

THE GLAUCOUS GULL IN WESTERN NORTH AMERICA SOUTH OF ITS BREEDING RANGE

By DAVID W. JOHNSTON

For many years ornithologists have considered the Glaucous Gull (*Larus hyperboreus*) to be a rare winter visitor along the coast of western North America south of its arctic and subarctic breeding grounds. With the possible exception of certain pelagic species of gulls, the Glaucous Gull is probably the least common of the eight-odd species which visit this coastline. Nevertheless, because of its large size and conspicuous plumage, this species has received considerable attention from ornithologists, and a survey of the literature and museum collections will reveal numerous sight records and specimens. Primarily on the basis of the sight records, it has generally been agreed that most of the observations have been of immature birds, and, since the age groups of this species are difficult if not impossible to distinguish infallibly under field conditions, birds observed in the field have usually been called just immature or adult. By carefully examining extant specimens and relegating them to the proper age groups, it is now possible to give a more accurate picture of the extent to which these various age groups occur south of the breeding grounds.

The present study deals primarily with 77 specimens which have been examined from the Museum of Vertebrate Zoology, California Academy of Sciences, United States National Museum, and the Los Angeles County Museum. More than one-half of these specimens were collected at or near the breeding grounds in Alaska, but it was necessary to examine as many specimens as possible so that the characteristics for all the age groups might be correctly ascertained. Following this detailed study of plumages, descriptions of the age groups were sent to collaborators at other museums in order to make this survey of specimens as complete as possible. Only those specimens from the four museums mentioned above have been examined personally. The following is a list of the museums and collaborators who have had specimens to contribute to this study: Museum of Vertebrate Zoology (Alden H. Miller), California Academy of Sciences (Robert T. Orr), Los Angeles County Museum (Kenneth Stager), San Diego Natural History Museum (Laurence H. Huey), Dickey Collection (Thomas R. Howell), University of Oregon Museum of Natural History (J. Arnold Shotwell), United States National Museum and Patuxent Research Refuge collection (Allen J. Duvall), American Museum of Natural History (Dean Amadon), Chicago Natural History Museum (Emmet R. Blake), Provincial Museum (C. J. Guiguet), Royal Ontario Museum (L. L. Snyder), University of British Columbia (I. McT. Cowan), Hamilton M. Laing, and Ronald M. Stewart. I am also indebted to Howard L. Cogswell who has given valuable assistance in the determination of age group characteristics. Since several important specimen records have been furnished by private collectors, it is possible that there are additional records not revealed by this survey.

The original intention of this study was to determine the distribution of the Glaucous Gull, but in the course of examination of specimens, certain important characteristics of the different age groups which other authors have not emphasized have been brought to light. In addition, significant and diagnostic differences have been brought out between the Glaucous Gull and the Glaucous-winged Gull (*L. glaucescens*), especially in the subadults.

DESCRIPTIONS OF AGE GROUPS

The usual designation for the puzzling age groups of gulls is simply immature and adult, this being the case in most field guides. Dwight (1925) and others, however, have

realized that "immature" might embrace as many as three different, separable plumages, these being sequential annually. First by using molting birds and later by confirmation with banded birds (in some species), it has been possible to express qualitatively for each species the plumage and soft-part characteristics for the age groups. Dwight's detailed paper has stood for many years as the authority in such matters, but due to the large scope of this study (gulls of the world), he usually was unable to examine more than a few individuals of each age group or species. The present intensive report on molts, plumages and soft-part colors for the Glaucous Gull is intended to supplement Dwight's descriptions by emphasizing certain of the characteristics which he recognized and by indicating others not generally utilized for this species.

