

Threats to Biodiversity Rise in the World's Mediterranean-Climate Regions

In the first systematic analysis of threats to the biodiversity of the world's mediterranean-climate regions, scientists at The Nature Conservancy and UC Davis report that these conservation hotspots are facing significant and increasing pressure. The study, which appears in this week's edition of the journal *Diversity and Distributions*, is part of a global conservation assessment of the rare mediterranean biome.

“Throughout human history, the mild climates of mediterranean regions have fostered growth of major urban centers, vast agricultural zones and dense human populations – all in the midst of some of the rarest biodiversity on Earth”, says Dr. Rebecca Shaw, a scientist with The Nature Conservancy's California program and the leader of the global assessment.

Mediterranean climates – characterized by warm, dry summers and cool, wet winters – are extremely rare, found on only 2% of the Earth's land surface: portions of California/Baja California, South Africa, Australia, Chile, and the Mediterranean Basin. Increasing the pace and scale of conservation in mediterranean regions is critically important to biodiversity protection, because these regions contain 20% of the world's plant species.

“If we are to reduce rates of biodiversity loss, then understanding patterns and trends in threats is of paramount importance,” says lead author Dr. Emma Underwood, a research scientist at the Information Center for the Environment at the University of California, Davis.

To this end, scientists from The Nature Conservancy and U. C. Davis analyzed changes in land use and population density in the world's five mediterranean-climate regions. Overall, population density and urban areas increased in these regions by 13 percent from 1990 to 2000, while agricultural areas spread by 1 percent. Population grew by over 34 million people from 1990 to 2000, twice the population of Chile. Urban areas expanded by 2,110 square miles (5,480 square kilometers), an area about half the size of the nation of Lebanon. The greatest increase in urban area was in California, USA and Baja California, Mexico. Loss of natural habitat to agriculture was greatest in southwest Australia.

Underwood said that urban expansion is worrisome in that it is not only impacting lowlands, which have been the historic urban centers, but is spreading into intact foothills, especially those within commutable distances to major cities. For example, this trend is seen in California's Sierra Nevada foothills and the Sierra de Guadarrama region near Madrid in Spain.

The researchers also analyzed the relationship between these threats and the number of at-risk plants and animals. For example, they found that numbers of threatened plant and mammal species increased as the size of the urban footprint and population density grew. These findings indicate the need to accelerate conservation action to outpace threats in

the mediterranean biome. “This information can help support decisions about how best to invest scarce conservation resources,” says co-author Kirk Klausmeyer, a scientist with The Nature Conservancy.

The Nature Conservancy and partners have launched a Global Mediterranean Action Network to connect and tap into the collective knowledge of conservation scientists, practitioners and policy makers across the mediterranean biome, and to foster strategies to combat threats to biodiversity in all five regions.

Relevant Web links

Learn more about the status of conservation in mediterranean-climate regions, and explore data on threats and protected areas using interactive web-based tools at <http://www.mediterraneanaction.net>

Learn more about the Information Center for the Environment, at the University of California, Davis at <http://ice.ucdavis.edu/>

Learn more about The Nature Conservancy at <http://www.nature.org>

For more information

The study appears in Underwood, E. C., J. H. Viers, K. R. Klausmeyer, R. L. Cox, and M. R. Shaw. 2009. Threats and biodiversity in the mediterranean biome. *Diversity and Distributions*. Volume 15, pages 188-197.

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