

A STUDY OF THE SNOWY HERONS
OF THE UNITED STATES.

BY ALFRED M. BAILEY.

Plates XIII-XV.

DURING the summer of 1925, Mr. J. D. Figgins and I spent a few weeks near the mouth of the Bear River, Utah, for the Colorado Museum of Natural History, collecting and photographing the birds nesting there so abundantly. The Snowy Herons seemed larger than specimens which we had taken on the Gulf coast of Louisiana, and on measuring them, we found that they answered well to the description of Brewster's Egret (*Egretta thula brewsteri*) described by Thayer and Bangs in the Proceedings of the New England Zoological Club, Vol. IV, pp. 37-41, from specimens taken at San Jose Island in the Gulf of California, about sixty miles north of La Paz, the difference between *Egretta thula* and *Egretta thula brewsteri* being entirely one of size.

A series of our Colorado and Utah birds was sent to Mr. Bangs for identification, and he replied as follows: "If the bird described as *Egretta candidissima brewsteri* is really any good, then your birds undoubtedly belong to it. Very unfortunately, we have one or two skins from Riverside, San Bernardino County, California, that are quite as light in the legs and feet as examples from South Carolina and Florida. I, since we described the form, have had my misgivings about it, because I consider that just the characters we used for it and by which it can only be told, are really very poor characters. Over and over again I have known of subspecies based on such differences, proving no good when very large series are brought together. It is wholly possible that the large size and very heavy feet and tarsi of the bird we call *brewsteri* are due only to old age. To be perfectly frank, I somehow now am rather inclined to doubt the distinctness of the form. There is a possibility, on the other hand, that all North American birds are larger and more heavily built than South American (the type locality of true *candidissima* is Carthagena, Colombia). For the



Photos by Alfred M. Bailey

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present, until someone disproves *brewsteri*, or calls all North American birds by that name, your skins must be referred to it, and its range extended to include the places whence yours came. There is no way out of that. Mr. Peters has been all over these conclusions, and all I say in this letter is agreed by him."

We then secured all the Snowy Herons available, and their measurements seem to demonstrate two points, first, that the birds of the Rocky Mountain region and westward average larger than birds from eastern United States, and second, that there is a great individual variation among birds of a given region. It will be seen by glancing at the measurements listed below that the tarsi of western birds undoubtedly average longer, with general measurements somewhat larger, than those of eastern birds. The tarsi of western males including those from Lower California, average over one hundred millimeters (107.3) in length, while in males from the eastern United States, they average well under one hundred millimeters (97.1). It will also be seen that there is less difference in the length of the tarsi of the females of the two regions, although those of the west are longer. Many birds from the east are as large as the average of the same sex from the west, but only one bird from the east approaches in size the largest from the west. The birds with long tarsi seem heavier built than others, even though the culmen and wings may be shorter.

The description of *brewsteri* is based on breeding birds, and the average of these specimens is much larger than that of a series from other parts of western United States, but it will be seen that there is little difference in size between fifteen other specimens here listed which were taken in Lower California near the type locality of *brewsteri*, and specimens taken in other western states.

The measurements of one hundred or more birds of any species are sure to result in a few interesting discoveries, and the more evidence presented, the less sure one is of the distinctness of any geographical race, for there are always exceptional specimens which are impossible to identify except according to locality. The last specimen I measured was the very large female in the Willett collection, which I collected in Louisiana on May 8, 1918, (i 2363). Louisiana Snowy Herons seem to average smaller than

other eastern birds, but this specimen has longer tarsi than any female I have handled; in fact, measurements show that its tarsi are one millimeter longer than the type specimen of *brewsteri*, a male (No. 11419). Its wings, however, are one millimeter shorter, and the culmen, thirteen millimeters. This specimen is so large that it suggests the possibility of error in determining the sex; it is a spring specimen, however, with the original field label, so there is little excuse for or likelihood of such a mistake.

