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FURTHER NOTES ON THE WHITE-THROATED SWIFTS OF SLOVER MOUNTAIN

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WITH FOUR PHOTOS

THE MAY-JUNE CONDOR for 1909 tells of my early experiences with the White-throated Swift (*Aëronautes melanoleucus*) on Slover Mountain which is located in the San Bernardino Valley near Colton. Continuous observations since that time have brought forth a few more interesting points, particularly concerning the nests.

During the breeding season single birds, or birds in pairs, are often noticed in flight. The nesting sites are then to be found by watching where these birds go. When a likely crevice is found, observations must be conducted to decide whether the nest is under construction, with eggs, or contains young. With the exception of set no. 1 and set no. 4, all nests that I have observed have been situated in crevices with bends and so far away that nothing could be seen even as to the location of the nests; and these two sets are the only ones I have taken where injury to some of the eggs in the set has not resulted.

The nesting cracks are best located by watching the birds carry feathers into them, but as the nest-building and egg-laying period may require over a month there is much chance of destroying the unfinished nests or in waiting too long before removal of the rocks. On several occasions I have been greeted by the screeches of half-grown young in crevices where I had expected to start operations for collecting eggs.

Locating the nesting cavity and estimating the proper time for collecting the eggs is but a mere start in the right direction, for the cavity is usually at some almost inaccessible point on the cliffs, 20 to 150 feet from the bottom, with many dangerous, loose, overhanging rocks. There is no certainty as to the

exact location of the nest within the crevice; it may be to the right, or to the left, or below or above the entrance. By examining the rock formation and looking into the opening one is able to suggest possible locations for the nest, and with all of the available data in mind it is time to start operations.

At least two men were required for taking all nests, and, with the exception of set no. 6, they were reached by descending on a rope. It was usually necessary for one man to steady the rope while the climber was working, especially where overhanging rocks did not permit him to reach the nest on a slack rope. Upon arrival at the cavity the first thing done was to pull up, by means of a small rope, tools for cutting foot-holds, and then, when these had been made, the rocks were removed in such a way as not to crush the nest. As the rocks may vary in size and weight from a few pounds to many tons, and as the exact location of the nest is not known, the man supported by a rope and with scant foot-hold has little in his favor. Set no. 2 and set no. 3 were snatched from the sides of huge falling rocks that were removed from the cliffs.

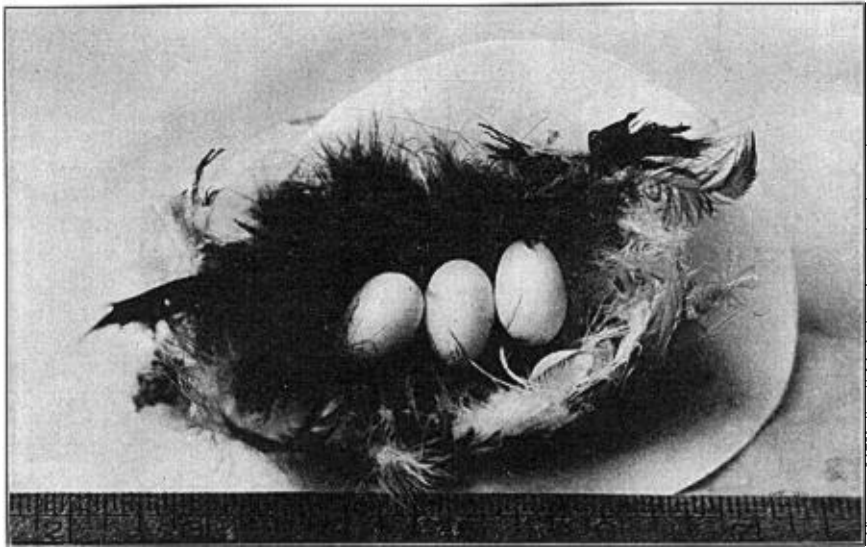


Fig. 1. WHITE-THROATED SWIFT, SET NO. 2.

All nesting cavities where sets were taken have been completely destroyed in removing the nests. While these operations are under way the birds either remain in the fissures or fly about making an occasional visit to the cavities or to within a few feet of the openings.

All nests that I have examined have been infested with numerous "bugs". In the two nests where birds could be seen while incubating, the insects could be observed crawling on the birds' heads. The eggs, in every case, were more or less spotted as a result of the insects, depending upon how long they had been in the nest. Where eggs can be seen in the nest I believe that observation of the degree of spotted condition will indicate state of incubation and possibly save destruction of nests containing eggs that can not be saved in perfect condition.

