

Age of a female *Amazona festiva* at sexual maturity.—The age until sexual maturity for most species of Amazon parrots (genus *Amazona*) is unknown due to the difficulty in making relevant field observations, in acquiring young birds whose age is known, and in successfully breeding adults in captivity.

Some information is available for a few species. Boosey (1956. "Parrots, Cockatoos and Macaws," Camelot Press, London, pp. 38, 46) noted that he had to wait four years for newly acquired, "young," *Amazona aestiva*, and *Amazona leucocephala*, to show interest in breeding. Vane (1957. *Aviculture*, 63:183–188) kept a pair of *Amazona autumnalis* which started laying when they were "about three years old." The following observations were made on a captive female Festive Amazon (*Amazona festiva*).

The parrot was six months old when obtained by the author in Iquitos, Peru. It was 3.5 years old in January 1967. Since September 1965, the bird has been caged in a windowless room which varies from 21–24 C, and is usually dark from 000 to 0700 hours. It is fed a variety of seeds and fruits and appears healthy.

The bird is handled daily, and for the first time, on 5 December 1966, it demonstrated female soliciting behavior while perched on the author's hand. When stroked near the base of the tail under the wings, or around the cloaca, the bird crouched low pressing its breast against the palm of the hand, raised its tail exposing its cloaca which began to pulsate, rapidly fluttered its wings, and issued a previously unheard sound, like the "whimpering" of a dog. If stroked occasionally, this behavior was continued for up to 15 minutes, after which the bird 'lost interest.' This behavior was evoked almost daily, but became more difficult to elicit by early February 1967. After 12 February 1967, the bird no longer responded and did not tolerate the stroking.

Although the time until sexual maturity may be somewhat different for wild birds, this activity indicates that *A. festiva* females become sexually mature in their third year, not unlike closely related species. It should be pointed out that this breeding behavior was observed only during months which correspond to part of the rainy season in the Peruvian Amazon basin (November–March), the time when much avian breeding activity occurs (G. Cetraro (pers. comm.), and personal observation).—LAWRENCE E. LICHT, *Department of Zoology, University of Texas, Austin, Texas 78712. (Present address: Department of Zoology, University of British Columbia, Vancouver, B. C.). 1 March 1967.*

Budgerigars are not determinate egg-layers.—Possible factors regulating the species-typical clutch sizes of determinate and indeterminate egg-layers are extensively reviewed by Lehrman (1961. In "Sex and Internal Secretions," Vol. 2, W. C. Young, ed.; Williams and Wilkins Co., Baltimore, Md.: pp. 1268–1382) and by van Tienhoven (ibid., pp. 1088–1172). Egg removal may prompt an indeterminate female to continue oviposition by preventing or delaying her incubation behavior, thereby inhibiting necessary hormonal changes which stop egg production. Or, the number of eggs in an indeterminate female's nest may act independently as a tactile or visible stimulus in the neuroendocrinological regulation of her ovarian activity. In contrast, the species-typical clutch size of a determinate female (i.e., her ovarian activity) is, genetically, determined by her internal physiological state and is not regulated by her performance of incubation behavior or by such external stimuli as the number of eggs in her nest.

Budgerigars (*Melopsittacus undulatus*) have been classified as determinate egg-layers (van Tienhoven, op. cit.; p. 1144). However, other, anecdotal, information suggested otherwise. Accordingly, it seemed worthwhile to investigate this apparent contradiction.

Budgerigars do not build nests but generally use a cavity (e.g., a nestbox) in which to lay a typical clutch of four to seven eggs. They lay an egg every other day and begin incubation with their initial oviposition.

Two groups, each consisting of eight heterosexual pairs, were studied. Females of Group A were permitted to retain and incubate the first egg they laid. Subsequent eggs were removed within eight hours following oviposition. Females of Group B were not permitted to retain any eggs: again, eggs were removed within eight hours following oviposition. Consequently, females of Group B were never exposed to the presence of an egg in the nest nor permitted to incubate an egg for more than eight hours at a time.

Results were clear-cut. All females of Group A laid only the species-typical number of eggs per clutch. Each female's ovary, when examined by laparotomy on the third or fourth day after her last oviposition, contained only small follicles (2.0 mm or less in diameter) typical of the inactive non-breeding state. All females of Group B continued to lay eggs until the arbitrary termination of this study, after each female had laid 20 eggs. Laparotomies of Group-B females, on the fourth day after each had laid its twentieth egg, showed that each female still possessed an active ovary containing large follicles of various diameters (8.0 mm or less). Indeed, in the interval between being removed from their breeding cages and the day of laparotomy, six Group-B females had laid an additional, twenty-first egg.

These findings indicate that the cessation of full ovarian activity and egg-production by female Budgerigars may be influenced by the performance of incubation behavior and/or conditions within the nestbox. Therefore, I would suggest that Budgerigars be reclassified as indeterminate egg-layers.

The author is indebted to Mrs. M. Goodrich and Mr. W. Schubach for help during this study. This study was supported by Grant GB-3191 from the National Science Foundation.—BARBARA F. BROCKWAY, *Department of Zoology and Entomology, The Ohio State University, Columbus, Ohio. (Present Address: 2175 Tabor Drive, Denver, Colorado.) 2 March 1967.*

A territorial encounter between Screech Owls.—While studying Screech Owl (*Otus asio*) population density on the night of 28 June 1965, at 10:30 PM Hardy Stebbins and I stopped at an oak woods northwest of South Bend, Indiana and observed a territorial encounter between two owls. After our giving only three imitations of an owl call, a gray phase owl responded from 10 m away. This owl flew about 74 m farther away upon our approach with a net. Our second approach flushed the owl about 42 m farther and after a few minutes it was forced about 122 m into the territory of another Screech Owl. The low monotone call of the first owl and our own imitations probably brought in the other owl, whose call descended the scale. As the two owls moved closer together, the quality of their calls changed. During three years of owl-calling I have never heard so many unusually low, angry-sounding, and ominous calls. The first owl was seen 9 m off the ground when the second owl came diving in out of the darkness and struck it on one side. Thereupon they grasped one another and tumbled to the ground, then separated, and flew off in opposite directions. A moment later the owls again moved toward one another giving their unusual calls. We could tell that a fight was about to occur when the calls became increasingly ominous and angry-sounding. The second and third fights were not observed directly, but the owls could be heard tumbling through the leaves to the ground. Finally, the first owl moved back to its original location, and the calling of both owls then diminished rapidly.—SCOTT C. REA, 952 Riverside Dr., South Bend, Indiana, 10 January 1967.