



Growing Nature

Priorities for managing the natural systems on our sites

Just as language has no longer anything in common with the thing it names, so the movements of most of the people who live in cities have lost their connection with the earth; they hang, as it were, in the air, hover in all directions, and find no place where they can settle.

- Rainer Maria Rilke (1875-1926), Austro-German poet

We have called this chapter “Growing Nature”, but before we go on we need to observe that, of course, *all* our chapters have been around growing nature. As our social and natural systems are so interconnected, it is somewhat artificial to separate them out. However, there are particular considerations concerning the adaptive co-management of natural systems on and around our sites. In this chapter, we draw some broad guidelines that have emerged from the experiences of Cape Town’s urban conservators.



1. Context and implications for practice

Enabling the city’s natural systems to function is critical for achieving more resilient and sustainable social ecological systems, but they are threatened by a number of factors. These are described below.

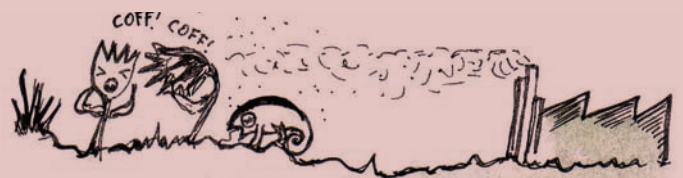
Challenges to urban nature sites:



Urbanisation

Our cities are expanding rapidly, often in unplanned informal settlements or poorly planned urban sprawl. This leads to the fragmentation of natural habitats, exposing flora and fauna to greater impacts of invasive alien species, pollution and other disturbances, which leads to population declines and increased extinction risks. The loss of key species, such as insect pollinators,

may cause poor seed production. Urbanisation disrupts, or even eliminates, the natural ecological processes that originally informed the biodiversity of sites.



Pollution

Nitrogen deposits from car exhausts enriches the soil – this makes it less suitable for the Fynbos species that are adapted to a low-nutrient regime. Seasonal wetlands and rivers are all polluted to a greater or lesser extent via the stormwater and failing sewerage systems. Nutrient enrichment of wetlands causes the loss of indigenous biota and the colonisation by less sensitive, often alien species.



Invasive Species

Invasive species such as the Australian Acacia, Hakea and Eucalyptus, as well as pine trees from the Northern Hemisphere are a problem all over South Africa. Invasive grasses and weeds are also a serious threat to urban sites, and harder to eliminate than larger invasive plants. These out-compete the indigenous vegetation and alter ecosystem processes. The fragmentation and degradation of urban sites make them particularly vulnerable to invasive species.

Problematic invasive alien animal species include the Argentine ant, which disrupts the fynbos seeds' symbiotic relationship with indigenous ants; the Mallard duck, which hybridises with the indigenous Yellow-billed duck and the Indian House crow, which preys on small indigenous animal species and birds' eggs. Feral and domestic cats threaten small mammals and reptiles.



Inappropriate Fires

Fynbos requires fire for the long-term conservation of its species. But over-frequent fires may eliminate slower-growing species, leading to the invasion of fast-growing alien species and if there are no fires at all, forest species tend to invade and others are lost. Urbanisation interferes with the natural fire cycles either through over-frequent burning caused by carelessness or vandalism, or because it is impossible to do controlled burning to mimic natural cycles because of the risk to property.



Mowing

The City of Cape Town mows public open spaces and road verges two or three times a year. In high-rainfall areas mowing eliminates all but the hardest indigenous plant species and leads to a grass domination cover or invasion by alien grass species. In drier areas, mowing destroys most of the vegetation and reduces plant cover.



We can find ways to enable nature to flourish in our cities



Overexploitation

Historically, stock would have been moved around to give the soil a chance to recover. Today, small stock farmers herd cattle and goats year-round on the same soil – a particular problem in Cape Town with its nutrient-poor sandy soils. This results in the vegetation being over-utilised and opening up gaps for alien grasses to colonise.

Marine conservation is also challenged by the proximity of a large metropolitan area. The exploitation of coastal natural resources is an important source of recreation, employment and food but the intensity of harvesting has exceeded the capacity of the many of the fish species to recover populations with many being severely overexploited.



Hydrology

Changes to hydrology such as large-scale hardening of catchment areas, drainage and canalisation of streams alters natural ecosystem functioning in wetlands and vegetation remnants, where this can lead to changes in species composition over time.



Crime

The current high crime levels are a major threat to nature conservation as people perceive bushy remnants as areas that harbour criminals. The threat of crime is often used to justify developments such as sand mining and housing. Criminal activities such as the dumping of rubble and toxic waste, poaching and arson also directly impact negatively on biodiversity.

Adapted from the City of Cape Town Environmental Resources Management Plan

The challenges to natural systems can only intensify with climate change as weather and rainfall patterns are disrupted. Already many of our nature conservation sites or open spaces present seriously compromised natural systems. In some, the original natural processes have been almost irreversibly transformed and some original species lost. It is difficult to predict the consequences of these and other challenges in the longer term.

There are several implications for our practice:

1.1 Broadening our definition of natural values

While all efforts should be made to conserve biodiversity by conserving or restoring remnants of important ecosystems, the 'natural values' of a site need to be understood more broadly. As we have pointed out, an urban nature conservation site has huge value for our social ecological systems, even if it is not possible to conserve all of the original ecosystem and biodiversity values of that site. A case in point here is the Edith Stephens Wetland Park, which due to its isolation and pressure from urban infrastructure, has a seriously compromised ecosystem and yet offers untold value in developing the capacity and will of local communities to value, protect and manage our natural resources.

There can be no questioning the importance of making every effort to sustain biodiversity. Some scientists, like Pat Holmes, believe that this is possible with the correct management:

We can easily manage the biodiversity in our reserves; some species populations may be too small to persist in the long term, so we may lose some species. But really, all we need are knowledgeable managers and adequate resources.

- Pat Holmes, Plant Ecologist, City of Cape Town

Others such as Howard Langley, believe that the objective of sustaining or restoring the original ecosystems may prove unrealistic in the long term.

We have to accept that in most cases, the ecological processes that informed the natural biodiversity values of our urban conservation sites have been so disrupted or fragmented by urbanisation, that they are no longer functional. For example, Rondevlei Nature Reserve has always had committed and knowledgeable conservation managers, yet its biodiversity values are under constant threat – evidenced by a number of plant species having been lost in recent times. This has not been because of poor conservation management, but rather because urbanisation has completely altered the hydrological systems on which many plant species depended.

Unfortunately, most of our urban parks are just too small, fragmented or isolated to be ecologically functional – even plants need space to move to more favourable sites, but just a path, drainage ditch or a road, can be an insurmountable obstacle to a 'migrating' plant. I have been observing an orchid population at Cape Point which, over the past 30 years, has migrated nearly 50 meters around the side of a hill. Fortunately no man-made or induced obstacle has yet impeded its migration and it has the luxury of space and a natural, unaltered environment in which to move. The same can't be said for the many threatened plants in our small urban reserves.

For reasons quite beyond the control of any conservation manager, Edith Stevens Wetland Park has lost most, if not all, of its original natural biodiversity... but does this mean it is not worthy of further conservation attention – of course not! The Park still has many other conservation values worthy of protection and these values will become increasingly more valuable to surrounding communities as urbanisation erodes and destroys what little naturalness remains in the area.

As urban nature conservators, our most important role is to conserve natural open spaces and to, wherever possible, maintain and restore the ecological processes on which they depend. If nothing else, this will allow for choices in the future.

