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Brunswick

Maine

THE RACES OF THE SOLITARY SANDPIPER

BY BOARDMAN CONOVER

WHILE it has been known for some time that there are two races of the Solitary Sandpiper, *Tringa solitaria*, there has always been confusion, not only as to the ranges and breeding areas of the two forms, but also as to the characters separating them. In fact, Swarth (Condor, 37: 199, 1935), after examining a series from Atlin, British Columbia, expressed disbelief in the so-called western race *cinnamomea*, taking issue with Taverner and Sutton (Ann. Car. Mus., 28: 38, 1934) who had identified six specimens from Churchill, Manitoba, as be-

longing to it and who had suggested on the basis of a female taken on June 8 with an egg almost ready to be laid, that the race might be a northern rather than a western one.

Hoping to clear up some of these questions, I recently borrowed a number of specimens taken throughout Canada and Alaska during the spring and summer. A study of these, together with specimens in breeding plumage in my own collection, has led me to the following conclusions:

1. There are two races of *Tringa solitaria*.
2. Adult specimens of the two forms in fresh, unfaded breeding dress are readily distinguishable by the difference in coloration of their upper parts. This character to the best of my knowledge has never been mentioned before.
3. In fresh immature plumage, the young can be identified in the same manner, as well as by the difference in the coloration of the spotting of the dorsal surfaces.
4. The race *cinnamomea* is distinctly larger as shown by its wing measurements and this character holds good in the immature birds.
5. There are certain other characteristics, such as the white mottling on the inner web of the outer primary, which, while not constant, are of great help in identifying specimens.
6. Typical *solitaria* is not an eastern but a southern race and breeds across the continent from the interior of British Columbia east to Labrador, while *cinnamomea* breeds north of it, but west of Hudson Bay. Below, these points are discussed more in detail.

Tringa solitaria solitaria Wilson

Tringa solitaria Wilson, Amer. Orn., 7: 53, pl. 58, fig. 3, 1813—
Pocono Mt., Pennsylvania, Kentucky, and New York = Pocono
Mt., Pennsylvania.

RANGE.—Breeds from northern British Columbia, northern Alberta (Wood Buffalo National Park), central Saskatchewan, central Manitoba (Ilford), northern Ontario (Moosonee) and Labrador (Flower's Bay, near Hopedale) south probably to about fifty degrees north latitude. Migrates through the United States (mostly east of the Rocky Mountains), the West Indies and Central America to southern South America (Bolivia, Paraguay, and northern Argentina).

Among the specimens examined were a few which gave evidence of actual nesting localities for this race. These localities are as follows: Alberta, Didsbury, specimen "shot flying off of nest with three eggs"; Manitoba, Ilford, two juvenile specimens three-quarters grown, shot on July 21 and 22; Ontario, Moosonee, Kwatabohegan River, three

immatures with outer primaries not quite fully grown (shot July 20); Labrador, Flower's Bay (near Jack Lane's Bay, north of Hopedale), a pair collected with a nest of four eggs. Besides, I have seen a downy young, taken at Henry House, Alberta, which probably belongs to this race.

BREEDING PLUMAGE.—The ninety-three specimens listed below were taken from March through July. Some fifty-four were collected before June 30 and therefore are mostly in comparatively fresh breeding dress. These, when compared to a like series of *cinnamomea*, show that typical *solitaria* has the ground color of the upper parts duskier and, on the average, more heavily spotted with white. This latter characteristic, however, only becomes apparent in a large series. Under the next race, this difference in coloration is discussed in greater detail.

Examination of these birds shows that in this race the outer wing feathers are generally immaculate, but that about one bird in nine or ten has some indication of white mottling on the inner web of the outermost primary. In this series of ninety-three, seven had these markings slight and one heavy.

