

CHAPTER VII

THE SAND LIZARD, *LACERTA AGILIS*

DISTRIBUTION—DESCRIPTION—HAUNTS—HABITS—
FOOD—COLOUR VARIATION—REPRODUCTION.

Distribution.—The sand lizard, like the common lizard, is widely distributed in Europe, but must be regarded as an inhabitant of the plains rather than of the mountains. It is especially found, that is, in low-lying land. It occurs in Germany, Switzerland, Poland, the North of Russia, Siberia; but in the British Isles it is limited in its distribution to a few of the most southern counties. A good deal of confusion exists in the minds of field naturalists on this point, specimens of the common viviparous lizard frequently being recorded as sand lizards, the reason for this mistake undoubtedly being that the great range of colour variation seen in the latter is not sufficiently well known. It is too generally assumed by those who are not familiar with the appearance of both species that any light brown or sandy-coloured lizard must be a sand lizard, which is far from

actually the case. A careful examination of the two species together will render the distinctions quite obvious; but a large number of field naturalists never see a sand lizard, owing to its limited distribution, and hence are liable, on encountering an unfamiliar colour variation in the common lizard, to erroneously put the specimen down as *Lacerta agilis*. The distribution of the sand lizard in this country is practically that of the smooth snake (*Coronella austriaca*), namely, restricted localities in Dorset, Hants, and Surrey, rarely anywhere else.

The sand lizard is not very rare on some Dorset heaths, being found especially in the neighbourhood of Poole. It is perhaps as common in parts of Surrey, but is everywhere very local in its distribution. It has been stated to occur in Berkshire, but the evidence is not good, though it is very interesting to remember that twenty years ago the smooth snake (*C. austriaca*) was also found in that county, where it has recently reappeared.¹ When we consider the close connection between these two reptiles, it is just possible that *L. agilis* once inhabited Berkshire, and that the same causes which led to the extermination of its enemy, the smooth snake, also had an influence in its own distribution. At any rate, it is not found there to-day. Coming to other counties, this species has often been recorded in places where there is no doubt

¹ "Reappearance of the Smooth Snake in Berkshire," *The Field Naturalist's Quarterly*, August 1903.



SAND LIZARD (MALE).



SAND LIZARD (FEMALE).

it never existed, on the authority of more or less incompetent naturalists. Thus Mr. Forrest was led to include the species in the *Vertebrate Fauna of Shropshire*, not from his own observation, but on the authority of others who asserted they had seen it. After this otherwise excellent book was published, Mr. Forrest, having his doubts raised as to the accuracy of these observations, conferred with G. A. Boulenger upon the matter, and in a letter to myself on the matter, he says, "as a result of this conference I have come to the conclusion that all these observers were mistaken, and that all the lizards in Shropshire which were said to be sand lizards belonged to the *L. vivipara* species." No doubt this is really the case. Personally, I have had the sand lizard reported to me from Scotland (Ayrshire), but I never could get the specimen forwarded for inspection, so upon this record, too, the gravest doubt must rest.

The neighbourhood of Bournemouth has been one of the districts where the sand lizard frequented; and F. G. Aflalo says, "I have dug it up in this state (*i.e.* in hibernation) near Bournemouth, where it is very common."¹

The general statement may be made, therefore, that the sand lizard is practically confined to those counties south of the Thames, and is found particularly in Surrey, Hampshire, and Dorset.

Are there no reliable records of the occurrence of

¹ *British Vertebrates*, p. 302.

this species in the northern counties of England? To answer that question we cannot do better than quote a communication to *The Zoologist* of September 1901, by Mr. T. A. Coward, the well-known Cheshire ornithologist. We give the communication *in extenso*, as it covers the ground, and from it my readers can gather the position of the matter. It is as follows:—

“THE SAND LIZARD IN THE NORTH OF ENGLAND.

“In the recent volume of the *Cambridge Natural History* on ‘Amphibia and Reptiles,’ Dr. Hans Gadow says that the sand lizard (*L. agilis*, Linn.) ‘is absent in Ireland and Scotland, while in England it is restricted to the southern half’; and a similar statement is made by Mr. Boulenger in the Hampshire volume of the *Victoria History of the Counties of England*. The reputed sand lizards, frequently reported from northern counties, generally prove, on investigation, to be large examples of the common lizard (*L. vivipara*). This, however, is not the case in Lancashire, and, I believe, in Cheshire, for on the coast sandhills the true sand lizard was formerly common, and may even yet occur in places where the sandhills are unreclaimed. Lancashire naturalists of the old school knew the sand lizard well, but, as questions of geographical distribution did not greatly interest them, there are few records left beyond the bare fact that the species was common. There are, however, specimens in the Warrington Museum, whose identity Mr.