With the exception of that containing set no. 3 all nests were apparently

new throughout and were being used for the first time. No. 3 was larger in all dimensions than any of the other nests and there seemed to be at least two layers under the nest in use, and in the layer directly under the new nest the remains of eggs could be seen. It is my opinion that the nest had been used in at least two former seasons. The two lower layers were not substantial, probably having decomposed due to age and insects. Photos of set no. 2 and set no. 3, with nests, show difference in size and at the same time the general appearance of typical nests.

Nests are constructed, for the most part, of chicken feathers and grasses cemented together and to the rocks, probably by saliva. They vary in size to suit the space between the walls of rock and are usually shallow and narrow. The following dimensions, in millimeters, show the range of variation.

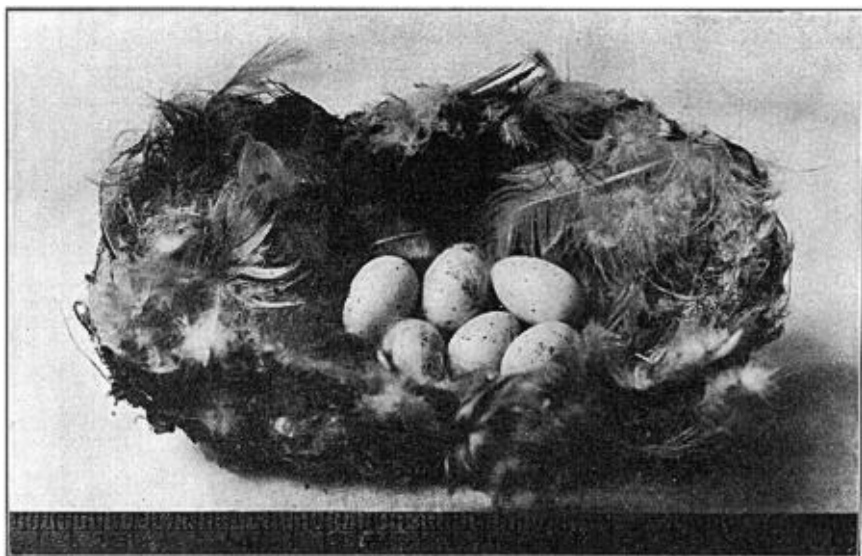


Fig. 2. WHITE-THROATED SWIFT, SET NO. 3. NOTE LARGE SIZE OF THIS NEST AS COMPARED WITH NO. 2, AND THE SPOTTED CONDITION OF THE EGGS.

Nest for Set No.	Depth	Outside		Inside	
		Length x Breadth	Depth	Length x Breadth	Depth
1	51	89x63	25	63x57	
2	63	140x48	38	70x41	
3	57	146x76	38	102x57	
4*	70	107x52	---	
5	51	102x51	19	70x44	

*Measurements by H. S. Swarth, Museum of Vertebrate Zoology.

Both the vertical and the horizontal cracks are used as nesting sites, but with the exception of set no. 5 all that I took were from vertical cracks. It is almost impossible to take nests from horizontal fissures without destruction of the eggs and in the exception noted, a rock weighing at least 35 tons was removed. This can be seen in the photo. The location of set no. 6 was rather unusual, being reached by going into a vertical crack about three feet, then up eighteen inches, then to the side about eight inches.

All eggs are narrowly elliptical in form, one end being slightly smaller. The two photos of nests clearly show the form. I believe the usual complement of eggs is four, while I think three is not unusual. I have never seen any sets of five, but set no. 3 contained six eggs. As far as I have been able to learn this set of six is the largest of which there is any record. The following tables show the dimensions of eggs, in millimeters.



Fig. 3. ARROW POINTS TO HORIZONTAL CRACK FROM WHICH SET NO. 5 WAS TAKEN AFTER REMOVAL OF A ROCK WEIGHING AT LEAST 35 TONS. THIS NEST WAS ABOUT 115 FEET FROM THE TOP OF THE CLIFF.

Set No. 1	Set No. 2	Set No. 3
21.1x13.9	20.6x13.9	21.1x13.9
20.6x14.2	20.8x13.9	21.3x13.5
21.1x13.9	20.8x13.7	21.6x13.9
20.6x14.2	Aver. 20.7x13.8	22.1x13.7
Aver. 20.8x14.1		21.3x13.9
		21.1x13.9
		Aver. 21.4x13.8
Set No. 4*	Set No. 5†	Set No. 6
21.0x13.0	19.1x12.9	20.3x13.2
21.2x13.0	19.3x13.1	20.8x13.7
20.8x13.2	19.9x13.3	20.8x13.2
20.8x13.2	Aver. 19.4x13.1	Aver. 20.6x13.4
Aver. 20.9x13.1		

*Measurements by H. S. Swarth, Museum of Vertebrate Zoology.