This form is smaller. In males the wing measured 123–132.5 mm. (average, 127.5), culmen, 27–32 (average, 28.8); while in females these measurements were 127–140 (average, 132.5) and 28–31.5 (average, 29.9), respectively. However, the maximum measurement of 140 mm. in females is a bit deceiving, as there was only one bird with such a wing-length; the next largest was 136 of which there were five examples. This latter measurement is just under the minimum of 137 mm. for females of *cinnamomea*.

SPECIMENS EXAMINED (BREEDING DRESS).—93: ALASKA (Griffin Point, Arctic Ocean, 1*); BRITISH COLUMBIA (Atlin, 1; Cariboo, 1); ALBERTA (Wood Buffalo Park, 4; Fort McMurray, 2; Lac la Nonne, 3; Didsbury, 1; La Saline, 1); SASKATCHEWAN (Big River, 1; Emma Lake, 1; Maple Creek, 2); MANITOBA (Ilford, 13; Bird, 1; Lake St. Martin, Indian Reserve, 1); ONTARIO (Favourable Lake Mine, 6; Lowbush Lake, Abitibi, 1; Moosonee, Kwataboahagan River, 3; vicinity of James Bay, 6); QUEBEC (Ft. Chimo, Ungava, 1); LABRADOR (Bowdoin Harbor, 1; Flower's Bay, north of Hopedale, 2); NORTH DAKOTA (Towner County, 2); MISSOURI (Koshkonong, 1); WISCONSIN (Beaver Dam, 3); ILLINOIS (Grand Chain, 1; Chicago, 5; Wheaton, 2; Libertyville, 1; Joliet, 3); OHIO (Circleville, 1); NEW HAMPSHIRE (Ossipee, 1); CONNECTICUT (New Haven County, 4; East Hartford, 2); NORTH CAROLINA (Dare County, 2); SOUTH CAROLINA (Mt. Pleasant, 2); GEORGIA (Chatham County, 1); FLORIDA (Brevard County, 1); DOMINICAN REPUBLIC (San Luis, Santo Domingo, 2); MÉXICO (Río Lagartos, Yucatan, 1); COSTA RICA (Limón, 1; Las Cañas, 1); COLOMBIA (El Tambo, Cauca, 1); VENEZUELA (Maracay, 1); DUTCH WEST INDIES (Curacao, 1).

* This bird, a female with a wing of 129 mm., of course is far out of the range, not only of the race, but also of the species.

IMMATURE PLUMAGE.—Examination of the specimens listed below shows that in this plumage the ground color of the dorsal surface in the typical race is near a dark Hair Brown, less olivaceous than in *cinnamomea*. The spotting of the upper parts is white or grayish white. The dusky coloring of the lower throat generally takes more the form of a wash than longitudinal streaks, but this is not always so.

In these fifty-nine typical examples, one has the outer primaries slightly mottled; the rest have them immaculate.

Measurements of these specimens are, for males: wing, 123–132 mm., culmen, 26–30.5; females, wing, 126–136, culmen, 26–31.

SPECIMENS EXAMINED (IMMATURES).—59: YUKON TERRITORY (Echamamish, 1); BRITISH COLUMBIA (Okanagan, 11); ALBERTA (Lac la Nonne, 10; Wood Buffalo Park, 3); SASKATCHEWAN (Maple Creek, 2); MANITOBA (Ilford, 2); ONTARIO (Mooseonee, Kwataboahagan River, 2); QUEBEC (Magdalen Islands, 1); NORTH DAKOTA (Nelson County, 7); WISCONSIN (Beaver Dam, 1; Fox Lake, 1); MASSACHUSETTS (East Orleans, 1); CONNECTICUT (East Hartford, 1; Grove Beach, 1; Guilford, 1; New Haven County, 7); NEW YORK (Suffolk County, 5); LESSER ANTILLES (Dominica, 2).

