



**USAID**  
FROM THE AMERICAN PEOPLE

# BIODIVERSITY CONSERVATION AND FORESTRY PROGRAMS

**Annual Report**



**OCTOBER 2010**



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## Annual Report

### **OCTOBER 2010**

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Front Cover: Photo by Sirajul Hossain

FOREST DEPENDENT: A family of Phayre's Leaf Monkeys (*Trachypithecus phayrei*) in Srimongol, Bangladesh. USAID supports community co-management of forests across the country, strengthening governance and improving rural livelihoods while conserving habitat for wildlife.

Back Cover: Photo by Joseph Foltz, USAID

HIGH WIRE: A tour guide working with the Rwanda conservation and tourism authority tests out the world's largest canopy walk, one of USAID's latest investments in Nyungwe National Park.



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## 2010 EARTH DAY PHOTO CONTEST

In celebration of the Year of Biodiversity, USAID organized a biodiversity and forestry photo contest to capture submissions from both amateurs and professionals alike. The contest defined five categories for which people could submit their photos. A tremendous success, the contest drew in 178 submissions from 21 countries. All the winners are featured in this year's report along with many honorable mentions.

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# ABOUT THIS REPORT

This report summarizes biodiversity conservation and forestry programs supported by the United States Agency for International Development (USAID) in fiscal year (FY) 2009. Biodiversity and forestry are reported together because they are highly interrelated: many forestry activities have both biodiversity conservation and economic growth objectives, and biodiversity efforts often focus on improved management and conservation of forest ecosystems.

The scale of biodiversity activities and the nature of forestry programs managed by USAID have both been affected by an increase in dedicated funding for biodiversity. USAID carefully assesses which programs meet the requirements of biodiversity legislation using four key criteria:

- The program must have an explicit biodiversity objective;
- Activities must be identified based on an analysis of threats to biodiversity;
- The program must monitor associated indicators for biodiversity conservation; and
- Site-based programs must have the intent to positively impact biodiversity in biologically significant areas.

All four criteria must be met for programs to be eligible for dedicated biodiversity funds. These criteria guide program design and budgeting, leading to robust and often interdisciplinary programs which recognize biodiversity conservation as a prerequisite to achieving development goals.

Key outcomes from FY 2009 activities described in this report are often the result of years of prior investment. Likewise, activities in 2009 contributed to success and recognition in 2010. For example, a USAID-supported project to restore Gorongosa National Park led the Government of Mozambique to announce in July 2010 that the park would be expanded by 367 square miles to include Mt. Gorongosa and certain buffer zones, areas critical to the park ecosystem. In East Africa and South America, biodiversity programs strengthened community organizations that were awarded the prestigious 2010 Equator Prize. Results like these are included in photo features and the main text to make this report the most current overview possible as of October 2010.

**SEA LIFE IN EAST TIMOR:** Three USAID missions support marine protected areas, fisheries management and information sharing in support of the six-nation Coral Triangle Initiative, launched in May 2009.

PHOTO: NICK HOBGOOD, DAI



# EXECUTIVE SUMMARY

USAID country, regional and global programs directly support forestry and biodiversity conservation in 60 countries around the world. In FY 2009, the Agency invested \$204.5 million toward biodiversity, more than in any previous year. This represents more than two-thirds of the total U.S. government investment in international biodiversity conservation of about \$300 million in FY 2009 (Table 1, page 105). USAID biodiversity investments improved the management of approximately 94 million hectares of biologically significant area, and resulted in 1,100 new policies, laws and regulations promoting conservation and sustainable natural resource management.

Almost half of USAID biodiversity activities involved forest conservation or sustainable forestry. Combined with programs not focused on biodiversity, USAID supported almost \$110 million in forestry activities in FY 2009, including \$103.7 million in tropical countries or focused on

tropical forests. Forestry describes a diverse range of activities, such as protection of natural forests, community management of forests for non-timber forest products, agroforestry and reforestation of degraded lands, and research and capacity building activities which help communities and governments benefit from markets for ecosystem services and certified forest products.

## Africa

The Bureau for Africa managed \$70.6 million in biodiversity funds, and \$37.7 million attributable to forestry, through four regional programs, 15 country programs, and initiatives managed centrally. About one-quarter of biodiversity funds (including half of forestry funds) supported biodiversity conservation and forest management in the Congo River basin, the second largest rainforest on earth. Results from FY 2009 include:

- In the Republic of Congo, authorities in Odzala National Park dismantled 54 illegal poaching camps, filed 36 police reports on crimes related to poaching, and seized hundreds of weapons and traps.
- Over 150 forest user associations with 10,000 members were co-managing 884,500 hectares of conservation areas in Madagascar in 2009; many remain active and vigilant in major central rainforest corridors despite political unrest and rampant logging in the north.
- Recognizing the value of conservation for improving fish catches and ecotourism revenue, communities to the south of a planned protected area along 100 kilometers of Lake Niassa shoreline in Mozambique successfully petitioned to have the reserve include their fishing grounds, a 40-kilometer extension.





**CLEAR CUT:** Slash-and-burn agriculture on Mt. Gorongosa, Mozambique, may soon come to an end: a July 2010 declaration added the mountain to Gorongosa National Park. USAID supports restoration of the park and promotes sustainable livelihoods in the buffer zone.

PHOTO: ANDREW TOBIASON, USAID

- In Malawi, beekeepers in 45 villages now provide surveillance and management of 213,000 hectares of designated apiaries in national park areas vulnerable to exploitation, and produce about 85 tons of “conservation honey” per year worth US\$150,000.
- During Kenya’s worst drought in 25 years, 87,000 hectares of semi-arid woodland and rangeland under improved management showed no decline in condition.
- The first systematic, nationwide census of the Western chimpanzee in Sierra Leone found 5,500 wild chimpanzees, more than double previous estimates, but elevating the urgency to conserve unprotected, marginal habitats where half the chimpanzee population lives.

## Asia and the Middle East

Of \$48.5 million in biodiversity conservation funding programmed by the Bureau for Asia, 80 percent supported conservation of high-biodiversity areas in Southeast Asia, including activities to address wildlife trafficking, illegal logging, and overfishing. Large programs in Afghanistan, Bangladesh, Indonesia, Philippines and the Regional Development Mission account for the majority of the Bureau’s \$22.5 million forestry commitment in FY 2009. USAID/Lebanon in the Bureau for the Middle East accounts for another \$500,000 in forestry programming. Some results from 2009 include:

- Two large timber plantations near Kutai National Park, Indonesia, incorporated a conservation corridor into their management planning, securing habitat and connectivity for 2,500 orangutans living outside of protected areas.

- The Government of Bangladesh approved a policy authorizing protected area co-management committees to retain half of all entry fees, allowing them to finance management actions and support community development.
- Despite the lack of security in many areas of Afghanistan, more than 2.2 million hectares of biodiverse forests and rangelands were placed under improved natural resource management, including 350,000 hectares of natural pistachio woodlands.
- In southern Vietnam, payments for ecosystem services financed community conservation units to protect and monitor nearly 115,000 hectares of protected area buffer zone and reduced illegal logging in the Da Nhim watershed by 50 percent.

- USAID-supported forest conservation in the Philippines became more sustainable as Local Government Units put US\$1.8 million of their own funds towards forest management - twice the 2008 contribution - and seized US\$19 million worth of illegal logs in Sierra Madre National Park, an action resulting in criminal charges.

## Europe and Eurasia

USAID/Russia supported \$500,000 of forestry activities in the Russian Far East, including work to conserve forest-dependent Siberian tigers and Amur leopards, and commercially-important varieties of salmon critical to forest and marine ecosystems. USAID's mission in Georgia implemented biodiversity activities in 2009 using prior-year funds. Highlights of these two programs include:

- Three new community watershed councils were established on Russia's Sakhalin Island, for a total of six involved in anti-poaching patrols, habitat restoration and environmental education, as well as an island-wide salmon monitoring plan developed with USAID support.
- The total number of visitors to Georgia's protected areas increased from around 9,000 in 2006 to almost 95,000 in 2009; if approved, a new national park proposed in 2009 will nearly double the size of Georgia's protected estate.

## Latin America and the Caribbean

Country and regional missions in Latin America and the Caribbean (LAC) distributed \$63.3 million for biodiversity conservation in FY 2009. Over 70 percent of these funds supported programs in South America to conserve the Amazon River basin, forests and high grasslands of the Andes Mountains, dry forests of Bolivia and Paraguay, and coastal areas. Nearly 21 percent of funds went to Central America and Mexico, and the remainder to the Caribbean. LAC forestry programs increased more than \$5 million over the previous year to \$40.4 million in FY 2009. Selected outcomes include:

- In the largest continuous stretch of high altitude forests in Peru, satellite monitoring of deforestation informed a rapid response to remove illegal crops and trespassers, and increased patrols.

- Better delineation of indigenous Waorani territory in Ecuador improved management of 1.6 million hectares, twice the area of Rhode Island.
- A public education campaign in El Salvador helped send 400,000 sea turtle eggs to hatcheries rather than dinner plates in 2009, while turtle egg poachers received assistance transitioning to sustainable jobs.
- Near Peru's Lake Titicaca National Reserve, community groups worked to recover *titora* reed beds important to 35 species of birds, and processed sustainably harvested reeds into livestock feed to curtail indiscriminate burning of 23,000 hectares annually.
- Along the Ecuador-Colombia border, agreements reunified the Awa and Cofan indigenous groups and strengthened their joint natural resources management authority.



SNOW CAT: USAID supports conservation of several subspecies of tiger, from Siberian tigers (pictured) in the Russian Far East to Bengal tigers in the Sundarbans of Bangladesh and Indochinese tigers in Cambodia.

PHOTO:  
JULIE LARSEN MAHER  
© WILDLIFE  
CONSERVATION SOCIETY



**FORESTRY TRAINING,** combined with land registration and more productive use of already-cleared land, has nearly eliminated illegal deforestation in Paragominas, Brazil.

PHOTO: INSTITUTO FLORESTA TROPICAL

- A debt-for-nature agreement with Brazil in August 2010 will generate \$21 million for conservation of forests outside the Amazon basin, bringing the cumulative impact of the Tropical Forest Conservation Act to \$239 million in grants and projects in 14 countries by the year 2023.
- USAID-supported researchers developed an invasive species control program to manage Mexican *Parthenium* plants introduced to East and Southern Africa, which cause respiratory and skin problems in humans, taint the meat and milk of livestock, and reduce diversity of native plants important to wild ungulates.

## Central Programs

Centrally funded programs supported \$22 million in biodiversity activities, prioritizing innovative conservation approaches and dissemination of best practices. Many central programs are cross-sectoral (especially with health and governance), demonstrate or scale up a novel approach (such as through landscape-scale conservation), and/or operate on a global level, working across boundaries to focus on ecological function and connectivity. Nearly 88 percent of central biodiversity programs and 100 percent of central forestry programs were administered by the Bureau for Economic Growth, Agriculture and Trade (EGAT) through seven teams in three offices. EGAT's \$8.3 million forestry portfolio included activities related to the role of forests in climate change mitigation, and increasing the legality and sustainability

of forest products. The Bureau for Global Health programmed 12 percent of centrally managed biodiversity funds, supporting activities that promote natural resource management and provide health services for marginalized and rural communities in high-biodiversity areas. Examples of results include:

- Investments in community rights and governance led forest management groups in the Philippines to halt an illegal mining operation and achieve a local moratorium on small-scale mining.
- A market-based biodiversity program in Zambia trained nearly 300 people to improve their livelihoods and food security through conservation agriculture rather than poaching, scaling up an approach with proven wildlife benefits.

The magnitude of USAID biodiversity funding in FY 2009 reflects a trend of steadily increasing investment since 1987. In contrast, forestry funds in FY 2009 are slightly lower than the previous year, and the peak of funding was in 1995 (not adjusting for inflation). Conservation of forests is taking on renewed importance for the Agency and the world as these ecosystems are increasingly recognized for their role in mitigating climate change. Existing USAID programs focused on conservation of forest habitats are being joined by new initiatives that more explicitly emphasize maintaining forests for their carbon sequestration value, as well as the sustainable revenue which carbon markets could provide for biodiversity conservation and development.

# EXPERIENCE IN ACTION

The United Nations' declaration of 2010 as the International Year of Biodiversity has prompted donors and implementers of conservation programs to reflect on what they have achieved and assess what challenges remain. For USAID, this requires going back at least as far as 1986, when the term "biodiversity" was first introduced and Congress established a \$1 million directive for biodiversity conservation.

The U.S. government's investment in biodiversity conservation has grown steadily over the years, from about \$100 million in FY 2000 to \$300 million just ten years later (Figure 1). USAID manages about two-thirds of this funding, mostly through field missions, to support biodiversity priorities in about 60 countries. The Agency's cross-sectoral approach to conservation yields results: in just the last

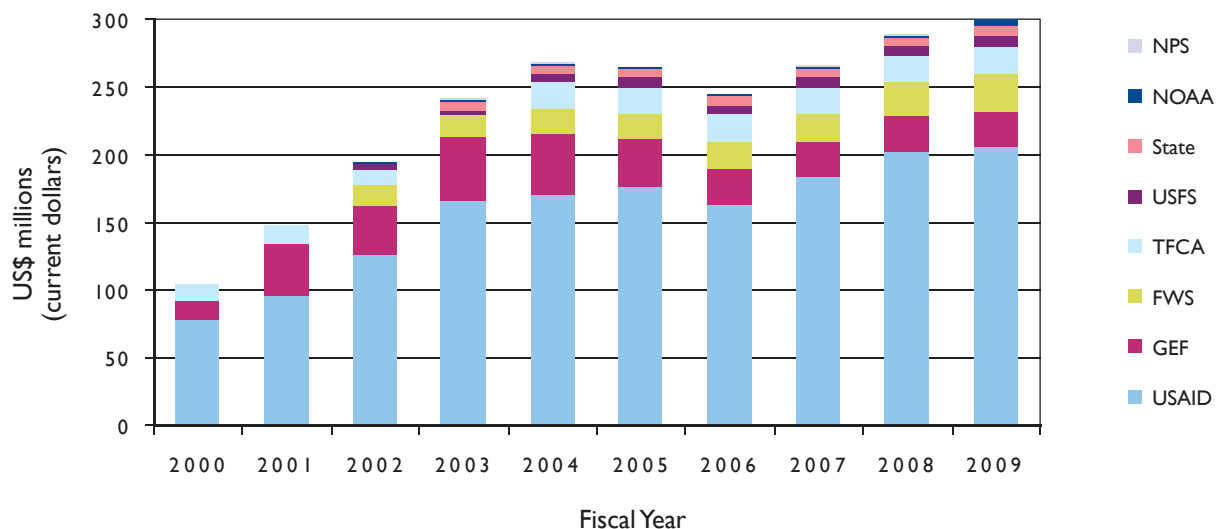
two years, USAID-supported biodiversity programs have helped put in place 3,000 new policies, laws and regulations that promote sustainable natural resource management and conservation. Annually, the biodiversity portfolio improves the management of about 100 million hectares of biologically significant ecosystems – an area three times the size of the U.S. National Park System.

**FAST FOOD:** Salmon is an important seasonal food source for brown bears on Russia's Kamchatka Peninsula. USAID support helped establish community-based watershed councils that participate in habitat restoration and salmon monitoring to conserve this keystone species.

PHOTO: IGOR SHPILENOK



**Figure 1. U.S. Government International Biodiversity Funding, FY 2000 - 2009**



**Key:** NPS (U.S. National Park Service); NOAA (National Oceanic and Atmospheric Administration); State (Department of State); USFS (U.S. Forest Service – International Programs); TFCA (Tropical Forest Conservation Act, with Treasury funds administered by USAID and the Departments of Treasury and State); FWS (U.S. Fish and Wildlife Service); GEF (Global Environmental Facility, with funds administered by the Department of Treasury); USAID (U.S. Agency for International Development).

Biodiversity funds are prioritized for countries with the greatest need and opportunity for conservation. Within each country, USAID uses threats analyses to guide which interventions to support, and applies adaptive management in order to refine approaches or change course altogether as conditions change. Integrated program design ensures that activities have the greatest positive impact on ecosystems and people.

One strategic approach to integrated biodiversity programming applied by USAID is the Nature, Wealth and Power framework, which was developed based on years of USAID and partner experience implementing natural resource management programs. The framework posits that conservation outcomes (nature) are influenced by how biodiversity is used to generate and sustain livelihoods and economic growth

(wealth) and how land and natural resources are governed (power). In turn, the framework asserts that good management of natural resources and conservation of biodiversity are critical to poverty reduction and economic growth.

The relationships among nature, wealth and power are often obvious in hindsight: badly managed fisheries contribute to poverty and food insecurity; when forest users are not engaged in forest governance, forests decline. Having the foresight to design programs that consider all three dimensions is relatively new to conservation practice. For instance, many protected areas were established to conserve nature without considering management requirements and costs, or the impact on communities living near or even inside the boundaries. Where local people still depend on natural resources but have lost legal access to

them, they are forced to act outside the law and are motivated to take more than they need, an unsustainable situation leaving everyone (and the environment) worse off.

In the last two decades, USAID conservation programs have learned to address both livelihoods and governance, demonstrating that when local people have both the right to use land and natural resources and the capacity to benefit from them, they can be extremely effective and efficient conservationists. For example, in 2008, improved community wetlands management in Bangladesh more than doubled the value of three inland fisheries to \$7.7 million, improving nutrition and livelihoods for 184,000 people while restoring dozens of species of fish and birds. Today, USAID is supporting a nationwide commitment to wetland and forest co-management benefiting up to 70 million people in Bangladesh.



PHOTO: DELPHIN KING, LAIKIPIA WILDLIFE FORUM

**GOING GREEN:** School girls in Kenya's Laikipia District participate in reforestation efforts and learn about the importance of protecting natural resources.

Scaling up good programs requires a commitment to monitoring – part of every USAID biodiversity program – as well as providing opportunities for innovation and learning. The Agency's Global Conservation Program (GCP), which ended in 2009, was a testing ground for both new approaches and best practices in conservation. Over ten years, GCP afforded six partner organizations the opportunity to involve local people in planning, invest in community organizations, and use the best technology and expertise available to set conservation

priorities. Collectively, GCP improved management of more than 20 million hectares of biologically significant area across 27 landscapes and seascapes in 29 countries, and strengthened dozens of government agencies, community organizations and indigenous groups in the process.

The primary legacy of GCP may be its influence on the science and practice of conservation. The program strengthened or institutionalized landscape-scale conservation planning for several international

conservation organizations. GCP's emphasis on using a threats-based approach and monitoring biodiversity indicators helped shape the definition and guidance by which all USAID programs are designed and measured. Three USAID programs supporting the six-nation Coral Triangle Initiative (CTI) in Southeast Asia were informed by GCP partner experience with marine protected area networks. GCP also influenced the design of USAID's multi-partner conservation program in the Congo Basin, where management



PHOTO: CHARLIE WATSON, RAINFOREST ALLIANCE

**FOUND ART:** Women in an indigenous community in the Mosquitia region of Honduras make colorful handicrafts out of discarded wood from a certified sustainable mahogany sawmill.

has been improved across an area larger than the U.S. National Forest System. A new centrally managed program takes lessons from GCP and applies them to nine transboundary areas in 18 countries, emphasizing adaptive management, sustainability, and scaling up impact on the ground, as well as continued learning among peers and partners.

USAID biodiversity programs also aim to be catalytic, using strategic

investments to leverage additional funding and attract non-traditional partners. Agency work in the Congo Basin has leveraged over \$200 million in additional public and private sector funds for conservation, and is building local capacity to benefit from emerging carbon markets. Through a new public-private partnership, USAID and two partners are working to eliminate trade in illegally harvested wood worldwide, with Rayonier, New Page Corporation, Staples, and IKEA

among the first companies to commit funding and other resources to this program. Combined with efforts to empower communities to manage forests for biodiversity, these funds and partnerships contribute to social and financial sustainability, and help curtail black markets and corruption.

In the last 25 years, biodiversity conservation has gained acceptance both as an applied science and as a means of achieving development objectives. USAID has provided leadership and support for innovation throughout this period, generating knowledge that makes each new program more likely to succeed and have a lasting impact. A new generation of conservation programs is now expected to address the impacts of climate change and increasing demands on ecosystems for food and fuel, while empowering local communities to govern and manage natural resources. The stakes have never been higher, but USAID and its partners are prepared to draw on a quarter-century of experience and a powerful toolkit of conservation approaches.

# AFRICA

USAID country and regional programs funded significant biodiversity conservation and forestry activities in over 25 countries throughout Africa in FY 2009.

Africa is a continent of mighty rivers and stunning wildlife. In the south, countries along the Zambezi River support over half the elephants on Earth, while the swollen Congo River drains the second largest rainforest on earth, home to four kinds of great ape. The Mara River dividing Kenya and Tanzania is crossed by one million wildebeest every year, and the Tano River on the boundary of Ghana and Côte d'Ivoire hosts some of the last, best primate habitat in West Africa.

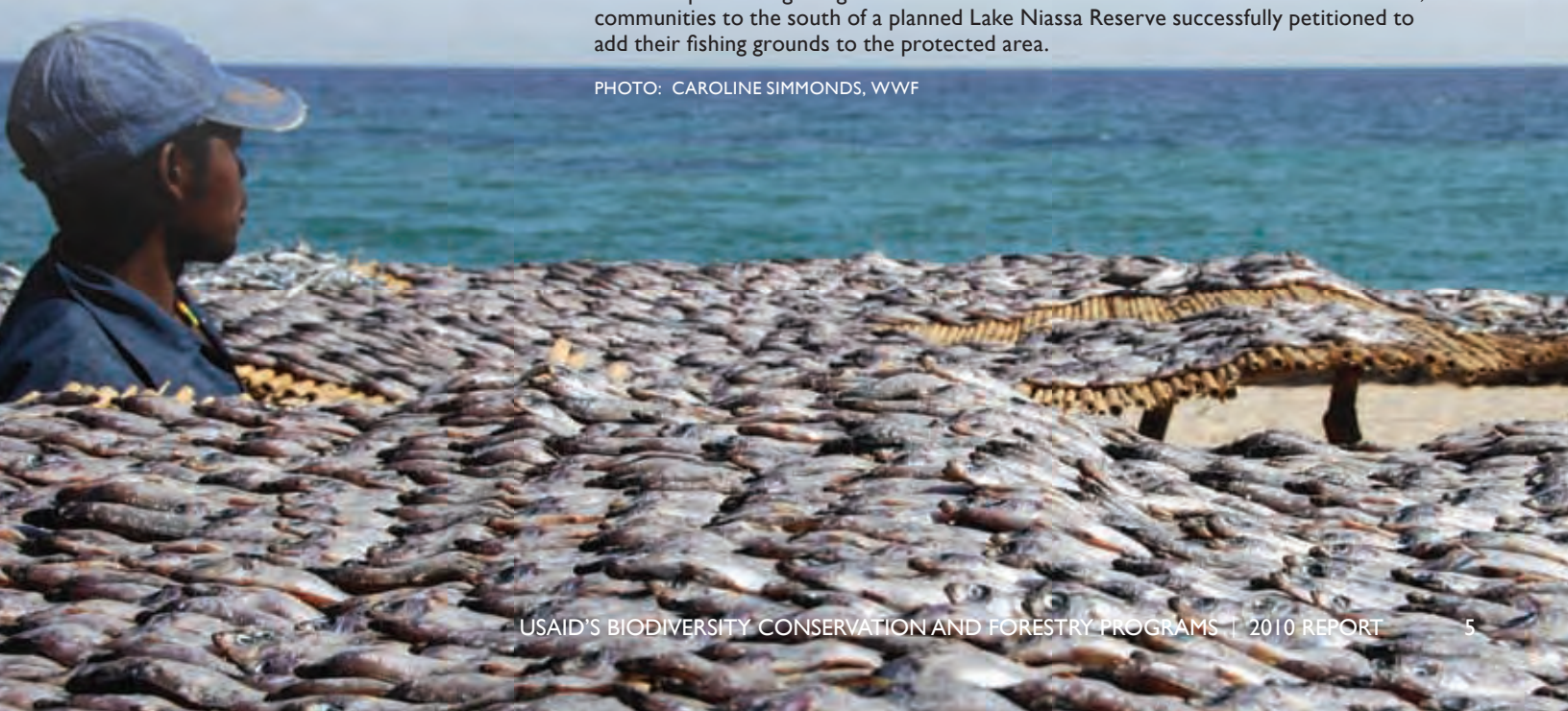
An estimated 70 percent of Africans depend on natural resources for their livelihood, and the richness and diversity of the continent's ecosystems provide global benefits. In FY 2009, USAID supported several programs working to promote sustainable

use of these resources, from the mountain forest of Rwanda to the coasts of Mozambique and Ghana. Responsible logging, community forestry, law enforcement, improved agricultural methods, payments for ecosystem services and ecotourism are just a few of the approaches put in place to address biodiversity threats driven by poor governance, conflict, and food insecurity.



**OVERLOOKED:** A fisherman peers over his drying racks in the village of Nkolongue, Mozambique. Recognizing the benefits of conservation for fish stocks and ecotourism, communities to the south of a planned Lake Niassa Reserve successfully petitioned to add their fishing grounds to the protected area.

PHOTO: CAROLINE SIMMONDS, WWF





## Africa Regional Program

### Mobilizing Knowledge for Conservation

The Office of Sustainable Development (AFR/SD) in USAID's Bureau for Africa provides analytical and technical assistance to country programs and coordinates with donors and partner organizations to promote social and economic development. Biodiversity activities include: knowledge sharing on emerging issues and best practices in conservation; timely and thoughtful biodiversity program assessment and planning for USAID's missions in sub-Saharan Africa; and support for great ape conservation in Central Africa.

Three agreements managed by AFR/SD collectively form the Biodiversity Analysis and Technical Support (BATS) program, which helps the Bureau for Africa apply effective forest and biodiversity conservation through assessments, targeted analyses, and other program development and management support. BATS is a multi-partner effort implemented by the Africa Biodiversity Collaborative Group (ABCG), the Environmental Capacity Building Project (ENCAP) and the International Programs division of the USDA Forest Service (USFS).

ABCG, a consortium of eight U.S. conservation organizations active in Africa, generated a variety of BATS accomplishments in 2009. Three workshops in Africa, six seminars in Washington, DC, and 11 analytical projects collectively enhanced networking and knowledge related to key themes, including HIV/AIDS

and conservation, sustainable bushmeat use, conservation linkages with emerging infectious diseases, conservation and the private sector, and biodiversity strategic planning. ABCG also maintained an active virtual and physical community, and electronically distributed over 30,000 documents.

On the theme of private sector engagement, ABCG generated analytical publications on partnerships between mining companies and conservation NGOs, private sector alliances for biodiversity conservation, and lessons learned from a buffer zone project in northern Congo. The consortium also organized a seminar on Zambia's first 'Partnership Park' and alternatives to extractive industry development. Efforts related to HIV/AIDS and conservation included a manual on the topic, and a seminar on providing HIV prevention and treatment in collaboration with wildlife conservation organizations and local communities. Partners also produced reports on: the financial costs of HIV/AIDS to the environment; mainstreaming and scaling up HIV/AIDS in the communal conservancies of Namibia; and incorporating HIV/AIDS into community-based conservation and development activities.

ENCAP's role in BATS is to provide short-term technical assistance, training and analytical support to strengthen the Bureau's application of biodiversity regulations and strategically plan and improve the implementation of conservation efforts. In FY 2009, ENCAP conducted nine mandatory strategic analyses of country-specific threats to tropical forests and biodiversity

(and opportunities for USAID intervention), and led development of BATS reports on topics relevant to USAID programming in Africa.

USFS promotes sustainable forest management and biodiversity conservation internationally. In FY 2009, USFS provided technical assistance to USAID missions in Liberia and Guinea, as well as a transboundary forest conservation program currently managed by USAID/West Africa. USFS also conducted training activities and short-term technical assistance for bilateral missions across sub-Saharan Africa.

BATS produced two major publications in FY 2009. *Partnering with Extractive Industries for the Conservation of Biodiversity in Africa: a Guide for USAID Engagement* which described specific industry issues and provides analysis of the forestry sector. *Biodiversity Conservation and Crisis: Key Issues for Consideration* includes chapters on protected area management in conflict zones, building capacity for conservation post-conflict, and land tenure and property rights for biodiversity conservation post-conflict.

The program also started two research efforts using FY 2009 funds. A review of lessons from 25 years of USAID environment programs in Madagascar was completed and published in the summer of 2010. This retrospective analysis catalogues the approaches and impressive results from USAID's long investment in biodiversity conservation, but also describes the rampant logging and wildlife trade following a *coup d'état* in March 2009 which

threaten to undo achievements in protected area management, conservation agriculture, and local governance and management of natural resources. A fourth report, on the linkages between faith communities and conservation, should be completed in early FY 2011.

AFR/SD continued to oversee USAID support to the Great Apes Conservation Fund (GACF) managed by the U.S. Fish and Wildlife Service. Through competitive grants, GACF supports research, protected area management, public education and law enforcement activities, contributing to the goals and objectives of the Congo Basin Forest Partnership. FY 2008 funds transferred in 2009 supported 23 new grants totaling \$2.25 million, and leveraged an additional \$2.88 million of matching and in-kind funds to directly support great ape conservation. From the largest grant, which financed two years of transboundary wildlife and human impact monitoring by local biologists and refinement of a strategy to reduce the impact of logging on apes, to the smallest grant, which helped fund a veterinary workshop for 18 great ape sanctuaries in 12 countries, GACF supports a variety of needs and stakeholders working to conserve great apes and their habitat.

USAID funds also supported an evaluation of GACF to measure and recommend ways to improve its effectiveness, efficiency, and degree of coordination with USAID's CARPE program (see next section). Stakeholder meetings in Washington, DC and in landscapes and capital cities throughout the Congo Basin informed the evaluation report, completed in 2010.

## Central African Regional Program for the Environment

### Conservation Landscapes and Regional Monitoring

The forests of the Congo River basin are of global importance for biodiversity conservation and climate regulation, with natural resources vital to the 80 million people who live in the region. Subsistence agriculture and an overreliance by communities on forest products for food and income create an unsustainable situation that threatens both biodiversity and human welfare. USAID's Central Africa Regional Program for the Environment (CARPE) supports work in nine countries to conserve biodiversity and reduce the rate of forest degradation, with most effort focused in Cameroon, Central African Republic (CAR),

Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon, and Republic of Congo (ROC), as well as the Virunga mountains in DRC and Rwanda. CARPE is the primary vehicle for U.S. government investment in the Congo Basin Forest Partnership, an international initiative with more than 40 partners.

CARPE activities operate at various scales, from forest cover monitoring across the region, to national-level forestry atlases, to field programs working with communities and governments in 12 priority landscapes. Comprehensive planning and management at the landscape level complement legal, regulatory, and policy strengthening programs at the national and regional levels. Landscape planning processes have been undertaken on over 52 million hectares since 2003, and the total area with fully-designed management plans nearly doubled, from 12.5 million



PHOTO: DAVID YANGGEN, USAID

**NET HUNTING** with Ba'aka in Bayanga, Central African Republic. USAID supports sustainable enterprises in the Congo basin, including cultural tourism with traditional forest dwellers.

hectares through 2008 to 22.5 million hectares in 2009. Highlights below from two landscapes in four countries illustrate some of the results of CARPE partner activities in support of community land-use planning, biological research, ecotourism, and law enforcement.

Maringa-Lopori-Wamba (MLW) is one of three CARPE landscapes that prioritizes conservation of the bonobo, a great ape endemic to DRC and an important flagship species. MLW had several notable achievements in 2009, beginning in March when the Government of DRC formally recognized MLW, a first among CARPE landscapes. This recognition was followed by a decree allowing for full implementation of a participative zoning project led by USAID's main partner in the landscape. Also in March, in the recently declared Lomako-Yokokala Faunal Reserve, the Lomako Conservation Science Center was formally opened in a ceremony well-attended by local and national authorities. This was followed in April by an excursion of prominent tourists which pilot-tested the potential for ecotourism in the reserve. The Lomako Center will be managed by DRC's nature conservation authority and will provide employment for local people supporting the needs of researchers and adventure tourists.

The Souanké Sembe Panhandle remains one of the wildest places in the 73,000 square mile Tri-national Dja-Odzala-Minkebe (TRIDOM) Landscape. The Panhandle is strategically wedged between the gorilla-rich Odzala and Nki National Parks in Republic of Congo (ROC) and Cameroon, and Minkebe National Park in Gabon, a stronghold



PHOTO: AFRICAN WILDLIFE FOUNDATION

**CONSERVATION STATION:** USAID provided funding for the Lomako Conservation Science Center in the Democratic Republic of Congo, which opened in March 2009 in a ceremony well-attended by local and national authorities. The Center will support bonobo research and tourism while providing employment for local people.

for forest elephants. Based on the results of CARPE-supported surveys, conservation efforts in the Panhandle were stepped up in 2008 and 2009 with the establishment of a northern headquarters for Odzala National Park and an increase in the number of eco-guards. Through FY 2009, authorities confiscated 20 automatic rifles used for elephant poaching, seized numerous other weapons and traps, destroyed 54 illegal poaching camps, and filed 36 police reports on crimes related to poaching. Other efforts in TRIDOM have led to the dismantling of illegal logging operations on the Dja River bordering Cameroon and ROC, and efforts to combat or offset the impact of mineral exploration and exploitation.

CARPE partners apply participatory mapping techniques to document natural resource use by all sectors of communities, including men, women and children. This approach provides a framework to share information on land-use zoning and delimitation including for protected areas; builds local capacity to assert and defend resource rights; and informs future management strategies. For example, in 2009, CARPE partners engaged with more than 300 villages in the region of the Itombwe Nature Reserve, eastern DRC, to produce base maps that now help orient community debates and develop zoning scenarios for the reserve.

Wildlife and forest policies and institutions were introduced or strengthened in several countries in 2009. In Gabon, a National Parks Agency was formally established to manage the new park system representing 11 percent of the country. DRC drafted a basic environment law, issued a ministerial decree launching a national forest land-use planning process, and completed a lengthy and comprehensive process to convert old forest titles to a new system, in the process canceling over 100 existing logging concessions. In addition, the percent of DRC territory inside protected areas increased to 11 percent with the establishment of the Kokolopori Community Reserve in the MLW landscape, which will protect a large population of the rare bonobo.

Following the killing of eight mountain gorillas in DRC's Virunga National Park, CARPE organized a successful Virunga Ministerial Summit in July 2008 to develop regional solutions to protect gorillas and their habitat in DRC, Rwanda and Uganda. In FY2009, the Greater Virunga Landscape Core Secretariat was legalized through a trinational treaty to coordinate activities across the landscape. To date, the rare mountain gorillas appear to have been protected, but protracted regional conflict coupled with increased interest in mining, oil and other extractive industries keep intense pressure on natural resources and fragile institutions.

Monitoring change and management impacts is a key component of CARPE's efforts, and substantial accomplishments were registered in

2009. Forest atlases were updated for Cameroon, Gabon, CAR and ROC, and most of the baseline work was done for an atlas of DRC. The atlases include maps of extraction activities developed using satellite remote sensing, which verify that loggers are limiting operations to their legally constituted boundaries. CARPE worked to expand the use of management plans in logging concessions in order to avoid high-biodiversity areas and include plans for community social development and wildlife management.

CARPE's partnership with NASA and the University of Maryland resulted in a methodology for analyzing forest cover change via satellite, which in 2009 was enhanced by adding and processing 7,000 additional archived LandSat images. This allows current and timely deforestation monitoring of the entire Congo Basin. Central African states used this information to develop their position on forest carbon in the context of the global climate change negotiations. The technology has now been transferred to a non-profit organization based in the region with the capacity to process the data.

While CARPE applies sophisticated technology to analyze forest cover change, traditional methods are still used for large-mammal surveys. Information on the populations of keystone species, including great apes, forest elephants and okapi, is used to prioritize biodiversity conservation in sensitive ecological areas. Data and analysis from surveys and inventories are featured on the CARPE website and in the State of the Forest 2008, the definitive report on the status of

the Congo Basin released in late 2009 and early 2010 (available in French and English at [www.observatoire-comifac.net/edf2008.php](http://www.observatoire-comifac.net/edf2008.php)).

The Congo basin contains the second largest tropical forest in the world, and its importance to carbon sequestration for climate change mitigation cannot be overstated. A CARPE-supported study of carbon stocks in protected areas and areas with reduced-impact logging found that improved forest management systems minimize the emission of greenhouse gases. Training sessions were conducted for local forest communities throughout the region to explain global climate change mitigation solutions such as reforestation, more efficient wood stoves, and other practical activities and technologies which contribute to biodiversity and forest conservation.

CARPE's emphasis on establishing use-rights through multi-stakeholder large-scale land use plans appears to be an effective approach for mitigating conflict and protecting biodiversity. Conservation, livelihoods, and governance results combined with U.S. leadership in the Congo Basin Forest Partnership leveraged substantial funding from both public and private partners in 2009. The African Development Bank approved a \$65 million grant to six of the CBFP landscapes, the Global Environment Facility advanced \$45 million worth of regional projects, the World Bank approved a \$56 million project for the DRC, and numerous foundations and private companies committed to new partnerships.

### Watershed Conservation Policy and Practice

The Mara River basin is one of the most ecologically and economically important transboundary regions in Africa. Encompassing the Serengeti National Park in Tanzania and the Maasai Mara Reserve in Kenya, the basin is host to the largest migration of ungulates on earth, with over 1.5 million wildebeest, zebra and gazelle in an event that draws tourists from around the world. This spectacle of life hinges on transnational flows of water that sustain species by providing unique riverine habitats and dry season water sources. Growing water scarcity, increasing upstream water offtake, and worsening water pollution threaten the river, as well as the people and biodiversity that depend on it. USAID/East Africa addresses this challenge through the Transboundary Water for Biodiversity in the Maasai Mara River Basin (TWB-MRB) program.

The program works closely with the East Africa Community's Lake Victoria Basin Commission to put in place policies and cross-border agreements that will improve management of the basin over the long term. During 2009, TWB-MRB facilitated the successful completion of a Biodiversity Action that designated the highest priority areas for biodiversity in three key habitats (Mau forest, Maasai Mara-Serengeti, and Mara wetland/swamp), identified associated threats, and made recommendations for key conservation actions. The program also supported an Environmental Flows Assessment, which used a participatory approach to analyze the minimum level of water quality



PHOTO: GLOBAL WATER FOR SUSTAINABILITY PROGRAM

**DROUGHT DRIVES MAASAI HERDERS** and thousands of cattle in search of pasture in Kenya. In 2009, the worst drought in 25 years underscored the importance of USAID's transboundary program supporting better management of the Mara River, including ecological flows for fish and wildlife.

and quantity needed to support biodiversity, and established an environmental flows prescription model for the basin (to regulate irrigation, dams, and other means of reducing flow). Recommendations from these tools build on a Strategic Environmental Assessment conducted under the auspices of the Basin Commission, which informs efforts to establish an Integrated River Basin Management Plan to meet the current and future needs of people and wildlife.

Working to improve water resource governance, USAID helped Water Users Associations in Kenya and Tanzania to formalize into a Transboundary Water Users Forum and Technical Advisory Committees. These new management structures will increase the efficiency and effectiveness of activities. Further, this network of community-level organizations serves as a platform for a local governance framework to promote sustainable natural resources management, and enhances

the development of the integrated management plan. During 2009, representatives from both Tanzania and Kenya approved a constitution for the Water Users Forum, and a Secretariat was formed.

USAID's support for transboundary watershed conservation in partnership with governments and communities is getting noticed. In recognition for their work promoting the protection and conservation of the Mara Catchment area and supporting the sustainable and efficient use of water, the Mara River Water Users Association was selected as one of 25 winners of the 2010 Equator Prize, from a total of over 300 nominees in 66 countries. The Equator Prize is awarded biannually by the Equator Initiative to community and indigenous organizations working to reduce poverty through biodiversity conservation.

