

MEDECOS declaration on Chile wildfires

In relation to the large wildfires that affected central Chile during the summer season of 2016-2017, we, scientists who specialize in the ecology of Mediterranean ecosystems and attended the International Congress of Mediterranean Ecosystems MEDECOS XIV at Seville, Spain (January 31st to February 4th, 2017; <http://www.medecos-aeet-meeting2017.es/>), draw your attention to the following points:

1. Warm and dry climatic conditions are essential for the occurrence of wildfires. The extreme drought events that have affected central Chile during the last decade contribute to explaining the magnitude, intensity and severity of recent wildfires.
2. Fires in Chile are mostly started by human-caused ignition sources, either accidental or intentional. However, the disproportionate increase in the burned surface area of recent fires suggests that drivers of the fire spread were mainly related to extreme weather conditions and fuel availability.
3. Both the severity and intensity of fires are directly related to the amount and spatial structure of the fuel. Under conditions of high homogeneity and fuel continuity, the risk of fire spread increases dramatically.
4. There is solid evidence in the scientific literature to indicate that the establishment of continuous, extensive, and homogeneous forest plantations significantly facilitates and increases the spread of wildfires across the landscape.
5. In contrast, heterogeneous landscapes combining different land uses and maintaining an adequate proportion of natural and productive ecosystems, have not only a greater diversity of species, but also determine different densities and types of fuel. This greatly diminishes the risk of fire spread and thus facilitates their control and extinction.
6. Under extreme climatic conditions and abundant fuel (dense vegetation), fires can exceed the extinguishing capacity of any fire-control agency, regardless of available resources.
7. The proximity of extensive homogeneous plantations to towns and rural villages increases the socio-economic impact of forest fires and endangers the population, especially, when there are no preventive measures to buffer these human settlements from wildfires.
8. Effective ecological restoration actions can be planned to restore affected ecosystems in Chile, and their biodiversity and ecosystem services. The recovery of the native forest is necessary to generate heterogeneous landscapes, allowing the coexistence of the forestry activity with population safety.
9. In order to start the process of ecological restoration, it is necessary to evaluate the potential of natural regeneration according to the specific characteristics of each site. Work teams could (1) establish measurable objectives; (2) involve affected communities; (3) define native reference ecosystems; and (4) consider regional conservation priorities.
10. The management of landscapes dominated by forest plantations, an important source of wealth in Chile, could be updated to take into account climate change, fire risk, the conservation of biodiversity, and the provision of ecosystem services for the quality of life of the local populations.

- Anibal Pauchard, Universidad de Concepción & IEB, Chile
- Byron B. Lamont, Curtin University, Australia
- Daniel Moya, Universidad Castilla La Mancha, Spain

- Enric Batllori, Centro de Investigación Ecológica y Aplicaciones Forestales (CREAF), Spain
- Fernando Ojeda, Universidad de Cádiz-IVAGRO, Spain
- Francisco Lloret, Presidente Asociación Española de Ecología Terrestre, CREAF-Universitat Autònoma Barcelona, Spain
- Gidi Ne'eman, University of Haifa-Oranim, Israel
- Grant Wardell-Johnson, Curtin University, Australia
- Jeremy Midgley, University of Cape Town, South Africa
- Jon E. Keeley, USGS Western Ecological Research Center & University of California-Los Ángeles, USA
- Jose Manuel Moreno, Universidad Castilla La Mancha, Spain
- Juan J. Armesto, Pontificia Universidad Católica de Chile & IEB, Chile
- Juli G. Pausas, Centro de Investigación sobre Desertificación-CSIC, Spain
- Lohengrin A. Cavieres, Universidad de Concepción & IEB, Chile
- Marcela Bustamante, Universidad de Concepción & IEB, Chile
- Margarita Arianoutsou, National and Kapodistrian University of Athens, Greece
- Mary T. Kalin, Directora Instituto de Ecología y Biodiversidad (IEB), Universidad de Chile, Chile
- Montserrat Vilá, Estación Biológica de Doñana-CSIC, Spain
- Pere Pons, Universitat de Girona, Spain
- Philip Rundel, University of California-Los Ángeles, USA
- Richard M. Cowling, Director Centre for Coastal Paleoscience, South Africa
- Susana Gómez-González, Universidad de Cádiz-IVAGRO, España & CR2, Chile
- Susana Paula, Universidad Austral de Chile, Chile
- Tianhua He, Curtin University, Australia