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Sexual Chase in Purple Martins

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Several behavioral studies of Purple Martins (*Progne subis*) have failed to comment on sexual chase (Olmstead 1955, Gaunt 1959, Johnston and Hardy 1962), although Allen and Nice (1952) make brief mention of "sexual flights." Here I describe and interpret sexual chase in martins. My studies were conducted at two martin colonies of 72 and 42 rooms, respectively, in Sherman, Grayson County, Texas. Individual martins in the colonies were identified by painted bands, plumage differences, and behavioral peculiarities. I spent approximately 5,445 h observing Purple Martins during 1972–77.

Others have described pair formation in Purple Martins (Allen and Nice 1952, Gaunt 1959, Johnston and Hardy 1962). In Texas two distinct types of sexual chase develop shortly after pairs become firmly established. I refer to them as *Pair Chase* and *Rape Chase*. Pair Chase commonly occurs in Sherman as early as late February, soon after pair formation, and I have noted it as late as mid-June. The peak seems to occur in March, April, and May before each pair lays its eggs. Pair Chase occurs only on partly cloudy to clear, rather mild days when martins are quite active. Cool weather restricts overall martin activity (Brown 1976, Finlay 1976).

Pair Chase involves only the members of a pair. The male vigorously chases his mate for 15–40 s. When chased, females make many complicated twisting and turning maneuvers, the male staying 10–15 cm behind the female. When the male terminates the chase, the pair resumes normal flight. During Pair Chase, the male often utters his song—a warbled set of "chur" and "sweet" notes followed by a guttural trill. Pair Chase invariably begins while a pair is foraging away from the nesting site. I have never recorded Pair Chase originating lower than about 12 m above the ground nor around the martin houses, although females sometimes fly near the ground in their maneuvers while being chased. Most Pair Chases occur when pairs are apart from foraging flocks. Pair Chase ceases when the female begins laying eggs. It seems to be largely a behavior of adult martins, and I have very few records of first-year birds engaging in these pursuits. In Pair Chase I have never recorded an instance of a female being chased by a male other than her mate.

Rape Chase differs greatly from Pair Chase. I have never noted Rape Chase in Sherman prior to the inception of nest building in mid-March. It has occurred as late as mid-June, although most Rape Chases

cease by late May when nest building stops. The occurrence of Rape Chase reaches a peak during the first 3 or 4 weeks of nest building in mid-March through early April.

Rape Chases are characterized by violent pursuits of one female by two–six males, none of which is her mate. The chased female's mate joins in the chase but always in an apparent attempt to drive off the other males. The female's mate usually mingles into the group of pursuing males, but is generally unsuccessful in repelling the pursuers. Rape Chases are prolonged, lasting 30–60 s. The chased female often plunges into tree branches or lands on a martin house in attempts to elude the males. The pursuing males attempt to copulate (hence "Rape" Chase), and I observed cloacal contact on at least two occasions. These chases sometimes turn into violent melees, with the pursuing males fighting among themselves.

In contrast to Pair Chase, Rape Chase originates at lower heights, often near the ground or around the martin houses. It appears that nest building is a stimulus to the release of Rape Chase behavior; when many males in the colony see a female returning to her nest with nesting material or collecting material on the ground nearby, these males pursue the female. Most of these males are firmly paired to other females in the colony. When the first female of the colony starts nest building, her first attempts to carry material into the martin house are usually thwarted by Rape Chases. Occasionally males pounce in apparent copulation attempts on females that are on the ground gathering nesting material, and Rape Chase follows. Adult males engage in most Rape Chases, and I rarely have seen first-year birds involved. Birds in Rape Chase generally utter no definite vocalizations.

From pair formation until the inception of incubation, male Purple Martins are in constant attendance of their mate. Males follow females whenever they leave the nesting sites. They forage with their mate, although members of a pair sometimes become separated while foraging. Males escort their mate while she nest builds, occasionally gathering material themselves, although on days of heavy building, most males cease escorting and sit on the martin houses or loaf on nearby utility wires during the afternoon. An escorted female is less likely to be attacked in a Rape Chase because her mate can drive off the first pursuer, thereby eliminating the "contagious" element in the chase. Male martins also are extremely jealous of their mate during the pair formation-to-incubation period and chase away other males that perch or fly near their mate. This sexual jealousy and the males' constant attendance of mates decreases opportunities for Rape Chase by keeping females away from congregations of potential rapists and facilitates Pair Chase.

