

had fledged. Six female ducklings fledged at 54 ± 4 days, and had an average of five primary feathers clear (rachis translucent); and six males fledged at 56 ± 3 days, and had six primary feathers clear ($P > 0.05$).

PRENUPTIAL MOLT

The first prenuptial molt of Greenland Mallard males began shortly after fledging and was nearly complete at the time head plumage was replaced. Several males showed indications of green head-feathering at 75 days of age. All eight males in 1968 acquired completely green heads in an average of 118 ± 16 days (range 98–134).

SUMMARY

Captive Greenland Mallards, one generation removed from the wild, nested during mid-April in North Dakota. Forty-one eggs averaged 42.49 mm wide, 58.54 mm long, and 58.00 g. Artificial incubation to hatch-

ing occurred in an average of 25 days and 15 hr. Ducklings grew most rapidly during the 3rd through 5th weeks after hatching. Tarsus growth was nearly complete by week 5; however, culmen growth continued through week 8. Females fledged at an average of 54 days and males, at 56 days. Males acquired green head plumage when an average of 118 days old.

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SEASONAL PREDATION ON MOLES BY THE RED-TAILED HAWK

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On 10 March 1972, a known pair of Red-tailed Hawks (*Buteo jamaicensis*) were sighted at 133 m elevation 2 km N of Clayton, Contra Costa County, California. At 08:45 the male dove and landed on the ground. After 5 min on the ground, the hawk flew toward the female, clutching a western mole (*Scapanus latimanus*). Perching beside his mate, the male regurgitated a pellet, then began to feed on the mole held in its talons. Both the mole (a juvenile) and the regurgitated pellet were collected. The pellet contained remains of an adult mole.

Significantly, it appears that moles occur as prey of

Red-tailed Hawks exclusively during winter and spring (Austing, The world of the Red-tailed Hawk, J. B. Lippincott Co., Phila., 1964; Fisher, Bull. U.S. Dept. Agri., Div. Ornithol. and Mammal. 3:48, 1893; Roest, J. Mammal. 33:110, 1952; pers. observ.). This seasonal vulnerability is apparently related to their reproductive period. During breeding and dispersal of the young, moles temporarily abandon their burrows (Arlton, J. Mammal. 17:349, 1936), and only then are readily available as prey. The ability of "general feeders" such as adult Red-tailed Hawks to utilize other species when rodents tend to be scarce could explain the occurrence of moles as prey (Craighead and Craighead, Hawks, owls and wildlife, Dover Pub., New York, 1969).

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THE INHERITANCE OF CLUTCH SIZE IN THE GREAT TIT (*PARUS MAJOR* L.)

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It is fundamental to theories concerning reproductive rates and population regulation (Lack 1954; Wynne-Edwards 1962) that the clutch sizes of birds have evolved through natural selection, and are therefore, at least in part, genetically determined. While this is now generally accepted, the role of inheritance in the determination of clutch size has not yet been demonstrated.

Several factors associated with egg production in poultry are known to be genetically determined because it has been possible to improve production by artificial selection (Nordskog et al. 1967), but

since the eggs are not normally laid in clutches, it has not been possible to investigate factors affecting clutch size. Among wild birds, the clutch sizes of many species are constant, and it may be argued that this is an inherited characteristic. However, since in such cases there is no observable intraspecific variation, the extent to which the clutch size of the offspring is determined by inheritance from the parents cannot be estimated. Other species, for instance, tits of the genus *Parus*, which lay relatively large clutches, show considerable variation in clutch size between individuals of the same species. A wide range of geographical variation occurs in the Great Tit (*Parus major*), clutch size increasing with increasing latitude (cf. Hoogerwerf 1949; Heim de Balsac 1952; Balat 1970; von Haartman 1969). Since this variation is associated with subspecific differences in size and plumage characteristics, which are presumably inherited, it seems reasonable to suppose that the clutch-size difference might also be inherited. However, it becomes possible to test this assumption only where a high degree of intraspecific variability in clutch size occurs within the same population.

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