

approaching human, and even when surprised underfoot, seldom gives any distraction display at all. She usually flies to a perch within 100 m of the nest and begins such movements as preening or bill stroking until the intruder withdraws, or simply flies away and feeds.

The potential of the Long-billed Curlew to be a significant predator on the eggs and young of ground-nesting passerines is limited in this region by its numbers. We estimate approximately one pair of breeding curlews per 6 or 7 km<sup>2</sup> each season in what would seem suitable habitat. Unfortunately few data are available in the literature for comparison, and the comments of recent observers who rate the species at its present density as "fairly common" in the Matador area (Roy 1964) are impossible to interpret quantitatively. Certainly the accounts of Sugden (1933) and Forsythe (1970) indicate that breeding densities much greater than this do occur.

Financial support for the project was from the National Research Council of Canada through the Canadian Committee for the International Biological Programme. We wish to thank R. T. Coupland, Director of the Matador Project (the Canadian IBP Grassland Zone Project), for his help and support.

#### LITERATURE CITED

- BANNERMAN, D. A. 1960. The birds of the British Isles, vol. 9. London, Oliver and Boyd.
- BENT, A. C. 1929. Life histories of North American shorebirds, vol. 2. U.S. Natl. Mus. Bull. No. 146.
- FORSYTHE, D. M. 1970. Vocalizations of the Long-billed Curlew. *Condor* 72: 213-224.
- GRAUL, W. D. 1971. Observations at a Long-billed Curlew nest. *Auk* 88: 182-184.
- MAHER, W. J. 1973. Growth rates of prairie passerine birds, Saskatchewan, Canada. Pp. 85-102 in *Productivity, population dynamics and systematics of granivorous birds* (S. C. Kendeigh and J. Pinowski, Eds.). Warszawa, Polish Sci. Publ.
- ROY, J. F. 1964. Birds of the Elbow. Regina, Saskatchewan. Saskatchewan Nat. Hist. Soc.
- SUGDEN, J. W. 1933. Range restriction of the Long-billed Curlew. *Condor* 35: 3-9.
- TIMKEN, R. L. 1969. Notes on the Long-billed Curlew. *Auk* 86: 750-751.
- WICKERSHAM, C. W. 1902. Sickle-billed Curlew. *Auk* 19: 353-356.

DOUGLAS A. R. SADLER AND W. J. MAHER, *Department of Biology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0*. Accepted 6 Feb. 75.

**Countershading on the feet and legs of the Common Loon.**—Audubon's (1966: plate 409) original painting of the Common Loon (*Gavia immer*) shows only the upper surface of the left foot of a loon in breeding plumage. The foot is mostly black, with gray on the toes and in the center of each web. Gromme (1963: 3) painted the feet of a breeding Common Loon a uniform gray. Most other artists have painted the loon swimming, sitting on a nest, or in flight without the feet or legs showing. Wilson (1840: 651) noted "the outside of the legs and feet is black, inside pale blue." Maynard (1881: 493) on the other hand thought that the

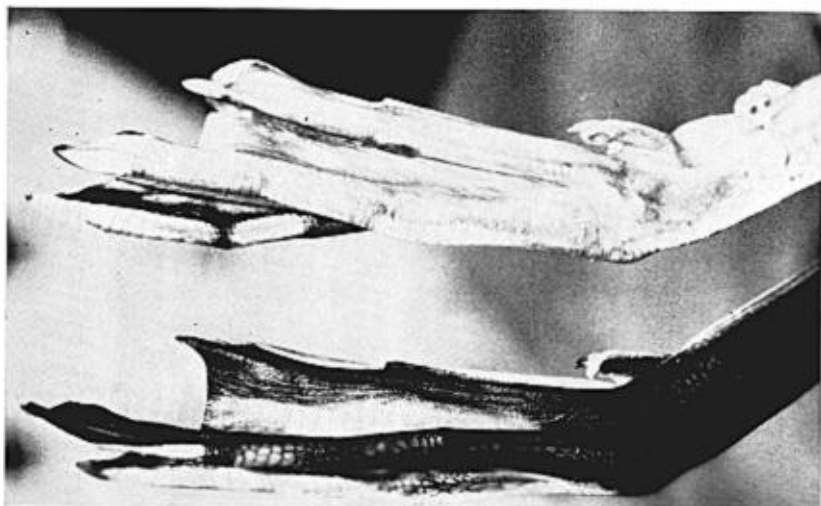


Fig. 1. Upper: Medial view of closed Common Loon foot. Lower: Outer view of closed Common Loon foot.