†Measurements by Chas. H. Rogers, American Museum of Natural History.

The nests that have been taken were from three different localities, and nests have been observed in three others. Two seemingly ideal locations for the swifts, having the same characteristics as the others, have never been used either for nests or for roosting, and I am not able to offer any reason for this.

The fissures where nests have been located seem to be used only in the nesting season of May and June; during the balance of the year the birds con-

gregate in large openings within rocks. The earliest and latest records I have for taking eggs are May 17 and June 13, respectively, both sets being fresh. The breeding season is so short that I am almost sure that but a single brood is raised. Incubation does not start until the set is complete.

During the heavy rains of January, 1916, quite a number of swifts were found on the ground in a helpless condition. It seems that some of the crevices had become flooded with water which had drenched the birds, causing them to attempt to escape, but it was impossible for them to fly with wet feathers. Several of these birds were kept in a warm place till their feathers were dry enough for them to fly away.

Observations are such as to fully convince me that these birds are residents here throughout the year. Many days often pass by during the fall and winter when no swifts are seen, and then at some unexpected time they appear in large

numbers. The most common time of day for the swifts to be seen is the late afternoon, and when a swift can be located flying about, one is almost certain to soon see many more, except it be in the breeding season. They fly about in the vicinity of the crevices, where they make their homes and seem to have no fear of humans, hawks, or noise; yet, apparently as if at some signal, all the



Fig. 4. PORTION OF SWIFT CLIFF. THE MAN IS ABOUT THIRTY FEET FROM THE BOTTOM AND 130 FEET FROM THE TOP. THE ROCKS HAVE BEEN TAKEN AWAY AND HE IS IN THE ACT OF REMOVING SET NO. 4.

birds will suddenly return to the fissures in the rocks, and there seems to be nothing that will cause them to leave their selected roosting cavities. In the district lying within four miles around Slover Mountain I have never seen the swifts more than one mile distant from it.

During the extremely cold wave of early January, 1913, eight, to me perfectly healthy, swifts were taken out of a crevice where they, with many others, seemed to be roosting in a dazed or numb state. They were kept in a room for about six hours and then turned loose, one at a time, a few hundred feet from the point where they were captured. All flew away in a dazed fashion and nearer the ground than usual and none were observed to return to the place where they were captured. I had hitherto thought that they were numb from the cold, or possibly from the jar of a blast in their immediate vicinity; but it has been suggested to me that possibly they were hibernating. This raises a very interesting question, as it seems possible that these birds have intermittent hibernation periods. The facts are that these birds are not observed for many days in the coldest weather, yet are found to be plentiful within the rocks, in a dormant state.

It is claimed by some that these birds do not use their wings in unison, but I am of the opinion that they do flap both wings at the same time, at least part of the time if not always. When flying about feeding upon insects, usually at several hundred feet elevation above the ground, they make a few rapid beats with the wings, then soar a little while, then beat their wings rapidly for a few moments and so on. They vary the flight by sharp darts in other directions, probably to catch insects. When returning to the cliffs they often keep their wings beating fairly steadily. Both when penetrating and leaving the crevices they seem to use both their wings and feet as aids to locomotion.

Set no. 3 was donated to the United States National Museum (Accession 60163), where it proved the first set of eggs of this species in that institution. Set no. 5 was donated to the American Museum of Natural History where there had been no eggs of the White-throated Swift previously. Set no. 4 was donated to the California Museum of Vertebrate Zoology (now no. 1632 of the oological collection there).

Colton, California, November 14, 1916.

BIRDS OF THE HUMID COAST

By FLORENCE MERRIAM BAILEY

I. FISHERMEN

THE HUMID COAST of the Northwest appeals to the imagination of the worker from the arid interior not only because of its phenomenal forest growth—its bearded giants towering from one to two hundred feet above an almost impenetrable jungle—but because of the ornithological antitheses that result from the juxtaposition of ocean and forested mountains in northern latitudes.

On Tillamook Bay in northwestern Oregon, reached from Portland by winding down through the Coast Mountains with their lofty conifers and their canyon streams frequented by Water Ouzels, the shore that is strewn with the trunks of headless giants is so close beset by the living forest that the bird stu-