

# LIZARDS

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## THE UNIVERSITY OF MISSISSIPPI FIELD STATION

The University of Mississippi Field Station (UMFS) is a major site for field research. It is located in an especially scenic area of northern Mississippi. The station is located in Lafayette County, about 11 miles northeast of the main University campus in Oxford. An unusual combination of terrain, water sources, vegetation, engineering, and habitat types makes a perfect outdoor laboratory for research in many fields.

The field station includes forested hills surrounding a V-shaped, almost 3 mile long valley. Springs and seeps emerge from these hills and provide water for approximately 200 ponds on the valley floor. Clear streams course along the periphery of the valley and a small swamp exists at the terminus of the southwest branch of the V. On top of the forested hills are extensive fields surrounded by hilltop woodlands. All this creates a place of great beauty and a remarkable diversity of habitats for various invertebrates and vertebrates. Add to this the species protection afforded by the station's refuge status and you have a site remarkably suited for maintenance of animal and plant populations and studies pertaining to those populations.





Is beauty in the eyes of the beholder? It could be said so for Dr. Ed Keiser and lizards – and all things reptilian and amphibian! In his fourth contribution to the UM Field Station publication library, Ed examines lizards with a depth of appreciation few others know. Fortunately for us, Ed not only catalogs the variety of lizards found at the Field Station – he also gives us the gift of seeing these gentle and elusive cohabitants in a new light through his magnificent photography and his careful, detailed descriptions. Just as he did in his earlier volumes on frogs (No. 22) and snakes (No. 23), Ed provides an up close and personal view of the Field Station ecosystem. In doing so, he gently reminds us of the value of all living creatures. With this volume, Ed has convinced me that lizards are much more than “snakes with legs and tails.” So, on your next (or first!) trip to the Field Station, be sure to take along this splendid guide to help discover our lizard neighbors.

We are deeply grateful to Dr. Keiser for his continuing service to the Field Station. After a 30-year career in the UM Biology Department, Ed’s skills and enthusiasm for field work continue to inspire and awe, and we are all the beneficiaries of his commitment to documenting and sharing the educational and research value of the Field Station to our university, our community, and the world of science.

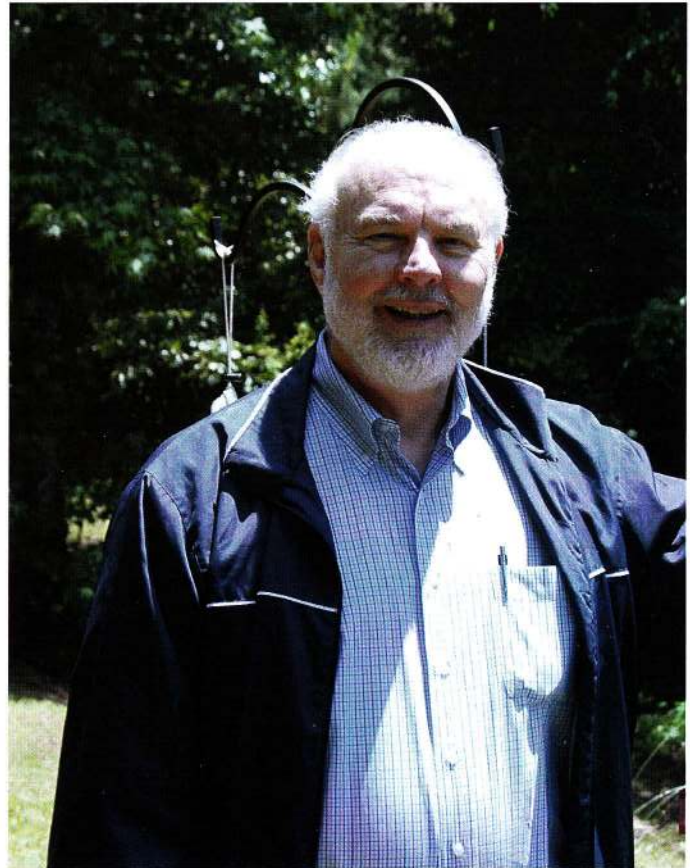
Dr. Alice Clark , Vice Chancellor for Research and Sponsored Programs

This booklet is dedicated to the memory of my friend

“Ray” Raymond Carl Highsmith  
1941-2013

As Director of the University of Mississippi Field Station there was none better. Among his numerous contributions to the station was his encouragement of others to produce numerous informative booklets on the flora and fauna of the field station. This booklet on lizards is only one of the any examples of field station productivity resulting from his enthusiastic support. Ray was a dear friend and I miss him.

Edmund D. Keiser



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## LIZARDS OF THE UNIVERSITY OF MISSISSIPPI FIELD STATION

Lizards are a conspicuous component of the University of Mississippi Field Station fauna. A walk around station lands during a warm summer day will usually reveal one or more species of these harmless and beneficial animals.

Nine native species of lizards occur within the field station boundaries. These same nine species, plus one introduced and established species, represent the lizard fauna of surrounding Lafayette County. The entire state of Mississippi harbors only 11 native species and two introduced species, thus the field station lizard fauna is fairly representative of Mississippi lizards.

Lizards are vertebrates classified in an animal group known as reptiles. With the exception of the legless, snake-like glass lizards, all Mississippi lizards have four legs. Lizard skin is covered with scales. The skin and scales lack sweat and

oil glands and thus appear dry. Most lizards lay shelled eggs on land and none have an aquatic larval stage. Lizards are ectothermic. The body temperatures of ectotherms fluctuate with the temperatures of their immediate environment. They do not have hair or feathers.

Lizards are closely related to snakes and share many anatomical features. Most differ from snakes in having moveable eyelids, fused lower jaws, external ears, a pectoral girdle, and usually, but not always, paired limbs. Non-burrowing lizards have excellent vision and some species are known to see colors. Many lizards also have a light-sensitive middle eye visible just under the skin on top of the head. This middle eye functions to regulate the lizard's internal biological clock. Lizards often partially chew their food before swallowing while snakes swallow items whole by a process known as "jaw-walking." Most lizards lap water with the tongue to drink, while snakes suck water into the mouth.



o lizard east of the Mississippi River is venomous and only two species in the entire United States are venomous. The bites of most Mississippi lizards usually pinch the skin and only rarely cause even minor bleeding.

