
January 1975

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Recommended Citation

Stevenson, Henry M. (1975) "Identification of Difficult Birds: Ill Semipalmated and Western Sandpipers," *Florida Field Naturalist*: Vol. 3 : Iss. 2 , Article 5.

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IDENTIFICATION OF DIFFICULT BIRDS: III. SEMIPALMATED AND WESTERN SANDPIPERS

Henry M. Stevenson

Whether in the field or in the laboratory, distinguishing between Semipalmated Sandpipers (*Calidris pusilla*) and Western Sandpipers (*C. mauri*) can be most difficult. Ridgway (1887) and some subsequent writers distinguished these species only by culmen length of the respective sexes. However, small birds collected in the non-breeding season often cannot be sexed, and other specimens have almost certainly been erroneously sexed. Since bill length in female Semipalmated Sandpipers may be greater than that in male Westerns, it would be valuable to find differences between the two species unrelated to their sex. Also, because of the flexibility of scolopacid bills, bill shape in dried museum skins is rather unreliable.

Ouellet, McNeil, and Burton (1973) described a method of distinguishing these two peeps that is almost independent of sex, namely the ratio of the length of the exposed culmen to the bill width "at narrowest part just behind nail" (dertrum). However, when the various categories of age and sex were examined considerable overlap existed between the two species.

One method of distinguishing unsexed Semipalmated and Western Sandpipers was pointed out by Brodkorb (1968: 338-339), who stated that the length of the exposed culmen was greater than that of the middle toe with its claw in *mauri*, but not in *pusilla*. I tested this statement by selecting from the collection at Florida State University some of the longest-billed specimens of *pusilla* and the shortest-billed of *mauri*. Of the 6 specimens measured, the middle toe tended to be not only *relatively* longer in the Semipalmated (i.e., longer than the culmen), but *absolutely* longer than that of the Western, although the differences were doubtless insignificant in view of the small sample size (culmen, *pusilla*: 20.3-21.6; *mauri*: 20.1-22.5; middle toe + claw, *pusilla*: 20.5-20.9; *mauri*: 19.1-20.6). It should be noted that, even among so few specimens, a variable proportion of the culmen's base was hidden by feathers. In their study of a much larger sample, Ouellet, McNeil, and Burton (1973) reported numerous exceptions to the culmen:middle toe rule, but did not show their data. Ridgway (1887) had indicated no significant difference between these species in middle-toe length.

In searching for other characters to separate individuals of these two species, I measured other specimens of known identity. Fortunately, the collection at Florida State University had a fair repre-

sentation of these species, largely as a result of Loftin's study (1962) of summering shorebirds in Florida. The original identifications of these two species of peeps were double-checked by such criteria as bill length, amount of rust and cinnamon on upperparts, and size of the spots on the throat and breast, but the two plumage characters are without value in fall and winter. However, only 5 of 35 specimens were collected between July and April. I concluded that 7 specimens were *pusilla* and 21 *mauri*. On a subsequent trip to the Florida State Museum (Gainesville) I was able to add 6 more specimens of the Semipalmated to bring the total up to 13, and a 14th was collected on 16 June 1975 (TTRS 3321). Because of the differences between the two sexes of sandpipers in bill length and other measurements, it is important to have a fairly equal distribution of sexes in this kind of study. Although a strong possibility always exists of mis-sexing birds collected after the breeding season, measurements and inspection of gonads indicated that females made up 6 of the 11 Semipalmated and 9 of the 21 Western Sandpipers measured. In most instances the labels correctly indicated the sex.

After the specific determination of these specimens, careful measurements (mm) were made to determine the lengths of the bill (from nostril), tarsus, and wing (chord). The shortest bill length in *mauri* was 17.1 (male) and the longest in *pusilla* was 17.3 (2 females); thus there was slight overlap. Length of tarsus ranged from 20.9 to 22.8 (mean, 21.32) in *pusilla* and from 20.0 to 23.6 (mean, 21.97) in *mauri*. Since bill length is much greater in *mauri* (mean of 20.12 vs. 16.00) but tarsal length only slightly greater, an almost infallible distinction can be made on the basis of the bill/tarsus ratio (Table 1). In *pusilla* this value ranged from .696 to .837 and in *mauri* from .792 to 1.080. (See below for comments on the former specimen of *mauri*.)

A better separation was achieved, however, by comparing bill length to wing length. Although Brodkorb (1968) indicated virtually no difference in wing length between these two peeps, Ridgway (1887) showed that *mauri* females averaged slightly shorter in wing length than *pusilla* females. In my study this difference was considerable in both sexes (Table 1). Relatively longer wings in *pusilla*, in fact, might be expected, since that species generally migrates for a greater distance. Both species breed in the Arctic Life Zone, but the Semipalmated winters farther south than the Western. Although the Semipalmated Sandpiper is reported by many sources to winter in the United States, Allan Phillips (*in litt.*) states that he has examined only one or two specimens taken in that season, and those only in extreme south Florida. The Western Sandpiper does winter

partly in the southern United States, and its southern limit in South America does not extend so far south as that of *pusilla* (American Ornithologists' Union, 1957). My measurements indicate that when specimens of the same sex are compared very little overlap occurs in wing length. The longest wing in a female *mauri* was 96.6, and the shortest for female *pusilla* was 94.7 (2 specimens).

