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The IUCN/WWF Forest Conservation Newsletter

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Bush cricket in Brazil's Atlantic rainforest

Forests and biodiversity conservation

Forests clearly have a vital role to play in biodiversity conservation, not least because they provide habitat for over two-thirds of the world's terrestrial species of flora and fauna. So how best can this forest biodiversity be conserved?

At first glance, the relationship between forest cover and biodiversity conservation seems a straightforward one: if forests are lost, so too are the species that live in them. Indeed, according to the World Bank, deforestation of closed tropical rainforests could account for the loss of up to 100 species per day. Yet, some of the implications of this relationship are not so simple. For example, simply increasing the coverage of protected forest areas is not necessarily the best solution for biodiversity conservation. This is due to several factors, including the limited resources available in many forest-rich developing countries to set aside their forests and maintain their protected areas. Indeed, natural forests at times need to be actively managed to eliminate threats to biodiversity, such as those from alien invasive species.

Another counter-intuitive implication of the forest-biodiversity conservation relationship relates to logging. Many conservationists still see logging as a major threat to biodiversity, yet studies have shown that most plant and animal species survive the highly selective logging that can be practised in the tropics. In fact, logging can provide the economic justification for retaining and managing natural forests rather than converting them to other land-uses such as plantation crops. Not that all logging is good news for biodiversity. The recent ITTO status report on tropical forest management makes sobering reading and there is much to be done before sustainable forest management becomes the norm rather than the exception. Also, just to add to the complexity, not all forest conversion is bad news. Agricultural production, when undertaken within a conservation-conscious landscape perspective, can complement forest management and support biodiversity conservation.

This edition of arbor*vitæ* looks at the multiple dimensions of these complex issues and provides some pointers to realistic solutions. The bottom line is that today's forests will need to be adequately valued for the multiple functions they provide, biodiversity conservation being one of them. It is only when forests are considered more valuable standing than cleared that their biodiversity will be safe.

Duncan Pollard, WWF and Stewart Maginnis, IUCN

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Saving deadwood to keep forests alive



Great spotted woodpecker, Switzerland

Dead trees are a vital component of a healthy forest. Daniel Vallauri of WWF-France reports on efforts to halt the removal of deadwood by forest managers and conservationists.

Species relying on deadwood for food and/or shelter make up the single biggest group of threatened species in Europe. The removal of decaying timber and veteran trees from Europe's forests has led to a drastic decline in species such as insects, beetles, fungi and lichens. It has also resulted in habitat loss for species such as woodpeckers, bats and squirrels that nest in hollow trees.

According to a report by WWF, *Deadwood – living forests*, deadwood is at a critically low level, mainly due to a lack of recognition of its importance, inappropriate management practices in commercial forests and even in protected areas. By stripping a forest of its veteran trees and decaying timber we are performing a strange and unnecessary cosmetic surgery on a natural ecosystem, and threatening much of its biodiversity.

WWF is acting around Europe to raise awareness about the importance of deadwood through conferences, publications, fieldwork and education tools. WWF has called on European governments, forest owners, and industry to help conserve biodiversity by increasing the amount of deadwood in managed forests by up to 20-30 cubic metres – about 1 truckload – per hectare by 2030. Things are moving but a lot more needs to be done to meet this target.

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news in brief

Elephant removals: Forest clearing in central Riau, Indonesia is leading to increased conflicts between elephants and local communities. In March, six elephants were found dead on an oil palm plantation, apparently poisoned after raiding crops. Some weeks later, another ten elephants were found chained to trees after being captured by local authorities wishing to relocate their herd. In mid-May, seven weeks after they were found, the surviving eight elephants were successfully released into Tesso Nilo National Park. WWF and other groups had expressed concerns that the park was too small to provide habitat for more animals. At end May, following a visit to the area, the Indonesian Minister of Forestry and Governor of Riau Province publicly committed to expand Tesso Nilo from 38,000 to 100,000 hectares and to establish Riau as a centre for Sumatran elephant conservation.
Source: www.panda.org, March 6, 13, 23, June 2 2006

Angolan antelope award: In May an Angolan conservationist, Pedro Vaz Pinto, received an award from the prestigious Whitley Fund for Nature for his efforts to protect the Giant Sable – an antelope unique to Angola. The antelope was feared extinct and Vaz Pinto had been searching for it since 2003. He employed local people around Cangandala National Park to maintain infra-red camera traps and keep out poachers, and in April last year one of the camera traps produced the first photos of the animal in more than two decades. The antelope is a national icon, featured on the country's bank notes and the logo of the national airline and football team. According to Vaz Pinto, this is what saved it. "The giant sable is a revered animal. Most locals really worship it because of its mystical aura and there are many local legends surrounding it", he said. "The animal wouldn't have survived if that wasn't the case. People really protect it. It's sacred."
Source: www.planetark.com, May 8, 2006

Research murders: Two guards at a forest research station in French Guiana were murdered by illegal gold miners in May, according to a report in *Nature*. The killings in the Nouragues nature reserve led to the temporary closure of the research station and evacuation of staff and equipment. The guards were shot dead as researchers prepared to launch a project that uses a large helium balloon and basket to give researchers full access to the canopy. The station director, Pierre-Charles Dominique, suspects that the murders were intended to scare away the scientists and staff from the site.
Source: www.scidev.net, June 2, 2006

Plant a tree – or else: In an effort to combat desertification, the Ugandan government is preparing a White Paper for legislation that will make tree planting a legal obligation. Speaking about the proposed law, the Minister of Water and Environment, Ms Maria Mutagamba, also called on local governments to pass their own by-laws on environmental issues.
Source: www.monitor.co.ug, June 15, 2006

Liberia's forests – from funding conflict to fostering conservation

Stephen Kelleher of IUCN reports on efforts to reform and rebuild Liberia's forest sector.

Local communities are contributing to the forestry reform process

Over the last few months, the eyes of the world have been on the arrest of Liberia's ex-President Charles Taylor and the war crimes charges he faces. Illicit trade by Taylor and other now-indicted criminals in Liberia's forests and other natural resources fuelled and prolonged the country's civil war. Proceeds in illegal 'blood timber' funded the arms trade during the war and led to chaos in Liberia and the destabilization of neighbouring countries. Forest activities during the Taylor regime were marked by illegal and unsustainable logging practices and human rights abuses by some of the forest concession holders or proxy militias. As a result of these abuses, the UN Security Council imposed sanctions on Liberia's timber exports in order to stem the flow of illegal conflict timber.