feet of adults were greenish and that those of nestlings were black. Gabrielson and Lincoln (1959: 53) suggest that in breeding plumage the feet are black, and that in fall and winter plumage they are dusky reddish flesh colored. Dement'ev and Gladkov (1968: 295) report that the feet of the Common Loon are "brown with yellowish or greenish tinge on exterior surface of tarsometatarsus and third and fourth toes." Palmer (1962: 22) records the legs of the Common Loon as "black on outer side paling to medium gray on inner; webs of feet dark with flesh colored centers." Bannerman (1959: 272) reports "The tarsus is black externally and whitish internally." Finally, Witherby et al. (1941: 117) stated "legs and feet (ad.) outside nearly black, inside very pale grey, webs same with flesh-coloured centres, (juv.) paler, outside dusky, inside milky blue-white."

Perhaps still other descriptions of the leg and foot color of Common Loons exist, but clearly ornithologists who have written about or painted loons fail to agree on it. Since 1970 I have examined five Common Loons found dead on Mississippi, Alabama, and Florida beaches, and one live loon found entangled in nylon fishing line. Some of the loons were still in winter plumage (e.g. MSU No. 700, male, 8 March 1973, Santa Rosa Island, Santa Rosa County, Florida) and others were in breeding plumage (e.g. MSU No. 813, male, 6 April 1974, Dauphin Island, Mobile County, Alabama); all had feet and legs colored similarly (Figs. 1 and 2). The medial surface of each leg was white; the outer side was black. The feet were also distinctly black and white such that when the webs were not stretched, that portion of the foot exposed medially was white and that portion exposed to the outside was black (Fig. 1). This pattern includes the nails, most of each being white, but the edge exposed to the outer side being black. With the web extended (Fig. 2) most of the upper surface of the foot was white, though that part of the web closest to each toe was black, shading to white. The plantar surface of each foot was mostly black, with only the center of each web white. Study of the living bird found tangled in nylon line revealed how this color pattern

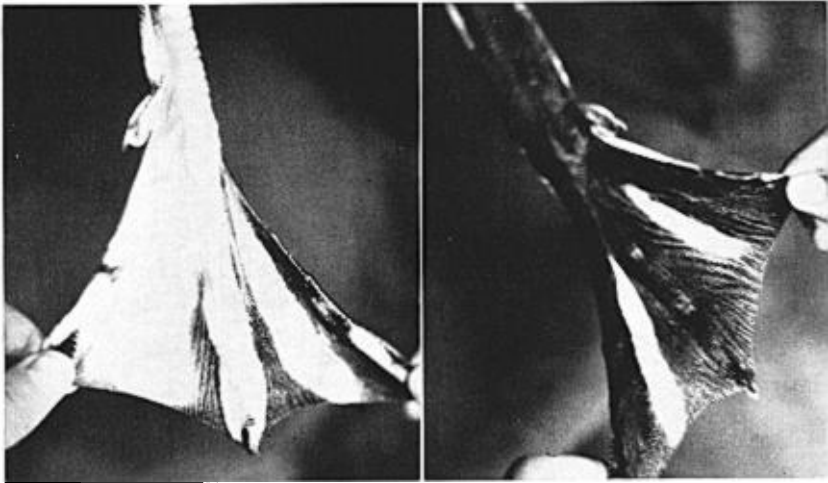


Fig. 2. Left: Dorsal view of Common Loon foot. Right: Plantar view of Common Loon foot.

contributes to the overall countershading of the loon. When the loon was relaxed in the water, its feet extended posteriorly, the white medial surface of the leg and upper surface of the foot were visible from below, and the black surfaces visible from above. It seems plausible that the loon is thus camouflaged by blending in with the dark bottom when viewed from above and with the light sky when viewed from below and as a result potential prey are less likely to see the loon until too late.

Sutton's (1943) drawing of a Red-throated Loon (*Gavia stellata*) clearly shows the outside of the tarsus dark and the inside pale. His (Sutton 1963) description of the feet and legs of the Yellow-billed Loon (*Gavia adamsii*) adult and day-old chick also suggest a color pattern similar to that of the Common Loon.

As with the upside-down catfish (*Synodontis* spp.) (Marshall 1966: 185) the foot of the loon is intriguing because the pattern of countershading is anatomically reversed (the dorsal surface is light) though, because of the bird's behavior, it exemplifies the principle of countershading (Thayer 1918).