In the Mara River basin, water users in the middle and lower basin, including protected areas, are highly

dependent on the good practices of economically disadvantaged water users in the upper catchment. This situation is well-suited to a payment for ecosystem services (PES) mechanism for financing upstream resource management by small-scale farmers and pastoralists. USAID made progress in 2009 towards realizing this approach to sustainable conservation finance, in part through support for a PES Handbook (published in March 2010) for Mara basin stakeholders participating in the process to create a mechanism to pay for watershed management. The handbook describes the current water situation and projects future trends, explains the importance of improved land management practices and more efficient water use in the Nyangores and Amala subcatchments (key headwaters of the Mara), and introduces the concept of payments for watershed services using illustrative examples from around the world. Specific to the Mara context, the book identifies potential buyers and sellers of services, explains the legal context for PES in both countries, and describes the process, roles, and responsibilities of Mara stakeholders. This handbook, combined with ongoing community and government efforts, brings the prospect of PES for the Mara River basin one step closer.

A severe drought in the region from 2007 through 2009 underscored the importance of rational water management in the Mara basin. TWB-MRB noted discontinuous river flows and large fish mortality during this time. In the nearby Amboseli-Kilimanjaro ecosystem, a joint aerial wildlife census conducted by authorities in Kenya and Tanzania found that wildebeest declined by a

staggering 83 percent, zebra by 71 percent, and buffalo by 61 percent. Livestock also declined by more than 60 percent, seriously affecting Maasai pastoralists. With the commitment of the East African Community, national governments, and the efforts of groups like the Mara River Water Users Association, USAID will continue working towards making this critical ecosystem resilient to drought and better able to support the biodiversity and traditional cultures for which the Mara River basin is known.

## **USAID/Southern Africa**

### **Integrated River Basin Management**

Maintaining connectivity of transboundary wildlife migration routes is critical for biodiversity in the Okavango River basin and the wider Kavango-Zambezi Transfrontier Conservation Area (KAZA-TFCA), and therefore important for the thousands of livelihoods dependent on nature-based tourism. In the Okavango River basin, Namibia's Kavango region and Botswana's Okavango Delta rely heavily on the transboundary water resources that flow from Angola. In turn, many people hope that wildlife moving through historic migratory patterns from Namibia and Botswana will help drive tourism and economic growth in Angola, which is still recovering from 30 years of war. To ensure the long-term existence of the relatively pristine conditions that exist today, USAID's program in Southern Africa continued to build the capacity of regional, state and local institutions to conserve biodiversity and address potential

threats, while improving natural resource management practices in large areas of southeast Angola which impact the Okavango basin.

In its last year of implementation, USAID's Integrated River Basin Management (IRBM) program worked with the Water Division of the Southern African Development Community (SADC) to strengthen the capacity of regional institutions to improve management of the Okavango River Basin and enhance community participation in the management of natural resources and protection of biodiversity. IRBM support helped to establish the Secretariat of the Okavango River Basin Water Commission (OKACOM), which is now a permanent institution with a clear mandate to work with and advise the governments of Namibia, Botswana and Angola on sound environmental management of basin resources. The three member countries of OKACOM pledged financial resources to fund long-term operations of the Secretariat, helping the organization become sustainable. IRBM has also led to improved hydrological data collection, management, and sharing among the three countries.

Many USAID outputs in FY 2009 were focused on conveying advice and lessons learned to institutions established in the Okavango basin and elsewhere in Southern Africa during the life of the project. For example, IRBM developed a report outlining short- and long-term recommendations on information management and started a website for the SADC Water Division. The program also developed guidelines on: monitoring institutional development



PHOTO: MARK ATKINSON, WCS

**STANDING TALL:** No predator in Africa is a more successful hunter than the African Wild Dog (*Lycaon pictus*), pictured here in Bwabwata National Park, Namibia. USAID's new SAREP program will work to conserve up to 70,000 square kilometers of wilderness in Angola bordering Botswana and Namibia.

for river basin organizations (RBOs); financing mechanisms for RBOs; and benefit sharing from water allocation schemes. A conceptual mapping exercise identified mechanisms for coordination between RBOs and TFCA institutions. Finally, a comprehensive biophysical inventory of southeastern Angola was completed with IRBM support, producing a much-needed reference for conservation actions in the region.

Along international boundaries in Southern Africa, numerous land-use conflicts will continue and others will surface demanding coordinated transboundary planning. Even within countries, such as in the Kavango and the eastern Caprivi regions of Namibia, conflicts between agriculture, tourism, and wildlife have occurred due to lack of inter-agency coordination. OKACOM and the KAZA-TFCA have both identified transboundary

land-use planning as a regional priority, resulting in IRBM support for a consultative land-use planning process. USAID also worked in cooperation with other development organizations to hold a number of local land-use planning fora in Angola, Botswana and Namibia, which raised awareness and built a foundation for basin-wide land-use planning.

Many of the processes begun by IRBM will carry on through a new USAID activity, the Southern Africa Regional Environmental Program (SAREP). Scheduled to begin in 2010, SAREP will improve the abilities of OKACOM member states to plan and manage transboundary resources by addressing longer-term impact and sustainability issues and will support land-use plans across the Okavango River basin. The program will also work to strengthen institutional capacity within SADC in the areas of transboundary cooperation, sustainable water resource management, biodiversity conservation, and climate change.

USAID has worked for several years to upgrade the classification of land in southeast Angola to protected area status. Land policy in the country is particularly complex and full of sensitivities, leaving the major task of securing the headwaters of the Okavango still undone. Dialogues between the Government of Angola and communities in the region have begun to garner support from residents for the proposed designation. SAREP will build on the progress made thus far to conserve up to 70,000 square kilometers of Angolan wilderness along the border with Namibia and Botswana.

## USAID/West Africa

### Resource Management Without Borders

West Africa's diverse landscapes and coastal areas are rich in biodiversity; however, destruction of the natural resource base is advancing more rapidly in this region than in most other parts of the world. Areas of ecological importance are becoming increasingly isolated, and many of these are divided by national boundaries, where policies in one country can have significant conservation impacts on the other side of the border. USAID/West Africa's biodiversity programs are designed to bridge gaps in regional coordination and create ecological, political, social, and administrative connectivity for better management of natural resources.

Two biodiversity programs initiated in 2007 continued assisting governments and communities to harmonize policies and improve management of select transboundary areas. In the Ghana-Cote d'Ivoire Transboundary Project, the commitment of host country governments has been critical. In 2009, the Forest Commission of Ghana initiated and promoted participatory governance in the forest sector during meetings at the community, district, national and regional levels. In Cote d'Ivoire, the Department of Nature Protection prevented the conversion of natural forest areas into palm plantations by designating them as classified forest reserves.

In the Guinea-Sierra Leone Transboundary Project, community participation is the key to success. In 2009, several stakeholder meetings



PHOTO: STEPHANIE OTIS, USFS

**THEATER IN THE PARK:** Traveling conservation plays around Tai National Park in the Ivory Coast have led communities to take ownership of chimpanzee conservation. With support from USAID's STEWARD program, Wild Chimpanzee Foundation extended these plays to rural villages around additional priority zones.

resulted in a landscape map that delineates the borders of a proposed National Peace Park for Sierra Leone and Guinea. USAID also supported community participation in the development and review of forest and biodiversity policies, improving local acceptance of ten new laws and agreements regulating natural resource management and conservation. Unfortunately, a *coup d'état* in Guinea in December 2008, followed by escalating violence in 2009 and prolonged elections as this report went to press, hastened a strategic and operational shift of activities to Sierra Leone.

Despite the unrest and political change, the project's engagement with communities improved forest and watershed management practices inside forest reserves as well as in farms, plantations and sacred groves. With USAID assistance, 23 tree nurseries were established, supplying 31,000 seedlings to participating communities. Over 1,000 hectares of riparian buffer zones were reforested with native tree species in 2009,

and more than 1,400 community members were involved in tree planting campaigns on 160 hectares of previously degraded land.

Perhaps the largest transboundary area in West Africa is along the coast, where 3,500 kilometers of diverse habitats and powerful upwellings of cold water create a productive food chain supporting biodiversity in one of the most economically important fishing zones in the world. Decades of overexploitation by foreign fishing fleets have forced West African commercial and artisanal fishermen to spend longer hours catching fewer fish, or to abandon fishing altogether. To protect the biodiversity and traditional livelihoods of this marine ecoregion, in 2009 USAID launched the Gambia-Senegal Sustainable Fisheries Project, known locally as Ba Nafaa ("Benefits from the Sea"). This project improves management of artisanal fisheries and coastal ecosystems in collaboration with fisheries authorities and local fishing communities.



One of the first priorities for *Ba Nafaa* was the oyster fishery in Gambia's extensive mangrove wetlands, where decades of unregulated harvest have made oysters smaller and harder to find, even in Tanbi National Park, an internationally recognized Ramsar wetland. In 2009, the program entered into partnership with the TRY Women's Oyster Harvesting Association, representing 500 oyster harvesters in 15 communities. Begun as a way to pool resources and raise funds for boats, USAID support has helped TRY expand its mission to include sustainable management of oysters and the mangrove wetland ecosystem.

Early results of technical assistance are promising. The women of TRY agreed to extend the closed season three additional months, resulting in a marked size increase in harvested oysters. Each community also agreed to close one tributary in their territory for the entire year to encourage regeneration of the oyster population. Oyster harvesters are helping conserve the wetlands by raising public awareness through plays, and by reporting observations of illegal fuelwood harvesting to local officials. TRY members are also experimenting with shellfish aquaculture to help relieve pressure on wild stocks and limit harm to mangroves. Eventually, *Ba Nafaa* and TRY hope to see oyster prices grow exponentially by opening up new markets in the high-end retail outlets serving tourists, and possibly by developing an export market for sustainably harvested oysters.

In FY 2009, the mission also began investing in the Sustainable and Thriving Environments for West Africa Regional Development



PHOTO: CHRISTI ZALESKI

**GROWTH INDUSTRY:** Assistance to a Women's Oyster Harvesting Association in Gambia produced early results after an extended closed season resulted in larger, more valuable oysters.

(STEWARD) program, initiated in FY 2008 with financial support from Africa Bureau's Office of Sustainable Development and technical assistance from the USDA Forest Service (USFS). STEWARD aims to strengthen transboundary natural resource management in the Upper Guinea forest corridor in support of peace building, biodiversity conservation, knowledge sharing, and policy harmonization, complementing existing regional initiatives such as the Mano River Union and other USAID funded programs in West Africa.

USFS consulted with local and international stakeholders to develop STEWARD's regional approach to biodiversity conservation prior to awarding grants for work in four priority transboundary areas in FY 2009. One grantee, Ghanaian NGO Nature Conservation Research

Center, is conserving biodiversity in the Wonegezi region of Liberia and Ziama Biosphere Reserve of Guinea by building local capacity to manage and harvest high value non-timber forest products (NTFPs), and by connecting NTFP harvesters with regional and international buyers and financiers. This sustainable and profitable use will maintain forest habitat in this important corridor for West African elephants and other rare populations. One of the first activities was a workshop on Sustainable Harvesting and Marketing of NTFPs conducted in October 2009. Pilot activities will work with communities in areas where NTFP resources have significant potential in terms of volumes traded and livelihood benefits.

Even the most intact forests of West Africa are merely a shadow of what once was: understanding the pattern of degradation and creating a meaningful baseline for setting conservation targets require looking into the past. Through an agreement with the U.S. Geological Survey, USAID completed a time-series analysis in FY 2009 that mapped the magnitude and extent of land area altered by humans on almost 33,000 hectares of transboundary land in the Mano River region, from the 1960's to the present. The analysis has raised awareness of natural resource trends among national and regional decision-makers, and is expected to help formulate sound and sustainable policies leading to better natural resource management, conservation, and food security. The satellite imagery will also help USAID monitor and describe measurable impacts from its agriculture, biodiversity, and natural resources management programs.



PHOTO: AMY COBDEN

**HOLDING ON:** By helping local people bring to market profitable agricultural goods grown in areas zoned for agriculture, USAID reduces dependence on bushmeat hunting and conserves habitat for the elusive bonobo, a flagship species for conservation in DRC.

## Democratic Republic of the Congo

### Conservation and Sustainable Agriculture

The Democratic Republic of Congo (DRC) is one of the world's ten most biodiverse countries, with a number of endemic species including two great apes: the bonobo (*Pan paniscus*) and Grauer's gorilla (*Gorilla beringei graueri*). DRC contains more than half of the vast Congo basin forest, about 130 million hectares virtually untouched by large-scale forestry or mining operations. At the same time, more than 80 percent of the country's almost 70 million residents make their primary living from agriculture, which results in deforestation from small-scale land clearing. To reduce this pressure on forest resources, USAID works to support more sustainable agricultural practices in

areas zoned for intensification within larger high-biodiversity landscapes.

USAID/DRC focuses on improving agricultural inputs and planning with communities on the margins of conservation areas. USAID/DRC plans biodiversity activities in coordination with USAID's Central African Regional Program for the Environment (CARPE), supporting sustainable agricultural activities in three CARPE landscapes: Ituri-Epulu-Aru, Maringa-Lopori-Wamba, and Salonga-Lukenie-Sankuru (see <http://carpe.umd.edu> for more information). Activities focus on maintaining forest cover in tropical production systems, reducing soil erosion and water degradation caused by shifting slash and burn cultivation practices, and maintaining and improving habitat. These investments recognize that food production, sanitation and health systems depend on ecosystem

services, including safe and plentiful water; climate change mitigation, and biodiversity protection.

In FY 2009, USAID/DRC commissioned an assessment that detailed the current status of and potential priorities for biodiversity conservation and forest management in the foreseeable future. Among other things, the assessment confirmed USAID's prominent role among many donors and conservation organizations operating in DRC, and highlighted the need for continued coordination between USAID/DRC and USAID/CARPE, as well as within the broader Congo Basin Forest Partnership. The report also suggested building on prior investments in capacity building, as at the Tayna Center for Conservation Biology in eastern DRC, as well as private sector engagement inside and outside CARPE landscapes.

A COMMUNITY NURSERY in Ethiopia's Central Rift Valley provides trees for communities mobilized for tree planting by a local partner, helping relieve pressure on fragile land.

PHOTO: COUNTERPART INTERNATIONAL



## Ethiopia

### Community Conservation and Ecotourism

Approximately 85 percent of Ethiopia's population is rural and engaged in rain-dependent smallholder farming and pastoralism. Dense populations and unsustainable agricultural practices put severe pressure on fragile land, resulting in high rates of deforestation and natural resource degradation, including biodiversity loss. Poor rains in 2009 coupled with policies that discourage private sector investment have further exacerbated the situation. To address these issues, USAID is working with the Government of Ethiopia to create

non-farm economic opportunities while improving community-based natural resources management.

At its best, ecotourism provides both the incentive to conserve species and landscapes that draw tourists, and the financing to do so. Launched in late FY 2008, the Ethiopian Sustainable Tourism Alliance (ESTA) became fully operational in 2009, and is working to capitalize on Ethiopia's rich biodiversity, unique culture, and impressive history. ESTA promotes community-based ecotourism in some of Ethiopia's most biologically significant areas, starting with six community conservancies located in protected areas of the Central and Southern Rift Valleys. A second

phase is planned for the Bale Mountains and Awash National Park.

ESTA will strengthen biodiversity conservation and natural resource management by: facilitating community mobilization efforts for co-management of natural resources; building capacity in participatory natural resource management and sustainable tourism planning; and establishing community conservation areas. By better managing neighboring protected areas, communities will reap the benefits of ecotourism through jobs, microenterprise development assistance, and community grants.

Ecotourism program interventions will create jobs and businesses by increasing market linkages,

expanding and diversifying the tourism value chain, and promoting cross-sectoral opportunities with health and education activities. For example, ESTA will support training in handicraft production and marketing for people affected by HIV/AIDS, while raising HIV/AIDS awareness and prevention among those working in the tourism sector and in destination communities.

USAID also supports forestry components of a Productive Safety Net Program (PSNP) implemented jointly by the Government of Ethiopia and various donors. In FY 2009, PSNP food-for-work activities applied agroforestry and soil conservation methods to over 1,000 hectares of farmland, and reforested about 420 hectares of degraded land with 6.6 million tree seedlings.

## Ghana

### Conservation Enterprises and Fisheries Governance

Ghana's forest sector faces a severe crisis. The country lost 80 percent of its forest cover between 1909 and 1990, and Forest degradation has worsened over the last two decades due to industrial logging and agricultural expansion. About 70 percent of Ghana's rural population depends directly on dwindling forest resources for their protein, medicine, fuel and other livelihood needs, including agriculture. Exacerbating this downward spiral of deforestation and poverty, logging operations have reduced access to non-timber forest products and caused collateral damage to farmland and crops, making the poor even poorer in many areas.

In another unfortunate feedback loop, forest degradation has been documented to reduce stream and river water flow in the dry season, while reducing rainfall and ultimately productivity in Ghana's large agroforestry sector. Less rainfall results in fewer trees, resulting in further local climate changes. USAID takes an integrated approach to natural resource management (NRM) in Ghana to ensure that the environmental services and products upon which Ghanaian lives and livelihoods depend are managed in ways that sustain incomes and biodiversity.

One of the most biologically significant forest areas in Ghana is in the Tano River basin, a transboundary watershed in which the forests of the Brong Ahafo region in Ghana regulate the flow of water into

ARTISANAL FISHING BOATS in Dix Cove, Ghana. A new USAID program aims to conserve key biodiversity assets in this area.

PHOTO: GLENN G. PAGE, SUSTAINAMETRIX



the Abi Lagoon of Côte d'Ivoire. Forest degradation is correlated with decreased rainfall in Brong Ahafo, which in turn has reduced production of Ghana's biggest export, cocoa. This situation is gradually extending to the other regions of the high forest zone. In response, the Ghana mission supports the Natural Resource Based Enterprise (NRBE) component of USAID/West Africa's Ghana-Côte d'Ivoire Transboundary project.

NRBE focuses on stimulating private enterprise growth and income generating activities that mitigate the unsustainable use of natural resources and promote biodiversity conservation. The project strengthens the capacity of community-based organizations (CBOs) to promote new, market-driven opportunities for forest and agroforestry enterprises. In FY 2009, NRBE reached 2,000 individuals in 12 forest-dependent communities in western Ghana. Program coverage expanded to two additional districts, bringing the total to five administrative districts and 54 communities, and increasing the number of participating CBOs from about 90 to 120.

USAID trained key stakeholders in business skills, technology applications, and small business development strategies to stimulate private enterprise growth as a mechanism for preventing unsustainable use of natural resources and promoting biodiversity conservation. For example, NRBE support helped establish a bird-watching ecotourism enterprise that provides sustainable employment while improving the management of one of the

most endangered bird species on the African continent, the Whitenecked Rockfowl.

Local oversight of forest use can be empowering and cost-effective. In 2009, NRBE funded the establishment of several multi-stakeholder forest governance fora for 913 participants in 11 communities to monitor natural resource flows. The forest forum concept may be replicated and strengthened to encourage forest conservation by additional communities.

As a result of NRBE support for conservation enterprises, community-based NRM, and local governance, newly conserved lands in Ghana increased by 132,000 hectares in FY 2009, primarily through the expansion of community protected areas. USAID will continue to support activities like NRBE which mitigate the alarming environmental and social impacts of forest degradation and deforestation, estimated to cost Ghana about ten percent of GDP annually.

Ghana's coastal wetlands provide critical habitat for migratory birds and marine species, as well as commercially important fisheries. While many of the coastal protected areas in the western region are in good condition, new oil and natural gas production may put them at risk from infrastructure development, shipping traffic and catastrophic oil spills. Five of the world's seven species of sea turtles use Ghana's coasts for nesting or feeding. Hunting, egg collection, beach development, and shrimp fishermen are major threats to these endangered reptiles.

USAID's new Integrated Coastal Resource and Fisheries Governance program aims to ensure that Ghana's coastal and marine ecosystems are developed in a way that generates a diversity of long-term socioeconomic benefits for coastal communities while sustaining biodiversity. In 2009, the program targeted three wetland areas within the Takoradi-Sekondi metropolitan area for restoration and conservation, starting with an assessment that identified key biodiversity assets such as sea turtle nesting beaches, humpback whale feeding and nursing grounds, and marine habitats of particular significance.

## Kenya

### Community-Based Conservation, Institutional Capacity Building

Kenya is renowned for its spectacular wildlife and scenery, but pressing natural resource management and biodiversity conservation challenges exist. USAID/Kenya works to develop and implement national conservation strategies and recovery plans for species of high conservation value, protect and improve biologically significant landscapes, replant and preserve native forest, and restore ecological processes on community grazing lands and wildlife ranges. Program activities focused on seven key geographic locations: Kitengela wildlife dispersal areas south of Nairobi National Park; community lands linked with marine and forest reserves in the north coast; western Mt. Kenya; the Amboseli-Tsavo wildlife corridor; Kakamega, the last area of Central African forest in Kenya;



REFORESTATION in Kenya's Mau forest complex contributes to a goal of doubling the forested area of the country by 2012. Government investments and policy decisions are working in tandem to help restore and conserve this critical water catchment.

PHOTO: CHARLES OLUCHINA, USAID

Nakuru and Naivasha lakes; and community wildlife conservancies in Kenya's northern rangelands.

Community conservancies play a critical role in the monitoring and preservation of endangered species. In 2009, USAID worked with five conservancies to conduct new threat assessments, and applied an improved Conservancy Management Monitoring System in ten conservancies. By the end of the year, over 200 conservancy wildlife scouts were equipped to collect ecological data and monitor threats on key wildlife species. Scouts also received training in data collection according to the Monitoring Illegal Killing of Elephants (MIKE) standards, and learned to improve and streamline reporting requirements of the Convention on International Trade in Endangered Species (CITES) and the Kenya Wildlife Service.

USAID supported several species-specific conservation efforts in FY 2009. Recovery plans were implemented for sea turtles, including turtle monitoring, tagging and data management, along with beach patrols to monitor and protect sea turtle nests. Relocation plans were developed for the translocation and reintroduction of reticulated giraffe and black rhino into their original habitats in the foothills and forested areas of the Mathews range and the woodlands of the Sera conservancy.

Kenya aims to increase forest cover from less than two percent in 2009 to four percent by 2012 through major investments in reforestation of five highland watersheds in the country: Mt. Kenya, Mt. Elgon, the Mau Forest Complex, the Aberdare Forest, and the Cherangani Hills. USAID supported this objective with capacity

building of the recently established Kenya Forest Service. Direct technical assistance helped prepare guidelines and operational procedures for Forest Conservation Committees within the Kenya Forest Service with which Community Forest Associations can develop forest co-management agreements. USAID also helped establish management systems for the Forest Service's transition to an independent state corporation capable of managing public and donor funds in support of forestry programs.

USAID supported baseline ecological assessments in the Mau Forest Complex, the most important of Kenya's five "water towers." Recommendations from these studies will serve as the basis for future efforts to restore and conserve native forests and rehabilitate critical catchments in the ecosystem. The

Government of Kenya aims to recover encroached and illegally allocated land in the Mau Forest, and has established a secretariat to coordinate action plans for restoring the catchment area. The mission also continued support for The International Small Group and Tree Planting Program (better known as TIST), through which 51,000 members from 1,600 villages have planted nearly five million trees around Mt. Kenya and the Aberdares.

On the policy front, USAID provided support to a coalition of NGOs to review the draft Wildlife Bill of 2007 and recommend revisions and updates for consideration by the Cabinet. Moving forward on tough, politically charged issues affecting the environment, the Cabinet approved the draft National Land Policy while the Ministry of Lands took tentative steps to recognize marginalized indigenous communities' rights to property in ancestral homelands along the North Coast.

Despite significant social and environmental challenges in FY 2009, USAID investments in capacity building, research, restoration and policy reform improved the management of more than 93,000 hectares of biologically significance areas. Improved management activities generated \$1.12 million in revenue for rural households, exceeding the annual target by 16 percent. Over 18,000 Kenyans received training in biodiversity conservation, natural resources management and conservation enterprises, and climate change mitigation.

Although women made up 37 percent of people trained in 2009,

their representation in natural resource governance and revenue-generating enterprises remains low, particularly in the strongly patriarchal, pastoral areas. Even so, female-dominated conservation enterprises performed very well in 2009. The Green Belt Movement's Aberdare forest rehabilitation project, where 90 percent of the beneficiaries are women, generated \$30,240 from the production and sale of tree seedlings in its first year of implementation. A butterfly farming project managed by the National Museums of Kenya in which 98 percent of members are female, doubled its previous annual earnings to \$109,000 from the sustainable production and export of butterfly pupae to exhibits in the U.S. and Europe.

Biodiversity conservation through natural resource management and conservation enterprises builds ecological and economic resiliency to extreme events. In 2008, wildlife tourism helped restore local incomes and international confidence in the country following post-election violence. In 2009, when the worst drought in 25 years severely impacted Kenya's ecosystems, USAID's ongoing support for natural resource management again proved its value. Although some endangered and threatened wildlife such as elephant, buffalo, wildebeest, and Grevy's zebra succumbed in large numbers, 87,000 hectares of semi-arid woodland and rangeland under improved management showed no decline in condition. Perennial grass cover, an indicator of ecological health, actually improved on nearly 600 hectares influenced by programs receiving USAID support.

## Liberia

### Community Forestry and Conservation

Despite previous civil conflict and continuing problems with illegal logging, shifting cultivation, large-scale agricultural investment, and an extensive bushmeat trade, Liberia retains some of the highest levels of biodiversity in West Africa. The country contains 40 percent of the remaining Upper Guinean forest, a critically threatened ecosystem with the highest mammalian species diversity in the world. In 2009, USAID completed programs supporting Government of Liberia priorities in the areas of sustainable logging and community conservation in park buffer zones, and scaled up support for community forestry.

Liberia resumed commercial forestry in 2009, three years after the UN Security Council lifted timber sanctions imposed because of unscrupulous logging practices that financed conflict. Improved forest management in Liberia should secure a reliable flow of forest products while conserving biodiversity and maintaining ecosystem services. The Liberia Forest Initiative (LFI), initiated by the United States and now a multi-stakeholder partnership, works to improve the harvesting practices of commercial logging operators while strengthening the capacity of the government to transparently award contracts to reputable companies. In its last year receiving USAID support, LFI provided training to the Forestry Development Authority (FDA) and the private sector in sustainable forest management, and worked with communities to better manage social agreements with logging companies.



PHOTO: DAN WHYNER, USAID

**SETTING THE TONE:** A village chief addresses attendees at the local launch for USAID'S Land Rights and Community Forestry Program in Liberia, sharing his aspirations for the program over the coming years.

USAID's Civilian Conservation Corps program operated in six communities around Sapo National Park to provide alternative livelihood in areas such as agriculture, livestock rearing, and agroforestry, thereby relieving pressure on pygmy hippos, chimpanzees, and other threatened residents of Liberia's only national park. When the program closed in FY 2009, USAID and its partners had identified threats to the park and succeeded in mitigating many of these by working with community conservation groups to develop conservation-compatible farm and non-farm employment opportunities.

The Land Rights and Community Forestry Program (LRCFP) is now USAID's flagship forest activity in Liberia. LRCFP assists the FDA with improving the enabling environment for community control

and management of forest resources; fosters better management of forests and the biodiversity they harbor; and tests approaches for communities to sustainably extract and market timber and non-timber forest products. The program works in two clan areas adjacent to East Nimba Nature Reserve and in two clan areas near community-owned forests south of Sapo National Park, primarily to develop and strengthen community-based forest committees that regulate logging, hunting and agriculture on community forest lands.

In 2009, LRCFP helped create three community forest management committees that now serve eleven villages in the periphery of East Nimba Nature Reserve. Through co-management agreements, these committees collaborate with the

FDA to ensure effective monitoring and protection of biodiversity in their forests, including enforcement of penalties for illegal use. USAID also helped to change local perceptions of East Nimba, and negotiated community acceptance of physical demarcation of boundaries absent since 2003 when the reserve was established. Rather than continuing to block the FDA's demarcation attempts, communities now want to assist with the process as conservation partners.

Establishing a legal framework for biodiversity conservation has been a challenging but important part of Liberia's reconstruction. USAID supported the passage of two policies important for community forestry in 2009, which became law in September and October of that year. The National Land Commission Act will result in policy recommendations concerning customary land and resource tenure regimes that underpin the legitimacy of community forestry management. The Community Rights Law with Respect to Forest Lands will allow for community management of forests, and specify the roles and responsibilities of the principal stakeholders in the process. The Government of Liberia is now implementing the regulatory framework for community forestry, including developing laws, regulations, and best practices governing these activities. With the legal foundation in place or in progress, USAID anticipates that forest management training and capacity building for community and government institutions may be necessary for community forestry to flourish.



## Madagascar

### Ecoregional Conservation and Sustainable Forests

Internationally recognized for its high concentration of endemic species, Madagascar is one of the world's highest priorities for biodiversity conservation. USAID has supported implementation of National Environmental Action Plans since 1989, which with recent commitments to conservation by the previous Government has increased the area under protection and led to numerous improvements to environmental policies and institutions. Tragically, a military coup in early 2009 brought this progress to a halt and threatens to reverse the gains achieved in biodiversity conservation and sustainable economic development. The program was terminated during the course of 2009.

Prior to the coup and subsequent suspension of assistance in the environment sector from the United States, USAID field conservation programs targeted buffer zones in the eastern montane forest corridor, working to provide viable alternatives to slash-and-burn farming and promote community co-management of forests and newly designated protected areas. USAID also worked to promote a legal and sustainable forestry sector that meets wood and energy needs, thereby minimizing pressure on natural forests. Following the coup, newspapers and conservation organizations have reported rapid destruction of forests and widespread biodiversity loss. Still, USAID's achievements in 2009 were significant, and investments over the past several years have empowered

some communities and civil society to know and assert both their rights and the government's responsibility to uphold environmental laws, even during a political and economic crisis.

Some of USAID's biggest successes were related to protected areas, including final approval of a revised policy that would have conferred definitive protection status on nearly three million hectares. An amendment to an inter-ministerial decree between the Mining and Environment Ministries prohibits mining permits in 1.2 million hectares of biodiversity-rich area, with permanent protection to be awarded once the protected area code is approved under a new democratically elected government. Local communities received 75 percent of the management rights and responsibilities for these new protected areas as a result of USAID assistance. Supporting protected areas more broadly, the first comprehensive map and associated geographic information system for all the nation's protected areas was finalized and distributed. In addition, USAID developed a communications plan and grant allocation strategy for the Madagascar Foundation for Protected Areas and Biodiversity, the primary provider of sustainable financing to Madagascar's most important protected areas.

Deforestation – from agriculture, fuel wood collection, and fire – was the greatest long-term threat to Madagascar's biodiversity, but is now exceeded by rapacious illegal logging of rosewood and ebony, uncontrolled wildlife trade, and unregulated fishing. USAID supported training and technology to improve forest

management in 2009, resulting in reforestation of 50 hectares with fast growing tree species, and 340 charcoal producers trained in less wasteful charcoal production techniques. Educational workshops and the establishment of irrigation systems in Anosy helped farmers realize the linkages between healthy forests (in the neighboring park) and water availability, and led to more efficient crop production, thereby reducing encroachment into the protected area. An automated satellite fire alert and monitoring system became fully operational in 2009, enabling forest service officials to locate and respond more effectively to forest fires.

Sustainable management standards were applied to over 380,000 hectares of forests, and five regions developed participatory zoning plans with detailed management schemes for 250,000 hectares. USAID also supported the finalization of complementary technical manuals on zoning, forest inventories, competitive bidding, and managing forest contracts which covered nearly 120,000 hectares of natural forests and 6,000 hectares of plantations. Unfortunately, final reforms of the forestry administration were not completed due to the crisis and suspension of USAID support to the sector.

Although wood products now coming out of Madagascar are of dubious legality, before the coup USAID assisted the National Environment Office (ONE) to develop a chain of custody system that verified the origin of wood products in three regions. The system helped to establish regional forest and timber volume baselines, apply management tools, conduct impact assessments,

and initiate conflict resolution among local forestry staff and ONE. At least 23 conflicts between overlapping forestry and mining permits were resolved as a result of the system.

Community participation is critical to ensuring the long-term health of forests. USAID helped communities develop sustainable landscape management plans focused on watershed management and reforestation, and supported community-based organizations and federations charged with co-managing conservation areas. Ten federations were operational in 2009, with 155 member associations and 10,000 affiliates covering an area of 884,500 hectares. To address rampant forest clearing, community forest control units were trained and equipped to enforce regulations. Four grants engaged communities in habitat monitoring, while others supported community ecotourism projects, produced communication tools for sustainable forest management and conservation, and passed conservation skills on to communities in remote areas.

USAID activities helped to establish management units and governance structures that support conservation activities. Local NGOs who signed conservation contracts with communities received 22 conservation action grants to engage these communities in conservation and alternative income generating activities. Thirteen traditional local customary laws related to reforestation, cutting of trees, and protection of watersheds were established to improve long-term protection and management of forests. The Ministry of the Environment regional offices established 25 forestry monitoring and control units, as well



PHOTOS: ANONYMOUS

**A THOUSAND CUTS:** The trade in rosewood surged in Madagascar after a March 2009 *coup d'état*. In the northeast, Masaola National Park and the Makira Reserve have been plundered for precious hardwoods, with logs dragged by hand to rivers for transport to the coast. A raft of five or six logs from lightweight trees is needed to float each heavy log of rosewood, multiplying the damage to forests. Most rosewood log exports are now bound for China, where they are fashioned into furniture. Elsewhere on the island, the vigilance of community forest management associations established by USAID and its partners has kept illegal activities at bay.



as 11 regional Forest Commissions tasked with delimiting areas for productive forestry and reforestation.

Madagascar now has much of the capacity and tools required to conserve its unique biological heritage, but the repeated postponement of democratic elections puts economic and environmental stability further out of reach. As donors withhold support and ecotourists stay away, illegal logging has reached unprecedented levels: nearly \$100 million of precious woods were exported over a recent nine month period. Illegal taking and export of other threatened and endangered species, including lemurs and tortoises, threaten extinction of species that exist nowhere else. According to recent estimates, at least two million hectares, or a quarter of all parks and other protected areas, are at risk. Political instability has derailed legislative processes and seriously curtailed security and the rule of law in rural areas, all of which threaten the fragile communities and community organizations which are the frontline for conservation and natural resources management.

Acknowledging the substantial impact of the entire biodiversity and forestry portfolio in 2009, a few activities are notable for laying the groundwork for future programs. One training session of 162 people led to a common methodology for designing and establishing marine protected areas across Madagascar. Support to the Government of Madagascar resulted in estimates of carbon stocks and projected sequestration rates, along with a readiness plan for participating in voluntary and formal carbon markets. A participatory assessment process involving more

than 250 people collected lessons learned from the past five years of USAID biodiversity activities and was widely disseminated. In addition, a retrospective on 25 years of USAID support to the environment sector in Madagascar was produced in 2010 by the Bureau for Africa, available at [www.rmpportal.net/library/paradise-lost-madagascar/](http://www.rmpportal.net/library/paradise-lost-madagascar/). With these tools in hand, USAID and its partners will be poised to resume biodiversity and forest conservation activities quickly and strategically once a democratically elected government is in place and broad U.S. assistance is restored.

## Malawi

### Collaborative Management and Natural Resource-Based Enterprises

Malawi is one of Southern Africa's most biodiverse countries, but efforts to conserve natural resources and biodiversity are hampered by a subsistence agriculture economy reliant on too many small parcels of land, resulting in exhausted soil, overdependence on natural resources for fuel wood and food, and a fragmented landscape. More than 15 percent of Malawi's forest cover has been lost over the past 20 years, while agricultural and fishery productivity have also declined. To restore the environment for the benefit of people and biodiversity, USAID supports a range of conservation efforts centered on devolving management of natural resources to local communities, enhancing their capacity to manage resources sustainably, and developing and marketing natural resource-based products as the foundation of a vibrant rural economy.

USAID/Malawi's flagship program, Community Partnerships for Sustainable Resource Management (COMPASS II), achieved significant results even in its last year of implementation. Efforts to protect Malawi's natural resource base and increase rural household revenue put close to 33,000 hectares of biologically significant lands under improved management in FY 2009, or almost 350,000 hectares over the life of the activity. An additional 124,000 hectares met the higher standard of showing improved biophysical condition, bringing the project total for this second measure to 328,000 hectares.

By combining conservation with small-scale commercial enterprise, USAID has helped communities to view forests and parks as resources requiring investment rather than unmanaged exploitation. Growing incomes from natural resource-based enterprises discourage unsustainable practices that degrade forests or convert them to agricultural land. Over the course of COMPASS II, 8,700 community members received natural resource management training, approximately 2,400 communities adopted appropriate community-based natural resource management practices, and more than 92,000 households participated in natural resource-based enterprises. Households earned nearly \$1.9 million from participation in community-based natural resource management.

COMPASS II beneficiaries sustainably harvest and sell a variety of forest products, from mushrooms to baobab fruit, but one of the most popular and profitable enterprises is beekeeping. A total of 213,000 hectares of



PHOTO: ANDREW WATSON, DAI

**ENTERPRISING SPIRIT:** With USAID support, several communities collaborated to create a small outlet for non-timber forest products such as honey and forest-grown coffee in the town of Mzuzu, Malawi.

national park areas vulnerable to exploitation were demarcated as apiaries over the course of the project, providing additional surveillance and management by communities as governed by Resource Use Agreements (RUAs) with more than 45 neighboring villages. Honey sales have pumped significant sums of money into local economies, as in 2008 when about 86 tons of “conservation honey” was sold for 22 million Malawian kwacha (\$150,000 at current exchange rates).

Voluntary carbon markets offer a new way to earn income from

forests, by maintaining the service of carbon sequestration rather than collecting forest products. In 2009, COMPASS II worked with Malawi’s Department of Forestry and Department of Parks and Wildlife to support participatory forest management by two community groups comprising 21 villages around Mkuwazi Forest Reserve and Nyika National Park. This biodiversity project also provided opportunities for livelihood development, including payments for avoided deforestation worth an estimated 1.5 million carbon emission reduction credits over ten years. USAID provided training

and technical assistance for 450 people in the areas of participatory threat mapping, development of local forest management plans, identification and monitoring of forest carbon stocks, and carbon credit benefit sharing mechanisms.

In the policy realm, USAID through COMPASS II assisted in the review, amendment, and implementation of 17 policies, acts, regulations, technical orders, and rules related to biodiversity conservation and natural resource management. The Agency also supported communities in developing and

successfully implementing 463 management plans (including RUAAs) with their accompanying resource use regulations. These efforts formalized community relationships with the various government departments and have led to improved utilization of natural resources and fewer conflicts with authorities.

USAID support for community collaboration in the conservation and revitalization of the Majete Wildlife Reserve in southern Malawi ended in FY 2009 after three years of assistance. Through a public-private partnership involving African Parks Network and Malawi's Department of National Parks and Wildlife, USAID made investments in infrastructure, game restocking, community mobilization, and strict protection of the most critical areas. Surrounding communities have welcomed the restoration of Majete and have benefited from the income generating activities introduced by the project, including beekeeping, rabbit farming and tourism. About 20 community-based organizations representing 130,000 people in 146 villages surrounding the reserve are now engaged in collaborative management of Majete with government authorities.

In just three years of support, hundreds of large mammals were translocated from Malawi's Liwonde and Lengwe National Parks to Majete, and capacity building for game scouts and extension staff has significantly improved management, law enforcement and monitoring. This training, combined with community co-management and economic incentives for conservation, has

dramatically reduced incidences of bushfire and poaching.

Building on previous efforts, in 2009 USAID/Malawi launched the Kulera Biodiversity Project, which aims to transform rural livelihoods in communities around protected areas from agricultural subsistence to self-sufficiency in rural enterprises. Using a value chain approach, Kulera will evaluate the progress and status of products and enterprises developed to date before addressing weaknesses or gaps. The project will also replicate the approach of previous programs in which protected area governance is improved through a participatory, decentralized structure that provides economic incentives for sustainable natural resource management. Kulera targets communities surrounding four biodiverse protected areas comprising more than 6,000 square kilometers: Nyika-Vwaza complex, Mkuwazi Forest Reserve, Nkhotakota Wildlife Reserve, and Ntchisi Forest Reserve.