Allen and Nice (1952) imply that females' mates commonly pounce on them while the females are on the ground gathering nesting material. My studies do not support this implication. I have never seen a male attack his mate; Allen and Nice likely confused this behavior with Rape Chase, which they appear to describe when they mention contagious "sexual flights."

In 5 yr of intensive field work, I have observed copulation by Purple Martins only eight times. In all cases it occurred while a pair was quietly perching on a wire, and in contrast to Allen and Nice's (1952) statement, the female apparently took the initiative by flattening herself for the male to mount. Data are not available to evaluate Allen and Nice's (1952) contention that copulation ceases when the first egg is laid; copulation may occur inside the martin house, and Lunk (1962) suggested concealed copulation for Rough-winged Swallows (*Stelgidopteryx ruficollis*), as did Petersen (1955) for Bank Swallows (*Riparia riparia*) and Emlen (1954) for Cliff Swallows (*Petrochelidon pyrrhonota*).

In his description of pursuit flights in Rough-winged Swallows, Lunk (1962) apparently describes behavior similar to the Purple Martin's Pair Chase and Rape Chase, including chases of building females, although Lunk did not differentiate the chases. Petersen (1955) describes behavior in Bank Swallows similar to Pair Chase in martins. Detailed observations on other Hirundinids are lacking, although sexual chase probably does not occur in Cliff Swallows, in which pairs do not associate away from the nest (Emlen 1954). Pair Chase behavior may be present in all swallows that maintain close pair bonds. Future swallow researchers should attempt to separate Pair Chase and Rape Chase, which are quite distinct in martins.

Lunk's (1962) view that sexual chase is difficult to interpret for rough-wings holds also for Purple Martins. Pair Chase could maintain or strengthen the pair bond and/or synchronize male and female reproductive rhythms. The significance of Rape Chase is obscure, despite its abundance during the early stages of the nesting cycle. Possibly it serves as some type of sexual stimulus to male and female Purple Martins.

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Snowy Egret in the Strait of Magellan

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On 24 May 1976 I observed a Snowy Egret (*Egretta thula*) foraging along the shore of a small island off Península Córdoba, Isla Riesco, in the Province of Magallanes, Chile (53°0'S, 73°30'W). A. W. Johnson (1965, The Birds of Chile, vol. 1, Buenos Aires) describes the Snowy Egret in Chile "as a resident only as far south as Valdivia and as a casual visitor to Llanquihue and Chiloé." This sighting therefore occurred south of the known range of the Snowy Egret by more than 1,000 km.

During the voyage from Puerto Montt to Punta Arenas the vessel, 'El Navarino,' passed through the narrow channel within 40 m of the shore. From that distance I could easily distinguish the black legs and bright yellow toes characteristic of the Snowy Egret.

The current known distribution of the widely dispersed Snowy Egret extends, at least casually, from Alaska (Nelson 1958, Condor 60: 142) and Alberta (Weseloh 1972, Blue Jay 30:29) to the southern tip of South America.

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Undependable Breeding Conditions in the Red Phalarope

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Unreliable breeding conditions place a premium on female ability to produce additional and replacement clutches, and therefore may foster female emancipation from care of eggs and young, and polyandry (Emlen and Oring 1977). The Red Phalarope (*Phalaropus fulicarius*) presents one of the rare examples of these circumstances among birds.

Red Phalaropes I studied on Bathurst Island in the Canadian high arctic showed wide fluctuations from year to year in breeding population and nesting success as a result of environmental factors. The capricious climate affected the accessibility of nesting sites and food, and arctic foxes (*Alopex lagopus*) brought severe losses to nests in years of fox abundance.

My work was conducted in Polar Bear Pass, 14 km inland from Goodsir Inlet (75°44'N, 98°25'W). Here I gave special attention to a rectangular tract ½ × 2 km (1 km²) comprising some of the best habitat in the region for phalaropes. I stalked the birds daily, watched them from blinds, and attempted to find all nests in the plot. In years when I was not present, field companions from other seasons continued to supply information, particularly Pierre Lamothe for 1972 and John Geale for 1974, 1975, and 1976. Their estimates of breeding activity here were based on birds seen as well as nests found. The Northern Phalarope (*Phalaropus lobatus*) does not occur here regularly.

Phalarope nests on the area fluctuated during 7 consecutive years, 1970–1971, as follows: 6, 14, 0, 8,