

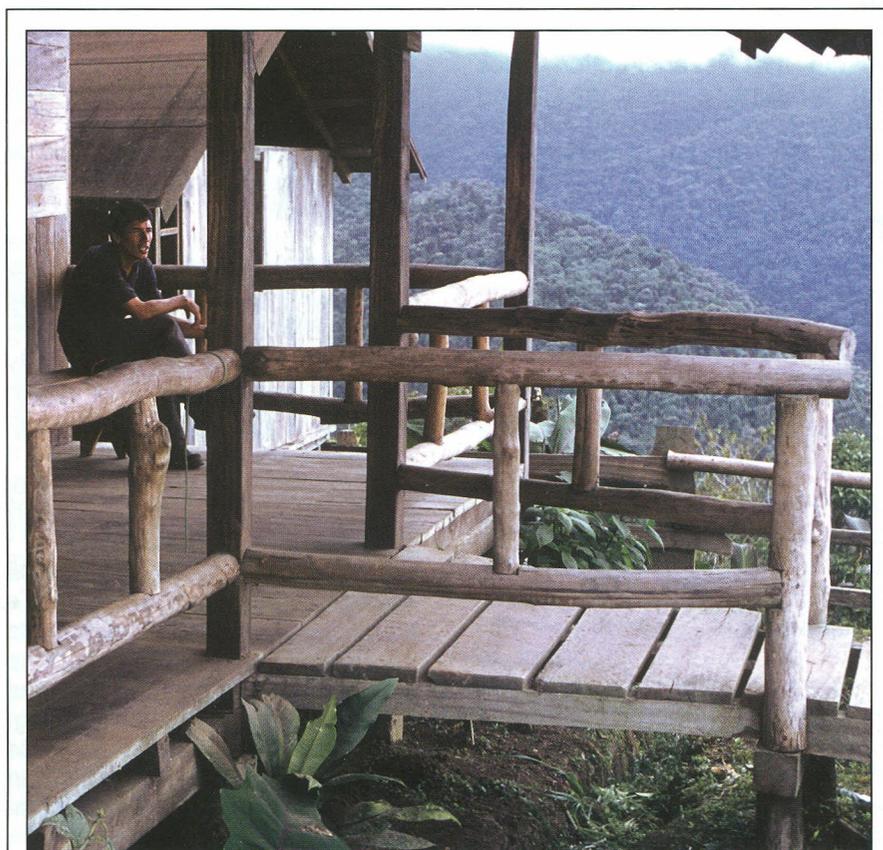
# National Parks and Protected Areas International Bulletin



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## EARTH'S LIFE SUPPORT SYSTEM RUNS DOWN



*Sitting in the clouds: Ecuador's Santa Lucía eco-lodge is one of the locations featured in eight pages dedicated to community-based tourism, starting on Page 14.*

A STUDY conducted by 1,360 scientific experts from 95 countries has revealed that approximately 60% of the ecosystem services that support life on Earth — such as fresh water, capture fisheries, air and water regulation, and the regulation of regional climate, natural hazards and pests — are being degraded or used unsustainably.

Their Millennium Ecosystem Assessment (MEA) Synthesis Report states: "Any progress achieved in addressing the goals of poverty and hunger eradication, improved health and environmental protection is unlikely to be sustained if most of the ecosystem services on which humanity relies continue to be degraded."

While evidence remains incomplete, the study found that the ongoing degradation of 15 of the 24 ecosystem services examined is increasing the likelihood of potentially abrupt changes that will seriously affect human well-being.

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# AFTER THE WAVE, RESTORATIVE WORK BEGINS

AS international efforts gather momentum to help rebuild the lives of those who survived the December 26 tsunami, the following reports highlight some of the assessments made to date on the environmental damage left in the wake of this unprecedented disaster, which claimed the lives of an estimated 300,000 people in the coastal regions of southern Asia.

## FISHERIES

Damage assessments have now been made of the losses suffered by fishing communities in southern Asia and the financial costs that will be involved in rehabilitating the region's fisheries and aquaculture sectors in the seven countries most affected by the tsunami — India, Indonesia, the Maldives, Myanmar, Somalia, Sri Lanka and Thailand.

Jeremy Turner, head of the UN Food and Agriculture Organisation's (FAO) Fishery Technology Service, said: "The current estimate for direct losses in the fisheries sector is now around US \$520 million."

According to FAO's latest information, 111,073 fishing vessels were destroyed or damaged, with an estimated replacement cost of US \$161m. Replacement costs of lost boat engines and fishing gear totalled an estimated US \$159m, and the cost of repairs and other damage to the fisheries sector, such as aquaculture operations, infrastructure and harbour repairs, is estimated at US \$200m.

FAO has sent fisheries specialists to all the affected countries and is supplying materials for boat repairs and purchasing and distributing ropes and nets to aid fishermen who lost all their equipment.

FAO has produced a framework strategy for the rehabilitation of fisheries and aquaculture in the tsunami zone, which it hopes will help contribute to sustainable and responsible fishing in the region as the sector recovers.

Mr Turner said: "We should not

## INDIAN OCEAN TSUNAMI

recreate one of the major problems within fisheries prior to the tsunami: over-capacity in the coastal fisheries, too many boats, and too much fishing effort. We must ensure that reconstruction does not produce a level of fishing capacity that exceeds what fishery resources can sustainably support."

## TASK FORCE

IUCN's Protected Area Programme and the World Commission on Protected Areas have set up a Tsunami Task Force to help rehabilitate and restore protected areas in countries affected by the Asian tsunami.

Many protected areas sustained severe damage to their ecosystems and park infrastructure, and Dr Robbie Robinson, WCPA Tsunami Task Force Leader, said: "Restoring these protected areas is important to ensure long term conservation in the region. Some protected areas were facing major challenges, even prior to the tsunami. Now we have a chance to review protected area policies and management practices."

The Task Force plans to focus on four key areas — assessment of

the status and rehabilitation needs of protected areas after the tsunami; development of a twinning programme linking tsunami-affected protected areas with protected areas in other parts of the world; support for nature-based tourism planning and development; and provision of expertise through the WCPA membership to contribute to IUCN efforts responding to the tsunami.

A final strategy will be developed after Dr Robinson, now based at the IUCN Asia Regional Office in Bangkok, has consulted relevant agencies in the affected countries and IUCN Asian staff.

## SATELLITE IMAGERY

The World Commission on Protected Areas (WCPA) efforts to restore protected areas devastated by the tsunami have received a significant boost with the donation of satellite imagery to the conservation community by DigitalGlobe, a commercial satellite operator.

The collection of images donated, which includes over 100 overviews of national parks and protected areas covering some of the most biologically diverse areas in the Indian Ocean, will aid IUCN and its members to assess the environmental impacts of the tsunami and implement and support rehabilitation plans.

The high resolution digital imagery taken from DigitGlobe's satellite, QuickBird II, will help efforts to better understand the short-term implications of the tsunami for these areas, the long-term natural regeneration process and the role protected areas can play in rebuilding dependent communities.

The collection of images may be downloaded free of charge from [www.digitalglobe.com](http://www.digitalglobe.com)

## TANZANIAN HEAD RANGER HAS NARROW ESCAPE

The head ranger of Chumbe Island Coral Park, Zanzibar, Omari Nyange, narrowly escaped death when a strong current surge related to the tsunami swept him from a reef where he was carrying out research work on the afternoon of December 26.

The current carried him 5 km/three miles south of Chumbe Island, and he was forced to swim for several hours before reaching a current that carried him north to a point where he could scramble ashore after a period of five hours in the turbulent sea.



*A scene of total destruction on the east coast of Sri Lanka after the tsunami had struck.*

**sri lanka**

# TSUNAMI RELIEF PROJECTS FACE HUGE PROBLEMS

**By MARTEN MEYNELL,  
IUCN Regional Marine  
Programme**

AS an intern on IUCN's Regional Marine Programme based in Sri Lanka, I took part in a field trip to the east coast of Sri Lanka (Ampara and Batticaloa Districts) in March. As well as myself and another member of the marine team, there were three terrestrial environmentalists and two socio-economists. The field trip's aim was to assess the impact of the tsunami on the terrestrial and marine environment, and also the socio-economic consequences.

On arrival in the region, it was apparent that the east coast infrastructure had been badly damaged by the tsunami. Roads have been washed away and bridges are in various states of collapse — a factor that prevented initial aid in some places for about a month after the tsunami. Additionally, the whole area is a conflict zone so independent travel is not always easy or allowed. We had linked up with Care — an international NGO which has been there for more than 20 years, and the only one that is

## INDIAN OCEAN TSUNAMI

fully accepted by the Liberation Tamil Tigers of Eelam (LTTE). So, under the banner of Care, we were able to get to places that many NGOs could not.

We visited several coastal villages which had suffered considerable damage, and the camps where the survivors from these villages were now living. On speaking to some of the locals, we learned that the biggest wave of three that hit the east coast was some 10 metres/33 feet high and travelled about 50-100 metres/55-110 yards inland before breaking. It then travelled inland at a height of about 1-2 metres/3-6 feet for up to 1 km/half a mile, depending on the lie of the land and vegetation.

Consequently, the land is now so saline that agriculture will be impossible in many areas for quite some time, and a lot of the natural vegetation has also died. The wells are polluted with salt and so unus-

able — there have been attempts to drain them in the hope that fresh water will return, but this has not happened as the salt has seeped deep into the earth.

Coastal erosion has been a major consequence of the tsunami waves. Beaches have been substantially reduced, sometimes by as much as one metre/three feet in height and 100 metres/110 yards in width. Mangrove forests have suffered local damage and loss of biodiversity, especially along the front line of the forests facing the waves. Areas modified by humans for palm plantations and home gardens have experienced similar, if not greater damage, due to their limited ability to cope with saline waters. Debris has been deposited on beaches, reefs and in lagoons, creating health and safety risks and various environmental problems. Additionally, in lagoons, debris is now a hazard for fishermen, catching and damaging their nets.

As well as debris deposition, the marine environment seems to have suffered in various other ways. Sri Lanka used to have substantial coral reefs but the coral bleaching in 1998 destroyed up to 80% of the reefs in the south and south west, and there has been very little coral recovery since. The bleaching did not affect the east coast reefs to the same degree, so this was where Sri Lanka's healthiest reefs were to be found. However, due to the civil war there have been few scientific surveys on the reefs around the east coast so their condition pre-tsunami was largely unknown. The consequence of this lack of baseline information was that accurate estimation of how much damage the reefs had suffered from the tsunami was relatively difficult.

From our initial observations the damage appears to have been quite patchy, some sites suffering extreme mechanical damage, sediment smothering and terrestrial (both organic and man-made) debris deposition, and other sites experiencing very little. The reefs we surveyed in Batticaloa District had big beds of dead coral rubble on the inshore sides of the reefs, although this was predominantly long dead coral. In among the rubble was evidence of recent mechanical damage caused by the tsunami waves; there were a lot of broken branching corals and larger overturned table and massive coral colonies (up to a metre in diameter). Many of these will eventually die due to the



abrasion and stress caused by their movement in the rubble. There were also signs of healthy corals having been smothered by sediment and so reducing their ability to survive and reproduce.

Since reefs provide ideal habitats, breeding and feeding grounds for many important commercial and subsistence marine species, any significant reef damage will affect these populations. Some reefs seem to have suffered reductions in smaller reef fish such as butterflyfish, wrasse, surgeons and damsels, but larger ones such as groupers and parrotfish have survived. The populations of many of these smaller fish may have been previously reduced by the bleaching, but tsunami reef damage is certain to have had some effect.

We tried to survey one site, Pasikudah, which had become a big tourist spot in the last few years since the Tamil region had become more secure after the ceasefire agreement. This was the one site about which there was pre-tsunami baseline information.

Unfortunately, when we got there we found out there was an army camp set back from the beach, and there had been anti-personnel land mines all about the place. The waves had washed their stores of live ammunition out of the camp, and also picked up the mines, depositing them all over the surrounding land. The army were combing the area each day and recovering substantial piles of both mines and ammunition. They assured us that none had gone in the sea but said they hadn't checked, so it was deemed unsafe to carry out surveys.

