

The eruption of Nyiragongo Volcano in DRC

On 17 January 2002 the Nyiragongo Volcano in the Democratic Republic of Congo (DRC) erupted, spewing out lava from both the cone and cracks in its base. The Nyiragongo Volcano is part of the Virunga Volcano Massif lying inside the Virunga National Park, a World Heritage Site. Goma town, at the foot of the Nyiragongo volcano, is home to many staff working in the National Park and the International Gorilla Conservation Programme (IGCP), and is a base for both park management and IGCP activities. IGCP works with the governments of Rwanda, DRC and Uganda to ensure the sustainable management and conservation of the mountain gorillas and afro-montane forest habitats. IGCP is a coalition of the African Wildlife Foundation (AWF), Fauna & Flora International (FFI) and World Wide Fund for Nature (WWF). Apart from conserving wildlife, the park also has a key role to play in bringing foreign revenue into the region and in supporting economic development.

In the destruction caused by the eruption some of the staff of the Virunga National Park and IGCP living in Goma were severely affected, losing their homes and belongings. IGCP is providing them with clothing, food, shelter and medicines, as well as funds. As we write, at the end of January, many people are without food and shelter. They will need to collect wood for fuel and construction and, as they will need to search for food, poaching is likely to increase. To ensure that the park does not become a source of these items, IGCP is coordinating with the aid agencies that are delivering food and shelter materials.

The Nyiragongo volcano is covered in typical afro-montane vegetation. The lush, mature forests at the lower altitudes contain a rich and varied wildlife, including elephants, buffalo, leopard, duiker, three species of primate, mongooses, civets, genets and more. Gorillas are not found on the two active volcanoes of the Virunga chain; they are restricted to the six 'dormant' volcanoes. Much of the wildlife on the Nyiragongo will have been affected by the eruption, but at present it is not known how much forest cover and wildlife was destroyed. Given that the lava flowed straight towards the urban centre of Goma, it is probable that the damage to the forest cover was relatively small. The impact of lava entering Lake Kivu on the wildlife in and around the lake is presently unknown. Many birds and other animals nest near the water, including the Congo clawless otter.

The people of Goma, with the spirit so typical of them, are starting to rebuild their town. They are beginning to clear the mess and attempting to make their homes habitable again. Park monitoring and management activities, and IGCP field activities, are continuing as usual.

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Developments in nature conservation in Liberia

In 1999 an international group of 150 scientists and policy-makers met in Elmina, Ghana, to review biodiversity conservation priorities for the Upper Guinean Forest Ecosystem, a programme supported principally by Conservation International (CI), the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF). Within the region, Liberia emerged as the country with the greatest potential and requirement for rainforest conservation. Although a system of eight national parks and nature reserves was recommended by a joint FDA/IUCN/WWF study in 1983, implementation was halted by the 7-year civil war in the 1990s. Only one fully protected area exists, Sapo National Park. The other areas recommended for protection are thought to be under immediate threat from a range of disturbances, and establishing a nationwide protected area system is a conservation priority.

Efforts to restart management of Sapo National Park began, on a small scale, before the end of the civil war, with contributions from WWF, the Society for the Renewal of Nature Conservation in Liberia, the Philadelphia Zoo, and later the Netherlands Committee for IUCN, the Dutch Interchurch Organisation for International Development, the European Commission (Monrovia), Naturschutzbund (NABU), Fauna & Flora International (FFI) and CI, among others. These efforts were channelled largely through the Society for the Conservation of Nature of Liberia (SCNL), Liberia's oldest indigenous conservation organization. Not until mid 2000 was a comprehensive effort launched to re-equip and demarcate the Park, monitor its fauna, train and

motivate staff, update the management plan, and develop good relations with neighbouring communities. Funds for this 2.5-year project, secured by FFI and SCNL, contributed principally by the UK Department of Environment's Darwin Initiative and complemented by WWF, the Whitley Foundation, WildInvest and others, will run out in mid 2002. After this time it is likely that GEF, via the World Bank, will continue to support the work.