The departure of Taylor to exile in 2003, the end of civil conflict and the establishment of a transitional government provided an opportunity to get Liberia back on its feet. The democratic election of President Ellen Johnson-Sirleaf in December laid a historic and hopeful capstone for the transitional period. The UN Security Council, recognizing the advances made in forest sector reform under President Johnson-Sirleaf, including a moratorium on timber exports and logging concessions pending passage of forest reform legislation, recently decided not to renew the timber sanctions on Liberia. The Council did note however that the decision hinged on the passage of the forest reform legislation and would be reviewed in 90 days with reinstatement a possibility if progress on adopting legislative reforms is not achieved. To facilitate review of progress, the Council renewed the mandate of the Panel of Experts for another 6 months and requested a report of the Panel's observations and recommendations by mid-December 2006.

The reconstruction of Liberia's forest sector, not to mention its entire economy and social fabric, is a daunting task. The Liberian Forestry Initiative (LFI) was established to help the country's government comply with the UN requirements, but also to go beyond this and establish lasting, equitable and sustainable systems for the management of Liberia's forests. IUCN is a member of the LFI, which is a cross-cutting approach to forest sector reform intended to build transparency, sustainability and good governance in the management of Liberia's forest sector in support of the country's '3Cs' approach to forest management: community, conservation and commercial. Other members of the LFI include the US, the World Bank, the EC, FAO, CIFOR, Conservation International, Fauna and Flora International, the Environmental Law Institute and representatives from Liberian government agencies including the Forest Development Authority (FDA) and civil society organizations.


Stephen Kelleher

IUCN's role in the LFI has focused on increasing the awareness of local communities, which play host to timber companies, about the ongoing forest sector reforms and directly soliciting community input into the reform process. This outreach effort has been undertaken locally by civil society organizations including the Sustainable Development Institute and Talking Drum Studios. Information from the communities about concession holders' behaviour during the war years, including human rights and labour abuses, contributed to the deliberations of a concession review process that eventually led to President Johnson-Sirleaf annulling all past forest concessions. This has provided a unique opportunity to start forest management with a clean slate. The concrete ideas and information provided by communities about sustainable forest management and community engagement in the forest sector are being integrated into ongoing reforms.

While much work needs to be done over time to right the wrongs of past forest mismanagement in Liberia, the country's leaders and FDA authorities, along with LFI members and Liberian civil society are working hard so that the country's forests can reach their full potential to contribute to sustainable Community, Conservation and Commercial forest use.

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Can protected areas meet conservation and human needs?

Always? Sometimes? Never?

Peter Shadie of IUCN looks at this question.

Maasai herding cattle near Amboseli National Park, Kenya

In late 2005 a vigorous debate emerged on the fate of Amboseli National Park in Kenya. At issue was a controversial political decision to change the management arrangements for the park which would, among other things, devolve management to the local Maasai Council and change the rules on local community use of the park and its resources. Conservationists and social advocates from around the world reached for their emails to express diverse views on this issue which really struck at the heart of the question: can protected areas meet both conservation and human needs?

This question is a real issue for developing countries, since some of the world's poorest countries have significant percentages of their territory under protection (Tanzania 39.8%; DR Congo 8.3%; Zambia 41.5%). Countries with some of the highest levels of global biodiversity such as Brazil, Belize and Costa Rica have been star performers in moving to set aside large areas as PAs. However, is it really practical or ethical to expect the world's least developed countries to forgoe the opportunity costs of setting these large areas aside? Why should they do this without compensation or at least recognition that they are shouldering a disproportionate share of the burden of conserving global biodiversity? We must ensure that the international community improves its support to countries making these commitments to conserve nature. Similarly we must find and share those successful examples where conservation and human livelihood outcomes intersect. It's not all good news but fortunately a growing body of evidence suggests many success stories.

The Lupande Game Management Area in Zambia supports a population of 50,000. Recent policy changes have seen the US$230,000 generated each year by hunting concessions redirected to local villagers, thereby supporting community projects such as schools and clinics. In Malaysia, the Sarawak government is seeking to balance the livelihoods of rural communities with their target of creating strictly protected areas across 10% of their territory. New laws recognize the rights of people to access resources within the forests coupled with co-management governance arrangements which make the community responsible for enforcing a sustainable hunting regime.

Several recent publications address these issues and offer constructive guidance and case studies on how to balance conservation and human needs. For example Lea M. Scherl et al. (2004) *Can Protected Areas Contribute to Poverty Alleviation? Opportunities and Limitations*. IUCN; and Emerton, L., Bishop, J. and Thomas, L. (2006) *Sustainable Financing of Protected Areas: A global review of challenges and options*. IUCN elaborate on this question. Both are available at www.iucn.org/bookstore.

All of us interested in conservation and social outcomes should recognize that solutions are highly contextual. There is no 'one-size-fits-all' approach. Case by case we should advocate combining the ingredients of successful conservation: political will and a big picture vision; participatory processes which arrive at a shared vision and responsibility for setting the rules of the game; incentives which respect rights and empower local people to benefit from conservation; and an over-aching programme of education and awareness.

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protected areas news in brief

Mexico's butterflies in a flap: A leading expert on Monarch butterflies has warned that illegal logging in Mexico's national parks is threatening their survival. 'If the illegal logging doesn't stop, I give the Monarchs less than 20 years' says US professor Lincoln Brower. A 17-member team of park rangers with assault rifles has been set up to counter the armed gangs of illegal loggers in the Monarch Butterfly Biosphere Reserve. Despite this, the illegal logging continues and, according to Brower, has actually accelerated in the last 4 to 5 years.
Source: www.news.bbc.co.uk, March 6, 2006

Canada protects Great Bear: The provincial government of British Columbia announced in March an agreement to protect the Great Bear Rainforest, sometimes dubbed the 'Amazon of the North', which runs along Canada's Pacific coastline. The agreement protects over 2 million hectares of the forest from logging and requires sustainable logging practices for another 4 million hectares. The agreement also gives First Nations groups more control over forest management on their territories.
Source: www.environmenttimes.co.uk, March 7, 2006

Recovery in Virunga: Conservationists have rediscovered the okapi in Virunga National Park in the Democratic Republic of Congo, despite fears that the animal had been driven to extinction by violent conflicts in the area. A survey in June by WWF and the Institut Congolais pour la Conservation de la Nature found 17 okapi tracks and other evidence of its presence in the park. The okapi, found only in the forests of eastern Congo, had not been seen in Virunga since 1959. The populations of other animals in the park also seem to be recovering, thanks to anti-poaching efforts. In the last three years, elephant numbers have risen from 265 to 340 and buffalos from 2,300 to 3,800. But these recoveries have come at a high price for the park guards, over 100 of whom have been killed in the last ten years.
Source: www.panda.org June 9, www.planetark.com, June 26, 2006

The Convention on Biological Diversity a COP-out in Brazil?



