MAINSTREAMING BIODIVERSITY CONSERVATION IN THE CHOCO-ANDINO MODEL FOREST, ECUADOR

Summary

The Choco-Andino Model Forest is located in one of the most biodiverse and vulnerable ecosystems on the planet; the conservation of natural heritage is a priority. With high levels of fragmentation and degradation Model Forest stakeholders agreed that no single approach or organization can reconcile biodiversity conservation and economic well-being in rural Ecuador on its own. The Model Forest has adopted a mix of approaches to change people's behaviour so that the concepts, principles and techniques that support healthy ecosystems are viewed as an opportunity, and subsequently become part of the daily life of the local population. To that end, stakeholders agreed to pursue three key themes: joint environmental governance, sustainable landscape management, and integrated human development. Under these themes land tenure, sustainable natural resource management/production/use, research, communication and cultural reinforcement are priority areas of work seen as leading to sumac kuasay[1] *of local communities. They directly align with national and international biodiversity goals and commitments.*

1 The Indigenous Worldview of good living **"Sumak Kausay"**. It is a paradigm of the sustainable society based on the balanced and equitable link between economy and nature in a reciprocal relationship between human beings and nature.

Description of the area

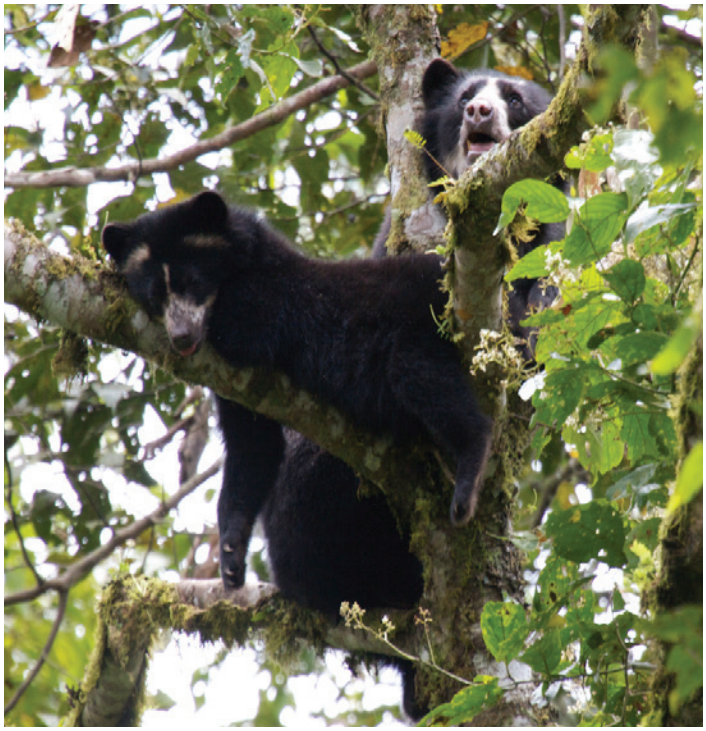
Ecuador is one of the 17 mega diverse countries of the world. Roughly 8% of amphibian species, 5% of reptile species, 8% of mammal species, and 16% of bird species in the world are found in a country which comprises only 0.2% of the world's land area[2]. Ecuador also suffers from high rates of deforestation.

The Choco-Andino Model Forest covers an area of 1,243 km^2 and is located north of the Equator, on the Pacific slope of the Andes Mountains in the province of Pichincha (northwestern end of the Metropolitan District of Quito (MDQ)). It encompasses 6 rural parishes: Calacalí, Nono, Nanegal, Nanegalito, Gualea and Pacto.

High levels of biodiversity and endemism are still found in the area. In fact, the Model Forest is located between two biodiversity hotspots: the Tumbes - Chocó - Magdalena hotspot and the Tropical Andes hotspot. For this reason the area is of global interest with respect to biodiversity conservation.

Topographically, altitude ranges from 500 - 4,700 m.a.s.l., resulting in a landscape characterized by a mosaic of ecosystems and uses. Eleven ecological systems ranging from the high mountain grasslands (Moors) to the Piemontanos rainforests have been identified, with rainforest predominating at about 65,000 hectares. Within this bio diverse territory, more than 60% is managed for conservation or sustainable use, including:

- 3 Areas of Conservation and Sustainable Use - ACSU[3] declared by the MDQ as Natural Area Heritage Reserves of the State[4]
- 8 Protected Forests
- 20 Private and Community Reserves
- The Ecological Corridor of the Andean Bear (*Tremarctos ornatus*)
- 3 important bird conservation areas: the Mindo, located on the western foothills of the Pichincha volcano, the Maquipucuna-Río Guayllabamba and the Mashpi-Pachijal



Principle economic activity includes small- and medium-scale agriculture (sugarcane, fruit, bananas, yucca, coffee, cocoa, palm, corn, beans, potatoes), timber plantations, flower production, and dairy and fish farming. Trade and ecotourism are considered growth categories. The majority of land is privately owned.

