewardship. An apparent advantage of having biodiversity conservation on local-community agendas is that effective community control over this usually less politically contested item can provide for better co-operation and collaboration between political factions and interest groups. Linking this civic involvement to outcome-based actions reinforces the positive cycle of drawing upon biodiversity as a force for social cohesion.

Nature trails, for instance, will have domino effects for environmental education, crime reduction, ecosystem service provision, and civic pride. Elevating natural areas with special features to the status of formal protected areas can then start to play a role in local economies with regard to tourism, and contributions to natural heritage status.

It must be recognized, however, that there is a clear action-based starting point for whatever pathway is chosen. From the Cape Town experience, it is clear that a formal catalog of biodiversity resources, established by agencies with the necessary standing, provided the appropriate launching pad for many of the actions that followed. For cities that do not have the advantage of urban national parks such as Table Mountain in Cape Town, Tijuca in Rio de Janeiro, or Santa Monica Mountains in Los Angeles (McNeely 2001), the road might be longer, and the need for good marketing of biodiversity as a social need greater. It is probably the role of international conservation agencies to proactively drive this process until there is enough substance to ignite local public demand for biodiversity-based sustainability.

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Mosaic: Building links between ethnic communities and national parks in the United Kingdom

JESSICA MEMON

1. INTRODUCTION: A PIONEERING PARTNERSHIP

The Mosaic Project (2001-2004) was a groundbreaking pilot project led by two nongovernmental organizations, the Council for National Parks (CNP) and the Black Environment Network (BEN), to link ethnic communities with national parks in the United Kingdom. *(Ed. Note: The project has been continued as the Mosaic Partnership, launched in January 2005; for updates, visit www.cnp.org.uk/mosaic-partnership.htm.)*

CNP (www.cnp.org.uk) is a national charity that works to protect and enhance the national parks of England and Wales, and areas that merit national park status, and promote understanding and quiet enjoyment of them for the benefit of all. It is an umbrella organization of 46 environmental and amenity groups.

BEN (www.ben-network.org.uk) works for full ethnic participation within the UK's built and natural environment. It uses the word "black" symbolically, recognizing that black communities are the most visible of all ethnic communities. It works with both black and white ethnic communities. BEN holds that there is no such thing as a pure environmental project: A so-called "pure environmental project" is one which has rejected its social and cultural context. BEN therefore works to integrate social, cultural, and environmental concerns in the context of sustainable development. BEN believes that alongside fighting racism, there is an enormous untapped force for change that rests within people of goodwill who far outnumber racists. Alongside stimulating ethnic participation, it works to inspire and enable organizational personnel to gain skills to work effectively with ethnic groups, thereby creating a climate and a framework within which ethnic participation can take place.

2. ORIGINS AND OBJECTIVES

Mosaic originated at a conference held in 1999 to mark the fiftieth anniversary of Britain's National Parks and Access to the Countryside Act. At that event, Judy Ling Wong, Director of BEN, said: "People cannot care about what they have not experienced. Neither will they have much interest in paying the taxes or providing the political support which is necessary to maintain viable national parks for the next fifty years." Her listeners went away asking themselves, "Why are we not engaging ethnic communities already?" It was from this idea that the Mosaic Project was conceived.

National parks in the UK have not always been equally accessible to all UK communities, especially to those living in cities. Mosaic aimed to create new opportunities for ethnic minority community groups, particularly those who have never been to the countryside, to take part in conservation, educational, and outdoor leisure activities, thus increasing their understanding and enjoyment of the national parks. It also aimed to create new ways for the groups to contribute to the care and protection of the parks.

CNP and BEN chose to target ethnic minorities because work to promote access by certain other excluded communities was already underway. It was felt that working with ethnic minorities required particular skills that were not being developed in the environmental sector, and that more resources needed to be devoted to it. One of two purposes of national parks stated in the 1949 act is promoting opportunities for public understanding and enjoyment of the parks' special qualities, and there is now also a legal duty to promote racial equality. So these two important purposes were "joined up" in the project, the name "Mosaic" being chosen to reflect the idea of a mix of ethnic groups.

3. THREE STAGES

The first stage of the Mosaic Project was to work with groups already committed to BEN, and engage with national park authorities and other relevant

countryside bodies, to prepare for ethnic community visits to the parks. This was done by establishing the social and cultural needs involved, the meaning and benefit of the forms of visits and activity programs formulated, and the contribution of different cultures to the vision of engagement with nature. The expertise of BEN was invaluable in providing awareness training for national park staff, and there were many practical issues needing discussion. Pilot visits reassured both sides that cultural barriers were not insuperable, and many people's initial perceptions were transformed and dispelled through the reality of contact.

In the second stage, many visits to parks were made by groups with no previous experience of them. Groups that had already visited parks acted as ambassadors to spread the word in their wider communities about national park opportunities. Urban events were arranged in Birmingham and Cardiff to encourage inner-city leaders to learn from park and youth hostel staff what they might experience during a park visit. Several groups that had visited a park in stage one went there again, and this time were encouraged to make their own travel plans and their own arrangements with park staff, with Mosaic's role a more supervisory and less direct one.

The third stage aimed to support national park bodies and ethnic minority groups in developing their own initiatives, and to produce a report promoting good practice. Several new kinds of interpretative materials were developed.

4. EVALUATION

Good and thorough evaluation of the project was seen as essential, and is expected to bring significant benefits to many other organizations as well as CNP and BEN.

Before the Mosaic Project, there was no baseline information about ethnic participation in the UK's national parks. With the cooperation of national park authorities, questionnaires were given to each group after its park visit so Mosaic could evaluate their experiences. Questions included: "What was the best thing?" "Would you visit this national park again?" "How would you like information provided?" and "Are you interested in working within the national park?"

Diaries and focus groups provided additional insight. In all focus groups, perceptions and

expectations changed after visiting the parks. Sample comments:

- "It is so nice. I couldn't imagine it." "It's the best place I've been to." "The mountains and hills are really beautiful." "I heard about it, but I didn't think it was going to be like this." (Bolton Asian Elders)
- "I think the Bengali community would really appreciate the sites because you would not expect to see them in England." "It is so peaceful, so different to [Newcastle]."
- "I just thought it was going to be a lake, but there is so much to do." (Newcastle Bangladeshi and Iranian Community)

However, there were some reservations about future visits. They tended to relate to food and traveling long distances. For newcomers, such basics are very significant. For example, some groups need particular foods for cultural or religious reasons.

Many groups have adapted to inner-city life, and going beyond these areas is about going into the unknown, with all the challenges that come with it.

5. ACCOMPLISHMENTS

The Mosaic Project:

- Highlighted the need to open up opportunities for ethnic communities to enjoy national parks;
- Promoted what national parks have to offer to ethnic communities;
- Established links between ethnic communities and national parks;
- Provided training and support to national parks, giving them the knowledge and skills to work with ethnic communities;
- Enabled ethnic community groups from across England and Wales to visit national parks for the first time;
- Consulted and represented the views of ethnic communities;
- Developed a model for encouraging ethnic communities to visit national parks;
- Produced resource materials; and
- Laid down the basis for increasing involvement by ethnic communities in national parks.

A conservation agency creates inner-city “natural parks” in Los Angeles

TED TRZYNA

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1. CONTEXT: A PARK-RICH REGION, A PARK-POOR INNER CITY

Famously a product of the automobile age and relentless growth, greater Los Angeles covers 7,500 square kilometers along the California coast (Census 2002) and reaches ever further into surrounding mountains and desert. The population in this area has grown from 250,000 in 1900 to over 16 million today, and is projected to reach 22.9 million by 2030 (SCAG 2005).

The Los Angeles region has a complex array of jurisdictions responsible for protected areas and conventional urban parks. The major protected area actors are national and California state government agencies. Local parks are the responsibility of several counties, over 150 municipalities, and in some cases autonomous park districts. NGOs help acquire natural areas and in a few instances own and/or manage them. (For background on urban protected areas in California, see Trzyna 2001.)

Greater Los Angeles is framed by extensive protected areas: along the ocean by state and local beaches and coastal parks; in the interior by mountainous national forests and a desert national park. In addition, many suburban jurisdictions have impressive park systems, some of which include natural areas.

However, the City of Los Angeles, which forms the urban core of the region and has a population of 3.7 million, is relatively poor in both conventional and natural parks. Recently elected Los Angeles Mayor Antonio Villaraigosa made this an issue in his election campaign: “Los Angeles has . . . the least accessible park system of any major city in America. Only 30 percent of Angelenos live within a quarter mile [0.4 km] of a park, compared with between 80 percent and 90

percent in Boston and New York. Here in Los Angeles more than 700,000 children do not live within walking distance of a park (Villaraigosa 2005).”

So-called “inner-city” neighborhoods suffer the most. (The term “inner city” is used in the United States to describe older, deteriorated residential areas of the central city that have high unemployment and crime rates, low levels of education, and crowded housing.)

With few exceptions, the story of parks and natural areas in Los Angeles is a story of lost opportunities.

The most striking example of a lost opportunity has to do with creeks and rivers. Los Angeles sits on a wide coastal plain crossed by a network of streams that flow from the mountains to the sea. These watercourses would have been an ideal foundation for a system of parks including natural riparian habitat. In fact, this was one of the principal recommendations of a visionary regional park plan commissioned by a citizens’ committee and published in 1930. The recommendation was for “pleasureway” parks along major streams that would serve two purposes: outdoor recreation and percolation of storm water into the ground.

Management of storm water was a critical element of this concept. Los Angeles has a Mediterranean-type climate with hot, dry summers and mild, rainy winters. Its streams have little water in summer but are subject to violent flooding in winter.

The park plan was never pursued, apparently because powerful business leaders disliked the idea of comprehensive planning, as well as the prospect of more public spending (Hise and Deverell 2000, 38-48; 95-98). Instead, between the 1930s and 1970s virtually all the streams were confined in narrow concrete flood control channels. This made it possible to develop adjacent land – and now makes it very difficult to restore any semblance of the original riparian ecosystem.

2. THE SANTA MONICA MOUNTAINS CONSERVANCY

Many organizations work to restore nature and create parks in the inner city of Los Angeles. The impetus for projects often comes from elected officials or NGOs. The city and county park departments have been active, as has California State Parks. However, one unusual organization, the Santa Monica Mountains Conservancy (SMMC), has had a special role.

SMMC, a unit of the California state government, started operations in 1980. It was created within the context of the Santa Monica Mountains National Recreation Area (SMMNRA), established in 1978 to protect natural and cultural landscapes in a mountain range that runs 65 km east to west from the center of the City of Los Angeles to Point Mugu on the Pacific Ocean. The mountains divide the Los Angeles Basin from the San Fernando Valley and include expensive residential areas as well as relatively wild tracts rising to 950 meters. SMMC's original mission was to acquire private lands for the SMMNRA in a fast-rising real estate market. (The SMMNRA now covers 62,000 hectares and is a cooperative effort of the U.S. National Park Service, California State Parks, and SMMC.)

In the process, SMMC became highly skilled at acquiring land and making it accessible by negotiating with landowners, combining funding from different sources, and forming partnerships with other agencies and NGOs. Its mandate has gradually expanded. It has helped preserve over 22,200 hectares of parkland in both wilderness and urban settings, and improved 114 public recreational facilities throughout the region. It participates in several "joint powers authorities," agencies that combine the forces of two or more public entities to work toward specific purposes. One of these, the Mountains Recreation and Conservation Authority (MRCA), whose members are SMMC and two local park districts, manages over 20,000 hectares of parkland.

Although SMMC is part of state government, it is also a partnership of different levels of government. Its board includes the superintendent of the SMMNRA and the supervisor of the Angeles National Forest, as well as members appointed by state and local officials and representatives of several state agencies.

In many ways SMMC and MRCA are mainstream conservation agencies in the tradition of the U.S. National Park Service. They focus mainly on acquisition, restoration, stewardship, and interpretation of natural areas. Their uniformed rangers wear a version of the well-known flat-brimmed hat. But in other ways these agencies are unconventional, at least in the U.S. context. Both of them are set up as partnerships and do much of their work through alliances with other agencies and NGOs. They are small operations notable for a non-bureaucratic approach. They are able to respond quickly and imaginatively to new challenges and opportunities, as was the case with the "natural parks" initiative.

3. "NATURAL PARKS" IN THE INNER CITY

In its earlier years, SMMC concentrated on acquiring and managing land in the Santa Monica Mountains, but also provided free outings to its mountain parks for inner-city school and neighborhood groups, and worked on revitalizing sections of rivers that flow through inner-city neighborhoods.

In the mid-1990s, then-Los Angeles City Councilmember Rita Walters brought an idea to SMMC. Walters represented a council district that included low-income areas of South Los Angeles as well as downtown. Her South Los Angeles constituents could look up at the Santa Monica Mountains, but few of them ever went there. Large amounts of public money had gone into preserving those mountains; couldn't SMMC do something for her people on the flatlands? Couldn't it bring nature and beauty to their neighborhoods?

In fact, SMMC's leadership had long been bothered by the inaccessibility of nature to people living in the inner city. With Walters' help, the agency soon identified a 3.5-hectare municipal site used to store discarded water pipes. The city leased the site to SMMC for a nominal fee, and contributed part of the funds needed to clean up the site and create and operate a new park.

The Augustus F. Hawkins Natural Park, named in honor of the first African-American elected to the United States Congress from California, opened in December 2001. It is not quite like any other park in the region.

First of all, the Natural Park is situated in a run-down neighborhood that has high levels of unemployment and crime. The few small parks that exist tend to be magnets for drug dealers and street gangs.

Second, the park was designed in consultation with the people who live in the area, rather than imposed on them. Originally a middle-class African-American neighborhood, its population is now predominantly of Latin American origin and includes many recent immigrants from Central American countries. The park designers soon realized public involvement had to go well beyond the usual public meetings, because few people came to them. Door-to-door visits, another common method of soliciting opinions, were met with suspicion. What finally did work was setting up a table in the local supermarket where hundreds of people came up to talk to members of the planning team. It became clear that, although the neighbors definitely wanted a connection with nature, their first priority was a safe haven. The planning team agreed to build a strong steel fence around the park, and house a ranger onsite, as on other major SMMC properties (Sorvig 2002, 69-70).

Third, the Natural Park is not a restoration, but rather a “reflection” of the natural ecosystems of the region. In many other places, creating a “natural park” would be seen as an opportunity to restore the original vegetation. In this case, however, the original landscape was an alluvial plain thinly covered with shrubs and grasses. At such a small scale, this plant life would be uninteresting. Instead, it was decided to recreate several plant communities found in the nearby mountains, including riparian forest, oak woodland, freshwater marsh, and chaparral (a dense growth of various species of evergreen, hard-leaved shrubs typical of much of California). But even though it is not a restoration, nature in some ways is taking its course. For example, because the plant species are native to the region, they have created habitat for native birds rarely seen in urban settings.

Fourth, the park includes a large lawn with shade trees, “blending the groomed and the wild,” as SMMC Chief Landscape Architect Stephanie Landregan (2005) puts it. This provides a “comfort zone” for urban people unaccustomed to nature. (The same technique has been used in several of SMMC’s portal parks at the wildland-urban interface in the mountains.)

Other parks in Los Angeles can claim some of these attributes, but probably none can claim all.

The Natural Park has a visitor center conforming to the high design standards SMMC applies to all its projects. The park sponsors free camping trips and day outings to mountain and beach parks. It has programs for visiting school groups on such subjects as mammals, water, and Native American cultures. It sponsors after-school and youth leadership programs. It is a popular place for family picnics, especially on Sunday afternoons. In the quiet morning hours throughout the week it is common to see elderly couples walking hand-in-hand and young mothers pushing baby-strollers.

The park has become the centerpiece of the neighborhood and local residents are highly protective of it. Perhaps the best indicator of this is that the Natural Park is one of the few projects of any kind in South Los Angeles that has not been vandalized.

In the larger Southern California community the park is now widely viewed as a great success, although Landregan, who shepherded the project, notes that initially “there were lots of naysayers who said ‘why are you giving *that* to those people?’” (Sorvig 2002, 66).” (Operations of the park were transferred to the City of Los Angeles in March 2005.)

Among its strategic objectives, SMMC now lists: “Expand efforts to integrate nature into the urban environment.” Among other things, this includes: “Acquire or create parkland in urban areas that lack open space or acquire natural parks”; and “Link and integrate new natural parks into existing park systems – literally via transportation and physical linkages, thematically via programs and events.”

There are plans to replicate the Hawkins Natural Park elsewhere in the inner city of Los Angeles. The most innovative of these plans is for a 4-hectare natural park on the grounds of a new secondary school. The school will be divided into several specialized “academies,” and there is a proposal to make one of these a “Conservancy Academy” devoted to education in natural resource management.

When SMMC Executive Director Joseph T. Edmiston described the Natural Park in The Urban Imperative workshop at the World Parks Congress, several participants questioned the wisdom of a protected area agency creating “simulations” of nature in cities. Others wondered where to draw the line in serving disadvantaged populations. “We can’t become social service agencies,” one park manager said.

Edmiston responded: “Even if you can’t restore the ecosystem, you can restore the aesthetics. Environmentalists often write off urban ecosystems, but you can’t write off people.”

5. CONCLUSIONS

The Santa Monica Mountains Conservancy has done two things unusual for a mainstream protected area agency:

(1) It has successfully intervened in the inner city. With local residents actively involved, it has created a place of beauty and safety, an anchor to the land for people who have had little connection to it.

(2) It has not been restrained by conventional ideas about the role of protected area agencies in promoting nature. It responded to a special situation with a special solution: “natural parks.”

An obvious question is: Can’t this sort of work be done just as well by local park agencies? The answer, at least from California’s experience, is: Not in most cases. Although there are exceptions, local park agencies’ priorities and expertise have to do with conventional city parks: lawns, shade trees, swimming pools, fields for team sports, and children’s playgrounds.

However, there could be synergy in both kinds of agencies working in tandem to create and manage inner-city oases. Most likely this is already happening somewhere in the world. In any case, it is an idea worth exploring.

This paper is based mainly on numerous discussions with board members and staff of

SMMC, MRCA, and partner organizations, as well as site visits, between 2000 and 2005.

Detailed information on the agencies mentioned is posted on their Web sites:

Santa Monica Mountains Conservancy:

www.smmc.ca.gov

Mountains Recreation and Conservation Authority:

www.mrca.ca.gov

Santa Monica Mountains National Recreation Area:

www.nps.gov/samo

California State Parks: www.parks.ca.gov

Los Angeles Department of Recreation and Parks:

<http://www.laparks.org>

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Healthy Parks, Healthy People” and other social capital initiatives of Parks Victoria, Australia

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1. INTRODUCTION: PARKS VICTORIA

In the Australian state of Victoria, Parks Victoria is the state government's statutory organization uniquely responsible for the management of national (terrestrial and marine) and state parks and reserves, together with a variety of major urban parks and regional open space in Melbourne. It additionally is responsible for the management of recreational use of two bays adjacent to the metropolitan area. In all, Parks Victoria manages over 4 million hectares of land-based parks that attract some 36 million visits annually.

Having this diverse combination of responsibilities enables the organization to understand community aspirations and readily communicate the values and recreational opportunities of the protected areas to city dwellers as part of its urban park management activities.

Over recent years, Parks Victoria has progressively adopted a range of contemporary and innovative management techniques to better undertake its responsibilities into the future. These are not limited to traditional park and recreation responsibilities but embrace social capital considerations.

Parks Victoria recognizes that it has an important responsibility to ensure the areas managed contribute to the quality of life for all Victorians and meet the “Caring Communities” platform of the state government. A sustainable future for Parks Victoria is dependent on the organization's relevance to community needs and expectations and to its broader contribution.