In comparing the Herons of eastern and western United States, there seems to be no relation between the length of the tarsi, culmen, and wings, that is, a long-legged bird often has a short culmen or wing; or a specimen with short tarsi may have a long culmen, etc. My measurements show that there is little difference in the wings of the females of the two regions; again, the culmens of the males average approximately the same, so the only measurement of value seems to be the length of the tarsus.

The Snowy Herons are entirely white of plumage, and do not lend themselves to racial color variation, as in the Great Blue Heron, for instance, but it is possible that accurate field color notes on the soft parts would show some difference. Races based on size are not always satisfactory, and without added differences in color, would not always stand the test. Ward's Heron, for instance, is supposed to be larger than the Great Blue Heron. Two specimens collected in Louisiana from the same breeding colony, showed the total length of one to be one inch shorter than the minimum given for the Great Blue Heron; The other was one inch longer than the maximum for Ward's Heron.

A study of the average measurements of Snowy Herons from Lower California, western United States, and eastern United States shows that those from west of the Rocky Mountains are intermediate between the Lower California form and the eastern one, but that the males are much nearer the Lower California *brewsteri* than they are to *thula*, while the western females have practically the same sized culmen and wings, and are intermediate in the length of tarsi.

The averages are as follows:

	Averages in millimeters		
	Tarsus	Culmen	Wing
10 Lower California Males.....	109.6	93.7	279.6
17 Western Males.....	105.8	84.8	271
43 Eastern Males.....	97.1	83.3	259.9
14 Lower California Females.....	100	87.5	264.9
14 Western Females.....	94.7	80.7	250.6
35 Eastern Females.....	89.6	78.6	251.2

This brings up the question of the degree of difference necessary to recognize a geographical race. The measurements listed herewith can leave little doubt that *brewsteri* can no longer be considered as an isolated subspecies inhabiting only Lower California, even though it averages larger than other western birds, for individual variation of birds from a given colony is very great, and one could hardly base a difference on an average of 3.8 millimeters which is the difference found in the length of the tarsi between males from Lower California and those from the western United States, (109.6, as against 105.8). Moreover the tarsi of a series of males taken along the Bear River range from 98 to 112 millimeters. The same argument could be used in comparing the birds of Utah with those from eastern North America, except that the extremes are greater. In the western males the range in length of tarsi is from 98 to 112 millimeters, and in the eastern, from 83 to 106 millimeters.

We have then the large *Egretta thula brewsteri* from a limited area in Lower California, and the much smaller *Egretta thula thula* from eastern North America, while in the vast territory west of the Rocky Mountains are found Snowy Egrets which are intermediate between the two, but seem nearer, in the length of tarsi, to the Lower California bird than to the eastern one. On the basis of measurements alone it is impossible to separate Lower California birds from other birds west of the Rockies, for their extremes are nearly identical.

Mr. Bangs has identified the Utah birds as being similar to his Lower California subspecies, and Arizona and California birds fall into the same category. He has suggested the possibility that the name *brewsteri* might be applied to all North American birds, with *Egretta thula thula* restricted to those of South America but there is no material available to work out the measurements