- Howard Langley, retired conservation manager



Urbanisation puts huge pressures on natural systems, but creative ways can be found to minimise these



Urbanisation has impacted Rondevlei, but it can still function as an ecosystem



Hippo at Rondevlei

The experience of conservationists like Howard suggests that while scientists are armed with substantial knowledge about what has informed natural ecological processes in the past, the complexity of the interrelationships make it difficult to predict how these ecological processes will be impacted with the unprecedented environmental changes we are currently facing, such as climate change, rapid urbanisation and widespread loss of biodiversity.

So does this mean we should only conserve pristine sites?

Even if scientists do have the necessary knowledge to restore an ecosystem, the costs can be considerable. It is important, then, to approach this strategically. We may need to prioritise restoring sites that have a well-preserved ecosystem, or suffer minimal impacts, or are key remnants. However, this does not mean that we should not protect and conserve other sites – it would be a tragedy if natural landscapes that provide significant social ecological values were lost to development because it is not affordable to restore them to their original state. If well-managed, these sites may do as much – or more – for the cause of nature conservation in the long run, because their location offers people the chance to engage with nature, which will encourage communities to support efforts to make resources available for restoration of other sites.

One example of this is the Princessvlei, described in more detail in Chapter Seven. This site offers huge benefit to the community and is a great ambassador for the value of natural resources. It may be too costly to restore it to its original state but with less input, one could create an aesthetic peaceful landscape that offers habitat to several plant and animal species; offers ecosystem services such as water cleansing and flood management and gives local communities a place to congregate and engage with nature.

This raises the question as to what our long term objective in restoring or protecting the site is. Sometimes, the original state of the site may be lost or irretrievable, due to major changes in hydrology, loss of key species such as pollinators and so on. However, it may be possible to artificially create a natural landscape that provides many of the values of a pristine ecosystem. An example of this is the Glencairn Wetlands. A hundred years ago, this was a seasonal stream running through a sea of drift sands devoid of vegetation. Today, the advent of roads, railway lines and sand-stabilisation projects (including invasive vegetation), has completely transformed the area into a densely vegetated artificial wetland. This site provides many of the ecosystem services of a natural wetland, as well as a beautiful recreational area much beloved and vigorously defended by residents.

Perhaps what needs to be remembered is that natural systems, even without human interference, are subject to constant change. Rivers changing course, floods, and natural imbalances all lead to shifts in natural systems. We need to be flexible, and create spaces for nature to flourish in whatever way it can in our highly impacted environments. And we need to use those spaces to their maximum to show communities the value of conserving nature.

1.2 Adaptive management

Whatever our long term objectives, our efforts to protect, restore or regenerate functioning natural systems are undertaken in the context of a highly impacted natural environment. This makes it difficult to follow a predictable blueprint. Although we can gain some insights from studying how the systems might have functioned without these impacts, we need to restore them in the context of ongoing and often unpredictable pressures. Coping with this demands a highly responsive and adaptive form of management. We need to understand the environmental context, and we need to continuously monitor and evaluate the impact of both the changing pressures of urbanisation and the impact of our own efforts to redress these and adapt our practice accordingly.

This is illustrated by Howard Langley as follows:

Without a proper understanding of how natural ecological processes inform the biodiversity of our urban sites or indeed what natural processes are being disrupted by urban development, it is impossible to properly manage biodiversity. For example, Rondevlei has long been subject to 'good' management practice – yet it is being unnaturally transformed by urban impacts that are quite beyond the control of conservation managers, the most significant impact being the disruption to the natural hydrological processes that informed both its aquatic and terrestrial ecosystems. Direct human impacts are a lesser threat to biodiversity than is the serious problem of collapsing ecological processes resulting from urban development impacts.

The first task therefore of any urban conservation manager is to fully understand what past, current and future impacts to natural ecological processes are shaping, and will shape, the site. Armed with this information, the conservator can then make informed decisions as to prioritising of conservation efforts.

- Howard Langley, retired conservation manager



Plant restoration at Princessvlei



Princessvlei

Urban infrastructure leads to major disruptions of natural systems



1.3 Growing nature friendly cities

Whatever our ambitions for a site, natural systems do not exist in isolation and our efforts to regenerate or protect these systems would be greatly enhanced with the transformation of our cities. Much could be done if our city planners and engineers embrace natural system functioning and biodiversity concerns as a core element of their designs. This is not just a soft nature issue – without this shift, cities will be hard-pressed to survive the impacts of climate change and sustained environmental degradation. Observing the following principles would go a long way to making our cities much more resilient and sustainable and also much more nature- and people-friendly.

- Conserving and restoring representative samples of vegetation types in a way that enables ecosystems to function, as far as is possible, under conditions of isolation and disrupted ecological processes;
- Creating and maintaining urban nature reserves and natural landscapes for the purposes of sustaining biodiversity for environmental education, recreation and spiritual upliftment and as nodes of adaptive co-management with communities;
- Supporting efforts by nature conservators and others to equip communities with the knowledge, motivation and skills to engage in the adaptive co-management of natural resources;



- Maintaining the health of all waterways and minimising interference in rivers, wetlands and coastal systems;
- Maintaining biodiversity corridors to allow movement of species and building underpasses to busy roads to minimise loss of animals;
- Developing around remnants of vegetation rather than uprooting and replanting;
- Growing indigenous vegetation in gardens and public open spaces, and minimising high-impact maintenance practices such as frequent mowing;
- Using environmentally-friendly materials and construction methods;
- Creating incentives for landowners to engage in stewardship projects and actively conserve natural systems and biodiversity on their land.

Policy makers need to enable and enforce legislation to support these efforts and to limit negative impacts from illegal development, illegal mining, dumping, and pollution. In order to effect this policy change, urban conservators need to lobby politicians and point out the huge benefits these shifts would bring by contributing to the value of property, limiting fire risks, providing clean air and water, minimising water loss and flood damage, limiting the spread of disease, providing facilities for health, recreation, spiritual upliftment, tourism and increasing resilience in the face of climate change.

The futility of trying to conserve ecosystems in isolation is rather poignantly illustrated by the biosphere dome project, in which eight people lived inside a 3.15-acre closed ecosystem for two years. The system featured agricultural land and replicas of several natural ecosystems such as forests and even a miniature ocean. In spite of an investment of more than \$200 million in the design, construction, and operation of this model earth, it proved impossible to supply the material and physical needs of the eight Biospherians for the intended 2 years. Many unpleasant and unexpected problems arose, including a drop in atmospheric oxygen concentration to 14% (the level normally found at an elevation of 17,500 feet [5334 metres]), high spikes in carbon dioxide concentrations, nitrous oxide concentrations high enough to impair the brain, an extremely high level of extinctions (including 19 of 25 vertebrate species and all pollinators brought into the enclosure, which would have ensured the eventual extinction of most of the plant species as well), overgrowth of aggressive vines and algal mats, and the population explosions of crazy ants, cockroaches, and katydids. Even heroic personal efforts on the part of the Biospherians did not suffice to make the system viable and sustainable for either humans or many non-human species.¹

