GENERAL NOTES

Problems with Wing Tags: Evidence of Harm to Willets.—Auxiliary wing markers have been used on many species of birds to facilitate individual recognition and to document local movements, dispersal, and migration. Wing markers are generally reliable (Marion and Shamis, 1977), but in the literature are scattered reports of wing markers causing mild skin and feather abrasion or unusual behavior in some birds (Anderson, 1963; Southern, 1971). The Bird Banding Laboratory receives occasional word of wing-tagged birds appearing injured or found dead (R. Reynolds, pers. comm.). But, despite such reports, no firm evidence exists that marked individuals are more susceptible to debilitating injury or mortality than unmarked individuals. In this regard, I report a case of wing tags adversely affecting adult Willets (*Catoptrophorus s. semipalmatus*).

In 1977, I trapped 49 adult Willets on their nests on the Virginia coast and marked each with one aluminum and three colored plastic leg bands on the tibiotarsus (2 bands/leg). Of these birds, 27 were also given a wing tag, which was secured around the humerus by a small aluminum grommet. The tags, made of Herculite plastic (Herculite Protective Fabrics Corporation, New York, NY), were designed after that described by Southern (1971), except that only one end broadened into a disc. The tags were 55 mm across the disc portion and 16 mm across the fastening tab. The total length was 133 mm fully extended and 95–100 mm in place (approximately the length of the secondaries). Each complete marker weighed about 1.5 g. Weights of birds marked with wing tags ($\bar{x}$ = 211.6 g, n = 20) did not differ significantly ($t = 0.16$, $P > .05$) from weights of birds bearing only bands ($\bar{x}$ = 217.9 g, n = 21). Birds were marked between mid-May and mid-June and their movements followed until mid-July, by which time most had departed from the study area. Although no evidence of serious injury or impairment of flight was detected among wing-tagged birds during this period, frequent preening and body-shaking (normal comfort movements) during flight suggested some discomfort. No other behavioral anomalies were noted.

Evidence of a serious problem was not discovered until the following breeding season. Regular searches between April and August 1978 yielded 14 of the 22 untagged birds but none of the 27 wing-tagged birds. Based upon the return rate of untagged birds (64%), 17 tagged birds should have been expected. The highly significant difference between observed and expected returns ($\chi^2 = 45.9$, d.f. = 1, $P < .001$) clearly indicates that the wing-tagged Willets did not complete the round-trip migration successfully.

Eastern Willets apparently undertake sustained, transoceanic migratory flights from the eastern United States to the Lesser Antilles, a pattern typical of some other shorebird species (McNeil and Burton, 1973) as well as certain passerines (Richardson, 1976; Larkin et al., 1979). In species such as these, impairment of flight during migration may have particularly severe consequences. I suggest the wing tags interfered with Willet migration by increasing drag or by causing abnormal feather replacement during molt on the wintering grounds. Either situation could have increased the incidence of mortality by leaving tagged birds more susceptible to predation or nutritional stress.

This incident emphasizes the need for careful evaluation of potential adverse effects before a wing-tagging program is initiated. Consideration should go beyond the problems of tag size, weight, and means of attachment and take into account all life history parameters that could be influenced by the tag, especially a need for making long, sustained flights. In many species, other life history requirements, such as aerial maneuverability related to foraging, courtship, aggression, or predator evasion might also be important and need to be evaluated on a species-specific basis.

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Association of Great Egret and White Ibis.—Several wading birds use White Ibis (*Eudocimus albus*) as beaters when foraging. Courser and Dinsmore (1975) have described these one-way associations with the ibis for Snowy Egrets (*Egretta thula*) and for Louisiana Herons (*Hydranassa tricolor*). Kushlan (1978a) has recently described a true commensalism in which White Ibis and the Little Blue Heron (*Florida caerula*) aid each other in foraging. I describe a two-way association in which Great Egrets (*Casmerodius albus*) were attracted to White Ibis as foraging associates and the ibis to the egrets, seemingly for the protective value of the larger birds acting as sentinels. That the association between the two species was a two-way attraction was repeatedly evident in the course of observations given below. These were made through 8 × 30 binoculars from a car parked close to a pond in Lake Placid, Florida.

On 10 February 1979, two Great Egrets were walking through shallow water at 0830. One became stationary after a few minutes with head pulled down and body close to the water, apparently resting. The other walked to the end of the pond and back in 15 min during which it struck at prey only once and caught nothing. The morning was cold (0°C) with a strong wind. Two immature White Ibis flying in at 0850 alighted close (60 cm) to the resting egret. When the ibis moved away probing into pond sediment, the egrets followed closely. Other immature ibis kept arriving, attaining a final number of 32. When a third Great Egret tried to alight, one of the original egrets leaped at it with bill open and wings out. The intruder plus the other egret flew off. Two other intrusions by Great Egrets were repelled in similar fashion. The remaining egret stayed close to the ibis. In some parts of the pond and along a roadside ditch where it walked with the ibis for 40 m, it struck at no prey. In other parts I noted it striking at prey 4 times in 5 min and 12 times in 10 min. When the ibis flew across an open stretch of water and later from the ditch to the pond, the egret flew also. When the ibis stopped to preen, the egret preened while standing among them. The ibis all left the pond at 1040, the egret flying with them to a second pond 200 m away.

In the two hours of observation, on three occasions the ibis seemed attracted to the egret. The two original ibis had landed close to the resting egret at the start of my observations. Later, when the combined flock came close to my car the egret shied away to rest in a hunched position on a sandy road. When six more ibis flew in, two landed on the road beside it. A third instance of attraction was noted after the birds had flown to the second pond. Here the egret seemed to lose interest in foraging with the ibis and moved away 8 m. Some ibis followed it immediately. The egret then flew across 10 m of open water to a highway embankment. Eight ibis flew to join it within seconds, four landing close to it. They seemed to find nothing to feed on and returned to the marsh. White Ibis feed with heads down when probing deeply (Kushlan, 1977a), with little looking