pulse

the heart of conservation
2011 / Volume 2 / Issue 1

A Future for Borneo & Sumatra

Creating Hope for an Imperiled Region

BORNEO'S FIERY APE
Helping communities protect orangutans

GLOBAL ACTION
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From the President

Hoping Against Hope

Some conservation challenges are so tough they seem to *dare us to find answers.*

In his epic poem *The Divine Comedy,* Italian writer Dante Alighieri described his journey through the nine circles of Hell, the gate to which was inscribed: Abandon All Hope, Ye Who Enter Here. Some might suggest he was describing Borneo and Sumatra. Of all the places WWF works, the rate of destruction on these two islands defies the imagination. Only 50 years ago the forests of Sumatra were as luscious and intact as the forests of Guyana or Bhutan. Today, they hang on in ever-dwindling fragments, as the profitable crop of palm oil continues its march from the coastline in.

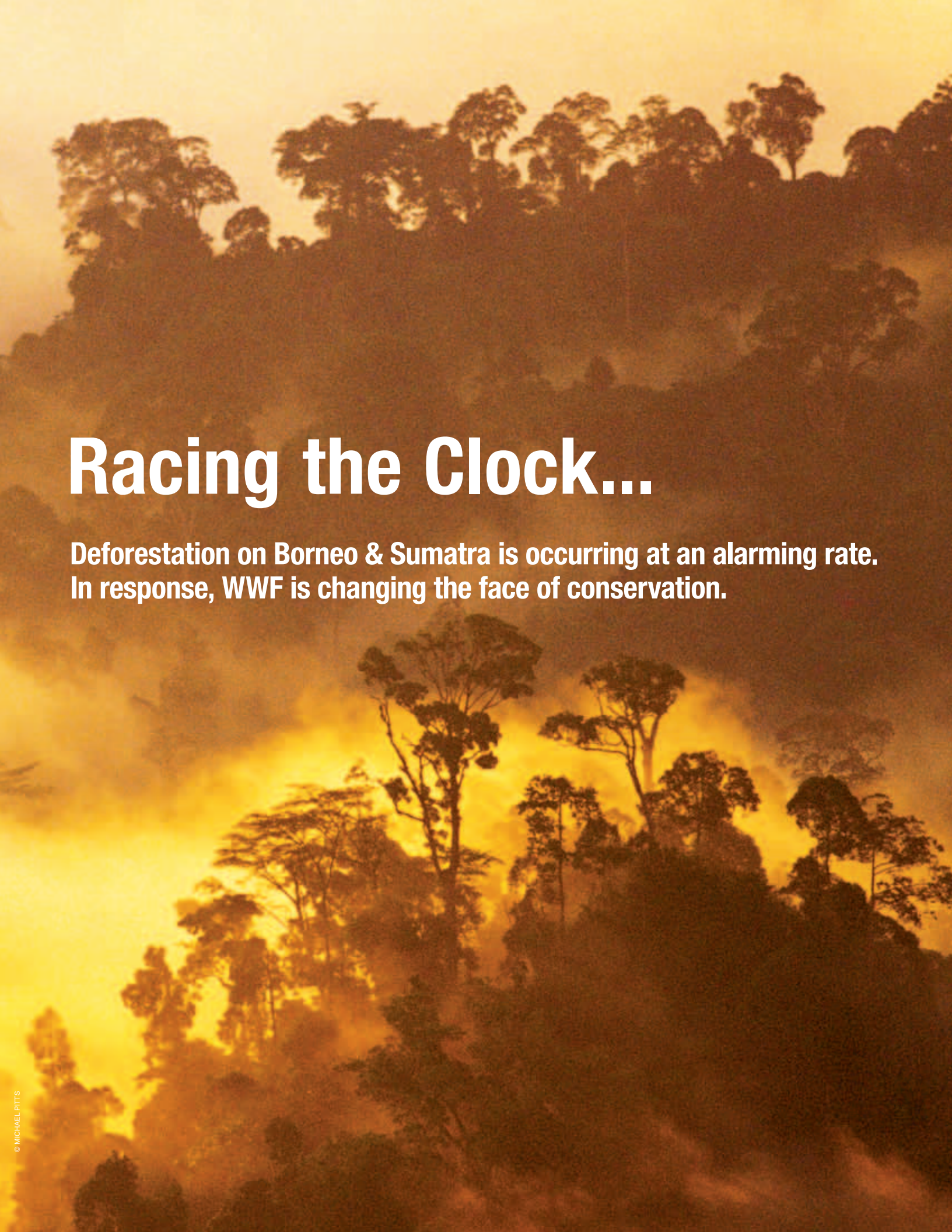
Last year, I talked to Princeton professors David Wilcove and Brendan Fisher (who joins WWF's science program this summer) about framing an analysis comparing the economic and biodiversity tradeoffs of palm oil plantations versus managed lands. The answer lies in managed forests, where some 80 percent of biodiversity remains intact and yet income can be derived from monitored logging. But since palm oil plantations generate $4,000-$12,000 per hectare over a lifetime, while managed forests realize a fraction of that profit, the prize is finding a way to close the gap. The best answer we've come up with is to create a global carbon trading market that values the standing forest. But regardless of the price per ton at which a hectare of forest conserves carbon, odds are it won't be enough to catch up to palm oil in time to make a real difference.

So we're desperate to find leverage in a situation where market forces and the forces of profit are not in our favor. On the margins, we're working to move production to already-degraded land. We're working to pull together project-level financing for REDD projects. And we're working with the Consumer Goods Forum – comprising the world's 500 largest consumer goods companies – to achieve zero net deforestation in their supply chains by 2020.

On a purely practical level, it's hard to deny the desire to make money from palm oil. It might be the perfect crop – the oil is clear and combines well with other products, so it's embedded in almost everything we consume. Perfect, except it is the leading cause of destruction of the richest rain forest on Earth.

We won't give up on what may be the greatest challenge we face: devising a solution equal to the weight of humanity's pressure on this rich place. Dante survived his descent and emerged from the other side. We'll need all our ingenuity and persistence to help Borneo and Sumatra's rain forests to do the same.

