

A. Title of Proposed Project

Standardization of the Terrestrial Ecosystems in the Central America Pine-Oak Ecoregion

B. Contact Information for Principal Investigator(s)

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C. Contact information for Managing Institution

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D. If Applicable, a List of other participating Institutions

E. Project Summary: An abstract of the proposal (200 words or less). This must be submitted in the proponent's native language and in English and Spanish (as the case may be).

The Nature Conservancy has recently completed a comprehensive ecoregional assessment of biodiversity and threat status of Central America. Faced with the lack of spatial data and tools and the urgent management needs of local organizations, the team developed a science-based approach to conduct the regional assessment. Ecosystem, landscape and species level biodiversity elements, known as targets, that represent a full spectrum of terrestrial, freshwater and marine biodiversity were identified and mapped using combinations of biophysical factors such as climate, geology, land elevation and ocean depth. Satellite imagery was used to create and validate habitat maps that were reviewed by local experts. Human activities were mapped and validated to provide a set of environmental risk maps that were used as conservation area suitability maps. Appropriate models were used for the three sets of biodiversity in the freshwater, terrestrial and marine environments. Project results were reviewed and developed into a portfolio of conservation areas that met the conservation objectives. These results indicate important areas to protect as well as threat status of critical ecoregions. One of the outcomes was a detailed map of the various terrestrial ecosystems. It is proposed that the ecosystems from the Central American Pine-Oak ecoregion be standardized and entered into the IABIN standard format. The general aim of this analysis is to test the standardization process and also to enrich The IABIN Ecosystem Thematic Network (ETN).

F. Classification System Description (Maximum four pages)

This project proposes to standardize the ecosystems that have been mapped in the Central American Pine-Oak Ecoregion. The Central American pine-oak forest ecoregion incorporates the central Chiapas state of Mexico, southern Guatemala, most of Honduras and El Salvador, and small areas of west central Nicaragua. This ecoregion encompasses the Sierra Madre de Chiapas with mountain ranges that run parallel to the Pacific Coast (Stattersfield et al. 1998), and various mountain ranges with complex topography. These data are part of the larger ecoregional assessment of terrestrial systems of Mesoamerica project that included 30 ecoregions, of which 17 correspond to forest ecosystems, 12 correspond to swamps and mangroves ecosystems, and one desert and xeric scrub system. Based on the forests that were evaluated, these systems represent humid tropical and subtropical forests (humid and mountainous), dry tropical and subtropical forests, and coniferous tropical and subtropical forests (pine and oak). In addition to the twelve ecoregions of swamp/mangrove, there also exists the thorny bush of the Vale of the Motagua (desert and xeric scrub ecosystem).



Location of the Central American Pine-Oak Forest Ecoregion.

The ecoregional evaluation of terrestrial systems was based on such criteria as climate, soils, geology, and types of coverage of the vegetation, since these environmental variables have an important influence in the history and the evolutionary distribution of many species and communities. To carry out the analysis, we took the approach and concept of ecoregional classification based on Dinerstein et al (1995), which points out that "an ecoregion represents a set, geographically distinctively, of natural communities that share the big majority of his species, where the ecological dynamics and the environmental conditions are similar and the ecological interactions are critical for long term survival." Ecoregions are defined in biological terms as logical units for the conservation of the biodiversity. Separated from units defined politically or geographically, the ecoregions think about how to use the limits of the nature to define the actions of conservation that reflect better the ecological and evolutionary processes that create and support the biological diversity (WWF, 2003).

This ecoregion is dominated by a rich assemblage of pines, *Pinus* spp., and oaks, *Quercus* spp., and it marks the southern limit of boreal floristic influence in the New World. Pine-oak forests are found at altitudinal ranges that vary from 600 to 1,800 m above sea level (Harcourt & Sayer 1996). Mixed forests of pine and oak are found between conifer and broad-leaved forests. The dominant species of these mixed forests include *Pinus* spp., *Quercus* spp., *Ostrya* sp. and *Alnus* spp.

At higher elevations in Guatemala, the conifer forests include *Pinus* spp., *Abies guatemalensis*, *Cupressus lusitanica*, and *Taxodium mucronatum*. A large portion of the pine-oak forests in the central and western Honduras contains predominant species of *Pinus oocarpa* and *Quercus* spp. at lower elevations, and *Pinus pseudostrobus* and *Liquidambar styraciflua* at higher elevations. In the Olancho area of Honduras, the trees reach exceptionally large stature, creating an especially regal forest. Pine forests in Nueva Segovia in Nicaragua occur at 400-700 m; these forests include *Pinus oocarpa*, *P. maximinoi* and *P. patula tecunumanii*. The pine-oak forests in El Salvador have almost entirely been cleared. Some of the remaining forests include *Quercus* spp. and *Pinus oocarpa* with other species like *Cedrella mexicana*, *Clethra vulcanicola*, *Permymenium* spp. and *Nectandra sinuata* (Harcourt & Sayer 1996).