In 2000, Parks Victoria introduced the slogan “Healthy Parks, Healthy People” as a seemingly logical statement that was immediately successful. A number of partnerships were developed with the health sector. In 2002, in conjunction with a

number of other Australasian park agencies, it commissioned the Faculty of Health and Behavioural Science at Deakin University to undertake a literature review of the health benefits of contact with nature in a park context (Maller et al. 2002).

The results of that research and subsequent projects have revealed a range of opportunities for park management agencies to play a significant role in contributing to social capital, as well as in furthering their own park management interests. The principles involved are not unique to Victoria or Australia; to greater or lesser extents they will be valid internationally.

Very recently, Parks Victoria has embarked on a new “Community Partnerships” initiative which broadens the development of a social capital approach beyond the basic social values provided by parks in four key areas: internal capacity building, collaborative programs, building collective community consciousness, and social responsibility.

This paper uses these Parks Victoria initiatives as a case study, but also provides some global context for how they could be more widely applied.

2. NATURAL AND SOCIAL CAPITAL

Australia is experiencing many of the same trends as other industrialized countries. It is undergoing significant urban development, both urban sprawl and consolidation, driven by a combination of increasing population and a lifestyle “dream.” There are consequent threats to undeveloped land, including open space and natural areas, and an isolation from green space. As elsewhere, the national park estate has been driven by a “purist” nature conservation agenda with invariable interfaces with growing ecotourism and urban recreational desires. The strong environmental concerns of the late 20th century have been overtaken by the policies of recent governments,

the self-interests of individuals, and international issues of terrorism and war.

In addition, with park and open-space responsibilities often fragmented and parochially managed, there is often a general absence of a coordinated approach to the needs of people for outdoor recreation and the relationship between remnant or restored vegetation and larger areas such as national and state parks. The associated social values are not fully appreciated or understood.

At the same time, we are universally experiencing a major decline in health standards due to the increasingly sedentary life and work style (computers, television, fast foods) and yet a tendency towards aging populations as health treatments and associated care improve.

There is also the increasing gap between the “haves” and “have nots” that affects how people are able to afford to recreate.

Among all these issues we seem to have forgotten the original purpose of parks. As a consequence we are missing synergistic opportunities for parks and the community.

When parks were first designed in the 19th century, city officials had a strong belief in the possible health advantages that would result from open space (Rohde and Kendle 1997; Hamilton-Smith and Mercer 1991). It was hoped that parks would reduce disease, crime, and social unrest, as well as providing “green lungs” for the city and areas for recreation (Rohde and Kendle 1997). At this time it was also believed that exposure to nature fostered psychological well-being, reduced the stress associated with urban living, and promoted physical health (Ulrich 1993). These assumptions were used as justification for providing parks and other natural areas in cities, and preserving wilderness areas outside of cities for public use (Ulrich 1993; Parsons 1991).

In the last few hundred years, however, there has been an extraordinary disengagement of humans from the natural environment (Beck and Katcher 1996; Axelrod and Suedfeld 1995; Katcher and Beck 1987), due mostly to an enormous shift of people away from rural areas into cities. Here, contact with nature is often only available via parks. Never have humans spent so little time in physical contact with animals and plants, and the consequences of this are only beginning to be explored (Katcher and Beck 1987). Modern society by its very essence insulates people from outdoor environmental stimuli (Stilgoe 2001) and regular contact with nature

(Katcher and Beck 1987). Detrimental effects on humans of this isolation from nature have been asserted by researchers who believe that too much artificial stimulation and an existence spent in purely human environments may cause exhaustion, or produce a loss of vitality and health (Gullone 2000; Stilgoe 2001; Katcher and Beck 1987).

It is internationally accepted that sustainable communities exist where the three capitals, economic, environmental, and social, co-exist and are in balance. It is well recognized that parks and open spaces are major contributors to the environmental capital of a society.

In the last twenty years, there has also been recognition that parks and open space can contribute greatly to a society's economic capital. In Australia, the nature-based tourism industry is worth over a billion Australian dollars (AUD) a year and many parks such as the internationally renowned Phillip Island Penguin Parade contribute as much as AUD100 million a year to Australia's economy.

But do parks contribute to *social* capital? Social capital is a relatively new and very useful concept. Social commentator Eva Cox popularized it in Australia with her 1995 Boyer Lecture, one of a prestigious series sponsored by the Australian Broadcasting Corporation. According to Cox (1995), social capital is “the processes between people which establish networks, norms, social trust and facilitate co-ordination and co-operation for mutual benefit.” She goes on to say that “these processes are also known as social fabric or glue” and “we increase social capital by working together voluntarily in egalitarian organizations.” Clearly, using this definition, parks can play a significant role in establishing and supporting social capital.

3. NATURE AND HUMAN HEALTH

Although parks have not entirely lost their connection with health, the modern emphasis is almost exclusively on their use as a venue for leisure and sport or conservation protection. Although the physical activity opportunities provided by parks have been promoted, little if any recognition has been given to the other potential health benefits offered by access to nature through parks. Aside from leisure and sport purposes, parks in cities tend to be viewed as optional amenities rather than as necessary components of urban infrastructure (Kaplan and Kaplan 1989).

Why the benefits of parks, understood by early landscape designers, park engineers, and public health campaigners, have been overlooked in recent decades is a mystery. Research on the benefits of nature carried out over the last two decades indicates that they were right. Data so far have shown that access to “green nature” can reduce crime (Kuo 2001), foster psychological well-being (Kaplan and Kaplan 1989; Kaplan 1990), reduce stress (Ulrich et al. 1991; Parsons 1991), boost immunity (Rohde and Kendle 1994; Parsons et al. 1998), enhance productivity (Tennessen and Cimprich 1995), promote healing in psychiatric patients (Beck et al. 1986; Katcher and Beck 1983), and aid community cohesion and identity (Lewis 1990).

Another factor likely to have contributed to human health problems over recent decades is (according to Putnam 1995) loss of social capital, which is defined by Putnam et al. (1993, 167) as “features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions.” Though there are variations in the way it is defined, the concept of social capital is generally accepted as including the level of connectedness or civic engagement within a community, the trust members feel toward others, and the security they feel living within the community (Flower 1997; Putnam 1993; Kawachi and Kennedy 1997; Bourdieu 1985). Rutter (1995) has proposed that the rapidly increasing psychopathology in modern industrialized societies is most likely due to factors including family conflict and break up, as well as increased individualism. This proposed association underscores the need to promote connectedness and civic engagement within such societies.

The role of social capital as a key determinant of health has been highlighted by recent research (Kawachi et al. 1997; Runyan et al. 1998; Leeder and Dominello 1999). Despite this recognition of the importance of social capital for health, Putnam (1995) observes that social connectedness and civic engagement – key aspects of social capital – are in decline.

It is not surprising, therefore, that recent research supports the proposal that social capital may explain differences in mortality and morbidity within and between groups (Runyan et al. 1998; Kawachi and Kennedy 1997). For example, a study of the connection between social capital and the presence of emotional and behavioral problems found that, independent of other factors, children from families high in social capital had fewer

problems than children from families low in social capital (Runyan et al. 1998). In another study, researchers found a significant relationship between community disinvestment in social capital and mortality (Kawachi and Kennedy 1997).

Given the combination of these two factors – disengagement from nature, or diminished access to “natural capital,” defined by Pretty (1998) as the goods and services provided by nature; and declining social capital, it is not surprising that in industrialized countries chronic disease has increasingly replaced acute infectious disease as the major cause of disability and death (House et al. 1988), and that the WHO Global Burden of Disease study (Murray and Lopez 1996) indicates that by the year 2020 this will be true for every region in the world, with cardiovascular disease and poor mental health as the two biggest contributors. These types of afflictions are often long-term and are potentially much more expensive in terms of health care requirements and cost to the community. Current theories of disease have become more complex, moving from single-cause explanations to ones in which multiple behavioral, environmental, biological, and genetic factors combine over time, resulting in one or more of a number of different diseases (Cowen 1999; House et al. 1988).

Yet despite the burgeoning chronic health problems in industrialized nations, and despite the trend away from single-cause explanations of illness and disease, little if any attention has been paid to the potential for the “symbiotic” relationship between social capital and natural capital to be exploited as both a preventive measure and a restorative solution to the diseases prominent in modern society.

Other research has demonstrated the importance of contact with natural environments for human health and well-being (Frumkin 2001; Wilson 2001). Yet, despite its potential health benefits, increasing urbanization results in diminishing contact between humans and natural environments, and health is being deleteriously affected. An example of this is in urban consolidation where infrastructure considerations are driving a vertical development agenda. Singapore is one of the few cities placing increasing importance on greening its urban environment.

These two strands of research into health determinants appear to merge in anecdotal evidence that suggests engagement in civic environmentalism (through volunteers and groups such as “Friends of Parks”) has spin-off health

benefits, relating to a combination of exposure to natural environments and increased social capital. This link is supported by Furnass (1996) who defines the components of well-being as including: satisfactory human relationships; meaningful occupation; and opportunities for contact with nature, creative expression, and making a positive contribution to human society. However, data are needed to verify this claim.

In many fields of research, including ecology, biology, psychology, and psychiatry, there have been recent attempts to understand the human relationship with nature and how humans might benefit from nature in terms of health and well-being. The research indicates that, contrary to popular thinking, humans may be dependent on nature for psychological, emotional, and spiritual needs that are difficult to satisfy by other means (Frumkin 2001; Wilson 2001; Friedmann and Thomas 1995; Roszak et al. 1995; Katcher and Beck 1987; Wilson 1984).

Australia spends 8.5 percent of its gross domestic product on health (Ross et al. 1999) and while, by international standards, Australians enjoy good health, it is also true that some experience poorer health than others (AIHW 2000). Obesity in Australia is reaching epidemic proportions and, as elsewhere in the world, cardiovascular disease and mental illness are growing. There are increasing rates of family breakdown, social cohesion is being challenged, and health care costs are rising rapidly. At the same time, environmental degradation is posing major problems in Australia.

The above information summarizes the findings of Deakin University's literature review on health benefits of nature in park contexts (Maller et al. 2002).

This research demonstrated that natural environments have been found to offer low-cost preventive and remedial opportunities for public health. These findings have led to further research and have major implications for park management. The research underway focuses, among other things, on: the health impacts of highrise living; the health and well-being benefits of "Friends Group" membership; and the value of natural experiences as an intervention in treatment of depression.

4. THE "HEALTHY PARKS, HEALTHY PEOPLE" INITIATIVE

In 2000, Parks Victoria successfully introduced the slogan "Healthy Parks, Healthy People" to promote its activities. Having a unique

combination of responsibilities enabled the organization, as part of its urban park management activities, to market the values and recreational opportunities of the protected areas within the metropolitan area to the city dwellers who comprise 3.5 million of the state's 5 million population.

While support for the principle of land being set aside for parks is widespread in Western societies, the rhetoric is not always realized in practice when commercial pressure occurs. The importance of parks is only top-of-mind when the integrity of a well-known park is threatened. So the challenge for Parks Victoria, as for many park agencies, is how to heighten people's sense of the value of parks. The provision of information and experiential opportunities are obvious, but both need to be cleverly crafted.

However, it is well documented that people need encouragement to recognize relatively easy options that will contribute to their own well-being. Along with the obvious virtues of open space for physical pursuits, parks are refuges from urban stress and places for families to get together for picnics, for people to enjoy a variety of outdoor activities, and for children to safely explore the magic of the natural environment.

Going to a park can be a great adjunct to both traditional and natural health therapies, as almost everyone's physical and mental well-being can be improved by visiting a park. To encourage Victorians to visit parks, to inspire them to play a role in their care, and to provide "healthy" places for body, mind, and spirit, Parks Victoria developed a comprehensive integrated program focusing on health.

The first challenge was to develop a genuine and effective positioning in line with Parks Victoria's core values. The positioning needed to trigger a perception in the minds of the public of an organization that exemplified the qualities and attributes of custodianship, environmental protection, and a contribution to a civil society. The clear and simple slogan "Healthy Parks, Healthy People" was developed, implying that the environmental health of parks results in a healthy community and that spending active recreation time in a well cared-for park environment can lead to greater health and fitness of both individuals and society.

The first stage was to develop broad-based awareness. An eight-week radio and print promotion program was launched, with activities supported by editorials in the national press. A

festival showcased statewide park and recreational opportunities and displays from community and recreational groups celebrating the benefits of outdoor recreation. The displays involved entertainment, music, environment displays, tree-planting, boating, bike hire, fishing, and fitness assessments – a fun experience!

The second element of the campaign related to partnerships forged with several peak health bodies. These alliances gave extra credibility to the campaign by legitimizing the link between a healthy park system and a healthy society through the imprimatur of the medical profession. Support was sought and obtained from the Royal Australian College of General Practitioners, Asthma Victoria, the National Heart Foundation, and Arthritis Victoria. Colorful posters and brochures have been designed and distributed to general practitioners' offices statewide, and more recently (in conjunction with Maternal and Child Health Services and the Australian Breastfeeding Association) a congratulations card is provided to the mother of each new baby. These advise patients and mothers on the benefits of the natural environment and where to get more information about healthy activities in parks.

Finally, all existing Parks Victoria brochures and promotional programs are now themed "Healthy Parks, Healthy People," including stands at three major annual exhibitions and major events like "The World's Greatest Pram Stroll" – an initiative to encourage young mothers to meet and mix in a pleasant environment and hopefully establish a great habit! These events provide very high levels of exposure to themes sympathetic to the campaign. "Healthy Parks, Healthy People" has a prominent section on the Parks Victoria Web site (Parks Victoria). Victoria has made the electronic and other collateral freely available to other park agencies.

A significant contributor to the success of the campaign to date has been its endorsement by Parks Victoria staff, in particular its championing by regional communication staff. Vital to the overall impact of the campaign has been the fact that it has been integrated into a wide range of activities, including staff awards, the Parks Victoria internal Web, everyday stationery and report covers, and rebranding of signage and existing sponsorship and media communications.

A partnership has been established with a national television program "Postcards," which features an actual park ranger as a presenter and highlights park venues and visitor opportunities.

Each segment is tagged with the "Healthy Parks, Healthy People" message and the Parks Victoria's telephone information center number. The series was so successful it was placed in the popular time slot of 7.30 p.m. Saturday, and has received even higher ratings.

The campaign has been awarded the Victorian State prize for the Australian Marketing Institute's Public Sector - Best Marketing Campaign 2001, the national Banksia Award for Communication 2002 and the Parks & Leisure Australia National Innovation Award in 2002.

So how effective is the campaign? Attributing success to any specific marketing campaign is difficult as many factors can influence the level of understanding and impact. The press component reached 85 percent of all Victorians aged 14 and over at an average frequency of 5.6 – that is, on average, each of the individuals reached by the campaign were exposed to the message more than five times. The radio component reached almost 60 percent of all adult Victorians at an average frequency of 12.6.

Parks Victoria cannot compel, only encourage, Victorians to take advantage of the myriad of opportunities to improve their physical and mental health, in some of the most beautiful places in the world. If more people are now more aware of those opportunities and place a higher value on parks, then the campaign has been, and remains, a core part of Parks Victoria's management strategies.

5. GOING A STEP FURTHER: "LINKING PEOPLE AND SPACES"

Within the greater Melbourne area, open space responsibility resides with 31 municipal councils and a number of individual organizations, including Parks Victoria. As the only entity with metropolitan wide responsibilities (37 parks covering 6,200 hectares) the state government charged Parks Victoria with preparing a strategy and vision for continued growth and improvement of Melbourne's open space network. This report, *Linking People and Spaces* (Parks Victoria 2002) was prepared in parallel with a Metropolitan Strategy (by the Department of Infrastructure). It takes into account the population growth predictions (numeric and spatial) for the next 20 years and demographic indicators of significance.

The key principles of the strategy are partnerships, equity of access, diversity, flexibility, and sustainability. It identifies the benefits of open space under headings of conservation (including

that many of the state's rarest flora and fauna species are found with the metropolitan area), urban lifestyle, and economic and health/well-being. The strategy sets out a coordinated, consistent approach to future urban open space planning and provides a logical connection to protected area values and issues.

The report was prepared through a community consultation process and subsequently released as a government-endorsed direction. The process and the future implementation provide continued opportunities to re-emphasize the relevance of urban open space and its linkages to protected areas (a number of which exist around the urban fringe) for habitat corridors.

Volunteers

In Victoria alone, there are more than a hundred "Friends of Parks" groups spread across the state, with thousands of members as well as additional volunteers who participate in community group park-related activities. An estimated 100,000 hours is contributed annually to Parks Victoria activities through such voluntary work.

As mentioned above, it seems obvious that members of groups involved in "civic environmentalism" are likely to receive a number of health and well-being benefits from their volunteer work with the natural environment, including: a sense of achievement and ownership; the opportunity to learn from, and socialize with, other members of the community, enhancing both social capital and "human capital," defined by Pretty (1998) as "the status of individuals"; multiple physical health benefits; and the opportunity to have access to plants and animals.

Anecdotal evidence from a pilot study indicates there are significant health and well-being benefits flowing from civic environmentalism. The findings of this study suggest that park volunteers not only work to restore the environment, but in the process they experience improved physical health as a result of increased physical activity, improved mental health through an increased opportunity for time spent in a natural environment, and an increased level of social connectedness and trust through interacting with others in their local community.

In the face of burgeoning health care costs, and the apparent declining physical, mental and social well-being of Australians, Australia's planners and policy-makers are being forced to "think outside the square," as traditional approaches to health

promotion, health education, and health care are fighting a losing battle. There may be value in exploring in more depth the health and well-being benefits of civic environmentalism, and testing the efficacy of a "lifestyle prescription" based on membership of a park volunteer group.

Community partnerships

Social capital, according to Australian social commentator Eva Cox, in her 1995 Boyer Lecture, is "the processes between people that establish networks, norms, social trust and facilitates co-ordination and co-operation of mutual benefit." Cox also states that "these processes are also known as social fabric or glue" and "we increase social capital by working together voluntarily in egalitarian organizations." By their very nature, parks contribute to social capital though the:

- Care and protection of the natural resource assets;
- Provision of safe and accessible open space in which sub-groups from a wide spectrum of society congregate to enjoy leisure activities;
- Support and encouragement for activities of volunteer and interest groups;
- Provision of recreational opportunities that encompass a wide range of interests; and
- Supporting regional employment and the local economy.

Under the broad initiative of "Community Partnerships," Parks Victoria is now striving to respond to its social responsibilities in four key areas:

- Internal capacity building: Development of tools, skills, and cultural norms to enable the organization to effectively engage with the community;
- Collaborative programs: Practical partnering programs that provide meaningful, rewarding, and mutually beneficial opportunities for park users, volunteers, interest groups, and the general community;
- Building collective community conscience: Building awareness, understanding, and ownership within the whole community of the broader importance of parks and open space; and
- Social responsibility: Using the "business" of park management and park resources to build

the skills, opportunities, and outlook of specific local communities.

Each of these key areas is described below.

Internal capacity building. This is regarded as the first stage for any organization wishing to undertake genuine community development. Encouraging an organizational culture that demonstrates community development principles through its leadership and management style, and providing the tools, processes, and support for staff to effectively participate in building social capital are key action areas.

The term “social capital” may be new to many, but the activity of using local resources, building local ownership through participation, engaging local networks, and honoring local processes is one which park management staff has traditionally used in working with communities.

Acknowledging the value of the existing relationships, networks and partnerships through which staff currently engage is part of building social capital within the organizational culture.

