



International Model Forest Network News

# Connections

LANDSCAPES PARTNERSHIPS SUSTAINABILITY

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## OUR VISION

To support, through model forests, management of the world's forest resources in a sustainable manner, reflecting environmental and socio-economic issues from the perspective of local needs and global concerns.

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## BIODIVERSITY AND MODEL FORESTS

The United Nations declared 2010 to be the International Year of Biodiversity. Events to celebrate the importance of "life on earth," as biodiversity is often called, are underway all over the world. See: <http://www.cbd.int/2010/welcome> for more information.

The Convention on Biological Diversity is a legally binding international agreement signed by 192 states and the European community. The CBD was originally opened for signature at the Rio Earth Summit in Rio de Janeiro, Brazil in 1992 and entered into force in December 1993. States that have ratified the CBD are required to report on their progress in implementing the various articles of the Convention. The three goals of the CBD are:

1. **The conservation of biological diversity**
2. **The sustainable use of its components**
3. **The fair and equitable sharing of the benefits from the use of genetic resources**

The CBD recommends that parties to the Convention use an "ecosystem approach" to guide their efforts in conserving biodiversity. This approach is described as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way...and that recognizes

that humans, with their cultural diversity, are an integral component of ecosystems" (<http://www.cbd.int/ecosystem>).

Model Forests are an excellent example of collaboratively managed landscapes that incorporate an ecosystem approach. Model Forest stakeholders commit to managing their landscapes sustainably as well as maintaining and/or restoring the ecological integrity of the landscape. This includes building local and national capacities for the sustainable management of natural resources.

In this issue we highlight the efforts and successes of Model Forests across the international network in working together to conserve biodiversity. These activities range from collecting data on plant and animal species and creating partnerships for sustainable forest management, to creating nature conservation areas and protecting watersheds. From projects in Canada that manage and protect habitat areas of the endangered Bay of Fundy Salmon, to rehabilitating watersheds in the Philippines, there are many examples of successful activities contributing to the sustainable use and conservation of biodiversity from Model Forests all over the world!

# BIODIVERSITY RELATED ACTIVITIES IN THE FUNDY MODEL FOREST

Barb Scott, Fundy Model Forest

The potential of forest biomass as a source of renewable energy has resulted in increased demand for this material which can include tops and branches of trees left after timber harvests, poor quality trees, trees removed during land clearing operations, and wood residues produced by sawmills.

On Feb. 24, 2009 Fundy Model Forest hosted a workshop to examine issues related to the sustainable supply of biomass from New Brunswick forests. The workshop provided information, described tools to predict the availability of sustainable supplies of biomass feedstock, and identified gaps in knowledge that need to be investigated. It was discovered that little is known about how biomass harvest will impact biodiversity. As a result, Fundy Model Forest is now conducting a literature search as the first step toward filling this knowledge gap.

This will add to a body of research on biodiversity that has been carried out within the Fundy Model Forest for more than 15 years which has resulted in the development of a set of guidelines for biodiversity, which were later revised and updated by a partner of the Model Forest, the Greater Fundy Ecosystem Research Group.

Four different types of land ownership are represented within the Fundy Model Forest: provincial land (Crown), industrial, small private woodlots and federal lands (Fundy National Park). Fundy National Park is a conservation area and its representatives have long recognized that activities beyond its borders in the watersheds feeding into the park affect its internal conservation efforts. Through the Fundy



© Parks Canada Photo: Peter Townsend

Model Forest, Fundy National Park is able to collaborate with other model forest partners who are conducting activities in those watersheds to develop good stewardship strategies for habitat outside the park as well as inside.

For the past several years, the Fundy Model Forest has co-ordinated the Inner Bay of Fundy (IBoF) Salmon Stewardship Program which complements the recovery efforts

of Fundy National Park and Fort Folly First Nation for this endangered species. The IBoF Salmon Stewardship program brings together industry, other stewardship groups in the area, as well recreation groups, such as ATV users, snowmobilers and hunters, who are active in the watersheds. Through this program water crossings have been examined, photographed and an inventory completed, indicating which need new culverts or other maintenance and the order of priority for those repairs. This information is being relayed to land owners, forestry companies and operators so they can use the information to help prioritize culvert maintenance schedules on their forest roads.

Improving water crossings throughout the watersheds enhances the habitat for the salmon species, aiding its recovery. Education is also a component of this initiative and there have been associated outreach activities to explain the importance of crossing the culverts properly in order to preserve their condition and avoid damaging salmon habitat. These outreach activities help to inform and enlist the co-operation of ATV users, snowmobilers and others in enhancing habitat.