A soldier showed us large piles of dead coral that had been washing up on the beach since the tsunami. Most of this was branching coral pieces, although there were some larger table and massive coral colonies (up to 0.5 metre/20 inches in diameter) among the rubble. Some of this rubble had been dead a long time, probably as a result of the bleaching, but there were also pieces of recently dead coral, indicating fresh mechanical damage from the tsunami.

Relief operations are raising both positive and negative issues. In these two districts there are over 200 local NGOs and 75 international NGOs, all with substantial amounts of money and trying to help. Although most of the camps are in fairly good condition, and

victims are now getting sufficient food and water, some camps have been located near environmentally sensitive areas such as lagoons and freshwater reservoirs, which may subsequently become polluted or create health risks.

Many NGOs are paying locals to work, clearing their villages of all the rubble and debris. In some places this is being carried out effectively, separating the types of rubble and recycling anything of value. However, in some places the rubbish is just lumped together and dumped either by the side of the roads — which looks terrible — or being dumped very near ecologically sensitive areas such as mangroves and lagoons.

Another problem is that some NGOs are paying the victims' wages that are significantly higher than they would normally receive, so many are working slowly to earn more money; farm labourers from other areas are even leaving their work to come and earn more by helping with the clean-up operations. This is making it very hard for the farmers to harvest their crops on time, and the wage hikes will mean locals get used to more money which farmers or local businesses won't be able to match.

Rebuilding the houses cannot really begin until the area is cleared of the majority of the debris, but some areas are being so thoroughly cleared for reconstruction that more environmental harm is occurring as a result of this than from the tsunami itself. The reconstruction efforts that have begun are often not being done with the environment or future sustainability in

mind, which will have far-reaching long-term impacts; the victims may soon find themselves in worse conditions than they were to start with.

This is where organisations such as IUCN can play a role, advising on issues such as suitable dumping sites and best environmental reconstruction practices, but it is a hard task to influence all the government departments, NGOs and private companies in time without hampering reconstruction efforts. IUCN is in the process of producing and distributing short briefing documents on the environmental effects of post-tsunami restoration, explaining how these can be minimised, and the importance of sustainable 'green reconstruction' for future livelihoods and coastal protection. Protected areas and lists of relevant contacts are also included in the documents.

Direct action in the field is also being undertaken by IUCN. Two sites have been chosen, one in the Hambantota district and one in the Batticaloa district, on which to focus reconstruction efforts. The reasoning behind choosing only two sites is that, rather than spread IUCN's resources and expertise over too wide an area, small-scale pilot projects can be implemented, demonstrating how sustainable development is practical, economical and easily achievable if planned along the correct guidelines. These pilot sites are small coastal fishing villages where most or all the houses have been destroyed and the villagers are now living in camps. Additionally, most or all of their boats and fishing gear have been lost or destroyed.



*The field team from IUCN's Regional Marine Programme on their fact-finding tour of eastern Sri Lanka.*

Pictures: Marten Meynell

IUCN has also been working in partnership with the United Nations Environment Programme (UNEP), several government departments — in particular the Ministry of Environment and Natural Resources (MENR) and the Central Environmental Authority (CEA), and NGOs to conduct island-wide rapid environmental assessments in the wake of the tsunami. These assessments are still ongoing and longer-term monitoring projects are being implemented, but there are interim reports available on the IUCN website at <http://www.iucn.org/tsunami/resources/iucn-reports.htm>

In addition to these assessments, the International Water Management Institute (IWMI) carried out a two-day rapid assessment on the impacts on coastal wetlands from Hambantota to Colombo. The types of wetlands surveyed were lagoons, estuaries, mangroves, sand dunes and coral reefs, with an aim to understand where, why and how certain areas were affected more than others. The report can be found at <http://www.iwmidsp.org/iwmi/info/tsunami.asp#1>

IWMI are also carrying out studies on the east coast on the effects of groundwater salinisation and the

well cleaning operations.

Apart from these environmental bodies, there are very few organisations that are investigating the environmental consequences of the tsunami and the resulting reconstruction efforts. There may be small NGOs carrying out such work in isolated pockets of the country, although this is on a scale that is not nationally significant or co-ordinated. Understandably, the priority for most NGOs at present is humanitarian relief and reconstruction work, but there is a definite need for increased environmental awareness.

## PAYING THE PRICE, COUNTRY BY COUNTRY

UNEP and IUCN reports based on surveys by teams in the field working with other UN agencies, governments and NGOs show that the impact of the tsunami on coral reefs, mangroves and wildlife varied enormously across and within affected countries.

A report released at UNEP's 23rd Governing Council/Global Ministerial Environment Forum indicated that while the environment was a victim of the tsunami, it also played its part in reducing the tsunami's impact.

"Where healthy and relatively intact features like coral reefs, mangroves and coastal vegetation were in place, there is evidence that impact was reduced."

### Indonesia

In Aceh region, North Sumatra province and the western islands of Indonesia, an estimated 30% of the 100,000 hectares/386 sq miles of coral reefs were damaged. Nearly one third of the 50,000 hectares/193 sq miles of coastal forests in Aceh and North Sumatra are also believed to have been damaged.

### Maldives

It is estimated that more than 100 million sq m/2,470 acres of beach on 130 islands were eroded by the tsunami's force. Extensive erosion caused sediment to accumulate in the harbours of 44 islands.

### Somalia

Of the 650 km/400 miles of coast affected, damage was greatest in areas where there has been huge clearance of coastal mangroves for firewood, building materials and charcoal markets.

## INDIAN OCEAN TSUNAMI

### Sri Lanka

Here, some of the best proof was offered that intact coastal ecosystems, such as coral reefs and healthy sand dunes, helped buffer aggressive waves. Most of Yala and Bundala National Parks were spared because vegetated coastal sand dunes completely stopped the tsunami, which was only able to enter where the dune line was broken by river outlets.

An expert committee set up by the Sri Lankan government's Department of Wildlife Conservation has completed an assessment of tsunami related damage in protected areas located in the country's coastal zones (*see also previous article*).

### Thailand

More than 12% of the coral reefs along Thailand's Andaman coast have been significantly affected. Among those areas seriously impacted were reefs in Mu Ko Surin National Park. The turtle breeding and conservation centre at Tap Lamu Naval Base in Phang Nga province was ruined and 2,000 turtles lost.

At Phuket, the country's most popular holiday resort, where 80% of the island's population relies on income from tourism, sea water quality is reported to have improved dramatically since the disaster. Water clarity is now up to 20 m/65 feet and after many years' absence, big fish including large schools of black-tip sharks and giant trevallies have returned.

Among measures being considered by the Thai Tourist Authority is a daily limit on the number of tourists allowed on the popular Phi Phi islands. It has stressed that planning and environmental regulations ignored in the past would now be imposed. Almost all the hotels built illegally on national park land in Phi Phi Don were swept away by the tidal wave.

### Seychelles

IUCN surveys revealed substantial damage to coral reefs. While southern and western islands suffered generally below 10% damage owing to their sheltered location and granitic substrate, the damage to most carbonate coral reefs in the northern and eastern islands was in excess of 50%.

UNEP estimates that the rehabilitation of areas that suffered high beach erosion could cost between US\$500,000 and US\$1.4 million.

### Andaman and Nicobar Islands (India)

A report on the post-tsunami situation in these islands will appear in the next issue of NPIB.

### World Heritage Sites

The UNESCO World Heritage Newsletter has reported that several members of staff lost their lives on December 26 in the Gunung Leuser National Park, one of three national parks within the Indonesian World Heritage site Tropical Rainforest of Sumatra, although the site itself did not sustain major damage.

The World Heritage site of the old town of Galle and its fortifications in Sri Lanka was flooded and preliminary reports indicated that there had been important damage, notably affecting underwater heritage in the ancient harbour. The Marine Archaeology Laboratory in Galle was destroyed and its equipment and findings lost.

# NEWS REVIEW

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## nepal

### WANTED: THEMES ON BIODIVERSITY

THE Asia Section of the Society for Conservation Biology is to stage a conference on *Biodiversity Conservation in Asia: Current Status and Future Perspectives* in Katmandu from November 17 to 20 this year.

The goal of the conference is to bring together conservation practitioners and government leaders from throughout Asia to share ideas on effective strategies for preserving the region's biodiversity.

To be held at the Yak and Yeti Hotel in the grounds of the historic Rana Palace, the conference will feature oral presentations, workshops, poster presentations and conservation films. Delegates will also be able to visit Royal Chitwan National Park.

Specific conference session topics will be based on contributed abstracts to allow a wide range of topics to be addressed. Authors are encouraged to think broadly in developing their themes, paying particular attention to the conference goals and critical issues such as biodiversity assessment, the role of protected areas, community-based conservation, sustainable use, endangered species, trans-boundary issues, and technological advancements in conservation biology.

Proposed workshops and symposia include: 'Thinking Creatively about the Long-Term Future of Biodiversity in Asia'; 'Crane Research and Conservation'; 'Sustainable Use and Bio-diversity'; and 'Community-based Conservation: the Role of Governments'.

The closing date for submitting abstracts of up to 200 words for oral presentations is May 31. Abstracts for poster presentations will be accepted until August 31. Send to Linda Whittaker at

[linda.whittaker@nature-parks.org.il](mailto:linda.whittaker@nature-parks.org.il)

# EARTH'S LIFE SUPPORT SYSTEM RUNS DOWN

(Continued from Page 1)

This includes the emergence of new diseases, sudden changes in water quality, creation of "dead zones" along coasts, the collapse of fisheries and shifts in regional climate.

Four of the report's main findings were:

- Largely to meet growing demands for food, fresh water, timber, fibre and fuel, humans have changed ecosystems more rapidly and extensively in the past 50 years than in any other period. More than half of all the synthetic nitrogen fertilisers ever used on the planet have been used since 1985. This, say the experts, has resulted in a substantial and largely irreversible loss in diversity of life on Earth, with some 10% to 30% of the mammal, bird and amphibian species currently threatened with extinction.

- Ecosystem changes that have contributed substantial net gains in human well-being and economic development have been achieved at growing costs in the form of degradation of other services. Only four services have been enhanced in the last 50 years: increases in crop, livestock and aquaculture production, and increased carbon sequestration for global climate regulation. Two services, capture fisheries and fresh water, are now well beyond levels that can sustain current — much less future — demands.

- The degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the UN Millennium Development Goals.

While progress in eliminating hunger is projected, it will be at far slower rates than needed to halve the number of people suffering from hunger by 2015, and changes in ecosystems such as deforestation will influence the abundance of human pathogens such as malaria and cholera, as well as the risk of emergence of new diseases.

- The challenge of reversing the degradation of ecosystems would involve significant policy and institutional changes which are not currently under way. Among options that exist, the report mentions protection of natural forests which not only conserve wildlife but also supply fresh water and reduce carbon emissions.

A statement by the MEA board of directors said: "The over-riding conclusion of this assessment is that it lies within the power of human societies to ease the strains we are putting on the nature services of the planet, while continuing to use them to bring better living standards to all.

"Achieving this, however, will require radical changes in the way nature is treated at every level of decision-making and new ways of co-operation between government, business and civil society."

The five-year assessment was designed by a partnership of UN agencies, international scientific organisations and development agencies. Major funding was provided by the Global Environment Facility, the United Nations Foundation, the David and Lucile Packard Foundation and the World Bank. The MEA Secretariat is coordinated by the United Nations Environment Programme. The MEA's board of directors is co-chaired by Dr Robert Watson, chief scientist of the World Bank, and Dr A. H. Zakri, director of the United Nations University's Institute of Advanced Studies.

