IDENTIFICATION AND SOUTHWARD LIMITS, IN AMERICA, OF *GAVIA ADAMSII*, THE YELLOW-BILLED LOON

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Various studies in recent years have advanced our knowledge of the identification of *Gavia adamsii*, the Yellow-billed Loon or White-billed Diver, and its winter distribution in North America. Still, only breeding adults are readily distinguishable (with care) from the more widespread *G. immer*, the Common Loon or Great Northern Diver.

IDENTIFICATION

After Palmer's (1962) basic handbook, important reviews of identification of *Gavia adamsii* were published by Binford and Remsen (1974), Burn and Mather (1974), Appleby et al. (1986), and the references they cited. To these may be added Schwartz (1978), McCaskie et al. (1979), and Godfrey (1986). Various helpful characters were pointed out, but most of them are rather subtle and/or show considerable individual variation, sometimes overlapping with those of *G. immer*. Even with birds in good plumage, close study is necessary, and additional complications are introduced by wear, fading, soiling, and molts. In the field, therefore, Appleby et al. warned that, even with well and closely seen birds, "too much reliance should never be placed on one or two characters alone"; identifications of even breeding adults should "be backed up by a careful check of other characters" besides the bill.

These warnings are underlined by Godfrey's report (in Palmer 1962:25, Godfrey 1986) of hybrids. Storer (1978) rejected Godfrey's identification of one of these, believing it simply a mis-sexed *immer*. However, the sexes are alike in all specific characters (differing slightly only in size), as stated in all standard references (e.g., Palmer 1962). The bird in question, Royal Ontario Museum 76360, was reexamined at my request by J. A. Dick; it resembles *immer* more than *adamsii* in the color of the shafts of the remiges, but it is nearer *adamsii* in the white of the back and in bill shape (J. C. Barlow in litt.); see also James (1981). Ornithologists need not determine a loon's sex to identify the species or possible hybrids.

In non-breeding birds, the most useful and constant characters of *adamsii* seem to be (1) Distinctly pale shafts of the middle part of the outer primaries, sometimes nearly whitish above; the pale color extends distad well beyond the tips of the primary coverts. (In *immer* the outer primaries' shafts are pale only basally, wholly dark fuscous to dusky beyond their upper coverts, so show no contrast with the dark webs.) Most of the under side of the shaft is also very pale to whitish. (2) complete lack of dusky on the distal half or more of the bill, particularly the culmen. (3) More extensive feathering anteriorly between the mandibular rami (see Binford and Remsen 1974) and a less extensive median groove beyond these (Godfrey 1986). (4) Broader feathering behind the nostril (Godfrey 1986). The maxillary ramphotheca, below the

nostril, is bare for 10 mm or more toward the base (from the posterior end of the nostril) in *immer*, whereas in *adamsii* feathering encroaches on it in less than 10 mm.

On the mandible of *G. immer* a median groove can be seen to extend distad perceptibly (at a proper angle of illumination) to within 30 mm or less of the tip. In *adamsii* the tip has no median groove for the last 35 mm or more (but it may have a slight median projection, producing a somewhat grooved appearance beside it).

In the field only (2) is useful, and it is usually difficult to get a good, direct view of the culmen from above. Appleby et al. (1986) therefore warned that even these differences "are not always so obvious under normal viewing conditions as the detailed accounts might suggest."

In fresh, unworn winter (basic) plumage, the extensively pale sides of the thick head and neck of *adamsii* are also fairly diagnostic; they contrast with a narrower (and not quite so dark) stripe down the thick hind-neck, and often with a somewhat darker auricular area. But by spring and summer young *immer* may be badly faded, obliterating this difference between the species.