## Join the “Green Wave”

– The IMFN Secretariat would like to encourage all Model Forests and associated community groups and schools to help celebrate the International Year of Biodiversity by participating in tree planting ceremonies around the world on International Biodiversity Day, May 22nd! Schools around the world are also encouraged to participate on Friday, May 21st during school hours. For more information, and to join in the fun see: <http://greenwave.cbd.int/en/home>.



# ENGAGING LANDOWNERS: A KEY TO PROTECTING BIODIVERSITY IN EASTERN ONTARIO MODEL FORESTS

J. Peter Hall

Chair – Forest Science Committee  
Eastern Ontario Model Forest

A prominent value of model forests is that of biological diversity, more commonly referred to as biodiversity. Model forests have as a goal the protection, enhancement and promotion of biodiversity usually measured as the diversity of ecosystems, among species, and the genetic diversity within species.

When it comes to ecosystems we look at the extent of forest area by forest type and by age class or successional stage, the proportion of forest in protected areas and the degree of fragmentation of that forest. In the Eastern Ontario Model Forest (EOMF) we have a densely populated landscape. Only about a third of the area is forested; it is highly fragmented and is over 88% privately owned. This puts a particular burden on the EOMF – how do we protect, enhance and promote biodiversity under these circumstances? To add to the complication, the data, information and public infrastructure needed to address our concerns is largely absent.

The model forest approach was first to survey EOMF landowners to determine their level of interest in biodiversity issues. The outcome of this process was that a surprising number of forest owners realized the value of biodiversity and were looking for ways to protect, enhance and promote biodiversity on their properties. The EOMF developed a publication for landowners called *Biodiversity Indicators for Woodland Owners* which outlined a number of strategies to help woodland owners know if they are doing the right things. Biodiversity species indicators were used as criteria which woodlot owners could measure and monitor; for example rare or uncommon species were monitored by the

presence of bitternut hickory, butternut, walnut and oak. Invasive species were monitored by the presence of European buckthorn, glossy buckthorn, Siberian elm, Norway maple, Manitoba maple, white poplar and garlic mustard. This approach actively engaged forest owners in enhancing biodiversity on their lands and encouraged public support for this important value.

Recently the EOMF has been actively engaged in a number of efforts aimed at encouraging species at risk stewardship under newly-instituted Species at Risk (SAR) legislation in Ontario, which is designed to protect rare and endangered species and in so doing, protect the species' habitats. The EOMF has been highly successful in these SAR stewardship endeavours given its broad reach of partnerships and collaborators in the forest community of eastern Ontario. The EOMF has developed a series of seminars and presentations which have been delivered to several hundreds of landowners, raising their awareness of the legislation and the measures to protect biodiversity.

The EOMF, with funding from the SAR Stewardship Fund, has produced a *Herpetofaunal Atlas* that describes the 35 species of concern in the model forest including seven turtles, nine snakes, one toad, seven salamanders, nine frogs and one lizard. Landowners, citizens and visitors are being asked to submit records of sightings to determine population levels and to track changes. Quantitative knowledge is essential if we are to enhance and maintain the habitats necessary for protection of rare and endangered species.

At the same time the EOMF has developed a model titled *Ecological Land Classification and Species at Risk Habitat Verification: Validating Landscape Based Model for SAR Recovery*. This model, based on field data provides an accurate theoretical model of potential SAR in defined ecosystems, provides crucial information on 'hotspots' of SAR habitats, and uses updated vegetation mapping which is necessary when considering future management and restoration initiatives.

Thus the EOMF has addressed the question of biodiversity through engagement of forest owners and the public with a mixture of surveys, information and engagement. This process, largely successful to date, gives us confidence that we are on the right track in the protection, enhancement and promotion of biodiversity in eastern Ontario.

# PROTECTING BIODIVERSITY IN THE PRINCE ALBERT MODEL FOREST

Mika Carriere, PAMF

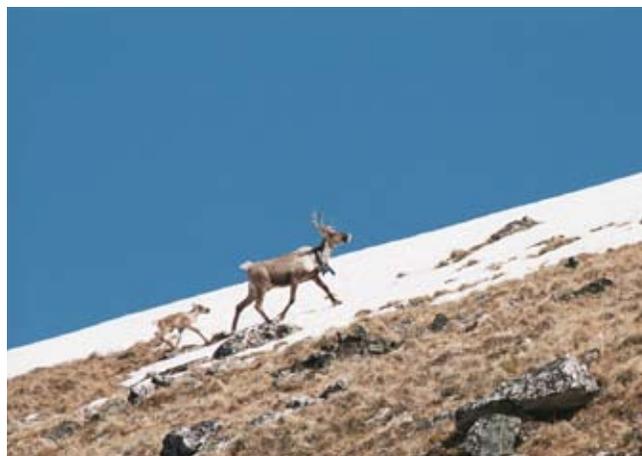


Photo: Dr. Hamilton Greenwood

Canada's western province of Saskatchewan contains two major natural regions: the Canadian Shield in the north and the Interior Plains in the south. The area of the Prince Albert Model Forest lies in the middle of these two regions spanning into aspen parkland and boreal forest.

