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Island Scrub Jay predation on cliff nests of House Finches.—The Island Scrub Jay (*Aphe-locoma coerulescens insularis*) is found only on Santa Cruz Island, 30 km from the coast of southern California (34°00'N, 119°42'W). Not as well studied as the jays of the adjacent mainland, many aspects of its biology remain unknown. In this note, I document predation by Island Scrub Jays on the nests of House Finches (*Carpodacus mexicanus*). Although such predation is well known among other Corvids, no specific reports of it have been published before for the Island Scrub Jay.

On the morning of 7 July 1984, I was hiking up Cascada Canyon in the Central Valley of Santa Cruz Island. On the right side of the canyon was a high cliff, pocketed with many small holes. As I looked up at the cliff, I saw two Island Scrub Jays hopping across its nearly sheer, vertical face, one approximately 25 m above the other. As I focused my binoculars on a jay, it entered a small hole in the cliff. A second later, it emerged and entered a nearby hole. After inspecting it quickly, the jay moved to still another hole, apparently looking for something. Two adult House Finches appeared and began diving at the jay. The finches apparently had a nest in the area and were trying to drive the jay away from it. Undaunted by their actions, the jay inspected a few more holes until it found a nest in one of them. Disappearing completely from view as it entered the House Finch nest hole, the jay re-emerged a few seconds later holding a light-colored egg in its beak. It then flew to a point on the cliff 30 m away and ate the egg. A few minutes later, the jay returned to the House Finch nest and took another egg, despite more threatening aerial dives by the parent finches. After removing the second egg to a safe distance, the jay ate it. I watched the jay for a few more minutes while it foraged among other holes in the cliff, and I saw it steal yet another egg from a different House Finch nest. As I turned my attention to the second jay, I saw it being mobbed by another pair of House Finches farther up the cliff. This jay, like the first, was not intimidated by the finches, and hopped into their nest hole and disappeared from view. A few seconds later, it reappeared carrying an egg in its beak, and flew to the other side of the canyon. A few minutes later, a jay returned to the same nest and took another egg exactly as before. In all instances, the defensive behavior of the finches seemed to have no effect on the jays. Each jay foraged alone and did not depend on the other for assistance. The entire episode lasted approximately 0.5 h.

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Wing-spreading in Chilean Blue-eyed Shags (*Phalacrocorax atriceps*).—During a field study of Patagonian cormorants, we observed wing-spreading in Blue-eyed Shags (*Phalacrocorax atriceps*) in Llanquihue and Chiloé provinces, Región X, south-central Chile. We report on our observations to clarify the function of wing-spreading, a behavior previously thought not to occur in blue-eyed shags (van Tets pers. comm. in Bernstein and Maxson 1982a; Bernstein and Maxson 1982a, 1982b; Robertson and van Tets 1982; Siegel-Causey 1986). The plumage of cormorants seems to be more wettable than in most water birds

(McAtee and Stoddard 1945; Rijke 1968, 1987; Bernstein and Maxson 1982a; but see Elowson 1984, 1987; Mahoney 1980, 1984), and the wing-spreading posture characteristic of some species may help dry the feathers (Owre 1967, Clark 1969, Francis 1981, Bernstein and Maxson 1982a, Hennemann 1984). Feather drying is apparently the main function of wing-spreading in Double-crested and Flightless cormorants (*P. auritus* and *P. harrisi*; Hennemann 1984); in other species wing-spreading may allow heat gain or loss (Clark 1969, Curry-Lindahl 1970, Kahl 1971). Jones (1978) hypothesized that in Reed Cormorants (*P. africanus*) wing-spreading may be an intraspecific signal of fishing success.

On 18 and 19 January 1987, Rasmussen saw wing-spreading by 4 of about 75 total individuals observed from 09:30–14:00 h (18 January) and by one between 08:30–12:30 h (19 January) in part of a cliff-nesting colony of Blue-eyed Shags at Punta Guapacho (41°45'S, 73°53'W), Península Lacuy, Chiloé Island, Chile. On 29 January 1987, both authors observed wing-spreading by several individuals we watched for about 10 min (starting at 0930) in a loafing flock of 8 adults and 4 juveniles on a gravel bar at Isla Elvecia (41°45'S, 73°09'W), near Calbuco, Llanquihue Province, Chile. Observations were made using 8 × 56 binoculars. All three days were sunny; on 18 January there was a light wind, and the approximate temperature was 21–28°C; on 19 January there was a strong wind, and the temperature was about 15–20°C; 29 January was calm with temperatures estimated at 21–28°C (all weather data estimated informally by Rasmussen). Adult Blue-eyed Shags were distinguished from juveniles by the characters given in Rasmussen (1986); subadults were distinguished by the presence of numerous pale juvenal feathers mixed with black basic feathers of the dorsum.

