CAVE SWALLOWS IN BIG BEND NATIONAL PARK, TEXAS

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In January 1969, Davis found nests within a cave he was exploring on Mariscal Mountain, Big Bend National Park, Brewster County, Texas. On 27 May, the authors visited the area and found 13 Cave Swallows (*Petrochelidon fulva*) and four or five Cliff Swallows (*P. pyrrhonota*) flying in a mixed flock outside the cave entrance. A total of 18 Cave Swallow nests was located within the cave, 60–70 ft back from the entrance; two nests contained young birds and a third contained four eggs. All of the nests were located along cracks within the domed ceiling 6–8 ft above the floor. Several discarded egg shells were collected and the nests were photographed. Two active Cliff Swallow nests were found at the cave entrance. A second cave nearby contained several inactive Cave Swallow nests in its twilight section. The caves were examined again on 17 July by David Easterla (pers. comm.), who found 20–25 birds at the caves and three more active nests in the first cave. In May and July 1970, Cave Swallows were again found nesting there.

Mariscal Mountain is a massive, limestone, anticlinal ridge situated at the "bottom" of the Texas Big Bend. The caves are located at 2300 ft elevation on the eastern side of the high cliff-face, slightly less than one mile from Solis on the Rio Grande. The cave entrances are elevated 300 ft above the adjacent xeric flats. Number and apparent ages of the nests indicate the Cave Swallow has nested on Mariscal Mountain for at least several years. Availability of mud is assured by the adjacent Rio Grande.

These data represent the first record of Cave Swallows nesting within Brewster County. Baker (pers. comm.) has recorded it within the Glass Mountains, approximately 75 miles NE of Big Bend National Park, and Selander and Baker (Condor 59:345, 1957) summarized its occurrence in Texas. It also is the first record of Cave and Cliff Swallows nesting within the same cave, although Whitiker (Condor 61:369, 1959) found Cave and Barn Swallows (*Hirundo rustica*) nesting together in a building near Cuartro Cienegas, Coahuila, México, and Baker (Condor 64: 326, 1962) said that this was of regular occurrence at villages throughout "the arid regions of north-central México," and reported all three swallows nesting in the same building.

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PARENTAL ACCEPTANCE OF YOUNG AS A FUNCTION OF INCUBATION TIME IN THE RING-BILLED GULL

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The orderly progression of the reproductive cycle of birds depends upon a number of physiological changes that affect not only the reproductive organs but also the behavior of the breeding individual. It is now known, for instance, that the sequence of behavior patterns occurring as the cycle proceeds through the sexual and nest-building phases to egg-laying and incubation is governed by a series of hormonal changes, induced in part by stimuli received from mate, nest, and eggs (Eisner 1960; Hinde 1965; Lehrman 1965). Results of exogenous hormone treatment give reason to suspect that the transition from incubation to parental care of the young also depends upon a shift in hormonal levels, but little information is available as to when the critical adjustments are completed in the normal flow of the cycle. This matter, as regards the natural breeding cycle of the Ring-billed Gull (*Larus delawarensis*), was investigated in an experiment reported here which tested the responses of incubating adults to chicks introduced into the nest at various stages of the incubation period.

Ring-billed Gulls breed in dense colonies wherein each nesting pair establishes an exclusively held territory of about 1–4 m^2. The female lays a clutch of two to three eggs over an interval of 3–5 days. Incubation begins with the laying of the first egg and extends over a 23–26-day period before the chicks begin hatching. Both parents participate in incubating the clutch and in brooding and feeding the young.

I performed the experiment in a large colony located on a peninsula protruding into Lake Huron at Rogers City, Michigan. Nesting activity within the colony varied widely enough to enable me to use chicks from the earliest breeders for testing later nesting pairs. Twenty-four such pairs each received a single standard test given between the 3rd and 20th day of incubation as determined from the date that the first egg of the clutch was laid. As this date differed by as much as 2 weeks within the sample, care was taken in conducting tests to vary the stage of incubation independently of laying date, so that possible variation in acceptance related to chronological differences in nesting onset would be well distributed along the postlaying baseline. The test procedure, already known to be effective in eliciting parental behavior in this species (Emlen and Miller 1969), consisted simply of replacing the eggs with two freshly hatched chicks. The exchange was immediately followed by 3–5 hr of observation through 7 × binoculars from a car parked near the colony. Nests with chicks surviving this period were repeatedly surveyed on subsequent days to ascertain whether the parents persisted in tending the chicks or later abandoned them.

Table 1 shows the stage and results of each test performed. Birds incubating eggs for one week or less were quite unreceptive to the chicks, accepting and continuing to care for them in only one of the nine test cases. Two others were observed to brood the chicks temporarily, but their apparent lack of attentiveness resulted in the chicks dying or wandering off within 24 hr. In six tests the attending adults rejected the chicks outright, either by killing them,

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