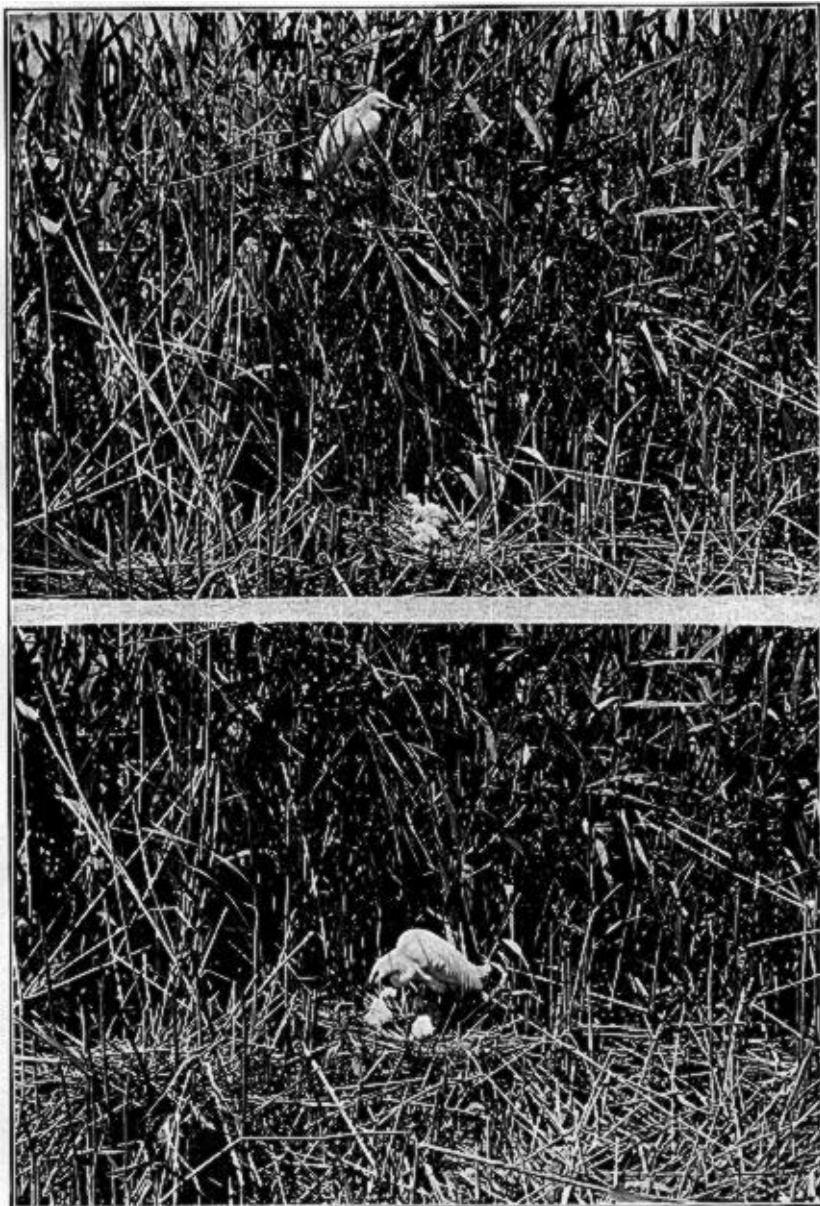
of the South American birds, so far as I have been able to find. Accepting Messrs. Bangs' and Peters' identification of our specimens from the Bear River Marsh as Brewster's Egret, and considering all western birds as the same, we find they compare with birds east of the Rocky Mountains as follows:

	Averages in mm.		
	Tarsus	Culmen	Wing
27 Western Males (including Lower Cal.)..	107.3	88	274.4
43 Eastern Males	97.1	83.3	259.9
28 Western Females (including Lower Cal.)	97.3	84.1	258.4
35 Eastern Females	89	78.6	251.2

The characters on which *brewsteri* is based are rather poor, and the measurements are extremely variable, but the evidence is conclusive that the Egrets of eastern United States average smaller than those of the west, with the birds of the Cape region of Lower California representing one extreme. How to dispose of the birds of the western United States is a matter of individual opinion, but with the data available at this time, only two courses are open: one is to extend the range of *brewsteri* to include all of the region west of the Rocky Mountains, and the other is to drop the subspecies *brewsteri*, and to consider all the Snowy Egrets as one form, with the added statement that those of the west tend to average larger than those from the east. I believe, however, until further data are available to determine the status of the South American Egrets, that we are justified in considering our western birds as a subspecies, and I suggest that *Egretta thula brewsteri* be considered as a western race, with its range including, at least, the territory west of the foot-hills of the Rocky Mountains.

In examining the series of eighteen specimens from the United States National Museum, I separated them accurately into two series,—one from eastern United States, and one from the western, without looking at the data, with but one mistake, and that was a large, heavy-legged Heron from Florida (No. 78583). Many of the western birds with long tarsi are not necessarily "heavy-legged," but average as a whole, larger than those from the eastern United States.