Parks Victoria is developing definitions and principles to underpin the spectrum of partnership types and guide staff to implement collaborative programs.

Collaborative programs. In this area, Parks Victoria has traditionally delivered a range of projects and programs which enable the participation of the broader community in park management.

A new direction however, is to engage volunteers to deliver high-priority projects for the whole park system while balancing the needs and interests of park visitors, volunteers, or community groups. In particular, the organization will seek opportunities to build the capacity of the park community through skills development and supporting community engagement through effective decision-making, listening, and networking.

Parks Victoria is now working more closely with its major stakeholders to build solid relationships or establish structured partnership agreements. Gamecon, the peak body supporting recreational game hunting, has partnered with Parks Victoria to undertake pest animal species management in one of Victoria's major national parks. This collaborative program was supported by shared decision-making, a skills-building program, and memoranda of understanding

between Parks Victoria and the range of community groups involved.

Building a collective community consciousness. Developing a broader understanding in the community of the value of parks beyond green open space is best demonstrated by the “Healthy Parks, Healthy People” program described above.

By promoting the connection, internally and externally, between a healthy park system and the health of the community, Parks Victoria is demonstrating the integral role parks play in supporting a truly civic society.

Social responsibility. Beyond the role that parks physically contribute to social capital, Parks Victoria has a responsibility to use the business of managing parks to benefit the broader community. Parks Victoria is exploring ways to use its networks, influences, and resources to build local employment and economic opportunities, to support the local community through access to resources or services, or to use its reputation and status to promote causes or affiliations.

A specific example of social responsibility is Parks Victoria's indigenous programs. Providing opportunities for indigenous people to reconnect traditional links with the land through employment, consultation, networking, and skill-building in co-management arrangements demonstrate how park management can be used to enhance the social capital of the indigenous community.

A second example is through Parks Victoria's pro-active participation in the establishment of the Mornington Peninsula Westernport Biosphere Reserve. UNESCO's Man and the Biosphere (MAB) Programme offers a vehicle for engaging local communities, in partnership with government and business, to build a sustainable community in a defined geographic area. Parks Victoria has supported this project through resources, services, and building credibility of the project in government, business, and the community.

The Mornington Peninsula Westernport area has a population exceeding 250,000 and is part of the metropolitan area of Melbourne. A successful application was made to UNESCO in 2002 for biosphere reserve designation supported by various levels of government. Most importantly, it had widespread support from the local community and such subgroups within the community as tourism operators, business groups, farmers, and environmental groups.

Parks Victoria can expect to be a beneficiary of the programs that occur in the transition zone – the area outside the parks where the bulk of the population of the biosphere reserve live and work. It is such activities that will be the key to the success of the biosphere reserve, and which are expected to provide mutual benefits to Parks Victoria and the local community.

The importance of the biosphere reserve to Parks Victoria is also that it signals acceptance of a new way of working, which may be applied in other management contexts. In particular, this refers to “place-based” delivery of services, which rely on a horizontal application of government expertise and resources. It is also a vehicle for community interaction with governments in which the community leads the way and takes greater responsibility for the area. The international recognition of the unique values and character of the area heightened a sense of “pride of place” within the community. The area of the biosphere reserve is a natural bioregion and the program will enhance current bioregional projects. All these aspects of the biosphere reserve project are expected to assist in the long-term protection of the environmental values within the boundaries of the park and the sustainable growth of the social and economic values in the transition zone.

The economic benefits to the area underpin social benefits. It has been estimated the economic benefits of biosphere reserve designation to the Mornington Westernport area will run into millions of dollars. The imprimatur of UNESCO elevates the value of goods and services that comply with biosphere reserve criteria for sustainability. The development of a community which recognizes the economic and social benefits of protecting and enhancing natural resources of the area will create a community living in greater harmony with the environment upon which it depends.

By supporting such projects, Parks Victoria contributes to the growth of social capital, and in turn reaps the associated benefits of further growth and protection of the park system.

6. CONCLUSION: IMPLICATIONS FOR MANAGEMENT

By developing an understanding of the interrelationship of the three capitals – environmental, economic, and social – agencies will be able to broaden the role of protected area management beyond the traditional mandate and realize a purpose benefiting all facets of society.

From Parks Victoria’s experience it is evident that by taking a wider perspective, protected area management agencies can take advantage of a diverse range of opportunities (such as those illustrated here) to assist with their particular challenges and to generate a greater sense of appreciation and recognition within the broader community. By including a social capital approach and adopting more comprehensive environmental and economic views, protected area management bodies can attract an increased constituency of support that will be of potential benefit in political, resource and financial terms.

To do so will require a commitment to:

- Internal capacity building;
- Learning from, and working collaboratively with, others (and developing systems to facilitate this);
- Encouraging innovative thinking;
- Communicating to urban communities (e.g., through a partnership approach with sister urban park management bodies) to demonstrate the value of parks beyond an environmental resource to include the economic benefits of nature-based tourism and the significant role parks play in the physical, mental, spiritual, and social well-being of society;
- Engaging the community and providing meaningful, rewarding, and mutually beneficial opportunities to participate in the planning, use, and care of parks, thereby building community capabilities and custodianship; and
- Adequately resourcing such initiatives.

It is hoped that this paper will assist others in progressing the World Parks Congress Recommendation on cities and protected areas.

Parks Victoria is willing to provide more detail on any of the activities outlined above. Contact John Senior, jsenior@Parks.vic.gov.au.

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Kids for Tigers: The Sanctuary Asia Tiger Program

A globally replicable school contact program to win support for wildlife and protected areas

BITTU SAHGAL

1. INTRODUCTION

Sanctuary Asia and *Sanctuary Asia Cub* magazines are India's premier wildlife publications. Established over two decades ago, they serve to inform and weld the wildlife and nature conservation movement in India. The primary rationale for launching both magazines was that without appreciation of their natural heritage, it is unlikely that citizens of a nation will feel concern at its loss.

We wish to share with others our success and experience in turning urban children, and through them their parents, into proactive defenders of protected areas.

We conceived Kids for Tigers in 1999, and launched it in 2001, to sow conservation seeds in young minds. The idea was to move beyond tokenism and make a serious dent in public opinion in favor of the tiger as a symbol for all of nature and protecting the environment. This was in keeping with the philosophy of the Government of India's Project Tiger, initiated in 1973 (Project Tiger 2004).

We took the "Benefits beyond Boundaries" theme of preparations for the Fifth World Congress to one million Indian children, their teachers and parents. The prime benefit on which we focused was water. We encouraged children to communicate with their counterparts in South Asia, so that an informal network of young persons will emerge in Bangladesh, India, Pakistan, the Maldives, Nepal, and Sri Lanka.

Apart from the long-term investment in our future citizens, children help us take nature conservation messages to the adults in their lives in real time. What is more, their innocence belies very incisive minds and enhances the credibility of messages that seek to convey to adults the need to protect ecosystems in the long term, despite the fact that they yield high profits in the short term.

2. FIRST STEPS: 1999-2001

In 1999, *Sanctuary Asia* contacted a major Indian business corporation, Britannia, to support its mission to win young minds. To test the concept, arrangements were made to visit over 700 schools in 12 cities to show a film on tiger conservation to students between the ages of eight and twelve. This was coupled with a major signature drive on special scrolls that resulted in the collection of one million signatures in support of the tiger. Our story was simple and direct and children understood it easily:

"We cannot save the tiger unless we save its forests. If we save its forests we wind up saving the subcontinent's most precious water sources. And if we save our water sources, we save ourselves."

India's *Limca Book of Records* certified this compilation of signatures as the world's largest "Save the Tiger" scroll. On November 14, 2000, India's Children's Day, the Prime Minister wrote a letter of congratulation to the children, stating that "the tiger is an indication of the environmental health of India. Protecting India's tiger forests will not only save this animal, it will also ensure the country's economic stability."

This pilot project proved to be wildly successful and resulted in Britannia holding a sales conference in February of 2001 at the Ranthambhore Tiger Reserve, at which *Sanctuary* made a detailed proposal for a school contact program titled Kids for Tigers. With help from Project Tiger, the entire corporate team of some 90 executives was taken into the tiger reserve and given the rationale for wildlife protection. Within a week after the conference ended, *Sanctuary* was given a green light to proceed (the fact that Britannia's flagship brand was a biscuit, or cookie, called "Tiger" played a key role in convincing the sponsor). We began putting together a team to execute the tiger program in 650 schools, with an average student population of 1,500 each, adding

up to just under one million children.

At the very outset, it was agreed that there would be absolutely no commercial activity surrounding the program. The only benefit the sponsor gained was association with Kids for Tigers. We recognized, of course, that without the wholehearted support of teachers, no school contact program would be successful. Therefore, our first step was to work on creating a supportive community of teachers through special teachers' workshops held to explain our program and the rationale behind it, and to present our belief that nature education and good values went hand in hand. An educationist headed the Kids for Tigers team, not a conservationist.

In very short order, special Tiger Notice Boards were put up, a Web site was created, slide shows were presented, nature walks were organized, and ten children per school (amounting to 6,500 kids throughout the country) were selected to be "Tiger Representatives." After observing them on nature walks and interacting with them after the slideshows, children with exceptional potential were asked to participate in a Kids for Tigers Nature Camp at the Ranthambhore Tiger Reserve. To carry the message wider into the public arena and provide children with a platform to display their arts, crafts, skills, and purpose, Interschool Tiger Fests were held in each of the cities where the Kids for Tiger program was being run.

Much larger "Tiger Melas" (fairs) were held in Mumbai (Bombay) and Delhi. Wildlife NGOs, forest departments and of, course, Project Tiger participated fully in these events. Over a hundred thousand people took part in the Ranthambhore Tiger Mela. A massive petition campaign was mounted with the object of having children proactively go out into the community to win support for the tiger. The children were able to get almost a million signatures. The objective was to create a vast community of young Indians who shared a common bond with nature.

3. NEXT STEPS: 2002-2003

In 2002, Kids for Tigers began receiving widespread public support and acknowledgment at the highest levels of government. India's Prime Minister met Kids for Tigers representatives at his residence in January 2002. The Minister for Environment and Forests also met the children and launched the Tiger Express, a mobile Kids for Tigers van that goes through cities and towns. In addition to its core supporters among teachers,

parents, and students, the program was acknowledged by NGOs, wildlife experts, and government officials involved with conservation.

After a meticulous review, a decision was taken to retain the basic thrust of Kids for Tigers and strengthen and consolidate the gains made in the previous year. Kids for Tigers was then taken to 700 schools in 12 cities, with over a million children participating. The Kids for Tigers Web site was expanded and turned into a resource not only for children, but for journalists and conservationists. Recognizing that teachers were key to the success of the program led us to find ways of making teachers' workshops even more attractive and useful. By then, teachers were helping to shape and plan the overall strategy and content of Kids for Tigers, including an activity calendar synchronized with examinations, holidays, and school events.

In May 2002, four "Tiger Ambassadors," carefully selected by Project Tiger from among its top student participants, visited Kruger National Park in South Africa, an event reported by the media in both India and South Africa.

Teachers suggested that more nature camps be held, and consequently a decision was taken to shift the budget from paying for one overseas trip for four students to using the money to support regional Kids for Tigers camps for 120 children within India: in four tiger reserves, plus one national camp at the Ranthambhore Reserve for 12 especially promising kids.

As in the previous year, Save the Tiger slide shows were shown in many schools, this time to 420,000 children in 700 schools. Notice boards were put up in 675 schools, and students were appointed to keep them up to date. In addition, Kids for Tigers inspired and helped several schools to carry out their own environmental education projects, always encouraging them to make direct contact with local NGOs and forest departments. Interschool Tiger Fests and Tiger Melas (fairs) were held and these served to take the Kids for Tigers message to adults, mainly parents, but also other opinion-makers in each city. A new concept, Mini Tiger Melas, first tried out in Chandrapur and Belgaum, proved to be very successful. The Ranthambhore Mela once again proved to be popular, but lost some of its original luster because local businessmen began to exploit the large crowds. This led us to abandon plans for large melas; we chose instead to run a yearlong school contact program for children in villages surrounding tiger reserves.

4. THE FUTURE

By 2003, Kids for Tigers had won acceptability and respect from schools, officialdom, and the general public. A community of teachers, children, and supportive parents had been established. A dedicated team of Kids for Tigers coordinators had been set up.

In late 2003, we had a midstream change of sponsorship, with Heinz Ltd. partnering with *Sanctuary Asia* magazine to run Kids for Tigers. To bring the rationale for saving wildlife into the mainstream, we intend to lay the foundation for a thrust on health as a principal byproduct of saving wilderness, since clean water and clean air are principal byproducts of protected areas.

The overall strategy we have chosen is to consolidate the goodwill and gains made over the past three years.

The access and credibility we have already established with schools will help to institutionalize the program still further by encouraging schools to incorporate Kids for Tigers camps, nature walks, and melas into their regular annual school calendars.

Training workshops for the coordinators and volunteers who carry out the program in schools will have positive impacts nationwide. These workshops will be timed to take advantage of regional and national Kids for Tigers camps, and general teacher-training workshops.

Despite demands from several other cities, including Jaipur, Pune, Lucknow, and Bhopal, we intend to stay focused on the cities in which we already have major activities, which include Delhi, Mumbai (Bombay), Kolkata (Calcutta), and Bangalore. In light of the fact that even in our focal cities many new schools are asking to be included in the program, we may change the mix of schools to delete those unwilling to commit the time

required. We also intend to establish very special relationships with 30-40 deeply committed schools nationwide.

5. CONCLUSION

This paper seeks to share not only what we did, but how we did it. Our Web sites (Kids for Tigers 2004; Sanctuary Asia 2004) are updated weekly. We are willing to assist groups around the world with ideas and advice on how to win the support of children in their communities for wider environmental action.

As of early 2004, Kids for Tigers reaches 13 cities, 750 schools, 1,500 teachers and one million children in India. The "strike strategy" employed by us is to stimulate interest in nature through slide shows in schools, followed by nature walks, and then camps for the most promising kids. Tiger fests in each city take the message to a wider community. Notice boards and wall spaces in schools continue to be our most effective communication tools.

We aim to create a veritable army of supporters for Project Tiger. We focus on kids, but also work to influence their parents and older relatives so the impact of the education imparted can begin to have effect immediately.

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Vision beyond mandate: Creating farmland protected areas in the city of Albuquerque, New Mexico

TODD MILLER

At The Urban Imperative workshop, protected area systems that include farmland in and near cities were mentioned, but not discussed in detail. Todd Miller, one of the workshop leaders, has managed farmland in such a system. Here he expands on his comments.

1. INTRODUCTION: FARMLAND LOSS AND PRESERVATION IN THE UNITED STATES

Daniels and Bowers (1997) describe the crisis of urban farmland loss in the United States quite clearly: Most population growth in the U.S. is occurring in the urban fringe around cities, and suburban sprawl is now the largest threat to farmland. As U.S. cities expand into the countryside, the country loses over 400,000 hectares of farmland each year. About a third of its prime farmland lies within or adjacent to metropolitan counties, which produce over half the country's sales of farm products. Suburban sprawl is a particular threat to this prime farmland, which is relatively flat, well-drained, and easy to build on.

Loss of farmland robs communities of wildlife habitat, aquifer recharge zones, open view sheds, and historic landscapes, and has serious economic consequences. Nearly one in every ten jobs in the U.S. is connected to agriculture, and farm-related jobs contribute substantially to the local tax base and economic stability. Along with the economic consequences of farmland loss, urban dwellers become increasingly dependent on food grown elsewhere, and on the transport and business networks that bring food to town. In addition, the residential development that typically replaces farmland requires schools, police and fire protection, garbage removal, roads, and utilities that can be very costly for local governments and taxpayers.

In the U.S., many city, county, and state governments have responded to this crisis by

establishing land-use regulations to protect farmland, channeling urban growth into more compact development and creating economic incentives for farming (Daniels and Bowers 1997; Farmland Information Center 2002). Government entities, private land trusts, and non-profit corporations have also initiated programs to purchase development rights from farm properties, sometimes transferring them to allow for more density in core urban areas. However, to succeed over the long run, these programs must preserve enough farmland to generate the level of economic activity required to sustain local farm businesses and keep farming profitable (Daniels and Bowers 1997).

2. ALBUQUERQUE'S FARMLAND PROGRAM

Albuquerque, the largest city in the state of New Mexico, is one of a very few cities in the U.S. that have chosen to preserve farmland by purchasing individual farms outright. The city has a population of 450,000; its metropolitan area has just over 700,000. Surrounding Albuquerque is mostly rural Bernalillo County, which has about 550,000 inhabitants (City of Albuquerque 2003). Despite living in an urban area, Albuquerque residents enjoy buying milk from local dairy cows fed crops grown within the city; taking quiet walks through picturesque farmland; and hearing the cacophony of migratory geese, ducks, and cranes as they land by the hundreds each autumn to spend the winter foraging in farm fields within the city.

This paper presents a case study of the City of Albuquerque's effort to buy, protect, and manage farmland as part of a "Major Public Open Space" network of urban protected areas, and the opportunities and challenges that have accompanied this approach. Since many protected area professionals may not be familiar with such urban farmland protection efforts, this paper will offer a glimpse into some details of establishing and managing such a program.

A local open-space program

While many Eastern U.S. cities built European-style “greens” and park-like “commons” for their residents, many cities in the Western U.S. have grown more recently, in the midst of wilder, more rugged, and usually more arid landscapes, and have chosen to preserve these natural areas as their parklands (City of Albuquerque and Bernalillo County 1999). Albuquerque lies within a rugged landscape with a unique cultural history. Native Pueblos and early Spanish settlers focused agricultural use around settlements within the floodplain of the Rio Grande, one of the major rivers of North America. The surrounding hills and mountains were left undeveloped and open for hunting, gathering, and extensive grazing. In the 1970s, these landscapes, along with a cottonwood (*Populus*) forest in the lowlands that border the river through the middle of the city, became the focal points of citizen efforts to preserve natural areas.

The 1975 Albuquerque/Bernalillo County Comprehensive Plan (amended in 1991) serves to guide and establish the legal mandate for growth management and open space preservation. Citizens crafting the Comprehensive Plan identified more than 40,000 acres of rugged, natural landscapes and cultural sites to acquire as Major Public Open Space (MPOS). These MPOS properties were to be “used and maintained to retain their natural character to benefit people throughout the metropolitan area by conserving resources related to the natural environment, providing opportunities for outdoor education and recreation, or defining the boundaries of the urban environment” (City of Albuquerque and Bernalillo County 1991, 2).

Despite a general reluctance of citizens to create new taxes, Albuquerque voters have, in overwhelming numbers, twice approved measures to raise taxes temporarily to generate funds to acquire land for MPOS. In 1982, they approved a temporary sales tax to purchase the first MPOS parcels. In 1997, voters approved another temporary tax for open space acquisition, bringing total MPOS holdings to nearly 12,000 hectares. Of this total, about 2,000 hectares are owned by state and U.S. government entities and co-managed by the city as MPOS. The city’s Open Space Division began in 1984 with five employees, and now has about 44 permanent employees working in planning, management, maintenance, environmental education, law enforcement, and administration.

To create a more detailed mandate for Open Space acquisition and management, the City of Albuquerque and Bernalillo County adopted the Open Space Facility Plan in 1999. The Facility Plan defines management goals, objectives, policies, design guidelines, and open-space management categories. Most MPOS lands are considered Undeveloped Open Space Areas that protect natural resources and allow low-impact recreation. Some areas contain Developed Facilities and Trails to concentrate use in appropriate locations. Special Use Areas protect natural landscapes while requiring special management, such as an off-road vehicle park and an equestrian complex. Open Space Preserves protect natural or cultural resources that merit special protection, and only allow public visits with staff supervision.