Lizards and snakes have forked tongues. Contrary to southern folklore, their tongues do not inject venom and are not instruments involved in any way with poison. The protruding, flicking tongue collects scent particles in the air and moves these to structures known as Jacobson's organs located in the roof of the mouth. These organs allow the lizards to associate the particles with specific odors. Lizard nostrils, as well as the forked tongue, function as olfactory organs.

All field station lizards are diurnal. During early mornings, they usually remain hidden in holes or under bark and other debris. Lizards at the field station tend to be most active from 10 a.m. till noon and again around 4 p.m. Their peak activity

periods are influenced by air and substrate temperatures, sunlight, and cloud cover. The favorable temperatures for lizard activity are typically between 70 and 92 degrees Fahrenheit. Sustained lizard body temperatures of 96 degrees F. and above are usually lethal.

Lizard sexes may be identified by several features. Mature males are usually larger and have larger heads. The paired male reproductive organs (hemipenes) lie posterior to the cloacal opening in the tail base. Due to the presence of the hemipenes, males have wider tail bases. Femoral pores (see glossary) under the thighs are also more prominent in males. Mature males are also usually more conspicuously colored than females. In some species, mature males have orange or reddish heads during the breeding season. Belly coloration is different in Eastern Fence Lizard males and females and Green Anole males have an extendable colored flap "dewlap" under the throat.

Sexually mature Mississippi lizards undergo courtship rituals in the spring. As noted previously, courting males are usually larger and more vividly colored than females. Lizards typically undergo some sort of courtship ritual and males may show aggressive behavior toward other males. Fertilization takes place by sperm passing through an erected hemipenis that is inserted into the female. Only one hemipenis is used at a single mating.

Lizards lay eggs with soft, leather-like or firm, brittle shells. Young often begin developing while eggs are within the oviducts. Eggs are typically deposited in warm, fairly moist ground, rotten log humus, or even loose sandy soil sometime during the spring months. Females may deposit one or more eggs within a nest. Sometimes, several females may deposit eggs in the same nest. Females of some local species will remain with their nest, occasionally turning the eggs and guarding them from predators.

In the field station area, most lizard eggs hatch from late July through August. In some cases, eggs may not hatch until early fall. Hatchlings are usually tiny versions of adult lizards although they are usually more brightly colored. Young lizards tend to have longer limbs and larger heads than adults but these become adult-proportioned with age. Hatchlings are independent from the time they leave the eggs. It is at this time that they are most susceptible to predators.

Most lizards feed on insects and other arthropods. They identify their prey by its movement or scent. Our largest lizard, the Broad-headed Skink, is known to eat other vertebrates, including lizards and small mammals on occasion. Some species may even feed occasionally on plants or plant nectar. Some lizards (e.g. Green Anoles) mostly lie in wait for prey or forage close enough to make pouncing captures. Others, e.g. Six-lined Racetrackers, will forage over wide areas. All, however, will seize prey that moves within the capture

range.

Lizards are small creatures and may fall prey to larger lizards, snakes, birds, mammals, and arthropods such as spiders and centipedes. Hatchlings, e.g., often get caught in spider webs. Lizard camouflage and their ability to remain motionless for long periods, undoubtedly reduce predation. Quick movements into hiding places also serve to discourage predators. The tough skins and dermal scales of lizards discourage attacks. Individuals of some species release their tails when they are touched by a predator. The predator is then attracted to the flip-flopping tail allowing the donor lizard to escape. Racerunner lizards simply outrun many potential predators.

Lizards are invaluable members of our ecosystem. They play a major role in control of many smaller animals and as prey for larger mammals. They are harmless to humans and, in fact, quite beneficial because of their controlling effects on insects,

spiders, centipedes, and millipedes. Although many species of their closest relatives, the snakes, are rapidly declining in Mississippi, most lizard species at the University of Mississippi Field Station appear to be holding their own. This is likely because favorable ecological niches are abundant and population reductions due to human activities are minimal. The exception may be the Slender Glass Lizard. These legless, burrowing, sandy-soil inhabitants were moderately common at the field station and in Lafayette County 35 years ago but they are rare today. The reasons for this decline at the field station are not evident although fire ant predation on nest eggs has been suggested.

## PREVIOUS STUDIES INVOLVING LAFAYETTE COUNTY AND MISSISSIPPI LIZARDS

Fannye A. Cook's 1942 "Alligator and Lizards of Mississippi" is perhaps the oldest comprehensive lizard study for the state of Mississippi. Cliburn (1959) "The Distribution of Some Mississippi Lizards" provided a summary of many county records. Gandy (1966, 1969) published his revised 2nd edition of "A Preliminary Checklist of the Vertebrates of Mississippi." Cliburn (1976) published the 4th revised edition of "A key to the Amphibians and Reptiles of Mississippi." Lohofener and Altig then issued their 1983 "Mississippi Herpetology," which remains today the most recent comprehensive work on amphibians and reptiles of Mississippi.

More recent studies involving lizards of Lafayette County, Mississippi include Keiser (1984, 1992, and 2010). Detailed summary accounts of individual

lizard species in the Catalogue of American Amphibians and Reptiles include: SLENDER GLASS LIZARD: (Holman, 1971); COAL SKINK: (Walley, 1998); BROAD-HEADED SKINK: (Cooper, 1988); LITTLE BROWN SKINK: (Brooks, 1975); and the SIX-LINED RACERUNNER: (Trauth and McAllister, 1996).

# CHECKLIST OF LIZARDS OF THE UNIVERSITY OF MISSISSIPPI FIELD STATION

CLASS REPTILIA, ORDER SQUAMATA.....THE LIZARDS

## FAMILY ANGUIDAE

    SLENDER GLASS LIZARD (*Ophisaurus attenuatus*)

## FAMILY IGUANIDAE

    GREEN ANOLE (*Anolis carolinensis*)

    EASTERN FENCE LIZARD (*Sceloporus undulatus*)

## FAMILY SCINCIDAE

    COAL SKINK (*Plestiodon anthracinus*)

    COMMON FIVE-LINED SKINK (*Plestiodon fasciatus*)

    SOUTHEASTERN FIVE-LINED SKINK (*Plestiodon inexpectatus*)

    BROAD-HEADED SKINK (*Plestiodon laticeps*)

    LITTLE BROWN SKINK (*Scincella lateralis*)

## FAMILY TEIIDAE

    SIX-LINED RACERUNNER (*Aspidoscelis sexlineatus*)

\* All photos/illustrations by Dr. Ed Keiser unless otherwise noted'.