In a joint response to the report, the world's leading international conservation organisations — Birdlife International, Conservation International, IUCN, Fauna & Flora International, the Nature Conservancy, Wetlands International, the Wildlife Conservation Society and WWF — said: "The MEA shows that unsustainable human actions are degrading ecosystems throughout the world. The short-term economic and other benefits that may be derived from exploitation of our forests, wetlands and oceans are significantly outweighed by the far greater long-term damage to human livelihoods and health."

Citing one example, the conservation organisations' response referred to the MEA's finding that wetlands provide services to humanity valued as high as US \$15 trillion annually, including the water supply on which up to three billion people depend. Yet current human practices are degrading and destroying wetlands at a faster rate than any other type of ecosystem.

## **oceans**

# **POLLUTION-LED WARMING SPARKS CLIMATE FEARS**

STRONG new evidence shows that ocean temperatures are rising because of atmospheric pollution due to human activity. Marine scientists who discussed their research findings at the annual meeting of the American Association for the Advancement of Science warned that the impact on people and ecosystems worldwide could be severe.

The study, which involved scientists from the US Department of Energy, the Lawrence Livermore National Laboratory in California, the US National Oceanic and Atmospheric Administration and the UK Meteorological Office's Hadley Centre, analysed more than seven million recordings of ocean temperature worldwide and two million readings of sea salinity, and compared the rise in temperatures at different depths to predictions made by two computer simulations of global warming.

A leading member of the team of researchers, Dr Tim Barnett, a marine physicist at the Scripps Institution of Oceanography in San Diego, said: "The two models, one from the United States and one from England, got the observed warming almost exactly. We were stunned by the degree of similarity. Over the past 40 years there has been considerable warming of the planetary system, and approximately 90% of that warming has gone directly into the oceans.

"We defined a 'fingerprint' of ocean warming. Each of the oceans warmed differently at different depths and this constitutes a fingerprint which you can look for. We had several computer simulations — for instance, one for natural variability: could the climate system just do this on its own? The answer was no.

"We looked at the possibility that solar changes or volcanic effects could have caused the warming; not a chance."

This, he claimed, showed the argument — made by President Bush's advisers opposed to sign-

ing the Kyoto Treaty to limit greenhouse gas emissions — that climate change might be a natural phenomenon to be untenable.

Dr Barnett said that typical ocean temperatures had increased since 1960 by between 0.5 deg C and 1 deg C, depending largely on depth. "The real key is the amount of energy which has gone into the oceans, and that has come from man-made greenhouse gases.

"The temperature-driven impact that these models predict over the next 30-40 years is severe, not only for the United States but also for China and Peru. Other parts of the world will face similar problems and lead to changes that millions of people will feel in their lives."

He said that models had predicted that the western United States would face a water crisis within 20 years. Peruvian officials have estimated that if warming continues, the glaciers of the Andes will disappear within a decade, and other estimates show that two thirds of the glaciers in western China could be gone by 2050.

Dr Ruth Curry, a research specialist at the Woods Hole Oceanographic Institute, said that warming could alter important warm-water currents such as the Gulf Stream. Over the past decade the ice mass of Greenland's melting glaciers has begun to decline, pouring massive volumes of fresh water into the North Atlantic and making the ocean's water less dense.

She said that, if the trend continued, it could have a "radical" impact on ocean ecosystems and lead to a slowing or stalling of the water flow patterns in the Atlantic which pump warm water from the tropics towards the north and carry cold water south. That in turn could lead to dramatically colder winters in locations ranging from Scandinavia and the UK to the east coast of the United States and Canada.

Ocean warming was also driving a disruption of the Earth's freshwater balance. Evaporation rates over warmer tropical and sub-tropical oceans have increased by about 10% in the past 20 years. But instead of falling over the mid-latitudes of the northern hemisphere, it is instead falling over the far north in North America, Europe and Asia.

Dr Curry added: "These changes are happening and they are expected to amplify. It is a certainty that these changes will put serious strains on the ecosystems of the planet."

## **uk**

# **SEABIRD DEATHS PROMPT ALARM CALL**

CONSERVATIONISTS have expressed alarm at the death of hundreds of one of Britain's most distinctive seabirds, whose bodies have been washed up on the east coast of Scotland. Examination of the bodies of around 1,000 shags showed they were suffering from malnutrition, and it is believed thousands more may have died at sea.

The UK has almost half the world's population of shags, also known as the green cormorant, with most of the 29,000 birds living around Scotland's coasts.

Mark Grantham, recovery officer for the British Trust for Ornithology, said that the malnutrition was thought to be the result of changing currents in the North Sea caused by global warming.

He said: "Seabirds, including shags, like the flow of cold water which normally comes from the Faroes and brings large quantities of zooplankton called copepods, which in turn feed the sand eels eaten by the shags. When the input of cold water into the North Sea is cut off, the shags start to suffer."

# north sea trail

## TRANSBOUNDARY COASTAL PATH TAKES SHAPE

PLANNERS, environmental bodies and local communities in seven European countries are working together to develop the 3,200 km/1,990 mile North Sea Coastal Path (Nortrail), a project designed to promote sustainable tourism by creating a network of paths that will link to form a transboundary walking trail around the North Sea basin.

The North Sea region is home to many unique cultural landscapes created by historical and traditional economic activities, many of which — particularly fishing — have declined in recent decades, and the Nortrail project, undertaken within the framework of the European Union's Interreg IIIB North Sea Programme, aims to contribute to the economic and social regeneration of these coastal areas by preserving their natural beauty and cultural/historical heritage and making them more accessible to the public through the regeneration of existing paths and walking routes.

The project's 25 partners, representing national parks, marine areas of special nature protection, local authorities and special interest groups, are now involved in identifying existing and new trails that will form part of this new international walking route, which will travel along the east coast of Scotland and England, and along the North Sea coastlines of the Netherlands, Germany, Denmark, Sweden and Norway.

The €7.2m project, which has a 2007 target completion date, is supported by 50% funding through the European Regional Development Fund and a Norwegian equivalent, with the balance provided by all of the European Union countries involved.

Trans-national co-operation between various national and regional bodies will be utilised to develop information services and infrastructure to promote the trail, a network of links to areas of natural beauty and cultural heritage sites, accom-

modation and support services.

A trans-national business development group will help formulate a transboundary information programme and promote national and international package deals to market the path through tour operators who specialise in walking holidays.

In **DENMARK**, the Nortrail section in the northernmost county of North Jutland will follow close to the shoreline for most of its projected 449 km/280 miles. The trail has been devised to create a route where walkers pass through beautiful landscapes as well as visiting interesting places of cultural heritage. It is estimated that overnight stops will be made at about 25 km/15 mile intervals, where it will also be possible to stock up on provisions.

Explained Kirsten Monrad Hansen, of North Jutland county: "Nortrail will follow mostly footpaths, but at times will utilise minor roads or continue along the beach. Along some stretches the footpath is already in existence, but in places it will be necessary to create new paths.

"Target groups of users will be local residents, tourists staying in

the area, and long-distance hikers."

She said that North Jutland was working on five priorities:

- accommodation — establishing an efficient network to serve ramblers using the Nortrail pathways;
- food — promoting traditional recipes which use locally-produced ingredients;
- storytelling — providing guidance to the area's natural and cultural heritage;
- lighthouses — introducing new types of use, according to demand;
- traditional North Sea trading goods — benefiting local products in an international market.

"We expect a positive economic effect by involving local businesses in developing the path," she added. "If they provide ramblers with essential back-up services like food provision, clothes-drying facilities, local tourist information and a baggage transfer service, we are confident of a good spin-off effect from the Nortrail project.

"Rambling is quite new in Denmark, and needs time to develop and improve as a tourist activity — especially off-season.

"A survey in the summer of 2003 showed that 60% of cyclists who were using national cycle paths in North Jutland would also use the Nortrail path; the potential is there.

"The direct effect on economic development will be an extension of the tourist season by three to four weeks.

"If we extend the season it also means a better financial return to local businesses along Nortrail,



Walking the Nortrail: the boulevard at Egmond aan Zee, a Dutch tourist resort near Alkmaar.

Picture: El de Joode



Pictures: County of North Jutland

Part of the old road from Aalborg to Thisted, in northern Denmark. Some existing routes will be incorporated into the Danish sector of Nortrail.

which in turn leads to better services for local communities. Any extra focus on our natural and cultural heritage could also lead to a better understanding of local history among the resident population.”

One of **ENGLAND'S** project partners, the Northumberland Coast Area of Outstanding Natural Beauty (AONB), lies almost in the centre of the UK's North Sea coastline, and Access Officer, Iain Robson, said: “In common with our partners in Denmark and Sweden we are facing the problem of a decline in our local fishing industry and a local economy that now has to rely on tourism.

“Walking is a way of developing tourism in an environmental and sustainable way and the Nortrail project will link our natural, cultural and historical heritage more strongly to walking and benefit local businesses.”

Work is now in progress to improve access and walking surfaces along sections of what will be a continuous 65-mile footpath through the Northumberland AONB, and this path will connect with a Berwickshire coastal path across the Scottish border which in turn will link up with the John Muir Way (see separate article, Page 10) to Edinburgh and the Fife Coastal Path to Dundee.

In **THE NETHERLANDS**, where

the project has been dubbed the “Dutch stepping-stone”, the coastal path will largely follow the Lange-Afstands-Wandelpad (LAW5), which at present has minimal waymarking and signposting, and is maintained by volunteer workers.

This national path will be incorporated into the Nortrail network following work to improve accessibility including the provision of stiles and gates, and improved signposting with links to places of

special regional interest.

Starting in Zeeland, the province which is the leading Dutch partner in the project, the Nortrail path will run north from the Hook of Holland in South Holland to Den Oever in North Holland, and link up to the German coastal footpath after passing through the provinces of Friesland and Groningen. Strong support for the project is being given by the Netherlands Board of Tourism and the Dutch Walking Association.



The harbour at Strandby, in north Jutland, is one of the towns on Denmark's Nortrail route.



Saltmarsh is one of the coastal habitats to be found in the John Muir Country Park.

**uk**

# COUNTRY PARK NAMED AFTER SCOTLAND'S U.S. CONSERVATIONIST

By **SUSAN BURKE**

ITS rugged coastline carved by the relentless pounding of the chilly North Sea, the county of East Lothian lies on Scotland's windswept eastern seaboard. Enjoying what is for Scotland a mild climate and low rainfall, this largely agricultural district produces much of the country's cereal and potato crop.

The 666 sq km/257 sq mile area is bordered by the Firth of Forth to the north, and the low Lammermuir Hills — the setting for Sir Walter Scott's romance 'The Bride of Lammermuir' — to the south. Its westerly boundary is formed by the city of Edinburgh.

The long-established fishing port of Dunbar is only a short distance by road or the east coast London - Edinburgh rail link. Standing on a promontory, the red sandstone town owes its existence to its castle which was built over the entrance to a natural harbour.

Before cheap package holidays lured many Scots to the Mediterranean, the unsullied golden sands of Belhaven Bay — lying within walking distance of the unpretentious town centre — ensured Dunbar's popularity as a

bracing seaside spa and golfing resort. Its heyday may be over, but the small community continues to attract a steady stream of visitors from around the world.

Many arrive eager to see the birthplace of Dunbar's famous son, John Muir (1838-1914), who was honoured by the Americans as the 'Father of our National Parks'.

John's parents, Daniel — an army recruiting sergeant — and

Ann, ran a meal store on the High Street. Reopened in 2003 as the result of a partnership between Dunbar's John Muir Association, the John Muir Trust, East Lothian Council and the Community Council who together form the John Muir Birthplace Trust, the store is now an interactive visitor centre dedicated to his work and vision. There is no shortage of material: in addition to his other skills — explorer, geologist, mountaineer, naturalist and farmer, dedicated to his role of protection for the world's wild places — Muir wrote copiously about his experiences and his philosophy.

The ground-breaking conservationist developed his skills, character, drive and vision through his early boyhood experiences in Dunbar's environs. Life at home was hard: Muir senior was a fanatically religious man who, in order to instil his high moral code, subjected his family to a frugal lifestyle and thrashed his eight children regularly. John found relief, pleasure and intellectual stimulus when scrambling unsupervised with his contemporaries over the ruins of Dunbar castle, clambering up the nearby cliffs or roaming the shoreline.