In the northern part of Saskatchewan the Prince Albert Model Forest has three projects that focus on boreal woodland caribou, listed as a threatened species by the Committee on the Status of Endangered Wildlife in Canada:

1. Dr. Micheline Manseau with the Parks Canada Agency and the University of Manitoba has been working with the partners of the Prince Albert Model Forest, including the Ministry of Environment, and Parks Canada on a boreal woodland caribou habitat connectivity study in the Prince Albert Greater Ecosystem (PAGE) area. Population sizes, movements and habitat preferences of woodland caribou are measured using DNA-based mark and recapture techniques. The data collected will help determine the genetic structure of woodland caribou in the PAGE area and provide a comparison with the provincial and national numbers. Continued monitoring of the caribou also aids in determining distribution, movement, and mortality rates in relation to forestry activities and peat mining exploration north of the Montreal Lake Cree Nation.

2. Researchers in Sweden and Saskatchewan have joined forces to create a circumboreal initiative: to complete a local knowledge gathering project entitled, *Learning From Our Elders: Aboriginal perspectives on climate change and caribou/reindeer habitat in the circumboreal forest*. The goal of the research team is to gather traditional local knowledge in both countries regarding changes in population and movements of reindeer/woodland caribou.

3. Saskatchewan Ministry of Environment, Forest Services, Mistik Management and the Buffalo River Dene Nation are collaborating to determine the approach to land

management necessary to protect the vital habitat needed for woodland caribou recovery in northwestern Saskatchewan. This three year project includes ground surveys, documenting of local traditional knowledge, and mapping the distribution range of the woodland caribou.

South of the Shield, in an area commonly called the "grain belt," are rolling plains and fertile soils that make Saskatchewan one of the world's greatest wheat producers. Once abundant in great numbers, the Plains bison thrived in the southern part of Saskatchewan but in the late 19th century the Plains bison were extirpated from most of North America. In Saskatchewan, since 1969, the southwest corner and surrounding area of the Prince Albert National Park has been home to Canada's only free ranging herd of 450 wild Plains bison.

In June, 2006, the Sturgeon River Plains Bison Stewards (SRPBS) was formed to manage the co-existence between wild Plains bison and local landowners in a way that is beneficial to both. Projects initiated include: fencing off river crossings, controlled grazing of bison to reduce their impact on sensitive areas, and a vegetation monitoring project. The SRPBS are partners of the PAMF; they also work with local farmers, ranchers and representatives from the Prince Albert National Park, Saskatchewan Ministry of Environment, Rural Municipalities and First Nations.

From north to south, the Prince Albert Model Forest is actively engaged in conserving the biodiversity of Saskatchewan. Research efforts and the partnerships built with local forest communities and with international organizations will help future generations understand the habitat requirements needed to maintain healthy woodland caribou populations. SRPBS will contribute to the development of a regional management strategy to enhance stewardship and conservation of nationally significant wild Plains bison population.

# RESTORATION OF DEGRADED AREAS AND OF BIODIVERSITY IN LATIN AMERICAN MODEL FORESTS USING ANALOG FORESTRY

Marie-Eve Landry, IAMFN



Photo: IAMFN

In Latin America, as in other regions of the world, there are large areas of degraded terrain which environmentally, economically and socially adversely affect the neighboring populations. With the goal of reversing this tendency, Analog Forestry has been considered by the Ibero-American Model Forest Network (IAMFN) as a novel option to restore these degraded sites, re-establish their biodiversity, and improve the quality of life of the associated rural communities.

Analog Forestry is a system of restoring degraded sites by introducing trees and plants that are similar to the original species found in that ecosystem - thereby creating an "analog" ecosystem with architectural structures and ecological functions similar to the original climax or sub climax vegetation. Analog Forestry is described as a complex holistic form of agroforestry that seeks to maintain a functioning tree-dominated ecosystem while providing marketable products that can sustain rural communities, both socially and economically (<http://www.analogforestrynetwork.org>).

Since 2008, the Model Forests Atlántica (Honduras), Reventazón (Costa Rica) and the proposed MF of Colinas Bajas (Dominican Republic) have participated in the regional project, "Restoring Biodiversity and Communal Development using Analog Forestry." A three year program, financed by the International Development and Research Center of Canada (IDRC), aids to enhance capacities of local producers, and in establishing demonstration sites in each MF. On a regional level the project supports the creation of tools for monitoring progress, communication, capacity building and knowledge sharing for use at the local level and for the scaling up of the concept. Examples of such tools are the development of a guide to monitoring biodiversity, an online portal for sharing knowledge, an electronic newsletter and a digital interactive course on Analog Forestry (in development).