Origins of the farmland protection program

The city government purchased its first farmland for MPOS in 1977, when it combined taxpayer-approved funds with U.S. and state government budgetary allocations to acquire the Candelaria Farm Preserve. This culminated more than a decade of citizen activism to preserve land for open space, recreation, and nature study along the bottomland woods, or *bosque*, in Albuquerque’s urbanizing North Valley. Within this 70-hectare preserve, about 16 hectares are leased to the state government’s Rio Grande Nature Center State Park, which features interpretive facilities focusing on *bosque*, riparian, and pond ecosystems. To complement the wildlife viewing at the nature center, the remaining 40 hectares of farmland was to be managed as an agricultural wildlife preserve, producing crops for commercial purposes, as well as forage crops for protected migratory waterfowl such as sandhill cranes (*Grus canadensis*), Canada geese (*Branta canadensis*), and numerous duck species. Guided interpretive programs were to provide the only public access.

The city government did not purchase additional farmland for MPOS until 20 years later, when Albuquerque citizens approved the second temporary sales tax. Residential development threatened one of the largest remaining farms in Albuquerque, and citizen activism to protect the farm drove much of the public support for the tax increase. Funds from this source enabled acquisition of this 55-hectare farm, now called Los Poblanos Fields, as well as three other agricultural

properties: the 35-hectare Hubbell Oxbow Farm, and the smaller Alamo Farm and Roberson Ranch.

Farmland as open space

Preserving farmland was not a goal of the Major Public Open Space (MPOS) program. As it was defined in the Comprehensive Plan, the Open Space Facility Plan contains no management category for farmland, and the management goals, objectives and policies in the Facility Plan are aimed more at protecting natural areas and archaeological sites than managing agricultural landscapes. However, despite the lack of a legal mandate, Albuquerque citizens, political leaders, city Open Space staff, and partner organizations saw many opportunities associated with acquiring farmland for MPOS. The land could be used to grow forage crops for migratory birds, as was the case at the Candelaria Farm Preserve. MPOS farms could enhance wildlife habitat by creating hedgerows and wetlands, and by encouraging wildlife-friendly farm practices. Tracks (dirt roads) through the farms could link to the regional trail network, offering recreational trail loops for city-dwellers who wanted to enjoy quiet walks or bicycle or ride by horseback through scenic agricultural lands. In addition, protected farmlands could frame the urban area, and preserve views of the rugged landscapes around the city. The Open Space Division and partner organizations could create educational programs about farm heritage and agricultural ecosystems. More recently, the Open Space farms have been seen as opportunities to promote water-conservation techniques, and for service groups to grow food in community gardens for local people in need.

But along with unique opportunities came special challenges.

3. FIVE CHALLENGES

Challenge 1: Who runs the farms?

One immediate challenge has been the question of who operates the farms. Other MPOS areas are natural landscapes that have required little management other than maintaining trails and visitor facilities. However, irrigated farmland requires active management on a daily basis. With 12,000 hectares of land to manage, the Open Space Division has been capable of fully operating the farms, and has looked to the private sector to find farmers willing to do so.

At the Candelaria Farm Preserve, the first management system allowed private farmers paying a cash lease to grow alfalfa and other commercial crops on a large portion of the farm; Open Space Division staff then assumed the responsibility of growing wildlife forage crops on other fields. However, demands on staff soon forced the division to delegate responsibility for wildlife crops to the private farmers. The division has since developed an innovative series of annual Farm Operating Agreements. Rather than demanding payment in cash, these agreements grant private farmers the right to grow commercial crops for profit, in exchange for maintaining the property and growing wildlife forage crops on a specified area. While this system has successfully decreased demand on staff time, ensuring an adequate quantity of wildlife crops has often been a problem. Fluctuations in rainfall affect crop growth, years of repeated growth deplete soils, and crumbling irrigation ditches do not supply sufficient water. The lack of adequate wildlife crops has led to the dismissal of several farmers, and at least one costly legal battle. Staff now emphasizes the importance of ditch maintenance and bountiful wildlife crops in deciding whether to recommend renewal of a farmer's operating agreement.

The Open Space Division has instituted similar Farm Operating Agreements at Los Poblanos Fields, where the visiting public has expressed a strong interest in wildlife. However, staff has created different arrangements on other farms, to address different circumstances. In the past, Open Space staff have been able to manage the smaller Alamo Farm and Roberson Ranch themselves, growing crops exclusively for waterfowl. However, due to increasing demands on their time, staff is moving toward instituting Farm Operating Agreements at these small properties as well. There is less public interest in waterfowl at the Hubbell Oxbow Farm, so a private farmer manages this property though a cash lease with no requirement for wildlife crops. This is the easiest arrangement to administer, and creates a source of income for the city program.

Challenge 2: How to pay for farm infrastructure improvements?

The next most immediate management challenge has been the need to make costly renovations to vital farm infrastructure, and the question of who is responsible. Like most farms in the arid Rio

Grande Valley, the Open Space farms are irrigated by a system of ditches, *acequias*, first built by early Spanish settlers. For farmers to irrigate fields efficiently, these ditches must be in good condition, and fields must be sloped uniformly away from them. Increasing competition for scarce water and a lingering drought make irrigation efficiency an urgent topic throughout the Southwestern U.S.

The old, earthen ditches at the Candelaria Farm allow substantial amounts of water to seep into the ground without reaching the crops. These ditches also attract vigorous growth of weeds that consume additional amounts of water, slow its delivery, and require constant mowing. The inadequate slope of many of the fields further slows the delivery of irrigation water, allows substantial amounts of water to seep past the root zone of crops, and results in weed outbreaks and irregular crop growth. These factors contribute to high labor costs, unnecessary water loss to seepage, and poor harvests. Over the years, improperly sloped fields and inoperable ditches have even led farmers to abandon fields which were then invaded weeds.

Re-leveling fields and ditches, and lining ditches with concrete, can save substantial amounts of water, reduce the time and costs involved in irrigating, and improve crop growth. Since fields and ditches are permanent infrastructure, their restoration has been seen as the responsibility of the city as the landowner. However, the Open Space Division has not had sufficient funds for such expensive restorations. To overcome this obstacle, staff has had to find farmers with the expertise, labor, capital, and equipment necessary to re-level fields and fix ditches as part of their normal operations. Staff has also had to find outside funding to subsidize the more costly ditch-lining work.

One local dairy farmer was willing to invest his labor and equipment in restoration, but only in exchange for a five-year operating agreement that would allow him to recover his investment. The Open Space Division agreed to this, and the farmer has since re-leveled every field and lined several ditches, bringing the whole farm into production for the first time in several years.

Based on success at Candelaria Farm, staff has invited the same dairy farmer to sign a Farm Operating agreement for a large portion of Los Poblanos Fields, and to level fields at the Alamo Farm and Roberson Ranch, in exchange for harvesting crops there. Field leveling has cut

irrigation time by about half at these farms, while improving crop growth.

A continuing challenge is the difficulty of contributing funds for ditch lining. The U.S. Department of Agriculture originally provided partial funding for this work, but no longer funds such work on publicly owned land. There appear to be few sources of funding for farm improvements on Public Open Space.

Challenge 3: How to improve wildlife habitat?

Through participatory planning exercises, the public has expressed strong interest in improving habitat for wildlife on Albuquerque's Open Space farms. Unlike improving habitat in wild areas, one challenge has been that habitat improvements on farmland must fit into the layout of the farm site and the schedule of farm operations. This requires careful coordination between parties, along with adaptive management and repeated refinements.

The wetland at the Candelaria Farm provides an example of meeting these challenges with mixed success. Ponds and wetlands were once prevalent in the floodplain along much of the Rio Grande, but dams have contained floods, levees have separated the river from the floodplain, and moist areas have been drained for agriculture and urban development. The Rio Grande Nature Center State Park, adjacent to the Candelaria Farm, built three ponds to provide critical aquatic habitat for native flora and fauna, especially resident and migratory waterfowl. In 2001, the Open Space Division secured financing from several U.S. government agencies to build a five-acre wetland that would complement the ponds by providing scarce shallow water and moist soil habitat, especially for shore and wading birds. The wetland contains a matrix of shallow and deepwater areas, and is filled from a well. The non-profit Friends of the Rio Grande Nature Center raised private funds, and together with the Open Space Division, organized over a hundred volunteers to plant the moist soil zones on the edge of the wetland with native vegetation.

In order to fit into the layout of the farm, the wetland was located at the downhill side of two irrigated fields, enabling those fields to continue to be irrigated from ditches on the uphill side. In addition, the wetland is surrounded by a berm to keep water from flooding adjacent cropland. Surrounding this berm, the farmer planted native grasses to provide additional native habitat, and serve as a non-mechanized buffer zone between the wetland and adjacent cropland. Scientists and

volunteers from the Friends have since monitored changing environmental conditions at the wetland, and have assumed responsibility for circulating water to maintain water quality. Pipes through the berm enable circulating water to drain into small basins that are also being developed as native grasslands. To compensate the farmer for his efforts in establishing the grasslands, the Open Space Division considers them part of his required wildlife crop acreage.

This layout seems logical, maximizes the use of space, and integrates the interests and abilities of the different parties involved. The wetland has also succeeded in hosting a surprising abundance and diversity of animals: songbirds, raptors, some shore and wading birds, turtles, frogs, toads, salamanders, coyotes, and aquatic insects. However, the design has created some additional challenges, and a need for further refinements. The steeply sloped berms around the wetland provide a very narrow width of moist soil for wetland vegetation, resulting in lower-than-expected visitation by shore and wading birds. Neither the Open Space Division nor the Friends group have had the resources required to expand the moist soils zones, and are looking for the funds needed. In addition, the layout of the wetland within a larger cropping system has been especially successful in attracting Canada geese, hundreds of which now reside at the farm year-round. Although visitors and passersby enjoy seeing the large, raucous flocks, the geese eat a substantial amount of the farmer's commercial alfalfa crop, considerably reducing his earnings. Open Space staff is now working with the Friends group and the farmer to find a mutually agreeable solution to the goose issue.

Fitting habitat management into the farm operations schedule has also been an ongoing challenge. For example, in order to establish more vigorous grasslands around the wetland, the farmer and the Open Space Division would like to plant additional native grass seeds. However, most native grasses only germinate in the cooler fall and spring seasons. Bird experts discourage such disturbance during the spring nesting season; however, irrigation water is often in short supply by fall, making it difficult to germinate the grasses. Next year, staff will experiment with other planting techniques and other plant varieties.

One lesson from this project is that creating wildlife habitat on farmland requires serious organizational investment at the beginning, and may require additional investment over the long-

term. However, with many tasks and limited resources, staff needs to finish projects quickly and move on. Private farmers and volunteer groups are also limited in their ability to devote time to ongoing experimentation. This level of ongoing, adaptive management is a considerable challenge for all those involved.

Challenge 4: How to balance multiple uses?

In preserving farmland as Public Open Space, the City of Albuquerque has an added challenge: balancing public service, recreation, and educational programs with agriculture and habitat protection. In addition, many local people have homes looking out at a farm, are directly affected by activities there, and have strong opinions about how farmland should be managed. Balancing multiple uses and diverse interests has required participatory, site-based planning, and constant oversight.

For example, Los Poblanos Fields is open to the public for walking and for riding bicycles and horses on dirt farm roads (tracks), and many local people enjoy the quiet, rural atmosphere of the farm. The public shares these roads with the farmer, requiring the public to be mindful of the farmer's activities. The farmer must also be careful around visitors, drive farm equipment slowly, and minimize dust. To protect wildlife and the farmer's crops, the public is prohibited from entering onto farm fields, and all dogs must be on leash. However, enforcement is minimal, so the Open Space Division depends largely on voluntary compliance. Further intensifying the human presence, the non-profit group that manages a portion of the farm hosts a variety of programs that benefit the public, including educational activities for schools, a community garden, and a corn maze for the public to visit each autumn.

Providing the public with the opportunity to participate in drafting a resource management plan to evaluate multiple uses and allocate appropriate times and sites for each of them seems to have created strong public support for the resulting balance of activities.

Challenge 5: How to sustain the region's agricultural economy?

Albuquerque's city government has acquired about 160 hectares of farmland for Open Space, including some of the largest remaining farms within the urban area. Despite ongoing challenges,

this effort has certainly succeeded in preserving farmland for agriculture, protecting scenic landscapes and cultural heritage, offering unique opportunities for public recreation and education, and providing wildlife with additional habitat. Four of the five farms were acquired partly because they were adjacent to other protected areas, so an additional benefit has been creating larger habitat blocks and corridors.

Farmland preservation advocates have learned that to succeed over the long run they must preserve enough agricultural land to retain agriculture-related businesses and sustain the regional farm economy (Daniels and Bowers 1997). Boulder County, Colorado, is an example of a local government that has an explicit goal of preserving enough farmland to maintain viability of agriculture. Boulder County has worked with the neighboring cities of Louisville and Lafayette to acquire ten farms totaling 350 hectares as part of an open space program to “ensure the continuation of agriculture in the local area” (Boulder County et al. 2003, 4). The Boulder County effort enjoys strong public support, and considerable taxpayer financing.

Whether Albuquerque’s farmland preservation efforts have helped support the region’s agricultural economy remains a critical question. The Albuquerque/Bernalillo County Comprehensive Plan stresses the importance of keeping farmland in production within the designated rural area, through tax incentives, farmers markets, zoning for low-density housing, and voluntary preservation efforts such as easements, land banks, land trusts and agricultural districts (City of Albuquerque and Bernalillo County 1991). Several of these programs have begun only recently, and their success has not yet been evaluated.

The Albuquerque Open Space program, however, is not part of any official farmland preservation effort. The Facility Plan that establishes the Open Space mandate does not even list preserving farmland specifically as a goal, or contain a category for farmland. And whereas the Comprehensive Plan only stresses the importance of farmland preservation in the rural area, the Open Space efforts have taken place in and around the urban area.

At this point, it would be difficult to assess whether the city and county have preserved enough farmland, through Open Space acquisition and other means, to sustain or even impact the region’s agricultural economy. Although this is beyond the

mandate of the city Open Space Division, it is surely a challenge we will face. For if agriculture in the Albuquerque region becomes less viable, what will be the fate of the Open Space farms?

By merely acquiring farmland for Open Space, City of Albuquerque staff, elected officials, and citizens have already expressed vision beyond any legal mandate. If this vision can continue to expand, the Open Space farms may play a vital role in a larger farmland preservation program to sustain the agricultural economy. For example, the city has already begun efforts to test and demonstrate irrigation efficiency improvements, which could help sustain local farmers during droughts. In addition, educational activities at Open Space farms already reach thousands of local citizens each year, and could teach them about the importance of broader farmland preservation efforts. In the future, amendments to the Comprehensive Plan and the MPOS Facility Plan could provide a policy framework for a broad farmland preservation program, and include a Farmland category for MPOS.

The cost of protecting additional farmland will be another challenge. The agricultural district and easement programs recommended in the Comprehensive Plan could protect significant additional acreage of farmland at a lower cost to the public. The Open Space Division could participate in these programs, or raise additional funds to purchase additional farmland outright. But to succeed, aside from funding, the city and county will need to work together, see beyond their existing mandates, and reach across institutional boundaries to implement a cohesive program.

4. CONCLUSIONS

This paper does not advocate Albuquerque’s Open Space approach to urban farmland preservation as the most appropriate course of action for cities worldwide. Indeed, Albuquerque’s effort was more a product of citizen activism and the vision of staff and elected officials than strategic planning or institutional mandate.

Nevertheless, detailed examples have been given of the opportunities and challenges protected area agencies engaged in large cities may face if they choose to undertake such efforts.

Protecting urban farmland can reduce the need for governmental entities to invest in infrastructure for development while sustaining the incomes of local farmers and providing food for local people. Protected farm areas can also create unique

opportunities to conserve habitat for wildlife and preserve scenic areas for the public, and opportunities to connect with their agricultural heritage.

The biggest challenge may be supporting the agricultural economy in and around cities, which lies beyond the reach of any single institution. However, this may also be the most significant opportunity. The importance of urban agriculture to food security is well known within the international development community. According to the United Nations Food and Agriculture Organization (FAO 2002), 200 million urban farmers grow food for 700 million people worldwide. Urban and peri-urban agriculture can contribute to food security by increasing the amount of food available and enhancing the freshness of perishable fruits and vegetables, while providing employment opportunities with low-entry barriers (FAO 1999). However, the FAO (2002) predicts that over half of the world's people will live in cities by 2005, and supplying the world's city dwellers with affordable, safe food will "strain the food supply and distribution chain to the breaking point." This may be especially true in developing countries, where poverty rates in cities often exceed 50 percent. FAO urban food security specialist Olivio Argenti further predicts: "Urbanization is likely to eat up the productive land, pushing food production further and further away. This increases the cost of all activities associated with producing food and bringing it to cities, calling for massive investment" (FAO 2002).

How might the Albuquerque case be tailored to suit other cities? In particular, are there any elements of this case that might be applicable to urban protected area agencies in the developing world? Farmland acquisition and easement programs may be too costly: What are other options for preserving farmland? The community garden at Albuquerque's Los Poblanos Fields provides food for local people in need, and the dairy farmer sells milk from cows fed alfalfa grown at the farm. Can protected farmlands in other cities play a role in urban food security?

Considering the difficulties already faced by conventional conservation initiatives, is it

appropriate for protected area agencies to become involved in farmland preservation or food security, especially in cities, especially in developing countries? Given their food security needs, is it appropriate for local authorities in cities in the developing world to also manage farmland for educational, recreational, and environmental benefits? There are many questions to answer in evaluating the applicability of this case for other cities.

By beginning the discussion, perhaps additional cases will emerge, and exciting new approaches will be attempted.

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Part 4:

Making partnerships work

Groundwork: An innovative British environmental partnership organization

TED TRZYNA

1. INTRODUCTION

In the United Kingdom, the agency responsible for national parks and countryside management was asked by the government in the early 1980s to do something about abandoned industrial sites and played-out quarries in the urban fringe areas of the economically depressed Northwest of England. Conventional top-down approaches didn't work, so it was decided to take a more flexible approach. An "environmental partnership" NGO called Groundwork was set up to bring the public, business, and voluntary sectors together in clearly defined geographic areas to clean up contaminated sites, create parks and green corridors, build hiking and biking trails, and convert abandoned buildings to offices and housing.

Groundwork is widely regarded as an emphatic success. Now, almost fifty local Groundwork "trusts," as the local organizations are called, exist in the UK. The territories of these trusts cover from one to several contiguous units of local government (for example, a county or one or more boroughs) and typically have a few hundred thousand residents. They involve all the key actors in their areas and are run by boards that represent local governments, businesses, and civic groups. Together, they include more than a quarter of the country's population. The areas in which they operate now span inner city and countryside, as well as urban fringe, but they are still places where the quality of life is poor owing to a combination of economic, social, and environmental problems.

Overall, Groundwork has an annual budget of some £95 million and over 2,000 employees. In 2004, it was involved in over 4,500 projects; encouraged volunteers to give more than 350,000 days of their time to improve their neighborhoods; provided 57,000 weeks worth of training; created 2,500 jobs; improved 780 hectares of land; and worked with 5,500 businesses and 3,700 schools.

Groundwork has become a federation of local trusts. Operation of the trusts is supported by

national and regional offices. The federation and the trusts work closely with, and receive support from, all levels of government. They also receive support from businesses, the European Union, the National Lottery, and charitable foundations.

In addition, there are several Groundwork projects on the European continent, and the Groundwork approach has been adopted in Japan and in the United States, where the U.S. National Park Service is supporting a growing number of trusts.