Aged 11, Muir was thrilled when the family emigrated to Wisconsin, which had been settled by colonies of the Disciples of Christ, the sect to which his father belonged. Not that his life improved greatly on their arrival, for the family had to establish a farm from virgin territory.

In adulthood and recovering from an eye injury, Muir decided to walk from Kentucky to the Gulf of



Attractive display boards bring to life the history of Belhaven Bay and inform the visitor of its wildlife.



Pictures: Susan Burke

*John Muir's childhood playground forms the John Muir Country Park, only a short distance from Edinburgh by road or rail.*

Mexico with the intention of taking a ship bound for South America. He was never to reach his final destination. Weakened by a bout of malaria whilst in Florida, he took what was to be a fateful decision to head homeward via California. For it was in this state's Yosemite Valley, high in the Sierra Nevada, that Muir found both his spiritual home and the inspiration for his passionate belief in conservation.

Whilst shepherding in the area, Muir became aware of the detrimental effects which over-grazing and the uncontrolled ravages of the logging industry were inflicting on the environment. In 1892 he formed the Sierra Club, the oldest grass-roots environmental organisation in the United States.

Dunbar's John Muir Association was founded in 1994 "to tell the world about Muir's life, his work, and his belief in the unique and irreplaceable value of wild places and creatures" and "to implement his philosophy by conserving, restoring and enhancing landscape and wildlife in East Lothian and Scotland". To further these aims, the voluntary group has established and documented the town trail 'John Muir's Dunbar'. They have also produced a booklet to accompany the 3 km/mile-and-a-half John Muir Clifftop Trail which, leading from the town's Victoria

harbour to the John Muir Country Park, gives views toward the Firth of Forth's landmark Bass Rock. The unmistakable volcanic plug lies some 3 km off the coast and rises abruptly to a height of 107 m/350 feet. Today the great basalt outcrop's craggy ledges are colonised by over 100,000 seabirds in the breeding season. Established in 1976 and managed by East Lothian Council, which owns 68% of the region's coastline, the John Muir Country Park encompasses 733 hectares/1,810 acres of the strandline around Belhaven Bay, the young John's playground.

While some visitors are more interested in having the wind fill the sails of their sand yachts, others are attracted by the area's varied habitats. These range from the ruined castle, crumbling cliffs and pristine dunes to salt-marsh, scrub, permanent grassland and woodlands. Some 400 recorded plant species support the 12 butterfly species that are generally to be found in the park. These include the meadow brown and common blue which, together with cinnabar and six-spot burnet moths, are most commonly seen.

Birdwatchers find no shortage of subjects on which to focus their lenses. Eider duck and shelduck

breed in the sheltering dunes, while kittiwake nest noisily on the rugged castle ruins. For John Muir the song of the skylark was evocative of his homeland: "No Scotch boy that I know of ever failed to listen with enthusiasm to the songs of the skylarks." Other summer migrants include the meadow pipit, lapwing and ringed plover. Winter sees the arrival of wigeon, bar-tailed godwit and whooper swan.

Currently being developed by East Lothian Council, the John Muir Way aims to provide a long distance walking route between Edinburgh and the Scottish Borders. With 18 km/12 miles presently established between Musselburgh and Aberlady in the west and 16 km/10 miles between Dunbar and Dunglass in the east which incorporates the John Muir Clifftop Trail, the path forms part of Nortrail — the North Sea Coastal Path Project (see Page 8).

The project's goal is to encourage exploration of the coastal heritage by linking North Sea shoreline communities and sites of interest. It's an objective which would, no doubt, probably have met with the approval of the great man himself.

\* *John Muir's Birthplace is at 126 High Street, Dunbar, East Lothian, Scotland. EH42 1JJ*  
[www.jmbt.org.uk](http://www.jmbt.org.uk)

peru/uk

# TREE RESEARCH FOCUSES ON ANDES FOREST

By STEWART BONNEY

A COMMUNITY-BASED research project into tree diversity and agroforestry in the Peruvian Andes has received significant UK government funding following the success of a similar three-year project which focused on the rain forests of Peru's Amazonian Basin.

Funding for both projects, led by experts from the Royal Botanic Garden Edinburgh (RBGE), has been provided by the Darwin Initiative, the UK government's grants programme for biodiversity conservation and sustainable development in less developed countries.

The new study, which has received funding of £80,000 — "Tree Diversity, Agroforestry Development and Reafforestation in the Peruvian Andes," began last November under the leadership of RBGE's Head of Tropical Diversity, Toby Pennington.

The Andean project involves the National Agrarian University of La Molina in Lima — RBGE's Peruvian partner in the earlier Amazonian project — and the NGO APRODES (Asociación Peruana para la Promoción del Desarrollo Sostenible), which works with local farmers to improve cultivation practices for crops such as coffee and helps them to seek diverse sources of income.

Mr Pennington said: "Whereas the plight of the Amazon region enjoys a high profile, the forests of the Andes are less well known and in many ways are more threatened. The forests on the mountain flanks and in valley floors are under serious pressure from farming as the land is very suitable for cultivation.

"We aim to produce a guidebook to the useful native trees of this region, as we did for the Amazonian Peru project. This book will cover about 100 species, some useful for their fruit or medicinal properties, while others are good timber trees that may be cultivated

quite easily. We expect the guidebook to be used by NGOs such as APRODES, who train farmers in sustainable cultivation.

"Species that are at risk due to timber cutting for local and national markets include relatives of the mahogany in the genus *Cedrela*, such as *Cedrela lilloi*, and conifers in the podocarpus family such as *Retrophyllum rospigliosii*. Both would be good candidates for *ex-situ* conservation and APRODES is re-introducing them into their reserve area and agroforestry sys-

tems in the communities they work with."

The current two-year project will, in line with its forerunner, focus on capacity building through the training of local scientists and foresters in modern scientific techniques.

Mr Pennington explained: "Together with La Molina University we will again be providing training in field work and herbarium curation techniques, but this time with the forests of the Andes as a focal area.

"This follow-up project is also an opportunity to complete the task of helping to curate the backlog of 30,000 or so dried specimens at the National Herbarium held at La Molina. The herbarium has doubled in size and is an invaluable resource for a new generation of local botanists."

He stressed that the survival of Peru's Andean forests, from the high cloud forests to the tropical trees in the lush valley floors, depends on local farming communities being encouraged to use these forests sustainably, rather than clearing them for cultivation or timber. "Managed use of native



Students visit the rain forest on a tree identification field course in Andean Peru.

Picture: Toby Pennington, RBGE.



*Andean forest at an altitude of 2,000m/6,500 feet: 150 native tree species have been identified as being economically useful.*

trees potentially offers a sustainable livelihood for farmers while slowing the rate of slash and burn," he said.

"Our partner organisation, APRODES, is particularly interested in protecting watershed areas by discouraging deforestation and encouraging replanting. Our guidebook will also focus on species suitable for reforestation in the Andes and will provide information about cultivating these species."

The three-year Darwin-funded project "Tree Diversity and Agroforestry Development in the Peruvian Amazon" which involved RBGE together with the UK's Royal Botanic Garden at Kew, the World Agroforestry Centre (WAC) and the Peruvian National Forest Herbarium, was completed in October 2003.

The study identified 150 native tree species economically useful for timber, fruit or medicine — many known only by vernacular names and some not yet described by science — and resulted in the publication of a user-friendly Spanish language guide to these tree species which is being used by WAC to encourage planting in

agroforestry systems in Amazonian Peru.

More than 50 trainees, comprising undergraduate and post-graduate students, technicians and scientists, participated in training courses that took place in Peru and the UK and covered plant taxonomy, identification of plant species in the field, herbarium curation and botanical databasing. All have since secured employment with conservation-related NGOs and the Peruvian government's Environment Department.

"Education was a key goal of this project," said Mr Pennington, "and much of it has centred around plant identification and the herbarium. A vital output from this work has been the improvement to the Peruvian National Forest Herbarium. Project trainees mounted, databased and incorporated into the collection some 9,000 specimens — many not present in collections outside Peru — and the database is now available online making it a global resource.

"We hope the legacy of this project will be a home-grown generation of foresters, forestry and conservation officials who better

understand the value of plant science."

One trainee, Reynaldo Linares, completed the RBGE University of Edinburgh MSc in Biodiversity and Taxonomy of Plants, gaining a prestigious distinction for his research dissertation which focused on the seasonally dry tropical forests of Peru, a threatened area that has been neglected in research and conservation compared to the rainforests. His work has since been published and presented at international conferences.

Reynaldo subsequently was awarded a one-year Darwin scholarship with RBGE to assemble a diversity and conservation checklist for some of the major tree species in Peru's seasonally dry tropical forests which is to be published online for access by conservationists and planners.

He said: "During my last trip to Peru I met a group from Birdlife International working with local NGOs in the seasonally dry forests and also funded by the Darwin Initiative. I am sure we will work with them to gain a better overall understanding of this unique habitat."

*As the global hunger for tourism shows no sign of abating, it has become more necessary than ever to balance visitor activity with the need to sustain landscapes and ecologies in the areas visited. This requires close consultation and co-*

*operation between the tourism industry and the indigenous population of the chosen destinations.*

*Over the next eight pages, NPIB offers successful examples of ecotourism at work from around the world.*

### laos

# COMMUNITY-BASED NATURAL AND CULTURAL TOURISM

***The following article reports on the pioneering community-based Nam Ha project to establish a successful working model for ecotourism activities in an area of distinct cultural and natural heritage. It was accorded a UN Development Award for achievement in sustainable human development and the reduction of poverty.***

LAOS is home to 47 distinct ethnic groups speaking more than 230 different languages, and these ethnic groups maintain largely traditional ways of life, particularly in more remote mountain regions. The country (which arguably has the most intact natural environment in south east Asia) also has an abundance of natural forest cover which is home to a vast number of bird and animal species whose survival is threatened by forest utilisation and hunting.

Since the mid-1990s the growth of international tourism in Laos has been dramatic and, from the most recent government figures available, annual visitor arrivals totalling 894,000 generate an income of US \$119m, making tourism the country's largest source of foreign earnings.

The number of people travelling to outlying provinces has also grown rapidly, with visitor numbers to Luang Namtha province in the north west of the country — which borders Myanmar and China — increasing five-fold in only five years.

While the growth in overseas visitors has led to local investment in tourism-related services and infrastructure, low national capacity to plan for and manage tourism's negative environmental and socio-cultural impacts, which are the resources underpinning the country's tourism industry, are in danger

of being irrevocably damaged.

In response to these emerging and very real threats, the Office of the UNESCO Regional Advisor for Culture in Asia and the Pacific, with donor support from the New Zealand government and the International Finance Corporation, in partnership with the Lao National Tourism Authority (NTA), launched the Nam Ha Ecotourism Project in Luang Namtha province in 1999.

Working in collaboration with the NTA and the provincial tourism authority, the three-year project, which had a budget of \$450,000, aimed to create an economically viable national demonstration model for locally managed community-based culture and nature tourism.

In and around the Nam Ha

National Protected Area (NPA), which extends over 222,400 hectares/860 sq miles and is home to endangered bears, tigers and gibbons, the project went on to develop a number of community-based ecotourism products.

With 25 villages located within the protected area and a further 86 located just outside its borders, one of the project's goals was to utilise tourism to assist in the social and economic development of ethnic villagers, in part by establishing a fund generated from tourist trekking fees specifically designed to assist in livelihood improvement.

Another equally important aim of the project was to use tourism as a tool for forest biodiversity conservation, as successful ecotourism growth would give villagers a larger economic base, which in turn would help reduce their reliance on forest flora and fauna resources.