Since 2008, 20 demonstration sites have been established in participating Model Forests. These demonstration sites have permitted a wide range of people, including farmers, students, college and university professors, members of municipalities, members of botanical gardens and environmental parks, to build capacity, apply the methodology, and observe the evolution of the system. They have identified lessons learned and best practices through this process of observation.

In the medium term, the expansion of the Analog Forestry Project is expected to be extended to other MF sites. There is also interest from the International Analog Forestry Network to construct a regional network of Analog Forestry projects which would encourage the horizontal exchange of information and collaboration between MF and other sites with experience in relation to this theme.

## ***The Model Forest Toolkit***

your guide to developing, organizing and maintaining Model Forest landscapes - is now available in five languages!

***See back page for more information.***

# BIODIVERSITY IN LATIN AMERICAN MODEL FORESTS

## Colombia: Risaralda Model Forest\*

The ecoregion of “Eje Cafetero,” is located in the central region of the northern Andes of Colombia. In this region, where one can find branches of the central and western Andes and the valleys of Cauca and Magdalena, is where the “Sistema Regional de Areas Protegidas del Eje Cafetero” SIRAP-EC (Regional System of Protected Areas of Eje Cafetero) is located. This ecoregion forms part of the Departmental system of protected areas of the Model Forest of Risaralda.

It has been shown, by a geographical analysis performed by SIRAP-EC that 57% of all birds found in Colombia and between 35 and 39% of all amphibians and mammals in the country, are found in this ecoregion. Of the amphibians, 71% are endemic to the ecoregion, whereas only 5% of birds are endemic to the ecoregion and 6% of mammals. Compared to the sub regions, which were also analyzed, the western flank of the western Andes demonstrated high levels of endemic species of birds and amphibians; and the central Andes and the valley of the river Cauca, where butterflies are found in high numbers.

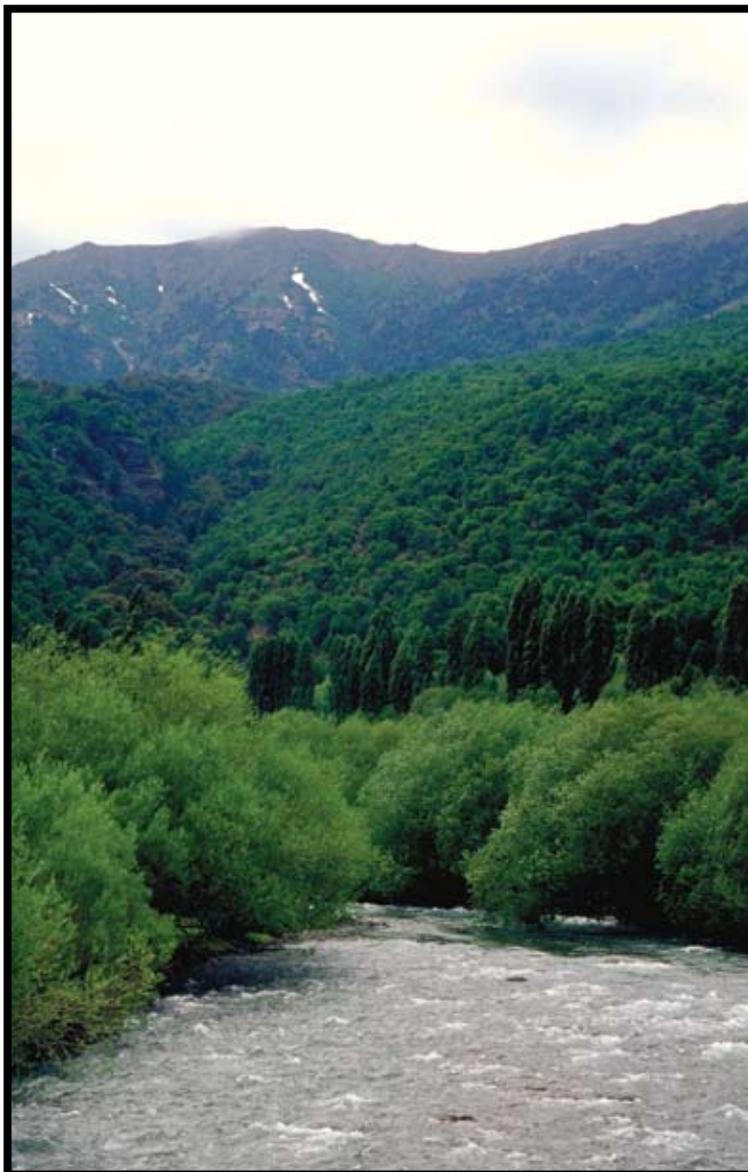


Photo: IMFN

The biodiversity of the ecoregion of Eje Cafetero, therefore, represents a significant part of the total biodiversity of Colombia. While the numbers presented above are not absolute, they are representative of the information currently available and serve as an incentive to further investigate the biodiversity of this important region.

