

On closer approach it became evident that the bird was actively chasing a small flyingfish through the air. I was able to watch four sequences of the pursuit flight at close range. As soon as the fish became airborne, the shearwater lunged after it, its beak sometimes coming within 2 to 3 cm before the fish reentered the water. On the fifth chase, the fish, perhaps caught by a gust of wind, seemed to soar slightly higher than usual, and the shearwater neatly plucked it from the air. The bird then landed, swallowed the fish, flapped its wings gently, and took off in a typical flight.

Schools of flyingfish 5 to 10 cm long were emerging commonly in the area, often in clusters, and it is possible that the shearwater was pursuing several fish sequentially rather than a single individual. Whether the bird's crash-landing behavior served to scare the fish into flight or was a consequence of the pursuit flight could not be established. In the entire day of almost continuous observation I saw only one additional Audubon's Shearwater.

This observation was made while I was participating in a research cruise of Scripps Institution of Oceanography. The precise locality was 15° 54' N, 98° 31' W; the surface water temperature was 27.8°C.—JOSEPH R. JEHL, JR., *Natural History Museum, P. O. Box 1390, San Diego, California 92112*. Accepted 10 May 1973.

**Individual differences in alarm calls of Canada Geese leading broods.**—The Canada Goose (*Branta canadensis*) is characterized by highly stable, interacting family groups (e.g. Raveling 1970). Observations of family group behavior suggest that goslings selectively respond to their own parents (Collias and Jahn 1959). In undisturbed situations, one basis of individual recognition of parents by goslings appears to be the low-pitched call given by both the parents when leading young (Cowan 1973). In an alarm situation, such as when the family party or group of family parties is approached on the breeding grounds by an intruder, the adult geese give high-pitched, loud alarm calls that also appear to elicit approach and following of the parent (pers. obs.). Goslings may therefore respond selectively to the alarm calls of their own parents. If so, the calls of parents must be individually distinctive (White and White 1970, Beer 1970). This possibility was examined by analyzing a large sample of alarm calls obtained from *B. c. interior* in the Churchill region, Manitoba, in 1971.

At Churchill after the young hatch, the geese desert their nesting grounds along the treeline and move toward the coast where they congregate in large flocks (Jehl and Smith 1970: 24). The flocks I studied were composed of one or more family parties and probable nonbreeders. By approaching and following individual family parties, I was able to record alarm calls from 11 different geese, each leading a brood of young goslings. The second parent, which by behavior and voice was apparently the male, nearly always separated early from the family party in a distraction attempt and its calls were not recorded. From 6 to 190 calls, a mean of 70 calls, were recorded for each brood-leading goose. All records were made with a Uher 4000 Report L tape recorder and Uher M 539 microphone. For analysis, six calls for each goose were selected randomly and converted to spectrograms using a Model 675 Kay Electric Missilyser (narrow band; flat shape). Visual inspection of spectrograms for shape difference was used to detect call variation (see Beer, 1970: 36, Thompson 1970).

Figure 1 shows five alarm calls from a single goose selected at random. These

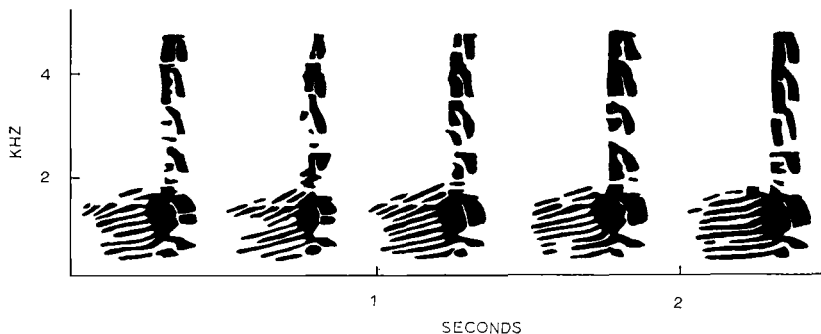


Figure 1. Five alarm calls by a Canada Goose with brood.

are typical of all the geese analyzed in that the shape of each call, and in particular the second half of each call was relatively stable between calls of the same individual. Spectrograms of one alarm call from each of the other 10 geese are reproduced in Figure 2. The marked differences between these calls of different individuals (Figure 2) compared to the relatively slight intra-bird variation (Figure 1) indicate that the alarm calls are individually distinctive, and hence could provide a basis for individual recognition of parents by goslings during alarm situations.