## USE OF A DICHOTOMOUS IDENTIFICATION KEY TO IDENTIFY UMFS LIZARDS

An identification key to the nine lizard species of the University of Mississippi Field Station (UMFS) follows. Basically, this key is an arrangement of species attributes presented as a numbered series of choices. The choices are arranged in pairs termed "couplets." These choices, if correctly made, will lead to the species name of a given animal.

In the following key, the user begins at couplet 1 and compares the animal to be identified with the two choices in the couplet. The choices will either lead to the vernacular name of a species or to the number of the next couplet to be considered.

For example, if the lizard to be identified in couplet 1 has a legless body, it is *Ophisaurus attenuatus*, the Slender Glass Lizard. If it has legs, then

the choice is to proceed to couplet 2.

There are two choices at couplet 2. If the body scales are smooth and shiny, lacking keels, and similar in sizes dorsally and ventrally, go to couplet 3. If the scales are not smooth and shiny and many dorsal and ventral scales are obviously smaller than others, proceed to couplet 7. By proceeding through the key choices, you should eventually arrive at the correct identification of the lizard being keyed.

The identification key, species account descriptions, and photographs can be used as aids in determining the species of most lizards encountered. With these guides and just a little experience, one should have no trouble identifying the native lizards observed at the field station and in Oxford and/or Lafayette County. All key determined identifications should be verified by reading the species account descriptions and studying the color plates.

No key can possibly account for all color and pattern variations so double check your key results. With some atypical juveniles (e.g. blue-tailed skinks of the genus *Plestiodon*), it may be necessary to consult someone familiar with lizard identification.

Technical terminology in this booklet is minimal. The few terms that are used in the keys and species accounts are illustrated and/or defined in the glossary. The drawing for Figures 1, 2, and 3 that follow and the drawings within the keys should be very helpful in making decisions. The photographs in the Species Accounts provide overall views of the adults of each species.