## Chile: Alto Malleco Model Forest\*\*

In the Alto Malleco MF activities are underway to support the production of non-timber forest products as a sustainable way to use the resources of the forest while maintaining the forest ecosystem. Very important to this MF, are the Chilean pines (araucarias) which were classified as a vulnerable species and declared a natural monument in 1976.

## Costa Rica: Reventazón Model Forest\*\*

In Reventazón MF the participatory development of a management system for protected areas, including an educational component on appropriate uses of the benefits derived from the ecosystem of the Reventazón MF, is a priority. Reventazón MF is a site that has a high degree of endemic species including 1500 species of trees as well as a high diversity of aquatic birds.

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\*Excerpt from Rojas D., V. y Osorio, D. 2004. *Análisis de Patrones de Biodiversidad Potencial y Vacíos de Información biológica del SIRAP-EC*. Wildlife Conservation Society-Fundación Ecoandina. Courtesy of Risaralda Model Forest.

\*\*Excerpt from an article by Leonardo Duran, IAMFN



Photo: Xiomara Fernandez

# PRESERVING BIODIVERSITY IN THE BOLIVIAN CHIQUITANO MODEL FOREST

Romer Miserendino, Hermes Justiniano,  
Roberto Vides-Almonacid, Xiomara  
Fernandez and Jenny Flores,  
Chiquitano Model Forest, Bolivia.

The Chiquitano Model Forest, with an area of approximately 20 million hectares, is a unique dry tropical forest with an extraordinarily rich natural diversity. Located in one of the last dry tropical forest regions, not only in Bolivia, but in all of South America, the Chiquitano is valued for both its unique ecology and its historical and cultural importance. The Chiquitano Model Forest is located in a transitional ecoregion between the humid climate of the Amazonian region and the dry climate of the Chaco.

There are several unique features of this region including over 40 endemic plant species, 1610 species of vertebrates, 396 species of fish, 74 species of amphibians, 153 species of reptiles, 787 species of birds and 200 species of mammals. The Model Forest encompasses five protected areas: the departmental reserve of the Tucavaca Valley; the municipal

reserve of San Rafael de Velasco, the national historic park of Santa Cruz La Vieja; the municipal protected area of Laguna Concepcion; and the municipal protected area of Laguna Zapoco.

Conserving the biodiversity and ensuring sustainable development of the region of the Chiquitano MF is approached in a coordinated manner between various stakeholders of the region. Priorities include the creation and management of protected areas, as well as providing indigenous populations of the area with technical support in order to develop and strengthen sustainable development programs. Programs of support to indigenous communities include: support for forest management plans, socio-economic analysis, training in wood carving, strengthening of the Forestry Inter-Communal Committee (COINFO) and its 34 affiliated communities. Programs such as, the “Tierra Comunitaria de Origen Turubo Este” (Original community land of Turubo East), effectively maintain an equilibrium between human necessities and ecological processes encountered in the Model Forest.



Photo: Leif Jougda

# FOREST ECOSYSTEM FRAGMENTATION IN BOREAL FOREST LANDSCAPES IN NORTHWEST SWEDEN

Johan Svensson & Per Sandström, Swedish University of Agricultural  
Sciences, Umeå, Sweden, Department of Forest Resource Management

The ongoing degradation of natural forest landscapes with associated biodiversity loss has stimulated the search for undisturbed or lesser disturbed forest landscapes, to identify biodiversity hotspots for nature conservation and to provide references for studies. Evidence shows that in forest landscapes that become fragmented due to anthropogenic factors, the maintenance of natural ecosystem biodiversity and processes depends on local and landscape continuity.

Historically, the boreal landscape of northern Sweden consisted of a mix of conifer-dominated forests of all ages. Episodes of natural disturbances occurred, with loss of forest cover at various spatial scales and with varying frequency. Proportions of undisturbed forests were left as refugia and re-colonization areas for species and processes that depend on ecosystem continuity.

Vilhelmina Model Forest (VMF) covers about 9 000 km<sup>2</sup> of northwest Swedish boreal forest landscape transitioning into the alpine environments of the Scandinavian Mountain Range. State records show that the first regular clear cuttings took place in 1958. It can be assumed that forests at that time were affected by selective cuttings, but also that forest habitat characteristics and ecosystem processes were maintained to a significant degree. With industrial forestry as the main disturbance agent, there is currently much concern about the decline in the amount of continuous tree cover forests (Ctcf) where natural ecosystem processes and biodiversity levels are maintained.