A second new project, Mountain Biodiversity Increases Livelihood Security (MOBI+LISE), will improve ecosystem health in the Mulanje Mountain Forest Reserve, a 45,000 hectare protected area containing the highest peak in Malawi and a unique ecology of rare and endemic life forms. Mulanje contains the last remaining stands of the Mulanje Cypress (*Widdringtonia whytei*), Malawi's national tree, which has been so heavily logged that it is considered endangered. MOBI+LISE will introduce more intensive and diversified natural resource-based opportunities to the thousands of people living at the base of the reserve, and increase local involvement in mountain management activities.

## Mali

### Sustainable Enterprises and Agroforestry Parklands

Mali's varied ecosystems range from subtropical forests in the south to Saharan desert in the north. USAID activities focus principally on valuing and conserving biodiversity through nature-based tourism, and reducing deforestation and desertification by increasing the sustainability and productivity of agriculture. In 2009, USAID also helped to implement seven local natural resource management conventions, improving management on 476 hectares of land through community forestry, pasture management and restoration, and the demarcation of grazing trails.

USAID's Global Sustainable Tourism Alliance (GSTA) project in Mali seeks to protect natural resources by promoting nature-based tourism. Project activities in Mali include documenting species, planting nurseries, training on biodiversity issues, and establishing environmental protection committees. In 2009, the project worked to conserve and replant important tree species in Dogon Country, a World Heritage site and popular tourist destination due to its cultural and biological value. The project worked with traditional healers and forestry agents to identify the causes of tree loss and secure wells to ensure that tree nurseries are adequately watered.

The Integrated Initiatives for Economic Growth in Mali project conducted a biodiversity inventory covering four important ecoregions including roughly 770,000 hectares of critical forests and floodplains.



**DUNE STABILIZATION** keeps the Sahara at bay in Dogon Country, Mali. Nine women's associations are working to create a two kilometer green belt of 25,000 trees.

PHOTO: DAVID JACKSON, USAID

Perhaps the most notable outcome of the inventory was the inclusion of the Sourou floodplain, which lies between the Bandiagara escarpment in Mali and the Yatenga plateau in Burkina Faso, as a Ramsar Convention wetland. The Sourou is home to over 30 species of water birds, as well as the rare dwarf hippopotamus. With its ecological importance established, the next step is to develop a strategy to protect and manage the Sourou in a way that economically benefits local communities.

Through support to Peace Corps, USAID advanced community development by establishing shea tree parklands. Shea is a protected plant, and shea "butter" (from the shea nut) is increasingly used in

cosmetics and food preparation. USAID support resulted in more than 9,000 hectares of land managed for shea production, helping 117,500 people to supplement their incomes. To secure this investment and safeguard against brush fires, a ten-meter wide firebreak was cleared around these protected forests.

USAID continued support to a program providing 25,000 eucalyptus trees to nine women's associations working to create a two-kilometer green belt to stabilize sand dunes and prevent further loss of agricultural land. The women will also make productive use of the land by planting vegetables. This activity supports the vision for a *Diré* green belt, part of a broader

community development and natural resource management plan.

Long-term conservation outcomes are being assured through training programs. In 2009, about 3,700 people (nearly two-thirds women) received training in natural resource management, biodiversity conservation, and associated policies and regulations. For example, 25 village monitors of the Bouberewol forest were trained in regulations impacting forest management, wildlife and wildlife habitat, fishing and fish farming, and the Mali pastoral charter. Applying a training-of-trainers approach, participants took this knowledge back to their villages to raise awareness among additional community members.

## Mozambique

### Ecotourism and Park Restoration

Mozambique's diverse geography supports high biodiversity, from Mt. Gorongosa's rainforests and the seasonal floodplain downstream, to unmatched freshwater fish diversity in Lake Niassa, to the Archipelago of Quirimbas and its abundant sea life. Habitat fragmentation and deforestation, food insecurity, detrimental agricultural practices, and overexploitation of coastal and marine resources are among the challenges to conserving this natural heritage. USAID advances the interests of the Government of Mozambique (GOM) through biodiversity programs focused on designation, recovery and management of protected areas on land and water, as well as compatible economic growth through sustainable enterprise and job development in the tourism and agriculture sectors.

Coastal forest ranges are decreasing and the entire marine zone of the country suffers from unsustainable fishing, loss of mangrove habitats, and, in some areas, high pollution. Haphazard and uncoordinated tourism development compounds these threats to biodiversity in northern Mozambique. USAID's Northern Arc project is helping the GOM establish guidelines for tourism development consistent with biodiversity protection, while supporting conservation of the natural areas and biodiversity which attract tourists in the first place. In 2009, project partners helped establish coastal zoning plans for tourism development, produced management plans for ecologically sensitive development along coastal



SNARES, SPEARS and other weapons and traps are confiscated by authorities in Zinave National Park, Mozambique. USAID supported the ecological restoration of the park along with anti poaching patrols by game scouts.

PHOTO: ROBERT LAYNG, USAID

areas, and provided support to the Pemba Bay Conservancy, established with prior USAID assistance, to manage the use of the bay and its resources. With these policy and management structures in place, the Quirimbas Archipelago of 32 coral islands and a vast expanse of mainland forest will provide important habitat or breeding grounds for migratory birds, humpback whales, and dugongs long into the future.

Lake Niassa (a.k.a. Lake Malawi) is widely regarded as the most biologically important lake in the world, supporting unique species and ecosystems, including about 1,000 species of fish found nowhere else. The neighboring Niassa Reserve is one of the world's largest protected Miombo woodland areas and supports

substantial biodiversity. Pressure from local communities on forests, fish and freshwater led to a public-private partnership for conservation involving USAID, World Wildlife Fund (WWF), and the Coca-Cola Company. Together, these partners are helping to demarcate and plan management for a national reserve on Lake Niassa that will protect its biodiversity and improve local livelihoods. WWF has started defining aquatic and terrestrial reserve boundaries and is conducting preliminary ecological and socioeconomic studies. Terrestrial wildlife areas will exceed 120,000 hectares in the remote northern and central areas of Lago District.

Communities on the lake are strong advocates for the Reserve due to its promise of higher fishing incomes

and tourism development. Though originally planned to conserve Lake Niassa along 100 kilometers of shoreline from Metangula to Cobwe, in 2009 four fishing communities to the south requested an expansion of an additional 40 kilometers to include their villages and fishing grounds. This extension would preserve key reproductive habitat for the *Ussipa*, one of the most valuable and threatened fish in the lake; establish a year-round no-take zone around Minos Reef, a rocky habitat for highly endemic ornamental cichlid fish of great ecological importance and tourism potential; and protect the Luchemange and Meluluca River mouths, critical for lake salmon spawning runs as well as avian biodiversity. The local government and fisheries authority recently reinforced the request of the communities and adjusted the general proposal for establishing the reserve to include 140 km of coastline.

Once considered the Jewel of Africa, Gorongosa National Park was neglected and overexploited during a long period of conflict ending in 1994, with little improvement in the decade that followed. Seasonal flooding of the park has defended much of the habitat from agricultural conversion and creates the dynamic patchwork of wetland, savannah and woodland capable of supporting large populations of a wide variety of species. Flooding has not prevented hunting however, and large mammal numbers may be up to 95 percent lower than pre-war estimates. Since 2004 the Carr Foundation's Gorongosa Restoration Project (GRP) has worked with the GOM to restore the ecosystem and management of the park. USAID

began a public-private partnership with GRP in December 2008 to re-establish Gorongosa as one of Africa's premier eco-tourism destinations, supporting conservation efforts in the park, a surrounding buffer zone, and nearby Mt. Gorongosa.

In Gorongosa National Park, a wildlife restocking program will eventually restore about 400 wildebeest, 200 zebra, and 150 buffalo. In 2009, 54 buffalo were successfully relocated to a fenced enclosure "sanctuary" constructed with USAID funds, and will be released into the park after an acclimation period of a few years. USAID also financed improvements to sanctuary infrastructure including a fully-functioning veterinary laboratory. On Mt. Gorongosa, the number of tree nurseries doubled in one year from eight to sixteen, and over 430 community extension visits were conducted on the importance of maintaining rivers, stream banks and other tenets of conservation in agricultural zones at the base of the mountain. In buffer zones around both the Park and Mountain, GRP introduced local communities to environmentally sustainable alternatives to poaching, slash-and-burn agriculture, and charcoal for household use. Environmental education workshops on the threats of deforestation and forest fire reached over 270 children and 22 teachers. The 18-member Vinho Community Association earned approximately \$3,100 in a recent eight month period for fruits and vegetables sold to the park tourist camp.

Two major threats to the Gorongosa landscape – clearing of high-altitude forest on Mt. Gorongosa and snaring of wildlife

for local consumption and trade – are driven by subsistence farmers who practice shifting agriculture and hunt wildlife to compensate for poor yields and incomes. The AgriFUTURO agribusiness competitiveness program includes a component which aims to address these threats by making farming more profitable and more permanent. By raising yields, adding value to agricultural products, and developing markets and market linkages for nine value chains, AgriFUTURO will provide economic incentives to prevent further land conversion on Mt. Gorongosa and reduce wildlife exploitation on the mountain and at edges of the park. AgriFUTURO will target assistance to people in communities which already have or plan to develop conservation contracts with the GRP.

Through support to GRP and AgriFUTURO, and complementary health services supported by PEPFAR, USAID is fostering a landscape-scale approach to conservation which has generated substantial goodwill and support from the GOM. This commitment was reiterated on July 20, 2010, when a Council of Ministers spokesman declared that the Government has decided to incorporate Mt. Gorongosa and a buffer zone into Gorongosa National Park, increasing the size of the protected area by 367 square kilometers. This announcement acknowledges the connection between the rainforests of the mountain and floodplain of the valley while promoting conservation-friendly development for rural people in the area.



## Rwanda

### Ecotourism and Conservation Enterprises

In the last five decades, Rwanda has lost approximately 65 percent of its natural forests and even degazetted national parks due to demands for agricultural land and firewood. The highest population density on the continent and high population growth continue to put pressure on remaining forests and protected areas. USAID is working to improve agricultural productivity in the country while supporting biodiversity conservation efforts that build government capacity to manage Nyungwe Forest National Park and provide sustainable economic growth for communities around protected areas.

Rwanda is well known for its rare mountain gorillas, including groups habituated for tourism. About 700 mountain gorillas remain in Rwanda, Uganda, and the Democratic Republic of Congo (DRC), and USAID support for their conservation has primarily been through the regional CARPE program (DRC and Rwanda) and USAID's mission in Uganda. In 2009, USAID/Rwanda complemented these investments with support to two tourism ventures near Volcanoes National Park: the Kinigi Community walk and the Kinigi Cultural Centre. These enterprises empower the people and communities living next to the park to become active participants in a growing gorilla tourism industry, and multiply the impact of a recently built ecolodge with additional jobs. By providing alternative livelihoods, the project helps to reduce poaching and other threats to park biodiversity.

The majority of USAID/Rwanda's biodiversity efforts focus on the Nyungwe Forest National Park (NNP) and surrounding areas in the southwestern part of the country. This mountain rainforest in the high-biodiversity Albertine Rift ecosystem hosts almost 300 birds, about 100 orchids, and at least 75 mammals including 13 species of primates. Nyungwe also supplies about 70 percent of the country's water and has substantial carbon stocks. Destination Nyungwe, USAID's three-year program that finished in FY 2009, supported biodiversity conservation, ecotourism development, and public health in an integrated fashion. Inside the boundaries of Nyungwe, partners strengthened the management capacity of park personnel, developed tourism infrastructure and sustainable financing mechanisms, and monitored key species, illegal activities, and ecotourism impacts. Outside the park, the surrounding communities of Kitabi, Gisakura, Banda, and Cyamudongo were targeted for conservation awareness, income generation and health activities to jointly accelerate rural economic growth and reduce unsustainable impacts on biodiversity.

Before USAID assistance, many communities around Nyungwe had few livelihood alternatives to farming, artisanal mining, logging, and hunting. This situation was countering conservation efforts until the project introduced training and small grants for sustainable enterprises. In FY 2009, USAID awarded ten community project grants in areas such as beekeeping and honey production (instead of wild honey collection involving smoke and accidental fires), and handicrafts including beeswax candles, baskets,



pottery and soap. The majority of beneficiaries are women. As a result of conservation education and economic development in the periphery of the park, the principal threats of fire, poaching, and mining were reduced by 46 percent since the beginning of the project in 2006, and by almost 20 percent since 2008.

To provide additional livelihood alternatives and maintain biodiversity, USAID intends to transform NNP into a competitive ecotourism destination by increasing both the number of visits to the Park and tourism receipts. In 2009, USAID facilitated the restructuring of the tourism pricing policy for Nyungwe Park based on market analysis,

**A WALK IN THE WOODS:** USAID financed construction of the largest canopy walkway in the world as part of efforts to attract tourists to Nyungwe National Park, Rwanda, an ecological gem in the Albertine Rift. One portion of the suspension bridge is 90 meters long.

PHOTO: JIM SEYLER, DAI



developed tourism promotional tools for the park, and organized training for park tourism staff. New tourism infrastructure started in 2008 and 2009 was completed in 2010, including a visitor interpretation center, the world's largest canopy walkway, and an observation tower. In Banda community to the north of NNP, USAID supported construction of a tented camp, dining facility, and cultural museum, and provided training in guiding and interpretation for a living heritage trail.

In addition to assisting government personnel with ecotourism and community development, USAID partners worked with park staff to enhance monitoring of biodiversity

and illegal activities in NNP and further develop chimpanzee tracking tourism opportunities at two sites. In addition, USAID funded installation of a communications system that allows rangers to better respond to biodiversity threats identified in their patrols. These management and monitoring improvements, combined with the results of community outreach and development efforts, improved biophysical conditions in more than 10,000 hectares of the protected area over the life of the project.

Two activities launched in FY 2010 will build on the success of Destination Nyungwe by: continuing to strengthen management of the

park, including new tourist attractions; providing additional opportunities for conservation-compatible enterprises and sustainable natural resource management to address the threats of fire, poaching and timber harvesting; and promoting Nyungwe internationally while increasing the amount of time and money spent in local communities and, by extension, the country. USAID will support ecotourism workforce development and market NNP to tour operators serving Volcanoes National Park, other destinations in East Africa, and globally. USAID also plans to assist the Government of Rwanda to identify and explore other opportunities for financing conservation and community development, such as payments for ecosystem services provided by NNP, including water provision and carbon sequestration.

Host country commitment has laid a strong foundation for ecological and economic success at Nyungwe during the next phase of USAID support. The tourism and conservation divisions of the Rwanda Development Board have already begun operating a boat on Lake Kivu that connects the western entrance of NNP to Volcanoes National Park to the north, and succeeded in attracting two luxury ecolodges that opened in Gisakura village outside Nyungwe in 2010. Together, these will help accommodate the expected influx of high-end tourists interested in combining a visit to the mountain gorillas with chimp treks, community cultural trails, and tea plantation tours, to name a few of the diverse tourism activities which benefit from conservation of Nyungwe National Park.

## Senegal

### Community Forestry and Local Governance

The dryland forests of southern Senegal are highly threatened, with only two percent of this forest type protected continent-wide. Agricultural encroachment and charcoal production result in fires, pests, deforestation and desertification. USAID/Senegal's Agriculture and Natural Resources Management project, known locally as *Wula Naafa* ("Benefits from the Bush"), protects dryland biodiversity by promoting sustainable use, conservation and management of forests by local populations. Project activities improve local governance and management of natural resources, develop and implement sustainable forest management and land use plans, and encourage conservation by increasing the income associated with natural products.

In FY 2009, *Wula Naafa* helped transfer responsibility for natural resource management (NRM) to local communities through support for legally recognized plans and conventions that manage forest resources and identify zones needing protection. Conventions articulate locally agreed upon management standards and ensure that communities have exclusive access to non-timber forest products. Working with local governments, USAID developed conventions for almost 628,000 hectares of land. Communities brought an additional 63,700 hectares of biologically significant forests under management plans. This breakthrough program is helping to restore the most



PHOTO: SUSAN TELINGATOR, USAID

**REJUVENATED:** Forest management committee members in Senegal show where trees cut for charcoal in 2008 have naturally regenerated. By cutting just the center branches, one tree can have several cycles of new growth.

exploited species of trees whose survival is threatened by poor harvesting practices and overuse.

In order to help communities to develop local conventions and forest management plans, USAID trained 838 beneficiaries from 16 communities on the topics of resource surveillance, local codes, and conflict management. Technical assistance to 287 individuals served to strengthen local governance and decentralized decision-making. USAID partners provided a variety of skills training to communities in the areas of nursery production, resource mapping in a geographic information system, and establishing forest management committees. As a result of training and technical assistance, communities have successfully controlled access to forests, reduced conflicts between cattle herders and farmers, and established a guard

system that ensures forests are protected and vegetation allowed to regenerate. This new approach is being used as a model for long-term, sustainable management of natural resources nationwide.

USAID promotes active participation by women in land-use planning, resource management, and advocacy. *Wula Naafa* helped establish long-term linkages among female NRM professionals, rural women, and resource user groups to strengthen the overall capacity of women entrepreneurs. As a result, 226 women were trained in NRM and biodiversity conservation to better manage community nurseries that were previously only managed by men. Women are also managing their family farms and gardens in a more sustainable and productive manner. In FY 2009, more than 3,200 women profited economically

from forestry and fisheries programs implemented under *Wula Nafaa*.

Through a new partnership with the U.S. Geological Survey (USGS), USAID used satellite imagery to monitor the state of Senegal's natural resources over time. This remote sensing technology and associated technical assistance will establish a baseline for future monitoring of natural resource conditions and land uses, particularly the current and planned expansion of gold and iron-ore mining into natural and semi-natural areas important for biodiversity. The results of geospatial analysis by USGS will serve as a platform for discussion of land-use planning with the Government of Senegal and various stakeholders.

Since the first phase of *Wula Nafaa* started in 2003, USAID has worked with the Government of Senegal to address most policy barriers to good forest management. One recent major achievement was a decree in 2008 that prohibits charcoal production outside of forests with established management plans. Forest communities with approved management plans are now empowered to produce their own charcoal, instead of the powerful charcoal cartel that used to exploit community forests and profit people mostly outside of the forest zone. Local charcoal workers now earn about three times what they did, and tax revenue for forest management has increased. Combined with conventions and management plans put in place in the last year, the decree increased net revenue from sustainable community charcoal operations by \$230,000, or a substantial \$730 per capita. Building on this record of

engagement, USAID assisted the Government of Senegal with drafting a revised national forestry code in 2009.

Management of natural resources in Senegal remains a challenge because inadequate resources are allocated to the implementation of laws that transfer resource management authority to local communities. USAID will continue to actively engage government institutions and specialists in policy reform, using economic returns to drive policy analysis and improving information management through a new data system that describes policy issues and can aid in evaluating their impact.

## Sierra Leone

### Forest Co-Management

Sierra Leone's natural rainforest once covered more than 60 percent of the country, but today, after years of illegal logging, fuelwood collection, charcoal production, and slash and burn agriculture, natural forest cover may be as low as three percent. Better management of Sierra Leone's natural resources is critical to reducing poverty, mitigating conflict, and conserving remaining areas of biological significance. USAID's Promoting Agriculture, Governance and the Environment (PAGE) program includes a component that addresses these threats by promoting collaborative management (co-management) of forests by communities and government in high-biodiversity pilot sites. At the national level, USAID supported an inventory of the country's biological resources and facilitated the development of policies that promote conservation.

Forest co-management is a proven approach to cost-effective biodiversity conservation at sites in West Africa and around the world. USAID is piloting forest co-management systems in three areas prioritized for conservation: Kambui Hills Forest Reserve in Kenema, Loma Mountain Forest Reserve (a proposed national park), and the Alabatia Community Protected Forest (a critical conservation buffer zone between Outamba-Kilimi National Park and Loma Mountain). In FY 2009, PAGE organized forest co-management committees for each pilot area, including one area where committees represent and serve nine distinct communities. These committees are developing sustainable forest management plans in cooperation with the Forestry Division and will then participate in implementation and enforcement of these plans. PAGE also developed a methodology for land-use planning and mapping in pilot areas using global positioning systems and satellite imagery in support of the sustainable forest management planning processes.

PAGE selected protected areas as pilot sites in part because of the paucity of biological information outside of these zones. To address this in part, PAGE partnered with Tacaugama Chimpanzee Sanctuary to support the first systematic, nationwide chimpanzee census of the Western chimpanzee (*Pan troglodytes verus*). From January 2009 to May 2010, a research team interviewed almost 800 communities and surveyed around 670 kilometers of transects on foot to collect details on chimpanzees, habitat quality and human impact, as well as data for other large mammal species including new evidence that



PHOTO: NICK THOMAS, ARD

**PARTICIPATORY RURAL APPRAISAL** exercises helped communities in three priority conservation sites in Sierra Leone self-assess readiness for forest co-management.

forest elephants remain in central Sierra Leone. A preliminary report of results includes the major finding that Sierra Leone is home to about 5,500 wild chimpanzees, more than double previous estimates. Almost half of these chimpanzees are surviving in highly threatened and marginal habitats outside of the country's protected forest reserves. Habitat loss and other threats must be addressed quickly if Sierra Leone is to remain a significant refuge for the Western chimpanzee.

Chimpanzee survey data combined with satellite imagery from the U.S. Geological Survey provided baseline biodiversity information for key geographical areas. This analysis confirmed that PAGE pilot areas are indeed high in biodiversity. As co-management systems become operational at each site, PAGE will train community members and forestry division staff in biodiversity monitoring techniques included in forest management plans. Monitoring protocols will be straightforward

and cost-effective to ensure data continue to be collected beyond the life of the project.

By the end of FY 2010, USAID anticipates having forest management plans in place for the three initial pilot sites, as well as preliminary work initiated in three areas in eastern Sierra Leone. Community protected forests are among the top candidates for new sites, but potential for success is a factor: in 2009, PAGE conducted 10 in a series of more than 20 planned participatory rural appraisal (PRA) exercises in order to empower local communities to identify and analyze their overall socioeconomic situation with regard to natural resources management, and assess their readiness to engage in forest co-management arrangements. Local and international organizations have requested PAGE training in co-management and PRA methodologies, allowing USAID to scale up conservation efforts even before designating a second round of pilot sites.

Many communities in the buffer zones of forest reserves earn income through the sale of tree crops, especially cocoa. As an additional incentive to participate in co-management, PAGE is facilitating links to end-markets and providing technical assistance and funds for improved processing. Managed well, tree crops provide habitat for some species and serve as a hard buffer against shifting cultivation and other less permanent agriculture. In 2009, PAGE trained nearly 200 tree crop producers in sustainable management, with a particular focus on shade cocoa.

Ultimately, conservation of forests and biodiversity in Sierra Leone depends on creating a policy environment that supports community participation in the management of natural resources. USAID worked with the Ministry of Agriculture, Forestry and Food Security (MAFFS) and other key stakeholders to develop policies being piloted through PAGE, requiring that forest resources nationwide be managed in partnership between the state and local communities.

MAFFS and other ministries have overlapping and often conflicting mandates related to the management of land and natural resources. International partners working on the environment are hopeful that the newly established Sierra Leone Environmental Protection Agency (SLEPA) will harmonize the legislative, policy and institutional framework for management of natural resources, but inadequate technical and financial resources currently hamper the agency. In FY 2009, USAID and other donors collaborated with the Sierra Leonean Law Reform Commission

and civil society organizations to conduct a comprehensive review of current forestry and wildlife policies with a view to developing more effective legislation. This activity helped to coordinate government ministries and agencies, and should lead to an enabling environment where SLEPA can be effective.

## Sudan

### Capacity Building and Landscape-Scale Conservation

Natural resources are critical to livelihoods in war-weary Sudan, but without effective governance and sustainable management they could fuel further conflict. In support of the Comprehensive Peace Agreement signed in 2005, USAID supports biodiversity conservation and natural resources management in Southern Sudan, a semi-autonomous region of the country which still harbors vast natural resources including large intact ecosystems and thriving wildlife populations.

USAID and its partners continue to work with the Government of Southern Sudan to develop and implement a comprehensive conservation program focused on the 3.8 million hectare Boma-Jonglei landscape. Containing one of the largest intact savannahs in the world and one of the largest freshwater wetlands, Boma-Jonglei supports an annual migration of more than a million antelope including white-eared Kob, Tiang, and Mongalla gazelle. In FY 2009, USAID support placed more than two million hectares of savannah and wetland under improved natural

resource management, and launched the Boma Park management planning process to clarify the location and extent of oil, mining, and timber concessions, protected areas, and roads. The project also conducted aerial surveys of wildlife, livestock, and human activity, and used socio-economic surveys to map communities' natural resource use. Outside of Boma-Jonglei, support from USAID's centrally managed Global Conservation Program helped establish a transboundary peace park to conserve biodiversity along the Sudan-Uganda border.

USAID promotes conflict-sensitive natural resource management which provides opportunities for employment and other income generation opportunities for people living in and around natural areas. USAID financed new infrastructure at the Boma Park headquarters and created jobs that benefit local communities. Two leadership and protected area management

workshops in Boma National Park involving 32 traditional chiefs and 29 local government administrators identified priority pilot livelihood projects, including beekeeping, shea butter production, and agricultural activities by small farmers. Overall in 2009, more than 120 men and women saw increased economic benefits as a result of sustainable natural resource management and conservation.

Natural resource management requires a well-trained, professional workforce. In FY 2009, the mission invested in capacity building for Jonglei State wildlife law enforcement, with particular attention to combating the commercial bushmeat trade. Representatives from the Government of Southern Sudan participated in study tours to Ghana, Uganda, Kenya and Namibia, and more than 100 environmental and forestry government officials received training in public administration and computer literacy. Additional training



RANGERS ON PATROL protect white eared kob during their annual migration to Boma National Park, a dry season refuge.

PHOTO: A SCHENK, WCS

in environmental impact assessments was provided to over 500 men and women. Wildlife and Forestry Training Centers continued to receive USAID support, including assistance with curriculum reviews and transition plans, and graduated close to 40 new wildlife and forestry officers in 2009.

To strengthen the legislative underpinnings of conservation in Southern Sudan, USAID and its partners assisted the Government with preparation of a draft environment policy concurrently with a general environmental law through an open, transparent and participatory process. USAID also supported the Government of Southern Sudan's Natural Resources Management Group, a committee working to improve knowledge and oversight of environmental activities. The Group ratified a 2009-2011 strategic plan, and has proposed to formalize its role as the primary natural resources management advisory unit for the Government.

USAID will keep building up the human capacity and policy backbone required to conserve and manage natural resources while continuing targeted support for protected area management, monitoring, and ecotourism. The Boma-Jonglei landscape is the ecological jewel of Southern Sudan, and could soon be an economic engine for people living there. Several ecotourism companies have already expressed interest in developing safaris to showcase the landscape's massive herds of antelope and offer a less-frequented destination for viewing elephants, buffalo, and other iconic African wildlife.

## Tanzania

### Livelihoods Approach to Landscape Conservation

World-renowned for its diverse wildlife and extensive natural areas, Tanzania's economic growth relies heavily on the sustainable use of its natural resources. Unsustainable and often illegal use is widespread, resulting in a deforestation rate of 400,000 hectares per year. USAID support for biodiversity-friendly policies, management practices, and livelihood options has helped many Tanzanians to now play a role in and receive benefits from conservation measures that preserve the country's natural heritage.

USAID/Tanzania focuses its efforts on protected areas and species migration corridors, including the Tarangire-Manyara ecosystem, Ugalla ecosystem, Greater Gombe ecosystem, Ruaha-Usangu-Rungwa ecosystem, and the coastal region. Activities aim to increase the population and health of key wildlife species, slow deforestation, decrease poaching and human-wildlife conflict, and curtail fishing practices

that are unsustainable for certain fish species and destructive to coral reefs. In 2009, USAID programs maintained or extended improved management practices across 6.3 million hectares in these critical ecosystems.

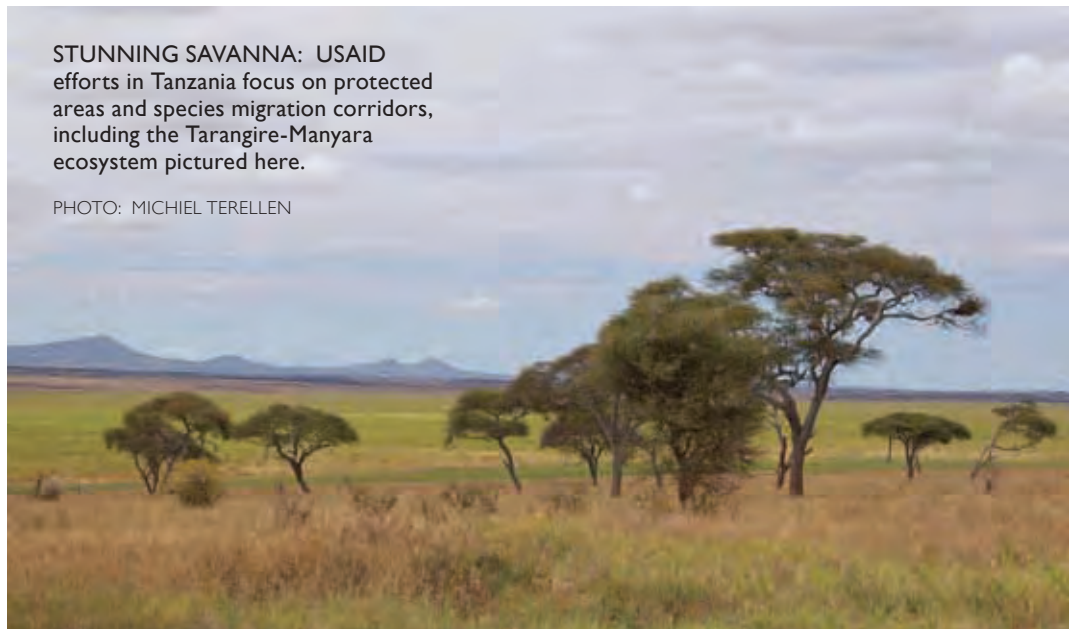
Programs also support national-level environmental policy and legislation as well as a livelihood approach that promotes economically sustainable, decentralized decision-making.

Monitoring is a critical component of conservation management, and USAID helps to ensure that wildlife population counts and tracking of flagship species are carried out on a regular basis. In Gombe National Park, chimpanzee counts have provided evidence of a slowly recovering chimp population, due primarily to local community support and improved protection of critical habitat. Better data helped to establish new protected corridors using a science-based approach that is being replicated and extended to additional ecosystems.

Sustainable livelihoods and community-based conservation

**STUNNING SAVANNA:** USAID efforts in Tanzania focus on protected areas and species migration corridors, including the Tarangire-Manyara ecosystem pictured here.

PHOTO: MICHIEL TERELLEN



efforts are critical to conserving biodiversity. Through FY 2009, a cumulative 816,000 people (mostly women) received increased economic benefits from USAID-supported conservation enterprises including ecotourism, seaweed farming, beekeeping, horticulture and specialty coffee cultivation and marketing. For example, the Greater Ugalla Landscape Conservation Program enabled beekeepers in three districts to earn an average income of \$2,694, in part through a public-private partnership with Honey Care Tanzania. Gains were also made in other non-timber forest products, as well as small-scale fisheries.

Several years of USAID assistance for wildlife sector reform led to the formalization of new regulations for Wildlife Management Areas (WMA) in 2009. WMA policy supports the first legal community-based natural resources management program in Tanzania, decentralizing management of critical ecosystems and wildlife to the local level while providing for secure land tenure in the process. WMAs allow local community associations to generate income by contracting with private sector tourism enterprises and engaging in sustainable agricultural activities. Importantly, women are required to serve on each association's board of directors, play a significant role in conservation business enterprises, and even work as village game scouts.

With USAID support in FY 2009, the Government of Tanzania successfully developed three key regulations under the Environmental Management Act which address air quality, water quality, and climate change. Agency environment activities

also strengthened the capacity of several institutions including Tanzania National Parks, the Wildlife Division of the Ministry of Natural Resources and Tourism, and the Ministry of Water. Even with policy reforms and capacity building, challenges and unintended consequences remain. For example, while tourism became the largest earner of foreign exchange in Tanzania for the first time in 2008, new regulations to boost revenue have the potential to negatively impact foreign direct investment in tourism. USAID will continue to work with the Government and conservation partners to position Tanzania as a premier biodiversity destination in Africa.

## Uganda

### Community-Based Conservation

The Albertine Rift ecoregion, found in western and northern Uganda, is one of the most biodiverse regions in Africa but also one of the most endangered. Habitat loss and fragmentation, overexploitation of species, and more recently pollution and disturbance from petroleum and natural gas development threaten natural resources important to sustainable livelihoods and economic growth. The USAID mission in Uganda oversees a large biodiversity program that supports community-based conservation, protected area management, sustainable tourism, economic incentives for conservation, and policy development and reform.

Protected area management is a key element of USAID/Uganda's current strategy. In 2009, the mission worked

with the Government of Uganda to establish a joint agreement to guide the development of a comprehensive management plan and biological monitoring program for the country. With USAID support, the Uganda Wildlife Authority developed park and resource management plans that promote ecologically responsible land and resource use. In addition, USAID facilitated coordination among protected area authorities through three transboundary meetings and one jointly implemented activity by the Governments of Uganda and Southern Sudan.

Activities in the Albertine Rift focus on expanding protected areas while increasing tourism revenues to benefit the surrounding communities. International tourism to parks receiving USAID assistance increased 17 percent in FY 2009 compared to the previous year, including a nine percent increase at Murchison Falls National Park and a 24 percent increase at Kidepo Valley National Park. Growing tourism revenues encourage the Government of Uganda to improve park management, increase support to local communities, promote biodiversity protection, and reduce conflict over resources.

Great apes and humans are susceptible to many of the same diseases, and a failure to treat the diseases where human and great ape populations overlap threatens them both. Most gorilla and chimpanzee tourism operations adhere to strict protocols for preventing disease transmission from people to apes, but local communities are more likely to be unvaccinated and unaware of these health and conservation threats. In 2009, USAID environment and health





PHOTO: TULLOW OIL PLC

**OIL DEVELOPMENT** is a growing concern for biodiversity in Murchison Falls National Park and elsewhere in Uganda, where exploration alone is disturbing wildlife. If oil reserves are viable, a pipeline to the coast would likely impact migration routes.

programs merged resources and prioritized vaccinations, education, and other health interventions for people living near populations of great apes.

Conservation enterprises and natural resource management provide economic and social benefits which improve livelihoods and reduce conflict over resources. In 2009, USAID worked with 75 schools and 31 community associations to establish sustainable activities like apiaries, tree nurseries and woodlots. As a result, nearly 3,500 hectares of community forest plantations will provide wood for cooking and building, supplant dependence on natural forests, and sequester 440,000 metric tons of carbon over time.

USAID has been a leader in efforts to reduce Uganda's contribution to

and impacts from climate change, primarily through sustainable forest management. Partners provided technical assistance and training on assessing characteristics of trees and modeling parameters for predicting carbon emissions. The National Forest Authority is now able to establish carbon baselines in target areas, and received training in the development of transaction management systems for administering carbon credits, which should help finance forest conservation.

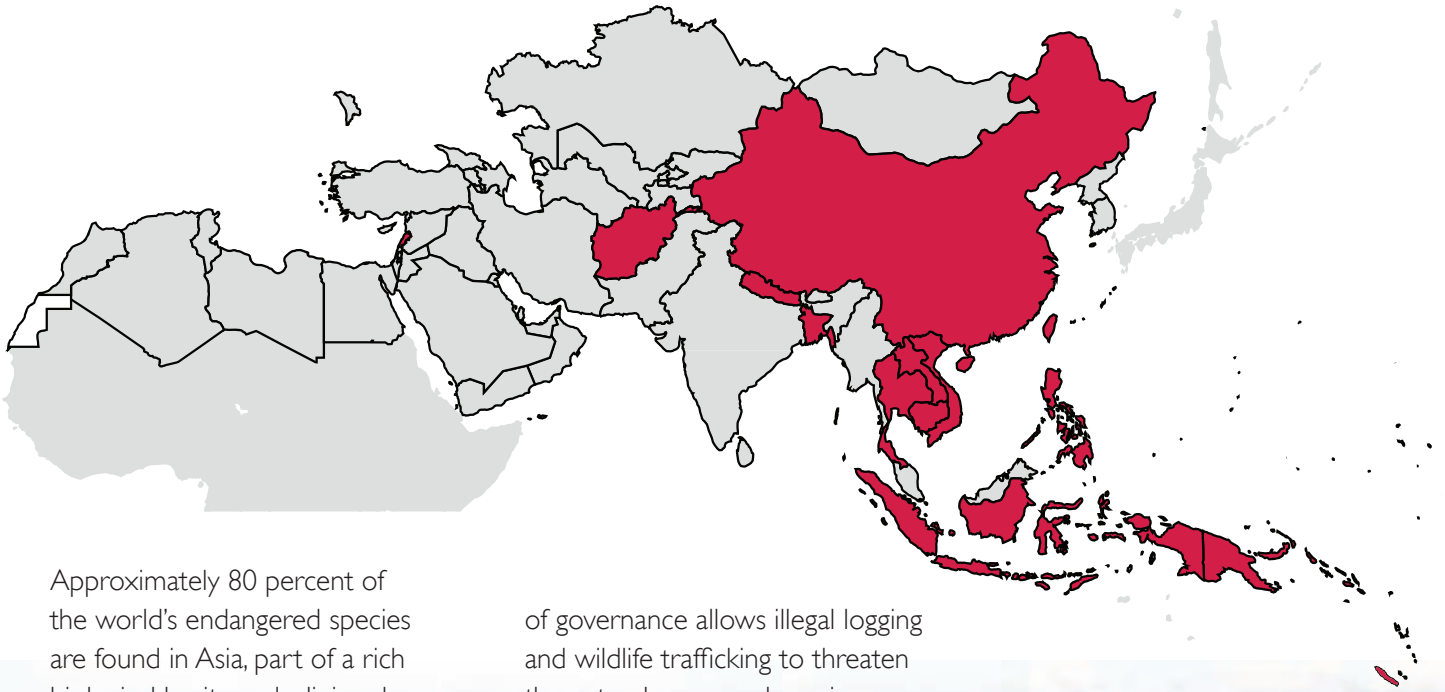
Mission programs have successfully supported government and community capacity in managing parks and natural resources, helping to reduce some of the threats and conflicts that impede conservation efforts. Overall in FY 2009, USAID assistance brought over 66,000

hectares of biologically significant area under improved natural resource management, exceeding the target by 20 percent. An even greater conservation area could have been achieved had land conflicts not hindered the re-establishment of an elephant corridor between Murchison Falls National Park and the East Madi wildlife area.

In the Albertine Rift, oil exploration and associated personnel, vehicles and heavy equipment, poses a new challenge for environmental management. Exploration inside or next to Uganda's protected areas may disrupt wildlife behavior and drive some populations outside of park boundaries, reducing their level of protection and making it difficult to monitor animal movements and health. Uganda's advanced stage of exploration has prompted neighboring Democratic Republic of Congo to demarcate its own exploration concessions in a form of economic arms race. When companies move from oil exploration to full-scale oil production, they will introduce a new infrastructure of pipelines, roads and railways, and risk catastrophic pollution in many of Africa's Great Lakes and protected areas. In FY 2010, USAID will expand efforts to mitigate this threat while promoting natural resource management, stronger conservation policies, and sustainable ecotourism.

# ASIA AND THE MIDDLE EAST

USAID country programs funded biodiversity or forestry programs in over a dozen countries in the Asia and Middle East regions.