First-year Birds.—This age group is probably the most puzzling because of plumage variations and fading. The characteristics of this age group are not as clear-cut as Dwight's figures would lead one to believe. Nevertheless, there are certain general features found in birds of this age: the back, head, mantle and underparts are generally mottled with pale buff or pale brown. The overall appearance usually is of a whiter bird when compared with *glaucescens* of the same age, and of a more speckled or mottled bird when compared with the typical second-year *hyperboreus*. According to Dwight, the primaries are usually pale drab or dark gray with colored shafts and mottled or freckled tips. My own examination of such birds has shown that the primaries may be either pure white or pale drab, and they are frequently mottled. Secondaries are usually of the drab or gray-brown, mottled type; they are less frequently white; the coverts are similar. The tail is marbled with irregular white and brownish-gray areas, although in one bird it was practically white with only a few such markings. In an unworn tail, there is a conspicuous subterminal whitish or buffy band. One of the most noticeable and useful identifying features of this age group is the bill coloration, which, even in old museum skins, has been found to be consistent: the basal one-half (approximately) is pinkish white, whereas the terminal one-half is black.

In the late winter and spring this plumage fades and wears considerably so that birds during this time appear whiter than earlier in the year. Similar effects are to be found in first-year *glaucescens*, with the result being a rather whitish bird that superficially resembles *hyperboreus*. Field observers and collectors have been confused by such "white" gulls, and usually such birds are called *hyperboreus* just because they are large and whitish. By examination of such worn and faded specimens, however, several misidentified birds have been found. Even in the most worn plumages where only the shafts of the rectrices and remiges are left, it is possible to recognize *glaucescens* because of the following features. The primaries and secondaries of *glaucescens* are generally darker, especially on the inner vanes. Similarly, the tail is darker and has fewer mottlings especially on the outer vane of the outermost rectrix which is conspicuously mottled in *hyperboreus*. Thus, the tail is more nearly uniformly grayish brown. Finally, the bill of first-year *glaucescens* is uniformly black. The following Californian specimens, some of which are recorded in the literature, have been previously considered to be *hyperboreus*, but in the light of these characteristics should be called *glaucescens*.

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|--------------------------|------|----------------|---------------|--|
| U. S. N. M. | ♂ | E. J. Brown | Mar. 14, 1915 | Hyperion, Los Angeles Co. |
| J. E. Law Coll. | ♀ | L. E. Wyman | Jan. 30, 1915 | Hyperion, Los Angeles Co. |
| Univ. Calif. Zool. Dept. | ♀ | C. P. Streator | May 27, 1940 | Santa Cruz, Santa Cruz Co. |
| M. V. Z. | ♀ | C. P. Streator | June 14, 1938 | Santa Cruz, Santa Cruz Co. |
| Ellis Coll. | sex? | coll.? | Mar. 17, 1927 | Bodega Bay, Sonoma Co. (second-year bird) |
| Ellis Coll. | sex? | coll.? | Mar. 14, 1926 | Monterey Bay, Monterey Co. |

This study of specimens should caution field observers in the identification of large white gulls in late winter, spring and summer, because a white-appearing gull is not necessarily *hyperboreus* but may be a worn, faded *glaucescens*.

According to Dwight, a complete annual molt occurs in August and September, but birds from Alaska were also found to be molting in July.

Second-year Birds.—In this plumage there is much variation in the amount of mottling on the back, wings and underparts. Depending somewhat upon wear and fading, birds may be either completely white or mottled much like the first-year birds. The primaries are usually whiter than those of first-year birds, but they may be pale pinkish brown. The back and mantle area may be entirely white or obscurely mottled with pale brown. No gray was found in the mantle of any of the birds examined. Also, the underparts may be white or mottled, but if mottled, they are lighter than in first-year birds. The tail is white or finely and variably mottled. There is usually a less distinct blackish tip to the bill than in first-year birds, although two birds (one fresh from the field) had completely black bills and five others closely resembled first-year birds in this character.

According to Dwight there is a partial prenuptial molt in April and May at which time gray feathers begin to appear in the mantle. Although this may be true for some individuals, specimens taken in April and May and examined in the present study were not molting and had no gray in the mantle. Two birds from Alaska in July were undergoing annual molt and new gray mantle feathers were just beginning to appear among the old mottled feathers of the mantle. These latter birds further show that the annual molt for this age group occurs in July as well as in August and September.