Groundwork UK is the lead partner in a major European Union project called Sustainable and Accessible Urban Landscapes (SAUL). This project involves partners from six metropolitan regions: London; Amsterdam; Luxembourg; and the Rhein-Ruhr, Frankfurt/Rhein-Main, and Saarland regions of Germany. SAUL addresses "the role of socially inclusive urban spaces on the sustainable development of metropolitan regions together with regional identity, planning through partnerships, and the transnational value of the 'learning region' approach (Groundwork 2005)."

2. "CHANGING PLACES, CHANGING LIVES"

Groundwork's motto is "Changing Places, Changing Lives." Its purpose is to "improve the quality of the local environment, the lives of local people, and the success of local businesses in areas in need of investment and support." Although many of its projects still relate to parks, open space, and outdoor recreation, it is now organized around six broad themes:

Communities: Building stronger neighborhoods. The focus here is on improving the quality of life for people living in neighborhoods "viewed by many as disadvantaged." "We help people improve the appearance of their streets, parks, and estates but also encourage them to lead healthier lifestyles, get to know other people in their area, or work with their neighbors to reduce antisocial behavior

and the fear of crime.” An example of a Groundwork initiative within this theme is its Safer Communities program, which installs lighting, fencing, secure locks, and smoke and burglar alarms on properties, and sets up local groups to improve relations between different age groups.

Land: Reconnecting people with their surroundings. “We aim to create landscapes that promote better health and biodiversity and encourage more sustainable living, for example, through renewable energy or local food production.” An example is extensive improvement of the Alban Way, a 10.5-km cycle route in Hertfordshire, north of London, including construction of a new bridge, installation of new signs, and creation of a “friends” group to organize activities and monitor maintenance of the route.

Employment: Training for work and stimulating enterprise. “We help people who are unemployed develop their skills and experience by working on regeneration projects in their own neighborhoods, including environmental training.” Many Groundwork trusts do this by setting up “intermediate labor markets” that pay apprentices a wage while they work on such activities as renovating run-down houses.

Education: Learning, citizenship, and sustainability. “We work with children in and out of school and with adults to illustrate how our individual actions can make a difference to our immediate surroundings and the global environment.” Among various initiatives is a program for schoolchildren across England called “Our Place, Our Future,” that helps them learn about their local environment. In Kent, to the Southeast of London, young people have focused on food production and the decline of apple orchards.

Business: Integrating the economy and the environment. “We help businesses and other organizations stay competitive and successful by taking a more responsible attitude toward the environment and their local community.” This includes training, advice, reviews, and audits.

Youth: Realizing young people’s potential. “We involve young people in a range of activities designed to bring them into contact with other people in their community and to increase their own confidence and self-esteem. Our aim is to get

young people interested in the place where they live and to help them play a full and active part in society.” In Coventry, for instance, a partnership including the local Groundwork trust helped a group of young people make a short film about their neighborhood, and persuade an electricity company to fund a decorative mural on the drab concrete wall of one of its facilities (Groundwork 2005).

One of the ways the national Groundwork organization serves its local trusts is by setting up national “strategic partnerships.” One of the most innovative of these partnerships is Youth Works, an alliance of Groundwork, a group called Crime Concern, and the Marks & Spencer department stores. Started in 1994, it aims to reduce crime among teenagers in specifically targeted “deprived neighborhoods” by, among other things, involving them in hands-on environmental projects. Participants help build new facilities such as gardens, bicycle tracks, and safe play areas for children. Local community advisory groups monitor progress. The hope is that through their participation in these projects, teenagers will gain new skills, develop self-confidence, and make fundamental changes in the direction of their lives. The expectation is that this will lead to better prospects of employment (YW 2005).

Another such strategic partnership is Barclays SiteSavers, supported by a major bank and cosponsored by the Office of the Deputy Prime Minister and two national environmental groups, The Wildlife Trust and the British Trust for Conservation Volunteers. Started in 1996, it helps local citizens “take action to transform derelict eyesores on their doorstep into dynamic places for play, education, relaxation, and fun.” Such places range from community gardens to skate parks. As of 2004, more than 600 such projects have been completed (BSS 2005).

3. GROUNDWORK ON THE GROUND: A PERSONAL VIEW

I’ve been following Groundwork since it started. I knew its cofounder and former Chief Executive, John Davidson, from serving with him on an IUCN commission. In 1995, John arranged for me to visit several local Groundwork operations in Britain and I had long talks with him and members of his staff. A year later, we went to Brazil together to promote the Groundwork idea. In 2000, I took a California delegation to Britain to meet with Groundwork staff and visit project sites, and then John visited

California to continue discussions on how the Groundwork concept might be adapted to California's particular circumstances. There were more visits and more meetings that – with many others involved – eventually led to plans for The Urban Imperative workshop, in which John had a key role.

The best way to understand how Groundwork operates is to look at one of its local trusts. A few years ago, I spent a day with the staff of Groundwork Kent Thames-side, which covers two boroughs, Dartford and Gravesham, in the county of Kent on the south side of the Thames River just below London. I was joined by my friend Bryn Green, then professor of countryside management at the University of London.

The offices of the Kent trust are in the gatehouse of a palace built in the sixteenth century for King Henry VIII. The trust was started in 1990 and now has around twenty staff. Its territory is one of the smallest of the fifty or so Groundwork trusts, but is one of the largest in terms of staff size.

The principal town in the area, Dartford, was once a country market town, then became industrialized with paper production, chalk mining for cement, and manufacturing of pharmaceuticals. Over the last forty years, it has also become a dormitory for workers commuting to London.

Although there are lovely green hills, patches of old forest, and the marshes where Charles Dickens set *Great Expectations*, much of the environment is badly degraded. Depleted chalk pits cover large areas, some of them right next to housing tracts. There is contaminated soil, an abandoned factory for making asbestos brake lining, an old canal used to dump waste. A large percentage of the population is unemployed.

A hopeful development for local residents that will also lead to new pressures on the environment is that the two boroughs are along the route of the Channel Tunnel link between London and France. A major international train station has been built in the heart of the area, and industry is locating along the rail corridor.

The Kent trust is involved in projects ranging from landscaping school grounds and producing access guides to open spaces, to rebuilding riverside trails and advising companies on improving their environmental management practices.

One attractive project that we visited is Beacon Wood Country Park. Originally, Beacon Wood

was a forested hill, but the timber was cut for building. During the Napoleonic wars, the hill was one of a series from which beacons could be lit to alert London of an invasion attempt along the south coast. In 1885, the E.C. Gunpowder Company began manufacturing smokeless gunpowder on the site. By the 1930s, ownership of the land had changed, and over the next thirty years four million tons of clay was extracted. Mining stopped in 1964 and Beacon Wood slowly returned to nature, but relics of its industrial history can still be seen.

Beacon Wood is owned by Blue Circle Industries, a chalk and clay mining firm, and leased to the county. The Groundwork trust has been developing it as a country park since 1991 with the support of local government. The aim is to create a balance for nature conservation, education, and recreation. Wardens employed by Groundwork, helped by a corps of volunteers, protect the park and organize guided walks and children's activities.

There are several other large-scale projects underway. One is removing contaminated infill from the old Thames and Medway Canal, recreating a two-mile-long water channel for recreation and nature conservation. Another is landscaping the major transport corridors through the area.

How does Groundwork Thames-side accomplish so much? First of all, money. The Kent trust takes advantage of one of the national Groundwork organization's special skills: putting together financial packages. Money from national sources, both governmental and private, is deployed by Groundwork to add value to local funds, thereby increasing investment in the local economy. For most of its projects, the Kent trust is able to leverage government money with substantial private contributions. In addition, the nonprofit trust has created a for-profit auxiliary ("trading company" in British parlance) to perform consulting tasks for businesses; the profits are plowed back into the trust's core operations. The trust has a full-time director of development, a senior person responsible for raising funds.

Second, the Kent trust pays a lot of attention to people and local communities and their real needs. There is a "community link officer." Projects are founded on "comprehensive community partnerships." Staff members told me that they try hard to "draw out from people what they want from the environment": They "don't come knocking at our door for help," I was told. "We

need to identify opportunities and pull things together; we need to empower and enfranchise communities.” Toward this end, staff put up displays in shopping centers, circulate questionnaires, knock on doors. It quickly became clear that words like “empowerment” were not buzzwords but criteria. Involving people is what Groundwork is about.

The third key to Kent Thames-side’s accomplishments is a creative and dedicated staff. On entering the offices of the Kent trust – and this was also the case in the other Groundwork offices I’ve visited – we immediately had a feeling of energy in the air, a sense of purpose, an eagerness to exchange ideas, what John Davidson calls the “Groundwork spark.”

Some of the new concepts the Kent staff is promoting are creating new community woodlands, establishing a network of off-road bicycle paths, exhibiting striking examples of outdoor sculpture by local artists, and an ambitious plan to create an “interlinking network of green corridors and open land for people and wildlife, connecting between the towns and villages.”

4. INGREDIENTS OF SUCCESS

There is nothing very unusual about the individual projects mentioned above; they happen in many places. What is special about Groundwork is:

- The synergy it creates through partnerships and involvement of local people;
- A bottom-up way of doing things;
- A holistic approach that tackles environmental, economic, and social issues together;
- Eagerness to test new ideas;
- Ability to attract money from government, use it efficiently, and in many cases leverage it with large private contributions; and
- The sheer scale of its operations.

“What is different and exciting about Groundwork,” one of its publications says, “is that it reaches out. It is not another group working only within its own band of members. It is a partnership that harnesses the private, public, and voluntary sectors. It is open to all: companies, local authorities, community groups, or individuals can be involved. Groundwork means the environment is for everyone.”

Although Groundwork’s organization is decentralized, it has strong national and regional

offices that maintain high-level contacts with government and major corporations, and facilitate sharing of skills among the local units.

Groundwork is highly skilled in developing financial packages for projects from a wide range of funding sources. These include government programs in such areas as employment training and neighborhood crime prevention, as well as environmental programs in the narrow sense. Groundwork also has substantial support from businesses. One reason for this is that Groundwork builds long-term relationships with companies through consulting and neighborhood improvement. Another reason is that big corporations, rather than contributing to many small local projects, often prefer to fund national programs of a large, highly visible organization that has a reputation of delivering what it promises.

But John Davidson believes the main ingredient of Groundwork’s success is serving the needs of local communities as those needs are expressed by the people who live there. When he and others started Groundwork over twenty years ago, they found conventional top-down methods didn’t work.

“We had to get into a dialogue with people,” he told me. “For there to be sustained regeneration, we had to invent incentives.” Such “participatory planning” is much more likely to produce results, he says, but is much more demanding than the usual kind. In fact, some newly hired employees trained in the design professions leave Groundwork after a short time because they don’t like the “people work” required.

Robin Maybey, a national figure in the organization who has chaired Groundwork Camden & Islington, a Groundwork trust that serves a vibrant and ethnically diverse area of central London which includes wealth and poverty and everything in between, observes from his experience that:

- In inner-city areas, the environment is neutral ground, “an issue that brings people together, an issue around which people can connect with each other,” whether the agenda is nature or refurbishment of structures;
- When projects in crime-plagued areas are planned by local residents, they are not vandalized because they are protected by residents who have a sense of possession and pride about their projects (Maybey 2002).

John Davidson says he “discovered that if you go into poor neighborhoods with unemployment, drugs, and violence it is hard to capture the minds of people there for parks and recreation. There are other priorities on their list. We need to recognize what people’s needs are. We must listen and respond in appropriate ways. Even in the most difficult areas, we can win the hearts and minds of people with that recognition in mind.

“The key,” he says, “is to achieve social and economic benefits at the same time as achieving conservation benefits.” People then see conservation as part of a “cycle of renewal.”

This paper is based on (a) a continuing conversation with Groundwork cofounder and former Chief Executive John Davidson that started seriously around 1995 and has since gone on not only in Britain but in such places as Brazil, California, South Africa, and Thailand; (b) meetings with current Chief Executive Tony Hawkhead and other senior Groundwork UK staff; (c) visits to several Groundwork trust offices and

project sites in the UK, where I had opportunities to talk with involved and affected local citizens, as well as staff; and (d) a previous paper I wrote on Groundwork for the California state government (Trzyna 2001).

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Chicago Wilderness: A collaborative model for urban conservation

LUCY HUTCHERSON

1. INTRODUCTION

Stretching across parts of three U.S. states – from southeastern Wisconsin, through northeastern Illinois and into northwestern Indiana – Chicago Wilderness is a regional nature reserve containing rich biodiversity. Embedded in one of North America’s largest metropolitan regions, Chicago Wilderness is a mosaic of natural areas that includes more than 102,000 hectares of protected lands and waters, as well as many that are unprotected. The natural communities within Chicago Wilderness are home to a wide diversity of life: thousands of species of native plants and animals live here among the more than nine million people who also call the region home.

The Chicago region is one of only a few metropolitan areas in the world that have a high concentration of globally significant natural communities. These include tallgrass prairies, oak woodlands, oak savannas, sedge meadows, marshes, bogs, and fens. Less than one-tenth of one percent of Illinois’ original tallgrass prairies remains, but within Chicago Wilderness some of the best remaining examples of these can be found, as well as rare oak savanna communities. These communities contain a number of species that are rare worldwide and listed as threatened or endangered in Wisconsin, Illinois, and Indiana.

To protect these communities and their inhabitants, area conservation groups in the 1990s formed the Chicago Wilderness consortium, an alliance of more than 175 public and private organizations working together to protect, restore, study and manage the natural ecosystems of the Chicago region, enrich local residents’ quality of life, and contribute to the preservation of global biodiversity.

2. HISTORY OF THE PARTNERSHIP

The roots of conservation run deep in the Chicago region. Early in the 20th century, local visionaries had the foresight to create a system of nature

preserves, set aside as protected lands and waters within the metropolitan area. Later, in the 1960s and 1970s, a grassroots network of volunteers became active in the region, formed by citizens who cared about the restoration and protection of their natural heritage. This network of volunteers grew over the next three decades, with thousands of area residents now working in the forest and nature preserves every week to restore and nurture the landscape (Ross 1997).

So when the founding members of Chicago Wilderness came together in the 1990s with the idea of working together on conservation issues, they had a solid foundation on which to build. They knew that because nature does not recognize political or institutional boundaries, they too would need to reach across such artificial boundaries and take a collaborative, regional approach to achieve their collective conservation goals.

Although officially launched in the spring of 1996, the consortium’s beginnings came years earlier, as conservation organizations in the Chicago area began to realize that together they could accomplish even more than they could independently. In 1993, representatives from 13 agencies met to discuss their common challenge: that while significant biological resources could still be found in the greater Chicago metropolitan area, their health and survival was threatened (Ross 1997). During the organizations’ initial meetings, the delegates were enthusiastic about the idea of working collaboratively. While each organization wanted to retain its own identity, the attendees recognized that there could be significant benefits to working together.

From 1993 to 1995, the groups continued to meet and expanded the number of organizations participating. They identified more specific goals for collaboration. These included expanding popular support for biodiversity conservation, increasing the amount of funding available for their collective endeavors, and increasing the amount of information sharing and coordination among scientists and land managers (Ross 1997).

They developed a memorandum of understanding to guide their initial work, and identified a structure by which they would govern their collective endeavors. They sought and received some initial funding for their work, which came from the federal government through the U.S. Forest Service (one of the consortium's founding organizations). Finally, 34 founding partners, including the United States Fish and Wildlife Service and U.S. Environmental Protection Agency Region 5, Brookfield Zoo, Openlands, The Nature Conservancy, The Morton Arboretum, and others, launched Chicago Wilderness during a public event in 1996. Today, more than 170 public and private organizations are members.

Ingredients for success

Several factors contributed to the successful initiation and continued growth of the Chicago Wilderness consortium (Moskovits et al. 2002). These include:

A critical mass. A key factor was a critical mass of people thoroughly committed to making the work succeed and willing to invest time and effort in consensus building. The members of Chicago Wilderness have shown a great deal of flexibility in working together, making plans, and adjusting their collective course as needed to make their collaborative work successful.

Early successes. In 1997 the consortium published the *Atlas of Biodiversity* (Sullivan 1997), a comprehensive, full-color guide to the natural communities of Chicago Wilderness. More than 50,000 copies of the *Atlas* have been distributed. It is used by educators and conservation institutions throughout the region as a way to present to the public the vision of Chicago Wilderness and the region's rich natural history. Another early success was the creation of the *Biodiversity Recovery Plan*, the consortium's detailed plan and collective recommendations for restoring and protecting local native biodiversity. Three years in the making, the *Biodiversity Recovery Plan* reflects the best thinking and consensus of the region's scientists, land managers, educators, and policy-makers. The *Plan* is the first of its kind in the region, and was awarded the Outstanding Planning Award by the American Planning Association in 2001. The *Biodiversity Recovery Plan* now serves as the guide for the work of the Chicago Wilderness consortium.

Mission-related benefits to members. For the consortium to achieve its conservation goals, individual member institutions must realize benefits from participation in terms of increased capacity to carry out their own work and achieve their own conservation missions. This increased capacity comes from sharing of expertise and resources.

Membership and organizational structure

The membership of Chicago Wilderness varies greatly. Currently, there are 178 organizational members representing federal, state, and local governments; municipalities and park districts; large nongovernmental conservation organizations; small volunteer groups; educational and research organizations; cultural institutions; and others. Until 2002, the consortium limited its membership to non-profit organizations and government agencies. However, in 2002, the members of Chicago Wilderness once more reached across institutional boundaries to forge a partnership with the local business community. Recognizing that business corporations play an important role in promoting community vitality and quality of life, Chicago Wilderness joined with local business leaders to form the Chicago Wilderness corporate council. The corporate council currently consists of 25 for-profit organizations that have pledged their support to biodiversity conservation and the mission of Chicago Wilderness.

An ongoing challenge is to find innovative ways to bring together such a diverse group of organizations, but all Chicago Wilderness members have the opportunity to participate in the consortium's governance and collaborative work.

From the beginning, the members of Chicago Wilderness made a conscious decision not to define the consortium as an entity unto itself, but rather as a loose network of partners. Chicago Wilderness is not designed to be an organization that competes with its members; instead, its sole purpose is to facilitate collaboration among them. Chicago Wilderness *is* its members, and vice versa. To that end, the consortium employs only a small staff, whose main purpose is to help the member organizations work together on common challenges. There are seven full-time and two part-time staff members who are housed within various member organizations rather than being centrally located.

The consortium's organizational structure consists of an executive council and general

members; the coordinating group; the steering committee; four teams; and the nine staff members.

Member organizations decide whether to join Chicago Wilderness as executive council members or as general members. Executive members commit to donating substantial time and resources to the collaborative work of the consortium, and receive a voting seat on the council. The executive council approves actions on behalf of the entire consortium, such as acceptance of new members and adoption of new policies. General members donate resources to a lesser extent and are able to render opinions on all issues related to the consortium's work, although they do not vote at the council meetings. The coordinating group serves as "staff" to the executive council, and meets every other month to ensure that the strategies developed by the executive council are implemented.

The steering committee is a subset of executive council members, selected by the council to represent the consortium on operational matters such as approval of budgets and allocation of funding to various Chicago Wilderness projects.

The four teams of Chicago Wilderness are Science, Natural Resource Management, Education and Communication, and Sustainability. They are the venues for members to meet, discuss common challenges and develop plans for collaborative work. Each team receives administrative support from one of the Chicago Wilderness staff members.

