

by requesting the 1980 *Report on Nantucket's Tern Population* by Nan Jenks-Jay from the Trustees of Reservations, Milton, Massachusetts, who provided funding for the Tern Management Program on Nantucket Island.—NAN JENKS-JAY, *Williams College, Williamstown, Massachusetts 01267*. Received 26 Feb. 1981; accepted 7 Nov. 1981.

**Hypothermia Used Instead of Anesthesia for Surgery on Nestling Passerines.—**

Surgery on birds generally depends upon immobilization of the subjects by means of general anesthesia. When Fiala (*Bird-Banding* 50:366–367, 1979) developed a procedure for laparotomy of nestling Red-winged Blackbirds (*Agelaius phoeniceus*), he preferred anesthesia by methoxyflurane to ether, but he noted that its use on very young nestlings was difficult to monitor because of irregular breathing and frequent cessation of breathing. He presented no data on mortality.

There is probably no safe anesthesia for young nestling passerines, and anesthesia is unnecessary since torpor is easily and safely induced by hypothermia. Featherless nestling passerines are ectotherms (see O'Conner, *Symp. Zool. Soc. Lond.* 35:277–306, 1975). I used hypothermia in skin grafting experiments on nestling House Sparrows (*Passer domesticus*; Mueller, *J. Exp. Zool.* 202:45–48, 1977). Most of the subjects were featherless nestlings 2 to 4 days old, and only 2 of the 85 nestlings died during surgery. When body temperature was reduced by swabbing with 70% ethanol, which was used to surface-sterilize the skin, struggling usually ceased, but on days when the ambient temperature exceeded 25°C, ice cubes were placed around the nestlings. Breathing was regular and slow, and there were no adverse effects even when hypothermia was maintained for as long as 30 min. After the surgery, each nestling was warmed in the hand until struggling resumed, and it was then returned to the nest. In the case of 6-day-old nestlings, which were feathered and had at least some endothermy, it was necessary to use ice to eliminate struggling, and recovery was rapid with no ill effects.

My experience with House Sparrows suggests that there is considerable risk of nest desertion when all young are removed from a nest simultaneously or even when all young from a nest are subjected to surgery within a few hours, since both the parents and the young are affected by the disturbance. I found that when surgery was done on all young from a nest within 4 h, 3 of 5 nests were abandoned. In subsequent experiments, at least one young was left in the nest, and only 5 of 21 nests were abandoned. It is possible to use all the young from a nest if several hours, or preferably one day, are allowed for the adults and the young to recover from the disturbance. Nest desertion can also be reduced if surgery is done in the field near the nest. A transportable "operating room" may be as simple as a folding table and chair and a dissecting microscope if such magnification is necessary. The aseptic conditions of an operating room, or even a laboratory, are unnecessary for surgery on birds. The major concern should be for minimizing the time when nestlings are away from, or inactive in, the nest.

Fiala (1979) reports some problems with the use of New-Skin as a dressing for incisions on his birds. I found that flexible collodion is an excellent surgical dressing; it dries rapidly, adheres tightly to the skin, remains for several days, and when it loosens and falls off it removes any sutures that might be used to close an incision.

Anyone contemplating surgery on young nestling altricial birds should consider the following: (1) induced hypothermia is preferable to anesthesia, (2) nest desertion can be minimized by leaving at least one nestling in the nest for the day, (3) surgery can be done in the field in proximity to the nest, and (4) flexible collodion provides an excellent surgical dressing.

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