TABLE 1. Nestling period and percent original clutch fledged for Purple Martins in aluminum and wooden birdhouses.

	Birdhouses	
	Aluminum	Wooden
Nestling period in days*	28.20 ± 0.46	27.92 ± 0.39
sample size (no. of pairs)	82	67
Percent original clutch fledged	82.25	85.67
sample size (no. of pairs)	275	116

*$\bar{x}$ ± SD.

martins are assumed to nest more successfully there. If wooden houses, built properly (Brown, Bird-Banding 49:321–325, 1978b), are managed to discourage House Sparrows (*Passer domesticus*) and Starlings and are repaired and cared for regularly, Purple Martins should breed as successfully in them as in Trio houses.

Yet from a management perspective, I recommend aluminum houses. Aluminum houses are lightweight, encouraging people to lower them for nest cleanouts. Hinged doors (which few wooden houses have) further facilitate cleaning and maintenance. Aluminum houses do not require as much repair and repainting as do wooden houses. For these reasons, aluminum houses enjoy longer life than most wooden houses and ultimately produce more Purple Martins, while Starlings and House Sparrows take over neglected and aged wooden birdhouses.—CHARLES R. BROWN, *2601 Turtle Creek, Sherman, TX 75090.* (Present address: *Dept. of Biology, Princeton University, Princeton, NJ 08544.*) Received 4 Aug. 1980; accepted 21 Mar. 1981.

Incubating Female Gadwall Dies Upon Flushing From Nest.—While studying the breeding ecology of the Gadwall (*Anas strepera*) in southern Manitoba, I observed the death of a female that had flushed from her nest. This Gadwall, marked with a nasal saddle (cf. Doty and Greenwood 1974) in 1972, had been observed on 13 June 1974 with an incomplete clutch of 7 eggs. The nest initiation date was calculated as 7 June. After I attempted to capture the hen on the nest with an automatic nest trap on 24 June, she abandoned a completed clutch of 11 eggs after 8 days of incubation.

The female was relocated on 25 July, at 1100 by a dog that was used in locating waterfowl nests. As I approached, she flushed from the nest and flew 10 m to open water. I walked immediately to the edge of the water and found the hen dead a short distance offshore. The hen's second nest contained 9 eggs, and an embryo was aged at 18 days of development. Back-dating of the clutch (Sowls 1955) indicated a nest initiation date of 30 June, 6 days after the abandonment of the first nest in the same area. The female was at least 4 years old since it was originally banded as an adult (2 years old or older) in 1972 (Blohm 1977).

The carcass was necropsied at the Veterinary Pathology Laboratory in Winnipeg, Manitoba. There was no food in the gastrointestinal tract and no signs of internal trauma or parasite loads. An analysis to determine the lipid portion of the carcass as an index of body condition and energy stores was conducted at Raltech Scientific Services, Madison, Wisconsin. The ether extract procedure, following methods outlined by Peterson (1976), indicated a fat content of 2.3% of the overall carcass weight which was slightly higher than the overall mean lipid portion of 1.7% for other adult females collected on the area at the same stage of incubation.

Kabat et al. (1956) stated that captive hen Ring-necked Pheasants (*Phasianus colchicus*) with high energy stores were more stress resistant than birds with lower reserves; the lowest level of physical condition in these birds was during the post-laying period. Breitenbach and

Meyer (1959) suggested that the rigors of incubation and brood-rearing were a drain on the energy reserves of hen pheasants, causing them to become more vulnerable to other stress factors; and Ankney and MacInnes (1978) reported that in Lesser Snow Geese (*Chen caerulescens caerulescens*) some females deserted their nests in late incubation while others starved to death because of depleted nutrient reserves. Bellrose et al. (1961) pointed out that little information is available on the relationship between stress, as defined by Selye (1956), and mortality; and in a discussion of differential mortality between sexes in ducks suggested that breeding females experienced the greatest loss of energy stores during egg-laying, incubation, brooding of young, and the post-nuptial molt. Harris (1970) studied the role of stress response in breeding Blue-winged Teal (*Anas discors*) females and suggested that a hyperactivity of the adrenal glands during the mobilization of energy reserves throughout incubation could result in undesirable side effects. One such effect would be induced anemia and subsequent oxygen deficiency.

No exact cause of death was indicated in the necropsy of this female Gadwall. However, available lipid reserves were low, indicating a reliance also on environmental food sources to maintain metabolism during incubation. The absence of food in the gastrointestinal tract plus the cumulative effects of prolonged incubation of a second relatively large clutch after a brief renesting interval may have predisposed the hen to a high degree of physical stress. It is possible that my approach to the nest site and the subsequent flight of the hen triggered an additional stress reaction. This response, together with age, could have resulted in the death of the female.

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