Carter S. Roberts
President & CEO



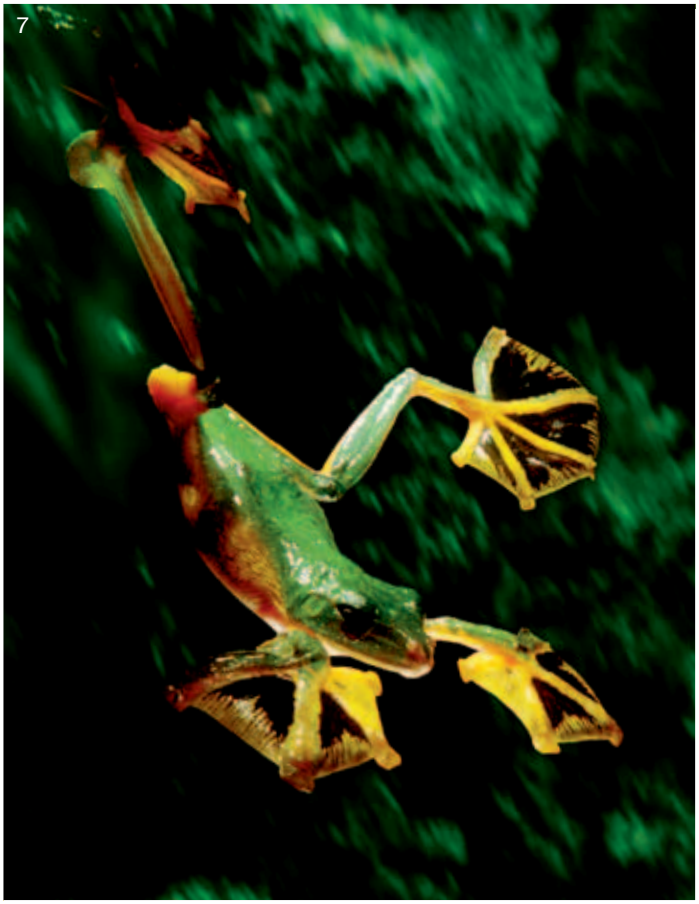
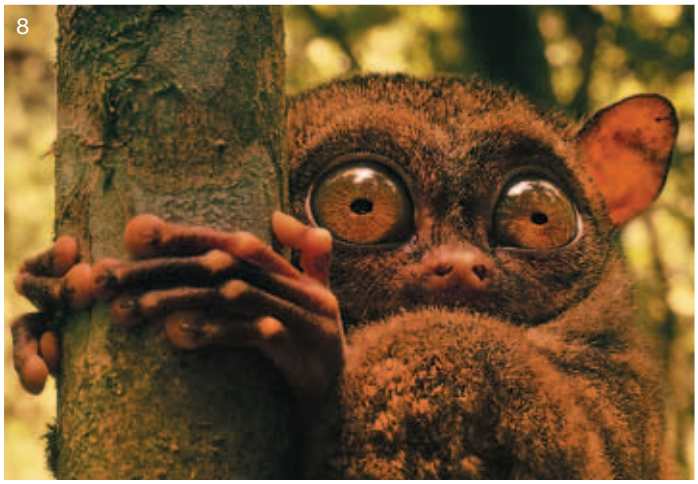
Racing the Clock...

Deforestation on Borneo & Sumatra is occurring at an alarming rate. In response, WWF is changing the face of conservation.







Breathtaking Biodiversity **1. Proboscis monkey 2. Red-faced skimmer 3. Sumatran tiger 4. Rhinoceros hornbill 5. Sumatran rhinoceros 6. *Rafflesia keithii*, the world's largest flower 7. Wallace's gliding frog 8. Horsfield's tarsier**

Dave McLaughlin
Vice President
Agriculture, Markets, WWF

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Forest & Climate Initiative,
Network Initiative, WWF

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Asia-Pacific Islands and
Oceans Division, Field
Programs, WWF

...to Save Borneo & Sumatra

Borneo and Sumatra are two of the most biodiverse places on Earth, with thousands of plant and animal species, many found only on these islands. But they face serious threats from rampant deforestation, which could lead to adverse consequences globally. WWF is working diligently to stave off these threats while there's still time.

BRUCE CABARLE: Why are Borneo and Sumatra such unique places? Well, during the last Ice Age, life had to retreat to certain refugee camps around the globe. Borneo and Sumatra were two of those camps. Then when the ice receded, life spread out from these epicenters. As a result, we find greater quantities and greater diversity of life here than in other parts of the world. In fact, our field surveys show that Sumatra contains the highest concentration of plant species ever recorded in a single place.

KATE NEWMAN: There was a moment in time when the islands were one mass. But they separated a long time ago, and now they are like fraternal twins. That is, you have species on the two islands that are similar, but not exactly alike, like the Bornean orangutan and the Sumatran orangutan, or the Sumatran elephant and the Bornean pygmy elephant.

BRUCE: And the differences in the physical geography of the islands contribute to us having different conservation strategies on each. Historically, both islands were predominantly covered by forest, but today the island of Sumatra has largely been deforested, while the island of Borneo has not.

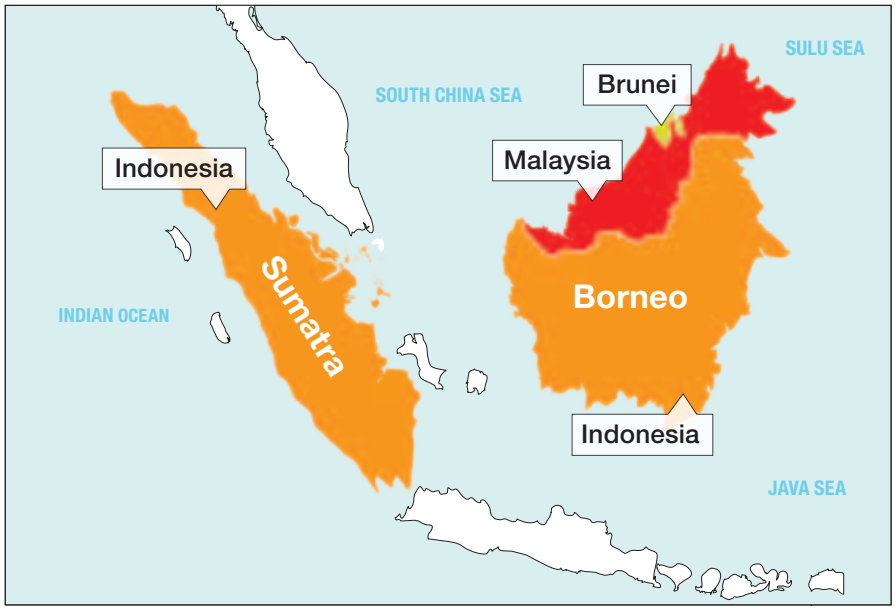
So in terms of our conservation strategy, in Sumatra we're at the last line of defense. Any further loss of forest will push things past the point of no return. But in Borneo, where the majority of the highlands still have intact forest, we have the opportunity to do forward-looking conservation planning before the wave of agricultural conversion sweeps over the island.

KATE: And we've had some real success doing that. For example, a large block of forest in the highlands of Borneo became the target of our Heart of Borneo program starting about six years ago. The forest block stretched across the national boundaries of Indonesia, Malaysia and Brunei and was not yet degraded by commercial use, but there was a proposal to create a palm plantation that would reach across the island in a big strip, fragmenting this relatively pristine forest.

To combat this threat, we examined the feasibility of whether you could even grow palm on top of all those mountains, and found that you could not. So we pointed this out to the three governments. Because of this and other mounting threats, they took the initiative to stop the clearing, and in 2006 launched their joint Heart of Borneo forest conservation initiative.

