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Response of pine-oak communities to climatic change: simulation of scenarios towards the temporary horizon 2050 and 2100 using the model climact in the Sierra del Nido, Chihuahua, México

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fueron localizados mayormente en la mitad inferior del contenedor que los caracoles control. Esta investigación proporciona evidencia básica sobre la capacidad de las presas para utilizar señales que indican seguridad, además de aquellas que indican riesgos.

Ecología / Ecology

**Respuesta de comunidades de pino-encino al cambio climático:
simulación de escenarios hacia el horizonte temporal 2050 y 2100
utilizando el modelo climact en la Sierra del Nido, Chihuahua, Mexico /
Response of pine-oak communities to climatic change: simulation of
scenarios towards the temporary horizon 2050 and 2100 using the model
climact in the Sierra del Nido, Chihuahua, México**

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CLIMPACT is a spatial reference aid system, based on a probabilistic method both reproducible and general that can be adapted to the Mexican territory. Currently the methodology has been applied at different scales (local, regional and national) in France. It is based on an "impact model" that integrates the relations of climate and vegetation, which allows defining the probable evolution of ecosystems and landscapes from the spatialization of climate change scenarios. The probability of a remarkable evolution of the distribution of vegetation in the coming decades as a result of climate change requires an in-depth evaluation. The overheating of the planet and more precisely its intensity and kinetics, could generate structural changes on the ecosystems and their functioning. An increase of between 1.5°C to 3.8°C is projected towards the end of the XXI century, in accordance with the scenarios of the IPCC (Intergovernmental Panel of Experts on Climate Change for its acronym in English), which studies the evolution of the planetary climate. In this work, scenarios of the impact of climate change and the adaptive response of pine oak communities are proposed, considering the scenarios of representative concentration

trajectories RCP 2.6 and RCP 4.5.

CLIMPACT es un sistema de ayuda a la referencia espacial, basado sobre un método probabilístico reproducible, general y que puede ser adaptado al territorio mexicano, actualmente la metodología ha sido aplicada a diferentes escalas (local, regional y nacional) en Francia. Esta fundada sobre un “modelo de impacto” que integra las relaciones del clima y la vegetación, lo que permite definir la evolución probable de ecosistemas y paisajes a partir de la espacialización de escenarios de cambio climático. La probabilidad de una notable evolución de la distribución de la vegetación en los próximos decenios a consecuencia del cambio climático requiere una evaluación a profundidad. El sobrecalentamiento del planeta y más precisamente su intensidad y cinética podrían generar cambios estructurales sobre los ecosistemas y su funcionamiento. Se proyecta un aumento de entre 1.5°C a 3.8°C hacia finales del siglo XXI, de acuerdo con los escenarios del IPCC (Panel Intergubernamental de Expertos en Cambio Climático por sus siglas en Inglés), que estudia la evolución del clima planetario. En este trabajo se proponen escenarios de impacto del cambio climático y la respuesta adaptativa de las comunidades de pino encino, considerado los escenarios de trayectorias de concentración representativas RCP 2.6 Y RCP 4.5.

A framework based on biodiversity indicators for the forest ecosystems of the Sierra Tarahumara / Un marco base de indicadores de biodiversidad para los ecosistemas forestales de la Sierra Tarahumara

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Governmental and nongovernmental organizations are trying to find environmental management solutions to various problems that affect biodiversity. The use of indicator species (IS) is part of a strategy to evaluate and monitor possible changes in species on the short and long term. As part of a larger project on Sustainability in the Sierra Tarahumara, the objective of this study was the development of a baseline on IS. First, a list of possible species was provided by the GEF (Global Environmental Facility). Then, a meeting was held with 25 experts in the area, and a bibliographic search was performed. Finally, stakeholder workshops were organized with people working and/or living in the Sierra Tarahumara. As a result, a catalogue was developed with a total of 31 fact sheets on species containing: common name, scientific name, species description, importance (category in the NOM-059 or another fact explaining its inclusion in the list), ecological aspects,