Wear can whiten the tips of the webs of the primaries, but the shafts remain dark in *immer* (Figures 1 and 2). Even the most extensively whitish-shafted *immer* do not have as extensively pale shafts as the least whitish-shafted *adamsii*. This is true of all but the upper side of the secondaries (where each species may have a dark tip for 45 mm, minimum of *immer* and approximate

Figure 1. Dorsal view of primaries of Colorado loons. Left to right: DMNH 12244, male *Gavia immer*; DMNH 23974, "male" *G. adamsii*; DMNH 7807, unsexed adult *G. immer*. Note pale shafts of *adamsii*, dark shafts of *immer*.

Photo by Gary Hall, courtesy of DMNH archives

maximum of *adamsii*); the difference is most marked on the under side of the outer primaries. In *immer* the lower side of the shaft is more or less dark (not whitish) for at least 120 mm from the tip. In *adamsii* it is whitish or very pale to within about 40 mm of the tip, at least in its major part; the inner edge of the shaft is sometimes darker, on the long primaries.

Thus not all sight and photographic records of supposed extralimital *Gaviae* are fully reliable. The species known to occur in a region, properly documented by concrete evidence—preserved specimens of some kind—will appear in all their varieties of plumages and molts, clean, faded, or soiled, normally or occasionally as variants (or perhaps hybrids). The farther from birds' proven ranges (geographic and ecologic) and seasons, the greater the need of concrete, physical evidence of correct identification. "It should be borne in mind that several of the observers consulted . . . some of whom have accumulated a lot of experience of divers in flight, do not claim to identify specifically more than 40% of those that they see" (Appleby et al. 1986:387-388).

SOUTHWARD AND SOUTHEASTWARD DISTRIBUTION

From coastal British Columbia south and east, the range and status of *G. adamsii* have been misunderstood and disputed for many years. Even in

Figure 2. Dorsal view of wing (remiges) of *Gavia immer*, showing dark shafts.

Photo by Victor Krantz, courtesy of National Museum of Natural History

British Columbia the species was considered of hypothetical occurrence to 1925 (Brooks and Swarth) and was termed "scarce" to 1947 (Munro and Cowan); it is still uncommon even in winter (Campbell et al. 1989).

There were no records for the contiguous United States until 1934, when a dead bird was found (but lost) in Washington; having no specimen, Jewett et al. (1953) placed the species on the state's hypothetical list. Gabrielson and Jewett (1940) and Grinnell and Miller (1944) had no reports from Oregon or California. Today it apparently winters rarely but regularly along the coast south to northern or perhaps central California (Monterey area). The southernmost California specimen is a bird eventually found dead at Goleta, Santa Barbara County, on 12 April 1982 (Morlan 1985). Perhaps *adamsii* does not survive well in southern climes, lacking physiological/immunological adaptations to warmer ecosystems (Remsen and Binford 1975:13-14).

A single specimen from Los Coronados Islands, northwestern Baja California Norte, 24 November 1968 (Jehl 1970) gives no support to a "well-described sight record" (Simon and Simon 1974; Wilbur 1987:32) on 30 June 1973, farther south and across the peninsula near San Felipe in the Gulf of California, where *adamsii* has never been taken, even in winter. The published photograph of a "Yellow-billed Loon" in Arizona (Witzeman and Stejskal 1984) is not convincing to me, as it does not reveal the color of the culmen.

Campbell et al. (1989), like most others, suggested that this apparent southward extension of range is a recent development. There had been early reports, but all were discredited. One from Colorado (Cooke 1897) was corrected by Bent (1915), who had "always suspected. . . erroneous identification, as Colorado is so far away from the known range or migration route of this Arctic loon." The specimen proved to be an odd, yellow-billed *immer*. Another Colorado specimen, Denver Museum of Natural History (DMNH) 7807, was later marked "*adamsii* F.C. L[incoln]" but was reported by Bailey and Niedrach (1937) as the large *G. i. immer*: "It is such a large bird that it greatly resembles the immature *adamsii* except for the shape of its culmen." (See Figures 1, 3, 4).