DAVE MCLAUGHLIN: Back in Sumatra it is really challenging because the island has lost half of its forest since 1985.

Racing the Clock to Save Borneo and Sumatra



Fraternal Twins **Borneo and Sumatra are both rich in biodiversity and have many similarities in both species and culture. However, there are also significant differences, not the least of which is governance.**

And almost all of that, something like 85 percent, was in the lowlands, which is prime habitat for tigers, elephants, orangutans and everything else.

Even national parks haven't been immune. Thirty-four percent of Tesso Nilo park has been overrun by palm oil and other crops. This gives you a sense of the law enforcement issue, when even national parks aren't safe. You've got enormous pressures on these prime habitats from economic drivers, and inadequate governance and law enforcement, and it's really wreaking havoc on the place.

BRUCE: Yes, the challenge in Indonesia on the governance front is that you have a history of totalitarian control, very centralized. That was all done away with when the Suharto regime was toppled, and a wave of democracy came in.

As a result, they went from a single layer of government to three layers of government, all trying to figure out who's got the upper hand. The authority oscillates between local control, provincial or state-level control, and national or federal-level control. This requires us to work with all levels of jurisdiction and makes conservation planning very, very challenging.

KATE: Meanwhile, communities know that they're going to both gain and lose from yielding forest land to large-scale agricultural commodities, but they don't have the capacity to assess the long-term implications of expansion. They seldom have the means to negotiate with these large companies or to influence a better vision for their region.

We need to help enable local communities to make decisions for their own future – decisions which at times will include fighting the temptation of receiving large, near-term payoffs for clearing their forests to grow products like palm oil. We need to help them look beyond today's profits to what they'll be losing: the long-term benefits those forests provide.

BRUCE: Palm oil is so profitable because it's not just used to cook with in developing countries, it's ubiquitous. It's in most of the products that you would find not only in your kitchen, but also in your …

DAVE: …cosmetics, even in your ice cream.

BRUCE: … and in your bathroom. What's more, palm is a fantastic biodiesel source.

DAVE: Most of this has been driven by economic development in China and India that has really pushed the increase in global demand for edible oils. Right now, India is the largest buyer of palm oil in the world, and it gets about 80 percent of its palm oil straight from Indonesia, the world's largest palm oil producer.

BRUCE: We see the same thing play out with regards to paper, and the pulp that is made to produce paper. Indonesia is the world's lowest-cost producer of pulp.

Here's the problem: In large part, the single largest cost factor in producing pulp is the cost of the wood fiber. If you can get that for free because the government grants you a concession to cut down trees for the development of palm oil, you are at a tremendous advantage.

In Sumatra, over the last 15 years we've seen the construction of over 20 pulp paper mills. Now, if you add up the installed capacity of those mills, there is not enough forest on that island to meet that demand. The problem is, no one ever sits down to do the cumulative arithmetic before the mills are approved and built. Borneo is next.

KATE: I want to point out here that palm oil is actually not all bad. It provides a really good opportunity for poor people to have a stable income in a country that is not bounding towards a large middle class at this point.

DAVE: Right, so part of the solution is to look at intensification – in other words, getting more palm oil per hectare so they can make the most

efficient use of their resources. There are palm oil varieties that yield 11 tons of oil per hectare versus the Indonesian average of four.

They also need to look at using degraded lands. All of that deforestation has created massive amounts of degraded lands that are perfectly suitable for planting. They can get higher yields using those, rather than taking out national parks and areas that have incredibly high value from a conservation standpoint.

BRUCE: The other half of the solution is finding value in keeping the standing forest standing. In the age of climate change, we've found that forests are really important in terms of harboring carbon that otherwise would be released into the atmosphere.

Now we can put a value on that carbon. We can calculate how much carbon is coming from the clearing and burning of forests, and how much it would be worth to stop doing that. Which leads us to REDD – Reducing Emissions from Deforestation and forest Degradation – which pays people to stop taking down trees.

So, for example, in the case of Indonesia, we have an agreement where the government of Norway has offered to pay the government of Indonesia a billion U.S. dollars over the next decade, if they can reduce their deforestation rate. To put that in context, the palm oil industry in Indonesia is probably worth about 21 billion dollars a year.

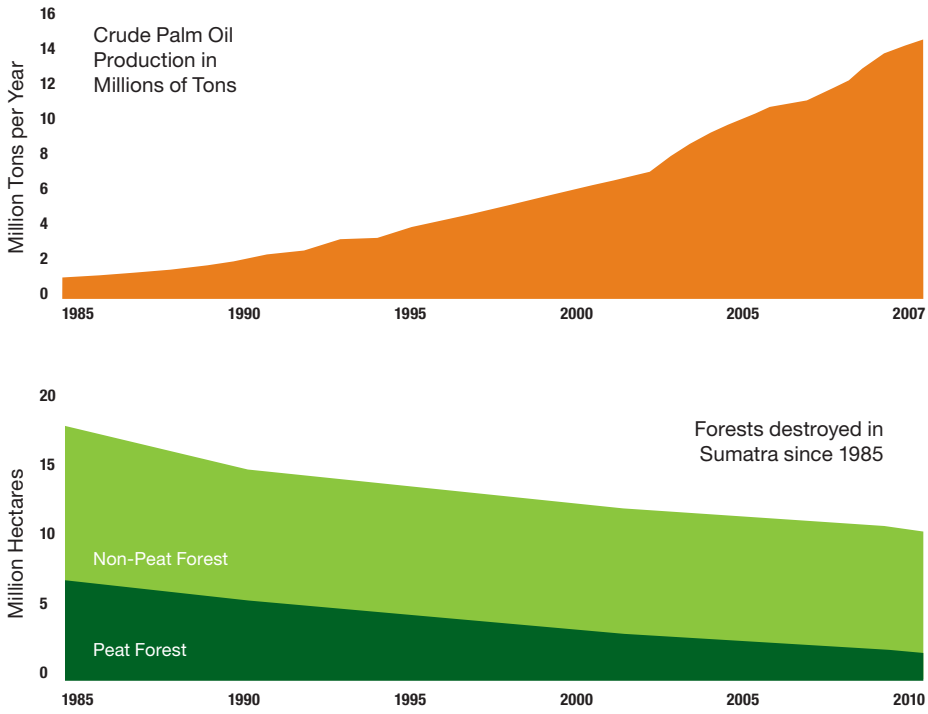
You have to realize that up until this point in time standing forests haven't been worth anything. So we have gone from zero value to a value of $1 billion over a decade, which is a start. To do this on a global basis, we would probably need about $20 billion a year to reduce the global deforestation rate by just 25 percent.

KATE: That's a major new advance – that the world will start paying.

BRUCE: There are now 44 countries in the negotiations who qualify as potential REDD host countries. We have pledges from rich countries of $4.5 billion between now and 2012 to help poor countries put strategies in place to keep tropical forests alive. So far Brazil, Indonesia, Guyana and Tanzania have signed deals with Norway to the tune of $2.5 billion.