right: Common Five Lined Skink

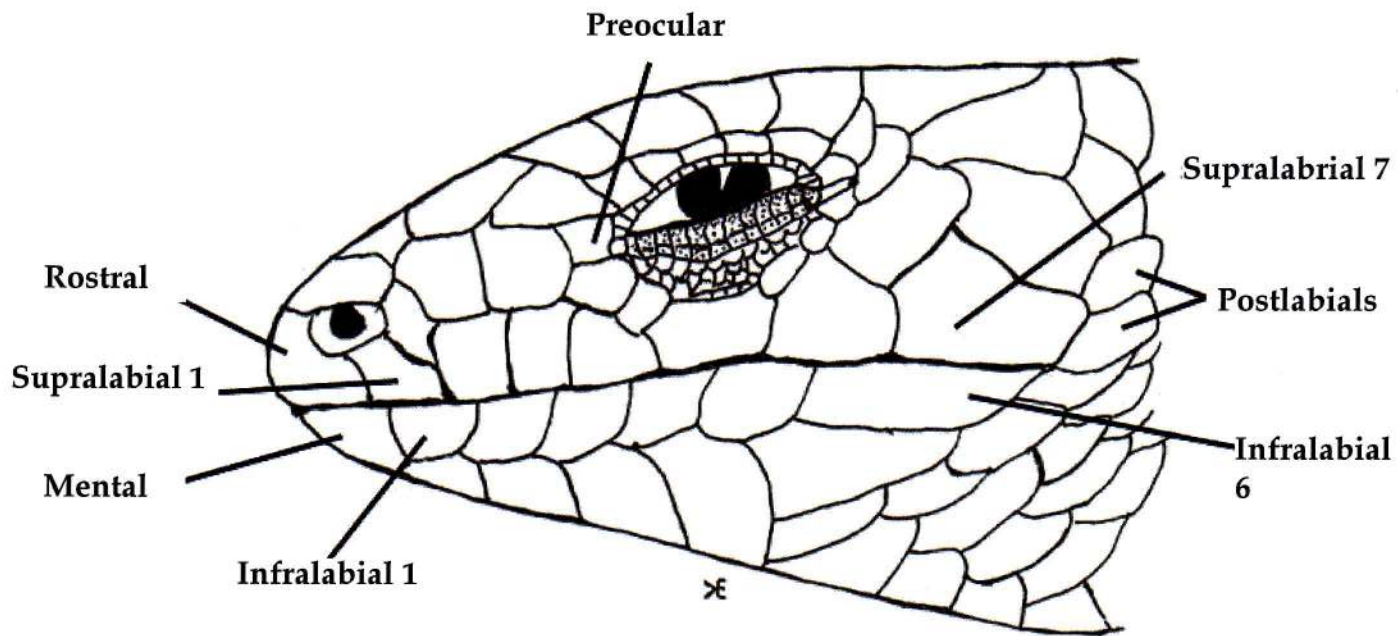


Fig. 1. Lizard Head, Side View



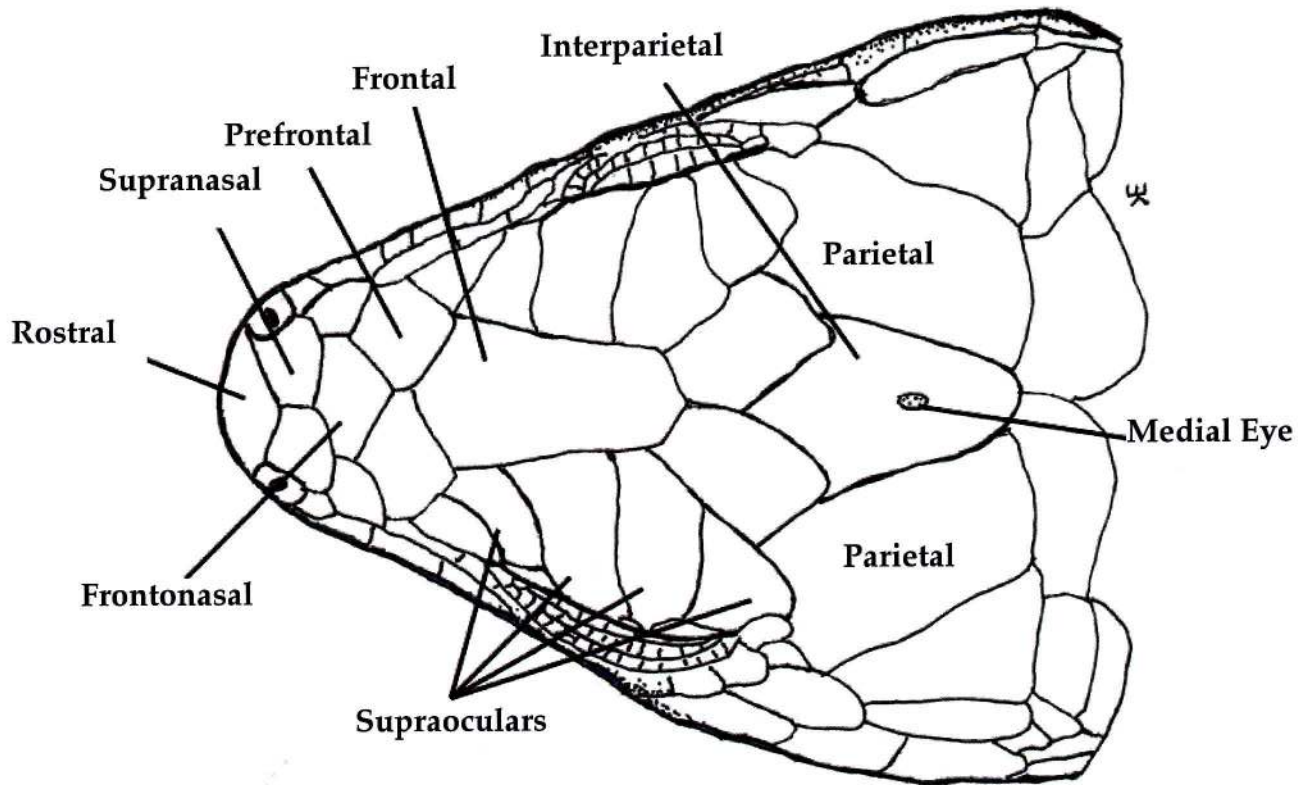
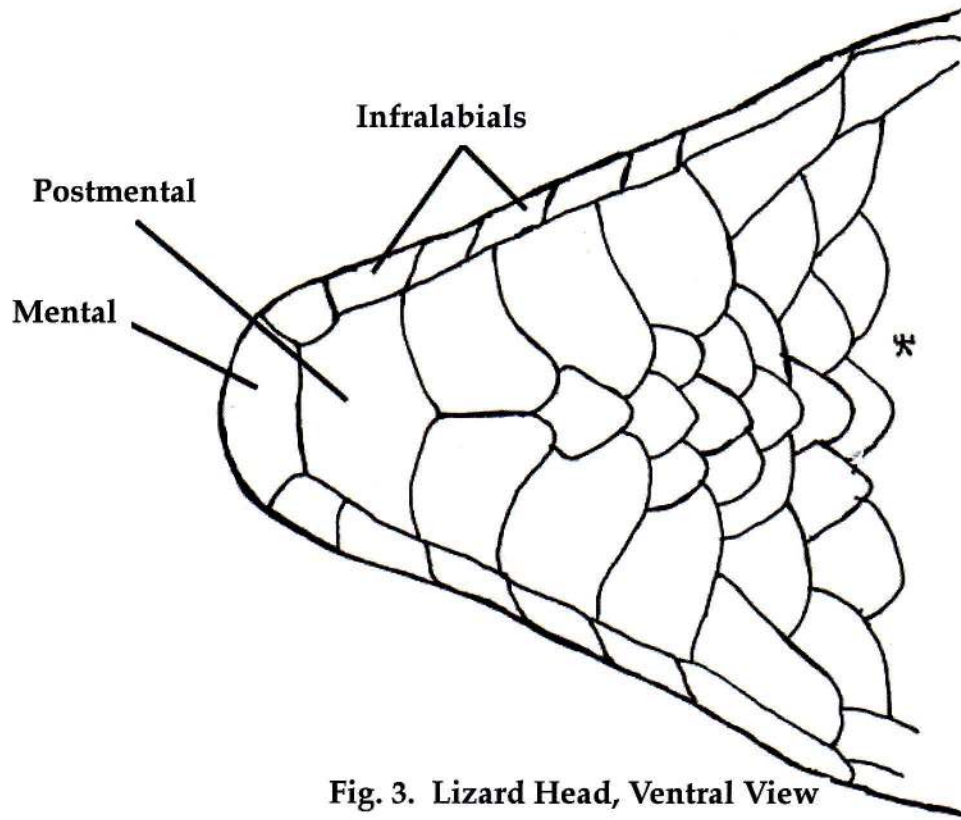


Fig. 2. Lizard Head, Dorsal View



**Fig. 3. Lizard Head, Ventral View**

# KEY TO THE LIZARDS OF THE UNIVERSITY OF MISSISSIPPI FIELD STATION

1. Snake-like, legless body.....  
SLENDER GLASS LIZARD (*Ophisaurus attenuatus*)

Scales not smooth or shiny; many scales obviously smaller than others; keels present (Fig. 5) or absent .. 7

Body not snake-like, fore and hind legs present ..... 2

2. Scales smooth, lacking keels (Fig. 4), and similar in size dorsally and ventrally; overall body appearance shiny ..... 3