Besides the above skins, there were seven immature specimens which I would class as intermediates. Six had the dorsal surface more or less olivaceous as in *cinnamomea* but with the spotting very light buffy, in one case almost white. In size, they agreed with the typical race, with the wing in the males measuring 123–126 mm.; in females, 122–131. Four had the outermost primaries immaculate; one had them slightly and one heavily mottled. The seventh example (from Moose Pass, British Columbia) was an astonishing bird in this respect for not only were all the primaries mottled with white, but the secondaries as well. It was a male (wing, 123 mm.) with the coloration of the dorsal surface as in typical *solitaria* but with the white spots washed with buff. The localities for the other six ran from Ontario and Iowa west to British Columbia and California.

WINTER PLUMAGE.—The Solitary Sandpiper does not appear to have a distinct winter plumage. Adults seem to molt some time in January from the old, worn and faded breeding dress of the previous spring into a fresh one. Immatures at about the same time start changing into their first adult dress. However, as only a few of the specimens examined were taken in the late winter, the picture is none too clear. A list of the fall and winter specimens is included so as to give an idea of the migration route and wintering grounds.

SPECIMENS EXAMINED (FALL AND WINTER).—56: NORTH DAKOTA (Towner County, 2; Nelson County, 2); WISCONSIN (Beaver Dam, 2); ILLINOIS (Libertyville, 1; Lake County, 1); Worth, 2); MAINE (Penobscot County, 2); MASSACHUSETTS (Monomoy Island, 1); CONNECTICUT (New Haven County, 4; East Hartford, 1); NEW YORK

(Kings County, 1); PENNSYLVANIA (Tioga, 1); COSTA RICA (Guanacaste, 1); PANAMÁ (Chiriquí, 2; Permé, 1); GREATER ANTILLES (Jamaica, 1); VIRGIN ISLANDS (St. Croix, 1); LESSER ANTILLES (Dominica, 1; Guadeloupe, 1); COLOMBIA (Cauca, 2); VENEZUELA (Catatumbo, 6; Encontrados, 1; Culata, Mérida, 2); ECUADOR (Baños, 1); DUTCH GUIANA (Paramaribo, 1); BRAZIL (Serra da Lua, Amazonas, 2; Boim, Pará, 1; Veadiros, Goyaz, 1; Quemada, Bahia, 1; São Paulo, 2; Chapada, Matto Grosso, 1; Vaccaria, Matto Grosso, 1; Urucum de Corumbá, Matto Grosso, 1); BOLIVIA (Buena-vista, Santa Cruz, 2; El Palmar, Cochabamba, 1; Arque, Cochabamba, 1); PARAGUAY (Villa Rica, 1).

DOWNY PLUMAGE.—If the downy young bird taken at Henry House, Alberta, represents this form, there is no difference in coloration between the young of the two races.

Tringa solitaria cinnamomea (Brewster)

Totanus solitarius cinnamomeus Brewster, Auk, 7: 377, Oct., 1890—
San José del Cabo, Lower California.

RANGE.—Breeds in Alaska and Canada from the limit of trees south to about 60° north latitude, and from Bering Sea to the west coast of Hudson Bay (Churchill). Migrates through the United States, mostly west of the Mississippi, and Central America to Bolivia, Paraguay and south-central Argentina (Río Negro). Rare on the Pacific coast of North America, north of southern California, and probably also in eastern South America.

Actual nesting localities for this race as shown by specimens examined are: Alaska (Circle, one downy young and two half-grown juveniles; Charlie Creek, on Yukon River above Circle, three downy young; Bethel, two immatures with outer primaries about two-thirds and three-quarters grown; Tocatna Forks, one immature with outer primary not fully grown, collected July 29); Northwest Territories (Mackenzie Delta, one female shot on June 1, label marked "egg inside"); British Columbia (Atlin, one female, collected May 23, label marked "egg three-quarters ready to lay"); Manitoba (Churchill, a female collected June 8, according to Taverner and Sutton contained an egg almost ready to be laid).