Since well before the meeting in Elmina, however, conservationists and forest managers understood that an obstacle to establishing a Liberian protected area system was the lack of up-to-date information on the status of the nation's wildlife and forest cover. Quick surveys in the south-east of the country in 1997 and 1999 found that wildlife populations in this heavily forested area had survived or even prospered during the war, although they were facing severe threats in the post-war period (see *Oryx*, 31(3), 153–155 & 34(1), 71–73). Since 2001 a biological monitoring programme has been underway in and around Sapo National Park (see *Oryx*, 36(1), 11–12) to collect baseline data, provide management recommendations for the Park, including identification of areas for expansion, and develop an ecological integrity index, based on faunal indicator species, that will be used for quick assessments of areas proposed for protection. Data on bushmeat use are being collected through efforts led by SCNL, the Philadelphia Zoo's One-With-Nature programme and Liberian universities. NABU is leading efforts with the University of Liberia to build capacity and support for wetland conservation.

Complementary to these programmes, with assistance from the European Commission's Tropical Forest Budget Line and the Critical Ecosystems Partnership Fund, the FDA, SCNL, the National Environmental Commission of Liberia and the Liberian Ministry of Planning and Economic Affairs launched a 3-year project starting in mid 2001, in cooperation with FFI and CI, to reassess the country's forest cover and update its protected forest system. Using archival information, satellite imagery, aerial overflights, GIS and ground surveys, and current and historical forest cover, changes are being assessed to determine which forest areas are of likely conservation interest. In those that are identified, further ground surveys will assess precise land cover, forest types, wildlife status, and basic demographic and economic trends.

In parallel, criteria for Liberia's protected forest system will be determined, and applied to information from the forest surveys to formulate recommendations for maintaining, upgrading or downgrading the legal status of forested areas. Preliminary management plans will be developed for 4–6 important forest areas in anticipation of their reclassification. Because much of Liberia's

important forests are classified as 'National Forests', intended primarily for timber production, and some are totally unprotected but belong to logging concessions, creation of the Liberian protected area system will require the Liberian Government to choose a balance between sound science and socio-economic considerations.

FFI has established a project office in Monrovia, and launched activities that include project planning, consultations on criteria for forest classification, training, and logistical organization for aerial overflights and initial field surveys. FFI and CI have consulted several organizations and initiatives with experience in macro-level biological mapping and assessments in the Upper Guinean Forest Ecosystem, including the University of Wageningen, the ECOSYN project and the EC's TREES project. CI has made considerable progress, having completed initial satellite image analyses from the late 1980s and 1999–2001, and assessed forest change during this period. Based on this, CI has prepared a mini-forest atlas for Liberia. These analyses will be expanded and refined with data from earlier land-use and forest-cover sources, information from aerial overflights of south-east Liberia, a review of all vegetation classification systems relevant to the area, and extensive ground surveys. CI have also begun training Liberian staff in GIS and remote sensing.

For more information on the above projects, contact:

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High biodiversity discovered in remote region of Guyana

The latest expedition of Conservation International (CI)'s Rapid Assessment Program (RAP) found high diversity and a relatively pristine ecosystem in the remote eastern Kanuku Mountains of southern Guyana. The Guyana Shield has one of the largest continuous expanses of pristine tropical forests in the world, and is one of CI's priorities for conservation action as part of the Amazonian Tropical Wilderness Area. High habitat diversity and low human population density make this area a refuge for species that are threatened elsewhere, such as the harpy eagle, giant otter, arapaima, black caiman, and river turtle. The RAP expedition took place during September–October 2001, following the recommendations of a previous RAP survey of the western

Kanuku Mountains (Parker *et al.*, 1993, *A Biological Assessment of the Kanuku Mountain Region of Southwestern Guyana*. RAP Working Papers (5), 70 pp., Conservation International, Washington, DC). A team of RAP scientists from Belgium, Canada, Guyana, Suriname, Venezuela and the United States surveyed plants, mammals, birds, insects, fishes and water quality along the little explored Kwitaro River on the eastern edge of the eastern Kanuku Mountains.

Burton Lim of the Royal Ontario Museum recorded 25 species of bats, bringing the total number of species known from the area to 88, surpassing the 86 recorded in the Iwokrama Forest in Central Guyana. Conservation International's landscape ecologist, Jim Sanderson, confirmed the occurrence of all eight primate species known to occur in Guyana, including the brown-bearded saki *Chiropotes satanas*.

Wilmer Díaz of the Jardín Botánico del Orinoco found the area's vegetation to be intact and free from human intervention; no logging clearings were observed. The only sign of human activity were very old latex scars on *Manilkara* trees from the thriving balata (non-elastic rubber) industry of the 1970s. The trees have not been tapped since, but the wariness of many animals to humans indicated that hunting occurs regularly in the area. Wiltshire Hinds of the University of Guyana observed a high diversity of birds, including a number of species that are rare elsewhere such as the harpy eagle *Harpia harpyja*, orange-breasted falcon *Falco deiroleucus*, stygian owl *Asio stygius*, and the cinnamon tyrant manakin *Neopipo cinnamomea*. Jan Mol of the University of Suriname netted 73 species of large- to medium-sized fish. Despite unseasonably high water and bright moonlight during the sampling period, both of which have a detrimental effect on fish capture, he observed many commercially important and threatened species, including the giant arapaima *Arapaima gigas* and aruanã *Osteoglossum bicirrhosum*.