Growing indigenous vegetation in public spaces helps to extend habitats



An ecosystem cannot survive in isolation



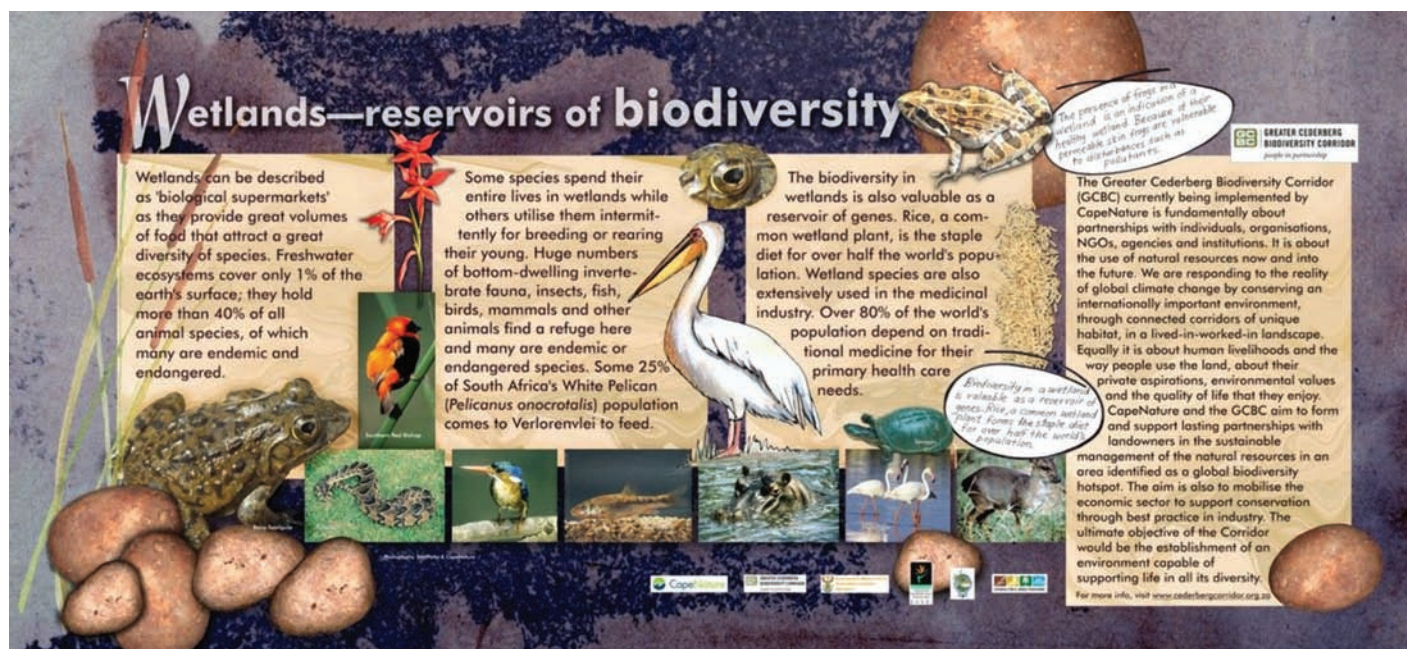
The financial cost of destroying nature

Arguments favouring commercial development of land over biodiversity conservation often claim that developing land 'increases its value'. This claim fails to take into account not only the irreplaceable emotional, spiritual value and health benefits, but also the monetary value delivered by healthy ecosystems. It is difficult to quantify this: How do

you put a price on something that sustains your life? The following list of services provided by ecosystems gives some idea:

- purification of air and water
- mitigation of droughts and floods
- generation and preservation of soils and renewal of their fertility
- detoxification and decomposition of wastes
- pollination of crops and natural vegetation
- dispersal of seeds
- cycling and movement of nutrients
- control of the vast majority of potential agricultural pests and insect-borne diseases
- maintaining biodiversity
- maintaining wild stock genetic storehouses, essential for medicines and developing food crops
- protection of coastal shores from erosion by waves
- protection from the sun's harmful ultraviolet rays
- partial stabilisation of climate through the absorption of CO₂
- moderation of weather extremes and their impacts – a value that has become particularly critical in the context of global climate change
- provision of aesthetic beauty and intellectual stimulation that lifts the human spirit
- tourism
- employment opportunities
- the potential for countless social development projects like those documented in this book

Efforts to quantify these services have estimated the global annual value to be US\$16 – 54 trillion, with an estimated average of US\$33 trillion. The real value is almost certainly much larger. US\$33 trillion is 1.8 times the current global gross national product (GNP). In other words, if we were to try to replace the services of ecosystems at the current margin, we would need to increase global GNP by at least US\$33 trillion. This impossible task would lead to no increase in welfare because we would only be replacing existing services, and it ignores the fact that many ecosystem services are irreplaceable.²



2. Reviving our systems

As we can see, it is almost certainly impossible to return all our urban natural systems to their original state. What we need to explore, through a flexible approach of adaptive management, is how to enable functioning natural systems that are resilient and encompass as much biodiversity as possible. In order to do this, we need to try to conserve:

- A representative sample of all biodiversity patterns in an area, particularly those that are endemic to the area (the principle of **representation**).
- The ecological and evolutionary processes that enabled this biodiversity to persist over time (the principle of **persistence**).³

In order to understand the ecological and evolutionary processes that have enabled this biodiversity to persist, it is vital to gain some insight into the history of the site before it was massively impacted by human interference; and also how urbanisation and climate change have impacted, and are likely to continue to impact, on the ecosystem. In particular, we need to explore:

- Climate and seasonal fluctuations
- Hydrology and soil hydrology
- Vegetation and soil type
- Alien invasion and soil quality
- Previous land uses
- Disturbance regimes of fire, flooding and herbivory: How often and in what intensity did they occur? Can they be restored or mimicked in any way?
- What were the keystone species?
- The presence of niche endemic species: What do they tell you about the prevailing micro-climate?

In this regard, we can benefit from the input of local community members who have lived in the area for a long time and have some memory of how things were before massive urban development. We can also work in strong partnership with higher education institutions and conservation scientists.

With this knowledge, we are better equipped to mitigate negative impacts of urbanisation and adapt to climate change. If we are unable to restore it to its former state, we may, at least, be able to conserve or restore some of the natural processes so that the system is resilient and self-sustaining. Due to the uncertainty of the ongoing and shifting impacts of urbanisation



and climate change, these actions will need to be continuously assessed and reviewed. It is helpful to identify appropriate indicator species and processes in order to monitor and evaluate the impact of our actions.

It is beneficial to involve at least some members of the local community in the process of defining a strategy for management, and the ongoing management. Volunteers, particularly local residents, can be extremely helpful in monitoring shifts in animal and plant species. This involvement will contribute to promoting the eco-literacy of the community and in laying the groundwork for long term co-management. We can also benefit from finding ways to share knowledge and draw on local indigenous knowledge systems to guide our work.

3. Nature friendly infrastructure: Touching the earth lightly

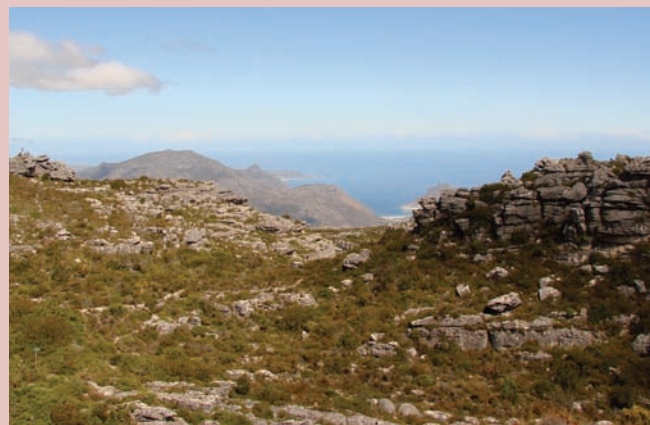
Any nature conservation site needs some infrastructure to enable recreational access and environmental education, and to provide community facilities. Many require infrastructure to house management on site. How much there is depends on the size of the site, and how and by whom it is used. But any infrastructure will impact on the natural systems and visual qualities of the site. Below are some suggestions for how to minimise this impact:

- Strategise and prioritise infrastructure according to the vision for the site and ensure that community partners participate in discussions around infrastructure and that their needs and wishes are taken into account;
- Design the layout of the site carefully in order to locate infrastructure and high-use recreational areas in places where the ecosystems are more robust – ideally on the periphery or even outside the conservation site. This can also form a natural fence or buffer zone around the site;
- It may be necessary to use species that are alien to the site for hedges, lawns and shade trees. Try to find species that are indigenous (even if not to your area), non-invasive and water wise;
- Design walkways to channel visitors around, over or away from sensitive areas. Raised boardwalks are preferable to conventional constructed paths, as they allow for small plant and animal life under the boards;
- Choose organic-looking materials and finishes for all buildings so that they blend in with the natural surroundings. Locate them in areas where they will not impose on the aesthetic value of the site;
- Choose building materials that have the smallest ecological footprint and incorporate other aspects of eco-friendly design such as passive solar design, solar water heaters, wind turbines and composting water-free toilets. Have information plaques explaining why we have these so that we can teach by example.