The highland massif of northern Central America contains scattered emerging islands of cloud forest. Some conifers found in cloud forests at high elevations include *Abies guatemalensis*, *Cupressus lusitanica*, *Pinus ayacahuite*, *P. maximinoi*, *P. patula tecunumaii*, *P. pseudostrobus* and *Podocarpus oleifolius*.

Ecosystem Descriptions included in the Central American Pine-Oak Ecoregion
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| Arbustal deciduo latifoliado de tierras bajas en suelos pobres |
| Arbustal deciduo microlatifoliado de tierras bajas |
| Arbustal siempreverde estacional latifoliado de tierras bajas en suelos calcareos |
| Arbustal siempreverde estacional mixto montano inferior |
| Bosque tropical siempreverde estacional aciculifolia de tierras bajas |
| Bosque tropical siempreverde estacional latifoliado |
| Bosque tropical siempreverde estacional mixto |
| Bosque semideciduo latifoliado de tierras bajas |
| Bosque semideciduo mixto de tierras bajas |
| Bosque tropical deciduo latifoliado de tierras bajas |
| Bosque tropical deciduo microlatifoliado |
| Bosque tropical semideciduo latifoliado de tierras bajas |
| Bosque tropical semideciduo latifoliado montano inferior |
| Bosque tropical semideciduo latifoliado |
| Bosque tropical semideciduo mixto montano inferior |
| Bosque tropical semideciduo mixto |
| Bosque tropical siempreverde estacional aciculifolia altimontano |
| Bosque tropical siempreverde estacional aciculifolia de tierras bajas |
| Bosque tropical siempreverde estacional aciculifolia montano inferior |
| Bosque tropical siempreverde estacional aciculifolia montano superior |
| Bosque tropical siempreverde estacional aciculifolia |
| Bosque tropical siempreverde estacional aciculifolia |
| Bosque tropical siempreverde estacional latifoliado altimontano |
| Bosque tropical siempreverde estacional latifoliado bajo |
| Bosque tropical siempreverde estacional latifoliado de tierras bajas |
| Bosque tropical siempreverde estacional latifoliado de tierras bajas |
| Bosque tropical siempreverde estacional latifoliado de tierras bajas |
| Bosque tropical siempreverde estacional latifoliado de tierras bajas |
| Bosque tropical siempreverde estacional latifoliado montano inferior |
| Bosque tropical siempreverde estacional latifoliado montano superior |
| Bosque tropical siempreverde estacional latifoliado submontano en colinas c rsticas escarpadas |

Bosque tropical siempreverde estacional mixto altimontano
 Bosque tropical siempreverde estacional mixto montano inferior
 Bosque tropical siempreverde estacional mixto montano superior
 Bosque tropical siempreverde latifoliado de tierras bajas
 Bosque tropical siempreverde latifoliado de tierras bajas
 Bosque tropical siempreverde latifoliado montano inferior
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 Bosque tropical siempreverde latifoliado
 Bosque tropical siempreverde latifoliado
 Bosque tropical siempreverde mixto montano inferior
 Bosque tropical siempreverde mixto
 Embalse
 Lajar con escasa vegetaci n
 Rocas con escasa vegetaci n
 R o de cuenca inferior del Caribe
 Sabana de graminoides altos con rboles latifoliados siempreverdes y/o palmas
 Sabana de graminoides cortos con arbustos dec duos
 Sabana de graminoides cortos con rboles aciculifolias

Provide timeframe/work plan (including preparation of technical and financial progress reports).

The Mesoamerica & Caribbean Region Science Team for The Nature Conservancy (TNC) will apply the standard format for terrestrial ecosystems that will be provided, to each class in the above referenced classification system for the Central American Pine-Oak ecoregion. TNC will provide the existing ecosystem map as an internet map service through our external data portal and hosting institution. TNC will ensure data quality via expert review and corresponding metadata will be developed utilizing IABIN standards. All data developed for this project will be made freely available to the public through our external data portal. The team will submit regular progress reports to IABIN to ensure timely delivery of all products.

Work Plan	Months 1-4	Month 5	Month 6
1. Application of the Terrestrial Standard Format – Ecosystems of Central American Pine-Oak digitized. Data will be submitted on a regular interval for reviewed to ensure proper data quality.	X		
6. Analysis of Results, Report Write-up		X	
7. Project Final Report (financial and technical included)			X

Objectives	Impact indicators	Result Indicators
Digitize all ecosystems located within the Central American Pine Oak Ecoregion	Central American Pin-Oak Ecosystem standardized to IABIN classes and made available to the public.	Data is available to the public through through the TNC data portal and linked to the IABIN portal. These data will be maintained through TNC's on-going Conservation Information System.

Project budget

Item	IABIN funds	"Matching funds"	Total
Operating Costs a. Technical consultant services	\$10,000		\$10,000
In-kind support to the project: TNC's Science Staff (30% of time) Communications Local travel Supplies and equipment		\$10,000	\$10,000
Total	\$10,000	\$10,000	\$10,000