SLATY-BACKED GULL

hybridization and variation in adult upperparts colour

Jon R. King and Geoff J. Carey

In North America, the Slaty-backed Gull *Larus schistisagus* is a scarce but regular migrant, summer visitor, and occasional breeder in western Alaska (Kessel and Gibson 1978, Kessel 1989, Tobish 1997), and has occurred as a vagrant elsewhere, primarily from southern Alaska to Oregon (there are currently no accepted records from California), but with records scattered as widely as Ontario, Quebec, Missouri, and Texas. With the exception of a record from Hawaii (Pyle 1997), all North American Slaty-backed Gulls outside Alaska have been in second basic through adult plumages.

Despite Slaty-backed Gull becoming a more established feature of the North American avifauna, few details have been published on the identification of the species (but see Dwight 1925, Firsova 1985, 1986, Goetz et al. 1986, Grant 1986, Melville 1990, Gustafson and Peterjohn 1994, Pyle 1997). In contrast, there has been an abundance of unpublished discussion among birders on topics relating to Slaty-backed Gull identification, especially on the Internet. Discussions have mainly focused on two areas of concern: variation in the colouration of the upperparts of adults, and whether or not Slaty-backed Gull has been recorded hybridizing with any other species (and whether the latter topic may have a bearing on the former).

These concerns have arisen in part from the work of Gustafson and Peterjohn (1994), which in addition to outlining some characters for the identification of adult Slaty-backed Gull, suggested that the upperparts colouration of adult Slaty-backed Gull appeared to be much more variable than had previously been reported. (Gustafson and Peterjohn used the term "mantle" to refer to the combined gray visible upper surfaces of the mantle, back, scapulars, upper wing coverts, and remige bases; we prefer the term "upperparts", following Grant 1986.) Gustafson and Peterjohn (1994) analysed some photographs and 15 specimens, and concluded that the upperparts of adult *L.schistisagus* range from as pale as the "Herring" gull taxon *vegae*, to darker than southern Western Gull *L.occidentalis wymani*, approaching the darkness of Scandinavian Lesser Black-backed Gull *L.fuscus intermedius*. This represents a range of up to four shades of gray, as defined by Kodak Color Separation and Gray Scale, catalogue no. 152 7662 (hereafter "Kodak").

Note that the American Ornithologists Union (1998) considers *vegae* to be a subspecies of Herring Gull *L.argentatus*, but there is an increasing body of evidence to suggest that this taxon may be a separate species, Vega Gull *L.vegae*, usually treated as consisting of two subspecies, *vegae* and *birulai* (Kennerley et al. 1995 and references therein). While we consider *vegae* to represent a separate species, given the contradictions in the literature we use the term *vegae* here referring to the nominate form, without assigning it to a species. Further, we follow convention by placing the taxa *intermedius* and *graellsii* within *L. fuscus*, while acknowledging that alternative arrangements have been proposed (Sangster et al. 1998).

Field observations of Slaty-backed Gull upperparts colouration

In February 1999, we studied over 2500 adult Slaty-backed Gulls in detail in the field at sites in eastern Hokkaido, Japan, and a further 200 at Choshi, Chiba Prefecture, Honshu, Japan. On Hokkaido, we found no evidence of significant variation (greater than one full shade of gray) in upperparts colouration of adult *L.schistisagus*. All birds were very dark bluish gray; in comparisons with taxa with which we are familiar, based on memory, we independently concluded that all individuals fell between the typical upperparts colours of western Lesser Black-backed Gull *L.f.graellsii* and Scandinavian *L.f.intermedius* and were consistently similar to, or marginally darker than, typical adults of Black-tailed Gull *L.crassirostris*.

At Choshi there were many Black-tailed Gulls available for direct comparison, and we were able to quantify some subtle variation in adult Slaty-backed Gull upperparts colouration. It is possible that Slaty-backed Gulls at Choshi averaged fractionally paler than on Hokkaido. In an analysis of 64 adult Slaty-backed Gulls, 22% were paler than adult Black-tailed Gull by a maximum of half a shade of gray, 30% were darker by a maximum of half a shade, and the remaining 48% were not distinguishable from *L.crassirostris* in upperparts shade (note that the gray on Black-tailed Gull is brown-toned, while that of Slaty-backed Gull is blue-toned, and that adult Black-tailed Gull appeared to vary little in upperparts colour). Even the palest adult *L.schistisagus* still appeared to be darker than typical *L.f.graellsii* (although they resembled dark examples of *L.f.graellsii*), while the darkest birds were considered to be paler than typical *L.f.intermedius*. We saw no Slaty-backed Gulls showing upperparts colours as pale, or paler than, typical *L.f.graellsii*, and all were determined to be clearly at least two gray shades darker than *vegae* (hundreds of *vegae* and *birulai* were available for direct comparison).

