



CONSUMPTION OF THE LICHEN *ROCCELLA GRACILIS* BY THE LARGE GROUND-FINCH *GEOSPIZA MAGNIROSTRIS* ON THE ISLAND OF DAPHNE MAJOR (GALÁPAGOS)

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Abstract · This note reports a trophic interaction of a passerine consuming lichens. On the islet of Daphne Major (Galápagos Archipelago), we made five observations of the Large Ground-Finch *Geospiza magnirostris* eating the fruticose lichen *Roccella gracilis*. This is an example of how island birds broaden their feeding niche in resource-poor environments.

Resumen · Consumo de líquenes por uno de los pinzones endémicos de Galápagos.

Describimos una interacción trófica de un paseriforme consumiendo líquen. En el islote de Daphne (archipiélago de Galápagos), realizamos cinco observaciones del pinzón grande de tierra *Geospiza magnirostris* consumiendo el líquen de talo fruticuloso *Roccella gracilis*. Este es un ejemplo de cómo las aves insulares amplían su nicho trófico en un entorno de escasos recursos.

Key words: Diet · Island ecology · Niche widening · Passerines · Trophic interaction

To date, some 19,000 species of lichen-forming fungi have been described, thriving in almost all terrestrial biomes (Lücking et al. 2017). Lichens are well known to produce a plethora of secondary metabolites, many of them with putative anti-herbivore activity (Boch et al. 2015). In addition, they produce a wide range of polysaccharides, many of which show relevant biological activities (Solberg 1970, Svihus & Holand 2000, Akbulut & Yildiz 2010). Despite their potentially nutritious composition, habitual lichen consumption by animals is rarely reported, except for some snails (Boch et al. 2011, 2015), weevils, the reindeer *Rangifer tarandus* (Scotter 1965, Storeheier et al. 2002), the goose *Branta bernicla* (Rémy 2006), and pygmy parrots *Micropsitta* spp. (Linck 2009. See Indiviglio 2012), and humans (Ivanova & Ivanov 2009). Rare consumption of lichens by other mammals (Chamois *Rupicapra rupicapra*, and Alpine Ibex *Capra ibex*) (Boch et al. 2011) and birds (*Corvus monedula*; Sriskandan 2021) have also been recorded. However, birds generally use lichens to build their nests instead of using them as food (Rémy 2006).

The observations described here were made on Daphne Major (38.6 Ha; 120 m a.s.l.), an islet nearly in the center of the Galápagos Archipelago (0°25'21.03"N, 90°22'19.24"W). This islet contains an old volcanic tuff cone with a relatively large central crater and a small lateral craterlet. During a visit from 16 to 20 November 2018, we observed consumption of the fruticose lichen *Roccella gracilis* (Roccellaceae) by the Large Ground-Finch *Geospiza magnirostris*. This lichen grows on the branches of the small tree *Bursera graveolens*, which forms a small woodland in the upper part of this islet. Initially, we considered the possibility that Large Ground-finches were foraging for small arthropods (basically, isopods and aphids) hidden inside the lichen structure. However, two observers further confirmed lichen consumption on five different occasions from a short distance (3–5 m from the birds). During these feeding events, they consumed relatively small amounts of the lichen. It is possible that secondary compounds may limit ingestion by birds, yet the beneficial effect of biological activity (e.g. antiviral or antitumoral) on vertebrates is also well-known (Akbulut & Yildiz 2010). We did not observe this interaction in another recent expedition to the islet during the same season (10–13th November 2022); it may not be a common event.

The tendency of island animals to broaden their trophic niche is well-known (e.g. MacArthur et al. 1972, Traveset et al. 2015, Balza et al. 2020), and this behavior could be even more common on small islands with few trophic resources, particularly in dry years (see Grant & Grant 2014 and references therein). Further studies could show whether the birds eat lichens as part of their diet or for medicinal purposes. Our observation adds a piece to the larger puzzle of how island birds can survive on poor diets — of often unusual food items— through opportunism and phenotypic plasticity.

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