

ZOOLOGICAL NOTES.

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Cedar Point offers a number of rather peculiar features for study, and the fauna of the locality presents a very attractive field. On the one hand there is an extensive beach some six or seven miles in length, from which the sand dune formation extends backwards and merges into a swampy area bordering the waters of Sandusky Bay. On the beach after every storm will be found a large mass of drift material, including numerous fishes that have been thrown ashore. These furnish an attraction for a number of forms of animals, a complete census of which has as yet not been attempted. It may be mentioned, however, that numerous species of flies take to them to deposit their eggs, the larvae a few days after each storm being a conspicuous element to be followed a few days later by pupae or mature flies; these in turn attract various birds and large numbers of



FIG. 1.—A BIT OF CEDAR POINT BEACH.

toads, which seem to secure a very constant source of food especially in this vicinity. Species of burrowing Hymenoptera are conspicuous and upon the sand dunes the grass hopper (*Trimerotropis maritima*) is especially abundant. A millipede (*Fontaria indianae*) is also very abundant crawling over the sand, and turtles from the lake pass up the beach and over the dunes to deposit their eggs at favorable points.

FOOT PRINTS.—A study of the tracks and foot prints which are made in the sand is especially interesting, and the determination of

species which are responsible for particular kinds of tracks is a fascinating though somewhat complicated study. Several of these have been identified with certainty, and a brief description of them in connection with a reproduction of some photographs may be of interest. Toad tracks are numerous and quite conspicuous and consist of four slight imprints in the sand, these occurring with regularity in length corresponding with the length of the leap and the tracks, with the distance between them, corresponding with the size of the



FIG. 2.—FOOTPRINTS OF TOAD, GRASS-HOPPER AND MILLIPEDE.

Photo by H. Osborn.

individual. These are shown in Figure 2, between the points marked X. The abundant grass-hopper, described more fully in another paragraph, produces when walking a continuous series of fine imprints in two or three more or less distinct lines on either side, midway between which is a narrow groove formed by the dragging of the abdomen. These tracks begin and end abruptly in case the insect is alarmed and leaps into the air. Several of these lines of imprint are shown in the figure—one distinct one above the point in Figure 2, marked +. Another very characteristic one that is easily referred to the millipede consists of parallel lines, in which the imprints of the individual feet are scarcely visible, and between which the sand is smoothed by the under surface of the body. In Fig. 2 under o.

ANT LION.—Still another very characteristic member of the dune fauna is the ant lion, the larvae of which construct their characteristic pitfalls in slightly protected places near bushes or trees, sometimes in great numbers, indicating a very numerous colony of these curious creatures. Of these there are, judging by the larvae, two quite distinct species common to the Point, but these have not as yet been reared. Aside from the pitfalls these ant lions make a peculiar track in the sand when they are moving from one point to another. These movements apparently occur only during



FIG. 3.—PITFALLS AND TRACKS OF ANT LIONS.

short periods, as is shown when an area which has been entirely free from such tracks will be noticed after an hour or two to be completely netted with their devious furrows, which could only be formed by a number of larvae. The larvae move backward, and from the character of the furrows produced in the sand, must remain just beneath the surface of the sand, as the sand is raised on either side. That the furrows are formed by these larvae is proven by the fact that if the pitfalls at their ends be dug into they will be found to contain larvae. The movements of the larvae, forcibly pro-

duced, make lines like those observed. Pitfalls and furrows are illustrated in the accompanying plates, the furrows being quite indistinct, as they are not deep enough to produce distinct shade, and consequently do not show conspicuously in the photograph. Furrows are to be noted, however, in the figure (No. 3) above the points marked X.

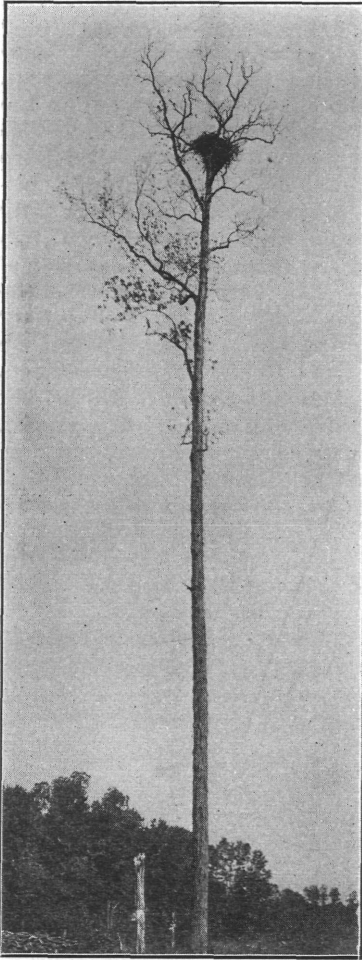


FIG. 4.—EAGLE NEST.

Photo by R. F. Griggs.