Approximately 80 percent of the world's endangered species are found in Asia, part of a rich biological heritage declining due to overexploitation. Habitat loss is occurring on a massive scale, driven by rapid economic growth, an increasing population, and agricultural expansion without adequate environmental considerations. Lack

of governance allows illegal logging and wildlife trafficking to threaten the natural resource base, increase conflicts, and reduce opportunities for future economic growth.

The Bureau for Asia and the Bureau for the Middle East continue to share some technical support

and backstopping in Washington, therefore this chapter includes both regions. USAID/Lebanon is the only mission in the Middle East with relevant programming in FY 2009.

**FISHING IN HAIL HAOR WETLAND:** USAID has played a pioneering role in advancing co-management of natural resources by communities and government in Bangladesh, and is now working to scale up the approach to all ecosystems.

PHOTO: SIRAJUL HOSSAIN



## Asia and Middle East Regional Program

### Support for Emerging Needs

USAID's Asia and Middle East (AME) Regional Program monitors new developments in forestry and biodiversity and applies this knowledge to support mission activities from North Africa to the Pacific Islands. In FY 2009, program staff worked primarily in South and Southeast Asia to develop several new conservation programs, including forestry and biodiversity activities in Indonesia, Bangladesh, Cambodia, and the Regional Development Mission for Asia.

Nearly half of the regional program's FY 2008 funds were used to enhance mission conservation activities in Prey Lang forest, the largest primary lowland dry evergreen forest in mainland Southeast Asia and home to elephants, gaur, tiger, and approximately 600,000 people. In

2009, USAID partners helped build alliances among local communities so they can better advocate for conservation and rights to forest resources. One program linked community products such as resins and honey to markets, while another aims to establish financing from carbon markets for the area. Economic valuation of the Prey Lang resources is in progress to demonstrate the financial benefits of conservation to the Government. For more information, see the section in this chapter on USAID/Cambodia.

The Bureaus for Asia and Global Health collaborated in 2009 to lead the "Asia's Future" process, which identified and analyzed a series of complex threats facing the Asia region in the next 10 to 15 years. Increasing and unsustainable demand for natural resources, food security, rapid and uneven population growth, urbanization, and climate change present major threats to human health, biodiversity, and overall

environmental security. Recognizing these trends, USAID organize eight expert consultations to consider their cumulative impacts and how to address them. Participants from across the U.S. government, international research institutions, NGOs, foundations and the private sector agreed that these environmental concerns require a cross-sectoral response. Results were shared with staff in Asian missions through an interactive training in Spring 2009, followed by a report synthesizing the process and results in September 2009. *Asia's Future: Critical Thinking for a Changing World* is available at [www.wilsoncenter.org](http://www.wilsoncenter.org).

A principle finding of the Asia's Future process was that the melting of glaciers on the Tibetan Plateau and adjoining mountain ranges is among the greatest environmental security and biodiversity threats in the region. To address the issue in a systematic, strategic way, the AME Regional Program is funding the

**WATERSHED MOMENT:** USAID supports a payment for ecosystem services mechanism in Vietnam that ultimately affords payments to ethnic K'ho minority farmers for protecting forest (pictured on patrol) instead of cutting down trees to expand agriculture.

PHOTO: DAVID BONNARDEAUX  
WINROCK INTERNATIONAL



“Blueprint for Addressing Glacial Melt in Asia.” This analysis will review the science of glacial melt, identify key organizations working on mitigation and adaptation, and determine which areas are most vulnerable and are therefore priorities for a coordinated, cross-sectoral response from USAID and its partners.

## Regional Development Mission for Asia

### Wildlife Law Enforcement, Forest Management and Seascape Conservation

Asia’s rich biological heritage is rapidly declining in the face of unsustainable exploitation fueled by rapid economic growth, increasing population, and agricultural expansion. Poor governance threatens the natural resource base and reduces opportunities for future economic growth, while increasing transboundary conflicts. USAID’s Regional Development Mission for Asia (RDMA) works to increase forest conservation using market-based approaches, improves forest management by strengthening regional cooperation on sustainable and legal trade in timber, builds local and regional capacity to address wildlife trade, and supports a major new initiative to conserve marine biodiversity and coastal livelihoods.

In southern Vietnam, nearly 115,000 hectares of biologically significant forest is better managed following a pilot payments for environmental services (PES) agreement in which community conservation units protect and monitor buffer zone forest lands.



PHOTO: WILDLIFE CHECKPOINT, SUVARNABHUMI AIRPORT

**TIGER TRADE:** Thai agencies that participated in a USAID-sponsored Wildlife Trade Regulation course at Bangkok’s Suvarnabhumi International Airport in 2009 worked together to detect and rescue this live tiger cub destined for Iran on August 22, 2010.

As a result, illegal logging in the Da Nhim watershed has decreased by 50 percent. Private sector investments in biodiversity-friendly bamboo production also helped to achieve conservation targets: in one corridor, populations of six target wildlife species migrated to areas where bamboo planting avoided clearing of natural forest. Memoranda of understanding with companies that produce bamboo furniture are expected to generate \$1,000 per hectare in annual revenue for local community partners.

RDMA’s Responsible Asia Forestry and Trade (RAFT) program aims to increase regional timber trade from legal sources, improve the sustainability of forest management on the ground, and strengthen regional cooperation on forest management and trade. In FY 2009, RAFT improved the management and conservation of 500,000 hectares of biologically significant

forests, for a cumulative 2.9 million hectares in Indonesia, Malaysia, Papua New Guinea, Lao PDR, and Vietnam since the program began.

Through RAFT, RDMA focused on implementing sustainable forest management in the major Asian timber producing countries, including protecting high conservation value forests and practicing reduced impact logging. RDMA helped to strengthen the adoption of laws and regulations designed to exclude products made from illegally harvested timber, and promoted market incentives which favor forest products verified as legally harvested.

RDMA continued support for the Association of Southeast Asian Nations Wildlife Enforcement Network (ASEAN-WEN) to strengthen the enforcement of existing international and national wildlife protection laws. Capacity building and public awareness activities served over 400 individuals

within 64 institutions. Over 55 concrete enforcement actions in 2009 collectively provided a strong deterrent to illegal wildlife smuggling. RDMA also provided technical support for improved fisheries protection legislation in the Philippines and for new wildlife protection laws in Thailand. With USAID support, Thai Customs expanded their “Sold Out” wildlife trafficking public awareness campaign to checkpoints throughout the country.

The Coral Triangle is the global epicenter of marine biodiversity, with resources that help sustain 120 million people in coastal communities of Indonesia, Timor-Leste, Philippines, Malaysia, Papua New Guinea, and Solomon Islands. In May 2009, the leaders of these six nations signed a declaration to launch the Coral Triangle Initiative (CTI) and committed over \$14 million towards improved management of coastal and marine resources and ecosystems for biodiversity conservation, improved food security and livelihoods, and climate resiliency. In turn, RDMA launched a CTI support program to provide direct assistance to the “CT6” and facilitate regional coordination.

In order to build a solid foundation for CTI success, RDMA helped establish and strengthen National Coordination Committees to facilitate communication between national agencies, draft national action plans, and identify priority geographies and demonstration sites. Regional action planning was supported as well, including: an interim CTI Secretariat for

coordination among the CT6; a regional monitoring and evaluation framework which established baseline information, indicators and targets; a map of existing and planned projects; and, a CTI partner portal. A Coral Triangle Atlas is in development to enhance decision-making for effective marine protected area network management.

The first CTI learning exchange took place with RDMA support, in conjunction with the Philippines National Conference of Coastal Mayors. International experts and officials from all CTI countries came together to advance shared strategies for improving ecosystem approaches to fisheries and marine protected area management. The 25 participating CT6 country representatives observed 700 local government officials issue a 15-point resolution to promote sustainable fisheries.

Climate change is more prominent than ever in the region as both a threat to biodiversity and an opportunity for valuing the carbon storage capacity of standing forest over the short-term gains of industrial logging and agriculture. In FY 2009, lessons learned from efforts to reduce emissions from deforestation and forest degradation (REDD) were shared across the region through a learning network which informed international policy discussions on REDD. In addition, a feasibility study determined that RDMA’s support for forest conservation and sustainable management will avoid the release of almost 2.5 million tons of CO<sub>2</sub>,

Overall, RDMA regional environment programs worked with over 300 national and local agencies, catalyzed over 50 innovative policies, laws and regulations, and trained over 4,000 practitioners in FY 2009. Through close collaboration with international and implementing partner organizations, RDMA leveraged over \$22 million in additional resources and is well-positioned to achieve regional conservation goals with sustainable, long-term impact.

## **Afghanistan**

### **Restoration of Rangelands and Woodlands, Conservation of Key Areas**

Decades of civil conflict, poor management and drought have heavily degraded natural areas in Afghanistan. USAID supports conservation of both pristine and threatened ecosystems and species: the Hazarajat Plateau, a remarkable landscape of existing and potential protected areas; the Eastern Forest complex, where wild pistachio and almond woodlands exist alongside native cumin and licorice plants; and the Wakhan corridor, home to some of the last, best wildlife habitats and populations in the country including Afghanistan’s national animal, the Marco Polo sheep. In provinces like Ghor, Faryab and Jawzjan, denuded forest areas are being replanted and conserved. Restoring lost forests and protecting remaining areas of biological significance and economic value through community-based natural resource management are priorities USAID shares with the Government of Afghanistan.



DESPITE ONGOING INSECURITY in Afghanistan, almost two million hectares of forests and rangelands were brought under community management in 2009, including areas near Surkhrud, pictured here.

PHOTO: USAID

In FY 2009, more than 2.2 million hectares were placed under improved natural resource management with USAID support, an incredible accomplishment considering the lack of security in many areas. This result includes 1.87 million hectares of forests and rangelands under community management, and over 350,000 hectares of natural pistachio forests which are now well-managed and protected from encroachers. Over half of the combined area is under direct monitoring and management by local Community Conservation Committees (CCCs). These investments generated more than 17,500 jobs for local community members and increased productivity of rangelands and pistachio forests by 40 to 50 percent, providing economic growth that is both legal and sustainable.

To address the lack of capacity to manage natural resources, 43,000 community members and extension

workers were trained in sustainable management of forests and protected areas. Community mapping of resource boundaries, identification of threats to watersheds, and formulation of management plans are among the skills developed. USAID also established Forest Management Committees in Samangan and Takhar provinces, Ranger Pamir Associations in Badakshan, and a Protected Area Committee for Afghanistan's first national park, Band-e-Amir, established in the spring of 2009.

With nascent government ministries and departments at both national and provincial levels, ensuring public officials have the means, knowledge, and ability to effectively carry out their environmental duties is key. In 2009, USAID and other international organizations provided technical assistance in drafting several laws to provide the legal basis for conservation, from protected areas law to regulation

of hunting and the wildlife trade. A new forest law endorsed by the Ministry of Environment is now under review by the Parliament for approval and endorsement to the Office of the President.

USAID support helped Afghanistan's National Environmental Protection Agency (NEPA) produce a National Biodiversity Strategy and Action Plan which addresses 40 threats to biodiversity across the country's 34 provinces. The Agency and its partners also worked with NEPA to develop a protected species list for 33 rare and endangered birds, plants, insects, amphibians, and mammals. This critical step provides legal protection to Afghanistan's wild species, which have been devastated by over 30 years of conflict.

In order to curtail further species listings, USAID supported a gap analysis of Afghanistan's flora to help identify where native plant

communities and ecosystems could be conserved. Working in parallel, USAID partners helped restore and electronically catalogue approximately 23,000 native plant specimens at Kabul University's recently renovated herbarium. This important collection will directly inform and strengthen efforts to restore Afghanistan's threatened ecosystems.

In addition to management, enforcement, and policy actions, USAID provided support for on-farm forestry activities which reduce pressure on natural forests. One project established over 500 woodlots, which will help rural people meet the demand for fuel wood and construction materials more sustainably. Tree planting is also part of environmental education programs; in one, pupils in 40 schools were given saplings to be planted around the schools and their homes. Green Generation Clubs were then established to oversee planting of trees and discussions of environmental issues.

USAID investments in the communities and institutions of Afghanistan have made substantial progress in restoring the country's depleted natural resources and the sustainable livelihoods that depend on them. A new area of intervention focuses on the intersection of human, livestock, and wildlife health. Working with Afghani wildlife experts, government agencies, and public health officers, one USAID partner is creating local training programs, conducting health investigations, and recommending

guidelines and policies to reduce disease transmission among wildlife, humans, and domestic livestock. Education programs teach local veterinarians about zoonotic diseases while targeted training is preparing them to take responsibility for an avian influenza vaccination campaign by 2012.

## **Bangladesh**

### **Co-Management of Forests and Protected Areas**

Despite low population growth, Bangladesh's high population density and limited arable land has put heavy pressure on natural resources, resulting in the loss or degradation of 90 percent of forests and 50 percent of freshwater wetlands. Climate change is expected to exacerbate threats to ecosystems and livelihoods in this low-lying nation where 30 percent of the country floods annually. USAID-supported activities promote community-led approaches to natural resource management in biologically significant tropical forests and wetlands, as well as alternative income opportunities that reduce overexploitation of protected areas.

USAID has played a pioneering role in pro-poor conservation in Bangladesh, promoting equitable economic growth and good governance through a collaborative management approach that devolves some authority for natural resources to local communities who depend on them the most. This model was tested and proven with a program to develop co-

management of declining wetland resources: Bangladesh now ranks third globally, after China and India, in open freshwater capture fisheries production. This success encouraged an expansion to co-management of six forest protected areas. Today, USAID's Integrated Protected Area Co-management (IPAC) project scales up collaborative management of natural resources to a national level by achieving recognition, acceptance and integration of the approach by the Government of Bangladesh (GOB).

IPAC works with the Ministry of Environment and Forests (MOEF) to operationalize a national strategy for natural resource management and biodiversity conservation which will benefit 2.5 million people in and around more than 50 protected areas. In FY 2009, co-management improved conservation of about 180,000 hectares of forest and wetlands, of which more than 20 percent showed improved biophysical conditions such as increased diversity of bird species. USAID leveraged €10.8 million (\$15.7 million) from the European Commission to improve the environment and livelihoods of the Sundarbans, the largest mangrove forest in the world and a priority for MOEF.

One of the groundbreaking achievements for USAID in FY 2009 was the GOB's approval of a policy authorizing co-management committees to retain 50 percent of funds earned from entry fees to protected areas. As a result, local communities can now use the funds to finance co-management and

community development activities. In collaboration with MOEF, USAID developed guidelines for entry fee collection and use, and trained co-management committees in how to implement fees and access funds.

Taking a national co-management approach to rural areas across the country requires substantial outreach and education. In 2009, IPAC trained over 5,000 government staff and community members on environmental law and policies, including enforcement. Workshops and other interventions developed the local and national conservation constituencies required for involving civil society leaders, women, and youth in natural resources management and conservation.

Studies suggest that a two degree Celsius rise in global temperatures would submerge 20 percent of Bangladesh under the sea, affecting 70 million people living in coastal areas. At higher elevations, seasonal droughts would impact another eight million. Communities around protected areas maintain traditional livelihoods, leaving them especially vulnerable to the effects of climate change. Alternative income generating activities promoted by USAID reduce dependence on natural resources while building capacity to adapt to the negative impacts of climate change and natural disasters. In 2009, these activities benefited approximately 245,000 people, half of them women.

Climate change is also an opportunity for Bangladesh. Payments for standing forests,



PHOTO: SIRAJUL HOSSAIN

**LEAP OF FAITH:** Hoolock gibbons in Bangladesh can easily jump a distance of 25 feet. The Government of Bangladesh and USAID have scaled up community co-management to forests and wetlands through the country, with the potential to benefit 70 million people.

which mitigate climate change through carbon sequestration, offer a source of sustainable financing for protected areas and forest management, thereby further contributing to their long-term viability. In partnership with the USDA Forest Service, USAID initiated a study in 2009 to calculate the value of sequestered carbon that could be offered for sale in the voluntary carbon market. USAID also successfully leveraged an additional €2.5 million (\$3.6 million) from the German Technical Cooperation (GTZ) for carbon sequestration projects in one protected area.

The GOB has allocated \$45 million towards addressing climate change. Supporting this commitment, USAID prepared a Policy Note on global climate change adaptation and mitigation in Bangladesh, and over the coming years will assist government officials to prepare

carbon sequestration projects and adopt a National Action Plan for Clean Development. USAID will also help the government implement its newly developed Climate Change Strategy and Action Plan, and will assist MOEF in securing funds for a portfolio of climate change adaptation projects for forests and wetlands.

When Bangladesh's national co-management policy is fully implemented in 2012, USAID anticipates an additional 350,000 hectares of land will be under co-management, and over 500,000 people will enjoy increased economic benefits from sustainable use of natural resources and alternative livelihoods. A formal performance evaluation of USAID's Environment Program in 2010 will make sure these goals and others are reached.





PHOTO: PYROU CHUNG, EWMI

**SCHOOL OF LIFE:** Indigenous Kuy youth survey biodiversity in Prey Lang, Cambodia. Working with elders, youth are encouraged to learn about the forest while helping their communities monitor and manage forest resource use.

## Cambodia

### Grassroots Advocacy and Community-Based Forest Enterprises

At nearly 360,000 hectares, the Prey Lang (“Our Forest”) is Southeast Asia’s largest primary lowland dry evergreen forest. An estimated 600,000 people rely on it for their livelihoods, and approximately 82 percent of rice production in Cambodia is dependent on its watershed. Like many other forests in Cambodia, none of Prey Lang is zoned for conservation or management under the protected area or forestry laws, resulting in opportunistic development including concessions for commercial agriculture and mining exploration. USAID assists communities in Prey Lang and other forest regions of Cambodia to claim, manage, patrol, and benefit from land and natural resources which are critical to biodiversity and livelihoods.

In 2009, three mechanisms were designed to reduce the potential

for violent conflict over natural resources, resulting in community media materials; environmentalism and biodiversity alliances across geographical areas; and grassroots networking. Biodiversity and community conservation workshops further engaged citizens in promoting strengthened environmental governance. Nine communities (representing almost 12,000 families) filed coordinated public complaints against concessions and land grabbers whose actions were affecting nearly 500,000 hectares of land in five provinces, including biologically significant areas.

The ecologically diverse landscape of the Cardamom Mountains includes the third largest standing rainforest in Southeast Asia, one of only seven remaining Asian elephant migration routes, over 2,000 species of plants, and at least 14 globally threatened species of mammals, from the Indochinese tiger to Irrawaddy dolphins. USAID supported community valuation of forest resources and ecosystem

services in priority areas including the Cardomoms, where rainfall generates water worth \$200 million per year to communities and farms downstream. Across the country, more than 1,100 people were trained in best practices for community-based natural resource management and biodiversity conservation.

Alternative livelihoods for local communities aim to minimize pressure on natural resources by replacing unsustainable activities and helping people value the forest. In several forest communities, USAID supported the development of renewable non-timber forest product enterprises based on honey, resin, bamboo, and medicinal plants. Over a dozen interest groups exchanged information on honey and resin harvesting technology, post harvest management, forest protection and resource management, and value chain networking. By linking resin and honey collectors to appropriate market channels, USAID provided them with more opportunities to sell their products.

Overall, USAID’s conservation efforts in 2009 helped to protect more than 220,000 hectares in Prey Lang, the Cardamom Mountains, the swamp forests of Tonle Sap (the largest freshwater lake in Southeast Asia), and areas characterized as Southeastern Indochina dry evergreen forests and Central Indochina dry forest. Through community advocacy and networking, improved natural resource management, and alternative livelihood development, USAID will continue to enhance protection and management of forests for biodiversity, livelihoods, water and food security, and climate change mitigation.

## Indonesia

### Natural Resource Management and Orangutan Conservation

Few countries can match the biodiversity of Indonesia, which ranks first in the world in number of species of mammals, palms, swallowtail butterflies, and parrots. Its land boasts ten percent of all flowering plant species, while its seas harbor the highest coral species richness in the region. Deforestation and associated nutrient runoff are major threats to terrestrial and marine habitats, with more than 20 million hectares of forest cleared since 1995. USAID biodiversity conservation and forest management programs protect habitat and improve watershed management by curbing land clearing for large and small-scale

agriculture and plantations; combating unsustainable and illegal logging practices; supporting protected area management and law enforcement; and building capacity to prevent and respond to large-scale fires.

USAID supports implementation of the Ministry of Forestry's National Orangutan Action Plan through policy and field conservation activities, including formation of the Indonesian Orangutan Forum to improve cohesion between conservation, private sector and government actors. Through the Orangutan Conservation Services Program (OCSP), USAID conserves wild orangutan populations and their forest habitat in Kalimantan and Sumatra by addressing the major threats to their survival, especially habitat loss, hunting, and wildlife

trade. OCSP impacts 3.3 million hectares of forest containing approximately 40 percent of the orangutans found in Indonesia. With collaboration from numerous stakeholders, OCSP has improved management of nearly one million hectares of high-biodiversity forest over the life of the project.

In 2009, OCSP-supported surveys discovered two new populations of approximately 2,000 orangutans in East Kalimantan and Sumatra and subsequently helped incorporate 250,000 hectares of habitat into district spatial planning as protected areas. In Tanjung Puting National Park, home to 6,000 orangutans, patrolling activities expanded to cover 70 percent of the park's 415,000 hectares. In the park buffer zones, increased patrols covered an additional 41,500 hectares.

**THICK SMOKE** over Kutai National Park, Indonesia, recalls devastating forest fires of the late 1990's. USAID works to reduce the incidence and impact of fires used to clear agricultural land, helping Kutai remain an important refuge for up to 2,500 orangutans.

PHOTO: DONALD BASON, DAI





PHOTO: DONALD BASON, DAI

**ZIZI IS TOPS:** Zivanna Letisha Siregar, better known as Zizi, shares a joke with a park guard before planting a tree at the headquarters of Tanjung Puting National Park in East Kalimantan, Indonesia. Zizi won the 2008 Indonesian Beauty Contest and is now a goodwill ambassador for USAID's Orangutan Conservation Services Program.

In Sumatra, OCSP helped to develop spatial plans and policies that protect critical orangutan habitat and support environmentally sustainable development. As a part of this program, OCSP supported the implementation of the Ministry of Forestry's model conservation villages, which improved conservation planning and management in approximately 45,000 hectares of buffer zone around the Leuser ecosystem, which contains the majority of Sumatra's 6,600 orangutans.

The majority of orangutans in Kalimantan live outside of protected areas, and therefore, public and private sector support for habitat conservation is critical. As a result of USAID interventions, two large timber plantations near Kutai National Park in Kalimantan incorporated a conservation corridor containing around 2,500

orangutans into their management planning. The corridor will help to ensure sufficient and varied food resources and gene dispersal by linking the plantations to the park.

Watershed conservation maintains reliable water supply while protecting high conservation value forests. USAID's Environmental Services Program focuses on collaborative conservation and land rehabilitation inside and adjacent to protected areas and other forest areas of high biodiversity value across the islands of Java and northern Sumatra. In 2009, field schools for public and private stakeholders promoted biodiversity conservation in water catchment areas, and a toolkit was developed to help replicate proven approaches to watershed management. USAID assistance also established payments for environmental services in the Sumber Brantas sub-watershed in East Java.

In Aceh and Papua provinces, watershed management activities facilitated the rehabilitation of nearly 225,000 hectares of degraded land in and around protected areas using native species to improve hydrology and biodiversity. In Aceh, USAID helped to develop an environmentally sustainable jobs creation program for ex-combatants in two post-conflict districts. In Papua, USAID supported province-wide strategic land-use planning for sustainable development. These approaches required careful attention to traditional land use systems, community rights, and food production requirements.

Nationally, USAID and the Ministry of Forestry collaborated with the newly-formed National Watershed Forum to develop an integrated watershed management framework which stabilizes water flow and addresses flooding and landslides. USAID also helped to develop a national conservation management policy guide informed by the framework.

As a country of 29,000 islands, Indonesia relies on marine biodiversity to support the nutrition or livelihoods of most citizens. Unsustainable use threatens fragile coastal and marine ecosystems. USAID/Indonesia launched a marine program in 2009 to support the Coral Triangle Initiative, which complements efforts by the Philippines and RDMA missions. To prioritize efforts, USAID and the Ministry of Marine Affairs and Fisheries agreed to focus activities in the three highest priority eco-regions of Papua, Banda Sea, and Lesser Sundas. This process laid

the foundation for a strong bilateral partnership for new USAID marine activities started in 2010.

Threats to Indonesia's marine and terrestrial resources are expected to increase as a result of global climate change. USAID addresses these concerns primarily through improved natural resource management and rehabilitation in high conservation value forests, which help both people and wildlife adapt to a changing climate while trapping carbon in standing forests. In 2009, a USAID partner in West Kalimantan signed a REDD pilot project memorandum of understanding to support the management of a 53,000 hectare area of peat swamp forest that contains approximately 600 orangutans. Across all mission programs with forest conservation components, an estimated 4.7 million tons of CO<sub>2</sub> emissions were avoided in FY 2009.

Several activities initiated in 2010 will build on the progress made to date. One new program aims to improve the capacity of law enforcement organizations to address illegal, unregulated, and unreported fishing; illegal logging; and wildlife smuggling. Another project will work with the Government of Indonesia to conserve forests and wildlife by improving forest governance and management, and by developing market linkages to promote a legal and sustainable supply of forest products. A third activity will incorporate climate considerations into natural resource and coastal management efforts, increasing the capacity of people to prepare for and adapt to climate variability and change.

## Lebanon

### Forest Restoration and Fire Management

With approximately 13 percent of the land area under tree cover, Lebanon is one of the most forested countries in the Middle East. These forests have degraded significantly over the last century, particularly in the last 30 years, due to forest fires, overexploitation of forest resources, and conflict. Three UNESCO biosphere reserves underscore the



PHOTO: MARK ROONEY, USFS

**“BE ONE OF US” is the message to potential recruits for a course in Lebanon on Incident Command Systems for Wildfire Events.**

diversity of plant species at risk. In response, USAID has partnered with the USDA Forest Service (USFS) to assist the government and civil society to conserve remaining forests through capacity building and technical assistance.

In FY 2009, USAID-supported efforts focused on addressing the threat of forest fires. USFS conducted a number of intensive workshops and training sessions aimed at assisting counterparts in Lebanon to better

understand and respond to wildfire. Field courses complemented classroom instruction in wildland fire behavior, use of fire retardants, firefighting safety, and forensic investigation prioritizing recognition of arson, the most common cause of wildfires in Lebanon.

One series of training courses focused on Incident Command Systems (ICS), to provide wildland fire responders with a foundation in incident management frameworks that are recognized as the international standard in wildfire response. A field course gave participants instruction in the proper use of hand tools and fireline construction, and evaluated participants' knowledge of ICS in real-time through a simulated wildland fire. This exercise served as a critical assessment of the preparedness of Lebanon's firefighting personnel and infrastructure for the upcoming fire season.

Fighting and investigating forest fires is led by Lebanon's Civil Defense, but first responders often come from communities nearest to a blaze. USAID support helped to train municipal volunteer firefighters with the knowledge and skills necessary to conduct an initial attack against wildland fires, and how to best assist Civil Defense once they arrive on the scene.

Good communication and coordination are critical to effective forest fire management. Taking funding, infrastructure and other limitations into consideration, USFS offered recommendations and guidance for a communications system that would greatly improve the operational capacity of Lebanon's

Civil Defense. Separately, USAID supported a fire risk assessment that identified areas requiring additional fire response infrastructure. These analyses should assist the government in setting priorities for investment as it moves forward with a National Strategy for Forest Fire Management.

In 2010, USFS continued training to improve wildfire response, helped Lebanon create a national fire risk model to improve response readiness, and provided equipment and engineering support for fighting fires in steep terrain. USFS also began providing technical assistance in reforestation, particularly in poorer areas where communities stand to benefit from the increased economic opportunities that well-managed forests can provide. Planned activities include: workshops on nursery operations and planting techniques, followed by small grants for community nurseries; a study tour for members of Lebanon's National Reforestation Committee on all aspects of the reforestation process; and support for a national-scale tree planting campaign with counterpart organizations to promote a conservation ethic.

## Nepal

### Community Natural Resources Governance

Standing at the junction of the Indo-Malayan and Palearctic biogeographic regions, Nepal has over 100 ecosystems ranging from subtropical forests to cold desert. The country has made significant progress conserving biodiversity in recent years but still struggles with overexploitation of forest resources, illegal trade in wild plant and animal products, overgrazing, encroachment on forest areas, and forest fires. These threats are compounded by population growth, poverty and political instability. USAID/Nepal's biodiversity program works primarily in 13 sites in the eastern Himalayan region to strengthen local and national governance, improve livelihoods, and empower local communities to assert their rights to manage and use the land.

Natural resources sustain the livelihoods of 80 percent of Nepali citizens, whose participation in community forest management has been critical to reducing deforestation rates across Nepal.

USAID support in 2009 helped over 1,400 forest user groups to better conserve, manage and utilize more than 10,000 hectares of community forests and buffer zones, for a cumulative 59,154 hectares since 2002. More than 44,000 metric tons of forest products were sustainably harvested for subsistence and/or trade in local and international markets. Surplus forest products gathered by 60 community forest user groups generated \$17,000 in funds for 386 of the poorest and most disadvantaged member households. The mission also contributed to a Global Health Bureau program to reduce pressure on natural forests by introducing efficient cooking stoves to rural households.

In FY 2009, advocacy campaigns and mass rallies helped to ensure that 14,000 forest stakeholders were adequately represented in Nepal's constitutional drafting process. USAID supported visits by members of the governing body charged with writing the new constitution so they could monitor critical issues related to illegal logging of timber, poaching of wildlife, climate change impacts, and agricultural encroachment into forests. Community groups also organized 246 advocacy campaigns at local, regional and national levels to hold local government accountable on issues related to natural resource management. A total of 534 groups conducted public hearings and audits and recovered approximately \$19,000 in misused funds from community officials or institutions.

Training is an important component of USAID's work in Nepal, and in FY 2009, nearly 216,000 community



**CATTLE BREAK:** Members of local community forest user groups in Nepal dig trenches along degraded forest patches to prevent overgrazing by cattle and encroachment from wildlife.

PHOTO: TRISHNA GURUNG, WWF

group members (half of them women) participated in workshops, awareness classes, and issue-based advocacy campaigns that focused on sustainable forest management and biodiversity conservation. These events improved herders' knowledge of conservation practices; updated habitat maps for the endangered snow leopard; resulted in construction of watch towers and natural fences; and strengthened ecotourism programs. A number of training events supported the development and implementation of forest operational plans.



PHOTO: ASUNCION SIA

**DUTY CALLS:** The only female warden at the USAID-supported Decalve Marine Sanctuary off Palawan Island, Philippines, keeps close tabs on fishing activities in this ecologically sensitive area.

## Philippines

### Local Conservation through Governance and Land Tenure

The Philippines has more endemic mammals than almost any other country and is a recognized center of world marine biodiversity. However, human activities are severely impacting the country's terrestrial and marine habitats, leaving less than one-third of the original forest and coral reefs still intact. USAID addresses threats to priority biodiversity areas by strengthening national and local government and community management capacities; improving policies, incentives, and political will for conservation; enhancing law enforcement; broadening the base of environmental financing; and mitigating natural resource conflicts. USAID assistance to national and local governments and communities improved management of about 125,000 hectares of forests and coastal areas in FY 2009.

Illegal logging and forest conversion, poor enforcement of forest regulations, and overlapping land use policies contribute to an alarming rate of deforestation. This is aggravated by a lack of alternative livelihoods for more than 20 million mostly poor upland communities. In an effort to reduce these threats, USAID in collaboration with the Philippines Department of Environment and Natural Resources (DENR) works to establish governance and use rights to open-access forest lands, while improving management of areas which already have secure tenure. USAID's Environmental Governance (EcoGov) program works to develop incentives for improved forest management for LGU's and other land holders, focusing on 16 provinces which contain about 31 percent of the country's total remaining natural forests.

Through EcoGov, more than 250 local government units (LGUs)

independently financed environmental programs in 2009 valued at \$6.9 million, a 60 percent increase over the previous year. Fifty-nine provincial and municipal LGUs put \$1.8 million of their own funds towards forestry activities, twice the amount in 2008 and a sign of commitment to good forest management. A USAID assessment revealed significant improvements in local governance, with 81 out of 86 target LGUs designated as well-performing. All told, EcoGov activities improved the management of over 28,000 hectares of natural forest in 2009.

Forest lands co-management and joint land use plan implementation agreements between DENR and local stakeholders give LGUs a direct stake in forest management. With USAID support, four new co-management agreements covering over 49,000 hectares were signed in 2009, for a total of 29 agreements covering

nearly 80,000 hectares since EcoGov began. LGUs have become frontline partners against illegal logging, as in the Visayas and Mindanao provinces where 17 LGUs hired 293 forest wardens and deputized 64 forest protection officers to assist the DENR in this task. Staff from six LGUs in South Central Mindanao confiscated 38,500 board feet of illegally cut logs, worth about \$14,000. In another case, the Isabela Province's Forest Protection Task Force, located within Sierra Madre Natural Park, seized \$19 million of illegally cut logs and filed cases against violators.

A USAID partnership with the U.S. Department of Interior (DOI) supports biodiversity conservation in the Philippines by increasing the capacity of local and national environmental law enforcement bodies to address environmental crimes. While the Philippines has sound laws and policies that address many environmental threats, national and local capacity to enforce environmental laws historically has been weak. DOI supports site-based activities in key biodiversity areas as well as national level activities to build the capacity of law enforcement bodies.

In 2009, DOI advised on revisions to the 1992 Protected Area System Act, which incorporated good governance practices. A first-ever environmental justice forum was organized with DOI assistance, calling for actions to address environmental crimes and helping to craft rules of procedure

that will govern the proceedings of cases in 117 environmental courts recently designated by the Philippine Supreme Court. In addition, DOI helped the government develop a standard training program for police and other environmental law enforcement authorities and provided technical assistance on standard operating procedures for investigating environmental crimes, so that cases are not thrown out for lack of evidence or proper protocol.

Until recently, illegal fishing, destructive fishing methods, and marine pollution resulted in a decline in fisheries production in the Philippines. USAID fishery support programs in the last few years have helped to increase the abundance of fish stocks by 10 percent over the 2004 baseline. A separate but related measure found a 19 percent increase in fish biomass in focal sites. Anecdotally, whale sharks, marine turtles, and dolphins previously absent from project sites are now being observed.

USAID supported the Government of the Philippines in their efforts to adopt a Coral Triangle Initiative (CTI) National Plan of Action in May 2009. The plan focuses on sustainable fisheries management and marine protected area (MPA) management effectiveness, especially related to conserving corals and associated ecosystems. In 2009, 16 MPAs were considered as having "improved" status based on effective enforcement, reduced violations, and other measures, for a cumulative

96,630 hectares. In the same year, a national network of academic and NGO support groups chose two USAID-assisted MPAs as the top two outstanding MPAs in the Philippines from over 70 nominations.

As it did in forested areas, USAID worked through LGUs to achieve coastal and marine objectives. Technical assistance helped 54 LGUs and five inter-LGU alliances to improve resource governance. USAID/Philippines also works closely with the U.S. Peace Corps to place volunteers in high-biodiversity coastal areas where they can support project design and management, environmental training, small grants, and other conservation and development needs of local communities.

Climate change is expected to have significant impacts on the people and ecosystems of the Philippines. To help mitigate these impacts, USAID helped to reduce deforestation and restore degraded forest lands through agro-forestry and tree farms. A vulnerability assessment in Verde Island Passage helped to target mangrove restoration and rehabilitation as a climate change adaptation strategy for local governments. With the adoption of the Philippine Climate Change Act in October 2009, the United States has an opportunity to support the Government in developing a national Climate Change Strategy.

# EUROPE AND EURASIA

USAID country programs funded biodiversity or forestry programs in two countries in Europe and Eurasia region in FY 2009.

The vast temperate and boreal forests of Eastern Europe are still home to bear, bison, leopard and tiger. Well-managed forests now provide valuable wood and wildlife products and are expected to draw tourism in the future from increasingly affluent citizens as well as Western Europeans seeking the wilderness experiences available to their east.

This vision of biodiversity conservation and thriving tourism is threatened by illegal logging, catastrophic forest fires, wildlife trafficking, oil development, pollution from growing cities, and a lack of



legislation and enforcement among countries in the region. The United States assists former Soviet states in adjusting to changing economic

and political circumstances, including growing demand for social and environmental responsibility in the public and private sectors.

**A BURNED LANDSCAPE** along a tributary to the Dzhimdan River on Sakhalin Island, Russia, is recovering but very slowly. USAID through the U.S. Forest Service developed a restoration plan in conjunction with representatives from the local community of Noglicky.

PHOTO: DAVE HELLER, USFS





## Georgia

### Stronger Protected Areas for Biodiversity and Tourism

Like other countries with territory in the Caucasus Mountains, Georgia's diverse topography and ecosystems support high biodiversity. Approximately 40 percent of the nation is forested, one-tenth of which is undisturbed old growth. The natural heritage of Georgia and its neighbors is disappearing at an alarming rate due to habitat transformation, weak laws and institutions, and low environmental awareness. USAID's modest biodiversity program in Georgia focuses on building the capacity of the Ministry of Environmental Protection and Natural Resources (MEPNR) of Georgia to conserve and manage biologically significant areas.

Through its partnership with the U.S. Department of Interior (DOI), USAID is enhancing the capacity of MEPNR to administer and develop a national network of protected areas, promote appropriate legislation, and plan and implement effective park management systems. In 2009, DOI helped Georgia to

identify and address weaknesses in legislation and policies that govern the country's protected area system. Following on the establishment of Tbilisi National Park in 2008, draft legislation was developed to create a new national park in the Racha and Svaneti regions, almost doubling the size of Georgia's protected estate. In all, nearly 496,000 hectares of protected zones were placed under improved management in FY 2009.

USAID supported training for MEPNR personnel on a wide variety of topics in 2009, including visitor services, parks management, and planning and design of protected areas infrastructure. DOI specialists developed courses and provided instruction in a training center refurbished by the Ministry in 2008, and worked with center staff to institutionalize the program as part of a national training strategy. More than 200 Ministry staff completed courses focused on general institutional strengthening, and natural resource and public land management.

Tourism development is a high priority for the Government of Georgia. Natural resource conservation contributes to tourism

growth and directly improves economic stability. With USAID's support, the total number of visitors to Georgia's protected areas increased from around 9,000 in 2006 to almost 95,000 in 2009. In turn, revenues from nature tourism supplement local livelihoods and encourage communities to prioritize and advocate for conservation.

In addition to policy and training programs, USAID financed reintroduction of the native goitered gazelle, which was exterminated more than a century ago. Ten gazelles, a gift from the Government of Turkey, will be released into Vashlovani National Park after an acclimation period in a fenced enclosure.

The conflict between Georgia and Russia in August 2008 had lasting repercussions for natural resource management. Forest fires destroyed 500 hectares, including parts of national parks, and highlighted Georgia's institutional weaknesses related to fire response. To bolster capacity in this area, USAID supported training on wildfire management plans, fire suppression skills, and ecologically sound post-fire rehabilitation

**TEN GOITERED GAZELLES**, a gift from Turkey to Georgia, must acclimate to new surroundings in a large fenced enclosure before they get reintroduced.

PHOTO: USAID

techniques for Georgian rangers, forest wardens, and headquarters personnel. USAID also provided sustainable humanitarian assistance to families displaced by the conflict through the provision of 500 energy-efficient wood stoves. Produced by local manufacturers, they require 50 percent less wood than standard stoves and should save money and trees for decades.

In FY 2010, several programs will contribute directly or indirectly to biodiversity conservation and forest management. A forestry program will provide technical assistance to MEPNR to develop forest management policies, beginning with a study of public and private forest areas in the Borjomi, Akhmeta, and Telavi districts to compare current forest management practices to the standards of a third-party certification body. Another program will target three regions of Georgia that are vulnerable to climate change and in need of post-conflict environmental rehabilitation, working with local authorities and communities to improve the sustainability of natural resource use and implement climate change adaptation activities. USAID will also launch an integrated watershed and natural resource management program that will improve wastewater treatment, management practices, potable water supply, hydropower sustainability, and irrigation and drainage systems in Georgia's most valuable watersheds. These programs will apply holistic and participatory approaches in order to spread economic benefits to more people and give local communities a voice in determining how the land around them is utilized.



