

**Pseudo-sleeping Attitude of the Canvasback.**—While studying the feeding behavior of diving ducks in southwestern Manitoba, we observed a brood of wild Canvasbacks (*Aythya valisineria*) and a gathering of captive, young Canvasbacks assuming a pseudo-sleeping attitude. This is a "sleeping" posture except that the eyes are open and the birds alert, prepared to avoid the cause of a disturbance.

Makkink (Ardea, 25, 1936:1-60) first described the pseudo-sleeping attitude (PSA) in the Avocet (*Recurvirostra avosetta*) and interpreted it to be a withdrawal made by the Avocet when a stimulus through an encounter with another bird was not strong enough to elicit a flight or attack response. Pseudo-sleeping has also been observed in the Oystercatcher, *Haematopus ostralegus* (Makkink, Ardea, 31, 1942:23-75; Edwards, Hosking, and Smith, Brit. Birds, 41, 1948:236-243); Turnstone, *Arenaria interpres* (Bergman, Acta zool. fenn., 47, 1946:1-151); Common Sandpiper, *Tringa hypoleucos* (Poulsen, Vår Fagelvärld, 9, 1950:4-10); Snow Bunting, *Plectrophenax nivalis* (Tinbergen, Trans. Linn. Soc. N.Y., 5, 1939:1-92); and the Ruddy Duck, *Oxyura jamaicensis* (Hays, 1962, pers. comm.). These studies report pseudo-sleeping only in sexual and/or hostile situations.

Tinbergen (Quart. Rev. Biol., 17, 1952:1-32) has written a classic discussion of derived activities, including the irrelevant acts (foraging, comfort movements, nest building movements, sexual movements, sleep, and so forth) to which his term "displacement activity" has been applied. Thus, the pseudo-sleeping attitude described by Makkink (1936, *op. cit.*; 1942, *op. cit.*) became generally known as displacement sleeping.

The model of a displacement activity is a behavioral act performed out of context by a bird torn between two opposing motivations and behaving in such a manner because of inability to express itself in any other way. The works of Tinbergen (Zeit. f. Tierpsych., 4, 1940:1-40); Bibl. biotheor., 1, 1942:39-98; Sympos. Soc. Exp. Biol., 4, 1950:305-312; The Study of Instinct, Oxford Univ. Press, Oxford, 1951; 1952, *op. cit.*; The Herring Gull's World, Collins, London, 1953; Social Behavior in Animals, Meuthen and Co., Ltd., London, 1953), Moynihan (Behaviour, 5, 1953:58-80; Auk, 72, 1955:240-246), and Makkink (1936, *op. cit.*; 1942, *op. cit.*) should be consulted for more thorough discussions of the displacement activity theory, misinterpretation of observations, and the restricted usage of the term "displacement." More recent considerations of this phenomenon are those of van Iersel and Bol (Behaviour, 13, 1958:1-88), Sevenster (Behaviour Suppl. IX, 1961:178pp.), and Fraser-Rowell (Animal Behaviour, 9, 1961:38-63).

Our observation of pseudo-sleeping in the wild was made at a pothole-lake, 8.3 miles north of Rapid City, Manitoba, at 7:00 p.m. on August 1, 1961. A brood of 12 Canvasback ducklings (6 to 7 weeks old), and an adult female Redhead (*Aythya americana*) were observed diving for food. We watched their feeding behavior from a distance of 50 yards for 15 minutes. In an attempt to crawl to the concealment of an alder-willow clump 50 feet from the birds, our movements were detected. We remained behind the cover, but the ducks became uneasy and ceased feeding. After approximately one minute of treading water and gentle circling, the entire brood went into a sleeping posture with the bill tucked under the left scapulars. The eye facing our "hide," however, remained open and unblinking, as in an alert bird. The brood, as a unit, slowly paddled toward the center of the lake. Within one minute after the ducklings assumed the sleep posture, the female Redhead took flight and abandoned the brood, giving the alarm call. In 7 minutes the ducklings reached the center of the water area, always keeping their right eyes fixed on our place of concealment and maintaining their individual positions within the brood (fig. 1). Three minutes after reaching the center of the lake the ducklings began to assume an alert posture and to swim about. Three minutes later, the first Canvasback dived for food and within 4 additional minutes, 20 minutes after the disturbance, all of the ducklings were actively feeding.

On several other occasions we have noted the assumption of pseudo-sleeping by individual Canvasback ducklings within broods, but never by the entire brood. We were able to make repeated observations of this behavior in captive Canvasbacks held in an outdoor pen at the Delta Waterfowl Research Station. A stream approximately 15 feet wide and 70 feet long, fenced at both ends, provided a suitable water area for 30 young Canvasbacks. During the first few weeks of life, the ducklings failed to assume the attitude when an observer entered the pen or watched without concealing himself. Rather, they would swim rapidly away to the most distant portion of the pen. In a behavior typical for the species, they preferred escape on the water to that overland. By the time the young Canvasbacks were 5 to 6 weeks old, they began to assume the pseudo-sleeping attitude observed in the wild.



Fig. 1. Brood of wild Canvasback ducklings in pseudo-sleeping attitude.

Most often, the head was turned over the right shoulder, with the bill tucked under the left scapulars. Only rarely was the opposite position seen, with the bill placed under the right scapulars. In this position, the Canvasbacks would watch the observer until he made a threatening motion or sound, at which they would become more typically alert, with heads up, and move off. Often, in a wind or breeze, the ducklings would swing in a tight circle while in the sleeping posture, apparently watching the observer.

It is unlikely that pseudo-sleeping, as we have observed it, would be encountered except under the stimulus of a very slight and unfamiliar disturbance which would cause the ducklings to become uneasy and wary without eliciting true fright and escape. Makkink's (*op. cit.*, 1936) term, "Pseudo-sleeping Attitude," more adequately describes the behavior observed by us than does the phrase "displacement sleeping," especially since the birds are not truly asleep.