In addition to our observations from Japan, other observers have reported that adult Slaty-backed Gulls appear to be both dark and consistent in upperparts colouration. Two individuals at Portland, Oregon, were apparently darker than *L.o.wymani* (Greg Gillson, pers. comm.), i.e. close in colour to *L.f.intermedius*. The birds in Missouri and Texas were "obviously darker than nominate Western" *L.o.occidentalis* (David Sibley, pers. comm.), and hence were presumably darker than *L.f.graellsii*, which typically averages only slightly darker gray than *L.o.occidentalis* (pers. obs.). In various locations in eastern Asia, Peter Kennerley (pers. comm.) has "seen tens of thousands of Slaty-backed ... and they are fairly uniform and dark. Furthermore there should not be any possibility of confusing Slaty-backed with Vega on mantle colour...." Observers with experience of *L. schistisagus* from Alaska seem to concur that the upperparts of birds there are both consistent and dark (David Sibley, Matt Heindel, pers. comms.), again darker than typical *L.f.graellsii* or *L.o.occidentalis*.

Photographic and specimen evidence

Valid comparison of upperparts colours between photographs, of the type undertaken by Gustafson and Peterjohn (1994), is fraught with potential problems (Grant 1986, p.21). A host of factors such as ambient light conditions, angle of the bird relative to the photographer and/or the sun, film type, photographic equipment used, and even photographic processing method, may all contribute to producing different gray tones on the upperparts of photographed gulls. Gustafson and Peterjohn (1994) compare three photographs (p.244, Figures 3-5) of apparent adult Slaty-backed Gulls taken in the field, which appear to demonstrate differences in upperparts colours. However, this comparison introduces many of the factors outlined above. In particular, Figure 3 was taken in overcast conditions with no shadows evident, Figure 4 in lightly overcast conditions with weak shadows, and Figure 5 in strong sunlight with bold shadows. In all three cases, the angle of the subject relative to both light and photographer is different. Even though two birds are shown in Figure 4, apparently showing different upperparts colours, the difference may be largely due to the birds standing at different angles to the camera. We note, however, that the bird in Figure 3 may indeed be genuinely pale, and we suggest that on the basis of this photograph alone, the identification of this individual as a pure Slaty-backed Gull is unproven.

Gustafson and Peterjohn (1994) studied adult specimens labeled as *L.schistisagus* from the U. S. National Museum of Natural History, and in Figures 6-8 they present photographs of a sample of these (USNM 366426, 494373, 201461, 201459, 210461, and 414373). Figure 6 shows the first four of these, and appears to demonstrate a dramatic difference in upperparts colour between the four birds. The six specimens are then compared to other gull taxa in Figures 7 and 8.

We have not examined these specimens directly. However, we contend that the palest specimen presented, USNM 201459, is actually a hybrid. In addition to having substantially paler upperparts than other apparent *L.schistisagus* specimens, the photographs in Gustafson and Peterjohn (1994) clearly show that this specimen has dark gray, not black, outer primaries. Our own observations, and published research (listed earlier), indicate that pure adult *L.schistisagus* always

Adult Slaty-backed Gulls *Larus schistisagus* with adult Glaucous-winged Gull *L. glaucescens* (second from left), Rausu, Hokkaido, Japan, 3 February 1999 (*Jon R. King*). The single bird on the left appears to show a paler upperparts colour than birds on the right due to its different angle relative to the camera, even under overcast conditions.

show black outer primaries (but see comments below regarding Melville 1990). The dark gray primaries shown by this specimen are indicative of a hybrid origin, presumably *L.schistisagus* paired with a paler-winged taxon. In combination with the paler upperparts, we deduce that this bird is probably Slaty-backed Gull × Glaucous-winged Gull *L.glaucescens*, based on published evidence of this hybrid combination (see below), and also the apparent similarity of the primaries to adult *L.glaucescens* × *L.occidentalis* observed in California (pers. obs). An alternative explanation might be that USNM 201459 is an adult Slaty-backed Gull × Glaucous Gull *L.hyperboreus*, although the primaries are probably too dark for a first generation, F1, hybrid of this combination (pers. data, from study of various hybrids involving *L.hyperboreus* in California and Japan) In addition, it is possible that the next palest specimen in Figure 6 of Gustafson and Peterjohn (1994), USNM 201461, may also be a hybrid. The outer primaries appear to be matt black on this specimen, appearing slightly paler than the jet black primaries of adjacent specimens of *L.schistisagus* (although they do not approach the paleness of the primaries of USNM 201459). Only detailed examination of USNM 201461 in the hand could confirm the possibility that this specimen is not a pure *L.schistisagus*, and even then it is doubtfully an F1 hybrid.