The Herons nesting near Great Salt Lake build their nests in the cane in extensive open marshes, usually about two feet



Photos by Alfred M. Bailey

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above high water level, while all the nests I have seen along the Gulf coast have been in buttonwood, willow and cypress. I have never seen the Gulf coast birds nesting in the marshes, but always in the swamps where the thick tangled growth and deep water give them protection. My experience is too limited to state that the birds of the east and the west differ in their nesting habits; it may be just the lack of similar sites. There are, however, willow growths along the Bear River and the adjacent marshes in which the Herons could nest.

I have the records of four specimens from Mexico which I have listed separately. That the birds of the Great Salt Lake region migrate down both coasts of Mexico is proven by the returns from birds banded in Utah, the data for which are listed below. Birds from the western part of Texas, especially during the migratory season, are likely to be western nesting birds, as are specimens from both coasts of Mexico, so it would seem impossible to separate the birds of the two regions when in their wintering ground in Mexico,—just as it would be impossible to separate the races of the Great Blue Heron.

I am indebted for suggestions and for the loan and measurements of specimens to Dr. Alexander Wetmore, Mr. Outram Bangs, and Mr. James L. Peters, Mr. Harry S. Swarth, Mr. A. C. Bent, Professor H. R. Dill, Mr. L. M. Huey, and Mr. George Willett, to Mr. F. C. Lincoln for data on the banded Snowy Herons, and to Mr. J. D. Figgins for the use of specimens, and for permission to use the photographs made at the time of our visit to the Bear River Marshes. I have placed a letter in parentheses before each museum number, which refers to the museum in which the specimen will be found, as follows:

- (A) United States National Museum,
- (B) United States Biological Survey,
- (C) Museum of Vertebrate Zoology,
- (D) Museum of Comparative Zoology,
- (E) Field Museum of Natural History,
- (F) Colorado Museum of Natural History,
- (G) State University of Iowa Museum,
- (H) Collection of Dr. L. B. Bishop,
- (I) Collection of Mr. George Willett,
- (J) San Diego Museum of Natural History,
- (K) Collection of Mr. Donald R. Dickey.

In a recent paper, (Condor Vol. XXIX, No. 1), Mr. Griffing Bancroft presents some interesting notes on Brewster's Egret and has suggested the possibility that *brewsteri* "may break into two forms, for some of the geographical isolations are great." The birds of the Great Salt Lake Valley are not "pocketed and isolated from Atlantic forms," however, as is shown by Mr. Lincoln's returns of banded birds.

I have often thought it possible that birds of the western United States could be considered as a race which is intermediate between the Atlantic and Gulf coast birds, and those of Lower California, for many of their measurements support this view. In wings and culmen the Salt Lake birds vary but little from eastern birds, and in length of tarsi they are slightly smaller than the birds of Lower California, and much larger than from eastern United States. But in races depending entirely on size, intermediate forms would prove most unsatisfactory, and, with the data available at present, there seems no other course than to consider all western birds as *Egretta thula brewsteri*.

I have taken the liberty of including in my article, the measurements given by Thayer and Bangs, in order that all the data possible will be available for comparison. Measurements of specimens, and data from banded birds are as follows:

Measurements (in millimeters) of adults.

EGRETTA THULA BREWSTERI Thayer and Bangs.

No.	Sex	Locality	Tarsus	Culmen	Wing
11418	Male	Lower Cal., San Jose Is.	112	86	261
11419	"	" "	114	95	271
11421	"	" "	110	98	282
11422	"	" "	114	99	283
11410	Female	" "	103	87	261
11411	"	" "	99	84	260
11412	"	" "	98	84	252
11417	"	" "	105	94	260
20279	"	" "	108	86	276
10142	"	" La Paz	103	85	255
(J) 10648	Male	Lower Cal., Scammons Lagoon	103.6	94.6	280

¹ The measurements of these ten birds are copied from the original description of *brewsteri* No. 20279 is in the collection of E. A. and O. Bangs. The other specimens in that of John E. Thayer.