PHOTO: ANATOLY SEMENCHENKO, WILD SALMON CENTER

**FISHING FOR ANSWERS:** Salmon specimens collected from Russia's Sakhalin Island provide some of the baseline measures for an island-wide monitoring effort.

## Russia

### Forest Management in Siberia and the Russian Far East

The far eastern region of Russia, which includes Primorye, Sakhalin Island, and the Kamchatka Peninsula, is an area rich in natural resources and biodiversity, including endangered big cats and various commercially valuable varieties of salmon. USAID through the USDA Forest Service (USFS) is working with a number of partners including the Russian Federal Forestry Agency (RFFA) to conserve critical wildlife habitat, restore damaged resources, and promote sustainable forest management and ecotourism.

Primorsky Krai in southwest Primorye is one of the most biologically diverse areas in Russia, and also subject to

some of the highest levels of human impact in the Russian Far East. USAID funds support a landscape conservation program geographically defined by the needs of two species dependent on large tracts of intact, functioning forest ecosystems: the Siberian tiger and Amur leopard. The program addresses multiple conservation threats to these species through: fire prevention and suppression; forest regeneration; capacity building for protected area management; population monitoring; and ecological and biomedical research. The program engages young Russian specialists who receive mentoring and training in ecology and conservation.

Conservation efforts on Sakhalin Island aim to increase stakeholder involvement in salmon conservation and habitat restoration through



PHOTO: JOHN GOODRICH, WCS

**BIOMEDICAL TESTS** inform conservation planning for this Far Eastern leopard captured in Southwest Primorsky Krai along Russia's border with China. With a population of only 30 to 40 individuals, this little known and highly threatened subspecies is one of the world's rarest cats. USAID supports Wildlife Conservation Society research on inbreeding and disease risks, as well as basic ecology.

community-based watershed councils that represent the varied interests of a watershed's population, its users, and visitors. Ongoing activities include anti-poaching patrols, habitat restoration, and environmental education. Three new watershed councils, including governance structures and workplans, were established in the Nogliki, Ulegorsk, and Makarov regions, expanding the total network to six. USAID funds also helped develop a conservation strategy for the Langry-Bolshaya watershed and supported an island-wide salmon monitoring plan.

USAID also supports salmon conservation, protected area management and ecotourism on

the Kamchatka Peninsula. Activities in the Kamchatka region leveraged funding from private sector and other organizations for effective management of salmon protected areas, integrated management areas, recreation and tourism areas, and other protected territories. One partner produced a protected area development plan for the peninsula and is working on a new strategy to protect four important rivers.

At the national level, USFS continued to provide technical expertise and professional exchanges to assist with the development of Russia's new National Forest Inventory System. USFS also assisted with workshops to improve transboundary

dialogue and cooperation on sustainable forest management and measures to reduce illegal logging along the China-Russia border.

Climate change is expected to have significant impacts on Russia's environment although the country's vast boreal forests also play an important role in sequestering carbon and mitigating the scale of change. In October 2008, the RFFA, with support from USAID, sponsored an international conference on the role of Russian forests in climate regulation. Over 150 representatives from 30 countries and several international institutions participated. Separately, the U.S. Civilian Research and Development Foundation supported several research projects in 2009 which will help Russian and American policy makers better understand climate change and formulate responses.

In order to scale up current activities and expand cooperation on several topics of common interest, a tripartite Protocol of Intent was signed between the USFS, USAID and RFFA in December 2009. The remit of a formal Forest Working Group with RFFA was expanded to include topics such as forest inventory and monitoring, forest certification, fire management, illegal logging, and climate change. These agreements and working groups will continue to build upon critical investments in the conservation of Russia's biodiverse forests.

# LATIN AMERICA AND THE CARIBBEAN

USAID country programs funded biodiversity or forestry programs in about 20 countries in Latin America and the Caribbean in FY 2009.

The Latin American and Caribbean (LAC) region includes almost half of the world's tropical forest and supports a tremendous array of biological diversity. However, the natural resource base is threatened by adverse trends such as habitat conversion and degradation, unplanned infrastructure development, low institutional capacity, illegal extraction of resources, poor management practices, and weak or ineffective enforcement of environmental laws and policies. Deforestation rates are some of the highest in the

world, particularly in the Amazon basin and dry Chaco forests to the south. USAID works to equip stakeholders with information and tools to participate in democratic decision-making and to better manage and benefit from nationally, regionally, and globally important natural resources.



**PARAMO:** Like other countries in the Andean Amazon, many of Ecuador's population centers rely on water from alpine glaciers and high-elevation grasslands called *paramo*. Both resources are vulnerable to climate change, which is causing glaciers to recede and grasslands to dry out.

PHOTO: BRUCE BAYLE, USAID



## LAC Regional Sustainable Development Program

### Conservation of the Andean Amazon

The eastern slope of the Andes Mountain range is characterized by a variety of forested ecosystems and tremendous biological diversity. Unplanned infrastructure development, low institutional capacity, illegal extraction of resources, poor management practices, and weak or ineffective enforcement of environmental laws and policies put pressure on biodiversity and forests.

Through the Initiative for Conservation in the Andean Amazon (ICAA), the Regional Sustainable Development program of the Bureau for Latin America and the Caribbean (LAC/RSD) addresses these threats by improving natural resource management; enabling legal, policy, and institutional development; and expanding market access for sustainable natural resource-based products. ICAA partners work with communities, indigenous organizations, NGOs, universities, and government entities in projects which complement USAID bilateral mission activities in the Andean countries of Colombia, Ecuador, Peru and Bolivia.

Indigenous peoples are important partners for conservation in the region, with traditional and legal claims to vast areas of high-biodiversity forest, as well as cultural and economic incentives to be good stewards of natural resources. ICAA co-financed a study of land use and vegetative

cover in the Ecuadorian Amazon which confirmed that indigenous territories have retained forest cover and protected biodiversity while surrounding areas have suffered significant degradation. USAID brought together 77 indigenous leaders from 17 organizations for on-the-ground training and exchange events in three countries in 2009. These facilitated first-hand learning experiences on tourism, forestry, and community park guard projects; generated new networks; and cross-pollinated ideas for conservation and development activities, including promoting greater involvement from indigenous women.

In Bolivia, ICAA strengthens mechanisms for indigenous participation in protected area management, including support for a proposal outlining co-management of the Madidi National Park by an organization representing four indigenous groups whose territorial rights overlap the park. The proposal is informing discussions regarding collaborative management of the entire national protected area system.

In Peru, an ICAA co-sponsored workshop in July 2009 brought together scientists, development practitioners and policy makers to discuss climate change vulnerabilities and innovative ways to adapt to changing environmental and climatic conditions. Following favorable legislative changes, ICAA partners implemented formal training workshops for Tambopata National Reserve personnel and Management Committee members to strengthen rapid response to illegal mining and logging, slash and burn agriculture, and

other threats. The training addressed changes in protected area management regulations; allocation of rights to exploit forest resources; land titling; and authority and responsibility of regional governments under decentralization (including closure of the National Institute for Natural Resources, transfer of forestry oversight to the Ministry of Agriculture, and creation of an Environment Ministry with purview over biodiversity and climate change). ICAA training also strengthened four Peruvian indigenous organizations' capacity to influence local, national, and regional decisions that impact their natural resource base.

In Ecuador, ICAA supported two Cofan indigenous organizations that succeeded in getting 30,000 hectares of Cofan territory and a 7,000 hectare community reserve accepted as pilot projects in the Ecuadorian Ministry of Environment's Forest Partnership program (*Socio Bosque*). This program offers annual payments (\$1/hectare/year for 20 years) to owners of titled properties with intact natural environments who maintain strict conservation areas under private management for the term of the contract. These payments for ecosystem services will partially fund the Cofan park guard program.

One of the strengths of regional programs is their ability to prioritize social and ecological connections over political boundaries. In 2009, ICAA partners continued to promote the declaration by the Ecuador Ministry of Environment of the 70,000 hectare La Bonita Municipal Reserve which, when completed, will represent a new legal category of reserve. Partners hope this category can be used by surrounding communities to further



PHOTO: SCOTT LAMPMAN, USAID

**HOT CHOCOLATE:** Cocoa dries in the sun next to a house in a Cofan indigenous community near the border of Colombia and Ecuador, where improved production techniques are raising yields and incomes while reducing pressure on forests.

consolidate buffer zones in the Cofan area, including the Colombian side of the border. The Colombian Ministry of Environment and Colombian Cofan groups are interested in creating a national park to form a corridor with reserves in Ecuador.

In another transboundary example further south, ICAA developed a

draft map of conservation set-asides on participating forestry operations in Pando, Bolivia and Madre de Dios, Peru. A survey of forest managers on their criteria for selecting set-asides and their understanding of high conservation value forests is leading to guidelines for additional training in these concepts. Also in Madre de Dios, ICAA is increasing the hectares

of Brazil nut trees that have been mapped and tagged with identification markers, informing management plans for 167,000 hectares (pending approval by Peru's Ministry of Agriculture).

Infrastructure development in the Andean Amazon is a necessary part of economic growth and service provision, but often proceeds without public engagement and adequate environmental and social safeguards. To address this issue, ICAA partners formed a cross-cutting working group on infrastructure development that partnered with the Inter-American Development Bank (IDB) and the Bank Information Center to develop guidelines for mandatory Strategic Environmental Assessments to improve IDB policies, plans and projects. Adoption of these guidelines will benefit the region as a whole by introducing enhanced rigor and transparency in multilateral funding for infrastructure.

Community-owned and led projects to reduce emissions from deforestation and forest degradation (REDD) can limit carbon emissions, conserve biodiversity, and ensure that resources flow back to local people. ICAA partners are playing an important role in disseminating knowledge about REDD policies and opportunities. With USAID support, Peru now has a REDD working group with the Environment Ministry, and the management plan for the Los Amigos Conservation Concession renewed by the Peruvian Forest Service includes a chapter on payments for ecosystem services, highlighting carbon markets as a way to offer tangible benefits to local communities for protecting forests. In the Madidi region in Bolivia, where indigenous communities

control approximately 1.7 million hectares of forest, a third party-assessment determined that a REDD project could achieve a 50 percent reduction in current deforestation rates and generate 22 million tons of emission reductions over an eight-year period. Although the global economic crisis has impacted short and medium-term prospects for voluntary markets for environmental services, including carbon markets, USAID partners remain optimistic that payments for climate change mitigation can provide sustainable long-term financing for forest conservation.

## **Eastern Caribbean Regional Program**

### **Improved Policies for Sustainable Biodiversity Conservation**

The islands of the Caribbean are important stopover points for migrating birds and marine mammals, offer feeding and nesting grounds for sea turtles, and support mangroves and corals which foster countless generations of fish. Conserving this diversity of species and ecosystems is of critical importance in the region given the close connection between nature and tourism, a major income earner. Population growth, poorly planned coastal development including marinas and other large infrastructure, bush fires, land-based sources of pollution, beach erosion, and overfishing are among the challenges facing eastern Caribbean nations.

USAID's Eastern Caribbean Regional Program implements biodiversity initiatives in six countries, but focuses activities principally in the

Commonwealth of Dominica and the twin-island nation of Antigua and Barbuda. In 2009, three separate but interrelated USAID projects brought close to 3,000 hectares under improved natural resource management and trained over 100 people in environmental management techniques.

USAID's Caribbean Open Trade Support (COTS) program works to strengthen policies, laws, and regulations that promote sustainable conservation of biodiversity in Antigua and Barbuda, Dominica, St. Vincent and the Grenadines, and Grenada. In 2009, biodiversity assessments were conducted and management plans developed for: the Wallings Forest and associated watershed, Antigua; Codrington Lagoon, Barbuda; and the Levera Mangrove Wetlands and nearshore reefs, Grenada. The Levera inventory and management plan will contribute to materials submitted to the Ramsar Convention Secretariat in support of its designation as a wetland of international importance.

COTS also worked in Antigua and Barbuda with local NGO Environmental Awareness Group (EAG) to increase public awareness about the importance of preserving native plants and areas which are often at risk from bulldozing, agricultural burns, and stray goats. EAG collaborated with the World Conservation Union (IUCN) and applied their methodology to develop the first Red List of Threatened Species and Habitats for Antigua to be incorporated into legislation. The EAG also produced a report which ranks thirty ecologically important terrestrial sites by the urgency of

protection needed. These documents provide baseline data to monitor plant biodiversity in Antigua.

One of the biggest threats to critical marine habitats in Dominica is pollution and sedimentation from sand and stone quarries. The scale of this problem has grown in recent years due to increasing demand for aggregates and a ban on quarrying in neighboring countries. In 2009, COTS developed an environmental management plan for the industry and provided training for government and quarry personnel in environmental management implementation and design. This has led to mining and quarrying certification and less destructive practices. USAID also collaborated with industry representatives to develop the Quarry Code of Practice, and supported the drafting of quarry legislation submitted to Dominica's Cabinet for approval.

The Protecting the Eastern Caribbean Region's Biodiversity program focuses on harmonizing national legislation, strengthening management of protected areas, enhancing public awareness, and promoting private sector involvement in biodiversity conservation. In 2009, regulations for terrestrial and marine protected areas were developed to support biodiversity inventories, status assessments, and the development of management plans at four critical sites. These activities support the goals of the Caribbean Challenge, a regional initiative working towards placing at least 20 percent of the terrestrial and marine environment under protected status.



PHOTO: NICK HOBGOOD, DAI

**ELECTRIC BLUE:** Marine and coastal zone management plans and policies supported by USAID in 2009 help protect coral and fish in the Eastern Caribbean, such as this territorial Barred Hamlet (*Hypoplectrus puella*).

## Central America and Mexico Regional Program

### Watershed Conservation and Sustainable Fisheries

The Mesoamerican biodiversity corridor and the Mesoamerican barrier reef are among the world's highest conservation priorities. USAID's Central America and Mexico Regional Program (E-CAM) supports biodiversity conservation in these areas through a program focused on two transboundary watersheds across five countries, in addition to working with governments in the region to meet United States - Central America - Dominican Republic Free Trade Agreement (CAFTA-DR) environmental standards, which enhance conservation investment and outcomes.

The watershed conservation program strengthens conservation of some of the most important and largest protected areas in Central America, habitat for endangered species such as manatees, sea turtles, jaguars and macaws. Effort is focused in two regions: Gulf of Honduras (coastal and marine Belize, Guatemala and Honduras) and Cahuita-La Amistad-Rio Cañas-Bocas del Toro (straddling Costa Rica and Panama). In 2009, the program worked with environmental ministries, protected area co-managers, local communities, and private sector groups to implement 11 protected area management plans, improving the management of more than 458,000 hectares of tropical forests, coasts and coral reefs.

USAID also assists member countries of the Organization of the Eastern Caribbean States to put in place policies, governance systems, and conservation measures to strengthen national capacity and promote biological diversity. In 2009, significant pieces of legislation were drafted, including a policy on protected areas for St. Vincent and the Grenadines.

In May 2009, USAID initiated support for a marine zoning plan in St. Kitts to balance multiple marine

and coastal management objectives with biodiversity protection and restoration. After applying ecological, economic, and social considerations, the outcome of the process will be a comprehensive zoning plan that supports the protection of coral reefs, fish stock and other natural resources by designating certain areas for conservation and other areas for sustainable use. This pilot activity is expected to serve as an example for other eastern Caribbean countries.



As part of the watershed program, E-CAM supported 152 capacity building events which provided training in natural resource management and biodiversity conservation to over 4,800 representatives (68 percent women) from the environment, agriculture, tourism, and industrial sectors. With this training, farmers have begun to apply conservation-friendly agricultural practices in the buffer zones of protected areas and biological corridors.

USAID also supported the development of business models for tourism, agroforestry, and agriculture businesses to generate sustainable financing for conservation. Long-term revenue streams for biodiversity conservation were developed with communities living in and around seven protected areas, accounting for 271,915 hectares of the total area reported above. All told, approximately \$6.7 million was leveraged for conservation through payments for environmental services and new budgetary revenues provided for conservation by governments.

The market-based conservation approach supported by USAID in the region requires a supportive enabling environment. To this end, E-CAM participated in the drafting and implementation of 27 national environmental laws, regulations and agreements. In Guatemala, the Ministry of Environment and Natural Resources formed a Technical Committee for Environmental Legislation Compliance with USAID support. In El Salvador, E-CAM assisted the Ministry of Environment to adopt and implement administrative sanctions related

to protected areas, wildlife and forestry. These policy and institutional changes have stimulated increased investments in conservation by the public and private sectors, maintaining biodiversity while helping create a cleaner, healthier environment.

Harmonizing legislation and establishing sound enforcement mechanisms across the region remains a challenge, but much progress has been made. A new coastal and marine program initiated in early 2010 will further develop market-based mechanisms for conservation and sustainable use of Central America's biodiversity.

## **Bolivia**

### **Sustainable Forestry and Landscape-Scale Conservation**

Few countries in the world possess as great a diversity of ecosystems as Bolivia. Twenty-two national and numerous departmental and municipal protected areas have been established to conserve this natural heritage, from the Andes Mountains to the Amazon basin. Tropical forest covers almost 50 percent of the country, but 300,000 hectares are lost each year from an expanding agricultural and rangeland frontier; large-scale infrastructure projects, coca production, and illegal logging. In addition, climate change may already be shifting the ranges of flora and fauna and threatening biodiversity loss.

Two major USAID environment initiatives were completed in 2009: the Landscape Conservation Program (LCP), and the Bolivian Forestry II

(Bolfor) Program. These programs helped to improve or maintain improvements to management of 2.1 million hectares of biologically significant area in their last year. As the two programs wound down, three new biodiversity conservation activities were initiated: pollution control in Lake Titicaca; an integrated biodiversity and food security program in population clusters throughout the country; and a lowland rainforest conservation program.

In 2009, LCP supported strategic land-use planning for seven municipalities and two indigenous territories in the corridor of forest connecting Amoro and Madidi National Parks, creating a strong foundation for conservation and sustainable use efforts in this region. Many of the municipalities are now engaged in biodiversity conservation and view sustainable natural resource management as critical to economic growth. Two of the world's largest municipal protected areas, together totaling over 1.1 million hectares, were also established with support from LCP. Several indigenous groups now have the tools to manage resources in their own territories, promote sustainable economic development projects, and conduct strategic and territorial planning.

The Bolfor program worked in the Bolivian Amazon to help open internal and external markets for wood and wood products, while increasing efficiencies in primary and secondary wood processing. Through improved forest management practices, Bolfor helped protect and maintain biodiversity, increased family incomes

from forest-based enterprises, resolved land tenure issues, enhanced community engagement in forest policy, and developed the capacity of communities to participate in forestry management and administration.

Lake Titicaca, one of the highest and oldest lakes in the world, has a unique ecosystem threatened from activities in both Bolivia and Peru. USAID/Bolivia started the El Alto-Lake Titicaca Pollution Management Activity in 2009 to promote the conservation and sustainable use of the Lake Titicaca ecosystem. The program addresses pollution from agriculture as well as targeted industries in the community of El Alto. All the links in the cattle value chain, from unrestricted grazing at the edge of the lake to chemical pollution from tanneries and an abattoir further upstream, represent major threats to the lake. Near-shore cattle grazing is being mitigated through the introduction of stables and corrals, which reduce damage to watercourses and

contain manure. In turn, manure is improving horticultural production in the region and supporting new enterprises, from mushroom farming to biogas collection.

Erosion of the natural resource base is undermining Bolivia's capacity to achieve food security goals. A new Integrated Food Security and Biodiversity activity is building resilience of food vulnerable populations in biologically significant areas, including adaptation measures to minimize climate change impacts. Bolivia is the center of origin for many cultivated species, and crop wild relatives are an important target for conservation measures, not only for the intrinsic value of endemic species and varieties but also for their cultural, scientific, and economic value, real or potential. Protecting Bolivia's agricultural heritage through conservation and sustainable management is important on a global level, while locally it can create jobs, expand exports, alleviate poverty and reduce food insecurity.

The Bolivian Amazon is threatened by conversion and degradation of forests, pampas, and other natural habitats. USAID initiated a lowlands conservation program in 2009 which will improve local and municipal governance of forests and biodiversity, generate financing for conservation, and increase resilience to global climate change. Activities may include development and strengthening of natural resource-based enterprises, such as those based on non-timber forest products from native species. The value of ecosystem services often exceeds the sustainable use of forest products, and when monetized, can supplement incomes and finance resource management. The lowlands program will promote systems in which resource managers are paid for the ecosystems services they secure: climate change mitigation through carbon sequestration; economic growth through ecotourism; and regulation of water quality and quantity for farmers and urban users.



**WATER IS LIFE:** Local people on the Beni River, which feeds the Amazon basin with water from the slopes of the Andes Mountains in Bolivia. Plans to harness this power for electricity could have a negative impact on lowland communities and threaten Madidi National Park and surrounding indigenous territory.

PHOTO: ELEANOR BRIGGS, WCS

## Brazil

### Sustainable Forest Management through Capacity Building and Markets

With the largest share of rainforest in the Amazon basin and 428 species of mammals, 1,622 birds, and about 55,000 plants, Brazil is a megadiverse country by any standard. The principal threat to the Amazon is deforestation, primarily from clearing for pasture and, to a lesser extent, crop agriculture and illegal logging. The Brazilian government has made serious efforts to control deforestation in the last six years, with a 75 percent reduction in area cleared in 2009 compared to 2004. USAID/Brazil supports the conservation efforts of communities and the government through support for protected area conservation and sustainable use of standing forests.

The Amazon region of Brazil is home to many indigenous peoples and traditional populations who rely on the forest for their livelihoods. These communities have generally been good stewards of biodiversity; USAID enhances their intimate knowledge of the local environment through capacity building to better manage natural resources and improve lives. USAID programs protect indigenous lands and isolated “non-contacted” indigenous people through stronger surveillance, while providing the Government of Brazil with information necessary for forest sector management and forest law enforcement.

The majority of the mission’s biodiversity conservation programs are implemented through community-level consortia, which are influential in shaping future land-use trends in the Amazon. The Challenging the Advance of the Deforestation Frontier (FORTIS) consortium in the southern region of Amazonas State has strengthened the capacity

to strengthen the technical and organizational capacities of Amazonian indigenous organizations, allowing meaningful and active participation in the management of Amazonian landscapes, conservation of biodiversity, and development of public policies. Through detailed surveys and mapping, PIB has increased the conservation status



PHOTOS: ERIC STONER, USAID

**PROBLEM:** Rows of beehive ovens in a clandestine charcoal operation are surrounded by felled and charred forest, exemplifying the hit-and run, unsustainable land use practices still taking place in the Brazilian Amazon. Illegal operations like this are driven by demand for cheap charcoal by nearby pig iron smelters. Photos: Eric Stoner, USAID

of local community organizations and government agencies towards effective environmental management. FORTIS monitors the scale and location of deforestation every three months in five large municipalities of southern Amazonas state.

In the northern Amapa and Roraima states, the Indigenous Landscapes in Brazil (PIB) consortium works

of two large mosaics of indigenous lands and federal parks in Roraima and Amapá states covering 2.1 million hectares. These mapping activities allow conservation efforts to be directed to critical areas.

The Conservation in the Indigenous Amazon (ALDEIAS) consortium, in southern Amazonas, helps to improve biodiversity and the

integrity of indigenous lands in targeted regions. In 2009, ALDEIAS mapped indigenous landscapes for their physical and socio-economic features; created new surveillance posts; and established natural resource plans and routines together with indigenous populations. Systematic surveillance and vigilance are essential activities, keeping

corridor where deforestation is relatively minor compared to advancing agricultural development. In 2009, the program mapped vegetation cover, fire hot spots, vulnerable areas, and forest areas with productive potential in these focal regions. This information helps to manage forest and water resources more effectively.

government officials in the concepts and practices of sustainable and reduced-impact logging in native forests. Forest Enterprise consortium partners organized short-term courses and experience exchanges targeting women's groups in themes such as community organization, cooperatives, and leadership. Such knowledge is essential for local stakeholders if sustainable forest management is to be an attractive incentive for maintaining standing forest, and thus for conserving the biodiversity it harbors.



**SOLVED:** Here, beehive ovens produce sustainable charcoal from a surrounding plantation of fast-growing paricá trees. In 2009, with the help of USAID partners, Paragominas municipality practically eliminated illegal deforestation and unsustainable charcoal operations by mapping its territory in a Farmland Registry System, and encouraged productive use of already-cleared land and land use intensification through integrated pasture-crop-tree plantation systems.

Across all programs, USAID/ Brazil invests in training local communities, indigenous peoples, government staff, and the private sector to increase their technical capacity to use forest resources sustainably. These programs help communities to conserve standing forests that may otherwise be cleared; manage potential emissions from deforestation and forest burning; and reduce illegal logging. Training for natural resource management and conservation reached over 1,600 people in 2009.

out illegal loggers, fishermen, and hunters while protecting isolated human populations.

The Strengthening Environmental Management in the Brazilian Southwestern Amazon (MABE) consortium operates in the state of Acre. MABE activities seek to protect forests in the Juruá watershed and BR-364 highway

A fifth consortium, Forest Enterprise, aims to improve the capacity of local partners to promote, implement and regulate the sustainable multiple use of forests. This program has helped to detect and contain illegal logging in the state of Para and has trained technical and managerial staff of private companies and

In addition to their importance for biodiversity and livelihoods, Brazil's vast forest resources give the country a major role to play in mitigating global climate change by reducing carbon emissions from deforestation and forest degradation. USAID programs will continue to support communities and government in protecting and managing forests for their multiple benefits at local, national, and international scales.

## Colombia

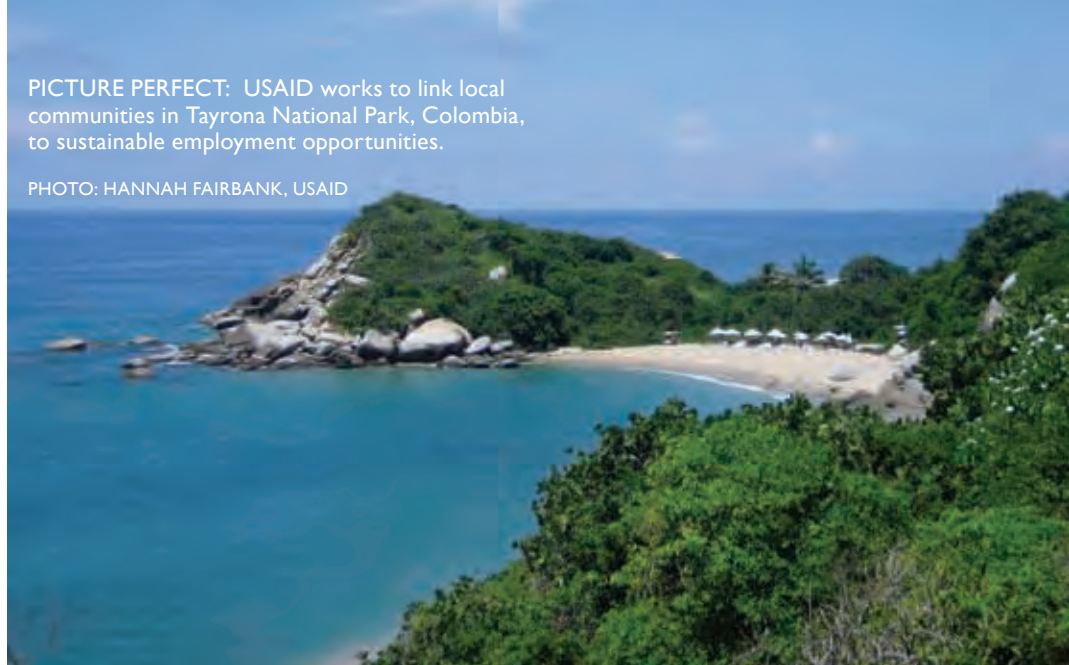
### Sustainable Development and Stronger National Parks

The 60 million hectares of primary and secondary forest in Colombia account for only 0.8 percent of the world's land mass but include an estimated ten percent of global biodiversity. Hundreds of thousands of hectares of this forest are lost each year, principally as a result of agricultural expansion. Conservation efforts in Colombia must overcome poverty, weak governance, and limited economic opportunities, which are root causes of biodiversity loss as well as drivers of conflict, illicit crop production, and narcotics trafficking. USAID/Colombia's environment program works to improve forest management for economic growth, strengthen national parks, and promote governance and sustainability in buffer zones.

Forestry contributes less than half of a percent to Colombia's GDP even though more than half of the country is covered in natural forest. USAID's Increased Investments for Sustainable Alternative Development (MIDAS) program works to develop the forestry sector while conserving forest. Forest projects are implemented in areas prone to illicit economies or where illicit crops have been eradicated, bringing farmers back to legal ventures and promoting the creation of small farmers' associations. Capacity building is an aspect of every project, in order to reinforce sound environmental agricultural practices, enhance community organization and territorial governance, and improve forest management planning.

PICTURE PERFECT: USAID works to link local communities in Tayrona National Park, Colombia, to sustainable employment opportunities.

PHOTO: HANNAH FAIRBANK, USAID



MIDAS seeks to foster legal timber production by establishing quality plantations of commercial species such as pine, eucalyptus and teak on degraded lands. Agro-forestry activities promote inter-cropping with eucalyptus and cash-crops (beans, corn, cassava, and others) in order to provide both immediate and long-term income. Some farmers opt for cattle instead of crops in later years, while maintaining the plantation for future harvest. With co-financing from two rubber-growers associations and regional government, rubber plantations are being established in the north-central inter-Andean valleys, with USAID providing technical assistance at every stage, from nursery establishment and development, to grafting, to planting in the field. Alliances have been developed to ensure these development impacts are sustainable; when the program ends, it is expected that all forestry plantations will continue to receive technical assistance.

The natural forest component of MIDAS has evolved from focusing on

low-impact logging to conservation easements – areas where landowners retain tenure over the land but have sold their development rights so that conservation is the primary use. In the United States, conservation easements often result in tax advantages for the landowner in exchange for limiting their revenue options and providing a public good. In Colombia under the MIDAS program, three Afro-Colombian communities and one indigenous community in the Chocó Department on the Pacific coast started receiving direct payments for conserving their tropical forest. The program has put great emphasis on strengthening communities' capacities for project management, administration and leadership, leading to improved governance over their respective territories and a significant reduction in illegal crops. All told, the program prevented deforestation of 30,000 hectares, with an estimated emission reduction of 125,000 metric tons of CO<sub>2</sub> per year. Discussions are underway with government officials and potential buyers regarding the carbon credits coming out of this program.

In July 2009, USAID launched the Conservation Landscapes Program (CLP) which aims to ensure that targeted national parks and the people living nearby are linked to legal and sustainable income-generating sectors that contribute to biodiversity and development goals. Managed by Colombian organization *Fondo Patrimonio Natural*, CLP activities focus on: increased licit livelihoods in buffer zones; institutional strengthening and governance of the national parks system; and social capital and community participation. Interventions will target six high-biodiversity regions comprised of protected areas and the communities around them, from the Alto Fragua/Indi Wasi National Park cluster in the Andean Amazon to the Katio and Utria National Parks along the Pacific coast.

## Dominican Republic

### Capacity Building for Conservation

The Dominican Republic (DR) covers two-thirds of the island of Hispaniola and hosts significant terrestrial and marine biodiversity. The island's clear water, coral reefs and clean beaches attract tourists who provide substantial economic benefits for the country, but unregulated growth in coastal tourism is destroying the very natural resources that people come to enjoy. Overfishing, pollution and sedimentation further threaten marine life, and poor forest management is even a problem in national parks. USAID's biodiversity program in the DR focuses on the long-term viability of natural resources required to meet the needs of present and future generations.

USAID launched a new Environmental Protection Program (EPP) in 2009, in partnership with the State Secretariat of the Environment and Natural Resources (SEMARENA) and local and international NGOs. EPP supports a range of environmental technical assistance, with biodiversity conservation activities focused on conserving endangered species, improving management of biodiverse sites, and enhancing the sustainability of conservation funding.

EPP field conservation efforts are focused on two key sites: Samaná Bay and Valle Nuevo National Park. Samaná Bay is comprised of seven National Protected Areas representing a mosaic of ecosystems and species, in the largest semi-enclosed bay in the Caribbean. With the cooperation of the local fishing associations which use the bay, EPP aims to design and implement a marine zoning proposal which will effectively protect the coral reefs and other marine life. Valle Nuevo National Park is a 912,000 hectare landscape-scale

conservation area located in the Central Mountain Range of Hispaniola. EPP has designed and initiated micro-watershed management pilot projects to conserve habitats for a rich and highly endemic species assemblage (for example, 90 percent of reptiles and amphibians are unique to the site).

USAID assistance in 2009 also improved the enabling environment and technical capacity for biodiversity conservation in the country. EPP support to the Municipality of Las Galeras helped to enact municipal environmental ordinances, which will serve as a pilot project to help increase effectiveness of the country's environment laws at the local level. The project also helped develop operational procedures for the National Fund for Environment and Natural Resources (Fondo MARENA), which has the mandate to program and administer funding to provide more effective management of protected areas and promote biodiversity conservation. In support of SEMARENA's decentralization



PHOTO: LILIANA BETANCOURT

**HEALTHY HARVEST:** USAID worked with fishing groups in Samaná Bay, Dominican Republic, to design and implement a marine zoning plan.

process, EPP initiated two university certificate training programs for 35 participants on protected area management and environmental impact assessments. EPP and SEMARENA have also collaborated to update the national Red List of endangered species in the DR and develop a national sea turtle management plan.

Under the Living Museums in the Sea project, USAID and Indiana University continued to work with SEMARENA, the Secretariat of Culture, and other partners to protect the coral reefs and cultural artifacts associated with the recently discovered Captain Kidd shipwreck off Catalina Island Marine Protected Area in eastern DR. Indiana University leads baseline surveys and biological resource monitoring at this and three other sites of cultural and biological significance: the 1724 Guadalupe Underwater Archaeological Preserve, the Guaraguao Reef 18th Century Cannons, and the St. George Artificial Reef. In 2009, baseline data collectors encountered anchor damage to rare *Acropora* corals. The Indiana team employed Reef Medic techniques to successfully mend the corals (as determined by coral skeletal and tissue growth over the repaired site). Where annual monitoring reveals damage to corals, the project can remove mooring buoys in no-anchor areas to reducing access to a dive site and relieve pressures imposed by divers.

A second university partnership was launched in 2009, to restore reef fish communities and conserve coral reefs in northeast DR. USAID supports Columbia University in a project that works with local fishermen in Miches municipality to improve the

sustainability of fishing practices. The program takes a multifaceted approach to achieve this goal: collecting baseline data on biodiversity and local reef health, including a historical perspective; fostering a network of community-based fisheries management entities; and developing a sustainable fisheries plan for the municipality. Columbia University and its partners are also raising awareness among local communities on the economic and environmental values of healthy reefs, their options for sustainably managing fisheries, and relevant laws that support conservation of marine resources.

## Ecuador

### Protection of Indigenous Land and Rights

Protected areas and indigenous lands cover one-third of Ecuador and are home to some of the world's richest biodiversity, as well as many of the country's poorest people. Overhunting is reducing wildlife populations, and one of the highest deforestation rates in Latin America results in significant carbon emissions and habitat loss. In response to these and other threats to biodiversity, USAID programs improved the management of 1.7 million hectares of tropical forest, brought economic benefits to more than 15,000 people, and trained over 14,000 people in conservation practices.

Indigenous communities are key partners for conservation in Ecuador. USAID focuses on: improving capacity for natural resource management; promoting secure land tenure, tribal governance, and sustainable livelihoods;

and reducing threats from major infrastructure projects. In FY 2009, the Agency supported work with lowland indigenous groups in the Amazon Basin and communities near protected areas to adopt more sustainable farming practices, such as production of organic vegetables, guinea pig breeding, cattle management, and ecotourism.

Conservation measures included better delineation of indigenous Waorani territory, which at 1.6 million hectares – twice the size of Rhode Island – accounts for most of the area under improved management in 2009. Zoning plans were endorsed by eight indigenous communities. In cooperation with the Government of Ecuador, USAID supported the unification of two branches of the Sapara indigenous group that had been in legal and sometimes violent conflict over rights to 220,000 hectares of traditional territory, leading to the secure land tenure needed for sustainable management. Along the Ecuador-Colombia border, agreements reunified the Awa and Cofan indigenous groups and strengthened their joint natural resources management authority. USAID also supported the inclusion of three indigenous groups into *Socio Bosque*, the Government of Ecuador's Forest Partnership program, in which communities receive annual payments in exchange for upholding conservation agreements.

Tourism in protected areas must be well-managed in order to attract tourist dollars, reduce inefficiencies and curtail corruption. USAID improved coordination between the Ministries of Environment and Tourism through the Ecuadorian Sustainable Tourism alliance (ESTA), a public-



**IN TIME FOR TURTLES:** Roque Alvarado and his three children (pictured) carefully tended 700 *charapas* river turtle hatchlings before releasing them back to the wild. *Charapas* eggs are a delicacy for the Waorani people in Ecuador.

PHOTO: JULIE LARSEN MAHER, WCS

private partnership which aims to increase economic benefits to local communities from sustainable tourism in and around protected areas, and provide income alternatives to more destructive livelihoods which threaten biodiversity. In 2009, more than 3,000 community members benefitted from training, equipment, investment, marketing, and direct relations with tourist operators and government agencies. ESTA helped develop a strategic plan for visitor management in national parks, including monitoring, impact mitigation, and rules allowing parks to keep entrance fees. New policies were developed to standardize signage in national parks, encourage private investment, and promote well-managed and profitable tourism. A new model for tourism concessions was put in place in the

Galapagos Islands, one of the world's iconic biodiversity destinations.

Many of Ecuador's population centers rely on alpine glaciers and high-elevation grasslands for their water supply, making the country highly vulnerable to climate change that is causing glaciers to recede and grasslands to dry out. USAID supported the creation of four new water management funds to improve municipal, agricultural, and hydroelectric water supplies while protecting parks and helping to mitigate the impact of climate change. These payments for ecosystem services structures improved management in 330,000 hectares of high-value watersheds, mostly in alpine grasslands. Another sustainable financing activity established

conservation endowments for full-time managers and park guards.

Deforestation in parts of Ecuador has resulted in dangerous flooding. In response, the Flood Recovery in Protected Areas project worked with local communities and the provincial governments of Manabí to establish seed nurseries and plant 235,000 native trees in five coastal protected areas and their buffer zones. The project also provided short-term employment in park and tourism infrastructure improvements for 3,890 people who were severely affected by flooding. A new Coasts and Forests project is expanding work to reduce deforestation and is developing a pilot program on adaptation of coastal communities to the effects of climate change.



## El Salvador

### Management and Conservation of Critical Watersheds

El Salvador's important natural areas suffer from decades of degradation and neglect. Ongoing threats include habitat loss and fragmentation as well as overexploitation of natural resources. Since late 2006, USAID has supported the Government of El Salvador to establish and improve the management of protected areas, and works with the public and private sectors to conserve sea turtles and increase the sustainability of coffee production.

Biodiversity conservation efforts are focused on two critical watersheds: *Rio Grande* in Sonsonate province and *El Imposible* in the province of Ahuachapán. These watersheds are part of the Mesoamerican biological corridor, home to numerous critically endangered species. In FY 2009, USAID helped to establish more

than 50,000 hectares of biological corridors to connect protected areas, including the expansion of buffer zones bordering parks. More than 33,000 hectares of El Salvador's protected area system were surveyed, resulting in the inclusion of 37 new sites in the national cadastral registry and legally establishing 31 protected areas by executive decree.

USAID also supported management improvements in Montecristo National Park, known for its biologically diverse cloud forest habitat. Activities included a detailed analysis of necessary infrastructure improvements, a livelihoods assessment of the two communities living within the park, a review of best practices among park concessions, a market analysis of park visitation, and an evaluation of park administrative and financial procedures.