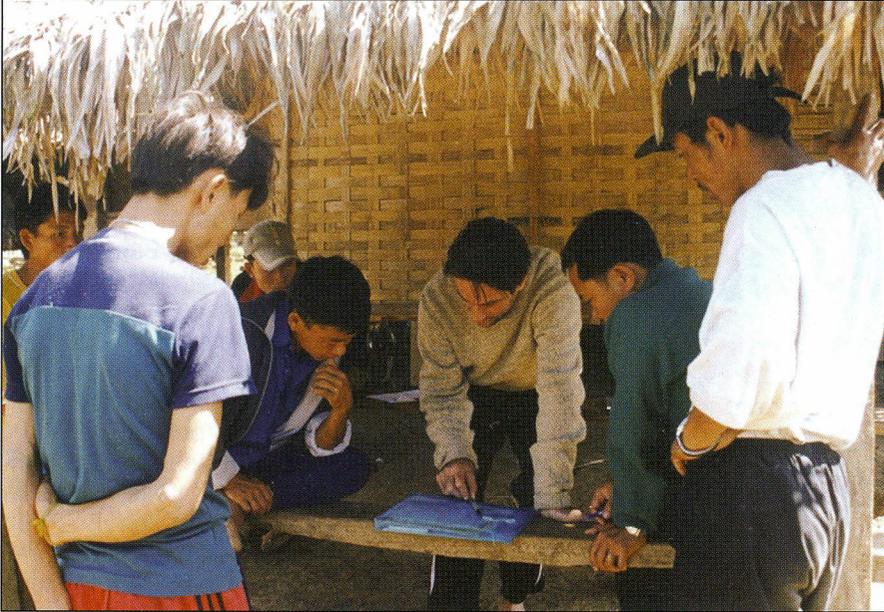
Other key components of the project's model for developing sustainable ecotourism were:

- participatory product development — the project team developed one- to three-day treks and a boat trip to villages in and around the protected area. Nineteen low-cost guest houses and hotels were built by local people in the Namtha district, and in June 2002 a new tourist information centre was opened in Luang Namtha;
- setting precautionary limits on the number of villages, the num-



*Surveying trekking routes in Nam Ha National Protected Area, Laos.*

## FOCUS ON ECOTOURISM



Pictures: Steven Schipani

*A participatory planning meeting at Tha Louang village in Luang Namtha province.*

- ber of treks and the number of tourists in each tour;
- establishing clear mechanisms for the distribution of fees paid by the tourists, including direct payments to villagers for food and lodging;
- close inter-sector collaboration, especially with the NPA management, to implement project activities and provide incentives for villagers to adopt a number of forest and wildlife conservation practices;
- formulation of a thorough guide-training manual and provision of training for trek guides;
- development of a monitoring system for evaluating the impact of the treks in the target communities.

Steven Schipani, who was the project's chief technical advisor and is now Nam Ha's senior ecotourism advisor, said: "The project helped establish a framework which allows the tourism authorities to manage and regulate ecotourism in a sensitive and equitable manner.

However, the project's implementation timetable was too short to ensure the achievements are sustainable."

This view was strongly reinforced in a report made by an external review team, which stated: "An extension of donor-funded support is necessary, both to consolidate the existing achievements and ensure that these achievements can be reproduced elsewhere. The

sustainable challenges faced by the project will be complex and difficult in the future.

"The sensitive attention to detail which characterised the first phase will be harder to maintain as both the number of tourists and treks increase and the scale of the project expands. As new sites are brought within the framework of the project, the existing capacity of the provincial tourist authority staff to maintain the careful consultative approach will be strained.

"The relationship between guides and villagers will also need continued careful attention. These relationships are crucial to the success of sustainable ecotourism, but these cross-cultural interactions are inherently fragile and need ongoing support training.

"With careful attention to the processes of replication and appropriate capacity building, an extension phase of this project should overcome existing weaknesses and leave a functioning model of great value to the Lao PDR government, the large array of stakeholders — in particular host communities — and to the tourists who visit the country to experience its physical beauty, ecological diversity and cultural heritage.

"During the three-year pilot project the team successfully conceived, field-tested and refined an effective methodology to develop and manage the country's first ever community-based ecotourism initiative.

"On all ostensible fronts the project has been a tremendous success. By bringing tourists to villages in large numbers, the project has set in place a form of social interaction that is powerful in its implications, and to date has managed to set in place a framework and mechanisms that make the process proceed cautiously and sensitively.

"The quality level of all operations, ranging from promotional materials and monitoring guidelines through to food distribution rosters in the villages, has been outstanding. This has led to the wide range of stakeholders to date benefiting on many fronts.

"There remains ample opportunity to strengthen and improve the pilot ecotourism programmes, tourism management capacity and inter-agency co-operation and to foster policy development at a provincial and national level in order to strengthen ecotourism activities in Luang Namtha.

"Since Luang Namtha is already playing an important role as a national ecotourism demonstration site, it is essential that provincial management and regulatory capacity is strong enough to sustain the early success of the original project.

"The vibrant traditional culture of the country's ethnic groups remains largely unchanged by outside influences, and the Lao government recognises that its natural and cultural assets underpin the country's tourism industry and actively promotes them in an effort to draw international visitors.

"However, the present lack of national capacity to plan for, implement and manage quality cultural and nature tourism activities is putting the precious heritage so vital to sustain the tourism industry at risk of being degraded and, in some extreme cases, already irreversibly destroyed."

This January UNESCO and the NTA, with generous support from the New Zealand Agency for International Development, launched the second phase of the project in Luang Namtha. This phase, with funding of US \$338,000, will address the concerns raised above, as well as aim to more closely integrate protected area management and private sector tourism development.

### australia

# NINGALOO REEF: BALANCING DOLLARS AND CONSERVATION

By **ANDY DONNELLY**

AUSTRALIA'S Great Barrier Reef is probably the most iconic coral reef system in the world. It has been a tourist destination since the 1890s but in recent decades — as global travel has become commonplace — the reef has become a major tourist destination.

In the 1980s visitor numbers increased by 30% each year and the reef now attracts around 1.6 million visitors annually. This represents an industry worth approximately US \$750 million.

The appeal of the reef and rapid increase in tourism has meant that conservation measures and management have often struggled to keep pace. We now know it is possible to love something to death. The cumulative effects of crown-of-thorns starfish outbreaks, El Nino-related bleaching events, sediment run-off from the land, overfishing and anchor damage have taken their toll on sections of the reef.

The reef's best defence for many years was its sheer size. Having grown since the last ice age, it now stretches for over 2,000 km/1,250

miles, made up of about 2,900 unconnected coral reefs and around 900 islands — the largest and most complex coral system on Earth. Over 85% of the visitors remain within 10% of the marine park area, centred around Cairns in northern Queensland and the Whitsunday Islands further south. This protects much of the reef from the effects of mass tourism but has also lessened the experience for those seeking a more natural experience with the reef. It is not uncommon to hear scuba divers complain that they spent two hours on a boat to get to a reef site where they saw more divers than anything else.

The way to experience the more remote areas of the Great Barrier Reef is to spend time at sea on a live-aboard boat. But this is expensive and beyond the budget of many who are now looking for their pristine marine ecotourism experience elsewhere. In Australia this often means Ningaloo reef.

Ningaloo is a coral reef that runs for 300 km/185 miles from the small township of Exmouth to the south of Coral Bay in Western

Australia. As far as the marine tourist is concerned it has a number of advantages over its larger, more famous equivalent on the east of the continent.

Ningaloo is a fringing reef as opposed to a barrier reef, which means it runs close to the shore. In contrast to the Great Barrier, which for most of its length is 160 km/100 miles offshore, Ningaloo is between 100 metres/110 yards and 7 km/four miles offshore. Access to the reef is far easier and snorkelling from the shore is possible.

Ningaloo is in near-pristine condition for much of its length. With over 500 species of fish recorded and more than 200 types of coral, it is considered one of the healthiest reef environments in the world. This diversity is partly due to Ningaloo's location, where tropical and temperate marine and terrestrial organisms' distributions overlap.

Probably the biggest attraction for the marine ecotourist is that at Ningaloo you are guaranteed to see big things — very big. Every year Ningaloo sees a congregation of whale sharks, which at up to 12 metres/40 feet long and over 11 tonnes are the world's largest fish. Manta rays with a wingspan of between four and six metres/13 and 20 feet are common throughout the year, and humpback whales migrate past the reef twice a year. Six other species of baleen whales, including the massive blue and sei whales are known from the area. The reef is a resting site for female humpback whales with their



Left: Ningaloo has some of the healthiest expanses of coral in Australia, like this vibrant staghorn coral. Right: lionfish are nocturnal predators commonly found hiding in caves during the day.

## FOCUS ON ECOTOURISM

calves, and other cetaceans like dolphins and orcas are common. Also common but more elusive is the dugong, of which there are thought to be a resident population of around 1,000 individuals. Six of the world's seven marine turtle species are found at Ningaloo, and sharks of all shapes and sizes are common.

The attractions for the marine ecotourist are many but it is the whale sharks and mantas that are the biggest draw card. The whale sharks alone bring in an estimated US \$14 million to Exmouth and Coral Bay, the two townships on the reef. There is nowhere else in the world where large numbers of whale sharks can be predicted to be at the same place at the same time of year. Similarly there's nowhere else that manta rays occur all year round in shallow, sheltered water accessible to snorkellers.

As a result, local operators run snorkelling trips in search of both mantas and whale sharks, with a 95% sighting success rate and confidence to offer free trips if unsuccessful. It is not unknown for tourists to watch (from the safety of a boat) manta rays being hunted by orcas. At Ningaloo a tourist can interact with mantas, then drop in on a reef shark cleaning station, all within 15 minutes of the shore and be back in Coral Bay before lunch. The Great Barrier cannot compete with this, yet Ningaloo remains a rarely visited reef in comparison.

One reason Ningaloo has remained free from hordes of tourists is that its wonders were not really well known until the early 1980s, when Western Australian ecologist Geoff Taylor confirmed the annual whale shark aggregations. Another is that Ningaloo is much more difficult to get to than the Great Barrier. Ningaloo is about 1,200 km/750 miles north of Perth — which is the most isolated city in the world — and none of the major domestic or international airlines fly to Ningaloo. Exmouth and Coral Bay are not large enough to



*Large and (thankfully) friendly potato cod are still frequently encountered on Ningaloo dives.*

accommodate the numbers required to justify the airline investment required.

This was set to change with a proposal for a 2,000 bed resort and marina being considered by the Western Australian government at Maud's Landing, on the southern reef. The prospect of Cairns-like mass tourism on the fragile and unique coral ecosystem dismayed conservationists. Geoff Taylor said: "With each discovery of an untouched wildlife sanctuary comes a tide of media exposure, immediately followed by the development moguls, desperate for profit. There was a time when some of us naïvely believed that national parks were created to protect the natural world, but in the harsh world of economic rationalism today, national parks are often created to define a resource that can be promoted for material profit — a developer's dream."

As the public were made aware of the issues the Ningaloo conservation argument gathered momen-

tum, culminating in 10,000 people marching in protest of the development in Perth in 2003. The Western Australian government, to its credit, listened. Premier Geoff Gallop said: "Ningaloo Reef is recognised internationally as one of the world's great fringing coral reef systems. It is the most distinctive and diverse marine region in Western Australia, and the government is determined that its integrity be protected."

Tour operators agreed in both Coral Bay and Exmouth and volunteered manta ray and whale shark interaction codes of conduct. Operators provide data on numbers and behaviour patterns of animals for monitoring purposes. Gordon McNair, who has been skippering manta ray and whale shark tours for five years from Coral Bay, said: "These animals are something really special which we have a responsibility to protect. If any interaction we have with them shows any sign of causing the animal stress, or we

threaten populations in any way, we will stop our operation."

In 2004 the state government announced a 60 km/37 mile expansion to Ningaloo Marine Park to encompass all the reef, and an increase of sanctuary zones to 28% of the park.

Geoff Taylor now sees whale sharks becoming the flagship species for coral reef conservation and acknowledges governments are recognising their responsibilities.