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Leonardo Lacerda of WWF-International looks back at what was achieved at the 8th meeting of the Conference of the Parties to the Convention on Biological Diversity, held in Curitiba, Brazil, in March.

Not so fast. Progress on most biodiversity issues was painfully slow

Uppermost on everyone's mind at the CBD COP8 was the question of meaningful progress towards the 2010 target to substantially reduce biodiversity loss. However, a lack of political will and divisions between industrialized and developing countries over future funding resources hampered this. Doubts over the future of the Global Environment Facility (GEF), the Convention's main funding source, also cast a cloud over negotiations. As a result, delegates lost some of their motivation.

Potential alternative sources of funding such as redirecting perverse subsidies – especially agriculture and fishing subsidies – in industrialized countries to support implementation of the Convention in developing countries were dashed by both the donor and recipient communities. The North did not want to agree to reductions and the South feared that any savings made would simply be diverted into other subsidies such as for traditional farming practices in European countries.

The imbalance between the conservation and development agendas created another source of tension. While the Convention's work on protected areas has advanced quickly, only very modest progress was made on the issue of benefit-sharing – a mechanism which should deliver financial benefits to developing countries from the use of natural and genetic resources.

Despite these setbacks, there were several positive results to hold out hope that the CBD will indeed contribute to reducing biodiversity loss. These included the adoption of the Convention's programme of work regarding island biodiversity, and the attention given to the links between poverty and biodiversity. The Convention also agreed to a de facto continuation of a ban on introducing GM trees outside experimental conditions, and the meeting of the Parties to the Cartagena Protocol on Biosafety extended its restrictions on all uses of terminator technology, the so-called 'suicide seeds'.

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New ITTA wrapped-up

Carole Saint-Laurent, IUCN's Senior Forest Policy Advisor, reports on how the new ITTA turned out.

The fourth and final round of negotiations for the Successor Agreement to the International Tropical Timber Agreement 1994 (ITTA) was held in Geneva on 16-27 January 2006.

It is significant that sustainable forest management was accepted as one of the two overarching objectives of the agreement, along with promotion of the expansion and diversification of international trade in tropical timber from sustainably managed and legally harvested forests. The overarching objectives are supported by what could be called strategic objectives, notably including: contributing to poverty alleviation, maintaining ecological balance while aiming for sustainable utilization and conservation of timber-producing forests, strengthening the capacity of members to improve forest law enforcement and governance, and promoting better understanding of the contribution of non-timber forest products and environmental services to the sustainable management of tropical forests.

The new ITTA does not suggest thematic areas of work to the extent that the list of objectives in the previous agreement did. Rather the identification of thematic programmes and priorities is to take place through the biannual planning process, which will also guide policy activities. This should allow implementation of the agreement to be more responsive to new and emerging issues. This should also provide greater scope for stakeholder engagement, including through the Civil Society and Trade Advisory Groups.

An important financial issue on which progress was made was the need to achieve predictable and secure sources of funding. The new ITTA responds to the desire of many to ensure and earmark funding for pre-projects, projects and other activities. The integration of policy work and project activities is also assured.

The ITTA continues to be a commodities agreement and there was little support for turning it into something else, such as a development assistance or an environmental agreement. Reasons for this ranged from trade being the predominant interest of some member countries to wanting to avoid the necessity of long and possibly unsuccessful ratification procedures (e.g. in the US, commodities agreements do not need to be approved by Congress). The result is a trade agreement that breaks new ground in mainstreaming environmental and social concerns.

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The Sumatran tiger – at risk from palm oil expansion

Transforming palm oil production to conserve biodiversity

Palm oil plantations are on the rise. So how can they be made less damaging to biodiversity? Kathrin Dellantonio and Bella Roscher of WWF's Forest Conversion Initiative report on recent work with the palm oil industry.

Palm oil is used in a huge variety of everyday products from soaps and plastics to chocolate and ice cream. It is also being increasingly promoted as a biofuel. Demand for palm oil has skyrocketed over the past 25 years and palm oil plantations now cover an area of 11 million hectares worldwide. Global production of palm oil is expected to nearly double by 2020. While palm oil production is a major source of income for Malaysia and Indonesia, the two main producer countries, poor practices in parts of the industry have brought high ecological and social costs. Industry growth is fuelling the rapid clearing of some of the most biodiverse tropical forests resulting in habitat loss for key species such as the orangutan, the tiger, and the Asian elephant. Furthermore, forest fires to clear land for plantations are a regular source of haze in Southeast Asia and pose serious health problems.

WWF is working with actors throughout the palm oil supply chain to improve practices and maintain or enhance areas of High Conservation Value. The Roundtable on Sustainable Palm Oil (RSPO), an independent non-profit association established in 2004 by a group of interested stakeholders including WWF, currently has 103 members, encompassing roughly one-third of global palm oil production and including some of the major palm oil processors and consumer goods manufacturers. At the third multi-stakeholder Roundtable conference in Singapore in November 2005, RSPO members adopted a global set of principles and criteria (P&C) that provides companies with guidance on how to produce palm oil in an environmentally-friendly and socially-responsible way. WWF is now calling on producers to implement the P&C as soon as possible and asks stakeholders in the supply chain to clear their chain of custody within the next two years to ensure the conservation of tropical forests. Some 15 companies have agreed to field test the P&C within this two-year trial period.

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Research in brief

Spider monkeys washed out: Researchers in Costa Rica's Corcovado National Park were puzzled in November last year when they found numerous carcasses of spider monkeys and other animals. First fearing an epidemic, they later concluded that the animals had starved to death when unusually heavy rains had left them stuck in the trees, unable to search for food or water. The rains had also led to a shortage of fruit, the diet of spider monkeys, as many trees had not fruited during the heavy rains. The research team fear that if climate change brings more extreme weather events such as this, some animal populations may not be able to recover. The Corcovado spider monkeys are most vulnerable, they say, as their genetic diversity is already very low. The Wildlife Conservation Society and Conservation International provided money for research into the animal deaths and are paying for follow-up visits to the park every other month to monitor the monkey troupes and fruit production.
Source: The New York Times, March 7, 2006

Allanblackia oil: supporting local livelihoods and conservation in Ghana

Samuel Kofi Nyame of the IUCN Ghana office reports on an initiative to help rural communities in Ghana sustainably harvest and sell an alternative to palm oil.

The Allanblackia tree is found in parts of West, Central and East Africa. It grows primarily in tropical rainforests, but can also be found on cultivated farmland areas. The oil obtained from the seeds has already been used by local communities but, until now, the extracted seed-oil has never been used on a commercial scale.