We have located only one reference that suggests that adult *L.schistisagus* has dark gray, rather than black, outer primaries. Melville (1990) discusses the primary pattern of adult *L.schistisagus*, based principally upon one individual found dead on Hokkaido, Japan, and provides a photograph of the wing-tip of this individual. Using colours from Smithe (1975), Melville described the outer primaries as Blackish neutral gray (Color 82 = Kodak 14), and the remaining remiges and coverts as between Medium and Dark neutral gray (Colors 84 and 83, respectively = Kodak 7-9). The blackish gray colour of the outer primaries described by Melville, and the relatively pale upperparts colouration (similar to, or paler than, typical *L.f.graellsii*), appeared to contradict other references and our field observations. Following examination of the original wing preparation, we suspect that the specimen in question may be a hybrid, though doubtfully first generation. A detailed discussion of this specimen will appear elsewhere (Carey and King in prep., Hong Kong Bird Report).

It is noteworthy that the extensive collections of *L.schistisagus* and *vegae* housed in St. Petersburg Zoological Museum, Russia, apparently do not contain any *L.schistisagus* showing atypically light upperparts. One "*vegae*" specimen (no. 166088) with unusually dark upperparts collected from the Lower Apuka River was subsequently determined by A. A. Kishchinsky to be a hybrid between *vegae* and *L.schistisagus* (L. V. Firsova and Vladimir Loskot, pers. comm.).

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Adult Slaty-backed Gull *Larus schistisagus*, Rausu, Hokkaido, Japan, 3 February 1999 (*Jon R. King*). Even under only moderate sunshine, the upperparts colouration can appear paler than in overcast conditions.

Hybridization

Gustafson and Peterjohn (1994) reported that no hybrids between Slaty-backed Gull and other species had been described. However, *L.schistisagus* is known to hybridize with *vegae* (Haffer 1982), and with *L.glaucescens* on the east coast of the Kamchatka Peninsula (Firsova and Levada 1982). In addition, *L.schistisagus* and *L.glaucescens* have apparently hybridized on the Commander Islands (Grabovsky et al., unpubl. ms).

Slaty-backed Gull breeds from northern Kamchatka south through the Kurile Islands to Hokkaido, and around the coast of the Sea of Okhotsk, including on Sakhalin (Brazil 1991, Grabovsky et al., unpubl. ms.). This typical breeding range of *L.schistisagus* appears to include small areas of contact with both *vegae* and *L.glaucescens*, although there is significant contradiction in the literature. All sources appear to agree that *L.glaucescens* breeds from northwestern North America west through the Aleutian and Commander islands, to the westernmost of the Commander Islands, Arii Kamen Island (Grabovsky et al., unpubl. ms). According to Grabovsky et al., *L.glaucescens* does not normally breed on the Kamchatka peninsula, although Haffer (1982) indicates that this species has a small contact zone with *L.schistisagus* on the east coast of Kamchatka. Suggestions that *L.glaucescens* breeds extensively on the western Bering Sea coast (Grant 1986, Verbeek 1993) appear to be erroneous. The breeding range of *vegae* includes the Chukotka peninsula in northeastern Siberia and on the north-west Bering Sea coast apparently south to the Koryak Highlands of northeastern Kamchatka (Haffer 1982) (the latter locality is not mapped for *vegae* in Grant 1986). There is a small zone of contact between *L.schistisagus* and *vegae* in extreme northeastern Kamchatka according to Haffer (1982). In addition, there is a summering population of *vegae* in northwest Alaska, including the northern Bering Sea islands (Kessel 1989).

Haffer (1982) briefly mentions that *L.schistisagus* "hybridizes locally with *L.vegae* in the south of Koryakland [= Koryak Highlands]", but no details are given of the frequency of hybridization between the two taxa. Hybridization between *L.schistisagus* and *L.glaucescens* was first observed in 1977, when a male Slaty-backed Gull paired with a female Glaucous-winged Gull tended two chicks in a Slaty-backed Gull colony on the Koryak (northeastern) shore of Kamchatka (Firsova and Levada 1982). In early June 1997, two individual adult Glaucous-winged Gulls were seen apparently paired to adult Slaty-backed Gulls at two localities on the east coast of Kamchatka where the Slaty-backed Gull colonies totaled 50-100 pairs, and several hundred pairs, respectively (A. Wilson, pers. comm.). Hybridization between Slaty-backed and Glaucous-winged gulls on Arii Kamen Island was first observed in 1989, when a mixed pair was found incubating eggs (Grabovsky et al., unpubl. ms). In 1993, Grabovsky et al. found four adult Slaty-backed Gulls in a Glaucous-