Besides the above there is, in the National Museum of Canada, a female, undoubtedly belonging to this race (upper parts grayish olive; wing, 143 mm.; outer primaries mottled), taken at Gypsumville, Manitoba, on June 18, which has the label marked "ovaries enlarged containing one nearly ready to lay." If this example was really nesting at this locality, it would seem to be far out of its normal range, as the typical race (see previous account) has been found nesting at Ilford, Manitoba, much farther to the north and east. Also, all the

other specimens examined from this province, both adult and immature, have proved to be *T. s. solitaria*, except those taken at Churchill.

BREEDING PLUMAGE.—In fresh, unfaded adult plumage, *cinnamomea* when compared to typical *solitaria* has the ground color of the upper parts lighter, more grayish as against more dusky olive. It is impossible to match these colors very closely in Ridgway's color chart, but *cinnamomea* might be said to have the dorsal surface between Hair Brown and Chaetura Drab while typical *solitaria* has it between Chaetura Drab and Chaetura Black. This character does not seem to have been mentioned before, but adults, when in fresh, unfaded plumage, can readily be identified by this difference in coloration. The upper parts of this race are, on the average, less heavily spotted with white and the dusky markings on the lower cheeks and throat are generally more distinct, but these characteristics are not very dependable and show up only in a large series. A better character, but still not an infallible one by any means, is the coloration of the lores. In the typical race there is usually a well-defined dusky loreal streak from the base of the bill to the eye and above this a white supraloral one. *Cinnamomea*, however, usually lacks these streaks and has the loreal region covered with fine dusky specklings.

About eighty-four per cent of the breeding adults examined had some mottlings on the inner webs of the outermost primaries. In the sixty-two listed below, ten had these parts immaculate, ten had them slightly mottled, and forty-two, heavily mottled.

This race is distinctly larger. In males the measurements are: wing, 128–139 mm. (average 134.65); culmen, 28–32 (average 30.5); females, wing, 137–148 (average 140); culmen, 29–34 (average 31.2).

To sum up, in adults in fresh, unfaded plumage the most constant racial characteristics of *cinnamomea* are the lighter olivaceous coloring of the dorsal surface, the length of wing (males 132 and females 137 mm. or over), and the white mottling of the outermost primary. By the presence or lack of these distinctions, specimens should be readily identifiable.

SPECIMENS EXAMINED (BREEDING DRESS).—62: ALASKA (Circle, 4; north fork Kuskokwim River, 1; Chitina River Glacier, 1; Bethel, 2; Tocatna, 1; Nulato, 2; Charlie Creek, Yukon River, 2); NORTHWEST TERRITORY (Finnie River, Thelon Sanctuary, 1; Mackenzie Delta, 4; Fort Simpson, 1; near Fort Providence, 1); YUKON TERRITORY (White Horse, 2; Yukon River, 1); BRITISH COLUMBIA (Atlin, 10; Cariboo, 1); ALBERTA (Lac la Nonne, 5; Edmonton, 1); SASKATCHEWAN (Maple Creek, 3); MANITOBA (Churchill, 6; Gypsumville, 1); CALIFORNIA (Yermo, 1); ARIZONA (Tucson, 2); COLORADO (Fort Lyon, 1); NORTH DAKOTA (Towner County, 3); WISCONSIN (Meridean, 1); ILLINOIS (Grand Chain, 1); EL SALVADOR (San Salvador, 1); COSTA RICA (Límón, 1; Miravalles, 1).

IMMATURE PLUMAGE.—In this race the ground color of the upper parts is more of an Olive Brown whereas in typical *solitaria* it is nearer a dark Hair Brown. The most distinctive feature, however, is the very buffy coloration of the spotting on the dorsal surface. This is a very constant character, at least through September, and wherever found serves to identify the individual as *cinnamomea*. After the beginning of October, however, the plumage is generally so faded and worn as to make identification impossible, except by the length of the wing and the mottling of the outer primary. In general this race also has the dusky coloring of the lower throat more in the form of longitudinal streaks than a wash as in typical *solitaria*. However, this is only an average character and of little use in identifying individual specimens.

