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Egg Retrieval by Incubating White-tailed Ptarmigan

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During investigations of nesting White-tailed Ptarmigan (*Lagopus leucurus*) in north-central Colorado I documented egg retrieving behavior by incubating females. This behavior has not previously been reported from the Tetraonidae. Egg retrieval was initially observed and photographed in 1975. In 1976 and 1977 I further investigated this behavior and delineated conditions causing egg retrieval.

Under field conditions an egg was randomly selected from the hen's clutch and placed at predetermined distances from the nest bowl. Only hens that remained on the nest during egg removal were tested. Behavior of the hen was observed until the egg was retrieved or 30 s had elapsed. During the trial the observer remained within 1 m of the nest.

All hens tested (n = 3) responded to an egg outside the nest by reaching out with their head and rolling the egg back into the nest (Fig. 1). This behavior appeared identical to that reported for the Greylag

Fig. 1. An incubating female White-tailed Ptarmigan returning an egg to her nest by rolling it with her bill.

Goose (*Anser anser*) (Tinbergen, N. 1951. The study of instinct. London, Oxford Univ. Press). At nest—egg distances of less than 10 cm the hens responded immediately. At longer distances (10–18 cm) a delayed response (5–10 s) often occurred prior to egg retrieval. There was no observed response within 30 s to eggs more than 18 cm from the nest. Once initiated, all egg retrieval attempts (n = 50) were successfully completed. When two eggs were placed outside the nest the closer egg was retrieved first. White eggs of domestic chickens (mean size 56.0 × 40.7 mm) elicited the retrieval response if colored to resemble ptarmigan eggs. There was no evidence that the larger chicken eggs presented a supranormal stimulus.

Egg retrieval has adaptive value as immediate retrieval of eggs insures their continued incubation. More important is the survival of the hen and clutch as eggs outside the nest may attract avian or ground predators. Incubating White-tailed Ptarmigan are cryptically colored, whereas their eggs are extremely visible when exposed.

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Blue-faced Boobies at an Oil Production Platform

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The Blue-faced Booby (*Sula dactylatra*) is a casual visitor to the Gulf coast of Louisiana and Texas (Traylor 1962). It feeds almost entirely far out at sea and is seldom seen in coastal waters (Snodgrass and Heller 1902, Gifford *in* Traylor 1962). It has learned to catch fish driven to the surface by ships passing through its feeding areas in blue water habitats (Traylor 1962), an area that is typically an impoverished sea with low densities of surface plankton and hence of surface-living prey fish (Simmons 1967). In recent years it has been observed foraging near oil production platforms in the northern Gulf of Mexico (Ortego 1977).

The thousands of petroleum platforms positioned off the Louisiana and Texas coast serve as artificial reefs which support diverse ecological communities, including fish (La. Advisory Comm. on Coastal and Marine Resour. 1973: 167). These platforms attract concentrations of fish that are available to natural predators and fishermen (Duffy 1975). While working on an oil production platform (28°15′N, 94°03′W) 190 km S 25° W of Cameron, Louisiana, I observed a total of 8 (5 immature, 3 adult) Blue-faced Boobies fishing in the vicinity during 26 of 39 days from 7 October to 14 December 1976. They normally soared within 25 m of the platform at an elevation of 35 m. Dives from this height were made at an angle of 50–60° to the surface. Frequently, these dives were temporarily halted, and a vertical dive from 10–20 m was made when the booby apparently relocated its prey. Of 1,215 dives I observed, 95.0% were made within 20 m of the platform, 4.8% at 21–50 m, and 0.2% > 50 m (all distances were estimated from a location 24 m above the surface and at the edge of the platform nearest to the boobies). This suggests that the platform attracted prey fish to the surface, especially close to the structure. The success of few dives was determined, as most prey caught were presumably swallowed prior to surfacing. Grant (Murphy 1936: 851) reported that Blue-faced Boobies swallowed their prey under water or on the surface with their head submersed. I observed a similar head immersing behavior on five occasions. Each bird immersed its head and peered around; no swallowing contractions were noticed, and at the time I assumed the bird was looking for missed or lost prey. Occasionally when a large fish (>15 cm) was captured, a booby surfaced with it and without immersing spent several minutes repositioning the fish before it was successfully swallowed.

Feeding near oil production platforms in the Gulf of Mexico by Blue-faced Boobies was typically a localized event. I spent the summer of 1973 at two locations 90 km S and E of the mouth of the Mississippi River without observing a booby, and I interviewed several oil field hands who worked at many locations

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