Sometimes, invasive infrastructure is necessary for better ecosystem management. This was the experience in Table Mountain National Park:

The top of Table Mountain National Park is a fantastic example of good conservation practice. The vegetation on the front table today is magnificent, but aerial photos of the mountain prior to the building of the new view paths, show a spaghetti-like sprawl of paths crisscrossing the mountain with places completely denuded of plants. We decided to create a circular route with viewing platforms because we knew that people would want to walk to the edge for the view. This meant we had to blast some rocks to make the paths, which caused much unhappiness to some conservationists. But we realised that there had to be some sacrificial areas in order to conserve the rest. I learnt these hard lessons at Cape Point. We concentrated all tourist facilities at the Point – we located everything there – it was where people wanted to be. But by giving them good, well designed paths and view sites, we could channel visitors away from sensitive areas. Importantly, it also allowed us to restore and maintain the 'naturalness' of the greater part of the park.

- Howard Langley, retired conservation manager



Well managed paths on the top of Table Mountain have enabled the regrowth of fynbos



Slangkop Boma in Table Mountain National Park

A boardwalk can protect vegetation



3.1 The fencing debate

Fences are the most contested and complex part of infrastructure. A fence may seem like a good way to combat threats such as dumping, littering, poaching and other crime, and may be necessary to prevent animals from straying onto roads. But fencing may cause more problems than it solves. Let us look at some of the experiences of fencing on urban conservation sites:

Looking at the way the Cape Flats Nature sites are developing – those areas are unbelievable – and I think that is purely because of our approach, not because the City installed big fences and heavy security to make sure no-one passed there. The mere fact that they exist without big fences around them is an indication that something has been done to get communities involved.

– Zwai Peter, ex Cape Flats Nature Communications Manager

In 1986 they put up the fence... at that stage we were very serious about the housing struggle and when the fence went up it was not a matter of any interest for us. Our perception was that it was just 'hierdie boere' [these white people] doing nothing for us – we needed houses... and so the Friends put up the fence, but the fence was broken and people set the area alight – there were many snakes, and people used to walk through and burn the veld to kill the snakes. The fence was later stolen for the scrap yards.

– Jan Geldenhuys, Harmony Flats Working Group



To fence or not fence?

These two quotes reveal the essence of the debate around fencing. Zwai comments on the fact that community participation has enabled conservation sites on the Cape Flats to survive without big fences. Jan Geldenhuys highlights one of the big challenges with fencing in low-income areas where scrap metal and fencing material are highly prized: How do you ensure that your fence is not simply demolished?

Jan's quote also points to the contradiction of the old way of thinking in conservation. The Friends group fenced off Harmony Flats without making an effort to inform the surrounding community about what they were doing, or to involve them in the deciding how to secure the site. They saw the community as a threat because, amongst other things, they burnt the veld. Had they engaged the community, they would have learnt that the main reason for burning veld was to kill the snakes. This could have offered a good chance to engage with the local residents and explain that snakes are unlikely to leave a good habitat, and a fire will probably just chase them out; that they keep down rodents and other pests; and, if they are found outside the reserve, nature officials can be asked to remove them. It was precisely the community's lack of information and engagement that made the fence necessary and it was also precisely this lack of engagement that ensured that the fence was removed soon after it went up.

However, twenty-three years after the first fence was raised at Harmony Flats, the present manager of the site, Sabelo Lindani, is arguing for another fence. This time, the context is very different. Cape Flats Nature, CREW, City staff and Sabelo have engaged extensively with the surrounding communities, and have helped to establish the Harmony Flats Working Group (HFWG). The Working Group conducted a survey of local residents, and found that many support erecting a fence for the following reasons:

- Frequent fires caused by pedestrians throwing cigarettes or deliberate vandalism threatens the rare fynbos and animal species on the site;
- Criminals use the site to access houses for theft;
- Littering, dumping and illegal sand mining can be controlled with a fence;
- There is a need to demarcate the area so that people know it is a reserve and not just vacant ground.

They chose to have a waist-high fence to reduce the 'keep out' message, and to enable neighbouring residents to still see into it. The fence has access points so that people can still enter the reserve.





Charline feels that this vibracrete fence has created more problems than solutions

Tshepo Mamabolo also felt that a fence was the solution to similar problems at Bracken. However, the fence angered members of a neighbouring low-income community as it blocked their access to the reserve, which they had entered to gather medicinal plants and used as a thoroughfare. Subsequent engagement and work with the community is helping to shift their attitude and many community members now value the fence.

For others such as Luzann Isaacs and Charline Mc Kie, fencing is not the ideal solution. Luzann feels that “your community is your fence”, and believes that a better solution is a ‘soft’ fence – a low fence or a living hedge that demarcates the boundaries of the site but does not prevent entry.

Charline was disappointed with the vibracrete wall erected between Wolfgat Nature Reserve and the neighbouring residential area:

Despite the fact that it brings with it so many challenges, it would be better not to have the fence. This now blocks off the neighbours and they don't have the option of appreciating the Reserve. Fences give the impression of the 'old way of thinking,' where you keep people out. The planning was quite wrong as the front of the houses do not face onto the Reserve, and therefore this colours peoples' perceptions of the Reserve. It is still often seen as the bush, a place to dump waste and a place where skollies hang out. This also creates a wall, in every sense, in trying to get the conservation message out there and change peoples' beliefs about nature and the conservation thereof.

- Charline Mc Kie, Reserve Manager, City of Cape Town

Howard Langley suggests a living boundary:

Whether sites are fenced or not, my view is that urban nature sites should have 'people boundaries/buffers' that incorporate cycle, jogging and walking paths, shaded seating areas, children's play parks etc. The provision of such community facilities will further enhance the value of the nature reserve to surrounding communities.

- Howard Langley, retired conservation manager

While there may be some argument for putting up a fence, it is clear that this is not a straightforward solution. There are no easy answers to this, but the following lessons can be drawn from these experiences:



ESWP has a recreational buffer zone, and a more ecologically sensitive area that is fenced

Bollards and signs can be used to demarcate the conservation area



- It is important to demarcate the boundaries of conservation sites, but there may be better ways to do this than a high fence that keeps people out and stops people seeing into or out of the reserve. For example: a low fence, a recreational area with mowed grass and play equipment, low walls that can also serve as benches for visitors with murals painted by local school children, information boards and signs;
- Whatever fence is – or is not – used, the most reliable protection of the site lies with community engagement. We need to work with communities in finding the best way to demarcate and secure the site;
- It is especially critical that a full and open consultation is conducted with the community *before* we erect or decide on the type of fence needed. If a community sees a fence going up without consultation, it may be extremely hard to win their trust and support afterwards;
- If possible, use the building and maintenance of the fence as an income-generating project for local service providers and residents;
- A fence without community participation will not solve the problems and will, almost certainly, have a very short life span.