Of the thirty examples studied that had the outer primaries fully grown, two had the inner webs immaculate, five had them slightly mottled, and twenty-three, strongly mottled.

Measurements were, in males: wing, 128–137 mm.; culmen, 27.5–31; in females, wing 134–145; culmen 27–32.

Immatures of this race, therefore, can be identified up through September by the very buffy spotting and Olive Brown ground color of the upper parts; after that only by the mottling on the outer primary (which if present is practically conclusive) and the length of the wing, which in the specimens examined usually ran above 132 mm. in males and 135 in females.

SPECIMENS EXAMINED (IMMATURE DRESS).—33: ALASKA (Bethel, 3; Tocatna Forks, 2; Circle, 2; Chitina River Glacier, 2; Situk River, Yakutat, 1); YUKON TERRITORY (60 mile Creek, 1); BRITISH COLUMBIA (Atlin, 4; Okanagan, 9; Shuswap, 3); ALBERTA (Lac la Nonne, 1; Henry House, 1); SASKATCHEWAN (Maple Creek, 2); COLORADO (Troublesome, 1); ECUADOR (Baños, 1).

DOWNY PLUMAGE.—The pattern of coloration is as in *Tringa flavipes*, but the general color of the upper parts is cinnamon drab instead of buffy gray.

SPECIMENS EXAMINED (DOWNY DRESS).—4: ALASKA (Charlie Creek, Yukon River, 3; Circle, 1).

WINTER PLUMAGE.—As stated under the typical race, this sandpiper does not have any winter dress, but adults wear the old worn breeding plumage until about January, when they molt into a new one. At about the same time immatures probably change into their first nuptial dress, but the winter specimens seen were too few to tell much about this molt.

SPECIMENS EXAMINED (FALL AND WINTER).—15: MASSACHUSETTS (Somerville, 1*); COLORADO (Fort Lyon, 1); TEXAS (Cameron County, 1); COSTA RICA (Volcan Turrialba, 1); ECUADOR (Paramba, 1; Baños, 1); PERÚ (Yurimaguas, Loreto, 1); BOLIVIA (Cercado, Santa Cruz, 3; Buena Vista, Santa Cruz, 1); PARAGUAY (Horqueta, 2; Chaco, 1); ARGENTINA (Tucumán, 1).

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Chicago
Illinois

THE STATUS OF BARROW'S GOLDEN-EYE IN THE EASTERN UNITED STATES

BY DR. EDWIN M. HASBROUCK

NUMEROUS writers in the last few years have suggested that the Barrow's Golden-eye (*Glaucionetta islandica*) "may be more common in eastern North America than generally supposed." In my studies of North American waterfowl I found this statement so frequently while a search of the literature failed to produce any concrete evidence on the subject, that it seemed advisable to investigate the matter and, if possible, ascertain something of the eastern status of this duck.

The great similarity of this species to the common American Golden-eye (*Glaucionetta americana*) may tend to hide the true status of the Barrow's. As Bent aptly states: "Outside of the Continental Divide in the northern states it is nowhere in this country an abundant species at any season. It is so rare throughout most of its American range that few ornithologists have seen it in life."

In addition to a careful search of the literature, over two hundred letters were sent to as many ornithologists throughout the eastern United States and Canada requesting information on the occurrence of this duck in each locality. These letters were sent out under the auspices of the United States National Museum, authorized by Dr. Alexander Wetmore and signed by Dr. Herbert Friedmann, Curator of Birds. Over a hundred replies were received, most of which contained valuable information; a few persons who replied (about twenty) knew practically nothing of the species.

In designating the area to be covered, an arbitrary western limit was set at Duluth, and only those records occurring at and east of

* This specimen is labeled as having been taken August 16, but it is in fresh, absolutely unworn breeding plumage, so that it is not a normal bird.