Third-year Birds.—In the third-year plumage birds rather closely resemble adults, and usually they differ strikingly from second-year birds. The primaries are usually white but they may have a pale pinkish brown tinge. Otherwise, the wings vary from gray to sparsely mottled. The mantle is usually pale gray as in adults, but in a few birds it was found to be sparsely mottled with pale brown. Also, the underparts are usually white but there may be variable amounts of pale brownish "clouding." The tail is usually white but sometimes there is some pale brownish mottling. Although no fresh birds have been examined to determine the true colors of the soft parts, the bill is apparently yellowish basally with about one-third of the tip blackish. In none of the five specimens examined was there any suggestion of a red spot on the lower mandible, although birds recently molted into the adult plumage in late summer begin to attain this reddish spot.

Whereas Dwight determined that the complete molt to the adult plumage occurs in August and September, two birds from Alaska taken on July 18, 1931, were in advanced stages of molt. Six or seven new white primaries are present and the head and neck areas are molting extensively. On the other hand, the rectrices are all old.

Adult Birds.—The detailed description of the adult plumage as given by Dwight has been found to be correct. Only two specimens out of thirty-three showed faint brownish mottling on the head and neck; all the others had pure white heads, necks and underparts and pale gray mantles. The bill in all these specimens was yellowish with a red spot at the angle.

Five adults taken at St. Michael, Alaska, on June 7, 1931, had three well developed incubation patches and enlarged gonads. Four of the birds were molting primaries. Similarly, specimens taken in July and August were molting primaries, rectrices and body feathers. One specimen, taken on October 8, 1927, at Nunivak Island, Alaska, had the outer two primaries still partly ensheathed, thus indicating that the annual molt may span the period from June to October in this age group.

Table 1

Specimens of the Glaucous Gull from Western North America

British Columbia

| Museum | Collector | Sex | Age | Date | Locality |
|------------------|----------------|-----|---------|----------------|------------------------------|
| | R. M. Stewart | ♂ | 2nd yr. | Dec. 7, 1942 | Masset, Queen Charlotte Isl. |
| | R. M. Stewart | ♂ | 1st yr. | Jan. 9, 1945 | Masset, Queen Charlotte Isl. |
| Univ. B. C. | ————— | ♀ | 1st yr. | May 15, 1947 | Langara Island, Q. C. I. |
| Univ. B. C. | ————— | ♀ | 1st yr. | May 14, 1947 | Langara Island, Q. C. I. |
| Univ. B. C. | ————— | ♀ | 1st yr. | May 18, 1931 | Tofino, Vancouver Island |
| M. V. Z. | A. Brooks | ♀ | 1st yr. | Dec. 17, 1925 | Comox, Vancouver Island |
| | H. M. Laing | ♂ | 1st yr. | Dec. 18, 1935 | Comox |
| A. M. N. H. | A. Brooks | ♂ | "im." | Sept. 15, 1903 | Comox |
| M. V. Z. | A. Brooks | ♀ | 2nd yr. | Mar. 15, 1926 | Nanaimo, Vancouver Island |
| Roy. Ont. Mus. | J. A. Munro | ♀ | 2nd yr. | Mar. 7, 1929 | Departure Bay |
| Roy. Ont. Mus. | J. A. Munro | ♀ | 2nd yr. | Mar. 23, 1938 | Departure Bay |
| Prov. Mus. | R. A. Cummings | ♀ | 1st yr. | Mar. 11, 1931 | Vancouver |
| Chic. N. H. Mus. | R. A. Cummings | ♂ | 1st yr. | Feb. 11, 1929 | Vancouver |
| Prov. Mus. | W. McKay | ♂ | adult | Feb. 11, 1921 | Kildonan, Vancouver Island |
| M. V. Z. | A. Brooks | ♀ | 2nd yr. | May 4, 1944 | Okanagan |
| M. V. Z. | A. Brooks | ♀ | 2nd yr. | Apr. 8, 1924 | Okanagan |
| M. V. Z. | A. Brooks | ♀ | 1st yr. | Apr. 7, 1938 | Okanagan |