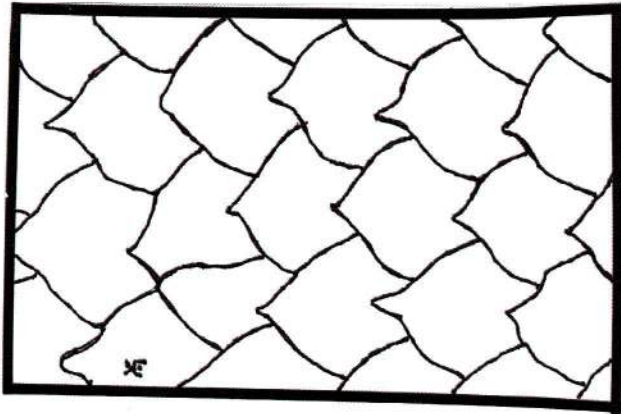


Fig. 4 Scales Smooth

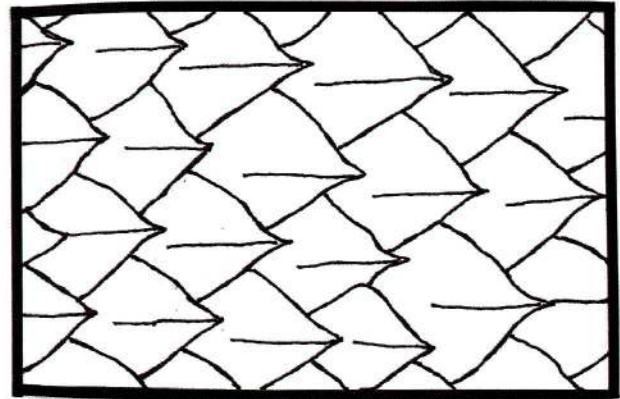


Fig. 5 Scales with Keels

3. Supranasal scales absent (Fig. 6)

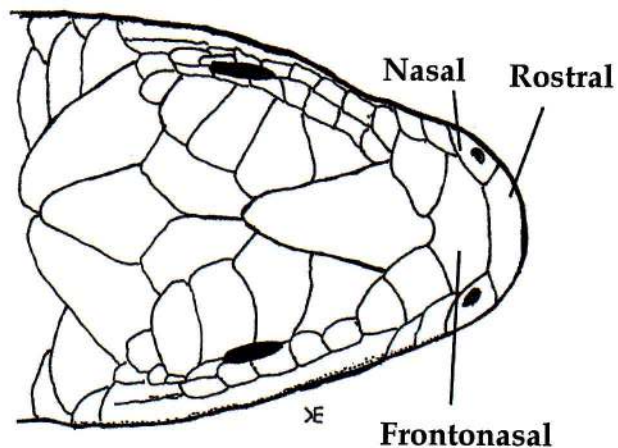


Fig. 6 Supranasal scales absent

lower eyelid with a transparent scale (Fig. 7) LITTLE BROWN SKINK (*Scincella lateralis*)

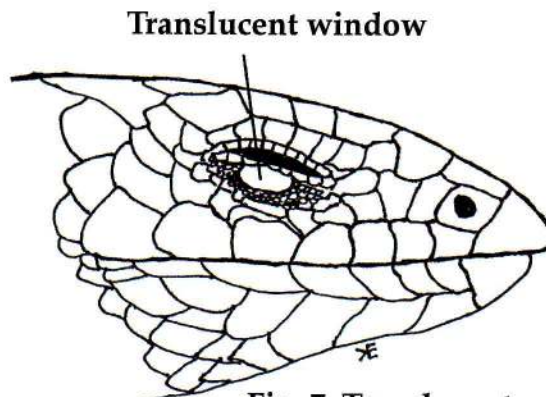


Fig. 7 Translucent window scale

Supranasal scales present (Fig. 8); lower eyelid lacking transparent scale ..... 4

4. Middle row of subcaudal scales only slightly wider than adjacent scales (Fig.9).....  
 SOUTHEASTERN FIVE-LINED SKINK (*Plestiodon inexpectatus*)

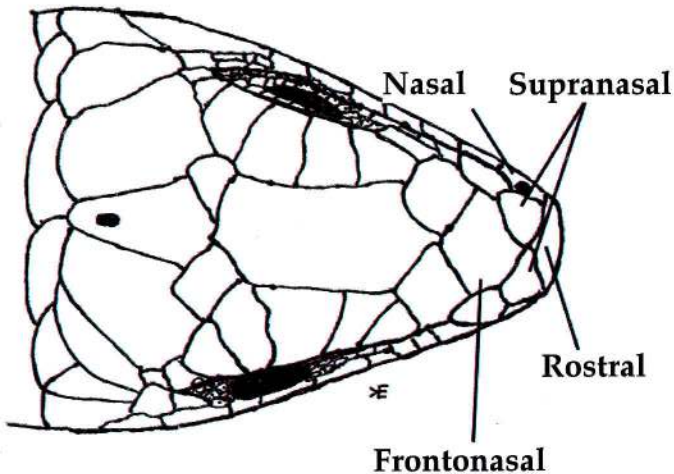


Fig. 8 Supranasal scales present

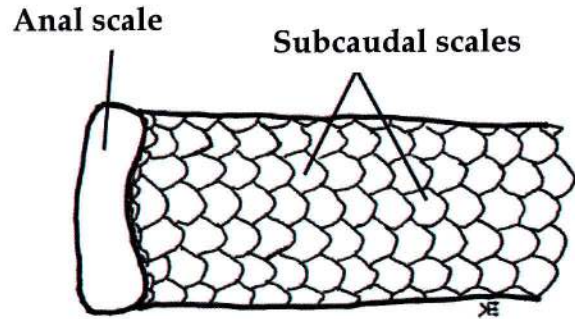
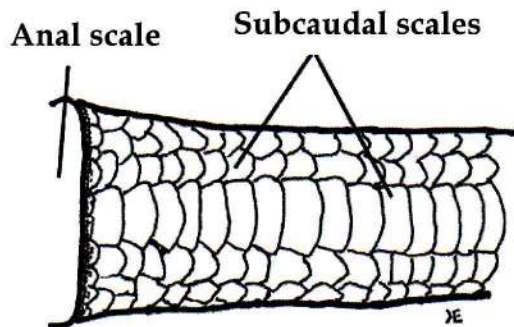


Fig. 9 Median subcaudals not conspicuously wider than adjacent scales

Middle row of subcaudal scales conspicuously wider than adjacent scales (Fig. 10)..... 5

5. Four light stripes but no mid-dorsal stripes; prominent lateral dark stripe along each side of the body and outlined by one of the light stripes; lower light stripe running from the lip line well onto the tail; tail tip not blue.....  
 ..... COAL SKINK (*Plestiodon anthracinus*)