El Salvador provides critical nesting habitat for four species of sea turtles and hosts more critically endangered sea turtles in its 300 kilometers of

coastline than Mexico's enormous Pacific coast. USAID is helping to prepare management plans for at least two sea turtle nesting beaches and is building long-term financial sustainability of conservation efforts through public-private partnerships. USAID partners are drafting improved sea turtle protection legislation, mapping where adult turtles feed, and identifying the causes of adult turtle mortality. One program will assist over 2,000 turtle egg poachers to transition into more sustainable jobs including positions in tourism and turtle hatcheries. On the demand side, a public education campaign aims to reduce turtle egg consumption. These efforts resulted in 400,000 sea turtle eggs going to hatcheries rather than dinner plates, a 140 percent increase over FY 2008 and nearly half of the target for the life of the activity.

The private sector has learned to manage complex requirements for certifying coffee as conservation friendly, fair trade, organic, or all three. Likewise, the Government of El Salvador has developed increased capacity for environmental management. To institutionalize and build on this progress, USAID/El Salvador is training local government and NGOs as well as the technical staff of coffee exporters to enable them to continue to obtain coffee certification. To date, USAID has assisted over 900 coffee producers to achieve specialty coffee certification on almost 300 private farms. This engagement has leveraged significant funding from private sector groups which have invested more than US\$400,000 to conserve soil, water and biodiversity.



VISITORS OBSERVE a waterfall inside Montecristo National Park, home to 70 percent of El Salvador's orchids and numerous other species.

PHOTO: MIGUEL GALLARDO, DAI



PHOTO: CHARLIE WATSON, RAINFOREST ALLIANCE

**FRESH COFFEE:** Coffee plants grow under the protective shade of giant ferns and native trees at a certified-sustainable farm in Guatemala. USAID supports certification of a number of forest products in Guatemala, including the understory *xate* palm, leveraging markets to improve prices for growers, conditions for workers, and habitat for birds and other species.

## Guatemala

### Sustainable Enterprises and Forestry Certification

Guatemala contains part of the second largest contiguous forest in the Americas after the Amazon and supports numerous species including wide ranging animals like jaguars and macaws. Economic growth and poverty reduction require sustainable management and conservation of the nation's natural resources and rich biodiversity. Forests are under threat from trafficking in wildlife and cultural artifacts, drug smuggling, and fires set to facilitate hunting and

farming which subsequently rage out of control. USAID/Guatemala is working with rural enterprises in the forestry and tourism sectors to ensure that investments are made and managed in an environmentally sustainable way, combining natural resource management with connections to international markets which harness financial incentives for conservation through demand for certified environmentally friendly products, services, and destinations.

The Maya Biosphere Reserve (MBR) is the largest conservation unit in the department of Petén, with core protected areas designated

strictly for conservation, as well as multiple-use zones where rights to use forest resources are allocated to communities or companies. Several community concessions have received USAID support in recent years to improve revenue from sustainable forestry through third-party certification of timber and non-timber forest products (NTFPs). By the end of FY 2009, nearly 671,000 hectares were certified by an independent third-party in the MBR and a small area in the Verapaces region to the south, including 189,000 hectares of *xate* (*Chamaedorea* sp.) NTFPs (see next paragraph). In that year, 8.2 million board feet of certified (or

nearly certified) forest products were sold for \$8.3 million. USAID also continued support for the Community Forestry Services Enterprise (FORESCOM), an organization that helps MBR community concessions improve management practices and access new markets. In 2009, FORESCOM found two new buyers in the Dominican Republic, and leveraged \$487,500 for equipment to produce certified oven-dried wood for local carpentry workshops.

*Xate* (pronounced "sha-tay") is a palm of the Mesoamerican forest understory used in flower arrangements and Palm Sunday celebrations. With USAID assistance, MBR community concessions become the world's first source of certified sustainable *xate*, which commands twice the price of non-certified palms. In 2009, communities doubled previous year sales to nearly 47,000 bunches of *xate*, sold directly to large buyers like Continental Floral Greens in the United States, which purchases up to 360,000 leaves each week. *Xate* is now a sustainable and profitable source of income that encourages people to value and maintain standing forest and the biodiversity it contains. Building on the success of *xate*, USAID also helped develop a market in ramon nuts (*Brosimum alicastrum*) which resulted in \$614,877 in sales and a new revenue stream for community members.

To support a need for current and accurate information on biological resources in the MBR, USAID partners developed a simple index that consolidates multiple indicators, including the status of wild *xate* populations, the presence of seed

trees in timber harvest areas, deforestation trends, fire risk, and the abundance of certain large mammals. This index allows decision makers to quickly evaluate the status of the MBR from year to year, though individual indicators provide other important insights: a 2009 survey in two areas found that jaguars are still abundant in MBR, with ten cats per 100 square kilometers.

Vast areas of the MBR have been burned in recent years, shrouding tourist attractions like Tikal National Park in smoke and causing more permanent damage to surrounding forests. Well-managed forest concessions have been the least affected: from 1998 to 2007, up to 20 percent of the MBR forest burned each year (never less than seven percent), but only a fraction of that was in certified concessions, where the area burned dropped steadily from 6.5 percent in 1998 to 0.1 percent in 2007. In order to address the problem of wildfires, USAID enhanced capacity for fire response along with support for preventative measures in the areas most prone to burning.

Fire also threatens the Verapaces region south of the MBR, where seven brigades were trained with assistance from the National System for Fire Prevention and Control. In the cloud forests of Sierra de Las Minas Biological Reserve, forest fires were successfully reduced due to 155 kilometers of fire breaks and 1,200 hectares of prescribed burning. Radio messages on fire prevention were broadcast in the region in Spanish and two Mayan languages, while direct training or

public awareness was provided to 60 communities, 59 schools, and 13 cooperatives, reaching 6,500 residents.

Guatemala's rich biodiversity, famous archeological sites, and colorful indigenous products have made tourism the country's second largest source of foreign exchange after remittances. USAID provides support for tourism development in various locations and at nearly every step along the value chain. For example, partners assisted with the development of a public use plan for the Carmelita-El Mirador-Rio Azul National Park, which will guide the development of tourism infrastructure. With USAID assistance in 2009, over 2,800 people (nearly 50 percent of them women) increased their income by providing lodging, guiding, and food services for sustainable tourism.

Community-based turkey hunting tours in the MBR are the epitome of high-value, low impact tourism. The Ocellated turkey (*Meleagris ocellata*) is prized by hunters willing to pay well for this unique hunting experience developed with USAID support. Sustainability is assured by setting the number of hunting permits each year according to the calculated sustainable off-take of adult males. The 2009 hunting season resulted in 18 visitors who harvested 32 adult male turkeys and generated \$37,350 (almost \$1,200 per turkey), not including tips, handicraft sales and personal donations. Populations of Ocellated turkey and other species are now stable or improving due to reduced subsistence hunting by community members who are employed by or otherwise benefit from this forest enterprise.

USAID and the Inter-American Development Bank supported the Government of Guatemala and selected communities in the process of advancing a national carbon sequestration program. Five specific carbon projects have been included in the development of methodological and legal frameworks, the most advanced being the GuateCarbon Project developed with USAID support in previous years. GuateCarbon includes 14 forestry concessions in the MBR, and thus far has developed a methodology for measuring avoided deforestation, completed a sub-national carbon baseline for the lowlands of Petén, and started a legal analysis of the rights and responsibilities associated with carbon credits. USAID, forest concessionaires, and the Government are working to clearly define the appropriate legal mechanism for administering financial resources generated by selling carbon offsets under the GuateCarbon initiative.

Conservation has been a critical path to development in the Petén, where communities operate sustainable, international business ventures which provide work for thousands of people. Hundreds of women have found work in non-timber forest products enterprises alone, while others have been trained in community development, forest management and reforestation, handicrafts, and entrepreneurship. Economic development in turn supports conservation: forest concessions in the MBR restrain the expansion of agriculture and associated fires by local people who now benefit from and appreciate standing forest.



PHOTO: KARYLL JOHNSTON

**NATURAL LEADER:** Guyana's significant intact forest and small population size give solid footing to a vision for low emissions development. USAID supports this vision through assistance for ecotourism enterprises and national carbon accounting.

## Guyana

### Forest Conservation and Responsible Ecotourism

The intact forests of the Guiana Shield are one of four large-scale tracts of tropical wet forest left in the world, covering an area of 163,777 square kilometers and harboring thousands of plant and animal species. A number of activities threaten the connectivity and biodiversity of forest landscapes in Guyana, including bad mining practices, unsustainable logging and timber processing, poaching for the wildlife trade, and overexploitation of wildlife and non-timber forest products for subsistence purposes. USAID assistance to Guyana strengthens sustainable and legal forest management, and promotes ecotourism as an alternative to less sustainable livelihoods.

In FY 2009, USAID in partnership with the USDA Forest Service (USFS)

conducted a Biodiversity and Tropical Forestry Analysis to identify the actions necessary to conserve and sustainably manage Guyana's natural heritage. This analysis led to a draft work plan for forest management nationwide, developed by the Guyana Forestry Commission and the Forest Producers' Association with technical assistance from USFS. Finalizing and implementing the plan was delayed by the Government of Guyana's preparations for the Climate Change Summit in Copenhagen.

Guyana has been a leader among nations in climate change negotiations. It was one of the first countries to develop a plan for Reduced Emissions from Deforestation and Forest Degradation (REDD), and in 2009 was the only one to have developed a Low Emission Development Strategy (LEDS). Guyana's LEDS essentially proposes that the country maintain its forest cover in exchange for financial resources that would be

invested in environmentally-sound development projects. The REDD plan and LEDS were presented at the Copenhagen Climate Change Summit in December 2009.

Sustainable forest management is a key part of any REDD program. In 2009, USAID began providing support to an NGO active in Guyana to establish a legal verification system for wood products concessionaires. This partner will produce detailed guidelines for wood processors, and conduct research on less-used species. Together, these measures will curtail habitat loss by ensuring timber is harvested legally and sustainably.

USAID also supports the Guyana Forest Inventory, currently being developed by the Guyana Forestry Commission and the USFS, which will measure carbon sequestration and be the basis for national carbon accounting and REDD reporting. USAID also secured the technical expertise of a USFS forest biometrician to participate in a Guyana-organized workshop designed to establish a monitoring, reporting and verification system for measuring forest attributes, including biodiversity, carbon stocks, and watershed services.

The mission continued support for high-value, low-intensity ecotourism in 2009, which results in biodiversity being conserved by communities rather than exploited for the wildlife trade. In collaboration with the Guyana Tourism Authority and the Tourism and Hospitality Association of Guyana, a number of tourism products were developed and promoted, including sport fishing. Combined with prior investments

to attract birdwatchers to the country, USAID is positioning Guyana to become a highly competitive ecotourism destination.

A vigorous public relations campaign, including familiarization ("FAM") tours of the country for tourism operators and nature photographers from North America and Europe, has resulted in Guyana being featured in a variety of prestigious international publications. USAID worked to include scientists and like-minded individuals on FAM tours in 2009, and more generally reached out to American environmental NGOs and scientific institutions to encourage further biodiversity research and conservation in Guyana.

## Haiti

### **Economic Development for a Sustainable Environment**

Environmental degradation in Haiti is a major threat to biodiversity and continues to destroy productive infrastructure, stagnate rural economies, and contribute to catastrophic flooding. Prior to the devastating earthquake and subsequent disaster response in January 2010, USAID's Economic Development for a Sustainable Environment (DEED) project advanced biodiversity conservation through support for protected areas, economic development, forest restoration, and sustainable natural resource management in four of Haiti's most vulnerable watersheds: Limbé, Montrouis, Gonaïves and Cul de Sac.

The marine and coastal zones of Limbé and Montrouis watersheds, in particular the Arcadin Coast, are habitat for diverse endangered species including sea turtles, manatees, and the rhinoceros iguana. In 2009, DEED worked closely with communities to develop 21 community maps and 13 land use maps, which will serve as the basis for watershed management plans. USAID facilitated the drafting of a presidential decree for the creation of Haiti's first marine protected area along the Arcadin Coast, which was submitted to the Minister of Environment for approval. DEED conducted a biological inventory of the proposed protected area and delineated boundaries in advance of anticipated co-management by residents of fishing villages, local associations of hotel owners, and other local service providers.

Deforestation in the upper Limbé watershed results in excessive sediment in the river and its tributaries, while at the coast, coral reefs are mined for cement, mangroves have been harvested for construction poles and charcoal, and estuaries have been destroyed or damaged. Unsustainable fishing practices constitute an additional serious threat to marine ecosystems and fishing communities. Some areas have high potential for beach tourism and ecotourism, but only if threats are addressed. In response, USAID supported the re-establishment of a 175-hectare mangrove swamp at the mouth of Limbé River. USAID also supported an initial ecotourism assessment of Islet Limbé, and facilitated discussions with Royal Caribbean cruises as well as hotel and restaurants owners in

FISHING AT THE MOUTH of the Limbé River, Haiti. In 2009, USAID helped re establish a 175 hectare mangrove swamp nearby, restoring protection against storms and providing a nursery for commercially important fish.

PHOTO: NICK HOBGOOD, DAI



the coastal city of Cap-Haitien to develop a nature and history trail on the Islet. Cap-Haitien's port is currently dedicated to relief and rebuilding efforts, and the future of tourism development is unclear.

Further building the capacity of local communities to manage natural resources, the DEED program helped establish a community-managed natural area around Etang Bois Neuf, a small lake near Montrouis that serves multiple uses for farming and fishing and is a principal stopover for migratory birds. Unfortunately, subsistence agriculture and deforestation have led to soil erosion and increased the lake's water level. Unregulated fishing and bird hunting put additional pressure on certain species in the area. An awareness campaign initiated

by USAID led to the creation of a management committee for the lake and its resources. The campaign and committee have been essential to changing the community's perception of the lake, inspiring members to see it as a patrimony whose deterioration should concern all. Local groups will collaborate with communal authorities to curb unsustainable exploitation of the lake's resources.

The main driver of deforestation in Haiti is the reliance on charcoal to meet 70 percent of energy needs. An assessment stimulated interest in replacing charcoal with liquefied petroleum gas, prioritizing charcoal-intensive businesses (bakeries and dry-cleaners) in urban areas, followed by rural communities where demand for charcoal is greatest. In complementary efforts, USAID

took initial steps toward establishing perennial biofuel-producing *Jatropha* trees on degraded hillsides, and developing community-managed woodlots. The mission also assessed the Cul de Sac and Gonaïves watersheds for reforestation potential. Overall in 2009, more than 18,000 hectares have benefited from improved management practices, and over 700,000 trees were planted with USAID support.

The United States has been a leader among donors in Haiti, working closely with the Government and local officials to improve their capacity to design, direct, and coordinate efforts which improve watershed management. USAID is committed to restoring this leadership and collaboration when biodiversity and forestry programs resume.

## Honduras

### Integrated Watershed Resources Management

Environmental threats, such as conversion of forests to agriculture, wildlife poaching, and pollution, coupled with low government capacity and poor enforcement of weak laws, negatively impact Honduras' natural heritage and contribute to significant biodiversity loss. USAID watershed management and conservation enterprise development activities worked to address many of these threats until June 28, 2009, when a *coup d'état* led to a nine-month suspension of USAID non-humanitarian assistance. Despite implementation delays, missed targets, and a termination of all actions with the Government of Honduras, biodiversity results were still achieved with USAID support in FY 2009.

USAID applies a landscape approach to conservation in Honduras focused on four protected areas and their buffer zones along the north coast of the country: Pico Bonito, Lancetilla, and Jeannette Kawas National Parks, and the Cuero y Salado Wildlife Reserve. Several activities support the NGOs co-managing the parks in their efforts to conserve biodiversity, maintain forest cover and watershed services, enhance tourism, and improve revenue streams. For example, USAID supported USDA Forest Service (USFS) training and technical assistance for NGO and government protected area managers. USFS specialists collaboratively developed environmental interpretation for visitor centers and trails, and helped update regulations for wildlife and park management.

USAID activities collectively improved biophysical conditions in over 44,000 hectares of forest in FY 2009.

The mission's Integrated Watershed Resources Management program (MIRA, in Spanish) combines watershed management and protected areas conservation with sustainable economic activities that give biodiversity and forestry resources greater value at the local level. In 2009, MIRA collaborated with local communities and leveraged donor funding to develop and implement seven priority municipal micro-watershed management plans for the north coast landscape. Specific activities included reforestation, expansion of the use of fuel-efficient stoves, and promotion of community-based enterprises as income alternatives to deforestation and other resource-depleting practices. The program also initiated a payments

for environmental services pilot program in one municipal water system, in which water users pay to conserve the forests that regulate water quantity and quality.

MIRA created opportunities for people living near protected areas to improve their livelihoods and reduce illegal logging, hunting, and expansion of agricultural lands: key threats to biodiversity in Honduras. One activity improved the management of 125 agroforestry plantations in buffer zones, generating \$500,000 in income and 350 permanent jobs. Another launched an innovative Garifuna tourism route in five coastal communities, helping this ethnic group share their cultural traditions and natural heritage with visitors.

In addition to raising incomes through sustainable natural resource management and conservation



PHOTO CREDIT: USFS

**WELCOME** to Lancetilla Botanical Garden. Along with support for management improvements in national parks along the north coast of Honduras, USAID provided assistance with interpretative design for visitor centers and trails, resulting in high-quality graphics and educational displays.

enterprises, continued improvements in the management of protected areas have reinforced their role as buffers against flooding and landslides, saving lives and homes.

To help Honduras comply with its international environmental obligations under the United States-Dominican Republic-Central American Free Trade Agreement (CAFTA-DR), USAID developed systems for the Honduran government to monitor national wetlands and trade in endangered species, and helped to develop a manual and training on compliance with the Convention on International Trade in Endangered Species (CITES). Another significant accomplishment was the approval of six out of eight new biodiversity-relevant environmental regulations by the Honduran National Prosecutor's Office, of which two have already been signed into law.

In addition to lingering political and administrative challenges from the *coup*, recent analyses have identified additional threats to biodiversity in Honduras, including biofuel production, overuse of pesticides and synthetic fertilizers, and discharge of untreated waste water into natural systems. Weak environmental controls, widespread poverty, and a lack of affordable energy alternatives are at the root of these problems. USAID/Honduras has designed a new biodiversity program that will help develop local environmental policy instruments to regulate newly-identified threats in protected areas and neighboring municipalities, while continuing to strengthen national parks and promote sustainable livelihoods.

## Jamaica

### Natural Assets Managed for Rural Development and Sustainable Growth

Jamaica's forests and biodiversity are under threat from forest conversion by slash-and-burn agriculture, overharvesting of young saplings used in yam cultivation, and other unsustainable practices within forest reserves. USAID works on a range of measures to reduce threats to Jamaica's biodiversity, including reforestation, increased enforcement and monitoring of forest encroachment, and targeted conservation education efforts. The Agency's primary biodiversity conservation program in Jamaica is the Protected Area and Rural Enterprise (PARE) project, implemented in partnership with the USDA Forest Service.

The PARE project supports the Government of Jamaica and community partners to conserve biodiversity through protected areas management, sustainable agriculture, and tourism enterprise development. With USAID assistance, over 4,600 hectares of biologically significant lands in the Blue and John Crow Mountains and Cockpit Country forest reserves were brought under improved management in FY 2009.

PARE helped build micro-enterprises through training, product development and business operation support, as in the case of 31 new honey producers in St. Thomas Parish who received hands-on instruction in bee keeping as well as approaches to managing

a business. Beekeeping is just one of many supported enterprises which depend on healthy forests and create tangible value for people motivated to conserve biodiversity.

Much of the assistance provided through PARE was directed at the Cockpit Country Local Forest Management Committee (CCLFMC). In 2009, CCLFMC launched Flagstaff Heritage Tours and Trails, a model for community-led tourism enterprise for successfully incorporating well-defined leadership and management arrangements, clear land ownership and rights, and private sector involvement. Overall in 2009, efforts to engage individuals in sustainable enterprises and natural resources management increased economic benefits for 361 people, including 229 women.

Though a training-of-trainers approach, PARE equipped 136 CCLFMC members to deliver conservation education messages to local communities, especially on the threats from unsustainable agriculture and removal of forest resources. An assessment conducted before and after the education program indicated that awareness of restricted activities in forest reserves grew from 52 percent of residents prior to the training to 80 percent afterwards. Similarly, awareness of biodiversity threats in Cockpit Country grew from 64 percent to 94 percent.

Complementing biodiversity conservation under PARE, USAID began designing a new activity with agroforestry elements in 2009. The mission commissioned





PHOTO: CARLA DUHANEY, USAID

**SWEET DEAL:** In Jamaica, participants in a six-month, hands-on training program given by the All Island Bee Farmers Association learned all aspects of bee keeping before earning their own hives upon graduation. Participants planted nectar-producing trees as part of a restoration project to improve the area's ecology and provide good bee-rearing conditions.

a survey of over 200 cocoa farmers regarding their production constraints, and organized a three-day cocoa technical forum engaging over 100 stakeholders. These activities informed one aspect of the Marketing and Agriculture for Jamaican Improved Competitiveness (MAJIC) project, an integrated agriculture and biodiversity project initiated in 2010.

MAJIC's cocoa component will target farms in buffer zones of protected areas, improving the economic viability of agroforestry operations that provide habitat for some migratory birds. The project will build the capacity of farmer associations, improve production, and facilitate market alliances related to cocoa. MAJIC intends to institute management

improvements on farms including vigilance against encroachment in conservation areas, as monitored by the number of incidences of fire due to agricultural clearing and land preparation. Through MAJIC, farmers will be part of the solution to unsustainable agriculture and wildfires that are still among the worst threats to biodiversity in Jamaica's remaining natural forests.

## Mexico

### Sustainable Livelihoods and Conservation

Mexico has been ranked the fourth most biodiverse country in the world, and second in number of distinct ecosystems. USAID programs focus on areas of high biodiversity, including the Mesoamerican Biological Corridor and national protected areas, including their peripheral zones. Activities address numerous threats to biodiversity including habitat loss through conversion for agriculture, global climate change, forest fires, overexploitation, and poor governance.

As neighbors, the United States and Mexico share ecosystems and a responsibility to manage them well. The 3,141 kilometer U.S.-Mexico border crosses a biologically diverse region of desert, forest, plains, mountains, river valleys, and wetlands. Some 12 million people and their

cities, towns, roads, and border fences are also part of the landscape. In 2009, through an interagency agreement with the U.S. Department of Agriculture, USAID enhanced capacity within the Government of Mexico to restore northern deserts and grasslands degraded by cattle ranching and invasive species. Exotic grasses imported for pasture enhancement were identified as a key threat to rancher livelihoods and biodiversity, including large herbivores, their predators, and a variety of resident and migratory bird species. To shift farmers and ranchers away from restoring degraded pasture lands using imported, exotic grasses rather than native grass species beneficial to both wildlife and livestock, USAID supported planning for local plant materials centers which provide seeds and other inputs. Training, technical exchange, and a study tour of centers in the United States helped officials from the Mexican Ministry of Environment prepare for these grassland restoration depots.

The Colorado River once flowed freely from the Rocky Mountains through Arizona to Mexico's Gulf of California, but upstream diversion of water now rarely allows the river to reach the sea. The Gulf is a UNESCO World Heritage site with numerous endemic species as well as seasonal migrants including sea turtles, whale sharks and blue whales. USAID's new Mexico Competitiveness Program (MCP) analyzes sustainable livelihood options for people living in high biodiversity areas like the Gulf, and promotes market-oriented approaches to addressing biodiversity threats. In the Gulf of California and Colorado River Delta, MCP strengthened value chains for ecotourism and fisheries, reducing fishing impacts on the critically endangered *vaquita* (a porpoise endemic to the Gulf) and other species. Value chain analysis helped to identify opportunities for increased market access by communities that adopt environmental best practices in agriculture and other land uses.

**BYE, BY-CATCH:** In collaboration with Mexico's Commission for Environmental Cooperation, a team of fisherman is testing out a modified shrimp net designed to protect against incidental capture of *Vaquita marina*, a critically endangered porpoise found only in the Gulf of California.

PHOTO: IVANA FERTZIGER, DAI



The rich ecosystems of Chiapas in southern Mexico harbor immense biodiversity, but government efforts to improve livelihoods in the region have focused on converting forests into agricultural and pasture lands. With the support of USAID, grassroots organizations worked with local stakeholders to develop land use plans, creating commitments for individuals and entire communities to conserve natural resources. With technical expertise from Mexican university ECOSUR and investment by the Plan Vivo Foundation, the amount of carbon that conserved forests will capture has been estimated and sold on the voluntary carbon market as offsets for individuals and companies around the world. Proceeds will go to communities in payment for conserving the forest.

With USAID support, the USDA Forest Service (USFS) and U.S. Natural Resources Conservation Service provided technical assistance to Mexico's Forest Commission, National Parks Commission, communities, and NGO's working in Chiapas. USFS provided training on best practices in watershed management, low impact rural roads, and soil restoration to protect ecosystems and livelihoods from forest fires, landslides and floods. USAID also evaluated Mexico's sustainable rural development program in Chiapas and presented findings to Mexico's Ministry of Agriculture, Livestock, Rural Development, Fishing and Food (SAGARPA) and the National Commission for Biodiversity Knowledge and Use (CONABIO).

USAID provides USFS expertise to assist Mexico's National

Commission on Protected Natural Areas (CONANP) to develop an Initiative to Respond to Climate Change. A series of workshops reached nearly 100 protected area managers with training on climate change vulnerability scenarios and the adaptation and mitigation strategies required to sustain ecosystems. Recommendations generated by the workshops will inform CONANP's National Climate Change Strategy.

The Peace Corps is a valuable USAID partner to Mexico as it is in many other countries. With USAID support, Peace Corps volunteers implemented six community-oriented conservation projects in biologically significant areas in 2009. Projects include "Community-based biodiversity monitoring in the valuation of ecosystem services in the Reserva de la Biósfera Sierra Gorda, Querétaro" and "Community monitoring and management of Morelet's crocodile (*Crocodylus moreletii*) in La Ciénega de Cabezas in San Luis Potosí."

Several training activities in 2009 helped to improve environmental governance by strengthening the capacity of environmental agencies at the federal and state levels while improving civil society participation in environmental policy decisions. For example, USAID promoted conservation-compatible uses of wetlands through support for ecotourism training of government officials and representatives from communities living near internationally recognized (Ramsar Convention) wetlands. USAID also began funding two new U.S.-Mexico university partnerships which build national capacity for biodiversity conservation. Arizona State University and the

Institute of Ecology at the National Autonomous University of Mexico will collaborate to enhance competency and expertise for biodiversity and climate change policy and planning, while the University of Florida and Universidad Veracruzana will enhance leadership capacity for conservation in managed landscapes.

## Nicaragua

### Sustainable Tourism and Forest Certification

Recent analysis of the state of tropical forests and biodiversity in Nicaragua confirms that poor land management and unsustainable agricultural expansion remain the major threats to forests and the species they contain. USAID addresses these challenges by supporting Government of Nicaragua priorities for market-based conservation and private sector environmental performance. In 2009, activities focused on community-based responsible tourism, and sustainable management of forests and agroforestry lands in high biodiversity areas.

Through an agreement with the USDA Forest Service (USFS), USAID supports community-based tourism in two protected areas. La Flor Wildlife Refuge on the southern Pacific Coast has important nesting beaches for endangered sea turtles. Dantali-El Diablo Natural Reserve in the central mountains is home to numerous endemic species and provides winter habitat for migratory birds. USFS is building networks of responsible tourism service providers, including tour operators and communities in protected areas.



PHOTO: JERRY BAUER, USFS

**FUTURE FIELD BIOLOGISTS** look on as a USDA Forest Service biologist weighs a captured songbird, part of long-term biodiversity monitoring supported by USAID in Nicaragua.

coffee prices in 2009 led many small coffee landholders to discontinue certification efforts.

USAID's partnership with USFS also strengthens the capacity of Nicaragua's Government to collect, analyze, and use biological information. Training programs and workshops for field biologists and park rangers have built a cadre of professionals certified to conduct scientifically sound monitoring. USFS also helped develop protocols for monitoring bats and birds as proxies for overall biodiversity, engaging with private landowners to allow data collection on their lands. Long-term monitoring plots for representative bird and bat species in two private reserves and three public reserves will inform how well tourism development and forest certification efforts support ecological needs and improve the connectivity of forest landscapes.

Training and technical assistance to local communities helps them play a greater role in management plans for protected areas and develops economic alternatives that reduce pressure on critical species. Nearly 350 men and women living in and around protected areas were trained in a range of topics in FY 2009, from microenterprise development to guide training and tour design.

USAID continued supporting improvements in forest management, agroforestry, and sustainable agriculture in 2009, which help to slow forest destruction and degradation by improving productivity on lands already under cultivation, and increase the sustainability of forests and tree crops through conservation certification. Forestry and agroforestry activities take place in or

near buffer zones of both public and private protected areas in the central mountains, including Dantali-El Diablo, and focus on improving degraded lands, protecting watersheds, and maintaining mixed tree and crop agroforestry systems. Support to coffee and cocoa farmers ensures that agricultural lands remain forested and truly serve to buffer high biodiversity areas from unsustainable activities.

Overall in FY 2009, tourism and forestry activities improved natural resources management in 13,000 hectares of biologically significant areas. Initiatives for sustainably managing forests and coffee or cocoa agroforestry lands brought an additional 125,000 hectares of degraded or agricultural lands under improved management, even though reduced international

Although the ministry responsible for environmental protection still lacks the capacity and funding to maintain conservation programs and systems, nearly all of the protected areas in the country contain private landholdings, giving individuals and businesses a unique opportunity and responsibility to support conservation. Agreements between NGOs and private landowners or coastal developers have already substantially improved the outlook for biodiversity in Nicaragua. USAID will continue to focus on sector-specific investments that decrease poverty by raising incomes from better management of the natural resource base, and by creating sustainable tourism opportunities that promote and rely on biodiversity conservation.



PHOTO: JOSÉ DEAGO, USAID

**SEEDS OF CHANGE:** USAID supports a network of seven woman-owned nurseries for growing native forest tree species used to reforest parts of the Panama Canal Watershed. After years of hard work, the nursery network has a contract to replant forest on either side of a major cross-country highway.

## Panama

### Conservation in the Canal Watershed

The impressive engineering of the Panama Canal would not operate without the abundant water collected in dense tropical forests. USAID programs support forest protection and sustainable use of natural resources in seven sub-basins of the Panama Canal Watershed in an effort to counter unplanned and unsustainable agricultural development. The primary conservation targets in this watershed are the Chagres and Soberania National Parks, which harbor several large, endangered mammals, more than 560 species of birds, and over one thousand species of plants including five new to science.

In FY 2009, USAID focused on: strengthening national park management; promoting best practices in watershed management and developing legal and sustainable businesses for resident communities; and strengthening community groups to better protect and advocate for natural resource conservation and improved livelihoods. For example, the mission supported policy reform that allowed Panama's National Environmental Authority (ANAM) to control and monitor activities in Chagres National Park. USAID also funded a new information management system that is making protected area data and analysis more accessible to ANAM and other authorities.

USAID support continued to establish and strengthen a number of sustainable, environmentally

friendly businesses that promote community participation in protected area conservation. This assistance provided ample technical support and extensive training, ranging from business planning and marketing to new agricultural techniques. Activities developed include sustainable agriculture and ranching, tree nurseries, beekeeping, handicraft production and sales, and responsible tourism. New conservation enterprises created full-time jobs and developed business links resulting in contracts for future sales and long-term commercial relationships. Productive activities increased average incomes by 81 percent in participating communities.

USAID promoted women's participation in conservation enterprises by encouraging employers to allow them to work from home and bring their children to the job site. Women were also trained to participate in governance structures and have proven to be crucial catalysts through their persistence and strong commitment.

The success of this pro-women approach is best illustrated with an example from the Community Green Nursery Chain, a woman-owned network of tree nurseries in Santa Rosa which specializes in native species for reforestation. After years of hard work, Green Nursery leveraged newly gained business acumen to close a five-figure deal with a construction company building a major cross-country highway. The company plans to replant native tree species and recover the banks of the road. The nursery has also signed delivery contracts with a reforestation company, a

major Panamanian environmental NGO, and several small buyers.

Perhaps the most strategic intervention in the Watershed was the consolidation of governance structures responsible for managing water resources and biodiversity. Two new watershed management councils are now officially recognized by the Panama Canal Authority and other government entities. Each council has developed action plans to restore and protect key sub-watersheds in the geographic regions they oversee.

## Paraguay

### Sustainable Resource Management and Capacity Building

Paraguay contains a diversity of ecosystems with an estimated 20,000 species of plants nationwide and areas of extreme biodiversity: in one hectare of tropical forest, 450 species of trees were recorded. Numerous endangered animals are found in these habitats, but hunting, conversion of forests to agricultural land, and overexploitation of forests for wood and charcoal are major threats. USAID/Paraguay promotes sustainable management and protection of priority areas of the Upper Paraná Atlantic forest, Chaco dry tropical forest, and Pantanal wetlands by strengthening NGOs, civil society organizations, and municipal and departmental governments.

USAID conserves biodiversity in Paraguay by improving livelihoods for people living inside and adjacent to important ecological areas through targeted technical assistance to

government authorities and large landowners, and through global development alliances among private sector companies, communities and non-profit organizations. By increasing incomes for rural communities, USAID and its partners reduce dependence on illegal or environmentally harmful activities and maintain ecosystem integrity.

An analysis of NASA satellite data by USAID in 2010 found that the Chaco lost 267,000 hectares in 2009, 17 percent more than in 2008. This translates to 730 hectares per day, or more than 2 percent of global tropical deforestation. Though highly degraded and fragmented, the Chaco forest remains the second largest forest in South America (after the Amazon) and a priority for conservation. In one development alliance, USAID

worked with *Fundacion Desdelchaco* to promote institutional strengthening in sustainable management of prioritized areas in the Chaco, as well as portions of the Pantanal wetlands. The alliance improved the management skills of several government agencies through participatory and democratic land-use planning processes. The program also strengthened civil society and community capacity to engage on environmental issues and conduct sustainable agriculture.

A second alliance with *Fundacion Moises Bertoni* and a private sector firm, Agricultural Development of Paraguay, is developing a sustainable model for the creation of economic, social, and environmental value in the northern part of Paraguay's portion of the Atlantic forest, a critically threatened, high-biodiversity



PHOTO: USAID

**ON ALERT:** A hawk rests in a tree in Paraguay's part of the Chaco, the second largest forest in South America. This tropical dry forest hosts a unique assemblage of plants and wildlife, but overexploitation for wood and charcoal contributed to a deforestation rate of over 700 hectares per day in 2009.

ecosystem that extends into Brazil. The alliance provides access to technology, credit, training, and health services for 500 families that engage in environmentally sustainable livelihoods on more than 5,000 hectares of land. In 2009, important agreements were struck with five of the largest landowners in the Atlantic forest to reinforce laws regulating the environment, including forestry, improving management of tens of thousands of hectares. Local leaders and hundreds of small producers were trained in sustainable production, agricultural best practices, and environmental conservation.

Less than eight percent of the original extent of the Upper Paraná Atlantic forest remains, and even this is highly fragmented. USAID through an NGO partner continued a public awareness campaign about the value of these forests and the services they provide, building local support for their protection. Mission support also provided ongoing assistance to an association of owners of private protected areas, which coordinates efforts to defend private parks in the Atlantic forest from squatters and land invasions while promoting eco-friendly activities and sustainable forest use.

While productive in the short term, slash-and-burn agriculture leaves a legacy of degraded land and frequently leads to wildfires. In collaboration with the Government of Paraguay and the USDA Forest Service (USFS), USAID provided technical assistance to improve local capacity for natural resource management, reforestation, and restoration of degraded lands. To improve fire management capacity,

USFS delivered training on forest fire prevention and control to 34 leaders of 17 institutions. This engagement also generated a communications campaign on fire issues and initial recommendations for a national strategy on fire management.

At the World Conservation Congress in October 2008, the Government of Paraguay announced it would extend the “Zero Deforestation Law” which was scheduled to expire in December 2008. First enacted in December 2004 and renewed in 2006, the new five-year extension will prohibit deforestation in the Upper Paraná Atlantic forest through December 2013. Paraguay’s Minister of Environment said the moratorium would be extended until each state has created a land-use plan showing how they will contribute to achieve zero net greenhouse gas emissions at a national scale by 2020.

The legislation has been credited with an 85 percent reduction in annual deforestation without diminishing agricultural production, particularly for soybeans. USAID programs in the Atlantic forest contributed to the success of the law, and the Ministry of Environment is doing its part by addressing internal corruption issues and supporting efforts to combat illegal logging. More work remains, however, as increased deforestation in the Chaco forest (which is not protected by the moratorium) suggests that some pressure on forests for charcoal and other uses has been displaced rather than reduced.

## Peru

### Forestry Sector Reform and Incentives for Conservation

The highland and lowland forests of Peru host some of the richest biodiversity in the world, but illegal and unsustainable logging are fragmenting habitat, threatening the water supply for urban populations, and releasing carbon in a country already vulnerable to climate change impacts. USAID’s environmental program in Peru focuses on strengthening forest concession oversight, increasing the number of hectares of internationally certified forests, and refining and implementing national environmental management policies, especially for protected areas.

USAID uses a multifaceted approach to enhance the management of protected areas in Peru. At the national level, mission support enabled Peru’s National Park Service (SERNANP) to upgrade their protected area management scorecard, which provides ratings across numerous legal and managerial areas and shares this information with civil society. It also allows the Government of Peru to use performance-based budgeting to efficiently allocate resources to manage its protected areas.

Other efforts in FY 2009 improved management of particular protected areas. In Tambopata National Reserve, where contamination from mining operations and illegal logging are the principal threats, USAID supports the formalization of unregistered mines in areas zoned for mining and the closure of mines in the protected area. In Cordillera Azul



**GOLD MINING** is a major threat to the ecology of Peru's Tambopata National Reserve. This mining dredge sucks up mud from the river bottom and extracts gold using mercury, a highly toxic metal. Other mining operations pump water from rivers to wash away sediment accumulated on land.

PHOTO: SANTIAGO DE LA PUENTE, CENTRO PARA LA SOSTENIBILIDAD AMBIENTAL-UNIVERSIDAD PERUANA CAYETANO HEREDIA

National Park, which contains the largest continuous stretch of high altitude forests in Peru, partners in a new Global Development Alliance (GDA) successfully used satellite images to detect 81 hectares of deforested or degraded land inside the park, resulting in a rapid response by park management to remove all crops and trespassers, then increase patrols in the impacted areas. The GDA is a public-private partnership among USAID and the Chicago Field Museum, local organization CIMA, the MacArthur Foundation, and the Moore Foundation.

Conservation of protected areas requires engagement with the people who live around them; in Peru, USAID builds the capacity of stakeholder groups in park buffer zones to manage and use natural

resources sustainably and profitably. In 2009, USAID assistance helped one group develop a sustainable management plan for Brazil nuts in two reserves, allowing SERNANP to manage 72,500 hectares of forests that will yield 120 metric tons of Brazil nuts each year. Near Lake Titicaca National Reserve, community groups are working to recover *titora* reed beds important to 35 species of birds, and using a prototype reed crusher, designed and manufactured with USAID support, to process the reeds into livestock feed and thereby curtail indiscriminate burning of approximately 23,000 hectares annually. In Pacaya Samiria, USAID works with local communities to raise awareness about the economic benefits of a sustainable turtle egg harvest and the capacity

to implement management plans. Overall, USAID trained 665 people in better management of local natural resources.

Internationally-recognized forest certification improves the legality, sustainability, and economic benefits of timber trade, providing incomes and jobs for poor and indigenous Peruvians through increased market access for their forest products. USAID/Peru's ongoing support for forest certification was validated in 2009 when the United States - Peru Trade Promotion Agreement (PTPA) entered into force: PTPA's Annex of Forest Sector Governance provides concrete steps that both countries will take to enhance forest sector governance and ensure that timber is legally acquired and processed.