The results of this RAP expedition to the Eastern Kanuku Mountains clearly support the assertion of CI's Regional Program in Guyana that the Kanuku Mountains need to be included in a Protected Area System, incorporating the two major habitat types of the region: forests and savannahs. Inclusion of the full range of landscapes and vegetation types (gallery forests, swamps, hill forests and montane areas) in such a system would effectively protect a very high number of the mammal, bird and plant species occurring in the country, many of them highly threatened in other parts of Amazonia.

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Six natural wonders recognized by the World Heritage Convention

On 13 December 2001 in Helsinki, Sweden, the World Heritage Committee inscribed six new natural sites on the World Heritage List and added substantial extensions to three others. Following these additions, 167 sites have now been inscribed on the World Heritage List for their natural values. The World Heritage Convention can be found at <http://www.unesco.org/whc>

The *Central Sikhote Alin* in the Russian Federation is a mountain range that contains one of the richest and most unusual temperate forests of the world; it is a mixing zone between taiga and the subtropics, where southern species such as the tiger and Himalayan bear cohabit with northern species such as brown bear and lynx. The *Jungfrau-Aletsch-Bietschhorn* in Switzerland is one of the most glaciated areas in the Alps, with the diversity of Alpine wildlife represented in a range of alpine and sub-alpine habitats. The *Dorset and East Devon Coast* in the UK is an exposed coastal cliff that provides an almost continuous sequence of rock formations spanning the Mesozoic Era; the cliffs include important fossil sites and classic coastal geomorphological features. Two *Cerrado Protected Areas* in Brazil contain flora and fauna and key habitats that characterize the Cerrado, one of the world's oldest and most diverse tropical ecosystems. The *Brazilian Atlantic Islands* are the peaks of the Southern Atlantic Submarine Ridge that form the Fernando de Noronha Archipelago and Rocas Atoll; they represent more than half the island surface of the South Atlantic, and their productive waters are important breeding and feeding areas for tuna, sharks, turtles and marine mammals, including threatened species such as the hawksbill turtle. The *Alejandro de Humbolt National Park* in Cuba has a complex geology and topography with a diversity of ecosystems and species; it is one of the most biologically diverse tropical island sites on earth and one of the most important sites in the Western Hemisphere for the conservation of endemic flora.

The *Galápagos Islands* World Heritage site was expanded to include the 133,000 km² Galápagos Marine Reserve; located at the confluence of three oceanic currents the Galápagos is a 'melting pot' of marine species. The *Volcanoes of Kamchatka* World Heritage site in the Russian Federation has been enlarged to include the Kluchevskoy Nature Park; the site contains high species diversity, including the world's greatest known diversity of salmonoid fish and exceptional concentrations of sea otter, brown bear and Stellar's sea eagle. Southern Island National Park has been added to Kenya's *Lake Turkana National Parks* World Heritage site; Lake Turkana is the most saline of Africa's large lakes, and the three National

Parks are a stopover point for migrant waterbirds, and are important breeding grounds for Nile crocodile, hippopotamus and a range of snakes.

World Bank assistance to Transboundary Reserves

A major conference on Peace Parks and trans-national parks and cooperation was held in Cape Town, in 1997, supported by the Peace Parks Foundation, World Conservation Union (IUCN) and the World Bank. As a result of this conference, and subsequent follow-up meetings around the world IUCN, through its World Commission on Protected Areas (WCPA), has recently published *Transboundary Protected Areas for Peace and Cooperation* (Sandwith *et al.*, 2001, 111 pp., IUCN, Gland, Switzerland and Cambridge, UK) as No. 7 in its *Best Practice Protected Area Guidelines Series*.

