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### FOOD OF SILVERY GREBES (*PODICEPS OCCIPITALIS*) AT LAKE CUICOCHA, ECUADOR

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The Silvery Grebe (*Podiceps occipitalis*) lives in upper temperate and lower paramo zones of the Andes from southern Colombia to Tierra del Fuego, Chile. The northern subspecies (*P. o. juninensis*), which ranges only as far south as Catamarca, Argentina (Meyer de Schauensee, A guide to the birds of South America, Livingston Publ. Co., Wynnewood, Penn., 1970), has been collected from alpine lakes in Argentina, Bolivia, Peru, Ecuador and Colombia (Blake, Manual of neotropical birds, Vol. 1, Univ. Chicago Press, 1977). Except for some anatomical work (Storer, Courtship and mating behavior and the phylogeny of the grebes, Proc. XIII Int. Ornithol. Congr. [1962], 1963) little is known of the biology of the species. It was the intent of my study to determine the food of the Silvery Grebes at Lake Cuicocha, Ecuador.

Lake Cuicocha is a volcanic lake, 3,100 m above sea level, in the extreme northwestern Ecuadorian Andes. Caldera walls completely surround the lake, rising almost vertically as much as 400 m above the lake's surface. In many places the cliffs are so steep that sufficient sediments have not accumulated so that emergent hydrophytes can grow. Even in shore areas with sediment the border of emergent vegetation (*Scirpus* sp., *Myriophyllum* sp., *Pomatogeton* spp.) is rarely more than 5 m wide.

TABLE 1. Stomach contents of three Silvery Grebes.

Stomach contents	No. counted*
Food items	
<i>Aeschna</i> nymphs	14
Total odonates represented	816
Other insects	9
Amphipoda (fam. Talitridae)	9
Nonfood items	
Cestoda (subfam. Hymenolepidinae)**	214
Feathers (shaft $\geq$ .5 cm)	866

\* The data from the three grebes have been combined.  
\*\* Cestodes were found in only one stomach, and their presence is probably due to an accident at the time of collection.

The Silvery Grebe population has been censused four times in two years. In January 1974, March 1974, and May 1975 34 adult grebes were counted; in January 1976 44 adults were counted. This population apparently breeds early in the year, as evidenced by the presence of one large downy young in May 1975. In contrast to this equatorial population, Silvery Grebes in Argentina begin breeding between September and November (Burger, *Condor* 76:301-306, 1974).

In March 1974, I collected three Silvery Grebes at Lake Cuicocha, and immediately preserved the stomachs in 10% formalin. The specimens are in the University of Miami Reference Collection. The contents of each stomach were examined under a microscope, separated by type, and counted (Table 1).

The macro-fauna of the reedy shoreline was sampled qualitatively for potential prey items. No small fish were seen or collected despite a careful search. Samples of inshore fauna contained: Ostracoda (Cypridae); Amphipoda (Talitridae); Odonata (*Aeschna* and *Ischnura*); Diptera (a few terrestrial adults, probably trapped on the water's surface). The odonates were identified to genus by M. Westfall, who concluded that they did not belong to any known species.

All insect sclerites found in the grebes' stomachs that could be identified, belonged to nymphal dragonflies (*Aeschna* sp.). The number of nymphs in each stomach varied greatly, possibly owing to individual differences in the amount of recent feeding and pellet formation. Grebes cast pellets by regurgitation (Storer, *Auk* 78:90-92, 1961), and grebes that eat highly indigestible food such as insects and crustacea probably cast pellets on a regular basis. The many feathers found in the stomachs probably served as strainers to retain such indigestible material between pellet formation (Storer 1961).

To the best of my knowledge, this is the first time that this lake or its population of grebes have been studied (Francisco Leon, Universidad Católica del Ecuador, pers. comm. 1974). The lake is being developed as a resort, and the future of its Silvery Grebes is uncertain because of habitat destruction, shooting, and pollution.

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