Similar behavior has been seen in the Ruddy Duck by Hays (*op. cit.*), who has observed and photographed single males putting their bills under their wings, in a sleep-like posture, when passing paired male Ruddy Ducks, Coots (*Fulica americana*), and Pied-billed Grebes (*Podilymbus podiceps*). A single male failing to assume this posture, or turn his head away, most likely will be chased. Miss Hays believes that the assumption of the sleeping posture, or turning the head away, hides the bright blue bill and white cheek and makes the male less conspicuous. The obvious sociological implications of this behavior in the Ruddy Duck are consistent with those of pseudo-sleeping observed in other species but would seem to have a very different motivation than the behavior of the Canvasbacks observed by us. In both situations the ducks are faced with the alternatives of (1) fleeing from a possible attack, or (2) assuming a posture less inviting to attack while withdrawing from the threat. We believe that pseudo-sleeping may exist among other anatids under stimuli of moderate threat and suggest that ornithologists be alerted to the opportunity for additional observations.

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The responsibility for interpretation remains our own, however. Financial aid was provided by the North American Wildlife Foundation, through the Delta Waterfowl Research Station, and the Frank M. Chapman Fund of the American Museum of Natural History. The illustration was kindly prepared by Mr. Peter Ward of Delta, Manitoba.—GEORGE W. CORNWELL, *Department of Forestry and Wildlife, Virginia Polytechnic Institute, Blacksburg, Virginia*, and JAMES C. BARTONEX, *Department of Wildlife Management, The University of Wisconsin, Madison, Wisconsin, December 15, 1962.*

**Recent Records of Birds in Korea.**—On December 24, 1961, Ben F. King collected a female Horned Grebe (*Podiceps auritus*) in the Korean Straits off the coast of Kyongsang Namdo approximately three miles southeast of Chinhae. It was slightly fat and weighed 344 grams. The stomach contained a small, well-digested fish. On November 19, 1961, King also observed two individuals, believed to be of this species, in Chinhae Harbor. Austin (Bull. Mus. Comp. Zool., 101, 1948:30) considered this species a rare transient or winter visitor in Korea and lists only two specimens, a male taken in Kyonggi-do on November 8, 1914, and a female collected in Hamgyong Pukto on October 6, 1929.

Although Austin (Bull. Mus. Comp. Zool., 109, 1953:297) lists the Red-necked Grebe (*Podiceps grisegena*) as nesting in Hokkaido and as a fairly common migrant and winter resident along the coast "farther southward" in Japan, he (1948:31) lists only three known specimens from Korea in addition to a single sight record of two near Suwon, Kyonggi-do, in February, 1946. However, he states that the species is "undoubtedly an uncommon but regular spring and autumn transient, despite the paucity of records." On February 24, 1962, King collected a male and female from approximately 25 Red-necked Grebes in the Korean Straits along the coast of Kyongsang Namdo, between Chinhae and the mouth of the Naktong River. Both birds were fat and weighed 1371 and 1090 gm., respectively. Both specimens were molting and on the basis of skull ossification appeared to be adults. The stomachs contained matted feathers and remains of fish. Apparently, these are the first specimens of this species collected in Korea since April, 1915, and constitute the third and fourth specimen records. In addition, on November 12, 1962, King and Fennell observed an individual, believed to be of this species, on the Han River approximately five miles west of Seoul. It was closely associated with four Great Crested Grebes (*Colymbus cristatus*).

On November 19, 1961, King observed two Pelagic Shags (*Phalacrocorax pelagicus*) in Chinhae Harbor, Kyongsang Namdo. On February 24, 1962, he observed a total of approximately fifty in the Korean Straits, along the coast of the same province, between Chinhae and the mouth of the Naktong River, and collected two females and a male. One female appeared to be immature from the condition of the plumage; the other two birds were apparently adults. All were fat and in molt; the two females weighed 1526 and 1598 gm., respectively, and the male, 1888 gm. The stomachs contained small fish measuring three to five inches in length. Austin (1948:36) considered this species an uncommon transient in Korea and lists only five specimens taken from coastal waters of the peninsula proper, one from Kyonggi-do taken on December 15, 1924, and four from Kangwon-do, along the east coast of the peninsula, taken in April and December, 1914. He also mentions several winter records from Cheju-do (Quelparte Island) and states (1953:320) that the species also winters along the coast of western Kyushu, Japan. Observations of King thus appear to support Austin's belief (1948:36) that this species occurs more regularly in Korea than the specimen records indicate.

Austin (1953:346-347) lists the Brant (*Branta bernicla*) as "formerly a common winter visitor to Japan" but "exceedingly scarce since the turn of the century." The 1958 Hand-list of Japanese Birds lists it as a rare winter visitor to Hokkaido, Honshu, and Shikoku and as occurring along the western coast of Kyushu (Hakata Bay and Nagasaki). Austin (1948:55) lists a total of only nine specimens from Korea and regards it as an "uncommon winter visitor." Later, however (1953:347), he states that "the Brant that reach western Japan occasionally probably come across the Straits from Korea" and that "the species still winters not uncommonly on the coasts of Kyongsang and Cholla Namdo." The senior author has not encountered this species in Korea, in spite of having inspected the take of many hunters throughout the peninsula in the past 10 years. However, on February 24, 1962, King observed a flock of approximately 45 in the Korean Straits along the coast of Kyongsang Namdo between Chinhae and the mouth of the Naktong River. An adult male and an immature female of the race *orientalis* were taken; both were fat and weighed 1551 and 1490 gm., respectively. Ensheathed