	No.	Sex	Locality	Tarsus	Culmen	Wing
(J)	10649	Male	Lower Cal., Scammons Lagoon	108.8	94.1	290
¹ (A)	86390	"	" " "	111	93	274
(A)	133778	"	" Salton River	104	92	287
(A)	102231	"	" Magdalena Bay	107	91.5	288
(A)	31955	"	" San Jose	112	94	280
(A)	133733	Female	" Gardner Sta.	94	84	261
(A)	133779	"	" " "	98	83	260
(A)	102228	"	" Magdalena Bay	97.5	90	271
(A)	102227	"	" " "	100	88	260
(J)	10650	"	" Scammons Lagoon	93.5	88.2	268
(J)	10651	"	" " "	100.2	89.1	280
(J)	10652	"	" " "	95.9	87.7	272
(J)	10653	"	" " "	105.2	96.2	273

The males listed below are from Thayer and Bangs' paper.

²	8794	Male	S. Carolina, nr. Charleston	105	87	260
	8795	"	" " "	106	86	270
	25415	"	" " Frogmore	100	87	258
	25417	"	Georgia, Broro Neck	105	88	265
	25418	"	" " "	96	83.5	255
	25419	"	" " "	96.5	87	251
	25420	"	" " "	97	83	251
	25421	"	" " "	95	76	248
	25416	"	" " "	94.5	88	257
	26637	"	" McIntosh County	93	79	259
	26638	"	" " "	83	82	245
	26639	"	" " "	99	85	268
	26640	"	" " "	106	83	261
	3972	"	Florida, Cedar Keys	97.5	81.5	250
	29226	"	" Tarpon Springs	94.5	74	265
	29227	"	" " "	93	77	255
	1093	"	" Georgiana	95	79	240
	6483	"	Texas, Point Isabel	97	84	247

(F)	7020	Female	Buzzard Island, S. Carolina	88	73.5	260
(F)	7327	"	" " "	91	80	240
(A)	80350	"	Cobb " Virginia	94	82	245
(A)	90146	"	Galooos, Florida	93.5		267

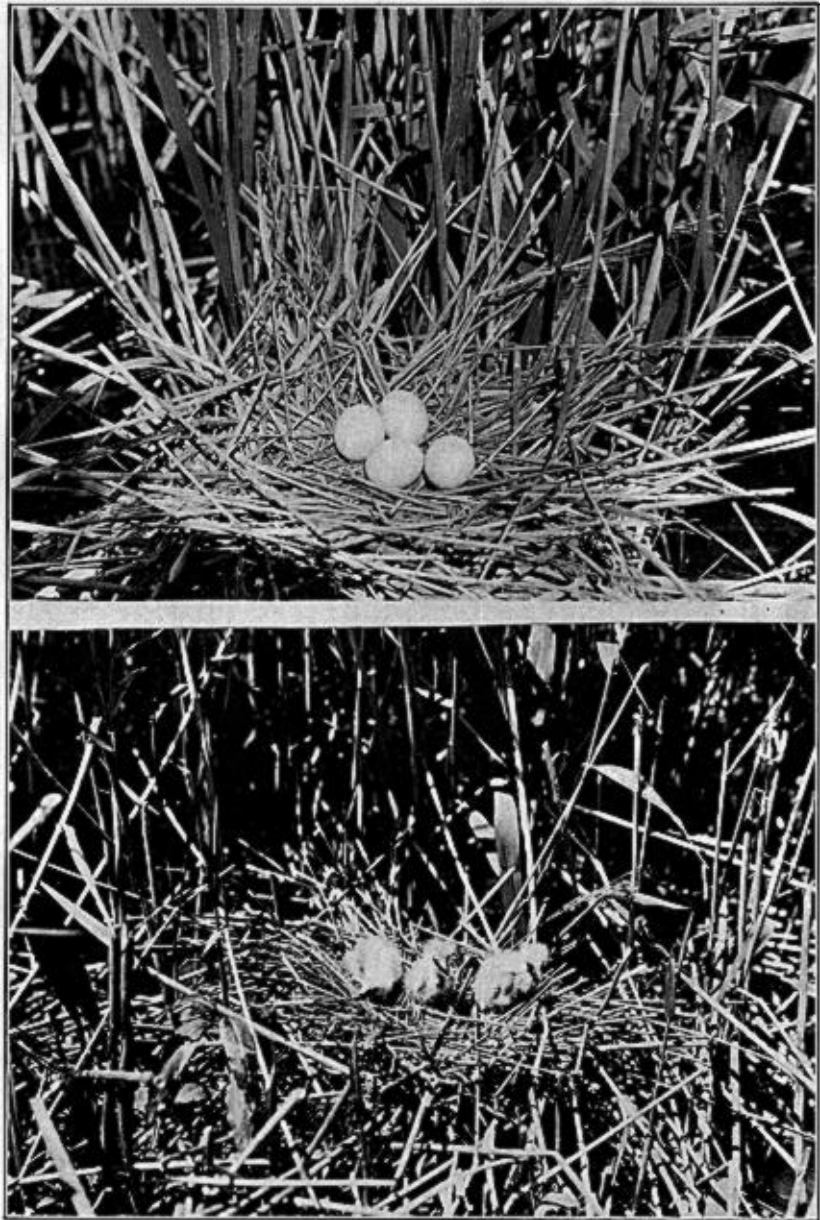
¹ The specimens from the United States National Museum (A) were taken in spring and fall, and were not breeding birds.