A farmer drying Allanblackia seeds on the steps of his house

Several years ago, Unilever became interested in using Allanblackia as a substitute for palm oil to produce commercial products such as margarine and soaps, as its physical and nutritional properties offer great potential for many products. Thus began in 2002 a partnership that brought together Unilever, IUCN, ICRAF, UNDP, SNV (the Netherlands Development Organisation), SECO (the Swiss State Secretariat for Economic Affairs) and a number of governmental agencies and civil society organizations in Africa. The partnership set up the 'Novella Africa' project for the sustainable harvesting, processing and sale of Allanblackia seed-oil by local communities, initially in Ghana, and later in Cameroon, Nigeria and Tanzania. In addition to securing a sustainable supply of Allanblackia oil, the project aims to help improve the welfare and livelihoods of rural poor communities and foster biodiversity conservation and management.

As part of this project, IUCN is implementing, through several of its members and partners, an initiative in Ghana to investigate the socio-economic, species and botanical impacts of Allanblackia commercialization, to provide tools that will ensure sustainable harvesting and equitable sharing of benefits among the stakeholders. The results of the project will feed into best-practice guidelines for the wild picking of Allanblackia. A draft version of the guidelines was developed by an interdisciplinary team in 2003 and this is currently being tested in the field to ensure their usefulness for all the stakeholders involved.

So far, the Novella Africa project has generated a total income of US$85,000 for the 3,000 farmers participating and by 2011 it is hoped to involve 30,000 farmers with a total income of US$2,000,000.

The project will also contribute to biodiversity conservation through the use of Allanblackia in forest landscape restoration programmes and agroforestry systems. Although the tree has frequently been used as a shade tree in cocoa farms, the increasing use of shade-tolerant hybrid cocoa is leading to the disappearance of these shade trees from farms. Now, this project will help provide cocoa farmers with an economic incentive to maintain these trees and inter-plant Allanblackia seedlings between their cocoa trees. The project will also help restore degraded forest lands in Ghana using the native Allanblackia as an alternative to the exotic species plantations that have had negative impacts on local biodiversity and livelihoods.

Using Allanblackia in forest landscape restoration also entails some risks to biodiversity. These include the possibility of over-harvesting the seed sources, the impact it may have on the regeneration of the tree species, the evolution of Allanblackia into a plantation tree (which would be contrary to the project objective) and habitat disturbance by seed collectors. These risks can be reduced through careful management and by promoting legislation that favours the sustainable use of Allanblackia, and enhances livelihood security and forest governance.

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Research in brief

Birdsong breaking up: Forest fragmentation in Spain and Morocco is making it difficult for birds to hear and copy each other's songs, according to a study published in the Journal of Applied Ecology. The study by two Spanish biologists found that birds are living in more isolated groups and learning songs only from their closest neighbours. The researchers believe that these changes in song patterns are an early warning of habitat fragmentation which could eventually erode the genetic diversity of less mobile animals such as insects and small mammals.

Source: www.guardian.co.uk, November 30, 2005



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The role of forests in biodiversity conservation: challenges for the 21st century

Jeffrey McNeely, IUCN's Chief Scientist, looks at the emerging trends and challenges in forest management for biodiversity conservation.

Rainforest in the Solomon Islands

Although scientists only started using the word 'biodiversity' in the mid-1980s, the term started flowing into the mainstream when the Convention on Biological Diversity entered into force in 1993. While the CBD has fallen short of its potential, being hammered on the treacherous shoals of competing national interests, considerable progress is nonetheless being made to achieve its objectives in many parts of the world.

That said, forests – the richest terrestrial habitats for biodiversity – are under greater pressure than ever before, even though forest cover is expanding in several countries (primarily in temperate regions). The CBD adopted a programme of work on forests at its Conference of Parties in The Hague in 2002, but this has not had the hoped-for effect: human impacts are growing in even the well-forested regions and the recent spread of forest fires in the Russian boreal forests is just the latest illustration of the problem. So what can be done to conserve forest biodiversity as demand for forest goods and services expand in the 21st century? Let's run through a few of the critical issues.

Forest ecosystem services: Forests are still valued particularly for the timber and fuelwood they provide, but are also increasingly valued for their role in watershed protection, soil formation, and cultural services such as the pleasure people receive from visiting a forest. The Millennium Ecosystem Assessment, released in 2005, well described these multiple values. The challenge in the coming decades is going to be putting the metaphor of ecosystem services into practice.

People who live in forests know better than anyone that a healthy, resilient ecosystem is essential for a productive and profitable forest. Using economic incentives to conserve ecosystem services recognizes the capacity of managers to care for the land, and supports a long-term view in management practices. With appropriate incentives, forest dwellers can become land managers as well as commodity producers, while forest managers can ensure that areas under their control are sustainably managed to provide multiple ecosystem benefits.

Recent human disasters caused by extreme natural events, including the 2004 Indian Ocean tsunami, the numerous tropical storms in the Caribbean in 2005, and the 2005 Kashmir earthquake, have demonstrated the value of intact ecosystems in reducing the impact of such events on human wellbeing. In the case of the tsunami, healthy coral reefs and mangroves greatly reduced the negative impacts of the tsunami; in the Caribbean, areas where forests had been well managed and coastal wetlands had been conserved fared better than areas where these ecosystems had been converted to other uses; and in Kashmir, slopes that remained forest-covered suffered far less landslide damage than those where forests had been over-exploited.

Climate change: Climate change offers both a challenge and an opportunity for forest biodiversity. Changes in weather patterns will inevitably affect forests (for example, making them more flammable and changing the distribution of species) and forests will be called upon to help sequester carbon. The carbon sequestration benefit of forests is likely to be a mixed blessing as some policy-makers will seek to develop fast-growing species, perhaps genetically modified, to sequester as much carbon as quickly as possible. Others will be using those same forests to produce biomass that is expected to increasingly replace petroleum as the source of energy for driving modern society. Already, Sweden is working toward a petroleum-free economy by developing numerous local biomass-fired power plants, often drawing on trees such as willows as the main source of energy. But biomass is not the same as biodiversity and new approaches will be needed to ensure that the rich biodiversity of forests is not depleted in the rush to sequester carbon or feed biomass power plants. One critically important policy measure that could be implemented is recognizing, and paying for, the carbon sequestration value of conserving old-growth forest – widely considered the most effective of the forest-based means of storing carbon (see www.rainforestcoalition.org).