As with flesh colors in most birds, the white on the legs and feet of my specimens darkened within a few days after death to a yellow- or gray-brown. Although possibly leg color may vary geographically, seasonally, or with age, apparently many previous workers have not relied on fresh specimens for their descriptions and paintings.

#### LITERATURE CITED

- AUDUBON, J. J. 1966. The original water-color paintings of John James Audubon for the birds of America. New York, Amer. Heritage Publ. Co., Inc.
- BANNERMAN, D. 1959. Birds of the British Isles, vol. 8. London, Oliver and Boyd.
- DEMENT'EV, G. P., AND N. A. GLADKOV (Eds.). 1968. Birds of the Soviet Union, vol. 2. Jerusalem, Israel Program for Sci. Transl.
- GABRIELSON, I. N., AND F. C. LINCOLN. 1959. Birds of Alaska. Harrisburg, Pennsylvania, The Stackpole Co.

- GROMME, O. J. 1963. Birds of Wisconsin. Madison, Univ. Wisconsin Press.
- MARSHALL, N. B. 1966. The life of fishes. Cleveland, Ohio, The World Publ. Co.
- MAYNARD, C. J. 1881. The birds of eastern North America. Newtonville, Massachusetts, C. J. Maynard & Co.
- PALMER, R. S. (Ed.). 1962. Handbook of North American birds, vol. 1. New Haven, Connecticut, Yale Univ. Press.
- SUTTON, G. M. 1943. The wing molts of adult loons: a review of the evidence. Wilson Bull. 55: 145-150.
- SUTTON, G. M. 1963. On the Yellow-billed Loon. Wilson Bull. 75: 83-87.
- THAYER, G. H. 1918. Concealing-coloration in the animal kingdom. New York, The Macmillan Co.
- WILSON, A. 1840. Wilson's American ornithology. Boston, Otis, Broaders, and Co.
- WITHERBY, H. F., F. C. R. JOURDAIN, N. F. TICEHURST, AND B. W. TUCKER. 1940. The handbook of British birds, vol. 4, London, H. F. & G. Witherby Ltd.

JEROME A. JACKSON, *Department of Zoology, Mississippi State University, Mississippi State, Mississippi 39762*. Accepted 19 Feb. 75.

**Bald Eagles soaring into opaque cloud.**—Recently Heintzelman and MacClay (1974, Auk 91: 849) reported Turkey Vultures (*Cathartes aura*) ascending on thermal currents into opaque clouds. Few reports of this phenomenon have been published, as noted by Griffin (1973, Proc. Amer. Phil. Soc. 117: 118). This note describes soaring Bald Eagles (*Haliaeetus leucocephalus*) entering opaque clouds, and comments on the possible function of such behavior.

On 4 February 1974 at 1320 I watched two adult and two subadult Bald Eagles at an altitude of approximately 500 feet above the ground soaring below a large cumulus cloud at the junction of Bacon Creek and the Skagit River, northeast of Marblemount, Washington. The base of the cloud was at least  $\frac{1}{2}$  mile across and its vertical height could not be determined. One eagle of unknown age was also seen just as it disappeared into the base of this cloud. As the eagles gained altitude, two of them flew laterally out of the thermal formation beneath the cloud, and descended out of sight. The two eagles still soaring disappeared into the bottom of the cumulus cloud at 1327. I estimated the bottom of the cloud to be 3000 to 4000 feet above the valley floor. I continued to watch the sky for more than an hour with 9 $\times$  binoculars, but saw no eagles descending from the cloud.

Cumulus clouds are associated with vertical air currents. The speed of the updraft beneath the cloud can be judged by the fact that the eagles ascended approximately 2500 to 3500 feet in 7 min.

The fate of the eagles that entered the clouds is unknown, but as the local wintering eagle population was declining at this time these eagles may have initiated a migration path over the Cascade Range to another drainage. An eagle trying to cross the North Cascade Range in this region would have to attain an altitude of several thousand feet. It is possible that these eagles ascended vertically through the cumulus cloud and left it after gaining enough altitude to be above the mountains. Another possible advantage of gaining such altitude is better visual orientation in the clear sky above the clouds.

I thank the Welder Wildlife Foundation for their support of my studies on eagles.—CHRISTOPHER SERVICEEN, *College of Forest Resources, AR-10, University of Washington, Seattle, Washington 98195*. Accepted 21 Feb. 75.