Shags were considered to be wing-spreading when the wings were held extended with remiges more or less parallel to the axis of the body (Fig. 1A), or with wings somewhat less outstretched than shown in the figure. Shags performed two types of wing-extended behavior that we did not consider to be wing-spreading: juveniles near fledging often flapped their wings vigorously, and juveniles (and occasionally adults) often extended their wings nearly parallel to the ground when walking on uneven rocky areas (probably for balance, as described for pelicans, *Pelecanus* spp., and anhingas, *Anhinga* spp.; van Tets 1965). During wing-spreading, shags preened the breast, abdomen, and flanks (with one exception), and they sometimes flapped and shook their wings. Bouts of wing-spreading lasted from 2–77 sec (N = 28 instances involving 18 individuals). Fourteen instances of wing-spreading lasted less than 10 sec, and 14 instances lasted over 10 sec. One shag held out each wing in turn for 2–3 sec, and another shag wing-spread three consecutive times for 3–5 sec, with pauses of about 1 sec each with the wings folded, then it wing-spread 7 consecutive times for 20–60 sec with pauses of about 1 sec each. At Calbuco, we observed five instances of individual wing-spreading shags walking through the resting flock, holding their wings fully extended and slightly raised, moving them as necessary to avoid bumping into the others. Most, if not all, wing-spreading shags had just returned from foraging and had wet plumage. We did not see shags returning to the water after wing-spreading. Wing-spreading shags did not appear to elicit reactions from other shags nor incite foraging trip departures by neighboring shags.

Our observations of wing-spreading in Chilean Blue-eyed Shags and its absence in Antarctic Blue-eyed Shags (*P. atriceps bransfieldensis*) support Bernstein and Maxson's (1982b) hypothesis that, in the Antarctic, climatic factors outweigh the putative advantages of wing-spreading. In the temperate Chiloé area, heat loss due to wing-spreading would be less than in Antarctica, and the fact that we saw wing-spreading several times during warm weather and only once in cool windy weather suggests it is used when heat conservation is not essential.

We observed several cases of wing-spreading in calm weather, but only once during strong winds on 19 January in 4 h of observation at Punta Guapacho. Windy weather may serve

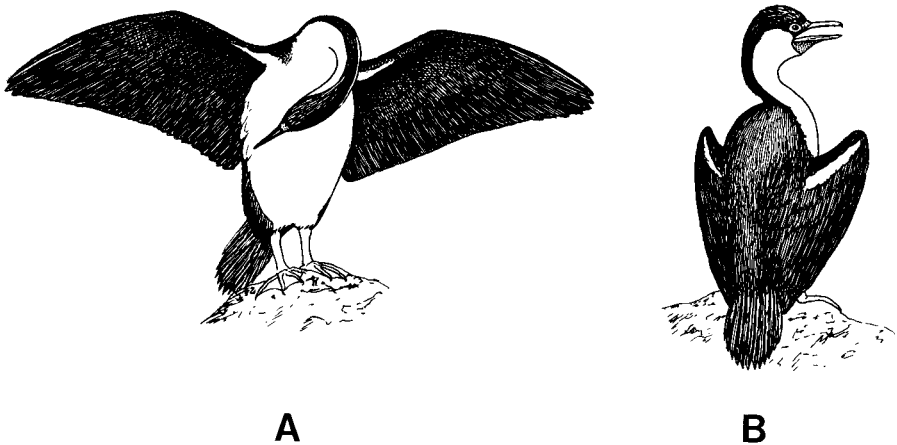


FIG. 1. (A) Typical wing-spreading posture and (B) wing-drooping and gular fluttering in Blue-eyed Shags.

to dry the feathers without wing-spreading. In addition, wing-spreading birds could easily be blown off their perches on days such as 19 January, when many birds could not even land at their nests without multiple attempts.