Fragmentation: While deforestation is recognized as a major conservation issue, the related issue of habitat fragmentation receives insufficient attention. Human impacts will continue to expand in both temperate and tropical forests as the 21st century proceeds, so areas that were once continuously forested will become increasingly fragmented. In the Brazilian Amazon alone, the area of forest that is fragmented (with forests less than 10,000 ha in area) or prone to edge effects (less than one kilometre from clearings) is already over 150 percent greater than the area that is actually deforested. Recent research has indicated that small fragments contain more light-loving species, more trees with wind – or water-dispersed seeds or fruits, relatively fewer under-storey species, a greater density of tree falls, more weedy species, and unusually abundant vines, lianas, and bamboos; thus they preserve only a highly-biased subset of the original flora and fauna that is adapted to these conditions.

Invasive alien species: As the global movement of people and products has expanded, so too has the movement of plant and animal species from one part of the world to another. When a species is introduced into a new habitat, such as the introduction of oil palm from Africa to Indonesia, eucalyptus from Australia to California, or rubber from Brazil to Malaysia, the alien species typically requires human intervention to be able to survive and reproduce. Indeed, many of the most popular agroforestry trees are non-native species that prosper in their new environments, at least partly because they no longer face the same competitors, predators and pests that they did at home. Such alien species have been very important economically and have enhanced the production of various forest commodities in many parts of the world.

In some cases, however, introduced species have become a significant problem by becoming established in the wild and spreading at the expense of native species and entire ecosystems. Notorious examples of this 'invasive alien species' problem include the ecological take-over of the Polynesian island of Tahiti by *Miconia calvescens*; the spread of various species of Northern Hemisphere pines and Australian acacias in southern Africa; the invasion of Florida's Everglades National Park by *Melaleuca* from South America; and the introduction of Kudzu (*Pueraria lobata*) from Japan and China into the US where it now infests over two million ha. Of the 2000 or so species used in agroforestry, perhaps as many as 200 are invasive, but only about 20 are highly so, including some very popular species such as *Casuarina glauca, Leucaena leucocephala*, and *Pinus radiata*. Great care is required to ensure that such species serve the economic purposes for which they were introduced, and do not escape to cause unanticipated negative impacts on native ecosystems.

The invasive *Miconia calvescens* has replaced over 70% of Tahiti's native forest





Forest dwellers, Indonesia

Some promising directions

While timber production often dominated forest management objectives in the 20th Century, new pressures for the delivery of multiple goods and services now demand a more nuanced approach to management. The public will expect forestry plans to adequately provide for the protection of watersheds, the rights of indigenous peoples to occupy their traditional homelands even if they are in economically valuable forests, a system of protected areas that covers all major ecosystem types in the country, and the adoption of sustainable methods for any exploitation of timber and other forest products. Sustainable forest management based on ecosystem principles (such as maintaining healthy breeding populations, conserving soils, avoiding erosion, allowing natural fire regimes, and carefully planning roads to minimize impacts) is entirely consistent with the needs of biodiversity conservation.

Intensifying the management of natural forests and plantations has often involved eliminating competing species, draining wetlands, suppressing natural fires, and greatly accelerating rotation cycles. All of these have led to an overall increase in productivity, at least in the short run, but often at the cost of a decline of forest quality, including threats to forest-dwelling fauna and increasing vulnerability to pests. 'Sustained yield forestry' designed to provide a steady stream of timber is not synonymous with 'sustainable forest management' required for the 21st century, as the latter gives greater attention to sustaining various ecological processes, producing a range of other goods and services, and conserving forest biodiversity.

Converting the potential benefits of forest biodiversity conservation into real and perceived goods and services for society at large (and especially for local people) requires a systems approach that will include:

- At the national level, an integrated set of protected areas encompassing various levels of management and administration, including the national, provincial, and local governments, non-governmental organizations, local communities and indigenous peoples, the private sector, and other stakeholders.

- Within the framework of the market-based economic systems that are becoming increasingly widespread, greater participation by civil society in economic development that extends to the management of production forests, plantations, and protected areas, especially for tourism and the sustainable use of certain natural resources.

- A fairly large geographical scale (sometimes called a 'bioregion' or a 'landscape') for resource management programmes, within which protected areas are considered as components in a diverse landscape, including farms, harvested forests, fishing grounds, human settlements, and infrastructure.

- Cooperation between private landowners, indigenous peoples, other local communities, industry and resource users; the use of economic incentives, tax arrangements, land exchanges and other mechanisms to promote biodiversity conservation; and the development of administrative and technical capacities which encourage local stakeholders, universities, research institutions, and public agencies to harmonize their efforts.

The values which different sectors of society attach to the different goods and services provided by forests may change more rapidly and profoundly in the coming decades than ever before. The impacts of climate change, forest fragmentation, and invasive alien species have already increased remarkably. We cannot reasonably expect these changes to slow down, and many experts expect them to continue accelerating. Therefore, the challenges facing local communities, scientists, conservationists, and foresters are likely to be very different in the future. Society needs a diversity of approaches to forest management, in order to provide multiple benefits to a wide variety of interest groups – all with a legitimate interest in conserving forest biodiversity and using forests sustainably.

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Forest concessions and conservation in the Congo Basin

How effectively are forest concessions contributing to biodiversity conservation? Cleto Ndikumagenge, of the IUCN office for Central Africa, looks at the current state-of-play in the Congo Basin.

Large mammals are hardest hit by hunting in forest concessions

The forests of the Congo Basin are incredibly rich in biodiversity. They are home to 84 percent of Africa's primate species and more than 8,000 known plant species of which the vast majority are endemic to the region. The forests are also of great economic importance and private logging concessions now cover between 50 and 80 percent of the forest area. This dwarfs the ten percent covered by protected areas and gives concession managers a serious responsibility for the conservation of the region's biodiversity, as more than 80 percent of the wild fauna is found in the forest concessions.

Although the rate of deforestation of the Congo Basin forests is just 0.6 percent, relatively low compared to other regions of the world, the forest landscape is undergoing drastic changes, primarily as a result of clearance for farming and the indirect effects of logging. The forest biodiversity is under serious threat from multiple causes, many of which are beyond the control of the concessions. In Cameroon, for example, these causal factors include

- the economic crisis that has led to massive job losses in the public and private sectors and the return of jobless city dwellers to rural areas;
- the emergence of a lucrative market for bush meat in urban centres;
- the proliferation of increasingly sophisticated hunting weapons, exacerbated by armed conflicts in the sub-region;
- the opening up of new road networks by logging companies and miners, facilitating hunters' access to previously impenetrable forests; and
- serious inadequacies in law enforcement.