Every situation is different and, while a fence may be appropriate on one site, it may not be right for another. But whatever our circumstances, before we turn to fences, we need to ask the following questions:

- Why do we want the fence?
- Will the fence resolve these problems?
- Are there other, maybe better, ways to resolve these problems?
- How do we ensure that the fence is not removed?
- Have we fully engaged with the community before deciding on a fence?

If a fence seems to be the best option, choose materials and a construction that will make it less likely to be stolen, and choose a fence that suits your animal needs. For example, palisade fencing keeps in large animals but allows smaller ones freedom of movement.

The cost of fencing is not only the initial construction but also its ongoing maintenance and repairs which need to be budgeted for.



3.2 Development and infrastructural pressures

City council poses the biggest threat to the sites.

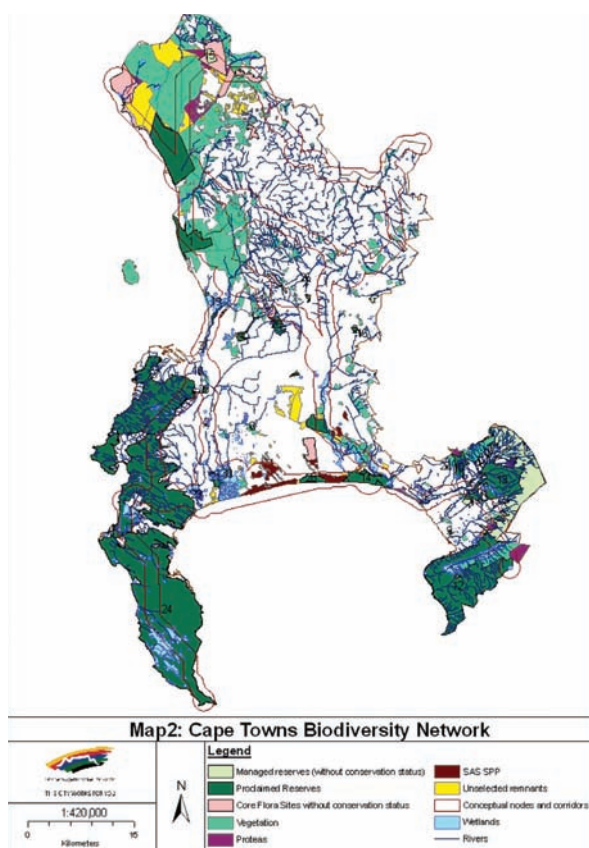
- Dalton Gibbs, Area Manager, City of Cape Town

I think we have lost touch and don't sufficiently value biodiversity ourselves. We don't go to reserves, and we give over our land for housing etc. Those people in high positions have lost connection with the land and have got lost in the process.

- Bongani Mnisi, Area Manager, City of Cape Town

Without doubt, the biggest threat to urban nature conservation is urban development and infrastructure. On the one hand, there is sustained pressure to use public open space for housing or commercial developments. On the other, even those areas given over for conservation and recreation are under huge pressure from infrastructural demands such as storm water drainage, exploitation of natural resources, digging to lay pipes, and mining – legal and illegal. The ecosystem service value of these sites is stretched to the limit.

The challenge posed by these pressures may feel overwhelming – particularly for the many urban conservators



who work for city governments and find their sites being demolished by their own employers. But while it is an *ongoing* battle, it does not have to be a *losing* battle. Although urbanisation and its associated pressures grow by the day, so does the awareness that humanity's continued survival depends on a healthy environment; it is critical that we advance and exploit this awareness to its full.

The Biodiversity Network in Cape Town has made huge strides in identifying sites with high biodiversity value and in informing spatial development planners about these. But, it needs the support of community partners. To build protection for biodiversity sites, we need to ensure that natural spaces which may not have high biodiversity, but do have the social ecological values mentioned earlier, are also conserved.

Ward councilors are sometimes persuaded by wealthy developers, but they are also accountable to their electorate. The more vociferous and passionate this electorate is about conserving the sites, the greater their protection against damaging developments. However, it also is up to nature conservationists to ensure that proposed developments are made public and that we give our community partners the tools to lobby powerful partners in government and in the private sector against these developments or, if necessary, to explore legal challenges. We take a further look at this in Chapter Seven.

Apart from helping to stem the tide of inappropriate government-enabled developments, community partners are invaluable in helping to deal with illegal development and interference, as the following inspiring case study from Wolfgat Nature Reserve demonstrates:

Lost City intervention

Last October, a local resident drew my attention to the big hole that was being dug out by machinery in Wolfgat Nature Reserve. I asked a staff member, Robert, to investigate. He discovered an illegal sand mining operation, with digger loaders and trucks extracting and driving sand away. Robert halted the operation immediately.

I investigated further with site visits, consultations with different officials out at site, looking at rehab options, taking a statement from one of the disgruntled residents who claimed that the operation was a *smokkeling* [underhand] thing between a local politician, who was a prominent community leader, and a business owner. I realised that this could be a contentious issue. Nonetheless Robert has opened a case with the Police, which is still in process.

I felt that I was in a sticky situation that could turn nasty, as the community members were fighting with each other. I decided to see the local politician and discuss how we could defuse the situation and work with the community to do something about the huge hole left behind, which was a danger to the children playing in the area.

A community meeting was called with the local politician and those responsible for the sand mining. The perpetrators claimed they were levelling the area for a vegetable garden – which was clearly untrue as there was no levelling going on, and it was not a suitable site for a garden in terms of watering and the angle of the slope.

The politician was not supportive during the meeting and appeared to rather want to hamper and criticise me personally. He knew that what they were doing was illegal but the perpetrators were prominent businessmen in the local community who were selling the sand to construction companies and it seemed likely that he was in cahoots with them.

Community members raised concerns about the dangerous hole that had been left. A colleague proposed a plan to rehabilitate the area with plants. The politician agreed to fund hiring the necessary machinery to fill the hole, but so far nothing has been done and all the individuals concerned have got away with the illegal operation. Meantime the winds have blown the sand so that the hole is less dangerous.

This issue became a springboard to engage with the community and explore their needs, through informal chatting and a meeting with community members. We discussed dumping and getting the City to clean up the area behind their houses. I arranged for the City's Integrated Development Plan representative to speak to community members on how they could influence the City's spending to help uplift the community, as I was constantly being approached for help with jobs and infrastructure for the area.

The community expressed concern about fires, which are a grave threat to the settlement. In response, I arranged a fire fighting workshop in conjunction with the City's Fire and Rescue Services at the Mitchells Plain Fire Station for 20 youths from Lost City.

The politician has not provided the machinery for rehabilitation as agreed. We are going ahead, and keeping him informed, but his attitude echoes many of the political representatives who make big promises but do not follow through. The hole is slowly blowing closed and we are trying to raise funds for topsoil and plants to rehabilitate the area.

However, we have made good contacts with the community and can rely on the resident, who first noticed the illegal operation, to champion the interests of Wolfgat Nature Reserve and to be our 'eyes and ears' for things going on in the Reserve when we are not around.

- Charline Mc Kie, Reserve Manager, City of Cape Town, case study, June 2008



Some of the many animal species whose habitat we need to protect in our cities. From top to bottom: Cape hare; mountain tortoise; cape dwarf chameleon; porcupine; spotted genet; eggs



Legal sand mining in Macassar Dunes

This is a good example of how a potentially damaging intervention by illegal miners was turned to the advantage of the reserve. Thanks to Charline and her team's previous work with the Lost City community, a local resident contacted the reserve management when she saw the sand miners. The community was vociferous in defending the reserve, and Charline's skilful management defused tension around different interests in the group.