Peat = Super Carbon **These burned-down peat swamps in Sebangau National Park on Borneo are a symbol of Indonesia's high carbon emissions. Depending on whose data you consider, Indonesia is either third or fourth in the world for total carbon emissions, exceeded only by China and the U.S. Carbon released as peat forests are razed accounts for more than half of these emissions, and is the reason that Indonesia's carbon emissions are an order of magnitude greater than those of Brazil, a country with a similar amount of tropical deforestation but with very little peat. To its credit, Indonesia has announced its intention to reduce its carbon emissions by at least 26 percent, which would require a slowing of deforestation.**

Racing the Clock to Save Borneo and Sumatra



Palm Oil: A Leading Cause of Deforestation **Palm oil was first used as a cooking oil in West Africa. By the late 1800s, British traders had discovered that palm oil also had value as an industrial lubricant for machinery. Since then it has become a ubiquitous commodity, and today can be found in products ranging from cosmetics to biodiesel to processed foods. Seeing opportunity for economic growth, Indonesia has become the world's largest producer of palm oil, followed by Malaysia. Unfortunately, deforestation has been occurring at an alarming rate to meet the growing global demand.**

DAVE: To put all this in perspective, if you look at global deforestation rates and the emissions associated with deforestation, Indonesia and Brazil account for 50 percent of global deforestation.

But then you take a look at the drivers of that deforestation, and it really comes down to essentially four commodities. In Brazil, it's beef and soy. In Indonesia, it's palm oil and pulp and paper. So when you think about the implications on a global basis, the production of four commodities in just two countries accounts for 50 percent of global deforestation. It's just so much more manageable when you think about it in those terms.

KATE: One of the exciting developments in this past year is that President Yudhoyono made a very public commitment to reduce emissions from Indonesia by 26 percent. That would have to come largely from reducing deforestation. And we have this window of time while Yudhoyono is still in office for WWF to help set up an ideal policy environment to make sure this commitment endures.

DAVE: WWF is also actively involved in something called the Roundtable for Sustainable Palm Oil. In its first two years, the Roundtable managed to get certification of 6.4 percent of global palm oil production within Indonesia, Malaysia, and Papua New Guinea, the primary palm oil producing areas.

In addition to that, WWF is working with major retailers, such as Kraft, General Mills and Wal-Mart, getting them to commit to purchasing sustainable palm oil. Wal-Mart recently announced that by 2015 they will be 100 percent sourcing sustainable palm oil and will be driving that goal with their suppliers as well.

BRUCE: We also have the Global Forest & Trade Network, a program that looks at how timber producers can improve the environment and the social practices of their operations to meet international standards and earn recognition of sustainable practices through independent certification. The certificate generates a label that goes onto the product. Each label has a number on it, which they call a chain-of-custody number. And that number allows you to trace that product all the way back to the forest from whence it came and to know that forest is well-managed.

In the case of Indonesia, we have about 25 different businesses that we are working with, and we link them up with buyers of sustainable products here in the U.S. as well as in Europe. It's critical that we keep building these linkages, because so much timber comes out of this region.

Yet another obstacle to reducing deforestation in Indonesia is that many of the indigenous peoples are not formally recognized as rightful owners of the forests they have inhabited for centuries. The forests are largely looked upon through legal eyes as being uninhabited, and therefore under the jurisdiction of the government, which can assign the rights to some type of economic interest. Historically, that is a big source of conflict.

WWF helps local communities meet government requirements for demonstrating management rights over the forests. For programs like the Global Forest & Trade Network, we'll help them get their production system certified and help them find avenues for marketing their products.

KATE: We've been supporting the development of the Alliance of Indigenous Peoples of the Highlands of Borneo in Malaysia and Indonesia to help empower them to negotiate with governments to maintain their rights. This kind of support is fundamental to our work.

They also need better information about the value that their forest ecosystems hold for them, so that they can actually start to choose – "Well, if we do palm oil, we lose the forest. We may lose water retention values. We may lose the biodiversity that tourists come to see. We may lose the food we depend on from an intact forest system. So maybe we shouldn't do that."

We're working with Stanford University and The Nature Conservancy on a program called InVEST, which gives the community the tools to make such choices.

BRUCE: InVEST allows people to assess the value of their ecosystem services – services that are not usually taken into consideration when land-use decisions are made.

So, for example, if they need to know the value of the water that flows down from the highland forests to feed rice paddies in the lowland, we now have a means of calculating this. The hypothesis is that if we put that information within the grasp of decision makers – both locally and at higher levels – we can begin to generate better decisions.

KATE: Speaking of influencing better decisions, we've made real progress this past year in generating political will favorable to conservation at the highest levels. This stemmed from our efforts to increase awareness of the urgent need to protect the tiger as the icon of biodiversity in Asia. At last year's international Tiger Summit in Russia, the 13 nations in which wild tigers still exist made new commitments to protect them.

Because tigers represent the future of natural habitat in Asia, people are taking their decline very seriously. The land's carbon value, agricultural value, water retention value, food source value, and biodiversity value have all been captured in the story of tigers.

And because these are top predators, when a country ensures that its tigers are protected, it's also going to be saving elephants, orangutans, clouded leopards, and all that vascular plant biodiversity.

BRUCE: And leaving its carbon stores undisturbed.

DAVE: That said, in Bukit Tigapuluh – which is one of the prime tiger habitats in Sumatra – the remaining 50 percent of the area that is not protected has been slated for pulping. So while we talk about important progress, we also know that there are chainsaws and bulldozers in the wings ready to go.

KATE: That race against time isn't slowing down much.

BRUCE: No, but we never give up hope. Here's yet another angle we're looking at: How do we take the tiger image and combine it with carbon value? That's where we came up with the concept of the REDD tiger premium.

We're finding out that the forests that tigers like also happen to harbor a higher amount of carbon, so if there's going to be an emerging market for forest carbon, might we be able to extract a premium from that market for tigers? And if so, can we then funnel that premium back into conserving the tiger habitat? And can we do that by compensating people who take conservation actions that maintain and improve habitat for tigers?

That's the next frontier. That's not the cutting edge. That's the bleeding edge. And that's where we are right now.

Stewards of the Forest **A Kenyah Dayak mother carries her baby in a traditional handmade carrier in Long Alango village. The native farming population of Borneo is usually referred to collectively as Dayak, a generic term that encompasses a broad range of very distinct peoples. It is believed that there are about 4 million Dayak in Borneo, made up of seven main groups. WWF supports the rights of indigenous peoples in Indonesia and Malaysia to manage the forests in which they live, and works with them to ensure that they understand the values the forest ecosystem holds for them.**

From the Field

Protecting Borneo's Fiery Ape

Building a Community of Orangutan Conservationists

By Albertus Tjiu

It's hard to forget the first time you see an orangutan in the wild. Though I'd been working as a botanist in my native Borneo for more than a decade, it wasn't until 2005 that my work brought me face to face with one of these shy, fiery-orange apes in its natural habitat.