Boulenger has confirmed, which were captured at Southport and Formby, on the Lancashire coast. In Mr. Isaac Byerley's *Fauna of Liverpool*, published in 1856, the sand lizard is described as occurring 'on the sandhills from West Kirby to New Brighton' (in Cheshire). 'At Seaforth, Crosby, and elsewhere' (in Lancashire). Mr. W. D. Roebuck states (*Naturalist*, 1884-85, p. 258) that, after examining specimens sent to him from various North of England localities, and finding that they were only 'lightly coloured specimens of the viviparous lizard,' he did not believe in the existence of the true *L. agilis* so far north, until Mr. G. T. Porritt procured him a couple of specimens from the Southport sandhills, which he 'at once saw were unmistakably referable to that species.' He adds: 'Mr. Porritt tells me these lizards swarm on the sandhills at Southport, where he has frequently seen them sparkling in the sun with a glistening emerald-green, and sometimes almost golden, brightness.' The late Thomas Alcock, in his pamphlet on the *Natural History of the Coast of Lancashire* (1887), also speaks of the sand lizard at Southport, where he says it was 'formerly plentiful on the isolated group of sandhills at the north end of the town. Hesketh Park, however, now occupies the best part of this locality.' In 1862 and 1865 he captured and received a number of examples from this place. Mr. H. O. Forbes, in the *British Association Handbook* for 1896, says, on the authority

of Mr. Linnæus Greening, of Warrington, 'Common ; Wallasey, Southport, and Formby sandhills.' The Cheshire locality is included on the strength of specimens which were shown to Mr. Greening by the late C. S. Gregson, who stated that he had obtained them at Wallasey. The sandhills between West Kirby and New Brighton were of the same character as those extending along the Lancashire coast from Liverpool to the mouth of the Ribble, and it is a generally accepted theory that the river Mersey, within geologically recent times, used to empty itself into the sea considerably to the west of its present mouth ; so that at one time the Wallasey coast-line was north of the river. The spread of the suburban residential districts round Liverpool, the growth of seaside resorts, such as Hoylake and West Kirby, and the formation of golf links all along the coast have destroyed a large portion of these sandhills ; but there are considerable stretches in both counties where the lizard may still exist. The sand lizard is not known in Cumberland or Westmoreland, and, although many miles of the North Wales coast, from the mouth of the Dee westward, are, or were, similar in character to the Cheshire shores, I know of no record of the sand lizard from the Principality. The evidence therefore shows that *L. agilis*, generally considered to be only an inhabitant of some of the southern counties, occurs in the north, on a strip of sandhills bordering the Irish Sea, from the mouth



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of the Ribble to the outskirts of Liverpool, and, unless Byerley's and Gregson's specimens were incorrectly localised, on the Cheshire shore from West Kirby to New Brighton."

Description.—A glance at the photographs of this species will convey the correct impression that the sand lizard is larger and of heavier build than the viviparous species. Associated with this is the fact that *L. agilis*, in spite of its specific name, is less agile than the smaller common form. It possesses granular nodes over the eye, and teeth upon the palate bone, the latter an important distinction between the two lizards. A comparison of the scales on the body will reveal that in the sand lizard these are more numerous across from one side of the back to the other, and also that the individual scales are smaller and evidently keeled. On the dorsal aspect these scales are more rounded or irregular than in *L. vivipara*, where we saw they were hexagonal and elongated. In colour there is the greatest variety, which is responsible for much of the confusion between the two species. Dr. Gadow describes it thus:—"The colouration is subject to much variation, local as well as individual. As a rule, the sand lizard gives the impression of being striped longitudinally, the striation being caused by rows of dark and white spots and patches along the sides of the back, flanks, and tail. In the male a more or less pronounced green, in the female brown and grey are the prevailing ground-colours. A

typically coloured male during the breeding season is grass-green on the sides and suffused with green on the yellow under parts; the sides are dotted with black, with whitish eye-spots. The under parts are spotted with black. The adult female is brown or grey above, with large dark brown, white-centred spots, which are arranged in three rows on each side. The under parts are cream-coloured, with or without black specks. The young are grey-brown above, with white, black-edged spots; the under parts are whitish.”¹ A careful description such as the above shows how impossible it is to convey an accurate impression of the colour of this species by a coloured plate. Comparing the shields with those of the viviparous lizard we find that the sand lizard has, as a rule, two anterior loreal shields in place of the one in the smaller lizard, these two along with the single post-nasal shield making a triangle. The average size of the male sand lizard is about $7\frac{1}{2}$ inches, the female being a little larger, 8 inches or rather more. Again, it is to be observed that the tail in the male sex is relatively longer than in the female, in the latter it is less than one-half of the entire length of the lizard. The tail is cylindrical, and covered by a number of rings of scales, these scales being more elongated than those on the dorsum. These annulations have a distinct relation to the position where fracture of the tail is apt to occur, a point which is dealt with later.

¹ Gadow, *Amphibia and Reptiles*, p. 554.



SAND LIZARD (FEMALE, GRAVID, SHORT TAIL).

[Facing p. 62.]

Habits.—The popular name of sand lizard in this case appears to rest upon a good foundation, sandy districts it undoubtedly affects. There is good reason for this in connection with the two physiological processes in this species of reproduction and hibernation. The warmth of the sand assists the former—for in this case the eggs are deposited early, while the ease with which it can burrow in loose sandy soil assists in hibernation. Sunshine is a much more necessary condition of life to the sand lizard than to the slow-worm, hence the former keeps to the open and undisturbed sandy heaths and commons, with sunny banks on which to bask. Much of its life is passed underground, and on the slightest approach of cold it retreats from exposure to air. But on bright warm days the sunniest spot in its local habitat will find the sand lizard deriving all the heat it can for its cold-blooded system from the sun. It is a dweller in plains rather than mountains.