² Additional measurements from Thayer and Bangs' paper.

	No.	Sex	Locality	Tarsus	Culmen	Wing
(A)	171302	Female	Pinar del Rio, Cuba	92		233
(G)		"	Avery Island, Louisiana	90	82	259
(G)		"	" " "	93	83	258
(G)		"	" " "	83	75	250
(G)		"	" " "	91	79	257
(G)		"	" " "	93	75	259
(G)		"	" " "	91	76	262
(G)		"	" " "	92	80	251
(G)		"	" " "	95	79	279
(G)		"	" " "	82	74	258
(G)		"	" " "	82	75	269
(I)	2363	"	" " "	115	82	270
(F)	11710	"	" " "	87	80	250
(F)	11711	"	" " "	89	79	247
(F)	11713	"	" " "	92	89	250
(E)	2093	"	Buttonwood Pond, Inagua	92	82	273
(D)	42559	"	Smyrna, Florida	91	74	240
(D)	42556	"	" " "	88	78	240
(K)		"	Vermillion County, Florida	90	80.5	258
(E)		"	Pudry Island, Texas	102	88	251
	25422	"	Georgia, Broto Meek	88	80	243
	26641	"	" McIntosh County	83	78	241
	26642	"	" " "	84	82	248
	26643	"	" " "	86	79	237
	26644	"	" " "	89	79	240
	26645	"	" " "	88	78	247
	26646	"	" " "	84	78.5	243
	26647	"	" " "	84	76	230
	29228	"	Florida, Tarpon Springs	86	74	242
	29229	"	" " "	94	72.5	254
	29230	"	" " "	74	73	242

SNOWY HERONS FROM WESTERN UNITED STATES.

	No.	Sex	Locality	Tarsus	Culmen	Wing
(F)	11417	Male	Bear River, Utah	104	82	270
(F)	11418	"	" " "	100	85	277
(F)	11419	"	" " "	109	93	269
(F)	11289	"	" " "	112	89	277
(F)	4250	"	" " "	104	82.5	270
(F)	4249	"	" " "	104	82	272
(F)	3098	"	Barr, Colorado	106	85	275
(F)	4134	"	Littleton, Colorado	110	84	293
(H)		"	Salt Lake, Utah	98	87	
(H)		"	" " "	102	82	



Photos by Alfred M. Bailey

NESTS WITH EGGS AND YOUNG OF THE SNOWY EGRET, BEAR RIVER
MARSHES, UTAH.