Charline used the situation to consult further with the community regarding their needs, and could respond by training the youth in fire fighting skills. This has helped the reserve in that the youth will alert management to fires on the edge of the reserve, and will often have put them out themselves before the reserve management even gets there. The dune rehabilitation also offers scope for community engagement and participation once the necessary funds and resources are located.

Another example where a potentially damaging intervention was turned to benefit the conservation site was at Zeekoevlei, where a Bottom Road resident wanted to build an illegal jetty (see page 70 for details).

These examples show the value of strong community relationships in dealing with challenges, and the

opportunities for community engagement that challenges can present.

The case studies point to three important elements in the battle against unwanted or illegal development. Firstly, an early warning – for this there is no substitute for a vigilant neighbouring community. Secondly, we need to be fully informed of the legal status of the site, and of any legal or procedural steps we can take to protect it, and have the institutional backing to do this. And thirdly, and most importantly, we need a community so passionate about the site they will do whatever it takes to defend it.

3.3 Alien-clearing programmes and partnerships

Invasive alien species, both flora and fauna, pose one of the greatest threats to biodiversity all over the world. According to the United States government, invasive alien species have effectively wiped out four percent of the global GDP – this is two and a half times Africa's combined GDP. They pose a particular threat to biodiversity in Cape Town because of the high concentration of endemic and threatened species. They compete with indigenous species for habitat and resources. Invasive alien plants may also increase the severity of fires



Restoring wetlands is an important aspect of ensuring healthy natural systems

Contractors clearing aliens in Wolfgat Nature Reserve



and impact negatively on both the quantity and quality of water resources.

Alien invaders are generally opportunistic, and pose a particular problem where indigenous vegetation has been fragmented, destroyed or disturbed – as is the case on most urban conservation sites. Alien management therefore forms a substantial part of the urban conservator's work.

While aliens pose a threat to biodiversity, alien removal and rehabilitation projects also present a tremendous opportunity for training and income generation amongst economically deprived communities, and can greatly enhance the value of the site with these communities. It is however important that alien clearing is done by a properly trained workforce under strict supervision in order to avoid damage to the biodiversity of the area being cleared. We explore this in detail in Chapter Four. In Chapter Five, we also look at the opportunities these programmes bring for increasing environmental awareness.

Fires

Fires are an ongoing challenge for urban conservationists. While periodic fires are beneficial and essential for fynbos, in an urban context they do not happen according to natural fire cycles. Some are deliberate acts of arson, but most are caused by careless acts such as throwing cigarette butts or leaving fires unattended. Fires in the Edith Stephens Wetlands Park have been caused by cable thieves burning insulation off stolen cable.

While some sites suffer from over-burning, others are not burnt often enough. Authorities are reluctant to allow conservation managers to burn due to possible risks to dwellings, or because smoke and ash causes problems with surrounding communities.

Howard Langley comments:

Burning of small sites can also be problematic in that rodents and antelope over-graze regenerating vegetation. For example, at Rondevlei, we patch-burnt a stand of *Cliffortia ericaefolia* (a very rare and threatened plant) which resulted in thousands of seedling plants emerging. However, Otomys (Vlei Rats) and Grysbok completely destroyed this new population, forcing us to fence off the site and to place plastic collars around the few surviving plants to protect them.

- Howard Langley, retired conservation manager

Fires in areas with a high number of aliens burn at a different intensity from fynbos fires, and can cause greater loss to the fauna. Fires disrupt fauna in other ways, as they lose food and habitat. They cannot simply move into other areas, because the sites are small, causing them to invade human settlements sometimes. This has been a major problem with baboon troops in Cape Town.

While community members may be recruited into fire fighting services, fire fighting requires rigorous and disciplined training. Bush fires are extremely dangerous, and should not be tackled without fully trained and equipped personnel. In addition, if anyone is injured, it is important they are fully covered by insurance.

However, there is scope to involve communities in programmes to build awareness about fire prevention and fire safety. These programmes can help with fire safety in the community, but can also prevent the starting and spreading of fires.

Residents of informal settlements are particularly vulnerable to fires, and can greatly benefit from fire safety training. We saw, from Charline's experience, how this benefitted both the community and the reserve (see page 119). Similarly, the Harmony Flats Working Group received training and equipment for putting out small fires. Children in the area know to call 'Aunty Julie' or 'Oom Jan' if they spot a fire. The Working Group manages small fires or calls the site manager if the fire is beyond their capacity.

3.4 Safety

Crime in the reserves is a major threat to environmental education. There are two City-employed law enforcement officers for my region. It covers four percent of the city, but is policed by only 0.01% of the law enforcement staff.

- Dalton Gibbs, Area Manager, City of Cape Town

Crime is an ongoing concern for urban conservationists – both environmental crime such as illegal poaching and dumping, which we look at in the next section, and social crime such as muggings, theft, prostitution, drug dealing and consumption. The sites are also sometimes used by criminals to access properties for housebreaking, to hide stolen goods, burn cables after cable theft and so on. Urban reserves that are large, with isolated areas, pose a particular challenge.

Crime threatens our reserves in different ways: Conservationists and visitors may be personally threatened by criminals – a particular concern with groups of school children. But criminal activity on the reserve also discourages surrounding communities from using the reserve. Criminals are also often responsible for starting fires, littering, and vandalism with negative aesthetic and environmental consequences. Law enforcement resources are overstretched and cannot always be relied on.

This issue is not easily resolved – on our reserves or anywhere else in the city. But steps can be taken to combat crime, and on some sites such as Zeekoevlei, these efforts have turned a dangerous wasteland into a much treasured community and environmental asset.



Safety is a major issue for those who cross the Reserve. One member of the Working Group witnessed the discovery of a dead person behind the container in this area. A number of people have been mugged. Southfork residents complain that housebreakers use the open space as an escape route after they have broken into their houses. The SAPS have also witnessed shootings in the reserve. People using the Reserve as a thoroughfare carry weapons to protect themselves. I have personally caught young people taking drugs at the back of the container.

- Sabelo Lindani, Site Manager, City of Cape Town

Zoë and two students were held up at gunpoint and robbed in Macassar Dunes Nature Reserve while out measuring tracks. At a meeting, branch management decided on various measures, including:

- Employing security staff to go with us into the field;
- Boosting the Reserve's law enforcement capacity with extra staff;
- Employing a consultant to do a security risk analysis;
- Checking the radio every half hour and informing people if you are going into the reserve.

Other suggestions made in response to this incident were:

- It would help if there was a stronger presence at Wolfgat and Macassar – for example having Enviro Ed centres in the reserves. Then there'd be a safe base within the borders of the reserve. These are big City reserves and they don't have offices on site;
- This is a deeply rooted problem with complex causes and needs a multi-pronged approach including working with the community, the Sub-Council, increasing security, and going door-to-door in the new settlement which has resulted in increased crime;
- We can explore the use of trained dogs. There are dog clubs in the area and a partnership could be explored;
- Self-defence training for staff and students
- Equip ourselves with pepper spray;
- Going into the Reserve in big groups;
- Warning visitors not to carry valuables.

- Zoë Davids, Intern, City of Cape Town, case study, June 2008

On my first day at work managing Zeekoevlei, I went to investigate a fire. To my horror I discovered it was a child's body a murderer had set alight to try to get rid of it.