Bailey and Lincoln (1954) reported a third Colorado specimen (DMNH 7808) as an immature *G. adamsii*. This was repeated by Bailey and Niedrach (1965), who also listed several *G. immer*, including DMNH 23974, an immature. Of 7808 they wrote "it reposed in the museum skin collection for thirty years in the series of Common Loon skins, until we studied individual birds in the course of preparation for this report." This they cited as an example of the difficulty of identifying winter and immature birds. But this specimen, in turn, was also reidentified as *G. immer* by Binford and Remsen (1974) and Remsen and Binford (1975).

After such repeated studies of the DMNH series of *G. immer*, it hardly seemed necessary to reexamine it in my taxonomic reevaluation of the collection. But I at once noted that DMNH 23974 was not *G. immer elasson* as labeled. Rather, it proved to have all Binford and Remsen's characters of *adamsii*! (Figures 1, 3, 4, center.) This bird, sexed as a male, was taken by K. C. Morse at (or near) Sterling, Logan County, on the northern Colorado plains, 19 January 1944. The label, as was customary, lacks supplementary

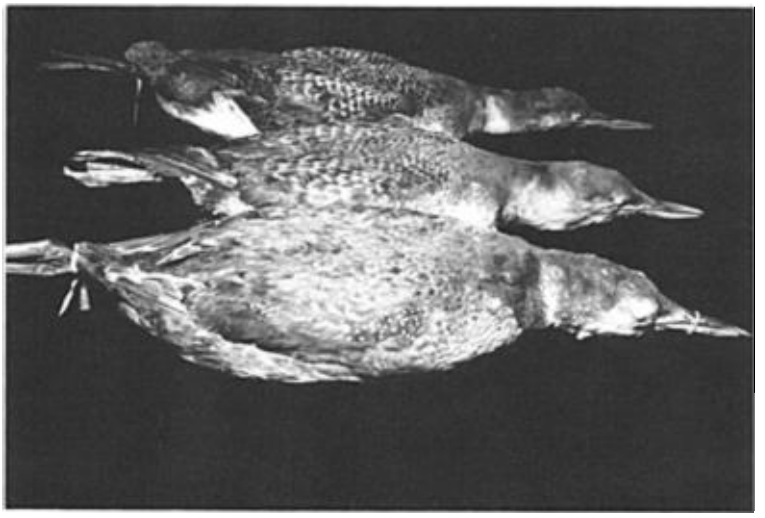

Figure 3. Dorsal view of Colorado loons. Top to bottom: DMNH 12244, male *Gavia immer*; DMNH 23974, "male" *G. adamsii*; DMNH 7807, unsexed adult *G. immer*.

Photo by Gary Hall, courtesy of DMNH archives

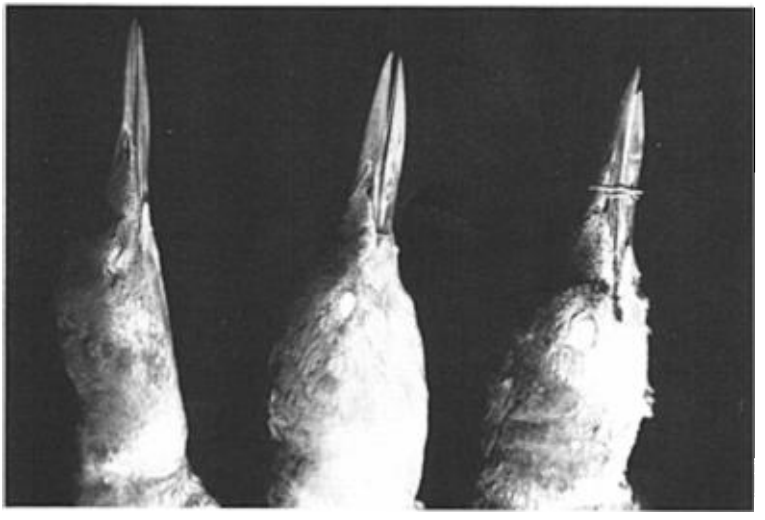

Figure 4. Heads of Colorado loons. Left to right: DMNH 12244, male *Gavia immer*; DMNH 23974, "male" *G. adamsii*; DMNH 7807, unsexed adult *G. immer*.