Albertus Tjiu
Project Leader
WWF-Indonesia, based in Putussibau

That year, my first orangutan survey brought me directly into contact with the endangered species I was trying to help protect. As a WWF conservationist, I was part of a team conducting a population count in the humid lowlands of Betung Kerihun National Park. As we walked along the grid we'd plotted, searching for orangutan nests in the canopy 60 feet above, I spotted a large male up in the dense green leaves of a *Garcinia* tree, just as he spotted us and dropped to the ground below, cracking a large branch along the way. My fellow surveyors – local villagers, who had been harvesting rattan along the way – dropped the large canes they were carrying and ran. I followed their lead. The orangutan was angry because we had disturbed him as he foraged for the purple, tomato-like *Garcinia* fruit. Once a safe distance away, we stopped and stared at this massive, lone male, as he stared back at us. We faced each other across the rain forest for nearly 20 minutes before he moved on and we could breathe again.

Though they can weigh more than 200 pounds and sport bright orange hair, orangutans are remarkably easy to miss as you're walking through the forest. They hide high in the treetops, where they are safe from clouded leopards, their main predators. So while our job was to survey the forest to determine their numbers, we were actually counting orangutan nests – which look like giant squirrel nests – rather than the great apes themselves.

The work we were doing that day was important for several reasons. First, we were gathering the scientific data needed to back up our advocacy of stronger protections for orangutans. Rapid deforestation during the past several decades, along with poaching, had dramatically reduced their numbers. Where there were once several hundred thousand of these great apes, just 62,500 remain, all in the forests of Borneo and Sumatra, the only two places on Earth where they are known to exist. Because females give birth only once every seven years (and then to just a single offspring), repopulation efforts are slow.

Second, we were training local people to do conservation work themselves. Our survey team included a number of villagers hired both for their intimate knowledge of the forest and for the purpose of engaging local communities in conservation. After all, nobody has more to gain (or to lose) from the program's success than those who live in the region.

In WWF's present-day work in and around Betung Kerihun National Park, the efforts to build the local capacity to practice conservation continue. Our hope is that they can take over this work once our projects come to an end.

These days, my job with WWF has me engaging the communities – comprising roughly 20,000 fishermen and villagers – in and around Danau Sentarum National Park. Although I am also a native of Borneo, I was raised in the Sambas region, which is a two-day journey from the park. Therefore, I have had to take special care to earn the trust of these people, to get to know them slowly, so that I can carry our conservation message to them successfully. It has not always been easy.

One of the toughest jobs has been meeting with poachers who hunt orangutans for food or to sell as pets on the black market, where a baby orangutan trades for as much as $350. The poachers, mostly members of the ancient Dayak tribe once known for headhunting, at first resisted meeting with us altogether. It has taken repeated efforts to convince them to hear what we have to say. We emphasize that poaching is not only illegal, but also harmful to their region – poaching robs them of a species that is unique to this part of the world and is an important player in perpetuating

(PAGE 10) PHOTO COURTESY ALBERTUS TJIU, (PAGE 11) KONRAD WOTHE/MINDEN PICTURES

a diverse food supply (the fruit-eating orangutans disperse fruit seeds throughout the forest as they roam). And we are making progress with them.

Luckily, poaching is frowned upon by many indigenous people, such as the Dayak Iban, who regard these ancient apes as village ancestors. The long-held belief is that killing an orangutan carries a taboo and will bring harm to one's family.

Many indigenous hunters are looking for game like wild boar, and only take orangutans when they can't find enough of their target prey. During workshops and meetings with them, we show them videos of orangutan mothers crying as their babies are taken away, a powerful image that helps to drive home our message that they are harming these animals in more ways than one. Combining this emotional appeal with presentations – and pressure – from law enforcement officials has been an effective strategy in reducing the incidence of poaching.

In the case of those who hunt orangutans for subsistence, we help them to transition to fishing and raising livestock as alternative sources of protein. This reduces their need to hunt for survival and increases their earning power.

One of the more successful ways we have engaged communities is to show them how the orangutan can be an asset to their region through ecotourism. We teach villagers basic English and other skills they need to work as guides or hosts for tourists, who will pay for the experience of staying with a local family in a *rumah panjang*, or longhouse, and for the chance to observe orangutans during the June to July and December to January foraging seasons.

In the hope that teaching about conservation early will instill a lifelong passion for it, we also work with several hundred school children in the region, using games and videos to teach them about the importance of preserving the unique biodiversity of their region.

Over time, we hope that this next generation of people indigenous to the Heart of Borneo will grow up to take pride in conserving their region, and that WWF's presence will no longer be needed.

A member of the grouse family, the greater prairie chicken was once widespread throughout the American prairie. WWF's initiatives to engage private landowners are key to helping recover substantial populations of charismatic birds such as this.

Global Action

We are strategically focusing on conserving critical places and species while also working to reduce humanity's ecological footprint. Here are some highlights of WWF's recent successes made possible by your support.

SPECIES

Changing the Course of Tiger Conservation ▶

The long-anticipated tiger summit held in St. Petersburg, Russia, in November 2010 delivered on its key promises to build political will among tiger-range countries and develop outlines of a sustainable financing structure to save wild tigers. At this historic event – the first global meeting ever convened to save a single species – the 13 tiger-range countries committed to an ambitious Global Tiger Recovery Program with a goal of doubling the number of tigers in the wild by 2022.

More than $300 million in funding pledges from the World Bank, the Global Environment Facility, the Asian Development Bank, the U.S., and Germany were announced, while actor and environmentalist Leonardo DiCaprio gave a $1 million gift to WWF's Save Tigers Now campaign. Individual countries also made bold new pledges in their national tiger conservation plans. With such a strong international framework now in place, WWF will work to ensure that the commitments made at St. Petersburg continue to receive the support they need – locally, nationally, and internationally – to secure a future for wild tigers.

Birds Get Boost on American Prairie ◀

When WWF helped a group of cattle ranchers in the Nebraska Sandhills receive Audubon's Important Bird Area status across their ranchlands, it was a victory for northern grassland birds such as the greater prairie chicken and the sharp-tailed grouse. The 48,000-acre site is the first privately owned site in the state to receive the designation.

Now WWF is working with these third- and fourth-generation "Sandhillers" to develop a plan to improve private land management for both livestock and wildlife. The plan, which will include recommendations for grazing that enhance habitat for grassland birds, will help ranchers modify practices so they contribute to improving wildlife habitat. WWF is also encouraging ecotourism opportunities, such as Sandhills Safaris and bird watching, that capitalize on native wildlife. The goal is to include over 100,000 acres in this collaborative effort. With so much land in private ownership across the Northern Great Plains, engaging landowners is vital to the long-term health of these grasslands.