"All of a sudden, governments throughout the world are realising that here is a resource that is worth preserving, and in order to preserve the whale sharks it is vital to preserve the whole tropical reef environment on which they depend," he said. "Whale sharks are becoming an icon for coral reef preservation. Even in areas such as the Philippines where they were formerly hunted, there are moves to protect them. This for me is the most exciting development of all."

**ecuador**

# AWARD-WINNING PROJECT IN THE CLOUD FORESTS

By **JOAN SHENTON**,  
Communications Manager, Rainforest Concern



Picture: Karen Ward

*Scooping the prizes: the eco-lodge at Santa Lucía.*

THE Santa Lucía community and eco-lodge in Ecuador, supported by Rainforest Concern, is set to win its third tourism award in a year.

The Tourism for Tomorrow Awards 2005 have just announced that the Santa Lucía Co-operative has been selected for the shortlist for the Conservation Award. There were more than 90 applications from 30 countries.

Last summer Santa Lucía was a finalist in the Condé Nast Traveller Eco-tourism Award, and in November 2004 it won a Responsible Tourism Award.

Santa Lucía is a community-owned reserve in the cloud forests of north west Ecuador. Rainforest Concern has contributed to the purchase of some of the land rights for the community, thus helping protect the forest and ensure ongoing reforestation programmes.

Fiona Perez, Ecuador co-ordinator for Rainforest Concern, said: "Santa Lucía's mission is to conserve and protect the forests while developing sustainable income sources for its families through eco-tourism and other projects. Income from the eco-lodge and associated volunteer programmes goes directly to support the community and its conservation programmes."

The Santa Lucía eco-lodge is

**uganda**

## COMMUNITIES BENEFIT FROM PARK ENTERPRISES

A UN Food and Agriculture Organisation (FAO) project funded by the United Nations Foundation and the Norwegian government has enabled more than 300 small-scale natural resource-based enterprises to be set up in communities around Uganda's Bwindi Impenetrable National Park.

Local people are now earning income from a variety of products such as handicrafts, making honey and growing mushrooms. Sophie Grouwels, an FAO expert in participatory forestry, said: "This shows that it is possible for communities living around high biodiversity or protected sites to create alternative sources of income using the natural resources in a sustainable way."

An estimated 40% of the population living around the park — which was designated a UNESCO

World Heritage Site in 1994 and is home to half of the world's mountain gorillas — lack sufficient land to meet their basic needs, and a further 16% are landless.

When the forest was declared a national park in 1991, conflicts arose between the park authorities and local communities who were barred from removing forest products which they relied on for weaving materials, medicinal plants, fruit gathering and building poles.

Raw materials for traditional handicrafts are now mainly grown in home gardens instead of being taken from the park, beehives once made from logs are now made with woven grasses and the cultivation of oyster mushrooms has reduced illegal harvesting from the park.

The FAO project, which was launched in 2001, has also

enabled local people to run guided walking tours with trained community guides taking tourists to rural homesteads and meeting traditional medicine healers.

Grouwels said: "The involvement of the community members from the outset — that is from the selection of products and development of business plans to the operation of the enterprises — has been key to the success of the project.

"Workshops were held in the villages, interest groups were created around promising products and able local entrepreneurs with leadership qualities were identified. We will use the lessons learned and share best practices from the project at other high biodiversity sites. It shows it is possible to conserve valuable natural resources while also protecting the surrounding people's livelihoods."

perched at an altitude of 1,900 metres/6,235 feet in the heart of the cloud forest, offering panoramic views, comfortable rooms, home-made food and candle light in the evenings ([www.santa-lucia.org](http://www.santa-lucia.org)). Reforestation, trail-building, organic gardening, conservation studies and teaching in the local community are some of the volunteer activities.

Santa Lucía protects over 650 hectares/1,600 acres of nearly virgin mountain cloud forest in the Choco Bioregion, one of the most biodiverse areas in the world. The over 320 species of tropical birds include Andean cock-of-the-rock, the plate-billed mountain toucan, and a variety of hummingbirds found only at these elevations.

Ocelots, coatimundis and spec-

tacled bears also find a haven here, along with an estimated 42 other species of mammal. Thousands of tropical plants are native to the region, including a large variety of orchids, bromeliads and other epiphytes.

\* For further information contact Rainforest Concern, [Email: info@rainforestconcern.org](mailto:info@rainforestconcern.org) [www.rainforestconcern.org](http://www.rainforestconcern.org)

### peru

## TOUR COMPANY INVOLVES INDIGENOUS PEOPLE

MANU Expeditions and its sister company Expediciones Manu are the longest established tour operators in Peru's Manu Biosphere Reserve, having organised rainforest and mountain expeditions and tours since 1983. The company is run by husband and wife team Barry Walker (who doubles as British Consul in Cuzco) and Rosario Velarde (20 years' experience in managing adventure tour companies), and the centre of operations is in the ancient Inca capital of Cuzco.

Manu Expeditions counts on a reliable team of boat crews for the rainforest, wranglers for the mountains and trained camp cooks for remote areas. All tour leaders are fluent in at least English and Spanish, and are experts in their fields. Leaders on mountain trips are knowledgeable about Inca history, archaeology and local culture, while rainforest leaders are naturalists and biologists who have spent much of their time researching the Manu area.

Barry and Rosario are part-owners of the Manu Wildlife Center Lodge in conjunction with a local conservation group, and rainforest research is constantly underway at this facility.

As one of the pioneer ecotour operators in Peru, they have outfitted expeditions for scientists and archaeologists, discovered unknown Inca and pre-Inca ruins and provided logistics for documentary film crews and biological expeditions.

### THE MACHIGUENGA PROJECT

When its secrets were recognised in 1973 and Manu was declared a National Park, there was already

an active and established culture of indigenous Machiguenga people. For centuries they have been an integral ingredient of the region, but often took a back seat as tourism developed in Manu, despite being the 'true owners' of the forest.

In 1996, a project was initiated by the native communities of Yombebato and Tayakome, in conjunction with a non-government organisation from Germany, to establish a lodge based on Machiguenga construction techniques and lifestyles in the Cocha Salvador area. Accommodation consists of simple rooms with beds and mosquito nets, rustic furniture and communal dining areas, with toilet and shower facilities on hand.

The object of this project is to give the visitor the opportunity to learn about and understand not only the natural wonders of Manu, but also the cultural history and traditions of its inhabitants. In 1999 the lodge, Casa Machiguenga, received its first guests, but there is still much to be done before its full potential is realised. For this reason Manu Expeditions, in agreement with the Machiguenga communities, will use Casa Machiguenga in the first fixed departure of each month.

This agreement means the visitor will benefit from experiencing aspects of Manu they otherwise would not have seen.

Manu Expeditions guides will be co-leading with Machiguenga on future trips so that everyone can learn from the indigenous peoples and benefit from their encyclopaedic knowledge of medicinal plants. In return, the Machiguenga

will be able to learn something about outside cultures and acquire the language skills necessary if they are to take visitors into their forest.

### THE POLYLEPSIS PROJECT

Two of Barry and Rosario's programmes pass through isolated villages whose only source of fuel is firewood. At these extreme altitudes, virtually the only tree is of the genus *Polylepsis*, known in the local Quechua tongue as Queuna.

The remaining Andean *Polylepsis* woodlands are endangered, as are many plants, birds and animals that use them for shelter. Some of the bird species found in these woodlands are on the critically endangered list and it is estimated that only five per cent of the forest remains; it is still being cut for fuel.

Manu Expeditions supports a project run by the Association for Andean Ecosystems (Asociacion Ecosistemas Andinas), loaning its team of saddle horses and camping equipment to researchers working for the project to help them reach isolated villages and research sites. They also enrol volunteers from many countries to help the Peruvian biologists. The Association for Andean Ecosystems attempts to find alternative and more efficient fuel sources to the rare *Polylepsis* tree.

Initiatives include planting sustainable eucalyptus groves at lower altitudes for villages and buying firewood until these mature, the planting of thousands of *Polylepsis* saplings with the help of Quechua communities as part of a reforestation project, providing simple fuel-efficient stoves to replace the inefficient traditional ovens, environmental education projects and inventory studies of the remaining woodlands to ascertain population levels of endangered flora and fauna.

[www.manuexpeditions.com](http://www.manuexpeditions.com)

### costa rica

# COMBINING TOURISM WITH FARMING

By **VINICIO GÓMEZ**

*Tourism Programme Director, ASODECAH*

COSTA RICA is a country which contains extensive protected areas and is renowned across the world for protecting its natural resources.

But outside the protected areas, most Costa Rican communities suffer from the harsh environmental effects of contamination, gas emissions, inadequate waste treatment, deforestation, monoculture, overgrazing and excessive use of agrochemicals.

This prompted the creation of the Association for the Development of Environmental and Human Consciousness (ASODECAH), formed in 1998 to complement environmental education and strengthen the relationship between society and the environment. Within the Association, ecotourists from around the world get the chance to work with professionals and the local community on an integrated farm on a variety of social and environmental projects.

ASODECAH comprises an agro-ecological farm and an environmental school located in the Finca La Flor de Paraíso, just a 75-minute bus drive from the capital city San José, overlooking one of the country's most beautiful valleys. It seeks to support sustainable development, and has established a farm school which demonstrates and teaches conservation practices, and helps to generate income which in turn finances the operation.

At the farm, practical forms of alternative land resource management are demonstrated, and land which has been degraded by excessive ranching and chemical use is regenerated. Work is in hand to restore natural vegetation around the watershed of the La Flor river, at the same time providing work for the community. An area measuring 10 hectares/25 acres has been protected to regenerate the natural forest, and this area will later be extended.

Instruction is given to ecotourists from Costa Rica and

beyond on domestic animal husbandry, organic fertilisers, organic agriculture, use of medicinal plants and forest regeneration.

All the farm's sustainable activities are taught in the environmental school through children's camps and intensive courses for adults.

The farm has a capacity of 30 students who stay in lodges or ecocabins. Visiting students attend talks about protecting the environment and participate in workshops relating to farm activities. All waste created by the farm and school is, if possible, reused, and the rest

separated for recycling. During their stay, visitors learn through lectures and practical work about the efficient management of solid wastes, some of which can be reused in the production of saleable art.

The local community similarly benefits from all of ASODECAH's activities, as local schoolchildren receive similar tuition which they can then pass on.

The environmental school aims to involve both children and adults in the protection of natural resources, and to complement the work being done on the farm. There are lectures about environmental issues, practical workshops through the farm, ecological art, and participation from all ages of the local community.

ASODECAH also runs an Alternative Spanish Institute, and an agro-ecotourism course, with particular reference to Costa Rican traditions and cultural exchanges through communal field trips.

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### australia

## PARK IS NATURAL CLASSROOM

BOODEREE National Park — formerly known as the Jervis Bay National Park — was handed back to the traditional owners of the land, the Wreck Bay Aboriginal Community, in December 1995.

For the past nine years it has been jointly managed by the community council and the Australian Department of Environment and Heritage, through the Director of National Parks, under the terms of a 99-year lease which requires that the park be managed with the interests of the traditional owners in mind.

The agreement allows for the traditional use of the area for hunting, food gathering and ceremonial purposes in areas determined by the park's director and the traditional owners.

The white-bellied sea eagle, seen as the traditional guardian of the aboriginal people of the area, is now represented in the park logo.

Park-use fees contribute to the cost of protecting the values of the park — which is located some three hours' drive from both Sydney and Canberra — and help maintain visitor services and facilities.

The Wreck Bay community

plays a leading role in providing opportunities for visitors to learn about aboriginal culture, which is seen as one of the park's most important assets.

Proud of their special knowledge of the area's natural resources and their ancestral traditions, the traditional owners use the bush as a natural classroom, showing visitors the foods and medicines found there and how to interpret indicators of seasonal and climatic change.

The board of management, which includes a majority of aboriginal traditional owners, is also responsible for the park's botanic gardens which were also renamed Booderee, the aboriginal word from the Dhurga language meaning "plentiful bay".