The World Bank, which helped with publication costs, has always played a role in efforts to reconstruct countries and economies after periods of conflict, and to encourage efforts for peace and cooperation. Additionally, over the last twelve years, the World Bank has become a major supporter of biodiversity conservation, with a total investment of more than \$2.6 billion in biodiversity projects and activities since 1988 (see *Oryx*, 35(4), 357–358, and World Bank, 2000, *Supporting the Web of Life: The World Bank and Biodiversity. A Portfolio Update*). This portfolio continues to grow, and a substantial number of the Bank's biodiversity projects provide financing to transboundary protected areas and international cooperation to support regional conservation efforts (see World Bank, 2000, *Transboundary Reserves, World Bank Implementation of the Ecosystem Approach*).

The Bank is supporting projects that foster a landscape approach to conservation, often across national boundaries. The Mozambique trans-frontier conservation project is promoting development models that benefit local communities yet protect wildlife migration routes and link conservation efforts in adjoining Zimbabwe and Mozambique. In Central Asia the Bank is supporting protected areas, landscape planning and tri-national collaboration between the Kyrgyz Republic, Kazakhstan and Uzbekistan in the mountains of the West Tien Shan. Cooperation between Romania and Ukraine in the Danube Delta is leading to better protection of the delta's wetlands. Kenya, Tanzania and Uganda are working together to combat problems created by invasive water hyacinth in Lake Victoria. In Central America national projects in Mexico, El Salvador, Guatemala, Nicaragua and Panama contribute to protected area and forest management in the Meso-American Biological Corridor. A new project in southern Africa provides support for protected areas and adjacent community lands in the

Maloti-Drakensberg Mountains on the borders of South Africa and Lesotho, a designated Peace Park and World Heritage site.

Transboundary protected areas serve as core zones in integrated management of entire ecosystems and, as many follow mountain ranges, their protection can help to secure watersheds, migratory pathways and other ecosystem services. Transboundary cooperation has many benefits, including strengthening of protection and management, exchange of information and expertise, cost effective and collaborative operations and training, joint research and monitoring programmes, and complementary tourism programmes. There can also be considerable political benefits from transboundary cooperation, including greater national support and strengthened regional collaboration, joint responses to international conventions, and increased international attention and donor support. By encouraging mutual understanding and exchange of information and expertise, protected areas along international borders foster peaceful cooperation.

Transboundary Protected Areas for Peace and Cooperation is available in print or from the WCPA web site at <http://wcpa.iucn.org>. Publications providing information on the Bank's biodiversity portfolio are free on request from the Environment Department.

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Flagship Species Fund

On 20 November 2001 the UK's Minister of the Environment, Michael Meacher, launched a new conservation scheme, the Flagship Species Fund. The Fund is a joint initiative between the Department for Environment, Food & Rural Affairs (DEFRA) and Fauna & Flora International. Over the next three years, funding totalling £280,000 will be allocated to the Flagship Species Fund by DEFRA. The Fund has also attracted contributions totalling £100,000 from Rio Tinto and BP, and it is hoped that further contributions from the commercial sector will follow.

For the first year the focus of the Fund will be primates and trees. Three primate projects have been earmarked for funding in 2002. The Awacachi project in Ecuador has led to the formation of a reserve linking the country's two largest areas of Chocó forest, and the Flagship Species Fund will support work on the conservation of the Critically Endangered brown-headed spider monkey *Ateles geoffroyi* subsp. *fusciceps* that occurs in this area. The Fund will support work on threatened primates,

particularly the Endangered red-shanked douc langur *Pygathrix nemaeus* and the Critically Endangered golden-headed langur *Trachypithecus poliocephalus*, in the fragmented forests of northern Vietnam. The third primate project to be supported by the Fund will look at ways of developing practical solutions to the bushmeat trade in Nigeria and Cameroon.

Three tree projects will also be supported by the Fund in 2002. The first will help develop and implement conservation strategies for Mexico's most threatened oak (*Quercus*) species. The second will expand the current educational programme on the Endangered pau Brasil or pernambuco *Caesalpinia echinata* in Brazil, benefiting a further 160 teachers and 10,000 children in southern Bahia. The third grant will fund a conservation programme on the threatened Philippine teak *Tectona grandis* that occurs in the limestone forests of Batangas, Luzon Island and Iling Island, Mindoro in the Philippines.

One agreed focus for the Fund in 2003 will be marine turtles. A proportion of the money raised for the Flagship Species Fund will also be used to disperse small grants.