winged Gull colony of 3000 pairs on Toporkov Island in the Commander archipelago, one of which was paired to a male Glaucous-winged Gull, and was tending a chick. In addition, Grabovsky et al. estimated that 2.7% of all adults in the Toporkov colony had an intermediate upperparts colour between *L.schistisagus* and *L.glaucescens*. They concluded that such birds were hybrids, and hence that hybridization between *L.schistisagus* and *L.glaucescens* "occurs on a regular basis, but at low levels" (Grabovsky et al., unpubl. ms). One of these presumed hybrids was apparently paired with a pure *L.glaucescens*. Finally, adult Slaty-backed Gulls have been observed for several years in a Glaucous-winged Gull colony on "Puffin Island", Attu, Alaska and it is believed that hybridization may have occurred (M. Smith, pers. comm.).

Clearly, information regarding the frequency of hybridization between Slaty-backed Gull and other species remains sparse, and it appears to be unknown if such hybrids are fertile. Furthermore, other than general statements in Grabovsky et al. (unpubl. ms) regarding the intermediacy of upperparts colouration between *L.schistisagus* and *L.glaucescens*, the field appearance of putative hybrids has not been described (although specimen USNM 201459 may give some clues).

Conclusions

Our field observations in Japan suggest that adult Slaty-backed Gull is generally consistent and rather dark in upperparts colouration, while assessments of birds in North America by experienced observers appear to support this conclusion. Adults of *L.schistisagus* are darker than average *L.f.graellsii* in upperparts colour, and can approach typical *L.f.intermedius*, and hence appear to be similar in gray shade to many *L.crassirostris* (and to *L.o.wymani*). Consequently, records of apparent *L.schistisagus* reporting an upperparts colour paler than, or perhaps even similar to, typical *L.f.graellsii* should be critically examined for the possibility of hybrid origin. However, consideration should be given to the many potential problems associated with accurately judging upperparts colour under field conditions (Grant 1986), and such problems may well be compounded on single vagrant individuals, especially when the taxon is unfamiliar to observers.

Although the gray upperparts colouration of adult gulls is reasonably consistent within a taxon, it should be noted that this character is subject to individual and seasonal variation (for example, upperparts colour of *L.f.intermedius* on specimens of breeding adults ranges from Kodak 10-14, though most individuals fall within Kodak 11-12, averaging 11.7; Jonsson 1998, L. Jonsson pers. comm.). Unfortunately however, upperparts variation has been poorly studied in most gull taxa, and consequently variation in this character is under-appreciated. Comparisons of upperparts colours are often drawn between gull taxa without due attention being paid to the potential variation in this character within any given taxon, and it is often uncertain exactly what taxa are involved in such comparisons. For example, comparisons with Lesser Black-backed Gulls in North America invariably assume the birds involved are pure *L.f.graellsii*, though this may not always be the case (Post and Lewis 1995, JRK unpubl. data). It must also be stressed that upperparts colour is only one of many characters that should be used for adult gull identification. In view of problems such as those described above, the considerable weight formerly attached to upperparts colour for the identification of large gulls has recently been questioned (Garner 1997, Garner and Quinn 1997).

Taken together with published data demonstrating that *L.schistisagus* hybridizes with paler mantled gulls (*vegae* and *L.glaucescens*), the field observations suggest that Gustafson and Peterjohn (1994) may have overestimated the range of upperparts colouration reported for adult *L.schistisagus*. We believe that the palest specimen those authors examined is itself a hybrid (probably *L.schistisagus* × *L.glaucescens*), and other pale specimens discussed by Gustafson and Peterjohn (1994) may also show possible signs of hybridity.

We are still a long way from a full understanding of plumage variation in adult Slaty-backed Gull, and of hybridization between this species and other taxa. A detailed review of Slaty-backed Gull specimens is required to critically assess whether subtle variation in upperparts colour may vary geographically. Examination of USNM specimens is obviously required; these include the type of *L.schistisagus*, USNM 92885, which is reportedly a relatively pale individual, collected on Bering Island (outside the typical breeding range of the species), and also a vagrant individual from

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Guam, which apparently has atypically pale upperparts. Further, we urge observers of putative hybrids involving *L.schistisagus* to fully document and publish such records.

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