The only Aboriginal-owned botanic gardens in Australia, the 80 hectare/200 acre site is now becoming known as a centre for interpreting plant uses by local Aboriginal people.

Established in 1951 as an annex of the Australian National Botanic Gardens, the gardens were formally made part of the national park in 2000.

*Masakala traditional guest house is located in the rural landscape of the southern Drakensberg mountains.*



### south africa

# GUEST HOUSE INVOLVES LOCAL COMMUNITY

MASAKALA Traditional Guest-house, in the southern Drakensberg Mountains, is owned by the Mehlooding Community Tourism Trust (MCTT). The Trust was founded in 2002 and represents more than 25 villages in the area, and also owns a nearby adventure trail which is still under development.

Masakala is managed by a village-based community tourism organisation, which is represented on the Trust's board. According to the Trust Deed, profit from tourism activities is paid into the Trust and subsequently distributed to specific social infrastructure projects like roads and schools, although to date no funds have been disbursed.

Masakala opened for business in 2002, and offers up to 12 guests comfortable accommodation, plus traditional cuisine based on local produce, some of which is grown organically. Masakala also provides meeting and workshop facilities, including catering, primarily for local government and local non-governmental organisations.

The infrastructure for the guest house and the Mehlooding Trail — a five-day trail for hikers who stay overnight in four custom-built chalets — was built using national poverty relief funds, which provided short-term job creation and skills development through building and other labour-intensive

activities. The Swiss Agency for Development Co-operation also supported the infrastructure and product development processes.

Currently the MCTT is supported by local and provincial government, local NGOs and a range of donors including the New Zealand government, which has provided technical assistance in the form of a professional volunteer on a two-year placement.

Tourism and community stakeholders in Matatiele were involved in the FTTSA pilot project (the Fair Trade in Tourism Initiative, which ran from 1999-2001), which has endowed the tourism development process with a strong appreciation of Fair Trade in Tourism principles and an aspiration for certification.

#### COMMUNITY IMPACT

Masakala provides permanent employment for three local residents. All staff received training in guesthouse management, hospitality, first aid and other subjects. Soil and water conservation is practised on site, organic waste is composted and most solid waste is recycled. Grey water is used to irrigate the vegetable garden.

The guest house also generates employment for village-based tourist guides, who conduct walking tours for guests to view rock art, go birdwatching and horse riding or witness cultural entertainment. Guests can also visit community-based development

projects and purchase locally produced crafts. Guest house purchases for goods and services are made within an eight-kilometre/five-mile radius, which includes the town of Matatiele.

#### APPLICATION PROCESS

After submitting a completed self-audit questionnaire, Masakala was told that the FTTSA Trademark Panel was impressed by Masakala's dedication to fair labour practices, local economic development and environmental management. Panel members specified that two issues had to be addressed prior to certification: purchase of sufficient public and passenger liability insurance, and the formalisation of certain ad hoc policies. These were quickly addressed, and Masakala was certified in May 2004.

Masakala is already benefiting from being part of the FTTSA network of certified enterprises: a number of more established trademark users have offered to facilitate staff exchanges with Masakala and to share knowledge and expertise around such themes as risk management and occupational health and safety, so that the adventure trail may also be certified one day.

The Trustees and staff at Masakala have recognised that the guesthouse is part of a niche market for "authentic" cultural tourism. The owners will need to develop their product further in such a way as to attract more guests so that the guest house can sustain itself over the longer term.

Masakala is proof that emerging product owners can achieve FTTSA certification. This case demonstrates that — no matter how small or rural or disadvantaged or community-based — tourism ventures can and should be run professionally, equitably and sustainably. This case also demonstrates that FTTSA can play an important role in integrating community-based and other emerging tourism enterprises into the industry, pursuant to the vision set forth in the 1996 Tourism White paper.

*\* For further information, FAIR TRADE IN TOURISM SOUTH AFRICA: [www.fairtourisma.org.za](http://www.fairtourisma.org.za) MASAKALA TRADITIONAL GUEST-HOUSE: [www.zulu.com](http://www.zulu.com)*

## **zimbabwe**

### **FAMINE PROMPTS ANIMAL SLAUGHTER**

A GOVERNMENT-sanctioned operation to kill animals to feed starving villagers in northern Matabeleland has led to the wholesale slaughter of elephants in Hwange National Park, the country's largest game reserve, according to eye-witness reports from tourists.

Observers claim that the famine relief programme, known as Operation Meat, is actually a cover for ivory smuggling condoned by President Mugabe's regime. In a report in the Game Rangers' Association of Africa's *Cleft Stick* bulletin, Johnny Rodrigues, the chairman of the Zimbabwean Conservation Task Force, said: "If the aim was to feed people, it is strange that most of the elephant bulls which are being shot have tusks weighing from 27 kilos/60lb to 32 kilos/70lb and are in their prime. Older bulls with broken tusks are not being targeted."

Although the culling of animals for food was due to end last December, tourists from the USA and Australia have recently reported seeing national park trucks loaded with dead impala and buffalo.

A former senior wildlife officer forced to flee Zimbabwe when he threatened to expose poaching rings organised by park wardens said that the situation in Hwange followed "a pattern that has been established throughout the country in national parks, hunting concession areas and private wildlife reserves.

"All the indications are that the country's game is being plundered and exploited with the connivance and encouragement of senior officials at regional and probably central government level."

## **india**

### **RESERVE LOSES ALL ITS TIGERS**

A CENSUS to be carried out this month is expected to confirm that one of India's important tiger reserves no longer contains a single tiger.

Following reports made by animal protection organisations that no trace of any tiger presence had been found in the Sariska Reserve in Rajasthan for the past five months, the Indian Government has ordered an official police investigation and the Prime Minister has launched a public commission to establish what went wrong.

In 2003 Sariska's tiger population was estimated to be between 25 and 28, but a year later this figure had fallen to only 16 to 18 animals. Similar losses have been reported elsewhere in the country, and wildlife organisations believe government estimates of a national population of 3,000 tigers is greatly overestimated.

Local officials, regional ministers and wildlife experts have offered differing explanations for Sariska's diminishing tiger population. Central government has been blamed for providing inadequate funding and it has been claimed that the reserve is incompetently managed. Local administrators have been criticised for

## **uk**

### **ARGUMENT OVER WIND FARM**

A PLAN to build England's largest wind (turbine) farm on the border of the Lake District National Park has divided environmental and conservation bodies who are set to give evidence to a government planning inquiry.

The project, which has been proposed by Italian energy company, Falck, involves the construction of 27 wind turbines 120 m/400 feet high in an area which has been described as one of Britain's most inspirational landscapes.

Opponents of the plan, including the Campaign to Protect Rural England and the Council for

failing to relocate 28 villages inside the 880 sq km/340 sq mile reserve, or divert a busy road which runs through its centre.

The reserve's deputy field director, Braj Mohan Sharma, told journalists that the problem was largely due to Sariska having only a small, ageing team of unarmed forest wardens to combat illegal hunting. No funds had been made available to recruit front-line staff since 1986.

If this month's census confirms that no tigers remain in Sariska it will deal a body blow to the area's thriving tourism industry, which has resulted in new hotels being built on the reserve's eastern fringes, and created jobs for tour guides, taxi drivers and craftsmen who carve tiger statues.

Similar fears about the preservation of endangered tigers have been expressed at Rajasthan's Ranthambhore National Park. The state government has declared an "emergency situation" after learning that there has been a sharp decline in tiger sightings during the past six months. A special committee has called for the appointment of 100 extra guards, intensified patrols and raids on camps of suspected poachers.

National Parks, claim that if the giant turbines were erected on Whinash Fells they would ruin pristine views and amount to "industrialisation of the countryside".

However, Friends of the Earth (FoE) and Greenpeace are not opposing wind farm schemes, which they say will help cut carbon emissions. An FoE spokesman said: "Whinash offers a great opportunity for renewable energy and would make a significant contribution to county, regional and national targets."

The British government plans to meet 20% of energy needs from renewable sources by 2020.



*You have been warned: a danger sign is installed in a mined area of Paklenica National Park.*

## **croatia**

# LAND MINES REMAIN THREAT TO PROTECTED AREAS

INTERNATIONAL donors are being urged to help support efforts to clear land-mined areas within five of Croatia's protected areas.

A dangerous legacy of the four-year conflict which began in the region in 1991, land mines have to date claimed 422 lives in the country and severely injured over 1,500 people. While progress has been made in making populated areas safe, Marina Mlakar, assistant Culture Minister with responsibility for Croatia's Directorate for Nature Protection, said: "We have about 120 sq km/46 sq miles of mined areas in our national parks and nature parks. The cost of clearance is a minimum of €1.5 per square metre, so the total cost of making all these areas safe could amount to €18m.

"Three areas on the Adriatic coast and in the central mountains of the country — Paklenica National Park, Plitvice Lakes National Park and the Velebit

Nature Park — have mountainous and forested areas which will be particularly difficult to clear. There are also mined areas in two inland wetland Nature Parks — Lonjsko Polje and Kopacki Rit — which lie close to the borders with Bosnia and Serbia respectively.

"With donations received from Monaco and Italy, the Croatian Centre for De-mining has been able to mark areas in Paklenica and Velebit and surveyed where mines may be, but the process of mine removal has not yet started. The difficult terrain requires detailed plans to be drawn up before any action can be taken, and more money is needed to complete this work."

Velebit Nature Park has the greatest extent of mined no-go areas. Said to contain the country's largest number of indigenous species, its beech and fir forests are home to a significant population of wolf, bear and lynx. Many

endemic flora species are found in its karst valleys, gorges and rock scree, and among the remains of what is the southernmost European peat bog.

Paklenica, which was established as a national park in 1949, protects a 96 sq km/37 sq mile area containing beech and black pine forests that stretches from the highest peaks of the Velebit Mountains to the Adriatic coast.

Biologist Gordan Lukac said: "We have six mined areas along the north border of the national park covering about 75 hectares/185 acres in an area standing 1,400 m/4,500 feet above sea level. All roads in the neighbouring area have signs warning visitors that walking on trails there is dangerous and is undertaken at their own risk."

He added that of the 108,000 visitors to the park last year, only a small percentage went to areas where warning signs had been erected.

Borislav Perica, manager of Plitvice Lakes, the country's first national park and a UNESCO World Heritage Site, said: "Although all the potentially dangerous areas in this park are away from the most visited places near the lakes, there is an urgent need for funding so that all the mined areas within Croatia's protected areas can be cleared as soon as possible."



Cave explorer, Carl Bern, kneeling next to Lake Vega in the south-west corner of Wind Cave.

## usa SURVEY REVEALS GREATER DEPTH TO CAVE SYSTEM

A RECENT mapping survey of Colorado's Wind Cave, one of the world's longest and most complex caves located in the US national park of the same name, found that it is even more extensive than previously believed.

Five teams of surveyors comprising National Park Service employees and members of the Colorado and Paha Sapa Grottos successfully mapped a further 827 metres/2,715 feet of passages in what is claimed to be the world's most complex three-dimensional maze cave, resulting in its official length

increasing to 183 km/114 miles, making it the fifth longest cave in the world.

The park's physical science specialist, Rod Horrocks, said: "This achievement is the culmination of decades of effort by numerous cavers and also makes us the third-longest cave in the country, behind Mammoth Cave in Kentucky and Jewel Cave near Custer, South Dakota.

"A total of 16 cavers participated in this mapping and exploration. Wind Cave's official length was 113.76 miles and we needed at

least another 518 m/1,700 feet to become number five in the world."

Exploration at Wind Cave began in the early 1880s and by 1893 between 9.6 km/six miles and 12.8 km/eight miles of passages had been discovered. Modern exploration began in the late 1950s and four consecutive summer expeditions led by expert caver, John Scheltens, expanded the number of known unexplored holes in the cave from the hundreds to the thousands.