**Fig. 10 Median subcaudals conspicuously wider than adjacent scales**

Five vague to prominent light stripes, one of which is mid-dorsal; tail tips blue except in older individuals (Old individuals may be almost unicolored and lack stripes; old males may have reddish or orange heads; tail tips usually blue..... 6

6. Typically four labial scales between nasal and subocular scales (Fig. 11); usually two large postlabial scales between last labial and ear opening (Fig 11); scale rows around the mid- body usually 26- 30.....  
 ..... FIVE-LINED SKINK (*Plestiodon fasciatus*)

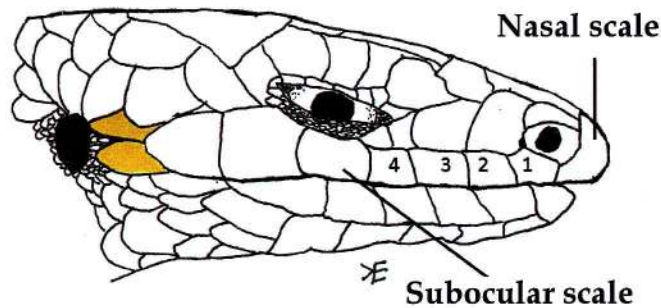


Fig. 11 Supralabials ( 1-4 ) and two postlabials ( shaded )

Usually five labial scales between nasal and subocular scales (Fig. 12); Postlabial scales between last labial scale and the ear opening are tiny or absent (Fig. 12); scale rows around mid-body 30-32. ....  
 ..... BROAD-HEADED SKINK (*Plestiodon laticeps*)

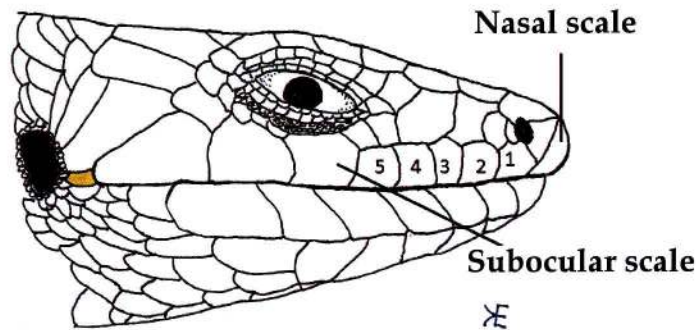
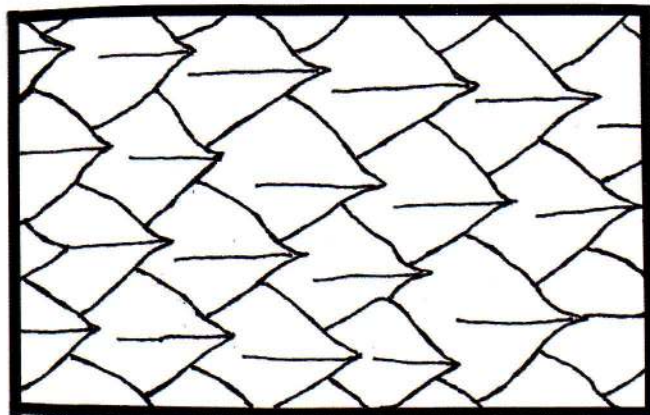


Fig. 12 Supralabials ( 1-5 ) and only one tiny postlabials ( shaded )

7. Dorsal surface with stripes .....  
..EASTERN SIX-LINED RACERUNNER (*Aspidoscelis  
sexlineatus*)

Dorsal surface without stripes ..... 8

8. Dorsal scales not tiny and with spiny keels (Fig. 13)



**Fig. 13 Dorsal Scales with keels**



toes lacking expanded pads (Fig. 14); never uniform green or brown dorsally.....  
EASTERN FENCE LIZARD (*Sceloporus undulatus*)

Dorsal scales tiny and lacking spines; toes with expanded pads (Fig. 15); Uniform green or brown dorsal coloration typical of this lizard's ability to change color quickly..... GREEN ANOLE (*Anolis carolinensis*)