3. THE COLLABORATIVE WORK

The *Biodiversity Recovery Plan* was the first significant product of collaboration by Chicago Wilderness members. Since then, collaborative projects have become the most prominent way by which Chicago Wilderness members work together to address common challenges. The benefits of collaborative work include the sharing of expertise and best practices across professions and institutions, more strategic use of limited resources, increased credibility for conservation agencies, and increased capacity of institutions to carry out their conservation work. Chicago Wilderness members have implemented more than 150 collaborative projects, covering a broad spectrum of work. These include inventory and monitoring projects, restoration projects, sustainability and policy work, and a variety of education and communication programs.

Two related projects provide a good example of the benefits of this collaborative approach: the Chicago Wilderness controlled burn training project and the Chicago Wilderness controlled burn communication project.

In the Chicago region, ecosystems have evolved with fire and depend on periodic burning for their overall health. For many years, local land management agencies in the region used national training programs for conducting controlled burns. While the programs covered some essential material, they were designed for use by land managers across the U.S. and therefore did not include information specific to Midwestern ecosystems. Seeing the need for more region-specific information, and recognizing the efficiency that could be realized by having a common approach, members of Chicago Wilderness produced a training program on how to conduct controlled burns in the area. The training program is now held several times a year at different locations around the region. This collaborative approach builds consistency in land management techniques, prevents duplication of efforts, and allows resources that would otherwise be used administering individual training programs to be put toward other conservation efforts.

In a related example of capacity building, Chicago Wilderness members in 2001 launched a burn communication project, designed to help members learn the most effective ways to communicate with the public about controlled burn programs. To begin to understand how to build public support for controlled burn programs, the burn communication project team worked with researchers from DePaul University and the Illinois Natural History Survey to conduct research on local residents' knowledge of, attitudes toward, and concerns about controlled burns. The studies confirmed that when people understand the role of fire in ecosystems, they are largely supportive of controlled burn programs. The research also provided insight into the best communication techniques. For example, in the Chicago metropolitan region, people understand the phrase "controlled burn" more often than "prescribed burn," and prefer specific visual cues, such as process diagrams and photos of multiple, well-equipped personnel conducting burns. Local land managing agencies have incorporated these findings into their communication programs, and templates for communication tools using the research findings have been developed for Chicago Wilderness members' use. The templates include

sample press releases, brochures, fact sheets, and other tools, and are available free on the Chicago Wilderness members' Web site.

4. CONCLUSION

The Chicago Wilderness consortium has thrived because of several factors: It was built on a strong history of local conservation; there has been a critical mass of people dedicated to making this unique collaborative approach work; the consortium enjoyed several early, public successes; and the members of the consortium benefit from participation in terms of an increased ability to achieve their individual missions. As a result of these favorable circumstances and the commitment of area institutions and individuals, the consortium has grown from 34 founding organizations to more than 170 participating members, and has become a unique force on the conservation landscape. In

other urban areas where similar favorable circumstances exist, Chicago Wilderness can serve as a powerful model for the collaborative approach to conservation endeavors.

Information about the biodiversity of the Chicago region and the Chicago Wilderness consortium is posted on the Chicago Wilderness Web site, <http://www.chicagowilderness.org>.

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Building urban constituencies for nature conservation: The Golden Gate experience

BRIAN O'NEILL AND GREG MOORE

1. THE GREEN MATRIX

The San Francisco Bay Area of California is home to 7 million people. It is also the home of one of the world's most extensive systems of protected areas. This remarkable juxtaposition – a large and densely populated urban area enriched with national parks and other protected areas – is the result of decades of building a constituency for nature conservation. This constituency-building has been sustained by more recent efforts to ensure that these protected areas are of service and are relevant to urban communities – and that people are given a role in their long-term preservation.

Within the Bay Area metropolitan region, specifically at the Golden Gate area, over two million hectares are protected in the Golden Gate Biosphere Reserve, one of the most significant urban biosphere reserves designated under UNESCO's Man and the Biosphere Programme. The Golden Gate Biosphere Reserve includes one of the world's largest urban national parks; vast marine protected areas; regional watersheds; special wildlife preserves; and state, regional, and county park systems. The protected waters in adjacent marine sanctuaries total 1.7 million hectares – one of the largest marine protected areas in the world. The protected lands in the San Francisco Bay Area greenbelt total 526,000 hectares.

The habitat diversity of these protected lands is remarkable: 19 separate ecosystems; 12 distinct plant communities; close to 1,300 species of plants and animals in the terrestrial environment; important migration routes and breeding locations; and more than 80 sensitive, rare, threatened, or endangered species.

Building constituencies for nature conservation in urban areas has depended upon several key elements. First of all, visionary private citizens paved the way to large-scale landscape conservation. Second, these leaders and their organizations have been able to create conservation

momentum over time. Each generation of conservation leadership and success creates a platform for future accomplishment, a sort of conservation “layer cake.”

And third, a green matrix has evolved, a set of key partners in nature conservation. A combination of governmental, nonprofit, and private actors – with a strong base of community support – has leveraged advocacy, talent, perseverance, and funding. In some cases, nonprofit leadership goes first, in others governmental, in still others private. All have learned to work in concert – and strategically – toward conservation action.

2. LINKING PARKS AND COMMUNITY

The centerpiece of these protected areas is the Golden Gate National Parks (hereafter referred to as “Golden Gate”), managed by the United States National Park Service. Formally known as the Golden Gate National Recreation Area, this complex of urban national parks contains a vast array of natural, cultural, and historic resources in over 30,350 hectares of open space. It includes important natural habitat, rare and endangered species of plants and animals, working agricultural lands, and former military open spaces and buildings now converted to park purposes. About 17 million people visit and enjoy these parklands each year.

Public support for urban environmental protection in the Bay Area began at the turn of the 20th century and became increasingly active and organized beginning in the early 1970s. Each wave of environmental protection has depended upon strong environmental leaders and well-developed and orchestrated public campaigns. To the initial preservation of a redwood grove and some small offshore marine islands, the Bay Area has added expansive parklands, marine protected areas, agricultural preserves, estuary protection, wildlife refuges, and watersheds.

In 1970, as natural areas, open space, and historic landmarks around the Golden Gate were

threatened by urban development, local activists mounted a campaign to save them. Symbolized by a bold slogan, “Parks for People, Where the People Are,” the campaign mobilized thousands of residents through grassroots environmental action. The result was establishment in 1972 of the Golden Gate National Recreation Area by Congress and the President.

3. AN NGO PARTNER

Building on this widespread public support, constituency-building has become a core management concept at the Golden Gate National Parks. To produce tangible results for the parks and other protected areas, these principles depend upon the engagement of not just the public sector (in this case, the National Park Service), but the NGO (nonprofit) and private (business and individual volunteer) sector as well. At Golden Gate, the National Park Service has enlisted the support of a single, comprehensive nonprofit, or nongovernmental, organization (NGO) partner, the Golden Gate National Parks Conservancy, to build community support for the parks and engage people in its stewardship.

Established in 1981, the Parks Conservancy links the parks to the surrounding community. It focuses on three goals: increasing awareness of the national parklands and their value; providing avenues for public engagement to bring more resources to the parks now and in the future; and preserving the parks over time by building long-term constituencies.

The Parks Conservancy works to leverage the role of its federal government partner, the National Park Service. While NPS’ focus is on the management and operation of the Golden Gate National Parks, the Parks Conservancy directs its efforts toward community engagement, specific grassroots campaigns, and sponsorship of park restoration, improvement, and education efforts.

Success factors of the Parks Conservancy

First and most essential to the Conservancy’s success is community awareness. At Golden Gate, the Conservancy has worked to make the parks as well-known and well-loved as other cherished public assets. The Conservancy’s goal is to elevate parks to the same level of community importance as other civic assets: as basic as schools; as essential as libraries; as necessary as hospitals; as valuable as clean air and water; as culturally

important as symphony halls, opera houses, and museums. The Conservancy has achieved this goal with a well-developed strategy of research, opinion sampling, branding, and marketing. Public-awareness campaigns, involvement programs, place-based education, and deeply connected forms of public stewardship of parklands have all been part of this strategy.

Central to the Conservancy’s work was a campaign to raise the identity of the Golden Gate National Parks by creating a series of graphically integrated logos and a branding and media campaign that invited the public to get involved in the Bay Area national parks. As a result of this work, the Conservancy achieved a remarkably high 92 percent recognition factor for the parks; additionally, more than 90 percent of those surveyed believed that the Golden Gate National Parks were essential to the quality of life in the region.

With this base of awareness in place, the Parks Conservancy has continued to mobilize Bay Area residents to take a part in specific conservation campaigns. To restore the natural landscape of a highly visible former military airfield, the Conservancy sponsored the *Help Grow Crissy Field* campaign. Through this effort, thousands of volunteers, school children, and contributors combined in a grassroots effort to restore coastal wetlands and shoreline dunes, and create a new national park area. Other Conservancy projects have restored other natural areas, created park visitor centers, and improved access to parklands. A current initiative, *Trails Forever*, seeks to engage the public in the enhancement and permanent stewardship of park trail systems.

Key to the Conservancy’s success is the ongoing effort to help the public, especially young people, understand the value of parks and protected areas and become long-term stewards. The Conservancy partners with others to help ensure there is a strong and active constituency for environmental protection. As one example, the level of environmental education is significant, with an “outdoor classroom” serving well with over 40,000 kids each year through environmental education programs delivered by the NPS and its NGO partners.

The level of voluntary stewardship is also extensive. More than 11,000 volunteers help annually in the parks, many in direct resource conservation, citizen science, and restoration work. Currently, these volunteers are engaged in over 30

restoration sites, planting more than 100,000 native plants annually.

In partnership with schools throughout the area, the Conservancy and Park Service manage a youth program called I-YEL, or *Inspiring Young Environmental Leaders*. Each year, a small number of high-school students are chosen to become active participants in environmental projects in the parks, in other protected areas, and in their own neighborhoods. These youth are required to take a leadership role in identifying environmental problems, proposing solutions, and mobilizing local communities. Through this program, the Conservancy reaches young people throughout the region, advances their support of parks and protected areas, and encourages many to consider environmental careers. The I-YEL program makes a particular effort to reach out to the Bay Area's growing culturally and ethnically diverse populations, recognizing the need for future environmental leaders who reflect California's demographic composition.

An enlightened management vision for urban parks

All the Conservancy's efforts depend upon a partnership philosophy established by the National Park Service that recognizes the public's role in the parks' future. To advance this philosophy, these urban national parks have had to abandon such traditional park management concepts as "command and control" and the "best way to accomplish work is to do it yourself." Because of the magnitude of the surrounding built environment, and the need to connect with a large and diverse urban population, park management soon recognized that if the full potential of the parks was to be realized, its foundations needed to be built on a nontraditional model.

4. PRINCIPLES AND RECOMMENDATIONS

Underlying this nontraditional model are six unifying principles, all of which focus on extending park benefits beyond boundaries, building urban constituencies, and establishing partnerships. These principles are:

Build and sustain parks based upon strong community partners

At Golden Gate, the National Park Service works to demonstrate that the parks are *a part of*, not

apart from, urban communities. The parks must show their benefits beyond boundaries: enhancing the quality of life, providing economic benefits to the urban area, and responding to local needs. Only on this basis are community partnerships possible.

There is an absolute commitment to create and sustain a partnership culture. Golden Gate is built on partnerships. It has worked hard to instill this culture throughout its structure, and understand what makes it work.

At Golden Gate, management has worked for more than 20 years to incorporate the community into the park's fabric. The National Park Service and the Conservancy have nurtured partnerships with schools, nonprofit organizations serving the poor and homeless, local environmental organizations, youth groups, businesses, cultural institutions, churches, neighborhood centers, organizations serving the elderly, and community leaders throughout the region. These include some rather unconventional partnerships, but ones that show the park is an integrated, intelligent, even compassionate contributor to the quality of life in our region.

Make parks an innovation laboratory for creative financing

The second principle relates to making Golden Gate an innovation laboratory for creative financing. The park's maintenance infrastructure, resource stewardship, and visitor service requirements represent literally hundreds of millions of dollars of need. These needs could be met either by using U.S. government dollars alone or by pursuing a path which combines government appropriations with private support.

Golden Gate has been entrepreneurial in pursuing and leveraging funds from other public sources, private philanthropy, aggressive cost recovery, and fee-for-service approaches, as well as expansive business and program partnerships. In fiscal year 2002, the park brought in 83 cents for every \$1 of public funds through its partnership, revenue, and volunteer programs.

Use marketing techniques to position parks

The third principle at Golden Gate involves the understanding and effective use of marketing techniques in positioning the park nationally and in the broader San Francisco Bay Area communities. For the parks to be supported, community awareness and even affection were essential. Ways

to build community affiliation with park values had to be developed.

National Park Service officials recognized that the agency was a neophyte in the area of “product branding and message communication.” However, Golden Gate had a firm commitment to evolve its organization into one that understood how to communicate its mission and values to the diverse communities it serves, and understand and respond to a variety of community expectations.

Through the efforts of the Parks Conservancy and voluntary leadership, park officials have brought in an impressive array of outside talent to assist them in a sustained effort to build organizational capacity in this critical area.

Build institutional capacity for community stewardship

An important fourth principle relates to Golden Gate’s desire to build the institutional capacity to successfully address community-based stewardship and constituency-building. The management team at Golden Gate understands that a long-term investment is required to build community ownership of park values and the mission of the National Park Service.

The management team also realizes that a sustained commitment to community building – connecting with people and organizations more holistically – requires that it operate differently. Rather than being the “doers” of all things, park employees needed to see themselves as the facilitators, the brokers, the conveners – the conduits through which talents of the community are tapped.

This principle is based on the notion that everyone in the community is a potential contributor to the work of the parks. Conversely, it reminds employees that every time something is done with staff resources only, an opportunity for community investment is lost.

This model of intense community engagement and resource leveraging required realigning the parks’ organizational structure. It also required changes in personnel policies: hiring for character and attitude, and training for skill and expertise. Toward these ends, the parks have been exploring best practices across the United States.

Establish a primary partner

The fifth principle at Golden Gate was to establish a primary non-profit entity that would function as

in seamless partnership with it and share goals for realizing the parks’ future. This partner is the Golden Gate National Parks Conservancy.

The Conservancy has grown from a modest start in 1981, when it contributed less than \$9,000 in support to the parks, to a peak contribution in 2001 of \$14 million. Since its inception, the Parks Conservancy has contributed \$70 million.

The Conservancy has become integral in the funding and delivery of curriculum-based education, helping manage visitor centers and bookstores, producing educational material and interpretive-based products, co-managing native plant nurseries and site-based stewardship programs, raising private and other governmental funds for both major capital projects and smaller site and program enhancements, and carrying out advocacy work for the parks.

Make a commitment to sustainability

The sixth and most recent principle at Golden Gate relates to sustainability. It is built on the notion that people visiting national park sites should expect nothing but the best in both practices and interpretation of park resources.

Visitors should experience the newest technology in energy conservation, renewable energy production, water conservation and re-use, recycling and waste management, trail design and maintenance, transportation infrastructure, and sustainable building design. They should also have access to healthy food.

This principle is predicated on the park’s willingness to raise the bar of expectations, to make the park experience an even greater laboratory of learning. As with its other major initiatives, park management recognizes the difficulty of establishing a mindset and internal culture in which sustainability is part of the prevailing operating philosophy. However, it is now firmly launched in that direction.

All these initiatives illustrate what Golden Gate calls the *Cycle of Friend Raising* that underlies how it approaches community work. It starts with *exposure* of a company, organization, group of people, or individual to an idea, project, or initiative. It then moves systematically to building an *awareness*, creating *understanding*, stimulating *caring* and a desire to *protect*, and finally a willingness to *advocate*.

Community-building at Golden Gate is about networking and relationship-building. The goal is to connect people at an emotional level with the

park and translate this into a sense of ownership of an idea, a place, a thing, or another value important to the park.

Creating and preserving national parks and other protected areas in urban settings presents many challenges: intense pressures of urban development, scarcity of open space, competing public and private interests. To succeed, park managers must develop strategies to reach important potential allies: the communities just beyond park boundaries. A park management philosophy embracing the importance of community awareness, outreach, and partnership,

coupled with marketing, engagement, and stewardship, is the best investment in the long-term value of urban national parks and protected areas.

Some of the concepts in this paper were set out in the newsletter of the U.S. Department of the Interior, People, Land, and Water, November 2002.

For more details and updates on the two organizations:

GGNP: www.nps.gov/goga

GGNPC: www.parksconservancy.org

Conservation NGOs as leaders in protecting urban nature: Aves Argentinas' urban nature reserves project

MARIA VIRGINIA DE FRANCESCO

1. INTRODUCTION

The accelerated process of unplanned population growth and urbanization is a common denominator in many parts of the world. The process of transformation of rural areas into urban districts normally creates great pressure on natural resources, especially in those regions where the land is of high agricultural value.

Argentina fits this model very well. It is predominantly an urban country, with 88 percent of its population already concentrated in cities, and highly selective spatial distribution: 71 percent of its urban population is concentrated in and around the pampas eco-region, and of these nearly 80 percent live in cities of more than 20,000 inhabitants in these vast undulating grasslands (Morello and Rodríguez 2001), which is also where agriculture and cattle-rearing are centered.

The country's population is concentrated in the city of Buenos Aires and its metropolitan region (MRBA). With a population of over 12 million, the MRBA represents 38 percent of the country's population (INDEC 1991; GCBA 2000), and is divided into 40 local jurisdictions. The infrastructure follows the lines of public transport (ribbon development, mainly as a result of the roads and railways built at the beginning of the last century). The MRBA has suffered from an accelerated process of urban growth in a scattered and uneven pattern in order to contain an ever-increasing population, and this has become worse over the last several decades. Urban growth has not only caused fragmentation of natural habitats, but has also created a crisis due to insufficient green spaces for relaxation and recreation. Estimates indicate that in this urban conglomeration there is, on average, only three square meters of green space per inhabitant, and only two square meters when restricted to the city of Buenos Aires (Prudkin and De Pietri 1995).

The principal environmental problems of the city of Buenos Aires and its metropolitan region are due, directly or indirectly, to bad land-use

planning: flooding, contamination of water courses, coastal degradation, noise, air contamination, and inadequate waste management (MCBA et al. 1999). All but the last of these problems could be mitigated by increasing the extent of protected natural areas. Thus, with proper planning and management, urban reserves can contribute to improving the quality of the urban environment and the health of the population in the MRBA, and offer people the opportunity to recover their natural and cultural heritage.

The aim of the urban nature reserves project of Aves Argentinas/Asociación Ornitológica del Plata (AOP), the Argentine partner of BirdLife International (AA/AOL), is to carry out a general survey of the principal natural areas of the city of Buenos Aires and its metropolitan area in order to:

- Identify urban nature reserves (UNRs) that exist in the MRBA;
- Promote the value of UNRs;
- Establish their biological importance; and
- Estimate their value as perceived by society.

2. THE URBAN NATURE RESERVES OF BUENOS AIRES

The areas considered in the survey were selected according to the following criteria:

- Found within the urban grid, or no further than 10 km (or within 30 minutes' traveling distance) (MCBA et al. 1999) from a city or group of settlements with a combined population of at least 50,000 inhabitants;
- Of small or medium size (covering from 5 to 5,000 hectares);
- Native habitats (essentially similar to the original habitats of the region) must be present in at least 40 percent of the land;
- Objectives of the area must be aimed at the conservation of native ecosystems, and generating opportunities for environmental

education, research, and/or recreation within nature;

- One or more of the following uses must be permitted in the area:
 - Public access for recreation and/or tourism;
 - Environmental education and interpretation;
 - Formal education at any level;
 - Scientific research related to the reserve's ecosystems;
 - Management of ecosystems or species aimed at their conservation.