Wing-spreading has been observed in birds of several orders (e.g., Pelecaniformes, Falconiformes, Ciconiiformes) when ambient temperatures required heat loss or gain (see Hauser 1957, Schreiber 1977). We observed other postures of probable thermoregulatory function in Chilean Blue-eyed Shags during the cooler and warmer parts of the day. In cool morning weather, birds usually assumed a hunched, closed-wing posture. During the warmer parts of our observation periods, many birds let their wings droop slightly at the carpal joint (Fig. 1B), and most birds gular-fluttered continuously. We often saw shags wing-drooping at nests as well as on loafing areas (as in Flightless Cormorants, Hennemann 1984). Shags that were wing-drooping did not wing-spread during the same general time periods (although the two behaviors are associated in the Great Frigatebird, *Fregata minor*; Mahoney et al. 1985). Because we usually saw wing-spreading performed during warm weather, and because we did not observe it in conjunction with other thermoregulatory behavior (e.g., wing-drooping and gular-fluttering), we do not think that wing-spreading primarily serves a thermoregulatory function in Chilean Blue-eyed Shags.

Jones (1978) found that Reed Cormorants that had just successfully foraged wing-spread more often than did unsuccessful birds, and he postulated that the birds signaled foraging success by wing-spreading. This hypothesis is not supported by the behavior of Chilean Blue-eyed Shags, because wing-spreading shags did not appear to incite foraging by nearby shags. A simpler explanation for the disparity in performance of wing-spreading by Reed Cormorants is that unsuccessful birds do not "dry" their wings because they must return to the water to forage sooner than successful birds.

Wing-spreading in Chilean Blue-eyed Shags appears to be used less frequently and to be less prolonged than in most species of cormorants (e.g., van Tets 1965, Owre 1967, Berry 1976, Jones 1978, Hennemann 1984, Brothers 1985); however, the frequent association of wing-spreading with flapping, shaking, opening and closing of the wings, and walking probably speeds feather drying (Francis 1981, Bernstein and Maxson 1982a, Hennemann 1984).

The hypothesis that wing-spreading in the Chilean Blue-eyed Shag serves primarily to dry feathers is supported by our observations that wing-spreading was often associated with preening, most wing-spreading birds had wet plumage, and shags did not return to the water immediately after wing-spreading.

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Male initiation of pair formation in Red Phalaropes.—The mating system of phalaropes has been labeled “female access polyandry” because females compete for and defend males (Emlen and Oring 1977). Males are smaller than females, more cryptically colored, and assume all incubation and brood-rearing duties. All previous studies of phalarope pairbond formation have described females pursuing and courting males (Höhn 1967, 1971; Bengtson 1968; Gillandt 1974; Howe 1975a, b; Kistchinski 1975). In each of these studies, except Gillandt (1974), the sex ratio was one-to-one or female-dominated. In this paper, we present observations on pair formation in the Red Phalarope (*Phalaropus fulicaria*) during a period when extra males occurred in the study population.

We made behavioral observations on Red Phalaropes at Barrow, Alaska, (71°17'N, 156°47'W) from 7 June through 7 July 1975 as part of a study of the mating system and breeding behavior of these birds (Schamel and Tracy 1977 and unpubl.). The main study area (0.67 km²) was a flat, wet sedge marsh with numerous small ponds. Phalaropes were color banded for individual recognition. Behavioral interactions were recorded on tape recorders. We determined the sex ratio in the local population by census counts and by monitoring the sex composition of birds in aerial chases. These two techniques provided independent estimates of the local sex ratio. We found that a male bias in census counts was complemented by a male bias in aerial chases and vice versa (Schamel and Tracy 1977). Although the other studies listed above did not rely upon census data to estimate the sex ratio, data presented in those studies show more than one female approaching and pursuing males and an apparent predominance of females in the local population. Further details of our study area and methods are found in Schamel and Tracy (1977). We observed three pairs during the initial stages (first 24 h) of pairbond formation. In two instances, the female was known to be forming a pairbond with a second male shortly before (one instance) or shortly after (one instance) completing a clutch of eggs for her first mate. All three pairbonds formed during a brief period (10-17 June, see Schamel and Tracy 1977) when males outnumbered females in the study area. All three pairs produced clutches.