An ongoing study encompassing about half of the Model Forest area (4160 km<sup>2</sup>) focuses on the decline and fragmentation of the forest landscape. Archives of satellite imagery are used as records of events over time

to eliminate areas not affected by clear cutting. By using a retrospective of 15 Landsat images dating from 1973, we classified areas as Ctcf-sites and estimated the true proportion of forest cover with supplementary kNN-analysis (kNN Sweden) and data from the National Forest Inventory. Through detecting changes we can identify and date each clear cutting event, which allows us to calculate cutting rates at the landscape level, to trace the decline in amount of Ctcf-forests, and to evaluate the spatial distribution, connectivity and fragmentation in the landscape.

Preliminary results indicate that only fragments of the natural forest landscape remain. Using 1958 as the base year with 66% of the total study area as forest land (0% loss) there is a 33% loss of the Ctcf-area in 1973, a 45% loss in 1986, and a 63% loss in 2005. Our conclusions showed that there is an evident decrease in the amount of potential Ctcf-sites, with fragmentation of natural forest habitats and with few larger patches remaining on landscape level, and that there is a geographical correlation between documented biodiversity hotspots and Ctcf-sites. Also as a result of this study, the present timber frontier can be traced closer to the mountainous areas within the study area. This study is representative of the inland area of northern Sweden. We suggest that the methods employed can be used to identify unknown biodiversity hotspots, and that the method can be used to quantify, date and reconstruct changes at the landscape level.

## SOME EXAMPLES OF BIODIVERSITY RELATED ACTIVITIES IN MODEL FORESTS

Model Forest	Biodiversity Related Activity
Formoseño Model Forest, Argentina	Conservation of the Algarrobo Blanco ( <i>Prosopis alba</i> ), one of the most important trees in the region displaying high forage and timber value, and of importance to local culture and indigenous communities. Partnership area established - Chaqueño National Park - some animal species listed in CITES.
Futaleufú Model Forest, Argentina	Secured conservation status for 122,000 ha of land in the Futaleufú River watershed and identification of other high priority conservation areas to be included in future biological corridors. Conservation of Huemul Program ( <i>Hippocamelus bisulcus</i> ). Biodiversity inventories conducted in Los Alerces National Park.
Jujuy Model Forest, Argentina	Project to preserve, understand and develop the Pericos-Mantales watershed by achieving protected status for it, putting in place an environmental monitoring system, and promoting and educating local communities in payment for ecological goods and services.
Chiquitano Model Forest, Bolivia	Development of land-use management plans that incorporate conservation priorities. Surveys of priority conservation zones conducted.
Eastern Ontario Model Forest, Canada	Examining how species at risk modeling can be used as a tool to improve strategic stewardship and recovery efforts. <ul style="list-style-type: none"> <li>- Developed a suite of biodiversity/species at risk presentations as part of a 'Caring for Your Land' workshop series</li> <li>- Initiated an Eastern Ontario Herpetofaunal Atlassing Program to solicit amphibian and reptile sightings in the interest of determining population levels and monitoring changes</li> <li>- Developed a publication entitled 'Enhancing Species at Risk Habitat in Your Eastern Ontario Woodlot'</li> </ul>
Foothills Research Institute, Canada	Grizzly Bear Research and Conservation Program.
Lac-Saint-Jean Model Forest, Canada	Zoning of moose territory to improve moose hunt management, especially in the Ashuapmushuan wildlife reserve. Endangered species inventory conducted and creation of a reference manual to inform and create awareness on endangered species protection.
Manitoba Model Forest, Canada	Study the effects of timber harvesting on woodland caribou distribution and habitat use. Advise forest industry and government on sustainable resource extraction that takes into consideration wildlife management.
Prince Albert Model Forest, Canada	Boreal Woodland caribou habitat connectivity research; Sturgeon River Plains bison stewardship efforts; Traditional ecological knowledge gathering collaborative research with Vilhelmina Model Forest, Sweden on reindeer and boreal woodland caribou in Prince Albert Model Forest, Saskatchewan, Canada
Model Forest of Newfoundland and Labrador, Canada	Evaluating a habitat suitability index model for the boreal owl home range and habitat use in Western Newfoundland.
Araucarias del Alto Malleco Model Forest, Chile	Studies and monitoring of the state of araucaria forests and NFTP, much used by local Pehuenche people.