Washington

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|--------------|----------------|---|---------|---------------|----------------------------|
| U. S. N. M. | H. H. Hindshaw | ♂ | 2nd yr. | May 12, 1896 | Seattle Harbor |
| Dickey Coll. | D. E. Brown | ♀ | 2nd yr. | Jan. 14, 1918 | Tacoma, Pierce Co. |
| U. S. N. M. | S. G. Jewett | ♀ | 2nd yr. | May 28, 1942 | Copalis, Grays Harbor Co. |
| Dickey Coll. | D. E. Brown | ? | 2nd yr. | May 5, 1920 | Westport, Grays Harbor Co. |

Oregon

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|---------------------------|---------------|---|---------|---------------|--------------------------|
| San Diego Nat. Hist. Mus. | E. Clark | ♀ | 1st yr. | Dec. 12, 1914 | Sauvies Island |
| Patuxent Coll. | ————— | ♂ | 2nd yr. | Jan. 28, 1933 | Bay Ocean, Tillamook Co. |
| Univ. Ore. Mus. | A. C. Shelton | ♂ | 1st yr. | Apr. 4, 1914 | Netarts |
| Univ. Ore. Mus. | A. C. Shelton | ♂ | 2nd yr. | Apr. 28, 1915 | Mercer Lake |

California

| | | | | | |
|-------------------|----------------|---|---------|---------------|----------------------------|
| M. V. Z. | A. Brooks | ♂ | adult | Mar. 4, 1936 | Suisun, Solano Co. |
| M. V. Z. | D. W. Johnston | ♂ | 1st yr. | Jan. 29, 1953 | Richmond, Contra Costa Co. |
| M. V. Z. | D. W. Johnston | ♀ | 2nd yr. | Nov. 26, 1952 | Richmond, Contra Costa Co. |
| Calif. Acad. Sci. | R. H. Beck | ♂ | 2nd yr. | Mar. 30, 1910 | Alameda, Alameda Co. |
| Calif. Acad. Sci. | R. H. Beck | ♀ | 1st yr. | Mar. 6, 1907 | Monterey Bay |
| M. V. Z. | R. H. Beck | ♀ | 1st yr. | Feb. 13, 1939 | Monterey Bay |

Table 1 (Continued)

| Museum | Collector | Sex | Age | Date | Locality |
|---------------------------|------------------------|-----|---------|---------------|---------------------------|
| M. V. Z. | R. H. Beck | ♂ | 2nd yr. | Feb. 20, 1939 | Monterey Bay |
| M. V. Z. | R. H. Beck | ♂ | 1st yr. | Dec. 30, 1910 | Monterey Bay |
| M. V. Z. | J. C. von Bloeker, Jr. | ♂ | 2nd yr. | Jan. 5, 1937 | Seaside, Monterey Co. |
| Chic. N. H. Mus. | L. B. Bishop | ♂ | 1st yr. | Mar. 31, 1922 | Hyperion, Los Angeles Co. |
| J. E. Law Coll. | L. E. Wyman | ♂ | 2nd yr. | Feb. 18, 1915 | Hyperion |
| L. A. Co. Mus. | L. E. Wyman | ♀ | 1st yr. | Jan. 28, 1921 | Hyperion |
| L. A. Co. Mus. | G. Willett | ♀ | 1st yr. | Feb. 18, 1918 | Hyperion |
| L. A. Co. Mus. | L. E. Wyman | ♀ | 1st yr. | Nov. 24, 1915 | Hyperion |
| Chic. N. H. Mus. | L. B. Bishop | ♂ | 1st yr. | May 13, 1922 | Sunset Beach |
| San Diego Nat. Hist. Mus. | Frank Stephens | ♀ | 2nd yr. | May 6, 1919 | San Diego, San Diego Co. |

RESULTS AND DISCUSSION

Table 1 includes all the known specimens of the Glaucous Gull which were examined or "discovered" by this study. At first appearance, it would seem that this species is more common in British Columbia and California than in Washington and Oregon, but this is not necessarily true because the coastline of these states and province are of different lengths and there are, or have been, relatively more collectors in the first-named areas. Even so, this tabulation of specimens does reveal several notable facts concerning the distribution of this species and its age groups on the west coast of North America.