Fragmentation and destruction of wildlife habitat due to insufficient enforcement of laws and regulations, irresponsible logging practices, and agricultural expansion[5] are significant concerns. Insecure land tenure and urban expansion are also a key factors driving deforestation and represent major threats to forest conservation and landscape connectivity. Finally, gold and copper mining exploration is also currently underway in priority micro-basins for biodiversity conservation.

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2 **https://biodiversitygroup.org/documenting-biodiversity-ecuador/**

3 The ACSU are one of the management categories of the Metropolitan System of Natural Areas-MSNA of the Municipality of the Metropolitan District of Quito. This category includes sustainable production and ecosystem conservation goals in an integrated management model articulated with local stakeholders.

4 The Geobotanical Pululajua Reserve, unique in its category, was created in 1978 due to its particular geological history and biological wealth, especially its plants. It is a complex of 3,800 has formed by a large central caldera surrounded by domes and hills, which rise inside the crater. It is one of the few craters inhabited in the world (Oleas, 2015).

5 Environment Ministry of Ecuador 2015 - **https://www.cbd.int/doc/world/ec/ec-nr-05-es.pdf**

Objectives

The Choco-Andino Model Forest uses a blend of approaches to natural resource management—landscape, ecosystem, multisectoral and watershed—involving a broad stakeholder group comprised of local landowners, government authorities and decision makers, private industry, and non-governmental organizations (NGOs). The goal is to demonstrate that economic development and environmental protection are not mutually exclusive. It is hoped that this new approach will ensure a sustainable and autonomous supply of environmental goods and services over the long term.

Key themes the Choco-Andino Model Forest seeks to address with respect to the conservation and restoration of forests are organized as follows (the strategies used to support the key themes can be found in Annex A):

a) A **joint environmental governance model** that considers the conservation of natural heritage in its planning and administrative decisions: governments and communities together identify ways to build landscapes and identify livelihood opportunities with greater resilience capacity when faced with the effects of climate change. This involves building capacity for participatory governance and landscape planning, coordinating inter-institutional actions to improve environmental monitoring by national and local authorities, influencing municipal land use incentives, and addressing land ownership issues (i.e. updating the land registry, promoting mechanisms for payment of environmental services), among others.

b) **Sustainable land management:** from an economic perspective, dairy farming occupies the highest percentage of land covering about 27,500 hectares, fragmenting natural forests and impacting biodiversity. Stakeholders in Choco-Andino Model Forest are promoting the development of sustainable land management practices (such as organic agriculture, agroforestry and ecotourism), to reduce environmental impacts and reconcile enhanced production with conservation.

c) **Comprehensive human development:** To encourage a process of change towards sustainable practices the Model Forest seeks to integrate biodiversity into other dimensions of human activity, such as culture, science, education, and technology. A strong communication and outreach platform is integral to this goal.

Progress and benefits to date

While the Choco-Andino Model Forest is relatively new as an organizational platform (accepted as a member into the International Model Forest Network in 2016), it builds on a history of collective action and momentum around landscape level approaches to sustainability. The Model Forest continues this work by advocating that governments and landowners specifically account for biodiversity conservation (i.e. the creation of conservation areas, sustainable practices, the Andean bear corridor (*Tremarctos ornatus*), private conservation areas and protected forests) in their management plans.

Changing land use patterns and practices takes time. While many local economic activities are still carried out using traditional methods, often with negative impacts on biodiversity conservation, the Model Forest is working to shift the production paradigm towards sustainable alternatives. The following has been of benefit:

- Restoration of 16,000 hectares of forest and degraded land
- Training in organic farming, agroforestry, analog forestry, and sustainable livestock production
- Training in sustainable tourism, ornithology tourism
- Producer exchange tours
- Researchers attracted to the area have made important discoveries vis-a-vis the richness and abundance of species within the Model Forest area, including: olingo mist (*Bassaricyon neblina*), the torrenticola frog (*Hyloscirtus torrenticola*), and the electric fish (*Brachyhypopomus occidentalis*)
- Generating local awareness to promote environmental conservation

Policy relevance

Activities in the Model Forest directly and indirectly help deliver on both national and international biodiversity related goals, and assist in mainstreaming biodiversity. The main policies, programs and commitments include:

National

- *National Biodiversity Strategy and Action Plan 2015-2020*: The Model Forest supports implementation of this plan in a number of ways, including: increasing awareness and capacity among local populations; reducing pressures on, and unsustainable use of, biodiversity; incorporating gender considerations into decision making; encouraging sustainable agriculture; undertaking restoration; conserving natural heritage; protecting threatened species, and; creating spaces for regional dialogue, participation and integrated natural resource management[6], among others.
- *National Forest Incentive Program*: Choco-Andino Model Forest participates through the Forest Partner Program (10,000 hectares) and the Forest Restoration Program (4,000 hectares) under restoration.
- *National Plan for 'Good Living'*: This plan is a foundation document for the country and the instrument outlining how public investment should be directed. It includes an environmental component that is concerned with climate change, with guaranteeing a healthy and sustainable environment including fragile ecosystems, and with promoting the participation of stakeholders across sectors and at different scales (national, regional and territorial).