No.	Sex	Locality	Tarsus	Culmen	Wing
(B) 270616	Male	Bear River, Utah	106	88	268
(B) 261040	"	" " "	110	76	265
(B) 261042	"	" " "	106	82	265
(B) 270517	"	" " "	105	82	256
(B) 272935	"	Great Salt Lake, Utah	110	79	267
(B) 111490	"	Ft. Haachuca, Arizona	108	99	288
(C) 4490	"	San Diego, California	105.7	84.8	254
(F) 11807	Female	Henderson, Colorado	100	85	260
(F) 11420	"	Bear River, Utah	89.5	80	240
(F) 11483	"	" " "	91	80	244
(B) 287712	"	" " "	88	79	236
(B) 270513	"	" " "	93	79	253
(B) 270511	"	" " "	87.5	80	258
(B) 261041	"	" " "	94	82	263
(B) 261038	"	" " "	91	70	256
(B) 270515	"	" " "	101	78.5	256
(B) 269087	"	Lake Burford, New Mexico	101	80	247
(J) 126	"	Riverside, California	93	85.2	248
(C) 4491	"	Santa Barbara, "	98.8	83.5	245
(A) 31962	"	San Pedro, "	101	84	256
(D) 33348	"	Sacramento, "	96	84	247

SNOWY HERONS FROM EASTERN UNITED STATES.

No.	Sex	Locality	Tarsus	Culmen	Wing
(G)	Male	Avery Island	94	83	265
(G)	"	" "	97	83	275
(G)	"	" "	92	86	288
(G)	"	" "	95	82	272
(F) 11714	"	" "	98	89	250
(F) 7021	"	Buzzard Island, S. Carolina	86	78	240
(F) 7326	"	" " "	100	88	262
(F) 7024	"	" " "	98	84	266
(F) 7022	"	" " "	97	79.5	257
(F) 7019	"	" " "	101	85	264
(F) 7324	"	" " "	102	88	262
(A) 140103	"	Tampa, Florida	94	77.5	264
(A) 119003	"	" "	98	84	269
(A) 176953	"	" "	96.5	82	271
(A) 191050	"	Barbuda, West Indies	101	86	277
(A) 73583	"	Florida	106		289
(D) 27190	"	Preston, Cuba	90	82	248
(D) 82592	"	Jupiter, Florida	96	86	240
(D) 42560	"	Smyrna, Florida	105	85	251
(D) 42558	"	" "	103	86	255

	No.	Sex	Locality	Tarsus	Culmen	Wing
(D)	42557	Male	Smyrna, Florida	96	81	248
(E)	33780	"	Myiakka River, Florida	103	84.5	280
(E)	33781	"	Manata County, "	96	86	265
(K)		"	Vermillion County, "	90	81.6	268
(E)	39759	"	Corpus Christi, Texas	94	82	248

SNOWY HERONS FROM MEXICO.

	No.	Sex	Locality	Tarsus	Culmen	Wing
(A)	57885	Male	Tehautepec, Mex. (west)	100	82.5	262
(D)	73194	"	Western Mex. Rio Coahuajami	96	81	251
(C)	13200	"	Yukatan, Rio Tagalos	106	81	275
(D)	48389	Female	Mexico Tamp. Matamoros	96	79	251

RETURNS FROM BANDED SNOWY EGRETS.

(Data from U. S. Biological Survey)

Number Banded on	At	Recovered on	At
313448	7/15/25 Salt Lake Co., Utah	8/24/25	(about) Pocatello, Idaho.
313353	7/27/25 " " " "	11/16/25	(about) El Paso, Texas, 40 mi. north.
313379	7/27/25 " " " "	9/20/25	El Paso, Texas.
3615	7/ 3/16 Bear River Mrsrs, Utah	1/20/23	Escuinapa, Sinaloa, Mex.
3671	7/ 3/16 " " " "	3/—/17	Mexcaltitan, Tepic, Mex.
3648	7/ 3/16 " " " "	6/ 1/17	Papagayo Lagoon, Guerrero, Mexico.
3608	7/ 3/16 " " " "	7/13/19	San Pedro River, Cochise County, Arizona.

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