WWF projected this image of a running tiger in downtown Moscow (pictured) and St. Petersburg during the course of the Global Tiger Forum. No mere stunt, this raised local awareness while reminding range-state leaders of what was at stake.

(PAGE 12) © DAVID TIPLING, (PAGE 13) © WWF RUSSIA / ALEXANDER EVGRAFOV

$1 Million Secured for Wildlife Enforcement ▼

From the Mesoamerican Reef to the Himalayas, poaching and wildlife trafficking threaten flagship species such as marine turtles, tigers, rhinos, and elephants. Wildlife Enforcement Networks have been proven to reduce these illegal activities by strengthening local wildlife law enforcement and improving coordination among government agencies.

WWF and TRAFFIC received a series of grants from the U.S. State Department to establish or reinforce Wildlife Enforcement Networks in South Asia, Southeast Asia, the Andes and Central America. In all, WWF and TRAFFIC secured nearly $1 million for four different networks, leveraged by almost a quarter of a million dollars in matching funding. Each network is in a different stage of development, but all are modeled after the highly successful U.S. government-funded network established in Southeast Asia in 2005.

Protecting Mexico's Hottest Fish

The Pandeño Spring in Julimes, Mexico, flows into the Conchos River in the Chihuahuan Desert. Here, a largely unknown and unprotected fish species – the Julimes pupfish – lives

Julimes pupfish

in the spring's thermal waters, which range from 107° to 114° F.

What began as a small field project has blossomed into a successful example of the blending of science, policy work, and community engagement under an Integrated River Basin Management Program framework. WWF, along with global freshwater conservation partner The Coca-Cola Company, is leading efforts to study and monitor the Julimes pupfish and its freshwater ecosystem, as well as protect the Pandeño Spring with fencing and signage.

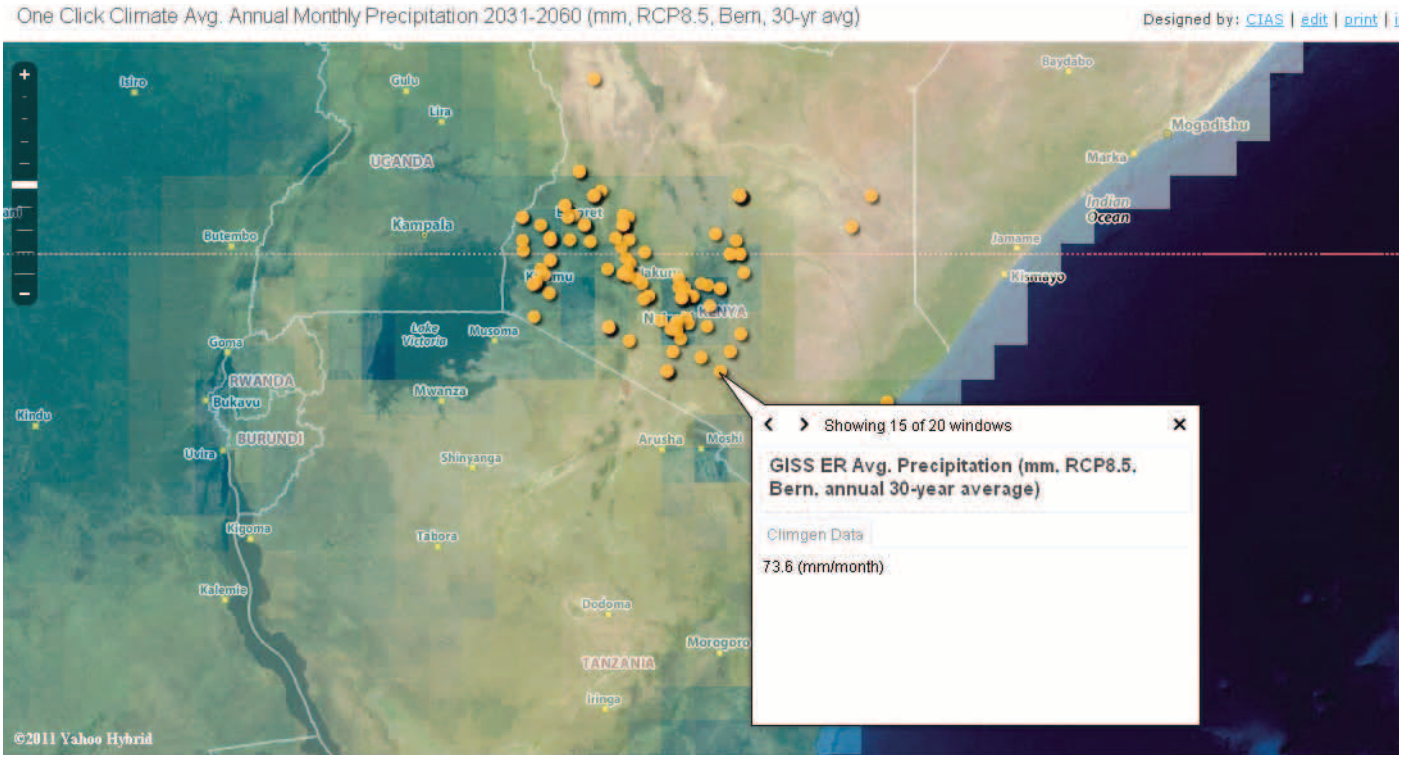
To aid in this endeavor, the team helped establish Amigos del Pandeño, an association of landowners who are committed to preserving the integrity of the spring. With the assistance of WWF and partners, the association was granted legal custody of the federal area surrounding the spring for conservation. This legal status means that nobody can extract water directly from the spring area, and that the flows necessary for the pupfish to thrive will be maintained.

Minimizing Mining Impacts in Africa

Extractive industries such as mining and logging wreak havoc on remote tropical forests in Africa by opening up roads that fragment vital habitat and create easy access points for poachers. Rain forests in Gabon are some of the most intact in the world, and contain vital habitat for elephants, leopards, chimpanzees and gorillas. The integrity of the Gabon forests is particularly threatened by the impending construction of the world's second-largest iron ore mine in the Belinga Hills.

WWF has seized the moment by bringing representatives from two major mining companies together with experts in great ape conservation to discuss the impacts of the mining industry on the environment, and on apes in particular. WWF is working with these stakeholders to look at possibly developing a toolkit to minimize the impacts of mining by testing tools and standards in the field at actual mines. All parties agree that a toolkit would be useful and we are on track to conduct analyses of existing standards and identify appropriate testing sites in early 2011.

Bird markets like this one are typical throughout Indonesia. They appear benign, but many of them also continue to sell endangered species such as orangutans and gibbons as pets.



This Climascope map shows how annual monthly precipitation might change between 2031 and 2060 at a horticulture site in Kenya. Using 18 different climate models, Climascope determined that although the site will probably receive the same or greater precipitation, projected temperature increases may lead to soil moisture deficits which could hurt crops. This predictive tool gives people information that helps them anticipate and adapt to the impacts of climate change.