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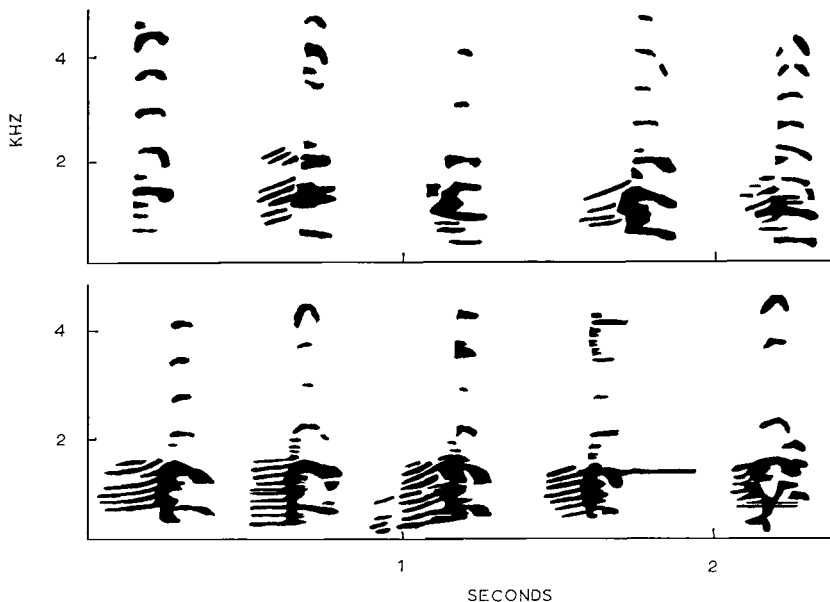


Figure 2. Alarm calls of ten Canada Geese each leading a brood.

## LITERATURE CITED

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**Notes on egg-laying in the Monkey-eating Eagle.**—On 22 September 1956 the Philadelphia Zoological Garden received an adult female Monday-eating Eagle, *Pithecophaga jefferyi*, that was supposedly captured on the Philippine island of Mindanao. Since then this specimen has been exhibited in a large open flight cage during the summer months and housed in a smaller off-exhibit area during the winter. Not until the spring of 1972 was pre-egg-laying behavior noted. This behavior, similar to that of other captive breeding raptors, consists of loss of appetite, restlessness, and aggression toward keepers. On 6 February 1972 she produced the first egg. It was found shattered on the floor of the enclosure, having apparently been dropped from her perch.

In December 1972 hay was spread over the floor to serve as a cushion in the event eggs were laid early in 1973. In late January, she once more displayed the pre-egg-laying behavior, made a depression in the hay, and produced a plain white egg on 3 February and another on 17 February. The first egg measured  $64.4 \times 90$  mm and weighed 202 g and the other measured  $61.5 \times 90$  mm and weighed 180 g. Incubation commenced with the first egg and continued with a substituted dummy egg. Even after the second egg was removed, she defended the nesting site and the dummy until its removal on 13 March 1973.

Only two instances of captive laying in this species have been recorded previously. A specimen exhibited at the San Diego Zoological Garden produced two eggs in 1954, one on 4 April and the other on 5 April. This bird had only been in the collection for 2 years. The other instance was recorded in January 1972 at a small zoo at Manila in the Philippines. I thank James Dolan of the San Diego Zoological Garden for providing information concerning their eagle.—STEPHEN R. WYLIE, *Philadelphia Zoological Garden, Philadelphia, Pennsylvania 19104*. Accepted 15 May 1973.