Habits.—There is always the danger in attempting to give an account of the character and disposition of an animal, that its behaviour in captivity, *i.e.* under artificial conditions, is assumed to be identical with that in the natural wild state. Further, we know that in some reptiles, the adder for example,¹ the effect of captivity upon the character is very marked. But the great difficulty has to be faced that it is practically impossible to watch some creatures in

¹ *Field Naturalist's Quarterly*, vol. i. No. 1.

nature, and in no case could that difficulty be much greater than in the sand lizard, except perhaps in fish. The sand lizard simply refuses to allow itself to be studied out of doors, at anyrate at close quarters. So that we are forced to gain our impressions from their behaviour in vivaria, where the conditions of existence are made as natural as possible. It is well that this should be frankly stated, because the impressions thus gained may not be perfectly accurate if applied to the wild reptile. Even then the difficulty is not ended, for various observers have recorded the most diverse opinions of the disposition of the sand lizard. Assuming that all these recorders were truthful, which doubtless they were, the conclusion to be arrived at is that the disposition in this lizard is a greatly varying one. Some are snappish, others docile; some refuse to feed, others feed readily; some inoffensive, others pugnacious; and so on. Miss Hopley had a male *L. agilis* which "at once displayed an aggressive viciousness of temper that would be deplorable were it not ridiculous. He not only turned to bite whenever approached, but held on to the finger so persistently as to be carried about the house on exhibition thus pendent. His feeble little jaws could, of course, inflict no injury; therefore, his spiteful efforts to grip the harder whenever touched, as he thus hung, were simply laughable, reminding one of the fly on the bull's horn, only lacking the fly's polite apologies. If he happened to grip a fleshy part of the hand, you

might afterwards almost count the number of his teeth, from the two little rows of indentations, like a V. The skin was never penetrated. To do him justice this temper lasted only a few days; and very soon he was the tamest of the family, which, at that time, consisted of himself and two ladies *agilis*, and five of *L. zootoca*.”¹ Here is a case in point, where the lizard at first showed signs of a disposition which afterwards disappeared. Is it not just possible that the whole exhibition of apparent temper was really due to abject fear and fright in the new surroundings? One can quite understand the reptile hanging on to the finger “like grim death,” while being carried about pendent, not necessarily from innate viciousness, but from an instinctive knowledge that if he let go he would fall and hurt himself. Lizards are extremely timid creatures until they become accustomed to their owners, and thus exhibit all sorts of curious traits when first made captive. Whether their subsequent good behaviour, when they have settled down to their vivarium life, is their real mood, or merely an acquiescence in the inevitable, my readers must judge for themselves.

Food.—As in the case of the viviparous lizard, insects of various kinds are the main diet of this species in nature. In captivity, as hinted above, some specimens refuse to feed, but most take food without difficulty.

Colour variation.—When describing the sand lizard

¹ i. e. *Lacerta vivipara*.

the various colours which are met with were mentioned. It need only be stated here that a large series of specimens will show a great range of colour variation, and it is only by examining such a series that the student of lizards can become familiar with all the differences which the species may show. The general impression will be gained that the males have more green about them than the females, the latter of which include the browner types. Thus sex evidently plays a part in the production of the varying colours, and the other factors concerned will be studied in a later chapter.

Reproduction.—The sand lizard is the only lizard of the mainland of Great Britain which is oviparous or an egg-layer. In this respect it agrees with the green lizard and the wall lizard of the Channel Isles, and with one of our snakes, namely, the ring-snake. Pairing takes place in England in May or June, according to the particular kind of spring weather in vogue. The eggs are deposited some four weeks or so later, in July, to the number of eight, frequently five, six, or seven. Some observers state that as many as a dozen are sometimes deposited. The female simply makes a depression in the sand, and leaves the eggs to hatch out by the aid of the heat of the sun and moisture. If the habitat be not in sandy ground, the eggs will be placed under leaves, earth, or débris. The egg-membrane is thin, but of firm consistence, having a parchment-like appearance.

Enemies.—Whatever the enemies of the sand lizard may be in other lands, by far the most important and interesting from the present point of view is the smooth snake (*Coronella austriaca*). We have seen that the distribution of these two reptiles in England is practically identical, and *L. agilis* seems to be the one meal which *Coronella* delights in above all others. An average-sized sand lizard is a large morsel for a snake only 2 feet long to manipulate, but it is astonishing what the serpent jaw is capable of in the direction of swallowing. When in the gullet of the snake the lizard will occupy the whole length of that organ, and if swallowed head-first in the usual way, the head of the lizard just reaches the entrance of the stomach at the end of the swallowing process. Digestion there takes place progressively as the lizard passes into the stomach, the part in the œsophagus being left undigested, so that one sometimes finds in the snake a lizard half digested, the intact part being that still in the gullet.

The sand lizard is also preyed upon by the adder (*Vipera berus*).