The cave has an outstanding display of boxwork, an unusual cave formation composed of thin calcite fins resembling honeycombs

Rod Horrocks added: "Since 1991 we have hosted monthly exploration trips by members of local caving clubs and over the years they have helped the park inventory features, correct surveying errors and collect data such as water samples."

Ranger-led tours of Wind Cave are offered throughout the year. For further details visit: [www.nps.gov/wica](http://www.nps.gov/wica)

# park management

# MAINTAINING SOUND MANAGEMENT OF PROTECTED AREAS

Based on a paper given by authors WAYNE LOTTER and JAN PHELAN at the GRAA Workshop in Kruger National Park earlier this year.

## INTRODUCTION

### Background

GLOBALLY more than 44,000 protected areas covering approximately 11.4% of the Earth's surface and 0.1% of the oceans contribute to ecological, economic and societal well-being. However, many are referred to as 'paper parks' because they are ineffectively managed.

For instance, a WWF/World Bank survey of 10 countries in 1999 found that only 1% of forest protected areas were considered secure. Similarly, a study of 93 protected areas throughout the tropics found that at least 20% had experienced some land clearance.

Unfortunately, many protected areas are under threat and some have been so degraded that they have lost ecological and cultural values. The world's protected area network therefore remains exposed to considerable risks of mismanagement, degradation and

a consequent loss of support from governments and populations.

### Concerns

Investing time and effort in protected areas only makes sense if there is a reasonable chance that they remain secure. The question regarding how societies may know if their parks are healthy and satisfactorily managed remains unanswered. Having gone a long way in the process of creating a global protected areas network, we now need tools to manage it, to justify its continued existence and to maximise its benefits. There have thus been increasing calls for some standardised way of judging whether protected areas are well managed, and of guaranteeing that such standards have been met.

### Existing Commitments

Two of the outcomes of the 2003 World Parks Congress are of major importance to protected area managers. The first is the affirmation of the importance of monitoring and

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ANNE JANET (JAN) PHELAN has carried out environmental audits throughout South Africa since 1997 and is involved in assisting companies in implementing environmental management systems. She is currently involved in doing environmental audits for SABS.

evaluating the management effectiveness as a basis for improved protected area management, transparency and accountability.

The second is the recommendation that parties to the Convention on Biological Diversity (CBD) adopt and institutionalise periodic Protected Area Management Effectiveness (PAME) assessments by 2005. State of Environment Reporting also needs to know the protection status of biodiversity.

## PRESENTLY AVAILABLE TOOLS, STANDARDS AND SYSTEMS

Tools, standards and systems available for protected areas include at least 27 management effectiveness evaluation tools, certification standards for some aspects of protected areas or certain biomes, management plans, codes and best practices, environmental management systems (such as ISO 14001), knowledge and views of interested parties (external expertise), legislation and scientific research.

However, none of these is adequate on its own and some of them are not well developed. Environmental legislation is also ineffective on its own. Of the suite of tools available, a well designed and tailored environmental management system (EMS) is arguably the most useful and important requirement for achieving and maintaining protected area management effectiveness.



Picture: GRAA

Sopa Lodge: an example of a tourist facility at the Ngorongoro Crater World Heritage Site, in Tanzania.

A brief discussion of some specific shortcomings of current tools follows:

**Management Effectiveness Evaluation Tools** can contribute meaningfully but are not sufficient on their own in ensuring effective management. For example, KwaZulu-Natal Wildlife implemented the WWF Rapid Assessment Methodology on a pilot basis in 2001. Although all of their management units were assessed for overall management effectiveness, major threats were assessed and priority actions/areas identified, 12 recommendations were made that would result in significant improvements to PAME, and these were adopted at regional and executive management levels, relatively little or no action precipitated.

Of the 27 management effectiveness evaluation tools available, only one addresses all six elements advocated by the guiding framework for assessing management effectiveness for protected areas (developed by the World Commission on Protected Areas Management Effectiveness Task Group, 2000).

**Certification** standards exist for aspects of protected areas or certain biomes (i.e. FSC for forests, MSC for some marine protected areas, Green Globe 21 and organic agriculture certification), but there are at present no appropriate generic standards against which to measure and certify protected areas. The ISO 14001 EMS certification would help improve management (it is certification of a management system, as opposed to environmental performance standards) but will not guarantee effective conservation management without suitable performance standards against which to measure.

The **Environmental Management System (EMS)** approach is the most comprehensive but it needs appropriate standards (criteria and indicators) for setting goals and against which to measure, and it needs to be tailored for protected areas.

Management Plans (strategic, operational, business): In a study of three small/medium national parks in South Africa, only one had a management plan but it was out of date. The stand-alone operational plans in place did not address all the environmental issues of park management and in certain cases did not comply with

environmental legislation. This is but one example of a trend that still exists widely throughout protected area authorities nationally and internationally.

**Environmental Best Practice Manuals and Codes** do not cover all aspects and impacts. Examination of the few that are in use in protected areas in Africa showed them to be seriously flawed and at best are guidelines only. The best practice manual that is currently in use in a flagship protected area in South Africa employs a subjectively determined scoring system to determine what is thought may be best practice. The whole concept of "scoring" progress is known to be fraught with difficulties and possibilities for distortion.

Fortunately, at a higher level, this same protected area authority has developed an innovative and promising tool guiding biodiversity management decision making at a strategic level. Even at best, none of these tools would be sufficient to assure the effective management of protected areas on their own.

**Legislation:** a recent study showed that in most cases awareness of all applicable legislation is not comprehensive and the monitoring of compliance with such legislation is virtually non-existent. Thus the fact that there is legislation applicable to protected areas is of no great merit on its own. If legislation were effective on its own the phenomenon of "paper parks" would not exist.

## THE SOLUTION

### **An environmental management system for effective protected area management**

A clear management structure is required into which results can be fed, with a clear route for integrating the information into the planning and management process. The absence of such a management 'structure' or framework was mooted as the primary reason why the implementation of various specific tools, as in the case with the KwaZulu-Natal Wildlife example, does not result in improved management effectiveness. We suggest that an appropriately tailored EMS will provide the 'structure' that is necessary to achieve and maintain management effectiveness.

### **Components of an ISO-based EMS for Protected Areas**

The proposed EMS is primarily based on the ISO 14001 version.

This can be simplified to suit the scale and capacity of individual organisations, but includes additional requirements relevant to conservation to ensure effective management.

The proposed EMS includes the usual primary components of ISO 14001:

- An **initial review**.
- An **environmental policy** to set the context and the long term Mission, Vision and goals.
- **Planning** to identify, prioritise and manage the risks related to the environmental aspects of all current and new activities, developments, services and products (including those outsourced).
- **Implementation and operation**, including the allocation of resources, roles, responsibility and authority.
- **Checking and corrective action**.
- An annual **management review**.

The proposed EMS which we advocate for protected areas contains some different emphases as well as unique specific requirements. In brief, some of these include the following:

The policy, *inter alia*, should be appropriate to the nature, scale and environmental impacts of the organisation's activities and to its conservation goals. It provides the framework for setting and reviewing environmental objectives and targets, as well as Limits of Acceptable Change (LAC), and should provide opportunities for stakeholder participation. Guided by the policy, the implementation and completion of Environmental Management Programmes (EMPs), which include the responsibility, means, time-frame and budget, is a core function of the EMS.

Emergency preparedness and response procedures (to identify and rapidly deal with potential emergency situations such as uncontrolled fires, floods, presence of new highly invasive alien species and disease outbreaks) comprise part of the implementation and operation aspect of the EMS.

Checking and corrective action includes monitoring and measurement (preferably using recognised PAME assessment tools), evaluation of the application of the Precautionary Principle where necessary, verification of whether the necessary research and monitoring needs have been identified and implemented to provide the required knowledge

# GRAA SEMINAR STATEMENT

DELEGATES TO THE GAME RANGERS' ASSOCIATION OF AFRICA SEMINAR ON THE EVALUATION OF MANAGEMENT EFFECTIVENESS, FEBRUARY 17 2005, LETABA, KRUGER NATIONAL PARK . . .

. . . are concerned with the effectiveness of Protected Area management in Africa,

and note that international conventions and agreements require that appropriate protected area management systems are implemented and their effectiveness be assessed and reported on.

And therefore recommend that conservation authorities:

- allocate adequate resources to institute appropriate protected area management systems and appropriate management effectiveness assessments in support of international conventions and national conservation legislation;

- together with the IUCN World Commission on Protected Areas develop an appropriate set of

indicators and standards against which they will be evaluated, and require third party implementation of assessments against appropriate indicators and standards;

- comply with Goal 1.4 of the Programme of Work on Protected Areas of the Convention on Biological Diversity, to "Ensure that protected areas are effectively managed or supervised through staff that are well trained and skilled, properly and appropriately equipped, and supported, to carry out their fundamental role in the management and conservation of protected areas".

To this end the GRAA, as an active member of both IUCN and IRF, offers its expertise to implement these recommendations.

for improved management and whether cumulative, subtle and potential long term impacts are being assessed.

Mandatory annual internal EMS audits will be conducted. These audits should be open to external observers (NGO representatives, etc) who should not be allowed to interfere in the audit process but who may provide comment thereafter. To add credibility, independent and competent third party auditors should be used to conduct audits.

**It is important to note that it is the adoption of an appropriately tailored EMS to facilitate improved transparency and management effectiveness that we are recommending, not necessarily the obtaining of an ISO 14001 or any other certificate. All the other tools discussed in this paper, as well as certification standards if/once developed, can be incorporated as part of this holistic system. However, if desired, an EMS such as the above could be certified as ISO 14001 compliant, following formal audits by an accredited certification body.**

This paper does not include all the details with regard to ISO 14001 implementation. It will be necessary to refer to the original ISO 14001 standard for these.

## CONCLUSIONS AND RECOMMENDATIONS

It may be concluded that no single currently available management effectiveness standard, system or evaluation tool for protected areas is adequate on its own. The proposed EMS can effectively integrate the different management effectiveness tools to suit the specific needs of protected area managers. The EMS must be comprehensive enough to close and address all potentially significant gaps (risks) but it should and can be kept as simple as possible.

In 1998 Bancroft concluded that an ISO 14001-based EMS would address the environmental aspects and impacts and shortcomings of the current stand-alone operational plans in small/medium SA national parks; and added that ISO 14001 may be an advantage to an organisation such as SA National Parks and, in future, might become a necessity.

However, ISO 14001 has been most widely used in industries that have profit as their primary goal (as opposed to conservation) and which seek to gain a competitive edge. In these industries pollution and consumptive use issues are of major environmental importance as opposed to more subtle influences, the precautionary approach and biological interactions that are

of primary importance to conservation organisations. Consequently, ISO 14001 auditors are typically more focused on, and expert in, urban and industrial related impacts.

We therefore conclude that a meaningful EMS is what is needed for protected areas as an appropriate vehicle and framework through which to achieve and maintain management effectiveness. The ISO 14001, or any other, certificate is of secondary importance.

There are a number of contributing roles that need to be filled in working towards effective protected area management. At the February Game Rangers' Association of Africa (GRAA) Seminar it was recommended that:

- Protected area management authorities should implement and institutionalise appropriate environmental management systems and management effectiveness evaluation assessments; and require, or at least encourage, outsourced operations (i.e. ecotourism concessions, hunting operators and construction businesses — which have profit as their primary goal) to obtain credible third party environmental certification.

- The Game Rangers' Association of Africa should provide a consulting (facilitation) service for protected area authorities to establish appropriate EMSs; train some of its members as environmental auditors to enable them to conduct protected area EMS audits; and spearhead the development of certification standards for (i) ecotourism developments/operations, (ii) hunting operators and (iii) construction and building contractors (some progress has been made in this regard already).

- An appropriate institution (such as the Institute for Natural Resources), through a process of comprehensive consultation, should establish principles, criteria, indicators and standards for effective protected area management.

- The GRAA and International Ranger Federation in association with various partners (e.g. IUCN, WCPA, FSC, WWF), using the principles, indicators and standards developed through the above process, should further explore the proposal to develop a certification standard for protected areas.

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