The areas were identified with the aid of key informants and by analysis of satellite images. Field information was then gathered by rapid ecological surveys of the areas, interviews with the managers and technicians in charge of the reserves, and literature reviews.

3. THE VALUE OF LOCAL PROTECTED AREAS

Among the most relevant results was the identification of 11 areas that were already functioning as urban nature reserves. These show great variety in size (between 6 and 3,000 hectares), but there is a tendency for them to be small in size (around 34 hectares). Most of them are found in the outskirts of the city of Buenos Aires, on low marginal land which is often subject to flooding. The local inhabitants in these areas have a high degree of unmet basic needs, even domestic water.

The state of conservation of these habitats depends on their distance from the city (degree of urbanization), current or historic land use, and habitat type.

Despite the limited size of these areas, their contribution to local biodiversity conservation should not be underestimated. In seven areas, significant remnants of original habitat, or similar habitats, were found. Native habitats were considered to be vegetation communities with the same structure as the original habitats, but not necessarily the same specific composition.

In these areas, 300 bird species have been recorded, which represent 86 percent of the avian species richness of the region. Nine of the reserves have recorded animal species considered to be of special value (typical, or of restricted distribution in characteristic habitats in the region). Threatened animal species were found in four reserves.

In spite of their biological value, the UNRs of the metropolitan region are little noticed. This can be measured using different parameters, among which the number of visitors received by a reserve is one of the most accurate when trying to measure social recognition.

A total of 700,000 people visit the reserves annually, of which 100,000 are schoolchildren. Considering that there are 12 million inhabitants in the MRBA, and that these areas are related to important urban centers with numerous educational institutions, this number seems very low: At this rate it would take ten years for the whole population to visit a reserve. If we take into account that 85 percent of the visits are to the Costanera Sur, the best-known urban nature reserve, the tendency is much more notable. Some of the areas are not visited at all, or receive an average of less than eight people per day.

One cause (and also consequence) of this is that in only 30 percent of the reserves do the neighbors as a whole recognize the biological, educational, and recreational importance of the areas. In general, social recognition comes from local groups with specific interests (naturalists, tourist guides, outdoor and sports lovers, etc.). In most cases, participation of local institutions in issues related to the reserves has been sporadic or discontinuous.

The low level of community participation in the UNRs in general (by neighbors, public authorities, educational institutions, and local non-conservation organizations) leads us to believe that this type of protected area is to be found under the classical conservation paradigm (Phillips 2002). In this model, protected areas are managed by experts with low or nil participation in decision-making by the local community, and with a perspective that excludes the surrounding area. These urban nature reserves are managed from their gates inward and have become "islands" of conservation, with little probability of being able to maintain their biological or cultural features.

4. A NEW PARADIGM OF CONSERVATION: THE OTAMENDI NATURE RESERVE

Therefore, the challenge is to open the way for greater participation from society in the conservation of urban nature reserves. Their closeness to centers of economic and political power make these reserves strategic areas for gaining support for biodiversity conservation in

general. UNRs should serve as models of what each region or country can do for conservation.

The Otamendi Nature Reserve, which has the largest expanse of natural habitats in the north of the metropolitan region of Buenos Aires, is an ideal area to experiment with mechanisms for putting this idea into practice. Aves Argentinas acts as a coordinator among different stakeholders in the area to promote conservation in this reserve.

Otamendi covers 3,000 hectares of freshwater lagoons, marshes and woodland. A great variety of habitats sustain important groups of native species, especially birds and small mammals. Bird species recorded total 282 (Babarskas et al. 2003), which represent approximately 85 percent of the total number of species recorded for the region. Among these are eight species currently facing conservation problems in Argentina and on a global scale (Fraga 1997; BirdLife 2000). For that reason, it is listed as an Important Bird Area. Some species, such as the straight-billed reedhaunter (*Limnocites rectirostris*), are protected only at this site in Argentina (Chebez et al. 1998).

This reserve also has populations of interesting mammals such as the carpincho or capibara (*Hydrochaeris hydrochaeris*) and the river otter (*Lontra longicaudis*), and is frequently visited by marsh deer (*Blastocerus dichotomus*) that are the most southerly population of this threatened species.

Otamendi also has archaeological and paleontological remains of great value; these cultural resources have not yet been exploited either for tourism or education.

In spite of the biological and cultural importance of this reserve, neither the local authorities, nor the local community in general, are involved in its conservation. The number of visitors is still small (around 10,000 annually) and local institutions and neighbors are only occasionally involved. As a result, the local authorities are not motivated to give attention to protecting the site or control harmful development around it.

Project strategy

The Otamendi Nature Reserve, considered one of the two most important UNRs in the MRBA, was selected to demonstrate participatory mechanisms that would get the largest number of stakeholders involved in conserving the site.

A logical sequence of actions was drawn up in order to obtain effective involvement of different sectors:

1. Identification of relevant stakeholders and their interests in the area;
2. Composition of a general message aimed at all the stakeholders identified;
3. Presentation of the idea to the management organization (the National Parks Administration);
4. Planning of objectives and activities in conjunction with APN;
5. Meetings with the other stakeholders that included:
 - a. Presentation of the “aim” of the reserve;
 - b. Activities for reaching this goal in the short term;
 - c. A request for collaboration;
6. Carry out the agreed activities;
7. Evaluation.

The first sounding out of the stakeholders allowed us to find ten important groups with direct links to the reserve, including national, provincial, and local authorities; scientists and technicians; two local NGOs; three enterprises; and a cooperative. Each of them had different perceptions of the protected area and different expectations.

A message was then composed that was easy to understand and corresponded to the expectations of the greatest number of groups involved:

The Otamendi Nature Reserve is an area of great biological and cultural value which could and should be considered for use by the local schools, for the direct enjoyment of the community, and to develop tourism which would help to improve the economic development of the area. If we all work together to reach this goal, the Otamendi Nature Reserve could become a model area, which would attract a large number of visitors, create work opportunities, make the inhabitants proud of their neighborhood, and demonstrate the commitment of the authorities to the recovery of natural and cultural heritage.

The specific objectives (defined in cooperation with APN) were:

- To increase the biological and social information available about the site;
- To develop specific activities for the local community;
- To inform the national, provincial, and municipal authorities about the value of the site.

First results

Since the project began in 2003, a large number of activities have been carried out, all with participation of community groups or institutions. These have included:

- Publishing a book on the vertebrates of the reserve, based on more than a decade of research by scientists, technicians, and amateur naturalists;
- Publishing a map of habitats in the reserve, based on satellite images and field surveys;
- Conducting social surveys designed to identify leaders in neighboring communities and determine their expectations concerning the reserve.

Activities directly aimed at the local community have included:

- Holding a workshop on public use aimed at achieving consensus about ways to make greater and better use of the reserve (this will contribute to management plans);
- Forming a support group for the reserve composed of neighbors, students from local universities, and people from local NGOs; members help as volunteers with activities and management;
- Organizing a workshop for teachers on relating the reserve to the school curriculum;
- Offering a course on bird observation for neighbors, guides, and volunteers.

The Otamendi process has involved different sectors of society working together. There have been at least 30 key people, including reserve volunteers and staff, members of seven local NGOs that work on educational and social participation, as well as conservation, issues; and representatives of national, provincial, and municipal authorities and the local school network.

All of the activities mentioned have been patronized, financed, or organized in conjunction with different levels of government.

5. CONCLUSIONS

Not every urban nature reserve identified contributes significantly to biodiversity conservation, but all of them offer a unique opportunity for city inhabitants to recreate and learn about their natural and cultural heritage.

At Otamendi, important progress has been made:

- We have the support of eight of the ten stakeholders identified, including all the governmental authorities;
- There has been a substantial increase in weekend visitors;
- The national authorities have agreed informally to raise the status of the Otamendi Nature Reserve to a National Park.

Our main conclusion about methodology is that increasing the level of stakeholders' participation has resulted in minimizing conflict and achieving broad consensus. We are convinced that this is largely due to our adopting a clear, easy-to-understand message that breaks with the traditional perception that people must be excluded from protected areas.

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Nature education in Yangmingshan National Park, Taiwan: The important role of volunteers

SHIN WANG

1. INTRODUCTION

Yangmingshan National Park is only a 40-minute trip by car from the center of Taipei (metropolitan population 6.9 million) and attracts a large number of visitors. In fact, in summer many people go there after a day's work in the city to watch birds and the setting sun. Yangmingshan, which covers 11,455 hectares, is renowned for its wealth of unusual volcanic features and topography. It has thirteen hot-spring and fumarole areas with clouds of geothermal steam. The highest volcano, 1,120 m in elevation, shelters the Northeast winter monsoon. The park is located in the subtropical zone, but its vegetation differs from other areas at similar latitudes. There are currently some 1,224 species of plants distributed in grassland, arrow bamboo forest, and broad-leaved forest.

Historical remains and early-day mountain trails used to carry fish products to the city market are still clearly visible. Visitors tend to concentrate along a butterfly trail, bird-watching trails, and a water-plant conservation zone. The park administration suggests half-day, one-day, and two-day itineraries, all posted on its Web site (www.ymsnp.gov.tw). The central visitor center has displays, a theater, a shop, and an information counter. Five other information centers are distributed around the park.

A park very near a large city has advantages and disadvantages. In terms of disadvantages, conflicts over land use with various governmental agencies, businesses, and local residents are never-ending. The park administration is under great pressure to give way to more intensive development. Overuse is also a problem. The more visitors there are, the more shops open, the more vendors stray along the way. Although vendors sometimes do provide convenient services, park policemen often have to play hide-and-seek with them.

However, there are clear advantages of having national parks near large cities because they are highly visible to the public. In the case of

Yangmingshan, the park is visited often by well-educated people who ask for detailed information about nature, history, and management. Demand for interpretation is high.

There are also many educated volunteers who love to serve as interpreters. It is not unusual for people retired from high-level managerial or teaching jobs to want to be volunteer interpreters or simply help visitors. They want to do something meaningful.

2. VOLUNTEER PROGRAM

The Yangmingshan National Park Administration takes advantage of this and has organized an extensive volunteer program. Because of the huge pool of volunteers, the park is able to recruit a large number of highly qualified people. The park provides intensive interpretation all year around, both in the field and at visitor and information centers. Interpreters are always available to the public during office hours. In addition, they are available to help with outreach programs to schools, neighborhoods, and nongovernmental organizations. In 2002, a uniformed team of park volunteers was pleased to help organize and provide support to the fourth East Asian conference of IUCN's World Commission on Protected Areas.

Many of these volunteers speak fluent English or Japanese. And they are often very well-informed people who provide unexpected assistance to foreign visitors.

In 2002, park volunteers provided 44,414 hours of service and served 955,933 visitors, including 9752 groups.

Volunteers are recruited from the general public through announcements made at the same time each year. Applicants are mostly people retired from careers in business, government, and (often) teaching. Occasionally, they are residents of the park. In addition, university students from a variety of disciplines are recruited for summer service.

The students often bring in new ideas and new scientific knowledge.

Volunteers mainly work as tour guides, at visitor and information centers as service staff, or as administrative support staff. A few participate in environmental surveillance.

Prospective volunteers undergo a training and certification process. Courses, taught by experts and government staff, focus on both conservation and presentation techniques. Volunteers are required to serve within one year after completing a basic training course, and are certified after passing an evaluation.

Volunteers receive material benefits that include a transportation allowance, accident insurance, medical insurance, a free uniform, and

participation in park training courses. Formal recognition is given for long or exceptional service. Although a volunteer's certification is rarely canceled, a temporary suspension of duties will be applied in cases of alleged wrong-doing.

To encourage cooperation among volunteers, the park administration has assisted volunteers in establishing a national park guides association. Publications, network-messaging, meetings, and conferences, as well as training courses help keep members in touch with each other. Volunteers discuss how to upgrade skills and to achieve organizational objectives. This association has twice received a "Best Volunteer Group Performance" medal.

Part 5: Evaluation

How to reach urban communities: Lessons learned from museum evaluation

MARTIN STORKSDIECK

1. INTRODUCTION

Museums in many parts of the world are government-funded and hardly need to worry about audiences, both in terms of number of visitors as well as quality of the museum experience museums provide their visitors. However, museums in some countries, notably the United States, are operated by nonprofit organizations and rely on fees and, more and more, outside sources of funding. A typical museum in the United States receives its operating income from ticket sales, corporate donations, endowments, special events, and – increasingly – grants, either from governmental agencies or private foundations (Falk and Dierking 1995; 2000; 2002).

Museum visitation is comparatively high in the United States. According to the U.S. National Science Board (2002), in 2001 the average American adult visited a science-related museum, zoo, aquarium, or other science-related informal learning environment approximately three times, and 66 percent of the adult population stated they had visited such an institution during the preceding year. In comparison, according to the European Commission (2001), only 37 percent of Europeans in 2001 stated that they had visited similar informal science institutions during the previous year. While these are impressive numbers, visitorship has declined after the terrorist attacks of September 11, 2001. The concurrent decline in world stock markets and the associated shrinkage in corporate donations led to serious monetary shortfalls in many U.S. museums. The questions since have become: How can we attract more visitors? How can we attract repeat visitors? And, most urgently, museums have been asking themselves: How can we attract those who currently opt not to visit museums?

Attracting current non-visitors has become a problem for museums on another front as well. Many funders of museum programs or exhibitions require a high level of accountability for the grants

they give, be they the National Science Foundation (the premiere U.S. federal government agency for science), the Howard Hughes Medical Institute (a major private source for science education initiatives), or the National Institutes of Health (a U.S. federal agency that funds health communication initiatives). Almost all major sources of grant funding for museums require that an “evaluation” be conducted. The major purpose of evaluations is *not* whether funds received were spent for the purpose they were granted. Evaluations also don’t assess whether a museum that promised to build 20 exhibits ultimately built them or whether a science program at a zoo actually attracted the promised visitorship. These input/output measures are only part of evaluations. In addition, funders like to know whether the initiatives they fund achieve the broader learning objectives that formed the basis for the grant proposal. Funders of urban outreach initiatives, for instance, might not only be interested in output-related measures such as the number of people reached by such an initiative, but might also like to know how the initiative impacted the thinking and behavior of the people who were reached by the urban outreach.

As part of almost any proposal, however, museums must now state to what degree their programs or exhibits address the need to attract what is commonly referred to in the United States as “underserved communities.” This term is a euphemism for “poor people” and immigrants. In urban centers of the U.S., these are mostly low-income people of color, and new immigrants with limited command of English.

Not only do many funders require that grantees address how they would serve these “underserved communities” when receiving grant monies; individuals who comprise the vaguely defined target group of “underserved visitors” are also the typical “non-museum visitor” (and, when they do come through the door, are referred to as “non-traditional visitors”). Museums in the U.S. are thus forced by their need to attract new audiences

and the need to satisfy funding requirements to service groups which, for whatever reason, have traditionally not visited museums.

Initially, the need for evaluation was seen by the museum community as a burdensome requirement, but museums have increasingly come to understand evaluation not only as a useful tool for accountability, but also as a tool for planning and management.

This article will explore three aspects of museum evaluation that might be of relevance to the protected areas community. First, it discusses general ideas behind program evaluation, ideas that will make it clear why evaluation is as much a planning tool as it is an instrument to demonstrate outcomes to external parties. Second, the article will touch briefly on how evaluation can be used to prove program effectiveness: to satisfy funders, but even more so to ensure that programs are successful. Third, the article will discuss lessons learned from evaluation studies of museum programs that addressed issues similar to those likely to confront the protected areas community when it engages in urban outreach.

2. WHAT IS EVALUATION, AND HOW IS IT RELEVANT TO URBAN OUTREACH?

“Evaluation” is done to ensure that programs are on track and successful. Good evaluations do that by measuring achievements or outcomes against goals and objectives during crucial stages of program development. Evaluation is thus not simply a tool to assess program outcomes and document success or failure; it can also be used to ensure program success throughout the process of program development. In order to serve such a broad purpose, evaluation research should be embedded into program development and defining such important program milestones as:

- Identifying target audiences (e.g., the entire urban population, schoolchildren, residents near certain urban protected areas, decision-makers in the community);
- Defining realistic goals and objectives for each specific target audience;
- Identifying all important stakeholders in the project and involving them in the process by asking about their needs and perspectives;
- Creating programs and program elements that address each objective for each of the target audiences (if there are more than one);

- Avoiding programs and program elements that cannot be mapped to an objective or goal;
- Testing all intermediary steps and products to ensure their efficacy;
- Documenting the degree to which the program has achieved its goals and objectives for each of the previously defined target audiences.

Evaluation should be seen as an integral part of any project, no matter whether an outside funding agency requires it or not, since it allows program staff to stay goal-oriented and keep the audience in mind.

In the museum field it is customary to identify four stages of evaluation. Only the last of these stages, the “summative” evaluation, actually documents the outcomes of the entire project and is normally conducted by an outside, neutral evaluator. The three prior stages simply guarantee program success. The four stages are:

- (a) Front-end evaluations. These provide input to decisions about how to develop a program in advance of the planning stage.
- (b) Formative evaluations. These provide information to improve the program during the design and development stage.
- (c) Remedial evaluations. These provide information to improve the program during implementation and allow for corrections once programs are underway.
- (d) Summative evaluations. These assess outcomes or impacts of a settled program.

In fact, the first three stages of an evaluation can be, and often are, done by program staff, usually aided by outside consultants or evaluators. Evaluation as described so far is often associated with written surveys or interviewers armed with clipboards. However, good evaluation uses the entire spectrum of educational and social science research methodology, from quantitative surveys to face-to-face interviews, from observations to focus groups, and ideally triangulates research methods to produce robust results.

Front-end evaluation

A number of fundamental questions arise at the beginning of a program or exhibition design, which can then become the focus of a front-end evaluation. The results from the front-end evaluation will lead to more informed decisions about the general direction and objectives of a

project and its overall implementation. Front-end studies are generally surveys or involve focus groups and answer such questions as:

- Is there a need for this program?
- What do we know about the needs that the program will address?
- What is recognized as best practice in this area?
- What does the relevant research or conventional wisdom tell us about this need?
- What do likely audiences already know, and what do they not know?

More specifically in the area of urban outreach, questions might include:

- Who are visitors and non-visitors to urban parks and protected areas?
- What are people's understandings and misconceptions regarding conservation, biodiversity, and habitats?
- What attitudes and beliefs do urban populations hold about urban parks, protected areas, and nature conservation?
- What understandings, attitudes, and beliefs do members of the protected area community have about possible visitors or supporters of protected areas?
- Who has conducted successful urban outreach initiatives and what can be learned from them?

Formative and remedial evaluation

The purpose of a formative evaluation is to assess ongoing project activities at several points in time to provide information for program improvement. It asks:

- How is the program going?
- Is the delivery working?
- Is it consistent with the program plan?
- How could the delivery be changed to make it more effective?

This kind of research can take place during the early conceptual design phase all the way through the early days of program implementation, when it is commonly referred to as "remedial" evaluation. Formative studies can also seek information on whether or not the program, or more often specific program elements, are meeting the stated goals or

objectives. It is a "rehearsal" of sorts for the summative (outcome) evaluation.

Early stages of urban outreach program development might raise the following questions (although more specific questions for program delivery depend on the precise nature of the outreach activities that are part of the program):

- Do target audiences understand the specific outreach messages, and are these messages relevant?
- Do outreach activities reach the target audiences?
- What specific outreach approaches or techniques do audiences respond to most positively? What are their preferences or levels of satisfaction?
- Do audiences enjoy the outreach activities, programs, or products?
- What benefits do visitors perceive that they derive from experience with the project or subject matter?
- To what degree is the project meeting established goals and objectives? To what degree do program elements and individual activities and products achieve their intended goals and objectives?