A recent study carried out in a forest concession in southern Cameroon showed that it is the larger mammals (elephants, gorillas and chimpanzees) that are under most pressure from hunting and represent indicators for the general integrity and conservation status of an area.

Tackling these threats is an enormous challenge. Despite the existence of several national and regional laws and strategies for the conservation and sustainable use of biological resources, biodiversity loss continues apace. The provision of tools – such as the ITTO/IUCN Guidelines for the Conservation and Sustainable Use of Biodiversity in Tropical Timber Production Forests (see page 14) – is useful but their practical application faces many challenges.

In the meantime, several concessionaires are showing real commitment to biodiversity conservation. Some concessions, such as WIJMA in Cameroon and CIB in Congo, are involved in innovative partnerships with local communities and administration officers to promote the sustainable use of the natural resources in their concessions, and have already obtained FSC certification. Their commitment to conserving biodiversity will help encourage other concessionaires to improve their practices. The specific activities undertaken by these frontrunners include inventories of fauna in the concessions, sensitization campaigns and training courses for local communities, and community participation in dialogues on biodiversity conservation in the concessions.

Some of the concessionaires have also, in close collaboration with conservation partners, laid down a set of minimum rules ('the ten commandments') to reduce biodiversity loss and wildlife loss in particular. These rules include, for example, the incorporation of wildlife management issues into forest management plans, the banning of commercial hunting or hunting using non-selective techniques within the forest concession and the promotion of alternative sources of protein for people's needs. The tenth rule is simply "Never give up!" and this is perhaps the most important. In the face of huge obstacles and challenges, stakeholders will need to continue to work in a coordinated manner to help slow down biodiversity loss in forest concessions. The participation of local people in this task will be crucial, to ensure that their rights are protected and their livelihood needs are taken into account.

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Local perspectives on forest conservation



Douglas Sheil

Villagers: villains or allies in forest biodiversity conservation?

Do local people help or hinder conservation? Douglas Sheil of CIFOR looks at how reality fits with the stereotypes.

Local people in West Papua ranking landscapes in order of importance

Local people often get a bad press in conservation stories. The intensive media interest surrounding recent discoveries in West Papua's Foja Mountains (Indonesia) is a case in point. Talk of birds of paradise and palms readily turned to the need for protection lest the local people pillage the treasure to sell to illegal collectors.

However, this stereotype of local people as likely villains belies the facts. Local people actually protect the Foja, driving away outsiders seeking minerals and other resources. No one enters without permission. I was with the conservation team that recently worked in the Mamberamo Foja region. To the villagers, outsiders like us come with a reputation for exploitation and deception. We are the potential villains. Fortunately, once we gained their trust, the local people enthusiastically helped with our conservation surveys in the lowlands, even drawing maps of special sites and resources. They are concerned about threats and keen to help us – these local communities are conservation's good guys.

Recognizing local views

Our surveys show that people in other forest regions of Indonesia are also worried about their environment. Recently we interviewed people in Malinau, in East Kalimantan and all respondents – remote villagers, townspeople and civil servants – agreed that local forests need protection. Opinions differed on what should be protected, how and where, but everyone supported land-use planning that provided for the needs of local people, kept the water clean and conserved flora and fauna. Such local commitment is a promising basis for action.

Local conservation priorities reflect local needs and interests. People often require access to wild resources and services on a regular basis or in times of hardship. Growing populations, changing technologies and expanding markets do pose challenges – but controls are more likely to work if local people have a say in devising them. Such collaboration is essential in any attempt to safeguard valuable biodiversity outside strictly protected areas.

Local interests are not merely utilitarian. Almost everyone appreciates or reveres nature to some degree, regardless of the tangible goods and services they might receive. While local and external interests differ in detail and motives, they almost always overlap substantially in aspiration. Opportunities for cooperative conservation are promising in places like West Papua and Malinau, where external forces threaten forests and their human inhabitants alike. By the same token, conservation will be more complex where people with limited livelihood options pose the greatest threat to their environment.

The need for democratic conservation

Conservation requires grassroots support. Interventions by outsiders are often regarded locally as just another attempt to gain control over land and natural resources. A democratic approach that responds to local needs and preferences is more legitimate. This approach is not about seeking support for pre-determined project goals, but rather determining those goals according to local choices and preferences.

Working with the locals will not solve every conflict. After all, who wants tigers in their back garden? However, a willingness to listen, understand and adapt provides a better basis for addressing problems than an attitude of discord and mistrust. Collaboration is more likely to help clarify problems than to create them.

Even when local people have earned a reputation for destructive behaviour they can be won over. Often excessive exploitation results from a 'free for all' or a 'tragedy of the commons'. Restraint is acceptable when the rules are seen to be fair and realistic. Local crocodile hunters in Papua are a good example: they have accepted size-based rules on trading in skins and condemn those who breach these rules. Local people can be effective guardians as poachers-turned-gamekeepers.

The potential benefits of working with local people are widely neglected particularly by centralized decision-makers who often prefer simple, uniform solutions. But it is also clear that we need to overcome stereotypical attitudes towards local people. Until we do, conservation is the loser.

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Agriculture:
a threat or promise for biodiversity conservation?

Sara J. Scherr and Seth Shames, of Ecoagriculture Partners, re-examine the role of agriculture in biodiversity conservation.



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Intensive tomato cultivation in a national park complex, Algeria

Since the alarms of the biodiversity crisis sounded in the 1970s, most conservationists have focused their efforts on establishing protected areas to conserve endangered habitats and species. Agricultural production areas have been seen as useless for conservation purposes and their expansion viewed as a threat. Indeed, land conversion to agriculture is the most important driver of habitat loss in the world. However, the notion that agriculture and biodiversity cannot coexist is wrong and the fact that half of the world's protected areas are working landscapes, providing food and materials for the people who live within their borders, means that agriculture and biodiversity can and must support each other.

The emerging concept of ecoagriculture seeks to support agricultural development and biodiversity conservation by enhancing rural livelihoods through more productive and profitable farming and forest systems. Ecoagriculture management has demonstrated considerable potential for biodiversity conservation in areas where forest and agriculture must coexist in a single landscape. The following strategies have proven valuable:

Creating wildlife corridors: Non-farmed portions of predominantly agricultural landscapes can provide patches of habitat for forest wildlife and form corridors that link protected areas and enable species to maintain genetic contact with populations that would otherwise be isolated. These networks of protected areas are particularly useful for migratory species. Compatible agricultural land-uses and practices enhance the effectiveness of such corridors. In one Costa Rican case, farmers and conservationists have worked together to plant windbreaks which protect coffee trees and dairy cows from strong winds while connecting forest patches in the Monteverde area.