Lin'an Model Forest, China	To combat forest degradation, non-wood forest products (NWFPs), such as hickory nuts and bamboo products are used as an alternate source of livelihood.
Reventazón Model Forest, Costa Rica	Application of a participatory work strategy for the COBRI SURAC Biological Corridor that connects the Volcan Irazu, Tapanti, Tiribi, Carpintera y Rios Navarro y Sombrero protected areas. Protection of natural resources and environmental services in a second biological corridor.
Sabanas de Manacas Model Forest, Cuba	Conservation of flora and fauna in the Monte Ramona protected area; planting of endemic and endangered species in the model forest area.
Yaque del Norte Model Forest, Dominican Republic	PROCARYN development of management plans for five protected areas in the Yaque del Norte watershed region. Establishment of biosphere reserve in process, and 3000 ha of natural forests managed for biodiversity conservation.
Kodagu Model Forest, India	Promotion of eco-tourism which interprets unique landscape, culture, conservation efforts and economic activities.
Atlántida Model Forest, Honduras	Co-management of protected areas between NGOs, national government, local government and communities.
Yoro Model Forest, Honduras	Work in partnership with the organization Amigos de la Montaña de Yoro (AMY) and the national government in the management of the Montaña de Yoro National Park, home to endemic and threatened species.
Ulut Watershed Model Forest, Philippines	Stakeholders collaborate in the protection of one of the most important "eco-regions" of the world (WWF) by rehabilitating degraded watersheds, reforestation, agroforestry and assisted natural regeneration projects. Planted a total of 47,700 assorted fruit trees species for food and 174,800 indigenous forest trees for climate change mitigation.
Tierras Adjuntas Model Forest, Puerto Rico	Preparation of a conservation plan for sensitive areas of the Adjuntas and adjacent municipalities that proposes the establishment of a biological corridor to unite a local community forest with a network of nearby state-owned forests. Butterfly farm to promote conservation and awareness of butterfly diversity.
Urbión Model Forest, Spain	Trees for Biodiversity Program; integrated forest reserves; improved regeneration; mycology.
Bergslagen Model Forest Sweden	Process to protect two forested mountains, Leien and Kulle, through the implementation of landscape-level planning for biodiversity conservation.
Vilhelmina Model Forest, Sweden	Satellite image based change detection to identify undisturbed or lesser disturbed forest landscapes as biodiversity hotspots for nature conservation. Combining indigenous ecological knowledge and remote sensing techniques and into the landscape planning process to maintain biodiversity. Watershed restoration and management to maintain biodiversity.
Kovdozersky Model Forest, Russia	Establish an electronic database to plan reforestation activities in the Model Forest.
Komi Model Forest, Russia	Develop and implement a "method of traffic lights" for estimation, conservation and sustainable use of pristine forests.

# CONSERVING BIODIVERSITY BY SUPPORTING LOCAL INITIATIVES: RAISING GIANT SNAILS IN THE MODEL FORESTS OF CAMEROON

Watteau Bityili, FAGAPE. Courtesy of Patrick Nyemeck, AMFN



Photos: Guillaume Roy, Lac Saint Jean Model Forest, Canada

Heliculture or the “raising of snails” is an activity that contributes to the sustainable management of Cameroonian MF pilot sites. Traditionally giant African snails were abundant in Cameroonian forests. Their consumption was effectively managed by our ancestors who ate only the mature snails and only in certain seasons; as well snails were typically only eaten by the elders of the village. In this way the continuity of the species was guaranteed.

Today these taboos, which protected the snails from over harvesting, have been broken as poverty and the pursuit of income has encouraged the selling of snails in roadside markets, in bars and restaurants. Snails are in demand for their many virtues including a high concentration of the amino acid lysine (which is sold in supplement form across the world for its various health benefits), and a high level of protein.

By-products of snails are also used in the production of animal food, which has further increased the market value of this commodity. Raising snails also helps to promote the proliferation of earth worms, further enriching

the soil and contributing to conservation efforts. Heliculture is a relatively uncomplicated and beneficial economic activity for Model Forest participants, which has the added benefit of encouraging the conservation of biodiversity.

In order to protect giant African snails, the Cameroonian MF pilot sites have instigated a heliculture project in the Campo Ma’an MF. This project helps indigenous populations, both men and women, to learn and improve upon production and marketing methods for this resource. This project not only supplies populations living in poverty with an important food source, but it also provides an income. This in turn helps to reduce poaching in the MF. MF participants, therefore, have the possibility to contribute to the conservation of biodiversity and to teach these skills to their children.

Ongoing research, in the Cameroonian Model Forests is committed to studying the characteristics of giant African snails and to exploring further possibilities to sustainably develop the culture of giant African snails in order to benefit populations of the MF.

# ULOT WATERSHED MODEL FOREST TAKES PART IN THE PHILIPPINE'S UPLAND DEVELOPMENT PROGRAM

Forester Leo M. Poculan, DM, WMF Coordinator, and Purificacion S. Dalooos, UWMF IEC Focal Person



Photo: Brian Bonnell, IMFN

Some stakeholders of the Ulot Watershed Model Forest are participants in the Philippine Government's Upland Development Program (UDP). The UDP is being implemented through the Department of Environment and Natural Resources (DENR), as a contribution to the Philippine Government's Comprehensive Livelihood and Emergency Employment Program in order to address poverty and hunger in the uplands while rehabilitating the degraded watersheds.