Fig. 14 Toes not expanded into pads

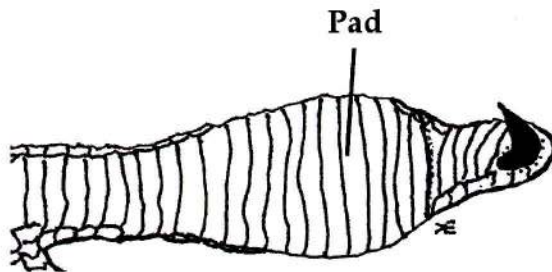


Fig. 15 Toe with expanded pad

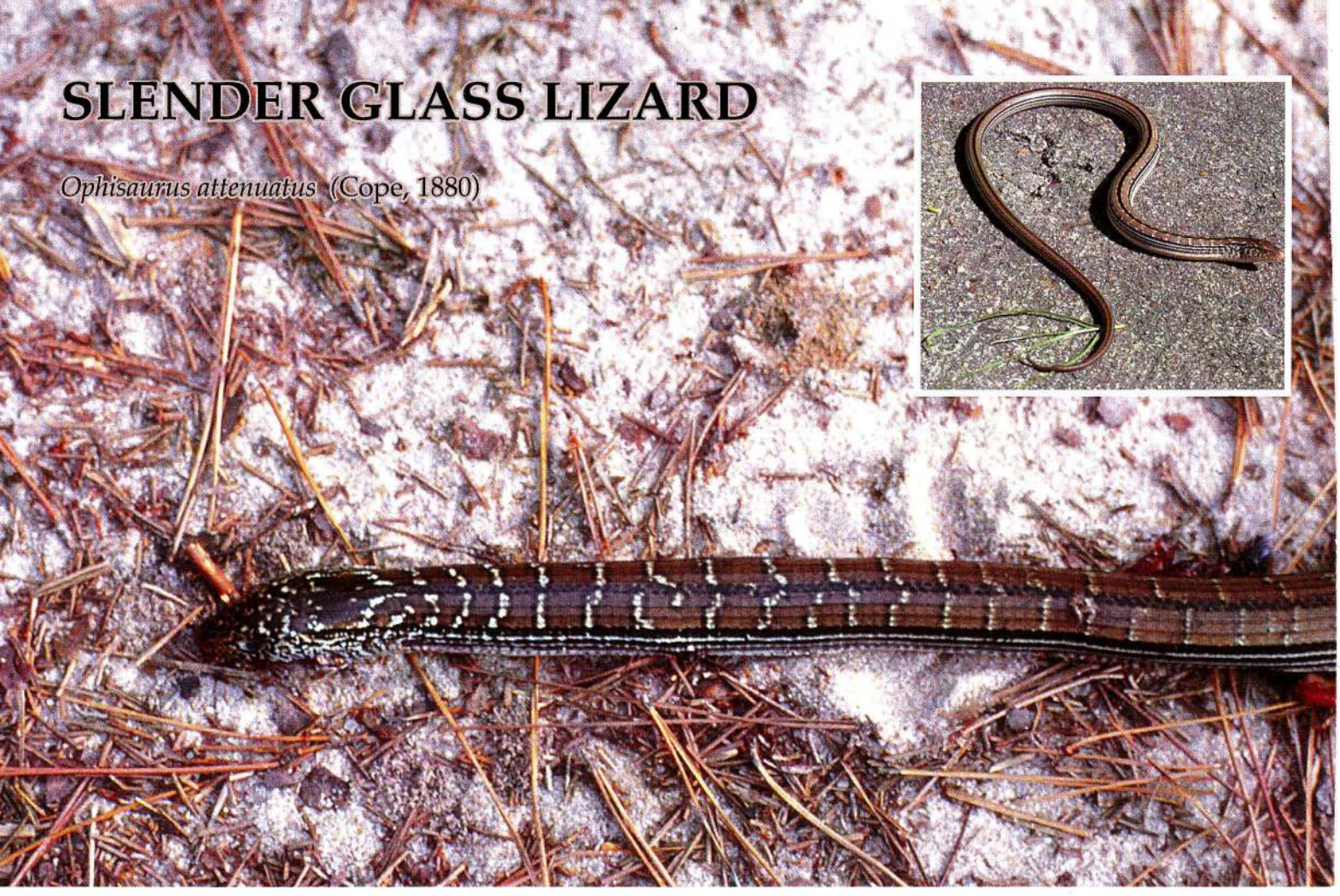


# SPECIES ACCOUNTS

The following species accounts provide essential information for identification of the lizard species of this area. They also include comments on species nomenclature, habitats, general biology, natural history, and other items of likely interest to users. The species accounts are intended only to provide introductory information. Those seeking more detailed information should check out the "Recommended Sources on Lizards" listed near the end of this booklet. Several will be available at area bookstores and others at local and regional libraries.

# SLENDER GLASS LIZARD

*Ophisaurus attenuatus* (Cope, 1880)



## Identification

Mississippi has three legless lizard species but only one species is known from the field station and Lafayette County. Basically, this lizard looks snake-like although its body movements are not smooth and flowing as those of snakes. These lizards range in background color from golden tan to bronze and they have a mid-dorsal dark stripe extending from near the head and fading near the tail. There is an obvious lateral fold running along each side of the body and a dark stripe below the fold. The ventral surfaces of the belly and tail are cream or white in color. Glass lizards can blink their eyes while snake eyelids are fused over the eye, transparent, and immobile. Glass lizards also have ear openings which snakes do not have.

## Similar species

There are no other legless lizards in north Mississippi.

## Taxonomic comments

The geographic race (subspecies) found in this area is *Ophisaurus attenuatus longicaudus* McConkey, 1952, the EASTERN SLENDER GLASS LIZARD. These lizards are in the Family Anguidae Gray, 1825.

## General Comments

This is a lizard with a preference for dry sandy soils. While these lizards can and do burrow, they are likely to conceal themselves among log debris or piles of dry vegetation. They feed heavily on grasshoppers and other insects, snails, spiders, and even hatchling lizards of other species. Predators include fire ants, snakes, birds of prey, and predatory mammals. Courtship, mating, and egg deposition occur in the spring. Four to 15 or more eggs are deposited and females typically remain with the nest. Hatching usually occurs about two months after egg deposition. Construction of human habitations on sand ridges have resulted in the elimination of numerous local populations of glass lizards. Thirty-five years ago, these lizards were common on the sandy ridge of the author's subdivision. The subdivision has since expanded to occupy the entire sandy ridge and the lizards now appear to have been eliminated from this particular area. There is also some evidence that fire ants are entering glass lizard nest sites and consuming the eggs.

# GREEN ANOLE

*Anolis carolinensis* (Voigt, 1832)



## Identification

This is a lizard which can rapidly change color. It is sometimes erroneously referred to as a chameleon. Dorsal colors can be green or brown and various shades in between. They may even be mottled with various shades of brown and green. A white stripe lies on each side of the lip below the eye. The head is wedge-shaped with keeled scales. Dorsal and ventral scales are keeled and the ventral scales are slightly larger. Several toe tips on each foot are slightly expanded and covered with thin plates called "lamellae." Females usually have a light stripe running down the middle of the back. The belly is white or cream. Adult males have a prominent reddish throat extension called a "dewlap."

## Similar species

No other area lizards resemble anoles.

## Taxonomic comments

The geographic race (subspecies) found in this area is the NORTHERN GREEN ANOLE, *Anolis carolinensis carolinensis* (Voigt, 1832). Many authorities place these lizards in the Family Iguanidae Oppel, 1811 while others consider them to be in the Family Dactyloidae Fitzinger, 1843.

## General Comments

This is a harmless, diurnal lizard with a preference for heavily vegetated, sun-exposed, forest edges. They are excellent climbers and easily run up and down trees and along fences. Whether dry or moist, the edges of pine, pine-mixed hardwood and pine forests are all desirable habitats. These lizards often conceal themselves under loose bark or beneath or within piles of loose, rotting vegetation. They sometimes inhabit cracks and crevices within wooden sheds and brick buildings. Their diet leans heavily toward insects (particularly flying insects and caterpillars, scorpions, and spiders.) They are even known to lick flower nectar and to be attracted to sweet juices. The outer layer of the epidermis is shed several times yearly and individuals typically eat that which is cast off. Predators include large spiders, snakes, larger lizards, predaceous birds, and domestic or feral cats. Courtship and mating begins in late March. During this time, males may engage in combat-like rituals with other males. Females usually lay one or two eggs per week in shallow depressions which they cover with debris. The young hatch in about 6 or 7 weeks and hatchlings can be found from very late July into September.

