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Wealth of Flora and Vegetation in the La Campana-Peñuelas Biosphere Reserve, Valparaiso Region, Chile

Enrique Hauenstein
Catholic University of Temuco, Faculty of Natural Resources, Temuco, Chile

1. Introduction

Chile has a National System for State-Protected Wilderness Areas (Sistema Nacional de Áreas Silvestres Protegidas del Estado – SNASPE), which consists of three categories: National Parks (PN), National Reserves (RN) and Natural Monuments (MN). It presently contains 95 units, covering in total 19% of the country’s territory. SNASPE has become a fundamental pillar not only for safeguarding an important part of Chile’s natural heritage but also for protecting and valuing our cultural heritage, particularly where it is integrated in the areas which make up this system (Oltremari, 2002). By 1985, UNESCO had designated 7 Biosphere Reserves in Chile: Lauca, Fray Jorge, Juan Fernández, La Campana-Peñuelas, Araucarias, Laguna San Rafael and Torres del Paine. To these were later added Cabo de Hornos [Cape Horn], Bosques Templados Lluviosos de los Andes [Wet Temperate Andean Forests], and recently Laguna del Laja-Nevados de Chillán.

The central zone of Chile, also called the mesomorphic or mediterranean zone, extends approximately from 32° to 37° S (Pisano, 1956). It has a mediterranean climate, which Koeppen (1931, 1948) classifies as a “warm-temperate climate with sufficient humidity”, in the subdivision “winter rains and prolonged dry season”, characterised by regular periods of rain in winter and a strongly marked dry season which may extend from six to eight months. This corresponds to other mediterranean zones around the world such as in California and southern Europe in the Northern Hemisphere, and Australia and southern Africa in the Southern Hemisphere (Grau 1992; Arroyo et al., 1995). The climatic conditions mean that the vegetation in these regions has specially adapted characteristics, such as the presence of sclerophyllous leaves, lignotubers and a great capacity for water-use efficiency (Money & Kumerow, 1971; Araya & Avila, 1981; Avila et al., 1981). According to
Marticorena et al. (1995), the central zone of Chile is a focus where endemic species are concentrated, with great wealth and diversity of flora. Mittermeier et al. (1998) indicate the presence of 1,800 species of endemic plants for this area, leading it to be considered as one of the world's 25 hotspots, requiring priority protection (WWF & IUCN, 1997; Myers et al., 2000).

In this context, flora and vegetation studies are essential basic elements for developing proposals for the conservation and management of species and ecosystems, or defining priority areas (Cavieres et al., 2001; Teillier et al., 2005). The object of the present study is to contribute to knowledge of the flora and vegetation of the La Campana-Peñuelas Biosphere Reserve.

2. Methods and results

2.1 Study area

This Biosphere Reserve includes La Campana National Park (32°55' to 33°01'S; 71°01' to 71°09'W) and Lago Peñuelas National Reserve (33°07' to 33°13'S; 71°24' to 71°34'W). It is important to indicate that by means of offer of the National Forest Corporation of Chile, the year 2008 extended his surface in near 14 times, going on from 17,095 to 238,216 ha (CONAF, 2008). The altitude ranges from + 350 to + 2,222 masl, and the highest peaks are “El Roble” (2,222 masl) and “La Campana” (1,920 masl). Some sectors of RN Lago Peñuelas contain plantations of exotic species (Pinus radiata D. Don and Eucalyptus globulus Labill.). Another part corresponds to Peñuelas lake, a reservoir covering 1,600 ha which supplies water to the cities of Valparaiso and Viña del Mar, and forms a wetland which is important for migratory,
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occasional or resident birds; more than 125 species of water, land and shore birds have been recorded in the lake (Strang, 1983) (figure 1, photos 1, 2, 3). The climate of the area is temperate-mediterranean, with sufficient humidity, winter rains and a prolonged dry season. The average annual temperature is 13.5°C; the average maximum is 17.1°C and the average minimum is 9.4°C; the temperature occasionally falls to 0°C, with frosts between May and September. Precipitation is seasonal (656 mm/year), from the end of May to August, with a markedly dry summer of six to eight months from October to March (Di Castri & Hajek, 1976; Luebert & Pliscoff, 2006).

Photo 1. Place of access to the Reserve for the sector of the Peñuelas lake.

Photo 2. Place of access to the Reserve for the sector of Ocoa’s Palms.


Oltremari, J. (2002). *Protected areas and the conservation of biological diversity*. Santiago, Chile. Catholic University of Chile. 11 pp.


In this book entitled “The Biosphere”, researchers from all regions of the world report on their findings to explore the origins, evolution, ecosystems and resource utilization patterns of the biosphere. Some describe the complexities and challenges that humanity faces in its efforts to experiment and establish a new partnership with nature in places designated as biosphere reserves by UNESCO under its Man and the Biosphere (MAB) Programme. At the dawn of the 21st century humanity is ever more aware and conscious of the adverse consequences that it has brought upon global climate change and biodiversity loss. We are at a critical moment of reflection and action to work out a new compact with the biosphere that sustains our own wellbeing and that of our planetary companions. This book is a modest attempt to enrich and enable that special moment and its march ahead in human history.

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