Photo by Gary Hall, courtesy of DMNH archives

information. The bill and foot are remarkably small (especially if the bird was sexed correctly); presumably they are still not full-grown. Morse was not a collector or regular contributor to the museum collection. Perhaps the bird was found dead or injured. But it is a normal, wild bird, establishing the occurrence of *adamsii* (at least casually) as far southeast as the Colorado plains at a date prior to its known occurrence anywhere else south of Washington (doubtfully) and British Columbia!

There is no reason to question the authenticity of the dates. DMNH 23974 was catalogued with numerous specimens taken in 1943. It was one of the earliest 1944 birds to be catalogued (though not the first). In fact, the museum's own April 1943 expedition was entered later (nos. 24065 to 24339). Thus the undated catalogue entry was probably made within a few months of the bird's receipt. The well-made specimen was doubtless prepared by the museum's taxidermists. (Such data never appeared on the labels.) And the degree of plumage wear is appropriate for January.

Not impossibly, were *adamsii* more easily distinguishable, it might prove regular in winter in Colorado. On a Denver reservoir, (soon after finding this Colorado specimen), I was shown a loon believed to be *adamsii*; the identification appeared to be correct, as far as I could tell. But at this writing DMNH 23974 remains the only specimen from Colorado or any adjacent or more eastern state, to my knowledge.

To be sure, the A.O.U. Check-lists of 1957 and 1983 accredit *adamsii* to Long Island, New York, as an accidental. This report is based on Zimmer's (1947) identification of a mandible from a badly decomposed bird; nothing else was salvaged. But even accepting Zimmer's dubious identification, we could not tell where the bird had died, as mentioned by Nichols (1948:135).

If *adamsii* does reach the interior United States regularly, this remains to be established. Any shed remiges or long-dead remains of large loons should be salvaged for identification.

Arnold and Henderson (1973) have provided an antidote to unwarranted over-optimism in loon identification: "a suspected Yellow-billed Loon was reported seen on . . . Christmas Bird Census (Amer. Birds 25:419, 1971)" in Texas; upon collection it proved to be *G. immer* "despite the oddly shaped bill."

Should *adamsii* actually prove regular in Colorado, there will be no reason to think the 1944 specimen accidental. Rather, it must cast doubt on the present general belief that the species has enormously expanded its winter range in America in recent years. Old-time ornithologists probably wasted little time searching for "this Arctic loon" at a time when the characters distinguishing it in winter were ill-defined or unknown and there was little hint of any long migration; a big *Gavia* is not easy to collect, to skin, or to store. More likely, what we now have is a greatly expanded number of eager observers, plus some knowledge of what to look for and where.

SUMMARY

Despite recent advances, the field identification of the larger loons remains extremely difficult, except in breeding plumage; even then, birds should be carefully observed. Fresh-plumaged winter birds of *usual* coloration and

shape may be identified with approximate certainty under favorable circumstances, but even museum specimens have required repeated examination for correct identification. Records outside the normal, proven range (geographically or seasonally) require specimen evidence, since the most reliable differences are not visible in the field and hybrids have been reported.

Discovery of a specimen from Colorado taken (doubtless at random) in 1944 not only extends the established range of *Gavia adamsii* onto the Great Plains but also suggests that the species' apparent enormous range expansion is an artifact of more intensive searching. But additional concrete evidence of normal wintering so far southeast is still needed.

This discovery also re-demonstrates the lasting importance of properly maintained scientific collections for accurate understanding of birds and their distributions, and the desirability of fuller labeling than has been customary.

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