CLIMATE

Helping People Respond to Climate Change ▲

Changing rainfall patterns, rising temperatures, and other impacts of climate change are expected to bring about more regional food shortages, increased water stress in many areas, greater health threats, and a decline in the productivity of livelihoods based on natural resources in communities around the world. Those who rely directly on natural ecosystems will feel these consequences most acutely.

WWF has joined with the World Conservation Union (IUCN) and CARE International to form ELAN, the Ecosystems and Livelihoods Adaptation Network, to help people adapt to the expected impacts of climate change. Believing that people's prospects for adapting to climate change are inextricably linked to the health of surrounding ecosystems, ELAN is developing two web-based tools to assess impacts and the vulnerability of species and natural systems.

The first is the Wallace Initiative, which brings together experts in climate modeling and biodiversity modeling to project changes in species. This information will guide policy makers and key stakeholders. To date, experts have modeled current and future distributions for 50,000 species and 50 major crops.

The second tool, Climascope, will give internet users anywhere access to state-of-the-art data and maps for climate change projections, thereby providing invaluable information to communities that are creating adaptation plans for the future.

Climate Impacts on Water Security In Nepal

Climate change poses one of the most serious threats to the people, wildlife and natural systems of the Himalayas. As glaciers melt and precipitation patterns change, the region's agriculture and power generation – which are dependent on precipitation, snow melt and water discharged by Himalayan glaciers – are in jeopardy. And rare plants and endangered animals found in Himalayan forests and alpine meadows face an uncertain future because of climate change.

With the Nepali government, WWF launched an Integrated River Basin Management project in the Koshi River basin to help local communities adapt to the impacts of climate change. The project established 30 "water smart" communities that are adopting conservation

WWF has helped install biogas units in Nepali communities to reduce pressures on forests while improving human health. Cow dung is mixed with water in the mixing tank (pictured) before entering the digester tank, which is below the ground. Naturally occurring bacteria act on the mixture in the digester tank to produce methane gas. The gas is then fed through piping into the adjacent house, where it is used as a smokeless cooking fuel. The end product, slurry, makes an excellent fertilizer.

measures such as rainwater harvesting, efficient irrigation systems, and protecting and sustainably managing freshwater sources. These management strategies help conserve precious water resources, ensuring future water security for both people and nature.

Reducing Illegal Logging in the Peruvian Amazon

Worldwide, deforestation accounts for a staggering 15 percent of greenhouse gas emissions. It also contributes to loss of biodiversity and adversely affects many indigenous communities who rely upon the forests in which they dwell. To effectively tackle these challenges, WWF is addressing deforestation around the world, and especially in the Amazon, where illegal logging is a significant threat.

Led by WWF and the European Union, the "Putumayo Tres Fronteras" project has strengthened the control and surveillance of the Gueppi Reserved Zone (GRZ) in the Peruvian Amazon by setting up a control post in the Santa Teresita community. Santa Teresita is a key access point for illegal loggers.

Since the post was established, the reserve staff estimates that illegal logging has been reduced by about 90 percent within the GRZ's almost 1.5 million acres. This partnership has strengthened our relationship with the indigenous people who are now actively participating in reserve management. The project is being implemented under a trinational program to encourage conservation and sustainable development in the Putumayo region of Peru, Colombia and Ecuador.

PEOPLE

Better Health for Humans, Forests in Nepal ◄

WWF's conservation projects are often located in remote areas of the developing world. Here, biodiversity is relatively intact, yet people lack modern health care and their health status is among the poorest in the world. WWF is addressing the problem by partnering with the health sector in multiple countries using a "Population-Health-Environment" approach.

In the Terai Arc in Nepal, we are working to address high rates of malnutrition and respiratory illness while reducing pressures on Terai forests – home to the world's highest concentration of Bengal tigers and endangered rhinos and elephants.

Terai households traditionally collect fuelwood and graze their cattle in the forest. To reduce these pressures on forests, WWF is replacing forest-grazing cattle with stall-fed cattle, which give milk that improves child nutrition. We're also helping families build stoves that use biogas made from cow dung instead of fuelwood taken from the forest. In the last year, the increase in use of these stoves in WWF's project area saved almost 2,000 metric tons of firewood. The smokeless stoves also are linked to reduced rates of respiratory infection among children.

Fuller Fund Helps Advance Marine Research

Through the Kathryn Fuller Fellowship program, WWF is harnessing the most promising research in conservation science, putting it into practice in the field, and fostering the next generation of conservation leaders. Thanks to his Fuller Fellowship, Dr. Octavio Aburto-Oropeza is building the scientific foundation for establishing a marine reserve network in the Gulf of California.

Stretching over 900 miles, the Gulf of California is one of the Western Hemisphere's most biologically rich seas and a vital economic resource for Mexico. Octavio has been studying the gulf for 10 years; now, his Fuller Fellowship is allowing him to examine the effects of different marine management strategies and provide local communities with estimates of the economic benefits the gulf provides.

Says Octavio, "We have to collaborate closely with decision makers to develop the science that can inspire coastal communities to demand – and participate in – the creation and management of marine reserves."

Empowering Girls and Women in Kenya

As heads of households and the primary caretakers of children in traditional, rural societies, women are especially well positioned to change local views of the environment. Through our Girls and Women Program, WWF seeks to increase awareness of environmental issues while giving women a pathway out of poverty through education.

This year, in the Kiunga Marine National Reserve in Kenya, WWF helped send 15 very impoverished, but very motivated, local girls to Lamu Secondary School. The program also supported environmental education programs in six schools through classroom lectures and an environmental club.

Historically, girls in the traditional societies of the Lamu region receive no education and marry early. Since 2004, the program has worked to shift the local society's view of girls by enhancing their perceived value in the community. And the girls, armed with a new understanding of the environment, are helping to cultivate a new conservation ethic within their communities that we believe will be passed down through the generations.

Cleaning Up the Galápagos ▼

When increased waste and improper waste management practices emerged as a critical threat to the wildlife and marine ecosystems of the Galápagos Islands, WWF and Toyota collaborated with the municipality of Santa Cruz to address the problem. The result? A new and improved waste management and recycling system. Now, recyclables are separated, municipal street cleaning has improved significantly, and environmentally safe disposal and treatment options are in place. With Santa Cruz generating more than 60 percent of overall waste in the Galápagos, these changes will have an immediate and significant impact.

Recognized internationally with an Energy Globe Award in 2010, the project is now a model for the other inhabited islands. Using experiences from Santa Cruz, WWF and Toyota produced a Waste Management Blueprint for the Galápagos Islands. WWF is already coordinating with new funding partners and the city of Isabela Island to replicate the Santa Cruz system.

Last July, the Galápagos Islands were removed from UNESCO's list of World Heritage Sites in Danger. The decision was a recognition from the international community of the government's effort to conserve the islands. WWF worked closely with authorities and stakeholders to address the issues and recommendations made by UNESCO which ultimately led to removal from the list.