The place had not been managed for five years, and had become a haven for crime. Prostitutes worked along the road, drug dealers sold drugs. We have managed to discourage criminals, prostitutes and drug dealers just by very visible patrolling, which made them and their clients feel uncomfortable. I am trained as a law enforcement officer, and have done the reservist course. I realised I'd have to enforce the law myself – we can't rely on police back-up. My staff will call me to assist if necessary, and I'll take the culprit to the police station. My staff have had fire-arm training, but do not carry weapons at the moment. It can be dangerous – you never know who you are approaching. For example a guy having sex under a tree may be armed. Some people on the Reserve have been held up at knife or gun point, so we know that some of the criminals are armed. We tried verbal warnings at first, but found they were not effective. Now we have zero tolerance and issue fines or even arrest people if necessary. It's an ongoing challenge, but visible patrols and swift responses have really helped.

- Asieff Khan, Reserve Manager, City of Cape Town



Creative solutions? Regular reserve users, such as this goatherd near Edith Stephens Wetland Park, can play a valuable role in watching out for and protecting the reserve from crime

Once again, community partnerships are critical to addressing this problem. Dalton Gibbs found a way of tapping community resources quite directly:

When I took over Rondevlei, a number of dead bodies were found each year. So I persuaded landowners to combine forces and employ security.

I explained to them that to make something work, you need salaries, equipment, infrastructure and the people with appropriate capacity. I could supply everything except the salaries. Now neighbouring land-owners employ 20 security personnel. They feel much safer and the Reserve is much more protected and more viable as a site for environmental education.

- Dalton Gibbs, Area Manager, City of Cape Town

This model may not be feasible for low-income areas. But if there are mixed income areas adjoining a site, members from the wealthier areas may be willing to employ those from the low-income areas for security patrols.

There are other ways to get the community involved. Vigilance is certainly helpful, and it may be possible to set up a community watch, whereby community members undertake to report any suspicious behaviour. This will be more successful if there are clear contact details and a rapid response to calls.

These experiences show that a visible and vigilant presence is a major deterrent to crime. There are different ways this could be achieved:

- Regular patrols by volunteers, reserve staff, security or police;
- Infrastructure to draw visitors, such as visitor centres, environmental education centres, and possibly even structures less directly linked to the core function of the reserve such as a community centre housing perhaps a clinic, crèche, senior support, or after-school projects. This would help ensure that there is a presence on the site on a daily basis and not only on weekends.

Other measures that can help are:

- Regular clearance of alien bush and trees to prevent the creation of hiding places for criminals;
- Making sure that staff and volunteers are trained and equipped with basic self-defence skills and have equipment such as good radios and pepper spray;
- Ensuring that at least some staff members are law enforcement officers and have the power to issue fines and make arrests;
- Building up a good, strong working relationship with local law enforcement and neighbourhood watches. When there are environmental education activities at Wolfgat, for example, Charline makes sure that City law enforcement officers from Mitchell's Plain send someone out with them and arranges an extra meal to be catered for them. They have a good ongoing relationship with the local law-enforcement office.

A final point to remember is that crime flourishes in depressed communities. As our conservators and their partners work towards creating more empowered and resilient communities, so will we help to reduce their – and our – vulnerability to crime.

3.5 Dumping and littering

People dump on our sites because they are seen as 'empty'... we need to change that perception.

- Bongani Mnisi, Area Manager, City of Cape Town

I was cleaning the Reserve with a team of seven casual labourers. While we were hard at work, heaping all the rubbish onto a pile, along came a man wheeling his huge black refuse bin, less than 20m from us. I stood there quite shocked as this guy proceeded to empty his bin right in front of us. Two of the labourers immediately approached the guy and told him that what he is doing is wrong. This will not stop him from coming back and dumping but at least it's a start.

- Charline Mc Kie, Reserve Manager, City of Cape Town

Dumping and littering are both major challenges to urban conservation sites. They make the landscape unsightly and cause environmental damage. Toxins from litter and waste may leach into the soil and damage vegetation or poison water, and animals may ingest litter. Visible waste and litter also creates the impression that a site is of little value and is unsafe, so is a major deterrent to visitors.

As Bongani Mnisi points out in the quote above, an important step in overcoming these problems is shifting the communities' perception of the site as a wasteland, or empty place no good for anything but rubbish. Charline's experience shows that some residents see nothing wrong with this practice. If the site offers real value to the community, and they come to treasure it as highly as their own gardens, the problem will be greatly addressed. There will always be those who dump or litter, but a vigilant and caring community will certainly reduce the problem. Many adults in the community were raised not to see anything wrong with littering. If this generation of parents can change, their children will learn to behave differently.

The following case study shows how community engagement can assist with dumping and vandalism.

Tons of rubbish is washed into water systems through our stormwater drains



Macassar Dunes

Macassar Dunes Nature Reserve (MDNR) is a significant 'outdoor lawn' of iNkanini informal settlement and the surroundings, so the community has no excuse for not being environmentally friendly. The Reserve is a mother to the destroyed and threatened dune system along False Bay coast. A mother is always in trouble, but this one is pressurised by urban development that creeps towards the sea from Khayelitsha. Residents from different areas are relocated to iNkanini daily. Some of the newcomers see the Reserve as dangerous, and an ideal place for their unwanted household accessories and rubble. Some people take the bollards that mark the boundary of MDNR.

People need somewhere to build their shacks and this pushes them to build on the MDNR perimeters. When an individual builds his shack, no EIA is done so even threatened species get squashed away in his yard. Signboards to inform people about the boundary have been ignored.

We decided therefore to conduct two door-to-door campaigns to inform people about MDNR and the opportunities it offers. The MDNR staff held one-on-one discussions with the community, explaining the importance of the dunes,

plants and wildlife and problems caused by dumping and damaging the bollards. We also explained the role MDNR plays for the schools and for community members who cannot afford to visit other areas.

The residents raised the issue of dumping and uncontrolled access to the Reserve. Suggestions were made by the volunteers and by MDNR staff on what to do if a person is caught dumping. We informed people of opportunities the area might offer such as a community vegetable garden, alien clearing contracts, and employment for tour guides. After this, bollards were never vandalised again and the dumping rate decreased.

We need to explore other ways to bring value to the community. For example, sports activities for youngsters or hiking that also includes environmental education. Perhaps our budget could be used to buy plants for the houses whose back yards are facing the Reserve and create gardens with them or paint the back of their house, and in return those people can watch over the Reserve.

- Hlangalandile Mananga, Site Control Officer, City of Cape Town, case study, January 2009

Asieff Khan found that offering neighbouring residents help with their gardens did win over their loyalty to Zeekoevlei Reserve and they now always inform him if they see anyone coming to dump in the Reserve (see page 102).

These problems are difficult to solve, but they do offer good opportunities for education and community engagement. Wolfgang volunteer, Christo Lackay, suggested involving the Tafelsig Youth League Against Crime in a bicycle patrol around the Reserve. This was their experience:

Every time we go on patrol with bicycles, we find people sleeping and cutting wood on the Reserve. But the most disturbing thing is the illegal dumping. The houses are very close to the Reserve, with no dividing line so they just empty their rubbish bins onto the reserve. Dumping is illegal, but we don't want to police the people since we want to build a relationship with them and be the link between the Reserve and the community.

- Christo Lackay, Community Activist and Volunteer

The Bicycle project did not last, as Christo and his team became discouraged when they found the same people dumping even after they'd spoken to them. However, Charline Mc Kie, the reserve manager, found the patrols useful in terms of keeping an eye on what is going on and reporting repeat offenders.

Litter drives are a popular environmental education activity and most urban reserves have conducted them as part of their engagement with local schools. Litter drives can be a very valuable educational tool, and, if combined with activities such as sorting and analysing the waste, can offer teachers a learning activity that covers many subjects of the curriculum. Litter clearing is also a useful form of community service.

Large-scale litter clearing can offer employment opportunities. For example, every year Asieff Khan employs 22 people for four months to clear the litter brought down by the storm water system into Zeekoevlei. In 2008 they cleared 11 000 bags of waste. The team also clears water hyacinth. See on pages 79 and 80 how this process is used to build loyalty and capacity in the local community.