Mimicking natural systems: Wild biodiversity can also thrive on agricultural lands when farmers design systems that mimic wild habitats, particularly by using perennial species. Although the science of designing agricultural systems to replicate natural ones is somewhat new, their benefits are well documented. For example, millions of hectares of multi-strata 'agroforests' in Indonesia produce commercial rubber, fruits, spices and timber, often in a mosaic with rice fields and rice fallows. The number of wild plant and animal species in these agroforests is often nearly as high as in natural forests.

Targeted agricultural intensification: Intensifying production in a properly selected agricultural area can reduce pressure on nearby forested lands. This approach gives degraded land an opportunity to regenerate and allows land at risk for future development to be left alone entirely. It is important to note, however, that this relationship is reliable only when the tradeoffs are considered within the landscape and conservation outcomes are explicitly pursued. The deal which the Brazilian NGO Pro-Natura set up with dairy farmers around one of the country's largest remnants of Atlantic Forest demonstrates the potential of this approach. In exchange for technical assistance that increased milk production, the farmers committed to reforest parts of their land and maintain them as conservation easements.

Farmers are often the primary stewards of forest landscapes. They can affect species composition, water flows and even fire regimes. They need little incentive to conserve off-farm wild biodiversity (such as medicinal plants and pollinators) that is crucial for their livelihoods. However, for farmers' conservation efforts to move beyond protecting those ecosystems and species that benefit them directly, they need to be engaged and rewarded for their role. Incentives to promote ecoagriculture systems can come in the form of direct payments from governments or conservation organisations for the ecosystems services provided by farmers or through markets that value food and fibre produced in biodiversity-friendly ways.

Substantial challenges still limit efforts to link forests, agriculture, and biodiversity. More work needs to be done to develop markets and policies that support integrated ecoagriculture landscapes and to ensure that forest management efforts recognise the critical role played by agricultural areas in biodiversity conservation and the maintenance of ecosystem services.

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Can logging save biodiversity?

Can logging really be better for forest biodiversity than strict protection? Jeff Sayer of WWF International and Sandeep Sengupta of IUCN look at the issues.

Timber at a sawmill in Cameroon, to be sawn for export

Only a tiny fraction of tropical forests – less than 10 percent – is included in strictly protected areas. Probably more than two-thirds of the remaining tropical forests are either already subject to logging or are likely to be in the future. Non-protected forests are home to much of the world's forest biodiversity; indeed, the fate of many rainforest species will be determined by what happens to these forests. The main threat to this rich resource of biodiversity is not logging; numerous studies have shown that most plant and animal species survive the highly selective logging practiced in the tropics. Rather, this biodiversity is threatened by the insatiable hunger for land needed to meet the world's expanding demand for palm oil, soybeans, rubber and other tropical crops, or at times by large-scale infrastructure development such as road-building and mining.

For most poor people in developing countries, forest conversion, primarily to agriculture, provides the quickest route out of poverty. It is unlikely that non-protected forests will be retained if they do not yield a flow of benefits to the people on whose land they exist. Logging can provide local employment, revenue flows and raw materials for processing industries. In the remote forested areas of the Amazon and Congo Basins and in Borneo, forest industries are amongst the main drivers of the economy. Sustainable logging may be the best strategy for building popular support for retaining the forests. It is therefore ironic that many conservationists still see logging as a major threat to natural forest values when it could be argued that it may provide the only justification for the retention of much of this forest.

Research by the Wildlife Conservation Society, WWF and IUCN has shown that well-managed forests in Africa and SE Asia are often both rich in wildlife and important contributors to local economies. In some parts of Africa, well-managed production forests are better protected than many national parks and strict nature reserves – an additional problem is that few visitors ever go to the strictly protected areas and most governments do not have the resources to manage them. Loggers have an economic stake in protecting their forests. This leads to the counter-intuitive situation where 'paper parks' may offer less security to biodiversity than logging concessions.

Logging has got a bad image, and rightly so. Opportunistic logging at the forest frontier – in areas newly opened up by roads but where governance structures are weak and corruption is rampant – can have disastrous environmental and social impacts. But recent progress in improving forest governance and sustainable management suggests that with limited funds available for conservation there may be many situations where investing in sustainable forestry may be a better option than further extending strict protection. Combining the forces for sustainable forestry with those for conservation may be the most powerful strategy for resisting the forces for land conversion.

Over the last twelve months, IUCN and the International Tropical Timber Organisation (ITTO) have been collaborating in developing new guidelines for biodiversity conservation in tropical production forests. These guidelines are now being tested in selected forest operations in Brazil, Cameroon, Guyana and Indonesia, to ensure they are focussing on the most important issues for conservation and are not making unreasonable demands on the logging companies. The long-term aim is to build alliances between the timber industry and biodiversity conservation groups to achieve 'multi-functional' forests. While these forests can never replace 'pure' protected areas, they can enrich the landscape mosaic in ways that are favourable for both biodiversity and the people who depend on them for their livelihoods.

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IUCN news in brief

Rights and resources: IUCN is a founding member of a new international coalition, the Rights and Resources Initiative, which aims to assist governments and communities to double the global forest area under community ownership and management by 2015, to help achieve the Millennium Development Goals on poverty and environmental protection.

Belief in protected areas

What links the world's faiths with Protected Areas? Liza Higgins-Zogib of WWF-International summarizes the key findings of a new report on this topic.



Malaysia's Mount Kinabalu, sacred to some local communities, is an important site for biodiversity conservation

The 'natural' and 'cultural' heritage of national parks is not separate. This is an artificial white-fella separation. They are still boxing the whole into sections; we need to integrate management into a holistic view of the landscape. (Phil Sullivan, Aboriginal Heritage Officer, National Parks and Wildlife Service, New South Wales, Australia).

What Phil Sullivan has put his finger on is that 'they' – no, we the 'conservationists' haven't got it quite right yet when it comes to managing protected areas that have important sacred values to faith groups. The importance of getting it right becomes very apparent when you consider the extent to which 'belief' lives and breathes in protected areas: from the ancestor spirits that inhabit the trees and water sources of many of Madagascar's parks and reserves; to the millions of Hindu and Buddhist pilgrims who trek through protected areas to reach their places of worship; to the holy sites sacred for Jews, Christians and Muslims alike. There are thought to be hundreds of thousands of such sacred sites around the world, contributing to global conservation efforts.

Ouadi Qadisha, or Holy Valley, in northern Lebanon is the site of one of Christianity's earliest monastic settlements and has been recognized by UNESCO as a World Heritage Site. Although most of the valley is owned by the Maronite Church (a branch of Roman Catholicism), five percent is privately owned and under threat from the development of roads, hotels, and even nightclubs.

