

(4) Dehydrate through a KOH/glycerin series as in step 8 above.

(5) Transfer to 90% glycerin as in step 9 above.

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Avian Davian Behavior.—Dickerman (J. Mamm. 41:403, 1960) reported a field observation of a male Richardson ground squirrel (*Citellus* [= *Spermophilus*] *richardsoni*) copulating with a dead female which was lying on its side in a copulatory position. He termed the behavior “Davian behavior,” a facetious reference to a ribald Limerick about necrophilia. Here I make what is apparently the first report of Davian behavior in birds.

I observed several drake Mallards (*Anas platyrhynchos*) attempting forced copulation with a hen Mallard at 16:00 on 9 April 1987 on Sheldon Lake, Fort Collins, Colorado. After several minutes of constant pursuit, the hen was forced to swim to the shoreline of an island. She stopped at the water’s edge, apparently exhausted and unable to escape farther. She was immediately approached by two Chinese Geese (*Anser cygnoides*), one of which repelled the drakes to a distance of approximately 2 m. It then stood over the hen in a pre-copulatory position and began to peck violently at the back of her head and neck. After approximately 5 min the hen became motionless in a copulatory posture, and she was not observed to move again; she was apparently dead at this point. The goose continued to peck for another

1–2 min before both geese walked away. Five male Mallards immediately swam to her, continued fighting among themselves, and began copulating with her body. This continued for approximately 7 min with a minimum of three different drakes participating. When the drakes swam approximately 3 m away, a Ring-billed Gull (*Larus delawarensis*) landed beside her and began pecking and tearing at her head and neck, occasionally grabbing her head and shaking it. In approximately 2 min, the five drakes returned, and two of them copulated with her body, but for a shorter duration than the first episode. After approximately 2 min they abandoned her body to the gull which began to tear flesh from her neck and back. The drakes did not return to her.

The proximate cause for this behavior can be explained in terms of the dead hen's lordosis position releasing copulatory behavior in the sexually aroused drakes. Schein and Hale (Anat. Rec. 128:617, 1957) demonstrated that a detached female head in an upright position is sufficient to elicit copulatory attempts in male domestic turkeys (*Meleagris gallopavo*). The adaptive significance of forced copulations in animals has been discussed by Crawford and Galdikas (Can. J. Psych. 27:215–230, 1986), but when it results in Davian behavior, it is difficult to explain in terms of individual fitness since apparently time, energy, and sperm are wasted. Although it was difficult to determine whether ejaculation occurred in all the copulations observed, post-copulatory tail-wagging behavior suggested that some of the drakes had ejaculated (McKinney and Stolen, Anim. Behav. 30:461–474, 1982). However, since this type of behavioral "mistake" apparently occurs infrequently, the fitness cost is too small to be selected against.—PHILIP N. LEHNER, Dept. Biology, Colorado State Univ., Fort Collins, Colorado 80523. Received 29 Sept. 1987, accepted 17 Nov. 1987.

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Nest lining with sheep wool: potential negative effects on Cave Swallows.—Much discussion has centered on the energetic costs and benefits of construction and use of the avian nest. Investigators have discussed the insulative value of roosting (Kendeigh 1960) and nesting (Royama 1966) in cavities and the thermal homeostatic role of domed individual or communal nests (Ricklefs and Hainsworth 1969, White and Kinney 1974, White et al. 1975). Withers (1977), however, found little of this property in mud nests of Cliff Swallows (*Hirundo pyrrhonota*).

Bailey (1928), and later Bent (1968), documented the incorporation of domestic sheep wool into the nests of U.S. birds. Subsequently, van Riper (1977) reported the increasing use of wool in nest construction by six Hawaiian species and indicated that only nest bodies, and not linings, contained this material. In this and a subsequent work (Kern and van Riper 1984), the authors discussed wool's function as a binding, but not insulating, agent. Despite this framework of interest, few studies have attempted to correlate variation in natural nest morphology with concurrent variation in reproductive parameters in the field, although White and Kinney (1974), working under seminatural, relatively uniform environmental conditions, found an inverse relationship between nest insulating value and attentiveness in *Ploceus cucullatus*. Here, as part of our analyses of the influence of man on hirundinids (Martin 1980, Hamilton and Martin 1985), we report the use of wool as a lining material in the nests of Cave Swallows (*Hirundo fulva*), describe its physical contact with eggs deposited upon it, and attempt to relate this phenomenon to length of incubation period, clutch size, hatch, and nestling survival.

Our study sites were nine concrete culverts in Uvalde County, Texas, beneath a 17.7 km stretch of U.S. Hwy. 90 extending from 0.5 km W of the Nueces River to the boundary of