International:

- *Convention on Biological Diversity Aichi Targets*: Choco-Andino Model Forest activities directly contribute to Aichi Targets 3, 4, 5, 7 and 15.
- *Sustainable Development Goals*: activities also contribute to SDGs 8, 13, 15 and 16.
- *Initiative 20x20*: A regional commitment in support of the Bonn Challenge to bring 20 million hectares of degraded and deforested land in Latin America and the Caribbean into restoration by 2020. Ecuador has pledged 500,000 hectares.
- *UNFCCC Paris Agreement*: The forest sector and protected areas are captured in Ecuador's Intended Nationally Determined Contribution (INDC). Reforestation and restoration are key activities listed. Effective water management and sustainable agriculture also feature.

6 Page 52 of Ecuador's 5th National Report the CBD references national biodiversity objectives **https://www.cbd.int/doc/world/ec/ec-nr-05-es.pdf**

Next steps

The first step was, and will continue to be, the strengthening of multistakeholder governance structure as a foundational element in the longevity of the Model Forest. As well, current financial resources for the office of the Choco-Andino Model Forest are provided by each participating parish. With limited resources, stakeholders are seeking to mainstream the Model Forest approach through all levels of government (provincial and municipal) and society as an efficient way to build sustainable natural resource management considerations into land use planning over the long term.

Although there is a system for accountability and monitoring of Model Forest activities and impacts, there is no specific system that measures regional changes at the ecosystem level through environmental variables. The Model Forest has partnered with local NGOs to develop an integrated monitoring system that accounts for the effects of both production and conservation on the ecosystems within its territory. A monitoring system for plant biodiversity and forest productivity at different altitude levels has been created, and the installation of a water quality and quantity monitoring system for the watershed is planned.

Additional planned activities include:

- Restoring 5000 hectares of fragile ecosystems (mainly cloud and rain forest)
- Strengthening and integrating agricultural and non-timber forest product value chains
- Preventing agricultural and livestock activities in unsuitable areas
- Carrying out studies that demonstrate the relationship between agroforestry, carbon and biodiversity practices and disseminate results to stakeholders
- Better engaging women and youth to build future capacity for sustainable landscape management
- Conducting an analysis of the landscape and connectivity of forests to prioritize ecological restoration in the territory
- Monitoring of restoration areas and generation of baselines and technical information, and publication of a protocol to monitor ecological restoration areas in the Model Forest
- Realization of the *First Choco-Andino Regional Contest on Methods of Production and Sustainable Living*, a challenge to increase the value, dissemination and use of sustainable production and management practices to conserve of the cultural and natural heritage of Choco-Andino

Conclusion

The Choco-Andino Model Forest is unique in the country. It builds on and supports an effort already underway in the territory and is considered a platform that plays an important role in the promotion and validation of alternative land management approaches that are generating sustainable livelihoods and contributing to the conservation of biodiversity.

Ecosystem health and recovery depends on decision makers and natural resource users who, in one way or another, affect long term sustainability of an area. Promoting a bio-centric approach and encouraging a change in production methods has helped initiate change in landowner perspectives regarding the importance of forests and the environmental services they provide. These efforts are helping to mainstream biodiversity considerations at the local level while also supporting national and international objectives.

Annex

Key themes to promote biodiversity conservation and the strategies used to achieve it (as related to Objectives).

Key themes	*Strategy examples*
Joint environmental Governance	• Strengthen the internal governance model of the MF by contracting a technical manager. • Consolidate the dialogue platform of the MF that involves other government and strategic actors. • Influence in the application of municipal incentives for forest conservation (e.g. tax incentives). • Motivate the update or generation of new ordinances for joint landscape-level planning. • Strengthen local capacities of the Autonomous Decentralized Governments and grassroots organizations involved with the MF regarding environmental governance and integrated landscape management.
Promotion of sustainable land management (SLM)	• Promote the continuity of ecosystem restoration linking the National Restoration Program with other initiatives such as Initiative 20x20 and the Bonn Challenge. • Generate capacity for ecological restoration and boost the value chain around these activities (nurseries, seed production, etc.). • Generate cooperative agreements with other key players to projects that implement sustainable land management practices and systemize their results. • Create awareness in the MF population about the importance of sustainable use and management of natural resources (soil, water, biodiversity), and of the need to strengthen local and regional food security. • Carry out studies that demonstrate the relationship between agroforestry-carbon and biodiversity practices and disseminate results to stakeholders.
Comprehensive human development	• Promote communication through the creation of the On-line Community Radio of Choco-Andino MF and its information center. • Promote the exchange of experiences and networking with other MF. • Prepare future generations for sustainable land management, integrating youth into the production, research, and political and training projects.