Local observers will probably be impressed with the significant number of heretofore unpublished but old records. For California, Grinnell and Miller (1944:168) recorded eight specimens whereas table 1 reveals sixteen specimens, not including those three which have been removed from this state list (see discussion of first-year birds).

If one can assume that birds of different ages were collected in a random fashion, then it becomes immediately apparent that the subadult birds are much more common than adults south of the breeding grounds. In fact, out of 41 specimens, there are only two adults. Furthermore, there seems to be a tendency for the younger subadults to occur farther south: table 1 shows 20 first-year birds, 18 second-year birds and no third-year birds. Whether or not this is an indication of the over-all abundance of the age groups for this species cannot be stated with finality, but from personal observations and collecting of California Gulls (*L. californicus*) on the wintering grounds, I have been led to believe that first-year birds are more abundant than second-year and second-year more abundant than third-year birds in this species.

In several other species of gulls, various investigators have demonstrated from banding records that the younger age groups tend to migrate or wander farther than the adults. This is true for the Glaucous-winged Gull (Woodbury and Knight, 1951:68) and for the Herring Gull (*L. argentatus*; Gross, 1940:153), and there are indications that the same phenomenon occurs in the California Gull and Western Gull (*L. o. occidentalis*; Woodbury and Knight, *op. cit.*, :70).

It is instructive to note that the sex ratio is nearly 50:50. There are 19 males and 21 females, and even a breakdown of the sexes in each age group is still nearly 50:50. This sample of 40 birds of known sex is admittedly small, but it does indicate that there is apparently no significant differential migration between sexes, even though there is a noticeable differential migration among the various age groups.

Table 1 and the examination of specimens from the breeding grounds indicate that

most if not all of the subadults return to the vicinity of the breeding grounds during the breeding season, although little is known about breeding of subadults in this species. There are indications, however, that only the adult birds actually breed even though subadults may be present in the vicinity. Whereas adults collected at various localities in Alaska had enlarged gonads and/or incubation patches during the breeding season, none of the subadults at this time from these localities had either enlarged gonads or incubation patches. In the California Gull (unpublished data) relatively few subadults return to the breeding colonies and virtually none of them breeds. More data are needed on this subject for the Glaucous Gull.

Relatively few of the specimens were collected in the fall or early winter months. This might mean that this hardy species is not driven southward until the most severe winter weather in midwinter. And the numerous records in the spring (April and May) might simply be a reflection of the more conspicuous nature of a large, white gull at a time when most of the other wintering gull species (at least the adults) have already left for their breeding grounds. Certainly in midwinter when *glaucescens* is abundant on the coast of California, it would be easier to overlook *hyperboreus* than at a later time when *glaucescens* is virtually absent.

SUMMARY

Detailed descriptions of the four age groups of the Glaucous Gull are presented, showing the differences in plumage and soft-part colors. During the late winter and spring months, much fading and wear of plumage occurs in first-year Glaucous and Glaucous-winged Gulls so that the two appear superficially alike, but characteristics are given whereby first-year specimens of the two species may be separated. By utilizing these characteristics, several specimens previously recorded as *hyperboreus* have been identified as *glaucescens*.

By examining specimens and by canvassing museums and collectors, 41 specimens of *hyperboreus* are reported from the west coast of North America south of the breeding grounds. Of these, there are 20 first-year birds, 18 second-year, no third-year and two adult birds (plus one of unknown age), indicating that the subadults are much more common than the adults in these southerly latitudes.

A nearly equal sex ratio indicates that there is no differential migration between the sexes.

Data are presented to suggest that, even though subadults return to the vicinity of the breeding grounds during the breeding season, probably none of them breeds.

Most of the subadult specimens collected on the west coast of North America have been taken during the winter and spring months.

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