The government, through the DENR, is exerting great effort to protect the Samar Island Natural Park because it is the largest remaining lowland tropical rainforest in the country. The park also has the distinction of being one of the 200 "eco-regions" of the world, described by the World Wildlife Fund as "vital in preserving the earth's biodiversity."

The UDP is being implemented in major watershed areas in the country which are sources of irrigation systems, power and municipal water systems or are headwaters of major river systems or river basins. These areas may include highly vulnerable forestlands or mangroves. They also include coastal areas, areas affected by natural calamities, and degraded protected areas.

The Ulot Watershed Model Forest, which is inside the Samar Island Natural Park, was tasked to do upland development activities inside the park. Under the direction of the DENR some individual members of the Ulot MF were able to enter into letters of agreements with the DENR. These letters of

agreement provide financial assistance for the development of a 266 hectare area within the MF and the Park through such activities as reforestation, agroforestry, and assisted natural regeneration approaches. This program started in July 2009 and will end in July 2010.

The Ulot MF, through its individual members, was able to plant in the following areas: Barangay Casandig, Lokilokon, Tinane, San Isidro, all in the municipality of Paranas; Barangay San Rafael, municipality of Hinabangan; and Barangay San Rafael and Binalo-an, municipality of Taft. They have planted a total 47,700 assorted fruit tree species for food and 174,800 indigenous forest trees for climate change mitigation.

This activity will not only ameliorate the living conditions of the MF stakeholders but will also enable them to join in protecting the Samar Island Natural Park where the Model Forest is located. Currently the Park's protected area is still facing the threat of forest degradation due to shifting cultivation, charcoal making, extending settlement and timber poaching activities. The people view the forest as their source for survival.

The government's UDP is also consistent with the Ulot Watershed MF and Samar Island Natural Park's goal of strengthening partnerships with other stakeholders for biodiversity conservation and sustainable forest management in the area.



# KODAGU MODEL FOREST TRUST: PRESERVING BIODIVERSITY IN MF IN INDIA

Kodagu Model Forest Trust

Photo: Brian Bonnell, IMFN

The Kodagu Model Forest is located in India's Western Ghats, which is one of the eight "hottest biodiversity hotspots" in the world. Although 80% of the Model Forest's 4106 square kilometers is forested, the natural resources of this ecologically fragile district are under increasing pressure. High population density, extensive agricultural development and an increase in human-animal conflicts have heightened the need for attention to related impacts on the biodiversity of the region, resulting in the following projects.

Kodagu Model Forest Trust has undertaken two projects recently which impact on local biodiversity. One is an initiative that addresses conflicts between humans and elephants along the fringe areas of Nagarahole National Park and adjoining Reserve Forests, the Karnataka Forest Department and the Kodagu Model Forest Trust. The goal

of the project is to improve the habitat of the elephant while at the same time protecting the interests of the private landholders. Solar fences and elephant proof trenches have been constructed. Kodagu Model Forest Trust is a coordinator of this project which will eventually be handed over to the Green Village Forum, Thithimathi to maintain.

Another project focuses on the health and livelihood of the Yerava Tribes of Kodagu. This project is funded by the Canadian Model Forest Network (CMFN) and aims to understand the culture of the Yerava Tribes through a detailed survey of their health and livelihood practices. The survey was carried out in the village of Mariamma colony near Konankatte in Virajpet Taluk. Various needs of the population were identified including; training in organic farming, supply of start-up small units of poultry and hogs and training of youth in weaving as an alternative livelihood.



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# Model Forest Toolkit Guides



All you need to know to set up, manage and maintain a Model Forest! Now available in **English, French, Spanish, Russian and Arabic.** For online PDF copies, please go to <http://www.imfn.net> and follow the links to *Publications and Resources* and then to *Model Forest Toolkit*

## Volunteer Opportunities in the Tropical Rain Forest of Cameroon, Central Africa!

CUSO-VSO is developing a project, jointly with the Africa Model Forest Network (AMFN) which will see overseas volunteers working with local government and civil society in two Model Forest areas (Campo Ma'an, Dja & Mpomo) in the areas of natural resource management and secure livelihoods strategies.

CUSO-VSO will be looking to recruit a number of organizational development advisors, small business management advisors, natural resources management advisors, local economic development advisors, social workers, among others. Up to ten 2-year volunteer placements, as well as shorter term assignments, are available.

**CUSO-VSO is currently looking for 2 volunteers with experience in organizational development for a May departure date.**

For more information on these placements, please send an email to [questions@cuso-vso.org](mailto:questions@cuso-vso.org) stating interest in Cameroon Model Forests, or call 1-888-434-2876.

For more information on international volunteering with CUSO-VSO, please visit their website at [www.cuso-vso.org](http://www.cuso-vso.org)



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