

Gavilea araucana (Phil.) M.N. Correa: first record of an orchid for Chile on *Sphagnum* peatland in Magallanes

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ABSTRACT

We report the first historical record of the orchid *Gavilea araucana* (Phil.) M.N., for a *Sphagnum* peatland in Chile, close to Torres del Paine National Park. Moreover, a brief description of the peatland and information about associated flora are provided.

KEY WORDS

Southern Patagonia; *Sphagnum* moss; peatland.

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INTRODUCTION

In Chile the Orchidaceae family comprises 52 species distributed from the Andean highlands to the Cape Horn (Novoa et al., 2006). The Magallanes region has a diversity of orchids represented by 11 species. Chilean orchids occupy diverse habitats, such as deciduous and evergreen forest, scrub and also the Patagonian steppe (Domínguez, 2003; 2010; 2012), but there are no reports of it in *Sphagnum* peatlands (Pisano, 1977; Moore, 1983; Pisano, 1983; Roig & Roig, 2004; Kleinebecker et al., 2010; Iturraspe, 2010). However, there have been at least five species reported for North America (*Arethusa bulbosa* L., *Colopogon tuberosus* (L.) Britton, *Pogonia ophiglossoides* (L.) Ker. Gawl., *Platanthera blephariglottis* (Willd.) Lindl. and *P. clavellata* (Michaux) Luer.) growing in *Sphagnum* peatbogs (Boland & Scott, 1992; Brown & Scott, 1997; Davis, 2011; Laroche, 2011). *P. blephariglottis* is considered a bio-indicator of the ecological integrity of peatlands because the abundance of this orchid is negatively affected by anthropogenic disturbances (Laroche, 2011).

Sphagnum L. is a genus of between 1510 and 3500 species of mosses (Bryophyta Sphagnopsida

Sphagnaceae) commonly called peat moss. *Sphagnum* peatlands are freshwater wetlands with a particular biodiversity and play an important influence on the subantarctic water cycle (Iturraspe, 2010), in addition to contributing to global carbon storage (Grootjans et al., 2010) through slow production and accumulation of organic matter as peat. These wetlands are mainly distributed in the northern hemisphere. While only 4% of peatlands are located in South America, mainly in Chile and Argentina (Díaz et al., 2008; Landry et al., 2010), they constitute habitats for rare and endemic species (Charman, 2002). Peatlands in Southern Chile are distributed from the Región de Los Ríos to the Región de Magallanes y Antártica Chilena, covering approximately 10,684,000 hectares (Pliscoff & Luebert, 2006) and 2.74 million hectares in Magallanes (Ruiz & Doberti, 2005), representing the largest deposit and sink of terrestrial carbon in the Southern Hemisphere.

There are several historical studies in pristine peatlands in Chile, but none have reported the presence of orchids (Skottsberg, 1909; Roivainen, 1954; Pisano, 1977; Moore, 1983; Boelcke et al., 1985). Recent studies in the regions of Los Ríos and Los Lagos, have given new contributions to the knowledge of the region's flora succession and hydrology of peatlands, but in that research the

presence of orchids is not reported (San Martín et al., 1999; Díaz et al., 2008; Teneb et al., 2008). The same results are evident for studies in the Region de Magallanes and the Provincia de Tierra del Fuego Argentina (Henríquez, 2004; Roig & Roig, 2004; Roig et al., 2004; Teneb & Dollenz, 2004; Kleinebecker, 2007; Larraín, 2011).

This paper presents the findings of an orchid population, located in a *Sphagnum* peatland, and its habitat description and distribution in order to provide information about biodiversity of these wetlands in Southern Chile.

Study site

The study site is located 20 km far from the Parque Nacional Torres del Paine (PNTP) in the municipality of Torres del Paine, provincia de Ultima Esperanza, Región de Magallanes y Antártica Chilena ($51^{\circ} 16' 18.69''\text{S} - 72^{\circ} 51' 56.41''\text{W}$). With an area of approximately 5 hectares, it is surrounded by four lagoons, the largest of which is the Lago Toro (202 km^2) (Fig. 1). In particular, the peatland called “the Frog” is characterized by (1) an ombrotrophic *Sphagnum* peatbog; (2) a transitional zone with *Pilgerodendrum uviferum*; and (3) a minerotrophic zone in the margins, surrounded by Patagonian Subantarctic Forest dominated by *Nothofagus betuloides* (Gajardo, 1994).

MATERIALS AND METHODS

Fieldwork was carried out in December 2011. For quantitative sampling, plots of 0.25 m^2 were arranged every 5 meters along a 250 m transect, across the largest longitude (maximum longitude) over the center of the peatland. Forty quadrants were evaluated and the taxonomic determination for orchids followed Correa (1969) and Novoa et al. (2006).

