

were resting in the water near the edge of the flooded area, but a few individuals were walking on the ground, grubbing in the mud for potatoes left after harvesting.

This behavior seems to be more common than previously noted, at least among wintering birds. Three of the above instances were not in response to adverse conditions but rather seemed to be part of the normal feeding pattern for flocks of this species wintering in central California.—JAMES TATE, JR., and D. JEAN TATE, *Department of Zoology and Physiology, University of Nebraska, Lincoln, Nebraska, 15 December 1965.*

**Homosexual Behavior in Wild Orange-fronted Parakeets.**—The tendency toward homosexual behavior in many species of captive psittaciform birds is a characteristic well known, if not well documented, by experienced aviculturists. In the past, many such observations upon captive birds have been based upon subjective, or even intuitive, "determination" of the sex of the individuals involved. The lack of external sexual dimorphism in most species of psittacines necessitates the careful determination of sex of both of the partners concerned either by subsequent autopsy, or more conveniently for the aviculturist, by laparotomy. Recently, Dilger (*Zeits. Tierpsychol.*, 17:649–685, 1960), working with African Lovebirds of the genus *Agapornis* Selby, and Hardy (*Condor*, 65:169–199, 1963), working with *Aratinga canicularis* (Linné), the Orange-fronted Parakeet of Middle America, have observed homosexuality in captive birds in which the sex of each partner was definitely known by gonadal examination. Aside from the problem imposed in ascertaining the sex of each individual comprising the pair in wild birds, there is, to my knowledge, no documented account of homosexual behavior in wild individuals of any species within the Order Psittaciformes. Thus doubt has existed as to whether homosexual behavior in psittacines may not be a pattern (whether latent in the wild or otherwise) either induced or brought forth by the conditions of confinement. The following observations confirm the presence of homosexual behavior in wild individuals of the Orange-fronted Parakeet, *Aratinga canicularis*.

During irregular intervals between November 1961 and April 1962, I made observations of both foraging flocks and pairs of *A. canicularis* on the properties of the Escuela Nacional de Agricultura y Ganadería, 12 km E of Managua, Nicaragua, alt. 150 feet. The habitat at this locality consists of Pacific coast lowland broadleaf forest (tropical deciduous forest of some authors), interrupted by cultivated fields and pastures. Termitaria, potential nesting sites for *Aratinga*, are a conspicuous feature of this habitat; these varied from small, football-size structures on fence posts and lower snags to immense 5- to 6-foot-long masses, which not infrequently occurred as high as 60–70 feet in large, dead *Ceiba* and other trees. Many of these termitaria evidenced excavation by parakeets; some of the larger structures exhibited as many as five separate entrances, although this does not, of course, indicate occupancy by more than one pair of birds at any given time. The Orange-chinned Parakeet, *Brotogeris jugularis* (P. L. S. Müller), was also commonly found in this habitat, but was not observed to associate in any way with *A. canicularis*. The area was, in short, a characteristic habitat for *Aratinga canicularis* such as may be found at many localities on the Pacific slope of Middle America from central Sinaloa, México, south to Costa Rica.

At approximately 1035, on 31 December 1961, I encountered a flock of nine *A. canicularis* perched on two horizontal limbs near the top of a large, broadleaf tree near the edge of the forest. The birds were not feeding, but rather were sitting quietly or slowly walking up and down the limbs and testing their mandibles on the bark. Occasionally a short, low mutter would issue from one or more individuals. After about 10 minutes of observation, the flock suddenly exited with loud alarm cries, flying off over an open, cultivated field. About 100 yards from the woodland, two of the individuals broke from the flock, and circling widely together, slowly returned to the original perch tree in the forest. At this point, my attention was diverted to other species, and it was fully five minutes before the pair of *Aratinga* was again under observation. At this time, the pair was sitting side-by-side on a limb at approximately the same height, but on the opposite side of the tree from the limb upon which the flock had originally perched. A few seconds later, they dropped to another limb a few feet lower—one of the birds circling several

feet out and chattering the while; they assumed the side-by-side position on the new limb. The birds now began to engage in the elaborate behavioral patterns that Hardy (*op. cit.*) has described in detail in this species and has termed mutual preening and appeasement. Mutual preening, fluffing of the plumage, closing the eyes, nuzzling, and "wing-up" actions were observed in the pair. This pattern of behavior was maintained intermittently for approximately 25 minutes, at the end of which period one individual began to "fawn" the other by raising its leg and "clawing" the wing and back of its partner. This action was followed in a few seconds by an attempt to mount on the part of the individual that had been engaged in the "clawing." Under the impression that this behavioral pattern represented an unusually early date for breeding in the species, the two individuals were forthwith collected while in the attempted mounting posture. The two specimens (U.C.L.A. nos. 51,588-9) proved to be two adult males, weighing 85.4 g and 82.2 g, and with testes 10 mm and 9 mm, respectively.

It is difficult to assess the evolutionary significance of such a behavioral characteristic in wild psittacines without additional information on the natural history as well as the ethology of the species concerned. For example, no information is available on sex ratios in wild populations of *A. canicularis*, of seasonal variations in flock compositions, of the ratio of available nesting sites to the number of breeding pairs of birds in any given area, or of the frequency of the homosexual character within wild populations. Certainly these are only a few of the many critical questions that must be answered before an evaluation of this character can be attempted.

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**Breeding Record of the Cassin Sparrow (*Aimophila cassinii*) in Arizona.**—While conducting research on the breeding biology of the Rufous-winged Sparrow (*Aimophila carpalis*), I was fortunate enough to find three nests of the Cassin Sparrow (*A. cassinii*). Nesting of the species occurred from the latter part of July to early September 1965. The habitat was mixed bunchgrass and thornbrush located 7 miles E, 7 miles S Tucson, Pima County. The nests were constructed 6 to 12 inches off the ground in bunchgrasses. All nests were constructed beside mesquite trunks, but none was attached to the trunks. A total of eight young fledged from the three nests. I banded five of the young and one maternal adult with Fish and Wildlife Service bands.

The A.O.U. Check-list (1957:603) reports Arizona as being in the breeding range of *A. cassinii*, but Phillips *et al.* in *The Birds of Arizona* (1964, pp. 200-201) reports no record of the birds breeding in the state. One 15-day-old fledgling (Univ. Ariz. Dept. Zool. no. 5683) was secured for the record.

Study of the breeding adults plus the observation of the Cassin's song flight during the nuptial displays eliminated any confusion with the Botteri Sparrow (*A. botteri*). Also, the Botteri Sparrow has not been reported in the Tucson area during its breeding season, and the nest has not been found in the state (Phillips *et al.*, *ibid.*:200).—ROBERT D. OHMART, *Department of Zoology, University of Arizona, Tucson, Arizona, 15 December 1965.*

**Notes on Costa Rican Birds.**—During the summer of 1965 incidental observations were made on birds in Costa Rica. Several items of interest are recorded here.

*Elanus leucurus*. White-tailed Kite. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964) gave several sight records for this kite, but reported that no specimens had yet been taken in Costa Rica. On 27 June I saw a lone bird foraging over a densely overgrown pasture along the Pan American Highway about 15 miles south of Buenas Aires, Puntarenas Province. Later, on 19 July, I collected an example of this species as it foraged with another individual over a pasture along the