USAID continues to support voluntary certification of Peruvian forest concessions, which puts companies and communities in an excellent position to comply with chain-of-custody requirements of the PTPA. In FY 2009, eight forest concessions and wood product companies obtained third-party chain-of-custody certification. Private concessionaires have taken steps to maintain open communications, improve relations with indigenous communities, and respect Peruvian labor laws. Although the global economic slowdown in 2009 resulted in lower demand for certified timber and a 31 percent fall in exports from Peru, USAID helped certify 46,000 hectares of forests, for a total of 700,000 hectares since the program began. An additional 160,000 hectares of forest is expected to be certified by the end of FY 2010.

USAID also builds the capacity of government authorities related to oversight and monitoring of forest

concessions in the Amazon basin, a necessary precondition for a community or company to obtain certification. Training for the Ministry of Agriculture resulted in focused attention on seven forest concessions, revealing that five did not comply with the management plan requirements. Administrative procedures were filed and concessions were expected to comply by the next scheduled audit. Conversely, nearly 88,000 hectares of forestry concessions did meet management plan requirements in FY 2009.

Climate change is expected to have various impacts in Peru, but one of the most severe is on water supply: glaciers are melting and forested watersheds are being lost. USAID began a new activity in FY 2009 to better understand how climate change may affect the Santa and Piura watersheds, and to build the capacity of stakeholders to adapt to climate impacts. Ongoing projects are also exploring options

for reducing emissions from deforestation and forest degradation via financial incentives for responsible forest management. For example, an assessment is planned for Cordillera Azul National Park in 2010, to measure carbon stocks and identify sustainable financing to support park management.

In addition to helping various stakeholder groups and the government prepare for both the threats and opportunities related to climate change, USAID priorities going forward are tied to complying with requirements under the PTPA's Environment Chapter and Annex on Forest Sector Governance. Activities will include strengthening the Government of Peru's capacity to develop, implement, and enforce environmental laws; protecting wildlife and endangered species; and promoting transparency and public participation in forest sector governance issues.

# CENTRAL PROGRAMS

Activities managed centrally by USAID and other U.S. government units take place in over 30 countries around the world, and generate even wider impacts through support to missions, outreach to partners, and leadership in international meetings.

Many threats to biodiversity and forests are similar worldwide: habitat loss, poor governance, and insufficient skills to manage land and resources are among the most common challenges. Likewise, certain classes of solutions have been found effective in most of the places USAID works, including sustainable finance for conservation, clear land tenure and property rights, and community-based natural resource management. Central programs advance innovative approaches, partnerships, and technologies to address conservation challenges and document what works, so that solutions can be applied throughout the Agency's portfolio of programs.

Working through strong conservation partners, USAID can manage activities from Washington in countries where the Agency has little or no presence, or where mission assistance is prioritized in other areas. Central programs, like many regional programs, often focus on ecological units and work in landscapes and seascapes which cross political boundaries.

Most central biodiversity and forestry activities are managed by USAID's Bureau for Economic Growth, Agriculture and Trade (EGAT), which supports a robust portfolio of about 20 programs. The Bureau for Global Health has several agreements which

integrate health and conservation interventions in high biodiversity areas. Biodiversity-earmarked grants managed by the Department of State are also described here, as well as the Tropical Forest Conservation Act, hosted by EGAT and managed collaboratively by USAID and the Departments of State and Treasury.

**COLLECTING COCKLES:** In Bweleo Village, Zanzibar, women spend hours bent at the waist collecting cockles for food. USAID support for "no-take" zones should allow regeneration of cockles while securing a good supply of oysters for half-pearl farming and jewelry making.

PHOTO: KLAUS HARTUNG





**PARTICIPATORY ASSESSMENT** engages communities in the science that will determine how best to conserve Red Pandas in Nepal's Sacred Himalayan Landscape.

PHOTO: WORLD WILDLIFE FUND

## **EGAT/NRM/ Biodiversity Team**

### **Global Biodiversity Conservation**

USAID's Biodiversity Team provides technical leadership on biodiversity conservation within USAID and among colleagues in U.S. government, foundations, and conservation NGOs. In support of this role, the Team produces and disseminates resources for preparing and implementing conservation activities which advance development goals, acknowledging the linkages among biodiversity and human livelihoods, economic growth, health, conflict mitigation, and governance. Staff assisted dozens of missions and regional bureaus with planning, design, and evaluation of biodiversity initiatives in 2009,

and provided leadership in the conservation community through participation in meetings of the UN Convention on Biological Diversity and the World Forestry Congress among others. Team members are also principal instructors and content developers in the EGAT Environment and Natural Resources Management Learning Initiative (ENRM-LI), which trained over 100 USAID staff in 2009 and 2010.

Biodiversity Team programs promote conservation innovation through landscape- and seascape-scale conservation, transboundary initiatives, and conservation enterprises, among other approaches. Programs also support research, monitoring and evaluation, and capacity building on a variety of topics critical to biodiversity conservation including

payments for ecosystem services (PES), sustainable tourism, land tenure and natural resource property rights, conservation in disaster and post-conflict zones, and biodiversity offsets for extractive industries. In addition to its own activities, the Biodiversity Team has made technical and financial investments in efforts managed by other USAID teams, including the Global Fish Alliance, COPASSA, TransLinks, and CK2C. See the Water Team and Land Resources Management Team sections in this report for more information on these programs.

FY 2009 was a year of program transition for the Biodiversity Team, with several activities closing out and others coming online. In the final year of support for Life on the Edge, a program which analyzed

approaches to conserving biodiversity and rebuilding livelihoods in the wake of natural disaster or human conflict, five case studies were developed which informed UNESCO's Rapid Response Facility in prioritizing actions for Natural World Heritage Sites in crisis. Support also ended for the Business and Biodiversity Offsets Program (BBOP), which supported biodiversity offset pilot projects in a range of extractive industry sectors to demonstrate that offsets can help achieve cost-effective conservation outcomes.

FY 2009 was also the last year of one of the Agency's flagship biodiversity activities, the Global Conservation Program (GCP). In its tenth year of support, this partnership among USAID and six organizations implemented biodiversity conservation activities in 18 priority landscapes and seascapes in 22 countries around the world. GCP activities improved ecological connectivity at sites in Kenya and Tanzania; enhanced the compatibility of agriculture and conservation in Madagascar and Brazil; strengthened the capacity of local communities and governments to manage and conserve coral reef and fish resources at sites in Indonesia, Papua New Guinea, and the Mesoamerican Reef; and improved community-based conservation in Bolivia, Guatemala, Nepal and Mongolia. By the end of 2009, GCP partners helped to bring well over 20 million hectares of biologically significant area under improved management.

Partners in GCP registered several notable achievements in 2009. New legislation was passed in Belize which

bans spear fishing within marine reserves, introduces size limits for Nassau grouper, and protects parrotfish critical to coral reef health. Community-based forest management groups in the Philippines halted an illegal mining operation and achieved a local moratorium on small-scale mining. In East Africa, Western Indian Ocean countries agreed on a legally binding protocol to protect coastal and marine environments from land-based sources of pollution. Community forest management in Nepal appears to have restored long-dry natural water sources in the Terai Arc region after nearly a decade of conservation effort. In Cambodia, the country's first mobile anti-poaching and law enforcement patrol team was established and began cracking down on illegal activities, many perpetrated by wealthy and powerful elites.

GCP took stock of its accomplishments in September 2009 through a two-day technical practitioner's symposium with participation by 17 representatives from GCP project sites. The symposium was followed by a celebratory high-level afternoon event attended by over 100 people, featuring presentations by GCP partners and USAID, and "Changing the Landscape," a video highlighting results from a decade of conservation investment.

Building on GCP's legacy of working at ecologically-significant scales and using a threats-based approach to conservation planning, USAID launched the Sustainable Conservation Approaches in Priority Ecosystems (SCAPES) program in FY 2009. SCAPES supports a partnership of four lead organizations



PHOTO: HOLLY FERRETTE, USAID

**GREEN ROOF:** A Tsimané-Mosetene indigenous woman weaves stalks of jatata palm into roofing panels, a sustainable and profitable use of non-timber forest products found in lowland Bolivia. With USAID support, the Wildlife Conservation Society has assisted the Tsimané-Mosetene Regional Council for Pilon Lajas (CRTM) in its efforts to co-manage the Pilon Lajas Biosphere Reserve and conduct local biodiversity conservation education, expel illegal poachers, preserve local culture and traditions, promote sustainable agriculture, and improve local livelihoods. In recognition of this work to reduce poverty through the conservation and sustainable use of biodiversity, CRTM was one of only 25 winners of the 2010 Equator Prize among 300 nominated community groups.

and a suite of their local and international partners, with nine site-based or policy activities spanning 19 countries. Partners apply a variety of approaches to strengthen local capacity to conserve and benefit from biodiversity, while addressing a number of threats ranging from hunting and habitat loss, to climate change and disease, to agricultural and industrial policies and the resulting physical and regulatory barriers to conservation which have emerged.

All SCAPES activities focus on transboundary areas and are working toward achieving financial, social, and ecological sustainability at the landscape level. Partners use adaptive management to effectively address changing conditions, and have prioritized scaling up impact and learning at the local and global levels. By field-testing both established and innovative approaches to conservation and development, then documenting them through a robust learning initiative, SCAPES complements and informs the Agency's portfolio of bilateral and regional biodiversity programs.

For more information on the Biodiversity Team, SCAPES activities and partners, and results from GCP including final reports, symposium presentations, and the retrospective video in three languages, visit [www.usaid.gov/our\\_work/environment/biodiversity/](http://www.usaid.gov/our_work/environment/biodiversity/).

## **EGAT/NRM/ Forestry Team**

### **Sustainable and Legal Forest Products**

Forest conservation and sustainable management support economic growth objectives while conserving biodiversity and reducing the rate of climate change. Illegal and unsustainable logging threatens forests and the people, plants, wildlife, and ecological processes that depend on them. USAID's Forestry Team responds to these opportunities and threats by testing approaches by which communities can sustainably benefit from forests, engaging with the private sector to improve the legality and sustainability of forest products, and providing technical leadership and assistance within USAID, across the U.S. government, and in multilateral policy fora.

An amendment of the U.S. Lacey Act in May of 2008 has increased

interest in both compliance and enforcement related to international forest governance and the control of illegal logging. The law now makes the importation of illegally sourced wood a crime, and requires all importers of wood-derived products (including paper) to declare the genus and species, value, volume, and country of harvest when a product enters the United States. Consequently, the private sector has demonstrated an increased interest in examining sourcing and improving supply chain management. The Forestry Team has been helping missions and Washington staff to understand the implications of the new law and take advantage of new opportunities for public private partnerships.

To jumpstart engagement with the private sector on the Lacey Act, USAID initiated the Forest Legality Alliance (FLA) in 2009 with World Resources Institute and the Environmental Investigation Agency. This new activity will support



FIREFIGHTERS demonstrate how to control fires intentionally set to clear bush and prevent or starve forest fires in the Russian Far East.

PHOTO: CHERYL HOJNOWSKI, WCS

outreach by NGOs and their private sector partners on the Lacey Act and stimulate new efforts to eliminate illegal raw material in global supply chains. FLA has already leveraged approximately \$8.7 million from companies such as Rayonier, New Page Corporation, Staples, and IKEA, and has been provided access to the membership of the Retail Industry Leaders Association, the American Forest and Paper Association, and the World Business Council for Sustainable Development.

A second public-private partnership launched in 2009 will pilot practices and policies that merge forest certification efforts with new opportunities to generate revenue from carbon sales. The Forest, Climate, and Communities Alliance (FCCA) aims to increase economic opportunities for poor, marginalized forest communities and forest management enterprises, and will support USAID collaboration with the private sector to address climate change. FCCA, led by Rainforest Alliance, will provide technical assistance in two forest field sites: the Mosquitia landscape of Honduras and the High Forest Zone of Ghana. The Forestry Team continues to invest in the complementary TransLinks project, managed by the Land Resources Management Team, which advances the state of knowledge in conservation finance, including payments for ecosystem services such as through carbon markets.

While the Lacey Act requires legality in the country of origin, the Global Forest and Trade Network (GFTN) promotes both legality and sustainability. The Forestry Team continued support to World Wildlife

Fund's GFTN in 2009 through USAID's Sustainable Forest Products Global Alliance (SFPGA) with WWF and private sector partners. SFPGA encourages companies to produce and trade legal and sustainable wood products and counter illegal logging and related forest destruction. Even though the economic downturn impacted the forest products sector significantly in 2009, the number of forest management companies in the GFTN grew to 90. The area of forest under improved management by GFTN producers held steady at 27 million hectares, and participants in Cameroon, Republic of the Congo, Peru and Indonesia increased the area with improved biophysical conditions by 2.4 million hectares. GFTN also led a participatory process to advance forest certification in the Congo Basin, helping regional stakeholders establish principles, criteria, and indicators for sustainable forest management.

On the demand side, GFTN continued to help U.S. retailers to analyze their supply chains and increase the proportion of certified wood products. GFTN helped participant Williams-Sonoma, Inc. conduct a supplier visit to Indonesia, Vietnam and China to gain a better understanding of regional forest and trade issues and the steps needed to meet their responsible purchasing goals in the next year. GFTN-North America also published a trade brief for U.S. companies purchasing forest products from the Amazon region, helping them obtain responsibly harvested and credibly certified forest products from this biodiverse and vulnerable region.

The Forestry Team provides technical leadership to the U.S. government

in its policy work with other nations, international organizations, and donors. In 2009, staff supported analysis and planned mitigation activities through various policy fora such as the UN Crimes Commission, the bilateral U.S. working groups on Memoranda of Understanding with Indonesia and China, and the U.S. working group on implementing the recently amended Lacey Act. The Team played a leading role on the U.S. Delegation to the International Tropical Timber Organization (ITTO) and coordinated \$1 million in U.S. government financing toward projects, fellowships, and capacity building related to tropical forests.

The USDA Forest Service (USFS) is a major partner of USAID, formalized in an agreement managed by the Forestry Team which gives missions and other operating units access to USFS expertise to support USAID forestry programs. USFS provides a range of technical assistance for governments, communities and the private sector, from formal and informal training programs in the field, to policy and economic analysis, to study tours and applied research. In FY 2009, this inter-agency agreement helped the government of Peru address forest management requirements contained in the new trade promotion act with the United States. The USFS also continued technical assistance to the Governments of Liberia and Lebanon, led land-use planning efforts in several countries in Central Africa, coordinated conservation and fire management activities in the Russian Far East, and supported the STEWARD initiative to conserve and protect the upper Guinean forests of West Africa.

## **EGAT/NRM/ Land Resources Management Team**

### **Conservation Innovations for Improved Policy and Practice**

USAID's Land Resources Management (LRM) Team promotes uses of the land and natural resources that are mutually beneficial for people and biodiversity. Approaches include: education and training in sustainable natural resources management (NRM); empowering local people with the right to use and benefit from forests, water, fish and wildlife; and conservation enterprises which provide incentives for good stewardship. Most LRM efforts apply the "Nature, Wealth and Power" framework, an approach which addresses resource management issues in the context of conservation, economic growth, and improved governance.

Lack of secure property rights and land tenure can lead to conflicts when different groups compete for control over resources, especially in open access situations where many groups use a resource but none of the users manage it. In FY 2009, LRM's Property Rights and Resource Governance (PRRG) program trained numerous U.S. government and host-country national decision makers on tenure policies required to support biodiversity conservation. Analytical tools were revised, including the Land Tenure and Property Rights (LTPR) Matrix, which provides the foundation for prioritizing policy interventions in the tenure domain with a specific focus on conservation of biodiversity

and improved NRM. PRRG analyzed the resource tenure challenges in 62 priority USAID countries and updated country profiles to better identify linkages between LTPR and biodiversity conservation, including new sections on rights related to freshwater resources, trees and forests, and minerals. PRRG also developed LTPR analyses and recommendations related to food security and global climate change.

The LRM team's Global Sustainable Tourism Alliance (GSTA) gives several USAID missions access to expertise for designing sustainable tourism projects. In 2009, GSTA developed the first concessions policy for protected areas in Ecuador to help strengthen park management and provide revenue for operations. In Mali, GSTA is using tourism development as an incentive to reduce the threat of deforestation in the Dogon World Heritage Site. In Uganda, the project works to ensure gorilla habitat conservation and reduce conflict between humans and wildlife. Across all sites, GSTA trained over 30 USAID staff and host country counterparts in sustainable tourism development.

The Capitalizing Knowledge and Connecting Communities (CK2C) activity provides a variety of tools and services for advancing knowledge in natural resources management. In 2009, a stock-taking assessment of community forest management in Kalimantan, Indonesia, launched a broader debate about forest management opportunities. An assessment of the biodiversity and development impacts of community-based NRM initiatives in Southern Africa is

now underway. The FRAMEweb.org site was redesigned, providing better support and features for the natural resource management communities of practice it serves. USAID's Environment and NRM Learning Initiative (ENRM-LI), a joint effort supported by several teams in two offices, delivered training on approaches and considerations related to biodiversity, water, climate change, and related programs. In FY 2009 and 2010, four one-week courses reached about 100 USAID staff in Pretoria (South Africa), Cebu (Philippines) and Washington, DC, while one-day courses were delivered to dozens of junior Foreign Service Officers and other staff. An advanced "ENRM Applications" course is in development and will debut in early 2011.

Satellite imagery and geographic information systems (GIS) are increasingly important tools for evaluating the extent of habitat and species, planning conservation activities, and developing environmental policies. The LRM team continued support for one of its highest profile initiatives, SERVIR, an earth observation, monitoring and visualization system with nodes in Panama and Kenya. SERVIR provides timely information and analysis on climate and weather trends, fire threats, and other variables used by managers of protected areas and other biodiverse regions of Central America, the Caribbean, and East Africa. USAID partnered with NASA to build the capacity of African university students to apply geospatial information technologies to biodiversity issues. A new



PHOTO: ERIC STONER, USAID

A SURUI CHIEF explains to visitors how preserving forest resources and forest carbon are important to his community in the Sete de Setembro Indigenous Reserve, Brazil. USAID support helped the community, which comprises an island of intact forest surrounded by deforestation, to map and monitor their forest resources, and assess options for possible remuneration for the ecosystem service of forest carbon protection.

“SERVIR-Himalaya” node is being planned to address environmental monitoring needs and climate change concerns in that region.

LRM’s TransLinks program applies research, capacity building and technical assistance to promote outcomes related to payments for ecosystem services (PES). For example, in Cambodia in 2008, TransLinks supported conservation financing by structuring a system for paying residents of Tmatboey to protect the nests of two species of endangered ibis. Other projects have assisted communities to

received funds from the voluntary carbon market in exchange for conserving forests. In FY 2009, 45 TransLinks activities complemented USAID biodiversity projects in 19 countries. Training activities reached 41 percent more people than anticipated and included one-week courses on forest carbon accounting methodologies for government staff in Cambodia, conservation marketing value chain analysis in Tanzania, GIS training for land-use planning in Mongolia, and PES mechanisms for indigenous community leaders in Brazil and USAID staff in South Africa.

The team’s newest initiative, Conservation Partnerships for Sustainability in Southern Africa (COPASSA), aims to scale up results produced by USAID conservation investments over the last 25 years in wildlife conservancies and other biodiversity-focused CBNRM programs in Southern Africa. In 2009, COPASSA worked to spur innovation and scale up successful initiatives by establishing partnerships that promote CBNRM principles, and developing and distributing tools to help rural communities use information more effectively. Partners launched a Community Centered Conservation and Development project in Zambia that will strengthen local communities’ role in conservation, management, and utilization of wildlife and other natural resources while establishing alternative livelihoods. In the Caprivi region of Namibia, COPASSA provided an opportunity for eight Parliamentarians to address human-wildlife conflict issues and respond to challenges to the conservancy movement, a hallmark of biodiversity conservation in the country.

Complementing COPASSA, LRM supported the Agency-wide Communications for Change (C-Change) project, in which one activity assessed the capacity of universities to address CBNRM in Southern Africa, and conducted three training workshops reaching 70 people on topics of advocacy, communication skills, and conflict management. In Namibia, C-Change assessed and increased partners’ ability to apply social and behavior change methodologies which strengthen community-based biodiversity conservation efforts.





**WATER QUALITY TESTING**  
in the Mara River, Kenya. Two  
researchers collect macroinvertebrates  
while a ranger looks on.

PHOTO: GLOBAL WATER FOR SUSTAINABILITY PROGRAM

**EGAT/NRM/  
Water Team**

**Conservation of Coastal  
and Freshwater Resources**

USAID's Water Team manages three programs that support biodiversity objectives through sustainable management of marine and freshwater resources. Activities address specific threats including overfishing, unsustainable aquaculture, ineffective resource management regulations, lack of alternative livelihoods for resource dependent communities, degraded watersheds and poor farming practices, and poorly planned and regulated coastal development.

The Sustainable Coastal Communities and Ecosystems (SUCCESS) program works to improve both human quality of life and biodiversity through

good governance. To meet this goal, the program works to establish, disseminate, and apply models, tools, and approaches that contribute to biodiversity conservation. SUCCESS completed field programs in Tanzania, Nicaragua, and Ecuador in 2009, and transitioned from site-based work to leadership activities at the global level. Over five years, the program improved management of more than 222,000 hectares (151,000 marine) in biodiverse areas and contributed to the development and implementation of 11 conservation policies including zoning plans, national codes of conduct, management agreements, and aquaculture guidelines.

In the Menai Bay conservation area in Tanzania, SUCCESS established community-based monitoring of permanent "no-take" zones, where habitat for fish and mollusks is left in reserve to repopulate fishing

grounds and provide ecological services. Partners introduced jewelry shellcraft and half-pearl aquaculture as eco-friendly sources of protein (oyster) and income (pearls) for communities on the adjacent Fumba Peninsula of Zanzibar.

No-take zones for cockles and other marine organisms were also established in the Nicaragua's Asseradores estuary, and a best management practices code of conduct was developed for aquaculture in the Estero Real biosphere reserve. In Ecuador, SUCCESS supported reforestation and improved agroforestry practices to improve water quality in the Cojimies estuary watershed.

As the number of marine protected areas (MPAs) around the world continues to increase, it becomes essential that the individuals

responsible for effective management of these sites have the requisite skills and experience. Recognizing this, SUCCESS began an effort in 2009 to certify MPA professionals, with nine people certified in the Western Indian Ocean and 22 certified in Latin America.

USAID's Global Water for Sustainability (GLOWS) program works to increase social, economic, and environmental benefits through healthy aquatic ecosystems and sustainable water resources management. Through the life of the project, GLOWS is expected to improve the management of approximately 2.23 million hectares of freshwater resources. In FY 2009, the program carried out cross-cutting activities in capacity building and international leadership to support integrated water resources management and biodiversity conservation.

The Mara River runs through and is the key permanent water source for the open savannah grassland protected by the Maasai Mara National Reserve in Kenya and the Serengeti National Park in Tanzania, as well as biodiverse floodplains and wetlands in Tanzania where the river feeds into Lake Victoria. In 2009, GLOWS monitored water quality to better understand the threats to aquatic ecosystems resulting from poor land management and pollution. With USAID support, two Ethiopian graduate students investigated the causes of land degradation and best management practices to remediate problems. A campaign led 14 hotels to commit to filtering and treating wastewater before it

pollutes the river through the use of constructed wetlands, which are at various stages of completion.

River flows in the Pastaza River of Ecuador and Peru have been altered by dam construction, threatening the unique biodiversity of the river. In 2009, GLOWS collected river flow data and conducted a workshop to determine environmental flow recommendations. Separately, water quality studies formed the basis for engaging small-scale industries to reduce pollution. GLOWS also organized a workshop to discuss the process of indigenous territorial planning and development of water laws in the Pastaza basin, with results submitted to the National Secretary's Office of Water. In the meantime, Kandozi indigenous communities from the middle Pastaza basin have already agreed to forbid illegal fishery contracts.

The impact of fishing on ecosystems and people is enormous: fishing is the largest extractive use of wildlife in the world, and fisheries products are the world's most widely traded foods, but high demand has exceeded the supply of many wild fish stocks. Acknowledging the magnitude and urgency of this issue, in FY 2009 USAID launched the Global FISH Alliance, a public-private partnership led by AED. Alliance partners include Darden Restaurants (the largest owner of casual dining restaurants in the United States), the National Fisheries Institute (the largest U.S. seafood trade association), several environmental groups, and relevant U.S. government institutions.

The Global FISH Alliance implements a holistic approach to fisheries reform. Alliance members and other partners apply information and communications technology to improve the science for decision-makers as they redesign and enforce regulations. USAID staff will receive training on the design, management, and evaluation of sustainable fisheries programs, and have access to the expertise of Alliance partners. Field activities will initially target reform of the spiny lobster fishery in Honduras and Nicaragua, which is seriously impacted by removal of undersized, non-reproducing lobsters, and the use of destructive collection practices that damage the Meso-American Reef, one of the top ten coral reef "hotspots" in the world.

In 2009, spiny lobster core working groups were established in both Honduras and Nicaragua, with about 20 to 25 representatives from the entire value chain as well as government, environmental organizations, and the private sector. Each working group convened a whole-system-in-the-room event to identify common ground and develop action plans. Both events identified an ecosystem-based approach to fisheries management and marine protected areas as critical for sustaining the fishery. Fishing communities are advocating for better fisheries management as well. The Global FISH Alliance will build on these shared priorities through support for fishing reserves and market-based approaches to management reform.

## EGAT/Agriculture Office

### Collaborative Research Support Programs

USAID's Office of Agriculture supported and managed two Collaborative Research Support Programs (CRSPs) with biodiversity components during FY 2009: the Integrated Pest Management (IPM) CRSP and the Sustainable Agriculture and Natural Resources Management (SANREM) CRSP.

IPM is the study and application of economical, socially acceptable, and environmentally safe pest management. It reduces pesticide use by applying alternative methods of pest control such as crop

rotation, mixed cropping, and introduction of natural enemies. In Ecuador, the IPM CRSP conducted biodiversity monitoring, beginning with an assessment of the impacts of the cacao, plantain, and Naranjilla cropping system on biodiversity. This cropping system reduces soil erosion, decreases the need for pesticide, increases income, and should enhance biodiversity in avian migratory corridors and buffer zones near rainforest habitats. The IPM package has stabilized the cropping system and reduced the need for frequent use of pesticides.

Biodiversity funds have partially supported IPM CRSP partners working to develop an approach to manage *Parthenium*, a highly invasive weed in East and Southern Africa that

reduces the yield of all major crops, competes with preferred pasture species, and taints the milk and meat of livestock. It causes respiratory and dermatitis problems in humans and outcompetes native plants, reducing biodiversity. Researchers from the United States, Ethiopia, South Africa and Australia have been monitoring the spread of *Parthenium*, assessing its environmental and economic impact and developing solutions to manage it. After examining several technologies, the team opted for a classic biological control program using a natural enemy from *Parthenium*'s native Mexico, the beetle *Zygodontia bicolorata*. The beetle was tested for host-specificity at a quarantine facility built at Ambo, Ethiopia, to confirm it would not feed on other plant species and also become



PHOTO: WILDLIFE CONSERVATION SOCIETY

**IT'S WILD!** A shopper in Zambia selects a bag of wildlife-friendly rice produced by farmers in the Community Markets for Conservation (COMACO) program supported by USAID. COMACO has helped thousands of people avoid periodic food insecurity and has reduced wildlife poaching.

invasive. A detailed environmental impact statement is being prepared prior to any field release of this natural enemy, though *Zygogramma* has been successfully used as a biological control in India and Australia and is expected to be effective in affected parts of Africa as well.

The SANREM CRSP conducts research, institutional development, and training in sustainable agriculture and natural resources management (NRM). One project reviewed how well decentralization and property rights reform policies achieve sustainable NRM to conserve biodiversity and improve local livelihoods. Data from Uganda, Kenya, Mexico, and Bolivia revealed some of the institutional conditions and interactions that will deliver benefits equitably to local populations while sustaining biological resources. In Uganda, the program trained community-based organizations and forest district officials in conservation and monitoring techniques, such as establishing alternative livelihoods and patrolling forest boundaries. The SANREM approach involves all stakeholders and has helped to stimulate dialogue between groups, leading to problem solving approaches as an alternative to violent conflict.

In Zambia, SANREM supported the Community Markets for Conservation (COMACO) program, which applies a market-driven approach to conservation to address two root causes of biodiversity loss: poverty and food insecurity. In 2009, nearly 300 people received instruction in conservation farming practices to improve their livelihoods through agriculture rather than poaching. Studies have shown that COMACO

has had a significant positive impact on wildlife populations, especially ungulates. Scientists are currently monitoring to see if animals will return to areas they previously inhabited, which will inform Zambian government authorities as they set new wildlife use policies. COMACO partners also conducted surveys to determine the size and distribution of Africa's largest hippopotamus population as it faces increasing pressures from siltation, changes in river morphology, and reprisals by local fishermen and farmers responding to net destruction, crop predation, and attacks on people.

## **EGAT/Environment and Science Policy Office**

### **Natural Resources Research and Climate Change Mitigation**

The Office of Environment and Science Policy (ESP) uses a mix of biodiversity and other funds to provide field assistance to USAID missions on climate change, forestry, and biodiversity conservation programs, and maintains a carbon accounting tool which helps quantify the climate change mitigation value of USAID efforts to protect and sustainably manage forests. The majority of biodiversity funding in the ESP Office supports applied conservation research by centers in the Consultative Group on International Agricultural Research (CGIAR). In FY 2009, eight of the CGIAR centers contributed to marine and terrestrial biodiversity conservation. Highlights from four centers are included below.

The Center for International Forestry Research (CIFOR) supported conservation of great apes in two countries through various approaches. In Indonesia, researchers studied local stakeholder perceptions and conservation norms related to orangutans, then designed tools to promote collaborative land-use planning based on a traditional zoning system in forested habitat near Danau Sentarum National Park. The project trained partners to conduct orangutan nest surveys, providing new data on population status and habitat use preferences. In the Nialama Classified Forest in Guinea, CIFOR's long-term chimpanzee monitoring program provided the basis for delimiting core protected area boundaries for the resident chimpanzee population. Satellite imagery of key chimpanzee habitat found less habitat change within Nialama Forest than in the surrounding strict protected area and other buffer zones, a credit to co-management of Nialama by communities and government.

A joint project between CIFOR and the World Agroforestry Center (ICRAF) continued work to bolster biodiversity conservation in transboundary landscapes in Guinea and Sierra Leone. Activities reduced pressure on forest resources, encouraged natural and assisted regeneration in target landscapes, and acknowledged the important role of women in conservation. Before closing prematurely in 2009 as a result of political instability in Guinea, the project reached over 3,000 households in four target sites and introduced new technologies and management practices to more than 100 farmer groups. Farms



PHOTO: NICK HOBGOOD, DAI

**HOME SWEET HOME:** Two clownfish hide in the retracted tentacles of their anemone home. Mapping and monitoring tools developed by the WorldFish Center are promoting better management and conservation planning of the Coral Triangle.

adopting new methods increased yields by an average of nearly 50 percent, reducing the need to clear forests for agriculture. In addition, 23 community tree nurseries supplied more than 31,000 seedlings to around 1,400 individuals for planting on 160 hectares, making productive use of degraded land and curbing fuelwood pressure on natural forests.

The Kitengela ecosystem, including Nairobi National park, once hosted one of the largest migrations of wildebeest and zebra in Kenya, second only to the Maasai Mara. Formerly large populations of wildlife have dwindled dramatically because the once open rangelands have been converted to agriculture and other land uses. Fences which block the migration and lost habitat in general threaten remaining wildebeest. The International Livestock Research Institute (ILRI) promotes co-managed

wildlife-livestock systems in order to address these impacts. ILRI's research led to the Kitengela Land Use Master Plan, enacted in late 2009, which will enable the local government to regulate land use and better manage its resources. The project also supported the development of a livestock market access company that should increase household incomes from livestock trading.

ILRI also worked with communities in the biodiverse Mara region, assessing traditional ecological knowledge and community perceptions of conservation while enhancing their skills through training in wildlife monitoring. Mara community members requested assistance with developing conservancies for better land management, integration of livestock and wildlife needs, and additional income to support the pastoral lifestyle. For example, the

Olare Orok Conservancy has pasture reserves for livestock dry season grazing and wildlife-based tourism that generates an extra US\$30 to \$40 per hectare of land. As of the beginning of 2010, four conservancies along the Mara River and the northern boundary of the Maasai Mara Reserve have been established, securing an area of some 90,000 hectares for conservation, and generating about US\$3 million for about 1,000 Maasai households each year.

The WorldFish Center worked to develop mapping tools in regions of marine and freshwater biodiversity. In the Philippines, the Biodiversity Information System on the Freshwaters of the Philippines (PhilBatIS) is a free, online resource that plans to list all freshwater species of fauna and flora in the country, providing critical basic data for conservation. At the regional scale, a Coral Triangle Atlas improves the efficiency of management and conservation planning among the seven nations in the Coral Triangle region by providing access to the best spatial data, encouraging data sharing, and reducing duplication of effort collecting new information. Atlas data are particularly valuable for designing and planning marine protected areas in the region. Worldwide, the AquaMaps project has modeled and mapped distributions for 9,000 species worldwide, and developed a set of tools to produce species richness maps for specific areas or taxonomic groups. WorldFish also continues to maintain two large databases: FishBase, with information on over 31,000 species; and ReefBase, a coral reef monitoring system.

## Global Health

### Population, Health and the Environment

Demographic trends such as natural population growth and migration place pressure on the environment, degrading the natural resource base and contributing to poor nutrition, sanitation and health. USAID's Population, Health and Environment (PHE) activities aim to improve access to health services, especially family planning and reproductive health, while helping communities manage the natural resources on which they depend. The underlying philosophy is that an integrated approach to meeting communities' family planning, basic health, and natural resource management needs is more effective than delivering these services in stand-alone or parallel programs. PHE activities in 2009 were located in the buffer zones outside of national parks in the Democratic Republic of Congo (DRC) and Nepal, and in communities immediately adjacent to marine protected areas of the Philippines, Kenya, and Tanzania.

In 2009, USAID's activities advanced wider use of integrated PHE approaches worldwide by building capacity for program implementation, developing and sharing knowledge and tools, and replicating successful field activities in areas of high biodiversity. The PHE Alliance, a public private partnership between USAID, Johnson & Johnson, and World Wildlife Fund, leveraged over \$800,000 in financing to integrate family planning into conservation activities in the DRC, Nepal, Kenya, the Philippines, India, Cameroon,

and globally through partner conservation networks. In most sites, PHE strategies were replicated and expanded using the approach outlined in the *Healthy People, Healthy Ecosystems* manual, previously developed with USAID funding.

In 2009, another project expanded to new sites adjacent to the double barrier reef of Danajon Banks in the Philippines, where partners mobilized government health personnel in rural health units, and provided training to upgrade their skills and



PEPPER FARMING helps to improve the livelihoods of HIV/AIDS-vulnerable households in villages surrounding the Saadani National Park in Tanzania. Monkeys and other wildlife do not eat peppers, which farmers process into paprika for added value.

PHOTO: KLAUS HARTUNG

knowledge in the provision of family planning information and services. These government personnel went on to identify and train 173 community-based distribution outlets and 42 peer educators who helped to expand family planning services to over 2,700 underserved people living near the reef.

In recognition of USAID's PHE efforts, a variety of media outlets have recently begun to cast a spotlight on successes. A panel at the October 2008 Society of Environmental Journalists conference on population and climate change led directly to an article entitled "Population growth contributes to emissions growth," one of the first Associated Press articles about this relationship. In 2009, two nationally distributed public radio segments highlighted PHE programs and reported on the benefits of integrating family planning and the environment. Implementing partners also co-authored two articles on population security and population projections for *WorldWatch* magazine, and advised on a prime-time news documentary featuring population themes and experts.

Media coverage is an important way to reach policymakers at the local level with policy-relevant information on the relationships between population dynamics and environmental degradation. Stories on PHE also generate support for continuing and scaling up this approach within international donor and NGO communities. PHE approaches continue to encourage wider local participation in biodiversity conservation activities by providing tangible benefits for some of the most marginalized groups.

## Department of State

### International Conservation Collaboration

The Office of Ecology and Natural Resource Conservation (ENRC) in the Department of State's Bureau for Oceans and International Environmental and Scientific Affairs coordinates U.S. foreign policy approaches to conserving and sustainably managing forests, wetlands, drylands, coral reefs and other important ecosystems, as well as the species that depend on them. A small grants program allows ENRC to catalyze the conservation actions it promotes during policy engagement. In 2009, ENRC provided three grants which give countries the tools necessary to create or comply with regional agreements related to wildlife trade in Asia and Latin America as well as transboundary conservation

in the Virunga Mountains of Africa. Grant funds are not administered by USAID but do contribute to the Congressional biodiversity earmark.

Reports of illegal fishing and seizures of sea turtle products are increasing in coastal areas of Southeast Asia. ENRC provided a grant to the Association of Southeast Asian Nations - Wildlife Enforcement Network (ASEAN-WEN) to build their capacity to combat illegal trade in sea turtles and other marine species. These funds build on prior support for judicial training under ASEAN-WEN, as well as coral crime scene investigation training workshops.

ASEAN-WEN has dramatically increased interdiction of trafficked animals and is a model of success for other regional networks in development. The grant described above also includes funds to reduce



PHOTO: JOSEPH FOLTZ, USAID

**PONDERING THE FUTURE:** Protracted regional conflict coupled with an illicit charcoal trade keeps intense pressure on natural resources and fragile institutions in and around the Virunga Mountains. A grant from the Department of State is helping to address these threats and develop regional solutions to protect rare mountain gorillas and their habitat.



**ATLANTIC RAINFOREST:** A new debt-for nature agreement with Brazil will generate \$21 million for conservation of tropical forests outside the Amazon basin.

PHOTO: SCOTT LAMPMAN, USAID

the illegal trade in wildlife in the biologically-rich Andean region by analyzing the problem and starting a framework for regional cooperation, potentially an “Andean WEN.” A second grant provides support for the South Asia WEN, established by Environment Ministers in May 2008. South Asia’s biological richness makes it a prime target for international organized wildlife crime, as demonstrated by recent seizures of skins and parts of tigers and other Asian big cats, rhino horn and elephant tusks, live birds, tortoises, freshwater and marine turtles, and rare medicinal and aromatic plants.

The balance of 2009 ENRC biodiversity funding supports the Greater Virunga Transboundary Core Secretariat, founded in 2006 by the wildlife conservation authorities of

the Democratic Republic of Congo (DRC), Rwanda and Uganda. Best known as the home of the last remaining mountain gorillas on Earth, the Greater Virunga Landscape faces serious conservation and development challenges including high population density, extreme levels of poverty, and insecurity. Illegal charcoal production is one of the biggest threats to biodiversity, with an estimated 45,000 tons or more of charcoal sourced from Virunga National Park in DRC each year. ENRC funds will strengthen Secretariat capacity related to strategy development, management, communications, and technical expertise in support of long-term conservation of biodiversity, with a particular focus on reducing charcoal production in protected areas by promoting alternative sources of energy and income.

## **Tropical Forest Conservation Act**

### **Debt-for-Nature Agreements**

The Tropical Forestry Conservation Act (TFCA) was enacted in 1998 to offer eligible developing countries options to relieve debt owed the U.S. Government while generating funds in local currency to support tropical forest conservation activities. In addition to forest conservation and debt relief, TFCA strengthens civil society by creating local foundations that support small grants to NGOs and local communities. The program also offers a unique opportunity for public-private partnerships: the majority of TFCA agreements to date have been supplemented by funds raised by U.S.-based conservation



organizations. USAID hosts the TFCA Secretariat but funds for agreements come directly from the U.S. Treasury and do not contribute to the biodiversity earmark or USAID's forestry budget.