Because bill length averages much greater in Western Sandpipers, and wing length much greater in the Semipalmated, the bill/wing ratio provides an absolute distinction between measured specimens of the two species in the Florida collections (Table 1). The maximum value for this ratio in the Semipalmated is .183, and the minimum value for the Western is .188. The latter specimen (FSU 2976u), however, may be misidentified, as both of its critical ratios fall between those of all other specimens of the two species. If this specimen is really *pusilla* rather than *mauri*, then the minimum values for these two ratios in *mauri* become .200 and .830. On the other hand, the wing length of this specimen (91.0) is typical of the Western Sandpiper and considerably less than the wing lengths of 12 of the 14 measured specimens of the Semipalmated. Also the date of collection (28 March) is earlier than the date the Semipalmated is thought to arrive in the Tallahassee area. In any event, regardless of the specific identity of this specimen, a definite distinction between the two species can be detected by these ratios.

Despite the small number of specimens involved, the dates of collection of each species may be of some significance. Field observations indicate that the Semipalmated occurs mainly in late spring, rarely if at all in winter, and in smaller numbers than the Western in the fall migration (also see Loftin 1962: 73). These facts are in accord with the collection dates of 25 April (possible exception noted above) to 16 June for all but 2 Semipalmated specimens, and those 2 were collected in August and October. On the Mississippi coast Burleigh (1944) found the Western Sandpiper in spring only on 27 and 29 April, and our spring dates of specimens range from 28 March to 11 April. Fall migrants of *mauri* appear very early (4 specimens on 17 and 18 June) and account for 16 of the 21 specimens. Neither species was collected in winter, but my sight records indicate that more than 99% at that season are *mauri*. It is not implied that these species do not occur outside the date limits shown above, but merely that they differ considerably as to the time of greatest abundance.

FIELD IDENTIFICATION

Several criteria have been given in field guides for separating Western and Semipalmated Sandpipers, but it should be obvious that one can hardly expect to do better with silent birds in the field than can be done in the museum. That is to say, a male Western frequently cannot be distinguished from a female Semipalmated. In alternate (breeding) plumage the Western tends to have broader spots on the throat and breast and to have more rufous and cinnamon color dorsally. Fall immatures also have more rust on the upperparts (Ridgway 1919). In basic (winter) plumage the Western is said to have a whiter face than the Semipalmated (Wallace 1974). The Western is said to stand in the water more frequently than does the Semipalmated and to carry its bill pointed somewhat downward. The bill of *mauri* is described as thicker at the base, tapering and drooping toward the tip. One of the *mauri* females at Florida State University had a bill depth of 6.4 mm at its exposed base, compared with 4.8 mm in a female *pusilla*, but the bill in both species is obviously thicker at the base than it is near the dertrum. The greater bill depth in *mauri*, however, is more conspicuous by comparison with the bill's attenuated tip, giving this field mark more validity. Some have considered *mauri* to be the larger species, but I have seen few data on weights. Without doubt the best means of separating these species in the field is by their vocalizations. In spring (at least) the Semipalmated frequently gives low-pitched twittering notes unlike anything I have ever heard from a Western. The Western Sandpiper commonly gives a high-pitched squeak similar to that of the White-rumped Sandpiper (*Calidris fuscicollis*).

In view of the difficulties of separating these two peeps in the field, and the lack of winter specimens of *pusilla* over most of the United States, it is urged that state and local lists no longer refer to the Semipalmated Sandpiper as a winter resident and that compilers of Christmas Bird Counts use extreme caution in accepting sight records of them (especially by the hundreds or thousands!) in their lists.

SUMMERING

Many sources refer to the summering of either or both of these peeps far south of their breeding range. It is possible that both do

TABLE I. RANGES AND MEANS FOR MEASUREMENTS (mm) AND RATIOS
IN SEMIPALMATED AND WESTERN SANDPIPERS

	<u>Semipalmated</u>			<u>Western</u>	
	<u>Males(5)</u>	<u>Females(6)</u>	<u>Unsexed(3)</u>	<u>Males(12)</u>	<u>Females(9)</u>
<u>Bill length</u>					
Minimum	14.1	16.0	14.4	17.1	18.6
Maximum	16.5	17.3	17.3	20.7	24.3
Mean	15.4	16.8		19.1	21.6
<u>Wing length</u>					
Minimum	89.3	94.7	93.1	79.3	90.1
Maximum	97.0	98.0	96.3	93.1	96.6
Mean	92.8	96.3		89.3	92.6
<u>Bill:wing</u>					
Minimum	.158	.166	.153	.188	.200
Maximum	.176	.183	.180	.253	.259
Mean	.167	.174		.214	.233
<u>Tarsus</u>					
Minimum	19.5	20.3	20.7	20.0	21.2
Maximum	21.4	22.8	22.4	22.4	23.6
Mean	20.4	21.9		21.4	22.5
<u>Bill:tarsus</u>					
Minimum	.712	.714	.696	.792	.830
Maximum	.790	.837	.772	.950	1.080
Mean	.755	.767		.892	.958

so, but this fact is probably not established yet. Spring migrants of *pusilla* continue to pass through in June almost concurrent with the arrival of the first fall migrants of *mauri*. Neither sight records nor collected specimens can determine the question of whether individual birds remain throughout June, except by daily observations of recognizable individuals. Birds dyed and banded by Loftin (1962) disappeared for varying lengths of time, suggesting the likelihood that they had migrated to some extent. Thus, the possibility of any individuals remaining throughout June is a problem still to be worked out.

ACKNOWLEDGEMENTS

Pierce Brodkorb, Herbert W. Kale II, Oscar T. Owre, Allan R. Phillips, and Glen E. Woolfenden deserve much credit for improvements made during preparation of this paper.

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