As is indicated by the mural in this Puros Village classroom, conserving wildlife has become an embedded value in the many Namibian communities that benefit from the community-based natural resource management programs promoted by WWF and its local partners. The money the communities generate through wildlife tourism helps to fund schools and other critical activities.

Scaling Up Conservation Work in Namibia ▲

In Namibia, WWF has collaborated with a strong network of local partners over many years to assist rural communities in forming communal conservancies. The work has helped promote sustainable resource management and increase income for local people through wildlife tourism and other natural resource use.

This year, we are poised to scale up these efforts dramatically, thanks to winning a nearly $9.1 million contract from the Millennium Challenge Account-Namibia, which provides funding for public investments in education, agriculture and tourism. The contract aims to reduce rural poverty by increasing sustainable tourism in 31 targeted communal conservancies.

Through our historical role in Namibia, WWF has been able to facilitate the formation of a powerful consortium of national partners. The contract will strengthen the institutional, business and natural resource management capacity of the conservancies.

Obtaining such a transformative contract would have been nearly impossible without the strength of WWF's long-term relationships with key partners and government agencies. Thanks to unrestricted support from our donors, WWF was able to facilitate a constellation of key people to focus on conservation results that no one organization could accomplish alone.

MARKETS

Partnering with Corporations to Protect Fisheries

Can changing certain corporate practices achieve real conservation goals? WWF believes it can, which is why we have signed a Memorandum

of Understanding (MOU) with major United States seafood buyers such as Kroger and Sysco, to help them source seafood in a responsible and sustainable manner. A WWF fisheries team will assess their top source species and provide a strategy for next steps.

Our work with these major corporations mirrors our efforts to improve fishery management in places such as the Coral Triangle and the Arctic. In the Coral Triangle, WWF is working with governments and the private sector to develop fishery improvement workplans to enhance the sustainability of the tuna and snapper/grouper fisheries there. And in the Russian Arctic, we are moving fishing companies toward participation in the Marine Stewardship Council (MSC) certification process.

Bringing Sustainable Sumatran Coffee to Market

In the village of Sedayu in Sumatra's Bukit Barisan Selatan National Park, members of a cooperative sort freshly picked green coffee beans and lay them out to dry. Eventually, they will roast and grind the beans, then package them for sale. The cooperative is funded by Kraft to improve coffee production practices in four villages adjacent to the park. With training from WWF in coffee processing and marketing, villagers have improved production on village lands. Today the cooperative processes one ton of coffee beans annually.

As demand for Sumatran coffee grows, farmers are tempted to grow coffee illegally in protected areas that provide habitat for endangered wildlife such as tigers, elephants, orangutans and rhinos. Yet cooperatives like the one in Sedayu point to a model that increases income for local people while ensuring the continued integrity of protected areas. Since the start of the Kraft project, attitudes about illegal encroachment are changing and families have seen an increase in coffee yield and income.

Reducing Pesticide Use to Benefit the Mesoamerican Reef ▼

Pesticide runoff from agriculture poses a serious threat to the health of the Mesoamerican Reef, the Atlantic Ocean's largest coral reef. Working with multiple stakeholders, including global freshwater conservation partner The Coca-Cola Company, WWF is promoting innovation in Honduras and elsewhere to conserve reefs by reducing runoff. The results: improved freshwater quality and reef health.

As part of this work, WWF and the Honduran Agricultural Research Foundation opened a laboratory that will develop biological control agents on a commercial scale. The lab is currently producing a naturally occurring fungus that specifically targets the froghopper fly that attacks sugarcane plants. The fungus will have little downstream impact on the Mesoamerican Reef, but will reduce pesticide use by 30 percent and eliminate the most toxic chemicals used on sugarcane farms.

By changing the way that sugarcane pests are managed in coastal Honduras, WWF and its partners are reducing toxic runoff and improving the health of the Mesoamerican Reef.

(PAGE 18) © FRANS LANTING/FRANS LANTING PHOTOGRAPHY, (PAGE 19) © ROBERTO RINALDI

Focus on Philanthropy

Lifetime Commitment

Marshall Field has always harbored a deep love and concern for nature.

From the childhood days he spent fishing at the edge of a local pond, to the adult years he has spent as an avid fisherman and environmental advocate, conservation has been a central part of Field's life.

"I remember when I was only six, sitting by that pond with my can of worms, just having a great time by myself," he says. "It made sense that I'd grow up to be interested in saving nature."

To say that Field is merely "interested" in nature, though, would be an understatement. For starters, he has been a WWF supporter for nearly 40 of WWF's 50 years. During that time, he has held several different positions on the Board of Directors, and has served as the chair of a range of WWF committees – from marine leadership to endangered species to development, to name just a few. His conservation interests are varied as well: He is particularly passionate about marine issues, but also has supported the Tesso Nilo project in Sumatra, among other WWF efforts.

Perhaps most of all, however, Field is committed to helping WWF achieve our overall mission to protect wildlife and biodiversity around the world – a mission that clearly resonates deeply with him. To that end, he recently agreed to chair WWF's tiger campaign, one of the organization's top priorities.

"I want WWF to be successful because I believe it is one of the most effective environmental organizations working on the ground today," he says.

Field has had the unique advantage of watching WWF's conservation strategies evolve over the years to encompass whole landscapes. He appreciates the scope and scale of our work today, as well as our focus on working with all stakeholders, from governments to local people.

"You can't save the panda if you don't save the forest, and you can't save the forest if you don't work with local communities and governments," he says. "And that is what WWF is doing in places around the world."

While Field himself is fiercely driven to make a difference – he serves on numerous nonprofit boards – he has also encouraged his four children to continue the Field family's well-known tradition of philanthropy. All of them serve on nonprofit boards, and three serve on WWF's National Council.

Those who have worked with Field at WWF call him "engaged and involved at the highest level." His explanation for such dedication is straightforward: "For me it's simple: If we don't protect nature, it won't be there for our children and grandchildren. Nature is a huge part of my life and I feel it's something worth fighting for."

“Borneo and Sumatra host greater quantities and a greater diversity of life than most other parts of the world. In fact, Sumatra contains the highest concentration of plant species ever recorded in a single place.”

Bruce Cabarle
Leader
Forest & Climate Initiative
Network Initiative, WWF

We seek to save a planet, a world of life. Reconciling the needs of human beings and the needs of others that share the Earth, we seek to practice conservation that is humane in the broadest sense. We seek to instill in people everywhere a discriminating, yet unabashed, reverence for nature and to balance that reverence with a profound belief in human possibilities. From the smallest community to the largest multinational organization, we seek to inspire others who can advance the cause of conservation.

We seek to be the voice for those creatures who have no voice. We speak for their future. We seek to apply the wealth of our talents, knowledge, and passion to making the world wealthier in life, in spirit, and in living wonder of nature.

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