out. By hatching time, nests were as much as 17 m from the shore, separated from the lake by steep grades or dense ground vegetation. Successful egg laying appeared to be directly related to the flood conditions: all chicks in the entire population (N = 7, of 5 pairs) hatched 7 July, 29 days after cresting (9 June), and the abandoned eggs of one other pair were known to have been laid on 9 June. (After cresting, no nests were found for 3 pairs.) The flooding introduced an unusually high degree of synchronism in breeding, and, as the occurrence of hostile behavior has been found to vary with stage of breeding cycle (Rummel and Goetzinger 1975), quite likely in aggressive motivation and behavior as well. The pre-nesting period (from the arrival of the loons on 5–6 May [B. Saunders, pers. comm.] to the lake's cresting on 9 June) was 2 weeks longer than the typical pre-nesting state (see Olson and Marshall 1952: 40, Sjölander and Ågren 1972), providing an extended opportunity for contact and prolonging pre-nesting motivation states. Hence, the incidence and intensity of aggressive interaction may have been atypically high.

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Male Pintails Defending Females from Rape

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Hochbaum (1944) applied a classical theory of territoriality to breeding Anatidae. In subsequent studies, however, a closer analysis of behavior and habitat use has revealed a wide variation among species in this tendency (Sowls 1955, Dzubin 1955, McKinney 1965). Among *Anas* species the Pintail (*A. acuta*) seems most divergent. Smith (1968) and McKinney (1973) reported Pintail home ranges broadly overlapped, a high incidence of promiscuous mating, and little defence of females by their mates from raping males. This is in contrast to the much more prevalent male-to-male aggressive behavior displayed by other *Anas* species (Weidmann 1956, Seymour 1974). We present evidence indicating that male Pintails will attempt to defend their mates from rape.

On 2 May 1975, R.W.K. observed an encounter between a pair and two male Pintails on a small pothole 1 km southwest of Lyleton, Manitoba. The pair was initially seen alongside the pothole where the female preened while the male (A) stood in alert posture less than 1 m behind her. The two other males (B, C) flew onto the pothole at 1505 CDT and swam toward the pair, which entered the water on their approach. When B was within 2 m of the female, A flew at him, grabbing at his back and tail feathers, and driving him to the far side of the pothole. While A was thus engaged, C flew directly at the female and mounted her on the water in what appeared to be a successful rape. Male A soon returned and immediately flew at C, causing him to fly 10 m across the pothole where he was subsequently joined by B. Observations ended at this time.

On 6 May 1975, R.A.W. recorded a similar observation 5 km north of Portage la Prairie, Manitoba. At 1314 CDT two male Pintails were seen fighting near a female in a roadside ditch. One male (D) appeared to be paired to the female. He held the nape feathers of the other male (E) and pulled him up and forward in a circular path over the water while beating him vigorously with his wings. Male E did not fight back or defend himself, trying only to move toward the female. On at least 12 occasions in the next 14 min E was able to grab the female by the nape and mount her on the water in an attempted rape. This occurred, either with D still clinging to E, or by E breaking away and swimming or flying to the female. When D lost his hold of E he immediately swam after him or flew at E with legs hanging, neck stretched forward, and bill open. The female tried to avoid E's approaches but did not fly from the ditch or dive when pursued. On all occasions E was dislodged from the female following vigorous struggles. This was accomplished by D in the same manner as described above, the female being dragged along until E lost his hold of her. Due to D's quick intervention it is unlikely that E attained cloacal contact with the female during the period of observation. At 1328 the birds separated, D positioning himself between E and the female. Male E flew from the area at 1330 and the pair swam to the ditch bank and preened. The female continued to preen while D moved higher onto the bank and assumed an alert posture until 1335 when observations terminated.

The females' behavior during these encounters was essentially passive, consisting only of an avoidance response to the strange males. No overt signs of incitement or repulsion by the females were evident, and no vocalizations were noted, although possibly missed.

Thus, drake Pintails will physically defend females from the approach of other sexually active males. The extent to which this occurs probably depends on the stage of the breeding cycle, strength of the pair bond, and density of birds in an area. McKinney (1973) observed that Pintail pairs remain stable through the laying period and he speculated that this association may afford some protection for the females from harassing males. Raping may be more common during the incubation period after pair bonds break but this would be of little adaptive value except as a means of fertilizing renesting females. Defense of a female is probably less successful if more than one extra male is involved, and this situation would lead to the raping bouts that Smith (1968) describes. However, S. R. Derrickson (pers. comm.) has observed that defense may be successful even when up to three males are attempting rape.

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