In response, Cardinal Sfeir, the current leader of the Maronite Church, pledged to make Qadisha Valley the second Maronite Protected Environment and is currently working with the Lebanese government to ensure that the area is declared a National Park and obtains the full protection it deserves. The first Maronite Protected Environment was the Harissa Forest north of Beirut, which was celebrated with WWF and ARC as a Sacred Gift for a Living Planet.

A new report from WWF and the Alliance of Religions and Conservation (ARC), ***Beyond Belief: Linking faiths and protected areas to support biodiversity conservation***, considers the many linkages between spiritual beliefs and practices and protected areas. The report includes a survey of a hundred protected areas around the world which contain important values to one or more faiths plus more detailed case studies from Kenya, Tanzania, Egypt, Lebanon, India, Nepal, Sri Lanka, Indonesia, China, Mongolia, Europe, Finland, Australia and Colombia. ***Beyond Belief*** calls on protected area owners, managers and supporters to recognize the importance and legitimacy of sacred values in nature and to work cooperatively with faith groups to ensure that non-material values are also effectively preserved. It also calls on the faith groups themselves to put the statements they have made about protecting the environment into practice by supporting global efforts to help conserve the abundance of creation through designation and good management of protected areas.

If we are to be truly relevant in a protected area or landscape, if we are to really engage local stakeholders, and if we are to respect the rights of indigenous peoples, different faith groups and cultures, then we must learn to understand the environment as others understand it. We must, as Phil Sullivan argues, move away from artificial separations and think holistically about all the values of an area – tangible and intangible.

Contact: Liza Higgins-Zogib: lhiggins-zogib@wwfint.org or download the report, *Beyond Belief: Linking faiths and protected areas to support biodiversity conservation*, by Nigel Dudley, Liza Higgins-Zogib and Stephanie Mansourian at: www.panda.org/forests/beyondbelief

WWF news in brief

Gateways to the Amazon and Congo Basin: WWF has launched two new web portals on the Amazon and the Congo Basin. These are designed as one-stop information sites providing answers to questions such as how big are these areas, who and what lives there, why are they still under threat, and more. Visit www.panda.org/amazon and www.panda.org/congo.



arbor*vitæ*

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The next issue of arbor*vitæ* will be produced in September 2006 (copy deadline 15 August 2006) and will focus on forest plantations. If you have any material to send or comments please contact: Jennifer Rietbergen-McCracken 85 chemin de la ferme du château, 74520 Vulbens, France. jennifer.rietbergen@wanadoo.fr

Back issues of arbor*vitæ* can be found on: www.iucn.org/themes/fcp/publications/arborvitae/avnewsletter/avnewsletter26_30.htm

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The editors and authors are responsible for their own articles. Their opinions do not necessarily represent the views of IUCN and WWF.

Reviews in brief

Banking our biodiversity
Available from: www.kewbooks.com

DNA banks offer great potential for biodiversity conservation, yet few have been established. A new manual, *DNA and Tissue Banking for Biodiversity Conservation: Theory, Practice and Uses*, published jointly by Kew Gardens and IUCN, aims to change that. In a highly readable style, the book sets out the science behind the technologies and the legal context of DNA and tissue banking, and provides practical guidance on how to establish a biological collection. The book is illustrated throughout and includes several case studies from around the world to show different aspects of DNA and tissue banking. The book will interest anyone wishing to understand the application of genetic technologies to conservation.

Forest management: first the bad news...
Available at: www.itto.or.jp/live/Live_Server/1222/SFMTropics2005.zip
The report of the most comprehensive survey of tropical forest management ever, launched in May by the International Tropical Timber Organization (ITTO), says that 95 percent of tropical forests are unprotected or not being managed sustainably. Commenting on the report's findings, Manoel Sobral Filho, Executive Director of ITTO, said "It is clear [...] that the security of most tropical forests is still in great jeopardy, which demonstrates a collective failure to understand that forests can generate considerable economic value without being destroyed." In addition, the report, *Status of Tropical Forest Management 2005*, says that governments have enacted management plans for only 2.4 per cent of the 461 million hectares of forest that are supposedly protected. The good news however is that sustainable forest management is on the rise. When ITTO last conducted a major survey, in 1988, only a million hectares of tropical forest were being managed sustainably. This has now risen to 36 million hectares – an area about the size of Germany.

Invasives on the web
Available at: www.fao.org/forestry/site/27081/en
FAO has launched a new online database and website on alien invasive species (AIS) to help foresters deal with this growing problem. Invasive species have always been of concern but their threat has grown exponentially with recent increases in trade, travel and transport, according to FAO. Climate change, civil unrest, tourism or a country's lack of effective forestry regulations also play a role in the spread of alien invasive species. The new web portal provides background information on these issues, highlights both the positive and negative impacts of AIS, outlines the tools available for prevention and management of AIS, and links with FAO's work in this area.

Protected areas – not just for conservation
Available soon at: www.panda.org/forests

Following the positive response to *Running Pure* and *Beyond Belief*, reports that put forward arguments for protected areas that go beyond biodiversity conservation, WWF's Forests For Life Programme will be producing two more reports in the series. One will highlight the role of protected areas in development and poverty alleviation, the other on stability and mitigating disasters. A third report, *Food Stores: using protected areas to secure crop genetic diversity* is currently being finalised.

The arbor*vitæ* survey – what you told us

Summary report of survey findings available at: www.iucn.org/themes/fcp/publications/arborvitae/survey-review/executivesummary-survey.pdf

Once again, many thanks for your great response to the arborvitae readership survey. Some 18 percent of you responded to the survey, quite remarkable by publishing industry standards as response rates rarely exceed five percent. The findings have been very useful, largely confirming that the format, frequency and content of arborvitae is as most of you like it. So we have decided to continue with three copies per year and to maintain the thematic focus with one longer feature article and numerous shorter articles. Two-thirds of you prefer to receive a hardcopy of arborvitae by post, while one-third would be happy to receive the newsletter electronically. We will look into the best way to accommodate these different distribution methods.

Over 90 percent of you said that you found the contents of arborvitae useful or very useful and the same percentage is able to apply that information in their work at least once in a while. You have also given us plenty of suggestions for improvements – which we will do our best to take on board. One suggestion – to include the issue number on each page, for archiving purposes – has already been acted on in this issue.

The survey also gave us a good idea of how many people we actually reach with arborvitae. If the same percentages of all our readers forward their copies to the same number of colleagues as you reported, over 7,000 people read the newsletter – not bad for a main distribution list of just 1,300 recipients.