

of some sort existed. Because the mate selection process in geese may involve a series of temporary associations, the bond formed here need not have been permanent. However, Wood (J. Wildl. Manage. 29:237-244, 1965) reported that Canada Goose (*Branta canadensis*) pairs formed while at least one of the members is immature (as in this case) are as likely to persist as are those formed when both members are adult. In the spring of 1978, this banded female was observed nesting with a white male 80 m from her 1977 site, within the home range occupied by the newly formed "pair" in 1977.

Cooch (Ph.D. thesis, Cornell Univ., Ithaca, New York, 1958) assumed that pair formation of some snow geese began in their yearling summer; our observations confirm that possibility. Although bond formation such as we describe is likely to occur relatively infrequently, it runs counter to the assumption that all pairing occurs during winter and spring (Cooke and Sulzbach, J. Wildl. Manage. 42:271-280, 1978).

The reported length of the period between mate loss and re-mating in geese is variable. In our case, a bond of some sort was formed within 48 h. Re-mating before the next breeding season is common in snow geese (Cooke, unpubl.). Prevelt and MacInnes (1980) reported that some snow geese remained unpaired in the breeding season after mate loss. Similar variability in interval from mate loss to re-mating has been reported for Canada Geese and is likely true for other species (Sherwood, Trans. N. Am. Wildl. Nat. Res. Conf. 32:340-355, 1967; Weigand et al., J. Wildl. Manage. 32:894-905, 1968; Jones and Obbard, Auk 87:370-371, 1970). Much of the variation can be explained by difference in time of mate loss relative to the next breeding opportunity and the availability of mates. Although a succession of temporary associations may usually be a part of the pair formation process in geese because it allows optimal discretion in choice of mate, circumstances may not permit. In particular, loss of mate during the nesting period characterized both cases where a new bond was formed within a very short time (Jones and Obbard 1970, this study). The male's important role in protection of the female and/or nest clearly favored the short interval (Ewaschuk and Boag, J. Wildl. Manage. 36:1097-1106, 1972; Mineau and Cooke, Wildfowl 30:16-19, 1979). Mate loss at other times of the year could result in longer re-mating times because both need for a mate and availability of potential mates will differ.

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**Common Eider plays "possum."**—Death feigning is widespread but not extensively described in animals. Reports of death feigning in birds are given by Armstrong (Bird Display and Behavior, Dover Publ. Co., New York, New York, 1965), Vogel (Auk 67:210-216, 1950), Francq (Am. Midl. Nat. 81:556-568, 1969), and others. Observations of invertebrates and vertebrates indicate that it is used only when escape is otherwise impossible and that it appears to be a stereotyped response.

At 13:30 on 17 January 1979, at Great Island, Wellfleet, Barnstable Co., Massachusetts, I observed an ill adult female Common Eider (*Somateria mollissima*) feigning death. My dog

found it on slush tidal ice 8 m from a salt marsh channel and 28 m from open water. The eider hobbled weakly away and beat the ground with its wings then slumped into immobility when the dog came alongside it. The eider's head and bill were depressed until the tip was 3 cm above the ground. The neck was twisted, body slumped forward, wings folded and tarsi tucked under the body. The bird remained motionless as the dog wandered no more than 5 m away. Closer inspection revealed breast, belly, flanks and undertail coverts were saturated with water. Ventral feathers around the cloaca were stained green, suggesting either lead poisoning or botulism; grit was also concentrated around the cloaca. The eyes were open but "glassy"; they were rolled and exposed much white. The nictitating membrane was not observed to function, and an eye did not respond when I touched it. I twisted the neck, pulled feathers on the back and wings, tapped head and bill with my fingers, let the head and bill drop 4 cm on the ice, and still observed no response. I did not feel the bird breathing. The only sign of life was involuntary pedalling of the tarsus and feet when I inverted the eider. I released it 2 m from open water and walked away 20 m. It remained on the ice in a death-feigned posture for barely 1 min. The head and neck came up suddenly and it appeared to look in our direction. My dog pursued it but the eider escaped to the water, where it preened vigorously and then slowly swam toward shore.

Perry (1938, *in* Armstrong 1965) described death feigning in a male eider which was apparently in good health. Armstrong (1965) records death feigning and injury distraction in a nesting adult female Greater Golden Plover (*Pluvialis apricaria*) suggesting association of these responses. Operational definitions of death feigning, immobility and "freezing" are lacking. Relationships of immobility responses to "freezing" postures have not been investigated (Hinde, *Animal Behavior*, 2nd ed., 1970:420). Laboratory studies conducted by Rafter and Thompson (*Anim. Behav.* 8:186-191, 1960) and Francq (1969) suggest the response develops at the period of emerging physical independence, not sexual maturation. Death feigning may be a response to extreme stress. However, Norton et al. (*Nature* 204:162-163, 1964), studying brain wave recordings in immobile opossums (*Didelphis virginianus*) during "feigned sleep," found no changes between "feigned" and normal states; the animals maintained normal brain wave patterns and heart rates, suggesting the state of shock in the animal is erroneously assumed.

Controlled experiments are needed to define the relationship of death feigning to other similar responses. Natural observations can do little more to provide evidence of the mechanisms of these relationships. Death feigning has survival value to the individual and has almost certainly evolved through natural selection.

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**Territorial attachment and mate fidelity by Horned Grebes.**—Although territorial attachment has been documented for many migratory birds (see Austin, *Bird-Banding* 20:1-39, 1949; Hilden, *Ann. Zool. Fenn.* 2:53-75, 1965), evidence that grebes (*Podicipedidae*) return to the same nesting territory in consecutive years is largely circumstantial. This note documents territorial attachment and mate fidelity by individually marked Horned Grebes (*Podiceps auritus*) at Minnedosa, Manitoba (50°15'N, 99°50'W). Seven of 50 grebes (43 adults and seven juveniles) banded in 1974 and 1975 were recaptured in either 1975 and 1976 by using