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DIET OF THE PATAGONIAN SIERRA-FINCH (*PHRYGILUS PATAGONICUS*) ON NAVARINO ISLAND, CHILE

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Dieta del Cometocino patagónico (*Phrygilus patagonicus*) en la Isla de Navarino, Chile.

Key words: Patagonian Sierra-finch, *Phrygilus patagonicus*, Chile, diet, Navarino Island.

The Patagonian Sierra-finch (*Phrygilus patagonicus*) is one of the most abundant species in the Subantarctic Magellanic evergreen forest ecoregion (Anderson & Rozzi 2000). It ranges from sea level to 1800 M and is most often seen in forests (Rozzi *et al.* 2003, Martínez & González 2005) and forest borders or shrubby cleared areas in southern Chile and Argentina (Ridgely & Tudor 1989, Vuilleumier 1991). In spite of its high abundance and potentially key ecological role, little is known about the diet of this species and sierra-finches (genus *Phrygilus* and subfamily Emberizinae) in general. Published records of Patagonian Sierra-finch diet consist of anecdotal observations, stomach contents (Humphrey *et al.* 1970) and observations of nectar robbing (Traveset *et al.* 1998). We present here Patagonian Sierra-finch dietary information at the southern extreme of its distribution on Navarino Island (55ºS), Cape Horn County, Chile.

From 25 September 2004 to 12 May 2006, Patagonian Sierra-finches were observed in Omora Ethnobotanical Park (54°55´S, 67°39´W). The park is located at the northern end of Navarino Island (Anderson *et al.* 2002), 5 km east of the town of Puerto Williams. Navarino Island receives 650 mm of precipitation annually with a mean annual temperature of 6°C (di Castri & Hajek 1976). The northern part of the island is characterized by old growth southern beech (*Nothofagus betuloides*) and Lenga Beech (*N. pumilio*) forests along with areas of second growth, burned areas and areas converted to pasture land. Observations of foraging were made from sea level to above the tree line at 750 m with 8x10 binoculars.

The results of our observations are summarized in Table 1. We documented utilization of two tree species, four flowering plants, six grasses, and a single species of lichen that had not previously been recorded as food items. We also reaffirm the use of Chilean firebush (*Embothrium conocidium*) and winter's bark (*Drimys winteri*) as food sources. Patagonian Sierra-finches were observed in all

TABLE 1. Fifteen plants consumed by the Patagonian Sierra-finch (*Phrygilus patagonicus*) on Navarino, Island, Chile.

Plant species	Parts of plant consumed	Months
Nothofagus pumilio	Seed, buds,floral parts	Nov. Sep., Feb.
Embothrium coccineum	Seed, nectar	Oct., Dec., Jan., Mar., Apr.
Perezia magellanica	Seed	Mar.
Carex curta	Seed	Mar.
Rumex sp.*	Seed	Sep.
*Taraxacum officinale**	Seed	Nov., Dec.
*Poa pratensis**	Seed	Jan.
*Holcus lanatus**	Seed	Jan.
Berberis ilicifolia	Nectar, floral parts	Oct.
Berberis boxifolia	Fruit, nectar, floral parts	Oct., Nov., Feb.
Ribes magellanicum	Fruit	Feb.
Chiliotrichum diffusum	Floral parts	Jan
Drimys winteri	Fruit, floral parts	Jan., Mar., Apr., May
Maytenus magellanica	Fruit	Apr.
Usnea spp.	All	Mar., Apr.

*Non-native species.

trophic levels of the forest and clearings. While feeding observations were of birds on the ground or in the lower 4 m of trees and shrubs, Patagonian Sierra-finches were often seen high up in beech trees and was noted to be a member of foraging flocks of the Thorn-tailed Rayadito (*Aphrastura spinicauda*) and the White-throated Treerunner (*Pygarrhichas albogularis*) and may have been consuming insects but was too high in the canopy to observe. The only non-vegetative item noted in the diet was grit recovered in the stomachs of two individuals that died in the nets.

The species preferred habitat appears unclear. Observations of sierra-finches robbing nectar of hardy fuschsia (*Fuchsia magellanica*) were recorded as being principally in open habitat followed by forest then forest edge (Traveset *et al.* 1998). Couve & Vidal (2003) state that it is "generally seen in the canopy or middle story where it feeds" while Jaramillo (2003) remarks that Patagonian Sierra-finches are "terrestrial when foraging". In consideration of these contrasting statements no singular trophic level within the forest appears to be preferred. Rather the species is likely inhabiting the level within the forest where food resources are most abundant.

Patagonian Sierra-finch diet is described as being composed of seeds, buds, flowers, fruit, insects and other invertebrates (Egli & Aguirre 2000). Specific documentation includes feeding on the nectar of Chilean firebush (Smith-Ramirez & Armesto 2003), Chilean needletree (*Rhaphithamnus cyanocarpus*) (Barros 1945), Austral bellflower (*Philesia magellanica*) (Rozzi *et al.* 2003) and hardy fuschsia (Blumberg undated, Traveset *et al.* 1998). Patagonian Sierra-finch has also been observed to consume the flowers and fruit of winter's bark (Chebez & Bertonatti 1994) and phloem-sap of southern beech (Schlatter & Vergara 2005). Seeds have been noted in stomach samples (Humphrey *et al.* 1970,

Markham 1970, Rozzi *et al.* 1996) as well as insects, pebbles, and vegetable matter (Schlatter *et al.* 1995). Finally, Crawshay (1907) reported that, around human settlements, it subsisted largely on refuse and he observed some individuals pecking at a raw sheep's head and beef bone.

Our observations add to the known list of items foraged on. Two plants noted as food items in other papers, Chilean needletree and hardy fuschsia, do not grow on Navarino Island (Moore 1983), so could not be utilized by sierra-finches. The four exotic species of grasses they consumed were introduced in the last 150 years as forage for livestock in Tierra del Fuego. We found no evidence that Patagonian Sierra-finches play a significant role as seed dispersers. The observed method of feeding consists of thoroughly grinding and crushing all food items before swallowing. On large fruits of species such as winter's bark and Magellan barberry (*Berberis boxifolia*), they took off small chunks of fruit, rarely getting any seeds in the center. A study of over 100 Patagonian Sierra-finch feces from birds captured in mist nets in Omora Park revealed no whole seeds had passed through after digestion (S. Ippi pers. com.). This species has previously been noted as a destroyer of flowers with nectar (Traveset *et al.* 1998, Smith-Ramirez & Armesto 2003), a behavior we also observed. The Patagonian Sierra-finch appears to act as a seed predator and a nectar robber. Its evolutionary relationship with the native plants inside its range and a more thorough study of this species diet remains to be conducted. Our observations add to the known list of items foraged on.

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