Summative evaluation

The purpose of a summative evaluation is to assess the effectiveness of the program as it relates to the initial goals and objectives. In short, did the program do what it was intended to do? This type of study is conducted after or very near the end of an initiative and answers such questions as:

- To what degree does the program achieve goals and objectives?
- What direct or indirect impact, short-term and long-term, does the program have on the target group?
- To what degree can changes in the target groups' understanding, attitudes, emotions, or behaviors be attributed to their experience with the program?
- Have the needs of those served by the program been fulfilled?
- What are unintended outcomes (positive as well as negative) of the program?

The results of a summative evaluation depend only in part on the quality of the program. Other factors that influence an outcome evaluation are:

- Have short- and long-term goals and objectives been well defined and serviced by program elements? Were those goals and objectives realistic?
- Has the target group been well defined, and has program design specifically addressed the target group?
- Are evaluation measures valid and credible, and do they actually measure what they purport to measure?
- Do evaluators, program designers, and funders agree on outcome measures?

Summative or outcome evaluations can help urban outreach efforts in many ways. Among others, summative evaluations:

- Document the outcomes of urban outreach programs and thereby provide crucial information on tasks accomplished and challenges still to be faced;
- Identify what works and what doesn't work, and what allows the community to learn and grow;
- Ensure that outreach efforts are done systematically and are outcome-oriented;
- Provide the target groups' perspective and thus ensure that outreach efforts actually address audiences' perspectives;
- Provide a level of accountability to funders and the community that creates trust and should ultimately lead to sustained support.

Understand what urban residents associate with protected areas

Definitions of "parks" and "protected areas" used by the protected area community might not be aligned with expectations of urban residents. Expectations stem from experience, and people's responses need to be assessed based on the context of their life experience. Urbanites, for instance, might associate "parks" with recreational activities such as sports or barbecuing, rather than such functions as protection of biodiversity. Protected areas that do not fulfill urbanites' expectations for well-managed recreational parks might even be considered dangerous, unaesthetic, or wasteful and underutilized. It is thus important to first elucidate

what urban residents understand by "protected area" or "urban park."

Understand who the "true" audience is

One major difference between "museums," broadly defined, and protected areas, be they in urban settings or elsewhere, is that the protected area community is seeking support from people who may not personally experience the protected areas. In contrast, museums are striving to gain more, or more diverse, visitors, and use their visitor statistics to gain funding and support from donors, foundations, and/or governmental agencies.

However, museums and protected area agencies share a desire to have citizens understand the value of what they are trying to accomplish. Within the museum profession there is a new movement to think about the role museums play within the larger communities of which they are part, both as a moral imperative as well as a long-term strategy for sustained support through relevance.

Clearly, museums, parks, protected areas, and other community resources create value within the larger context of the community, although the total benefit within that community context might not be well known (especially in the case of museums), or might not have been communicated well (especially in the case of protected areas).

Protected areas, for instance, might not seek to have more visitors, and certainly do not seek support only from visitors. Instead, appreciation and support for protected areas is sought from a range of stakeholders for benefits that may not be immediately personal. Thus, those responsible for protected areas should ideally determine at the local level the answers to these questions:

- Do people know what protected areas are? Are they aware of the difference between "parks" and "protected areas," and between "protected" and "wilderness" areas?
- Who benefits from protected area management, and are benefits broadly disseminated and communicated within the urban community?
- Are beneficiaries of protected areas aware of the benefits?

3. USING EVALUATION TO PROVE PROGRAM SUCCESS AND PROGRAM EFFECTIVENESS

Setting realistic goals and objectives

As described above, any assessment of success needs to start with objectives. Success should ideally be measured against goals and objectives, and funders increasingly want measurable objectives against which results can be evaluated. Hence, the first step of any project planning is defining realistic goals and objectives. Ideally, it is these goals and objectives that determine program development, implementation, and evaluation. Urban outreach projects could embrace a range of objectives and goals, some of which are stated below in very generic terms (and should never remain stated in such generality for any specific outreach program):

- Increased knowledge of urban populations about the benefits of parks and protected areas;
- Eradicated misconceptions about parks and protected areas;
- Increased awareness of parks, protected areas, and their benefits among crucial stakeholders;
- Increased appreciation for parks and protected areas;
- Increased willingness to support parks and protected areas;
- Increased financial and non-monetary support for parks and protected areas.

Revising goals and objectives

Funders commonly write lofty goals into their funding requirements. Organizations seeking funds often include these goals in their grant proposals and later realize that the goals were actually unattainable. Science museums and science centers have often claimed that their efforts increase their audiences' understanding and appreciation of science. And environmental and conservation education often claims to influence audiences' environmental awareness or attitudes. But attitude and value development is a slow process, and when measured, depend on the particular state of mind of the person whose attitude change is to be measured (Ajzen and Fishbein 1977; 1980; Diekmann and Preisendörfer 1992; Fliegenschnee and Schelakovsky 1998; Hines, Hungerford and Tomera 1986-87; Kollmuss and Agyeman 2002; Zelezny 1999; Zimmermann 1996). Claims of

changing deeply ingrained aspects of the human mind and soul need to be revisited and, if necessary, restated or changed.

Museums and nature centers in the United States have learned through numerous evaluation studies and much research that their impact on audiences depends on how much, relative to other factors, they actually interacted with their audiences. For example, objectives need to be calibrated depending on whether audiences experience an outreach effort for 10 minutes, 30 minutes, 2 hours, a day, or weeks, whether they have a one-time experience or repeated experiences, whether the experience is personal, such as a guided tour through a protected area, or a simply a leaflet or public-service announcement on radio or TV (Falk and Dierking 2000).

Create programming that addresses the objectives

Funders prefer a sequence of logical program steps that start with clearly defined objectives for clearly defined audiences, proceed to activities that address each and every objective for every possible target group, define measurable outcomes for these objectives, and then set out to measure them once the program is completed or nears completion. Thus, the crucial next step in program planning is mapping objectives to activities. In brief: What is actually being done to achieve the objectives? Are all objectives addressed in some way by the intended programming? (Objectives that cannot be linked to programming should be dropped!) The easiest way to ensure that each program objective is linked to an activity – and, almost as important, that each activity actually addresses a program objective – is to create a matrix of goals and objectives on one axis, and programming and activities on the other. Are all of the cells filled? Where are most of the programming efforts placed? Ideally, this exercise, commonly referred to as Program Modeling, will also map each goal or objective to at least one measurable outcome, and ultimately specific measures for each outcome.

Define the target group(s)

Objectives need to be defined for various target groups, and target groups can be rather different when it comes to promoting protected areas to urban populations. Possible target groups include, but are not limited to:

- The urban population in general;

- Decision-makers;
- Stakeholders;
- Multipliers (for instance, teachers, community activists, etc.);
- Media and other opinion-makers.

People experience an urban outreach program through their own personal lens, which is shaped by their prior knowledge and beliefs, their attitudes and awareness, their receptivity, and other personal factors. Hence, it is often useful to define a range of different sub-groups within a target group, both to focus program delivery, as well as to make evaluation efforts more effective, since no evaluation will show significant results when programming hasn't actually served the needs of the audiences. It is thus necessary to distinguish among:

- Those who already know a lot from those who don't;
- Those who are generally supportive from those who are not;
- Those who are already aware from those who are not; and
- Those who already provide support from those who don't.

Program outcomes should be defined for such sub-groups, and program success should not be assessed by changes in the "average audience," because an "average audience" does not exist (Prochaska, DiClemente, and Norcross 1992).

Conduct the final summative evaluation

Once goals are clear and are based on front-end research, target groups have been defined, programming has been linked to goals, and sufficient testing has been done to ensure that programming is of high quality, and once the program has been running long enough or comes to its conclusion or outcome, summative evaluations can be conducted that document program success (or failure, as the case may be).

At this juncture, it is important that program staff and the evaluator agree on measures that will validly and reliably capture the outcomes. "Increased knowledge about protected areas' role in preserving biodiversity," for instance, should only be a goal if it was directly addressed by programming the issue. And if it was, it is important to realize that there are many different ways to capture knowledge change, not all of

which might be appropriate for measuring urban outreach efforts. It is also important to capture unintended outcomes, since the audience and the community is not necessarily restricted to the original objectives, and might take away other, surprising, yet useful aspects from the program (Storksdieck, Ellenbogen, and Heimlich 2005). In general, research design and research methods should be chosen carefully and from the full spectrum of the social science research repertoire. The old adage holds that if the only tool available is a hammer, all of one's problems will look like a nail!

Evaluation done in the context of protected areas will mostly be applied research, and resources to conduct such research will be extremely limited. Thus, it is important to conduct the studies efficiently and effectively, which means that:

- No more data than can be analyzed should be collected.
- Data should not be collected because it "would be nice to know." Only data that will help answer a research question should be collected.
- Making sense of data takes time and experience. It is paramount that enough time be scheduled for this most crucial stage of research. Researchers and program staff often underestimate the time it takes to make sense of data and prepare reports.
- Reports are read by people who have agendas. It is thus important to consider the addressee when developing conclusions and writing the report. In the museum field, addressees range from funders to museum directors, from program developers to marketing specialists.

In the museum field, evaluations are used as a tool to keep projects on track and report outcomes to funders (in fact, evaluation results from one project are often used to gain support for another project). Evaluation is particularly successful when a few deceptively simple-sounding rules are followed:

- Know your audience and slice your target audience well.
- Develop realistic expectations in funders, and define achievable goals, objectives, and outcomes.
- Create programs that actually provide for experiences that will address the potential changes you envision in the audiences. Always keep your eyes on your goals.

- Develop a research design and methods that actually measure valid outcomes.
- Choose methods that answer your questions.
- Remember why you do evaluation.

Learning from museum evaluation

Two major areas of museum evaluation might be of relevance to the protected area community. The first one involves the perceived need of museums to reach out to new audiences. Museums in the U.S. (and elsewhere) attract mostly middle- to upper-class, well-educated audiences. A variety of museum initiatives have been conducted, mostly in partnership with community organizations, to reach new, non-traditional audiences and increase appreciation for museums as urban educational resources within those audiences. The second one involves efforts of nature centers, science centers, zoos, and aquariums to convey increased appreciation for urban green space, urban habitats, and nature in the city to urban populations.

The primary factors that connect these projects (or, in fact, any initiative that intends to create an appreciation for something that was not appreciated or even known) were:

- A need to know the audience, their priorities, their concerns, their interests, and their knowledge prior to embarking on educational and outreach initiatives;
- A realization that target audiences are best reached when programming is flexible and allowed to change course where and when needed;
- A need to base decisions on solid data (rather than ideology or gut-feeling), and to always align goals with audiences and program activities.

More specifically, lessons learned through program evaluation in museums and similar institutions that could potentially be transferred to protected areas include the following:

- Solid research into people's motivations, needs, and constraints, from their perspective, is essential.
- Barriers for support and appreciation might not be obvious. For example, in many cases underserved audiences would not visit museums even when visits were free of charge and free food was served. It became apparent

that such audiences were non-visitors for many, other than financial, reasons. Support for protected areas from audiences not traditionally inclined to support them might be forthcoming only if the benefits are personally relevant to their everyday lives, and communicated in such ways as to ensure that they understand the personal benefits derived from protected areas.

- It must be realized that cultural barriers exist for many urban populations. Visiting parks or supporting protected areas are lifestyle issues in the same way that going to a museum and becoming a museum member are lifestyle issues. Knowing about the benefits and even importance of parks and protected areas does not make them any more of a priority for those who struggle with other problems.
- For non-traditional audiences, museum visits often mean leaving their neighborhoods, something they are not accustomed to doing and prefer not to do. Another way of putting this is that some populations are not as readily willing as others to leave a zone of physical or mental comfort. Translated to urban outreach efforts, this finding might signify the need to design program locations around audiences' comfort zones and primary means of receiving information.
- Urban outreach programs need to communicate forcefully that local communities are welcome to join the protected area movement. Outreach cannot be an afterthought or add-on if it wants to be successful.
- If people don't go to parks and protected areas, and thus are less likely to appreciate them, bring the parks and protected areas and their benefits to the people by conducting urban outreach programs jointly with schools, churches, and other community organizations.
- Create tangible and personal benefits, even if they are relatively small. Providing neighborhood amenities concurrently with urban protected areas helps residents see that such areas benefit them *in their everyday life*.
- Conduct field trips for urban people to parks and protected areas.
- Forge strong coalitions with urban community groups that are rooted in the city. Make sure you align your goals with theirs. Ensure that they have the needed resources to participate in your urban outreach efforts. Use community partners to gain insights into community members' perspectives and opinions.

- Nature, habitats, and green space might hold different meanings for urban populations and might even be seen as dangerous and unattractive. Be aware that people who grew up in the built environment might prefer concrete over grass. Don't take nature appreciation for granted.
- People who are aware of a protected area or park, and who might normally be willing to visit such areas, might not visit because they take the resource for granted. In a non-visitor study for Fort Snelling (a historic site in Minnesota, USA), respondents were asked whether they knew about the fort and how they knew about it (Lanning and Elton 2001). It turned out that many locals took the existence of the fort for granted and did not visit since they felt no urgency to visit the venue: it would still be there next year.

Museums in the United States now embrace evaluation as a valid and useful tool for better programming. Evaluation is no longer done simply because a funder demands it. Instead, it is seen as an opportunity for institutional growth. Missing so far is broad dissemination of evaluation results. Inasmuch as evaluation becomes second nature in the development of urban outreach programming, the protected area community should be willing to share the lessons learned. This should include failures as well as success stories, since it is from the failures that we learn the most.

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Appendix:
World Parks Congress Recommendation

World Parks Congress Recommendation V.14

Cities and Protected Areas

Noted by the Vth IUCN World Parks Congress, Durban, South Africa, September 2003*

Half the world's population now lives in cities, and this proportion is expected to grow to 60% by 2030.

Protected areas both near and far provide many significant benefits to cities, ranging from education and healthy recreation, to watershed protection, biodiversity conservation, and income from tourism.

Protected area systems also depend on support from voters, leaders, opinion shapers, and financial resources, which are largely concentrated in cities. At the same time, city dwellers tend to be less and less connected to nature and consequently the quality of their lives is diminished and they may unwittingly behave irresponsibly toward the environment.

Nevertheless, urban residents can gain greater appreciation and love for nature through experiences in natural areas and open spaces as well as through education. Ecological restoration and environmental protection are essential to the quality of life of urban dwellers. Interaction with nature by city dwellers brings direct social, economic, and cultural benefits.

Agencies responsible for protected areas can serve urban residents through conventional activities such as preserving, restoring, and interpreting natural areas in and near cities, but also through less conventional roles such as reaching out to disadvantaged people, working to bridge social divisions through shared experiences in nature, and helping to 'green' and promote sustainable development in cities.

IUCN has recognised the critical roles that cities, urban people, and urban institutions play in achieving IUCN's overall mission; for example, in *Caring for the Earth* (1991) and at the Union's 50th Anniversary Celebration (Fontainebleau, 1998). Urban populations are also essential to achieving such fundamental goals of the IUCN

World Commission on Protected Areas as 'Strengthening the constituency for protected Areas' (Recommendation 1 of the IVth IUCN World Parks Congress, Caracas, 1992). Connecting protected areas to social and economic concerns is a priority of WCPA's 2001-2004 Action Plan.

At the same time, more should be done to facilitate exchange of experience in urban conservation and outreach among the increasing number of IUCN members with such activities, and many innovative local socio-environmental programmes, including programmes involving children and young people in making the case for conservation.

Finally, allied intergovernmental programmes such as UNESCO's Man and the Biosphere Programme and national programmes that connect natural and cultural heritage sites are placing greater emphasis on urban dimensions of protecting biodiversity.

Therefore, PARTICIPANTS in the Workshop Stream on Building Broader Support for Protected Areas at the Vth IUCN World Parks Congress in Durban, South Africa (8-17 September 2003):

1. RECOMMEND that conservation agencies, NGOs, local authorities and local communities:
 - a. RECOGNISE the importance of protected areas and green spaces to the people living in cities and ENCOURAGE and RESOURCE the development of strategies and programmes that engage groups in activities that improve their quality of life;
 - b. RECOGNISE the interdependence of cities and protected areas, as demonstrated for example through regional and ecosystem approaches linking urban and rural conservation areas and efforts, and the important contributions of protected areas to socio-economic priorities; and
 - c. STRENGTHEN the capacity of the protected area community to preserve and restore natural

areas in and near cities, reach out to urban residents, and build stronger urban constituencies for nature conservation;

2. RECOMMEND that the IUCN World Commission on Protected Areas incorporate an urban dimension in its activities through a Theme on Cities and Protected Areas; and

3. RECOMMEND that IUCN:

a. ORGANISES activities at the 3rd IUCN World Conservation Congress (Bangkok, 2004) spotlighting innovative programmes linking cities and protected areas;

b. INCORPORATES the urban dimensions of conservation into the 2005-08 Intersessional Programme to be considered at the 3rd IUCN World Conservation Congress (Bangkok, 2004);

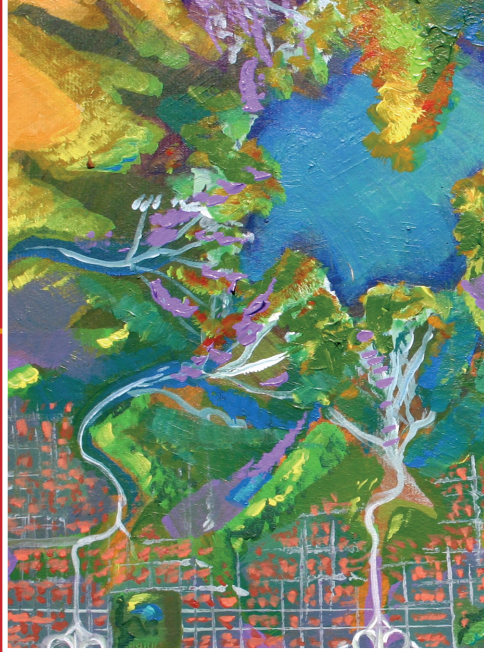
c. LINKS biodiversity conservation to human settlements in order to better advance the implementation of sustainable development objectives, including the United Nations Millennium Development Goals;

d. RECRUITS as members organisations engaged in urban environmental issues, and INVITES prominent leaders and experts in urban management to participate in the work of IUCN;

e. DEVELOPS partnerships with key organisations engaged in the urban environment; and

f. DEVELOPS tools, such as modelling techniques, which assist urban managers to incorporate ecosystem management approaches in their planning and management.

* (a) This Recommendation is written in an international style of English used by IUCN that differs from the U.S. style used in the remainder of the book. (b) World Parks Congress recommendations were “approved” by thematic plenary sessions for each of seven workshop streams and then “noted” by the Congress. The Urban Imperative workshop was part of the Workshop Stream on Building Broader Support for Protected Areas. (c) This World Parks Congress Recommendation led to a broader Resolution, “Cities and Conservation,” adopted by the 3rd IUCN World Conservation Congress, held in Bangkok, Thailand, in November 2004. That Resolution, CGR3.RES049, is posted at www.iucn.org/congress.



IUCN - The World Conservation Union

Founded in 1948, the World Conservation Union brings together States, government agencies, and a diverse range of nongovernmental organizations in a unique world partnership: over 1,000 members in all, spread across some 140 countries.

As a Union, IUCN seeks to influence, encourage, and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

The World Conservation Union builds on the strengths of its members, networks, and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional, and global levels.

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