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Awacachi Corridor links Awá Ethnic Reserve and the Cotacachi-Cayapas Ecological Reserve

An internationally important landscape-level conservation project that aims to link the Awá Ethnic Reserve and the Cotacachi-Cayapas Ecological Reserve in north-west Ecuador has attained its short-term goal of linking the two reserves through the 'Awacachi Corridor'. The project, managed by Fundación NYTUA (Niños Y Tierra Unidos por el Ambiente) with international support from Fauna & Flora International and Rainforest Concern, purchased the crucial link, of over 10,000 ha, in December 2001. Wardens, who have been recruited from the local communities, patrol the corridor, and the project will continue to try to acquire more land as opportunities arise. A key objective is to broaden the link in the middle section of the corridor. It is currently only 600 m wide, in comparison to an average of over 2 km for the rest of the corridor, and is bordered by a logging concession on one side. A current proposal to the government could result in the expansion of the entire Awacachi Corridor by 50% through conservation management of public lands. The corridor itself is of great importance, containing some of the best lowland forest outside the two reserves, which are the largest protected areas within the Ecuadorian section of the Chocó biome.

The area is recognized as a global biodiversity hotspot, with exceptional endemism but with <5% of the original habitat remaining.

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The Cambridge Mpingo Project

The Cambridge Mpingo Project has been working in the Lindi region of southern Tanzania since 1996, gathering data on the ecology and exploitation of the East African Blackwood *Dalbergia melanoxylon* (known as *mpingo* in Swahili). The tree, which is used to make clarinets and oboes, is a key species in the Soundwood Programme of Fauna & Flora International (FFI); it is also the medium of choice for local wood carvers. Current exploitation is thought to be unsustainable, and the imminent completion of a bridge over the River Rufiji, which controls access to the Lindi region, threatens large-scale deforestation in the area. Blackwood is the most valuable timber growing in the Miombo woodlands, and is considered to be a possible flagship species because of its high economic value (up to US \$13,000 per m³) and cultural significance. The project has carried out three basic ecological surveys of increasing breadth, and conducted rapid rural appraisals in local villages to investigate local knowledge and attitudes towards blackwood and its exploitation. In 2001 the economics of the Mwenge Carvers Market & Co-operative in Dar Es Salaam was investigated. The results of these surveys will be used to facilitate management planning for the species based upon community management of natural resources, and the project is now working towards a pilot scheme to test the ideas. Research is continuing in collaboration with the project's Tanzanian partners. Ongoing collaboration with the FFI Soundwood Programme was discussed at a workshop on African Blackwood held in Tanzania in October 2001.

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New web site for The Nando Peretti Foundation

The Nando Peretti Foundation, which supports programs in humanitarian aid, wildlife and the environment, has relaunched its web site at <http://www.nandoperettifound.org>. The new website provides details of both current and past projects supported by

the Foundation, which welcomes applications that fall within the areas of environment, youth and education, and that have a strong commitment to the voluntary, non-profit sector. Projects currently being supported include: support for the management of the Golden Stream Corridor Preserve in Belize in a sustainable manner and for the benefit of the local Mayan communities who directly depend on their natural resources, with Fauna & Flora International; creation of a fund for financing urgent interventions to safeguard birds in Eastern Europe, with BirdLife International; and a 3-year biodiversity conservation project in the Abruzzo, Lazio and Molise National Park to determine roost selection in bats, with researchers in Italy and the UK. The relaunched web site includes guidelines for applications, which may be made either online or by downloading an application form.

International Elephant Foundation: conservation projects for 2002

The International Elephant Foundation (IEF), a non-profit organization dedicated to saving elephants by providing funds and scientific expertise to support elephant conservation programmes, has announced that it will fund a variety of conservation projects in 2002. With minimal administrative costs, IEF puts more than 95% of its budget directly into elephant programmes. A diverse selection of projects will receive funding, including

the creation of a model for Elephant Conservation Centers in Sumatra, a study of bull elephant reproductive strategies in Kenya, research into the freezing of elephant semen for artificial insemination, analysis of urinary cortisol to measure renal status, radio-tracking in Sri Lanka and Cameroon to investigate habitat use and migration patterns in order to help mitigate human-elephant conflict, an assessment of the status of domestic elephants in Sri Lanka, and various professional and educational scholarships.

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New wildlife resources web site

The *Journal of International Wildlife Law and Policy* has launched a new web site that seeks to catalogue available wildlife resources on the Internet. The resource page, at <http://www.jiwlp.com/cgi/links.cgi>, is organized into 19 categories, including species, regions, wildlife sanctuaries, wildlife habitats and ecosystems, and research bibliographies and databases. The initial incarnation of the web site contains more than 1,400 links. Visitors to the page are encouraged to send suggestions for additional links, and the site will ultimately facilitate the automatic addition of such links.