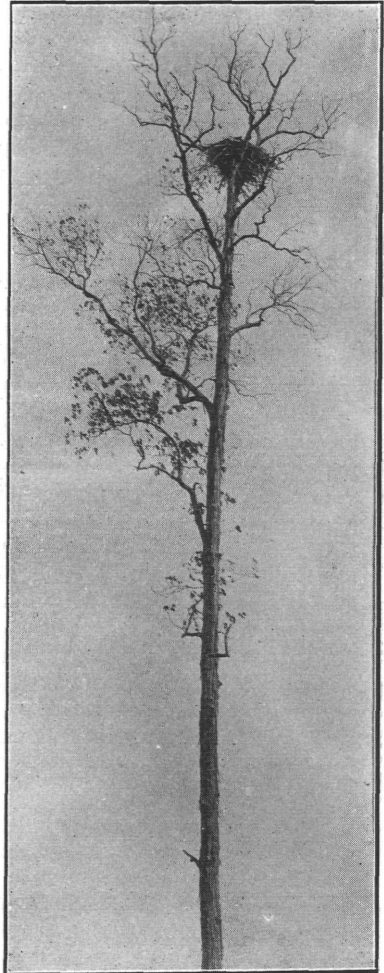


FIG. 5.—EAGLE NEST.

Photo by H. Osborn.

EAGLE NESTS.—The bald eagle nests at various points along the lake shore, and some of these nests were observed, and photographs secured during the past summer. One of these is between Sandusky and Huron, about two miles from Huron, and a half mile from the Huron street railway, in a Shag bark hickory tree. It stands away from other timber, although it is said formerly to have been surrounded entirely by trees. It is probably one hundred and twenty-five feet in height, or more, and doubtless towered above surrounding trees, and at present constitutes the most conspicuous object to be seen for miles in any direction. The nest, as shown in the accompanying photographs, must be at least a hundred feet from the ground, but owing to the impossibility of climbing the tree, and from the fact that no exact means of measurement were at hand, the precise height is unknown. This nest, we were told, has been in this tree only a few years, but prior to its building one has existed in the immediate locality for at least thirty years past. The nest is evidently five or six feet in diameter, being somewhat more flattened than other nests observed, owing probably to the spreading character of the limbs upon which it rests. No eagles were to be seen at the time of our visit to the tree, but we were informed by the proprietor of the farm that they had reared a brood during the season, and one was seen later by Mr. Griggs, at the time his photograph was taken.

Other nests occur on Kelly's Island, and we made a trip to that locality for the purpose of noting them and taking photographs, which, however, on account of the day being unfavorable, are not very clear, and cannot be reproduced to advantage. They are about a mile and a half eastward from the steamboat landing, one occurring in a Maple tree about seventy-five feet in height, and the nest at a height of about sixty-five feet, being at least six feet in height, fitting the somewhat acute crotch, and at least five or six feet across the top. The other is in a Burr Oak tree, some distance from other trees, in a vineyard, and plainly to be seen from the lake steamers when to the southeast of the landing. The tree is about a hundred feet high, and the nest is about eighty or eighty-five feet from the ground. It is similar in form to the one just mentioned. Portions can be seen to contain very large branches, which show out conspicuously from the ground.

TRIMEROTROPIS MARITIMA.—This grasshopper which is very abundant on the dunes along Cedar Point Beach, is of special interest because of its protective resemblance to the sand on which it ordinarily rests. It is one of the best examples I have seen of adaptive coloration, but does not seem to have been mentioned in such connection, possibly because the colors change in preserved specimens so that the mimicry is totally lost. They reach maturity in latter part of June, and while only larvae are seen in middle of June,

nearly all have matured by the latter part of July. They occur most abundantly on the sand adjacent to the clumps of grass upon which they doubtless feed, though so far no individuals have been observed actually feeding on grass leaves, but one was observed eating a fragment of apple cast up in drift materials on the beach. When disturbed they invariably alight on the sand, upon which they become at once invisible. About the only way to capture them is to throw a net down on a spot where one has been seen to alight, and then it not infrequently happens that two or even three will be caught though their presence has not been suspected.

The adult is whitish gray speckled with ferruginous fuscous and black, conspicuous ferruginous points occurring usually on the anterior margin of pronotum and on the lower borders of epimera of meso- and meta-thorax, humeri of elytra and discal carina of femur, these may be faint or obsolete, and on wings and legs may form slender lides; dark freckles occur on carinæ of vertex and face, forming a series back of collar on pronotum, on posterior border of pronotum and on sides of elytra and hind femora; on elytra they are thicker at three places, one-fourth, one-half and two-thirds from base, constituting fairly distinct patches, and on femur are two indistinct bands corresponding with well marked black bands on the inner side. Anterior and middle femora and tibiæ nearly white, milky, with gray annulations; hind tibiæ gray at base, distal two-thirds yellow, in one form orange or reddish, spines yellow, tipped with black, anterior and middle tarsi ferruginous or reddish, hind tarsi yellow. The sternum is finely pilose. A variety is quite uniformly yellowish gray.

The larvae are similarly speckled but differ in that the dorsum of abdomen is densely speckled, while in adults this part protected by the folded wings is not speckled. In all these points a perfect adaptation to the color and markings that blend with the sand grains is evident.

In the latter part of the summer of 1899, many of these grasshoppers died from an attack of parasitic fungus, and in such cases climbed up on stems of grass where their whitened bodies became very conspicuous. Eggs are doubtless laid in autumn probably in packed sand in grass clumps to hatch in following spring.