People dump on our sites because they are seen as 'empty'... we need to change that perception



iNkanini settlement

The Tylac bicycle patrol at Wolfgat Nature Reserve



Community clean up hike at Wolfgat Nature Reserve



Recycling projects may be linked to litter clearing. Housing recycling containers on the site will build awareness, draw people to the site and may provide an income-generating project for community entrepreneurs or a nearby school.

Changing people's attitudes towards dumping and littering is a long and often thankless task. While these problems will, perhaps, haunt us forever, they can be minimised with a combined effort of promoting community awareness and ownership and vigilant prosecution of offenders.

3.6 Harvesting

Poaching and illegal harvesting are complex problems facing urban conservation sites. Both are complicated by the extreme poverty experienced by many residents surrounding these sites. This makes the sites vulnerable to poaching for two reasons: people may poach for food or for resources to sell because they are hungry, and secondly, people are vulnerable to the enticements of cash payment by large-scale poachers. Cape Town's extended marine coastline makes it particularly vulnerable to poachers and illegal fishing.

The following case study illustrates the complexity of these problems.

LAW ENFORCEMENT: WOLFGAT & THE BIGGER PICTURE

Enforcing the law in our reserves is never simple. These stories illustrate this point:

- I met two pensioners and their grandchildren harvesting sour figs in the Reserve. I explained that it is illegal and why we need to conserve our dwindling natural resources. I gave them a verbal warning, took down their details and confiscated the two bags of sour figs. The grandmother asked me what they should do now because they have been coming to the Reserve year after year collecting sour figs to sell so that they can have 'spare' money for the festive season especially now that they have been on pension for a while. I really do not have an answer for them; all I can do is my job....
- I met anglers fishing off the beach who had illegally parked on the cliffs to avoid having their vehicles burgled, or so they say. We are aware that there is a safety risk, but does it justify people doing what they want to? How can we make the Reserve safer with our constraints?
- I encountered people making fires to make 'potjiekos' from their catch on the cliffs.
- Students at Wolfgat and Macassar were stoned by people along the Atlantic coast while patrolling and checking for valid fishing permits. Tumeka said that one individual mimed to show that he was hungry and needed food. This tells me that people will resort to any means for basic needs such as food and it is likely that individuals living along the coast have been collecting marine resources for all their lives, so who are we to stop them? We also all know about the great personal risk we take when doing law enforcement. Officials were abducted by poachers in 2005.

- Charline Mc Kie, Reserve Manager, City of Cape Town, case study, March 2006



These examples show that the reasons for poaching are varied and complex, and that there is no simple solution to the problem. Many 'poachers' have been gathering natural resources for years, possibly generations, and have come to rely on these as an important part of their livelihood. Others may be exploiting the resources for self-enrichment. Still others are part of massive syndicates and are exploiting locals to do their dirty work for them. But whatever their motive, the first step to solving these problems is to engage with the community with the following intentions:

- Find out why people are engaging in poaching or harvesting illegally;
- Explain to them why it is a problem and that it will lead to the loss of these resources in the long term – in fact, with resources such as abalone, in the short term;
- Explore with them other ways the reserve can help to meet their needs without damaging the natural resource base.

Finding sustainable ways to meet community needs is not always easy with city conservation sites. They are small, with few natural resources and one cannot offer hunting for game rights that one might be able to offer communities living on the borders of large game reserves. However, there may be creative options, as Brett Myrdal explains below.

Here in Table Mountain National Park we had a major problem with traditional healers killing trees in the Park by stripping bark. We launched a project in which we engaged with traditional healers, and found out what species of trees they need. We also introduced them to the Park and explained the threat posed by unsustainable harvesting of bark. We started a nursery at Groote Schuur estate where traditional healers can propagate the plants they need, and have taught them horticultural skills to help them grow these plants in their own gardens. Since this project has been started, there has been no more bark stripping reported in the Park.

- Brett Myrdal, Manager, Environmental Planning, SANParks

It may be possible for some conservation sites to have their own garden of medicinal herbs and plants to educate visitors and school children. Tshepo has been working on creating this at Bracken Reserve – the Friends group employs a youth from a local impoverished community to work in it. Urban conservators may be able to work with other city departments to grow some of the plants that are harvested by illegal poachers. Sour figs, for example, could be grown in recreational parks or even on the verges of roads.



Traditional healers visit Macassar Dunes



Traditional healers in the medicinal plant garden



Small game is vulnerable to poaching for sport and for subsistence

Some conservation sites such as Blaauwberg Conservation Area experience a different form of poaching, where young people go in with packs of dogs and hunt small game for sport rather than for subsistence. Often bets are laid as to what and how many animals will be caught. This problem may only be resolved with good policing, but with community involvement it will be easier to identify culprits. Young offenders could do community service working for the reserve, which could include a rehabilitation and educational programme, rather than serving prison sentences – although they must be well supervised by law enforcement officers to ensure that they pose no threat to conservation staff or visitors.

You need to find creative solutions: for example, in Zandvlei, a man was fishing with no permit. He said he could not afford a permit, so the manager agreed he could work in the Reserve to earn his permit. Or another reserve... cows were grazing on the land. The manager didn't know who they belonged to, so in the evening he followed them home and spoke to the owner.

- Julia Wood, Biodiversity Management, City of Cape Town

What is important is to avoid tarring all poachers with the same brush. There is a difference between those who poach for sport, or for the high profits of an illegal trade, and those who poach for subsistence. Subsistence poachers often have extensive knowledge of the natural resources in an area, and some also know how to harvest in a less damaging way. Senza Kula from Ilitha Lomso in Khayelitsha remarks on this:

One Rasta guy knows the ins and outs of the Reserve. He goes in to Macassar Dunes with a bag, spends the whole day in the Reserve and comes out with traditional extracts. We can use this guy as a pioneer for getting the community involved in nature. He really knows Macassar Dunes thoroughly.

- Senza Kula, Co-ordinator, Ilitha Lomso

A person like this can be an invaluable source of knowledge and can help with monitoring species and ecosystem changes and promoting environmental awareness. Rather than taking punitive measures, it may be more effective to engage with the community around the challenge of meeting the needs of subsistence poachers in a sustainable way. Creating a meaningful sense of joint stewardship will help us also work with communities to find ways to stop destructive and non-sustainable poaching.

Moving on...

We can see that urban conservation sites experience the full range of environmental, social and economic complexities that characterise modern urban existence, from alien plants to sex workers plying their trade in the bushes. Anyone managing these sites would be forgiven for sometimes feeling overwhelmed. However, these challenges also present tremendous opportunities. And while these problems will probably never be resolved, they can be managed and even turned to our advantage with patience, persistence, extremely creative thinking and, most importantly, strong partnerships. We explore the creation and sustaining of interconnected partnership networks in Chapter Seven.

¹ Adapted from Daily G.C., Alexander, S., Ehrlich, P. R., Goulder L., Lubchenco, J., Matson P. A., Mooney H. A., Postel S., Schneider S.H., Tilman D., Woodwell, G. M., "Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems." <http://www.ecology.org/biod/value/EcosystemServices.html>

² Costanza R., d'Arge R., de Groot R., Farber S., Grasso M., Hannon B., Limburg K., Naeem S., O'Neill R. V., Paruelo J., Raskin R. G., Suttonk P., van den Belt, M., "The value of the world's ecosystem services and natural capital" in *Nature*, Vol 387, 15 May 1997

³ Driver A., Cowling R. and Maze K., "Planning for Living Landscapes", SANBI 2003 p i