RESULTS AND DISCUSSION

Gavilea araucana is a terrestrial orchid, erect up to 70 cm in height. Leaves lanceolate, acute. Inflorescences lax, up to 8 pale yellow to whitish flowers. Bracts lanceolate, acute, slightly surpassing the ovary. Dorsal sepal $18 \times 5\text{ mm}$, oval-lanceolate, acute. Lateral sepals up to $27 \times 6\text{ mm}$, oval-lanceolate, with thin caudicle up to 12 mm. Petals with va-

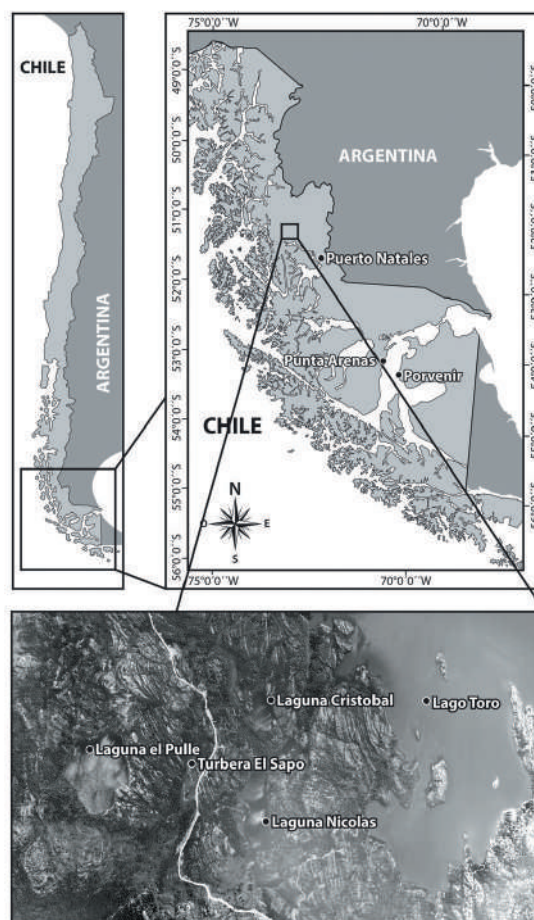


Figure 1. Geographical location of the *Gavilea araucana* finding in a *Sphagnum* peatland in the Magallanes Region, Chile.

ricose veins, at base. Labellum 3-lobed, lateral lobes forming an obtuse angle with the central lobe, notorious rounded veins, apical margin slightly sinuose, central lobe elongated, more or less triangular, with veins cross over by few flakes with thicken margins, margin lacinate or merlon-shaped. Column 5 to 6 mm, with 2 folds at the contact place with the labellum. Fruits capsules, globose and cylindrical. Flowering in December, fruiting in December and January. For the Región de Magallanes, its presence has been cited in the Torres del Paine National Park and the Milodon Cave Natural Monument (Domínguez, 2003; 2010) in clear forest sites, usually on the banks of Great Lakes.

This orchid has also been found in small populations in sites affected by forest fires at the Lago Pehoe areas and on the slopes of Mount Ferrier (Domínguez, 2012). This population of five *G. araucana* individuals with flowers, located in a



Figure 2. *Gavilea araucana* in inflorescence and vegetative state in a *Sphagnum* peatland in the Magallanes Region, Chile (Photo Erwin Domínguez, 2008).

Sphagnum peatbog next to Torres del Paine National Park, represents the first record for Chile (Fig. 2). The orchids are growing from the *Sphagnum* carpet (lawns and hummock) reaching between 0.25 to 0.5 m tall. Several herbaceous species are coexisting under the *Sphagnum magellanicum* Brid domination, including *Cortaderia egmontiana* (Roem. & Schult.) M. Lyle ex Connor, *Senecio trifurcatus* (G. Forst.) Less, *Symphyotrichum vahlii* (Gaudich.) GL Nesom., *Hypochaeris arenaria* Gaudich, *Marsippospermum grandiflorum* (Lf) Hook., *Tetroncium magellanicum* Willd., and the carnivorous plant *Drosera uniflora* Willd. Rhizomatous species such as *Myrteola nummularia* (Poir.) O. Berg and *Nanodea muscosa* Banks ex C.F. Gaertn. with other woody plants such as *Empetrum rubrum* Vahl ex Willd and *Nothofagus antarctica* (G. Forst.) Oerstr were also present. In these environments *S. magellanicum* represents 70% coverage, and grows as hummock-lawns shape with at least a two-meter peat depth and a shallow water table. This finding may provide new information about habitat types for an orchid not previously described for the rest of the country. Research on peatlands in Chile are mostly focused on flora descriptions, but this is not an adequate characterization of these ecosystems, and further studies are required to describe and quantify the *Sphagnum* peatland flora. Therefore, the results of these studies would not show the cur-

rent state of the structure and floristic composition of peatlands, at least for the Región de Magallanes.

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