As of December 2009, approximately \$135 million in congressionally appropriated funds have been used to conclude 15 TFCA debt-for-nature agreements with 13 countries: Bangladesh, Belize, Botswana, Colombia, Costa Rica, El Salvador, Guatemala, Indonesia, Jamaica, Panama (two agreements), Paraguay, Peru (two agreements), Indonesia, and the Philippines. The Nature Conservancy, Conservation International, the World Wildlife Fund and KEHATI (an Indonesian fund) have contributed an additional \$14.1 million to nine of these agreements, enabling more debt to be treated and in turn generating

more funds for conservation. The local foundations established by TFCA agreements have awarded 348 grants and otherwise invested in protected area activities totaling nearly \$28 million, including over \$5.4 million in 2009 alone. The collective balance accumulated through December 2009 in these local accounts was about \$49 million in grants accounts and \$19 million in endowment accounts.

As this publication went to press, the Governments of the United States and Brazil had just signed the latest debt-for-nature agreement under TFCA (August 12, 2010). Over the next five years, nearly \$21 million in debt payments will be redirected to activities which protect the country's highly threatened Atlantic Rainforest, as well as tropical forest and buffer areas of the Caatinga and Cerrado Biomes. These regions comprise

about half of the national territory and are highly biodiverse: the Atlantic Rainforest alone contains about 2,000 species of mammals, birds, reptiles and amphibians, and almost one-third are believed to be found nowhere else.

By 2023, the 16 TFCA programs will generate more than \$239 million for grants and projects to help protect and sustainably manage tropical forests in beneficiary countries. The debt swap agreements with the three U.S. NGOs and one Indonesian Fund could contribute to improved conservation of up to 67 million acres of high-value tropical forests globally including several national parks and other protected areas. USAID and the Departments of State and Treasury are currently exploring or negotiating additional TFCA agreements with two more eligible countries.

# FUNDING OVERVIEW

## Biodiversity Budget

### Analysis of FY 2009

USAID provided more financial support to biodiversity conservation activities in FY 2009 than in any previous year. Central, regional and country programs provided \$204.5 million for work in Africa, Asia, Europe and Eurasia, and Latin America and the Caribbean. Combined with \$850,000 in biodiversity-specific activities managed by the Department of State, the \$195 million Congressional funding request for biodiversity was exceeded by more than \$10 million.

The Bureau for Africa managed \$70.6 million in biodiversity funds through four regional programs, 15 country programs, and initiatives managed centrally. About one-quarter of these funds supported biodiversity conservation and forest management in the Congo Basin, including technical and financial assistance to the Great Ape Conservation Fund administered by the U.S. Fish and Wildlife Service. FY 2009 funds designated for Madagascar, historically the Bureau's largest bilateral program, were redistributed due to a *coup d'etat*, and redirected to new or ongoing activities in Liberia, Mozambique, Sierra Leone, Tanzania and Uganda, along with the Africa Regional Program which supports work by all missions in the region.

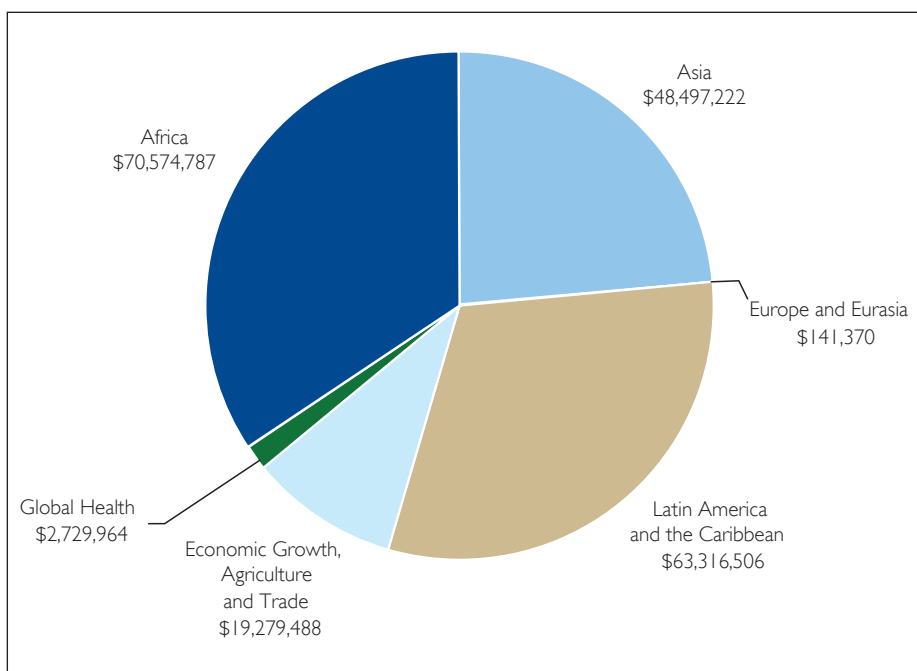
Country and regional missions in Latin America and the Caribbean distributed \$63.3 million for biodiversity conservation in FY 2009. Over 70 percent of these funds supported regional and bilateral programs in South America to conserve the Amazon River basin, forests and high grasslands of the Andes Mountains, dry forests of Bolivia and Paraguay, and coastal areas abutting the Atlantic and Pacific Oceans. Nearly 21 percent of funds went to Central America and Mexico, and the remainder to the Caribbean.

Nearly \$48.5 million (24 percent) of biodiversity conservation funding was programmed for Asia by country and regional programs.

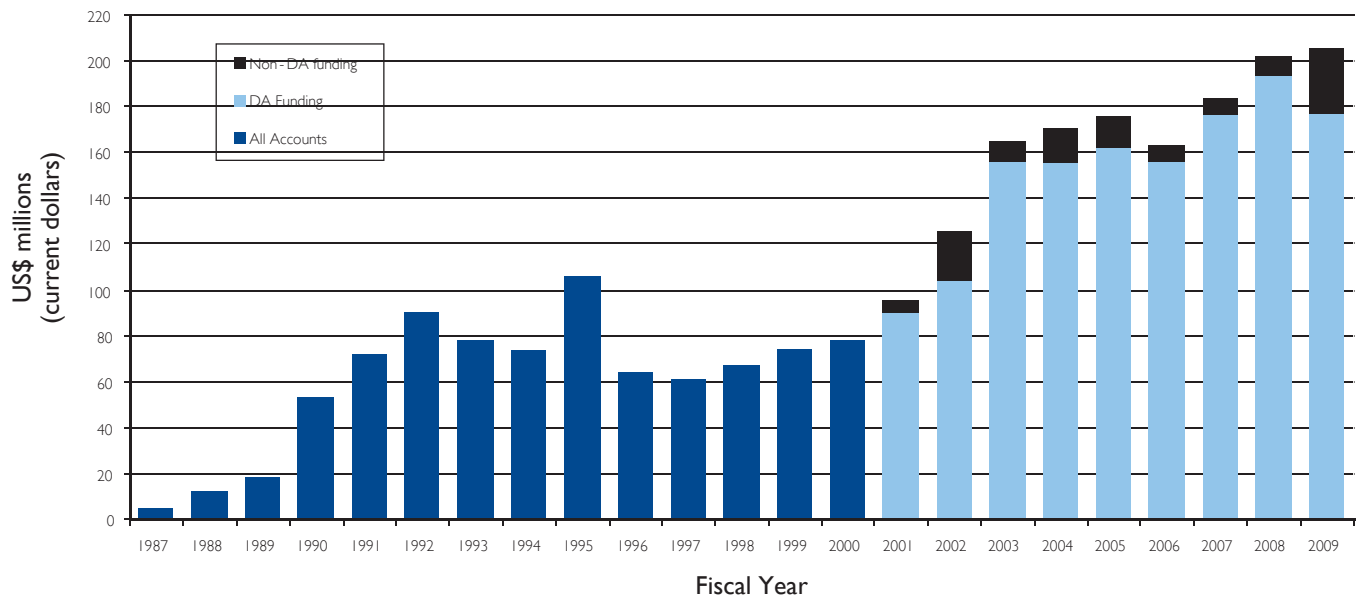
Eighty percent of FY 2009 funds supported conservation of high-biodiversity areas in Southeast Asia, including activities to address wildlife trafficking, illegal logging, and overfishing, advancing coral reef protection and conservation of endangered wildlife like the Sumatran orangutan. Substantial programs in Afghanistan and Bangladesh developed new protected areas and advanced community management of forests, wetlands and rangelands.

In Europe and Eurasia, only Russia reported biodiversity programming, as a component of forestry activities in the Russian Far East. Activities helped conserve keystone species including Siberian tigers, Amur

**Figure 2. USAID Funding for Biodiversity by Bureau in FY 2009**



**Figure 3. USAID Funding of Biodiversity Conservation Activities, FY 1987 - 2009\***



\* All funding accounts displayed. Disaggregated figures for DA and non-DA funding are only available from FY 2001 onward.

leopards, and varieties of salmon important to whole ecosystems.

Centrally funded programs supported \$22 million in biodiversity activities, about 11 percent of USAID’s biodiversity portfolio. These programs test innovative approaches and collect and disseminate best practices in conservation. They also support activities which address a certain theme (reducing conflict, enhancing conservation-health linkages), promote a certain approach (such as landscape-level conservation), and/or operate on a global level, working across boundaries to focus on ecological function over political borders. Nearly 88 percent of Central Programs were administered by the Bureau for Economic Growth, Agriculture and Trade, with the remainder managed by the Bureau for Global Health.

### Budget trends

The U.S. government contributed about \$300 million in FY 2009 funds to international biodiversity conservation programs. USAID managed about two-thirds of this total, a proportion consistent since at least FY 2000 (see Figure 1, page 2), when U.S. funding for biodiversity conservation abroad was just over \$100 million.

USAID has supported biodiversity conservation activities for more than three decades, even before the term ‘biodiversity’ was coined. During the early 1970s there was a focus on conserving natural forests, primarily through mission funds. In 1986, Sections 118 and 119 of the Foreign Assistance Act were amended, which placed a greater emphasis on tropical forests and endangered species conservation in U.S. foreign assistance.

The FY 1986 Appropriations Act also incorporated a \$1 million directive for biodiversity conservation, which began a long-term trend of increased USAID investment in conservation activities.

By the 1990s, USAID investments in biodiversity conservation expanded to more than \$60 million annually, at times exceeding \$90 million. Since 1997, USAID support for biodiversity programs has steadily increased with new Congressional directives.

In FY 2004, Congress created a biodiversity earmark of \$155 million, to come from Development Assistance (DA) funds. The earmark increased to \$165.5 million for FY 2005 through FY 2007, then again by nearly \$30 million in FY 2008 to \$195 million<sup>1</sup>. In FY 2009, the biodiversity earmark remained at the same level, but legislation introduced new flexibility allowing biodiversity programs to be

<sup>1</sup> A rescission of foreign assistance programming reduced the actual FY 2007 earmark to \$163.8 million; a rescission combined with a diversion of funds to food crises reduced the actual FY 2008 earmark to \$191.5 million.

**Table I. U.S. Government International Biodiversity Funding, FY 2009**

Program or Funding Type	United States Government Department or Agency	FY 2009 Funding for Biodiversity Conservation (US\$ millions)
Biodiversity Conservation Activities	U.S. Agency for International Development	204.5
Global Environment Facility – Biodiversity*	U.S. Department of Treasury	26.4
International and Species Programs	U.S. Fish and Wildlife Service	27.95
Tropical Forest Conservation Act	U.S. Department of Treasury	20
Office of International Programs	U.S. Forest Service	8.5
International Conservation Programs	U.S. Department of State	7
Coral Reef, Coastal and Marine Programs	National Oceanic and Atmospheric Association	4.25
International Program	U.S. National Park Service	0.88
<b>TOTAL</b>		<b>299.5</b>

\* Biodiversity funding managed by GEF is estimated to be one-third of the \$80 million U.S. appropriation for all types of conservation programs.

funded from any account. The FY 2010 biodiversity earmark is \$205 million.

USAID prioritizes biodiversity investment based on criteria such as species richness, the degree of threat to species and ecosystems, host country commitment, and opportunity for addressing poverty, governance or conflict through conservation. In FY 2009, nearly a quarter of biodiversity funds were programmed by missions in just eight megadiverse<sup>2</sup> countries: Brazil, Colombia, Democratic Republic of Congo, Ecuador, Indonesia, Mexico, Peru and the Philippines. Three large regional programs in Central Africa, Southeast Asia and the Andean Amazon managed another 22 percent of USAID biodiversity funds, largely for conservation of forests and coral reefs in megadiverse nations.

In other countries with USAID biodiversity activities, several programs focus on conserving large remaining areas of intact forest, as in Cambodia and Guatemala, or habitat not well represented

elsewhere, like the dry forests of Senegal. Many programs play a role in conflict resolution or recovery, including territorial disputes along the Colombia-

Ecuador border, post-war Liberia and Sudan, and ongoing conflict in Afghanistan. Bilateral programs in such countries account for at least ten percent of biodiversity funds.



<sup>2</sup> The World Conservation Monitoring Centre of the United Nations Environment Program identified as “megadiverse” the 17 most biodiverse countries on earth, which collectively harbor an estimated 60 to 70 percent of all species.

**Table 2. USAID Funding for Biodiversity and Forestry Programs, FY 2009**

Program Name	Program Description	FY 2009 Biodiversity Funding (in US\$)	FY 2009 Forestry Funding (in US\$)	Forestry Overlap with Biodiversity (in US\$)	Type of Funds <sup>1</sup>
<b>TOTALS</b>					
<b>TOTAL FUNDING IN FY 2009</b>		<b>\$204,539,337</b>	<b>\$109,931,739</b>	<b>\$97,622,782</b>	<b>ALL</b>
<b>TROPICAL FOREST FUNDING IN FY 2009</b>			<b>\$103,713,936</b>	<b>\$92,368,912</b>	<b>ALL</b>
<b>AFRICA</b>					
Africa Regional <sup>2</sup>	Mobilizing Knowledge for Conservation	4,475,000	2,250,000	2,250,000	DA
Central African Regional Program for Environment	Conservation Landscapes and Regional Monitoring	17,500,000	17,500,000	17,500,000	DA
East Africa Regional	Watershed Conservation Policy and Practice	1,500,000	0	0	DA
Southern Africa Regional	Integrated River Basin Management	2,000,000	0	0	DA
West Africa Regional	Resource Management Without Borders	2,000,000	1,235,000	1,235,000	DA
Dem. Republic of Congo	Conservation and Sustainable Agriculture	2,000,000	1,900,000	1,900,000	ESF
Ethiopia	Community Conservation and Ecotourism	1,020,000	762,353	762,353	DA
		0	1,000,000	0	PL-480
Ghana	Conservation Enterprises and Governance	2,050,000	0	0	DA
Kenya	Capacity Building and Community Conservation	4,021,876	970,275	273,376	DA
Liberia <sup>2</sup>	Community Forestry and Conservation	2,000,000	1,600,000	1,600,000	ESF
		1,000,000	1,000,000	1,000,000	DA
Madagascar <sup>2,3</sup>	Conservation Landscapes and Sustainable Forestry	0	0	0	DA
Malawi	Co-Management and NRM Enterprises	3,500,000	1,724,318	1,724,318	DA
Mali	Sustainable Enterprises and NRM	532,911	362,000	164,000	DA
Mozambique <sup>2</sup>	Ecotourism and Park Restoration	3,000,000	1,090,000	660,000	DA
Namibia	Improved Rural Livelihoods through NRM	2,025,000	0	0	DA
Rwanda	Ecotourism and Conservation Enterprises	1,500,000	1,500,000	1,500,000	DA
Senegal	Community Forestry and Local Governance	2,000,000	1,000,000	1,000,000	DA
Sierra Leone <sup>2</sup>	Forest Co-Management	500,000	500,000	500,000	DA
Sudan	Capacity Building and Landscape Conservation	5,000,000	0	0	ESF
Tanzania <sup>2</sup>	Conservation through Livelihoods Approach	6,000,000	1,525,000	1,525,000	DA
Uganda <sup>2</sup>	Community-Based Conservation	6,950,000	1,800,000	1,800,000	DA
<b>Africa Total</b>		<b>\$70,574,787</b>	<b>\$37,718,946</b>	<b>\$35,394,047</b>	
<b>ASIA and the MIDDLE EAST<sup>4</sup></b>					
Asia Regional	Support for Emerging Conservation Needs	400,000	50,000	50,000	DA
Regional Development Mission for Asia	Wildlife Law Enforcement, Forest Management and Seascape Conservation	14,250,000	5,925,000	5,925,000	DA
Afghanistan	Woodlands Restoration and Conservation	5,159,597	1,905,303	1,800,000	ESF
Bangladesh	Co-Management of Forests and Protected Areas	4,500,000	2,812,500	2,812,500	DA
Cambodia	Grassroots Advocacy and Forest Enterprises	1,557,625	787,454	787,454	DA
		600,000	600,000	600,000	ESF
Indonesia	NRM and Orangutan Conservation	5,300,000	4,911,710	4,911,710	DA
		8,000,000	2,360,016	2,360,016	ESF
Lebanon	Forest Restoration and Fire Management	0	500,000	0	ESF
Nepal	Community Governance of Resources	500,000	500,000	500,000	ESF
Philippines	Improved Governance and Land Tenure	8,230,000	2,659,333	2,315,208	DA
<b>Asia and the Middle East Total</b>		<b>\$48,497,222</b>	<b>\$23,011,316</b>	<b>\$22,061,888</b>	
<b>EUROPE and EURASIA</b>					
Georgia <sup>3</sup>	Protected Area System Support	0	0	0	n/a
Russia	Forest Management and Wildlife Conservation	141,370	500,000	141,370	AEECA
<b>Europe and Eurasia Total</b>		<b>\$141,370</b>	<b>\$500,000</b>	<b>\$141,370</b>	

**Table 2. USAID Funding for Biodiversity and Forestry Programs, FY 2009** continued

Program Name	Program Description	FY 2009 Biodiversity Funding (in US\$)	FY 2009 Forestry Funding (in US\$)	Forestry Overlap with Biodiversity (in US\$)	Type of Funds <sup>1</sup>
<b>LATIN AMERICA and the CARIBBEAN</b>					
LAC Regional	Conservation of the Andean Amazon	15,000,000	7,113,693	7,113,693	DA
Eastern Caribbean Regional	Policies for Sustainable Biodiversity Conservation	2,000,000	0	0	DA
Central America and Mexico Regional	Watershed Conservation and Sustainable Fisheries	1,600,000	0	0	DA
Bolivia	Landscape Conservation and Sustainable Forestry	4,900,000	2,450,300	2,450,300	DA
Brazil	Forest Management and Capacity Building	10,000,000	10,000,000	10,000,000	DA
Colombia	National Parks and Sustainable Development	4,000,000	800,000	0	ESF
Dominican Republic	Capacity Building for Conservation	1,200,000	0	0	DA
Ecuador	Protection of Indigenous Land and Rights	5,000,000	3,365,000	3,365,000	DA
El Salvador	Management and Conservation of Watersheds	2,000,000	106,045	106,045	DA
Guatemala	Sustainable Enterprises and Forest Certification	3,100,000	1,140,756	1,140,756	DA
Guyana	Forest Conservation and Responsible Ecotourism	686,506	0	0	DA
Haiti <sup>3</sup>	Sustainable Economic Development	0	0	0	ESF
Honduras	Integrated Watershed Resources Management	2,300,000	103,904	103,904	DA
Jamaica	Conservation and Rural Development	500,000	315,211	315,211	DA
Mexico	Sustainable Livelihoods and Conservation	2,500,000	990,000	990,000	DA
Nicaragua	Sustainable Tourism and Forest Certification	1,000,000	0	0	DA
Panama	Conservation of the Panama Canal Watershed	1,500,000	900,000	900,000	DA
Paraguay	Resource Management and Capacity Building	550,000	260,000	260,000	DA
Peru	Forestry and Incentives for Conservation	5,480,000	12,880,000	5,480,000	DA
<b>Latin America and the Caribbean Total</b>		<b>\$63,316,506</b>	<b>\$40,424,909</b>	<b>\$32,224,909</b>	
<b>CENTRAL PROGRAMS</b>					
<i>Bureau for Economic Growth, Agriculture and Trade, USAID</i>					
Office of Natural Resource Management					
Biodiversity Team	Global Biodiversity Conservation	5,175,964	1,006,192	1,006,192	DA
Forestry Team	Sustainable and Legal Forest Products	3,631,036	3,391,036	3,391,036	DA
Land Resources Management Team	Conservation Policy and Practice Innovation	4,541,827	1,289,340	1,289,340	DA
Water Team	Conservation of Coastal and Freshwater Resources	1,650,000	0	0	DA
Office of Agriculture	Collaborative Research	143,000	0	0	DA
Office of Environment & Science Policy	Natural Resources Research and Climate Change Mitigation	3,975,000	2,590,000	2,114,000	DA
Cross-Cutting EGAT	Various Activities	162,661	0	0	DA
<i>Bureau for Global Health, USAID</i>					
Office of Population & Reproductive Health	Population, Health and Environment	2,729,964	0	0	GHCS
<b>Central Programs Total</b>		<b>\$22,009,452</b>	<b>\$8,276,568</b>	<b>\$7,800,568</b>	

1. Funds include: Assistance to Europe, Eurasia, and Central Asia (AEECA), Development Assistance (DA), Economic Support Fund (ESF), Global Health and Child Survival (GHCS), Food for Peace (PL-480).
2. \$7,000,000 in funds designated for biodiversity programs in Madagascar were redistributed following a coup in March 2009. Recipients of additional funds include AFR/SD (\$2,000,000), Liberia (\$1,000,000), Mozambique (\$1,000,000), Sierra Leone (\$500,000), Tanzania (\$1,000,000) and Uganda (\$1,500,000).
3. Missions in Madagascar, Georgia and Haiti continued activities in FY 2009 using FY 2008 funds, but no new funds were committed for biodiversity or forestry.

## Forestry Budget

### Analysis of FY 2009

USAID supported \$109.3 million in forestry activities in FY 2009, including \$103.7 million in tropical countries or focused on tropical forests. Forestry includes a range of economic growth and biodiversity conservation efforts, including protection of natural forests, sustainable management of forests for timber and non-timber forest products, reforestation of degraded lands, the use of woodlots and agroforestry to reduce pressure on natural forests, and research and capacity building activities which help communities and governments benefit from markets for ecosystem services and certified forest products.

Latin America and the Caribbean (LAC) programs increased more than \$5 million over the previous year, supporting \$40.4 million in forestry activities in FY 2009, almost 37 percent of all USAID forestry funding. From policy and awareness initiatives which strengthened indigenous land and forest use rights, to training for the authorities in charge of national forests, USAID provided funds to a wide range of activities involving stakeholders of every variety. With nearly \$13 million in forestry programs, Peru comprised 32 percent of the LAC portfolio, mostly for activities which advance forestry goals of the new United States - Peru Trade Promotion Agreement, including better forest sector governance and mechanisms to ensure timber is legally acquired and processed. A quarter of LAC funds supported conservation of the Brazilian Amazon.

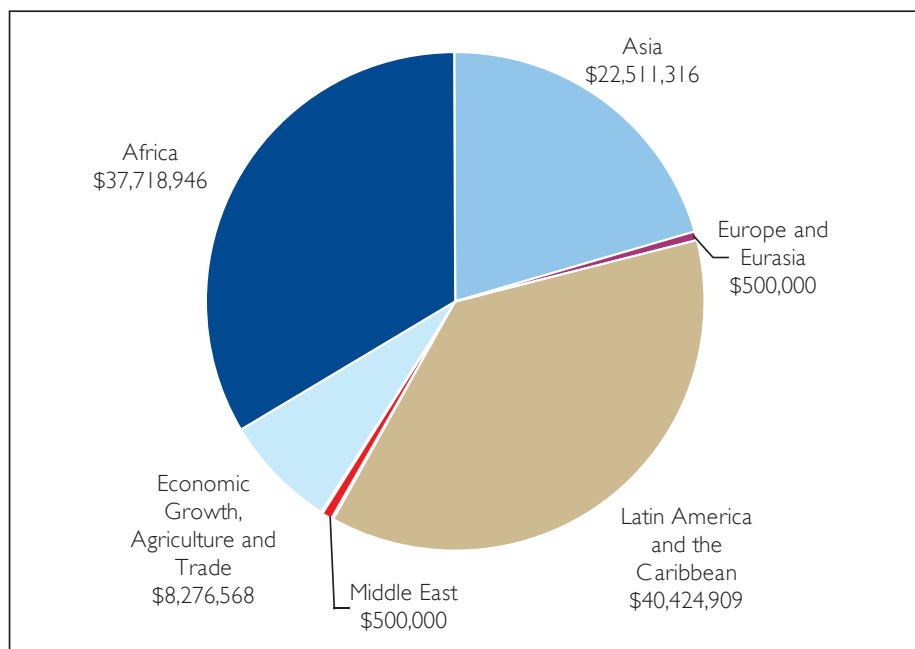
The next highest share of forestry support was provided by Africa regional and country programs, which managed \$37.7 million of total USAID forestry expenditures. Of this funding, almost half went to the Central African Regional Program for the Environment (CARPE), which conserves biodiversity by improving the protection and management of the second largest rainforest on earth. Activities in 2009 supported community forestry, monitoring of illegal logging, sustainable agriculture and conservation of species and protected areas.

The Bureau for Asia received \$22.5 million of overall forestry spending, including large programs in Afghanistan, Bangladesh, Philippines and the Regional Development Mission. USAID/Indonesia managed nearly a third of the total, for activities to conserve orangutan habitat and reduce illegal logging.

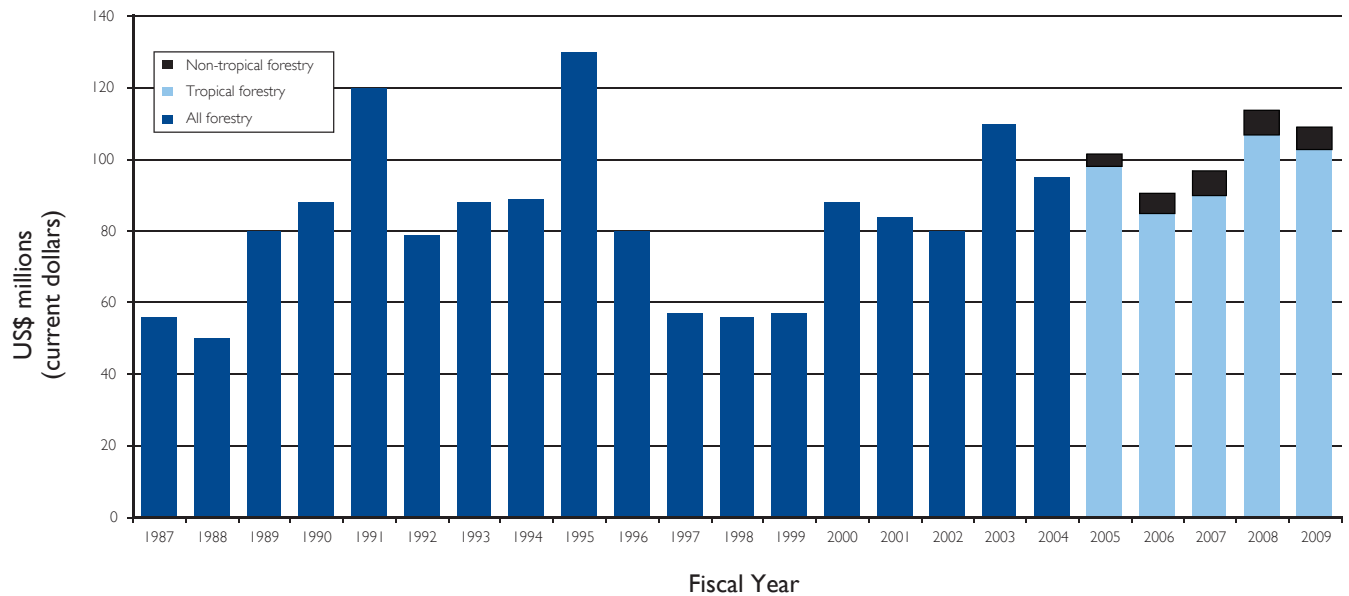
Russia and Lebanon represent the forestry investments for the Bureau for Europe and Eurasia and the Bureau for the Middle East, respectively, at \$500,000 each. Both programs are implemented through USAID's interagency agreement with the USDA Forest Service, whose International Programs division supports capacity building for fire prevention and forest management in two very different environments. The Forest Service also partners with organizations which conserve forest-dependent species in the Russian Far East.

The Bureau for Economic Growth, Agriculture and Trade (EGAT) supported \$8.3 million in forestry work around the world. EGAT's Office of Natural Resources Management administered about 75 percent of these funds, with programs that strengthen forest conservation and governance, and promotion of alliances with the private sector that

**Figure 4. USAID Funding for Forestry by Bureau in FY 2009**



**Figure 5. USAID Funding of Forestry Programs, FY 1987 - 2009\***



\* Figures for tropical and non-tropical forestry funding were disaggregated beginning in 2005.

decrease illegal logging and increase the area of forest under sustainable management. The Forestry Team provided technical assistance to missions on biodiversity and climate change programming and represented the Agency at U.S. and international meetings on the Lacey Act and tropical timber. The remainder of EGAT forestry programming was supported by the Environment and Science Policy Office, which funded applied forestry research by international research institutes. Their Global Climate Change Team participated substantially in climate change treaty negotiations and continued support for USAID's own tool for estimating the carbon sequestered by Agency programs.

USAID hosts the Secretariat of the Tropical Forest Conservation Act (TFCA), which finances debt-for-nature agreements as described at the end of the Central Programs section of this report. TFCA funds are appropriated directly to and managed

by the Department of the Treasury, and therefore are not earmarked or included in Table 2. In FY 2003, TFCA funds were appropriated to USAID before being transferred to Treasury (resulting in a spike in funding for 2003 in Figure 5).

### Budget trends

Forest management and conservation has been an important part of USAID's mandate since at least 1986, when Section 118 of the Foreign Assistance Act was enacted and the value of tropical forests to development was formally recognized. In the late 1980s and early 1990s, USAID investments in forestry activities increased substantially, reflecting increased awareness of the importance of tropical forests to the environment.

In the late 1990s, forestry expenditures declined from an all-time high of \$130 million in 1995 to less than half that, on par with the

level of investment a decade earlier. This was primarily due to USAID budget cuts, but also in part because Agency priorities shifted. From 2000 to 2003, forestry funding averaged about \$85 million per year (adjusting for the one-time appropriation of TFCA funds to USAID described above). From 2004 to 2007, forestry funding hovered around \$100 million.

FY 2008 and 2009 forestry investments of around \$110 million are largely due to an increase in the biodiversity earmark. The relatively high levels of funding observed in the last several years reflect increased USAID support for biodiversity activities in forests, including indigenous forest governance in the Amazon basin, combating illegal logging in Southeast Asia, landscape planning and protected areas in the Congo Basin, sustainable forest certification in Central America, and community forestry in West Africa and parts of Asia.



**Table 3. U.S. Government International Forestry Funding, FY 2009\***

Program or Funding Type	USG Department or Agency	FY 2009 Funding for Forest Management and Conservation (US\$ millions)
Forestry Activities	U.S. Agency for International Development	108.8
Tropical Forest Conservation Act	U.S. Department of Treasury	20.0
Office of International Programs	U.S. Forest Service	8.5
<b>TOTAL</b>		<b>137.3</b>

\*This list is not necessarily comprehensive.

The need for forestry investments will remain high into the future, as forests once valued only for fuel or timber, or seen as inferior to agricultural uses, are increasingly recognized for their full suite of

ecosystem services. For example, the Sustainable Landscapes component of USAID's Global Climate Change Initiative will almost double Agency investment in forest conservation, especially through policies which

recognize and valorize the climate change mitigation service provided by standing forests, and encourage reforestation of degraded lands.



**MOVING FORWARD:** In this area of Lam Dong Province, Vietnam, USAID piloted an approach by which hydroelectric companies and others pay communities to monitor forest use and prevent activities which pollute the river and increase costs. The activity is gaining widespread interest in the region.

PHOTO: RICHARD NYBERG, USAID

# ANNEX I. DEFINITIONS

## Key Issues

The most important definitions related to this report are those which determine if a program or activity meets the USAID definitions for Biodiversity or Tropical Forests, according to Agency Operational Plan and Performance Reporting Guidance:

### Biodiversity Key Issue

This Key Issue cuts across Functional Objectives and meets a Congressional Earmark. Activities have biodiversity conservation as an explicit objective in natural and managed terrestrial and aquatic ecosystems. In addition, activities are identified through an analysis of the threats to biodiversity and have associated indicators for biodiversity conservation. Activities may be site-based or they may have a broader scope, such as policy-level initiatives. Any site-based work is implemented in biologically significant areas. *Ex situ* conservation of wild species, and their germplasm, may also be included when explicitly linked to biodiversity conservation.

### Tropical Forests Key Issue\*

This Key Issue provides input to an annual reporting requirement to Congress. Activities aimed at the conservation and sustainable management of forests growing in tropical regions as well as the use of trees in tropical production systems which increase forest cover and improve soil and water functions or other ecosystem services, while contributing to economic growth. Activities include research, analysis, and capacity building to improve planning, protection, and management of natural forests and related benefits including timber; non-timber forest products, wildlife and ecosystems services such as carbon sequestration; rehabilitation of degraded or deforested lands through reforestation or afforestation; establishment of woodlots and agroforestry systems which reduce pressure on forests through alternative livelihoods; and interventions related to processing, trade and markets that have a positive impact on forests. Targeted sites may range from small-scale management units to large scale transboundary watersheds and landscapes.

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\* Non-tropical forestry is described in this report for the countries of Afghanistan, Georgia, Lebanon, Nepal, and Russia. Activities meet the Tropical Forests definition except they do not take place in tropical regions.

## **Glossary of Terms**

### **Adaptive Management**

Adaptive management emphasizes designing, implementing and monitoring project activities in a way that helps people learn more about complex ecological and social systems, which in turn can help them to make better choices and design more effective interventions. Adaptive management provides a framework to experimentally test assumptions, adapt project activities, and learn from project impacts.

### **Agroforestry**

Forestry that combines agriculture and forestry technologies to create more integrated, diverse, productive, profitable, healthy, and sustainable land use systems.

### **Aquaculture**

The cultivation of aquatic plants or marine or freshwater food fish or shellfish, such as oysters, clams, salmon, and trout, under controlled conditions.

### **Biodiversity**

Short for "biological diversity," it is the variety and variability of life, including the diversity of genes within species, the diversity of species, the diversity of communities and ecosystems, and the diversity of ecological processes.

### **Buffer zone**

An area adjacent to a protected area on which land use is partially restricted. This gives an added layer of protection to the protected area while providing benefits to neighboring rural communities.

### **Carbon sink**

An area that absorbs more carbon than it releases. Carbon sinks can be found in forests, soils, and the oceans. Carbon sinks help regulate climate by reducing the release of CO<sub>2</sub>, a potent greenhouse gas, into the atmosphere. The process or service of absorbing carbon is known as carbon sequestration.

### **Certification**

An independent, third-party assurance that a forest or forestry/agroforestry operation meets the responsibility standards set by a certification program. Companies apply voluntarily, and the government plays no direct role in the certification process. Timber from forests and forestry operations certified as 'sustainable' can command a higher price in the marketplace. Coffee or chocolate from a certified agroforestry operation can be sold for more money because it meets social (eg. "fair trade" chocolate) and/or environmental (eg. "organic" or "shade grown" coffee) responsibility standards important to consumers.

### **Co-management**

A specific type of community-based natural resource management in which communities or community groups share responsibility for managing a protected area or other clearly designated resources (forest, freshwater or marine fishery, etc.) with a local or national government entity.

### **Community-based natural resource management**

A management and governance structure in which the communities that use or benefit from a resource are directly involved in its management. CBNRM activities may include sustainable resource exploitation, support for small enterprises which rely on the resource (eg. tourism or crafts), enforcement, and benefits sharing.

**Ecological Corridor**

Corridors are linear landscape elements that may function as habitat, dispersal/movement conduits, or barriers for various organisms and other non-living landscape elements (e.g., nutrients, water, etc.).

**Ecosystem**

A dynamic system of interactions among all of the species inhabiting an area and the non-living, physical environment. Ecosystems vary spatially and change with time, and no ecosystem is closed with respect to exchanges of organisms, matter, and energy. Priority areas or sites for conservation exist within ecosystems.

**Ecotourism**

Responsible travel to natural areas that conserves the environment and improves the well-being of local people.

**Endemic species**

A species that is native to only one geographic area of the world.

**Environmental service (Ecosystem Service)**

An ecological process from which humans benefit. For instance, forests provide several key environmental services such as providing clean water and regulating climate. Financial incentives to conserve the natural resource base required by ecological processes are collectively known as Payments for Ecosystem Services or Payments for Environmental Services (PES).

**Forest concession**

The award of forest harvesting rights to individuals, private companies and/or communities. In practice, the geographic area in which forest exploitation rights are granted to a concessionaire for a certain period of time.

**Land tenure and property rights**

Land tenure is historically the right to hold and use land on behalf of the State (or the Crown), but today it effectively means ownership and is frequently preceded by the word secure. Secure land tenure is ownership with formal title, and protection from taking by the State or other entity without due process and just compensation. Property rights in the natural resources context are assurances that an owner can use or transfer use of trees, fish, wildlife, water or other resources as they see fit, within the bounds of the law and without causing undue hardship on others.

**Landscape (Ecoregion)**

A relatively large unit of land or water, sometimes known as an ecoregion, that contains a distinct assemblage of natural communities sharing a majority of species, dynamics and environmental conditions. Landscapes may also be defined by a set of common threats or opportunities, the ranges of particular focus species, or other factors, but generally are not limited by political or protected area boundaries.

**Landscape-scale conservation**

A conservation approach in which activities are planned and managed for an entire ecosystem, watershed or other natural unit based on biodiversity priorities and ecological, social and political factors. Landscape-scale conservation emphasizes threat assessment and planning across many development sectors.

**Microenterprise**

A small-scale business, often owner-operated with few employees.

## **Nature, Wealth and Power**

An approach or framework for achieving successful natural resource management, developed over many years by USAID and partners and formally articulated in a report in 2002. The “Nature, Wealth and Power” approach involves an explicit consideration of the environment, economic flows and governance structures when planning or assessing a natural resource management program.

## **Non-timber forest product**

Any organic material other than timber that is extracted from forests for human use.

## **Protected area**

An area of land and/or sea dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and that is managed through legal or other effective means (IUCN World Commission on Protected Areas).

## **Reduced Impact Logging**

A method of harvesting trees with minimal residual damage and degradation of a forest site, which is achieved through the careful planning and design of the pre-harvest, harvest, and post-harvest stages of timber production.

## **Slash and burn agriculture**

A farming practice by which forests or woodlands are cut or burned to clear land for agriculture and add nutrient-rich ash to soil. This practice is also known as shifting cultivation, because poor tropical soil farmed in this way has only a few years of productivity before farmers must move on to other plots of land.

## **Sustainable development**

Development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development). Sustainable development activities are carried out such that natural resources are not depleted and therefore are available for future use.

## **Sustainable forest management**

Management regimes applied to forestland that maintain the productive and renewal capacities as well as the genetic, species, and ecological diversity of forest ecosystems (USDA Forest Service).

## **Watershed (Basin, Catchment)**

All these terms describe the land area from which surface water runoff drains into a stream, channel, lake, reservoir, or other body of water. The terms are sometimes used interchangeably, as they all refer to the surface hydrologic system. However, ‘basin’ generally refers to a much larger geographic area than watershed, usually the drainage surface of a major river or lake system. While ‘watershed’ is used in some places to describe entire river basins, it is most often used to describe smaller sub-basins or micro-basins draining to secondary or tertiary streams or tributaries. The term ‘watershed management’ also often has a connotation of traditional soil and water conservation activities in some regions (as opposed to the more comprehensive IWRM). Catchment is a term in more common usage in Africa, Australia, and Europe, and can describe drainage basins or watersheds of many different sizes.



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