# EASTERN FENCE LIZARD

*Sceloporus undulatus* (Bosc and Daudin in Sonnini and Latreille, 1801)





## Identification

These are moderately large, grey to grey-brown lizards, with prominent scales that are ridged with sharp spin-like keels. Their skin is very rough to the human touch. The sides of the bellies of adult males are a prominent blue with black borders, while adult females also have bluish bellies but considerably lighter and less prominent. Dark, usually poorly defined, transverse bars undulate across the dorsum. These bars are usually vaguely edged with white. The undersurface of the throat is dark except along the cream-colored lip lines. The throat is dark blue in adult males and light blue in some females, white in others.

## Similar species

No other area lizards resemble Eastern Fence Lizards.

## Taxonomic comments

Some authorities consider the local subspecies to be the Northern Fence Lizard, *Sceloporus undulatus hyacinthinus* (Green) while others recognize no geographic races for this species. Further, some authorities consider this species to be in the Family Iguanidae *Oppel*, 1811 while others relegate it to the Family Phrynosomatidae *Fitzinger*, 1843. Obviously this group needs more investigation.

## General Comments

This is a harmless, diurnal lizard with a decided preference for sun-exposed, forest edges particularly along hillsides. They do well in yards with wood piles and around old wooden buildings. As with most lizards, they are excellent and fast climbers. These lizards usually seek concealment under rotting bark or logs or in woodpiles. They sometimes inhabit cracks within the boards of wooden sheds. Their diet leans heavily on grasshoppers and other insects, millipedes, and spiders. These lizards remain motionless and usually wait for prey to come close enough for a quick, lunge-like capture. Predators include snakes, birds, and mammals, particularly house cats. Courtship and mating begins in March and may continue into the spring. During this time, males may engage in combat-like rituals with other males. Females usually lay 4 to 15 or more eggs in nest holes up to 4 inches deep in loose soil or humus. The young hatch in about 6 or 7 weeks and hatchlings can be found from very late July into October. The hatchlings resemble the adults.

# COAL SKINK

*Plestiodon anthracinus* (Baird, 1850)



## Identification

This is a smooth and shiny-scaled lizard with a 2 ½ scale row wide, dark lateral stripe bordered above and below by light stripes. The stripes extend onto the tail base. There is no light stripe on top of the head or down the middle of the back. There is only one postmental scale and the ventral surface is dark. Males and females are similar in coloration except during the breeding season when the heads and lips of adult males turn orange-red.

## Similar species

Adult Coal Skinks are usually easy to recognize. They have 4 not 5 light lines with no line in the mid-back region. Hatchling Coal Skinks have dark blue tails as do hatchling and older Five-Lined and Broad-headed Skinks. This makes very young Coal Skinks easily confused with hatchlings of the other skink species. The presence of a single postmental as opposed to two in the other species may be helpful. As these species reach maturity, identification becomes easier.

## Taxonomic comments

The subspecies found in our area is the SOUTHERN COAL SKINK, *Plestiodon anthracinus pluvialis* Cope, 1880. This species is in the Family Scincidae Gray, 1825. These lizards were previously in the genus *Eumeces* Wiegmann.

## General Comments

Our local Coal Skinks are found primarily within habitats characterized by sandy soils. Forest edges immediately bordering sites with forbs and grasses complexes are preferred. Their prey includes insects and a variety of other small invertebrates. Predators include snakes, birds, and domestic cats. Loss of their tails and escape under objects or below ground are the main defense against predators. Courtship and mating is in late winter and about 4 to 10 eggs are deposited in late April or June. The female tends the nest until the young hatch in about 5 weeks after deposition. Hatchlings are almost black with dark blue or black tails and many have red patches on the head. These skinks are moderately common at the field station but are apparently absent from many nearby localities which appear to provide ideal habitats. Area Coal Skink populations are undoubtedly being adversely affected by the rapid growth of human populations and the resulting conversion of wooded sandy ridges into vast numbers of homes, condominiums, and buildings. Fire ants may be disastrous to their nests.

# COMMON FIVE-LINED SKINK

*Plestiodon fasciatus* (Linnaeus, 1758)



## Identification

This is a shiny-scaled lizard with five light lines extending from the rear of the head, over the body and onto the tail base. Hatchlings, juveniles, and young adults usually have blue tail tips but this color fades in older specimens. Most individuals have four supralabial scales anterior to the subocular scale and two large postlabial scales. Also, counting from the mid-dorsal row, this is the only skink in this area in which the third scale row is included in the dorsal-lateral stripe. Sexually mature individuals may only have vague indications of stripes. Mature males have reddish-orange heads during the breeding season and their body color becomes mostly olive or olive-brown.

## Similar species

The Common Five-lined Skink differs from the Southeastern Five-lined Skink in having the median row of subcaudal scales conspicuously wider than the adjacent rows (Fig. 10, p. 22). The species differs from the Broad-headed Skink in being smaller and usually having only 4 supralabial scales and two large postlabials (Fig. 11, p. 23). It differs from the Coal Skink in having a light, mid-dorsal stripe. Common Five-lined Skinks differ from Little Brown Skinks in having a light mid-dorsal stripe, two supranasal scales (Fig. 8, p. 21), and a lower eyelid that has no transparent window.

## Taxonomic comments

No subspecies are presently recognized. This species is in the Family Scincidae Gray, 1825. These skinks were formerly in the genus *Eumeces* Wiegmann.

## General Comments

Common Five-lined Skinks occur in a variety of habitats. While they are most commonly found along the sun-exposed margins of pine and pine-mixed hardwood forests, they are often associated with small forest clearings opened by fallen trees. It is not rare to find these skinks even within heavily shaded areas of forest canopy. Individuals also take up residence in wood piles and older wooden buildings and can be common in residential subdivisions. Spiders, insects, and other small invertebrates are the major prey. Snakes, birds, and certain mammals (e.g. domestic cats) are major predators. Courtship and mating take place in April and early May. Two to 16 or more eggs are laid. The female remains near the nest and will occasionally rotate the eggs which incubate one or two months before hatching. Hatchlings look very much like young adults.

# SOUTHEASTERN FIVE-LINED SKINK

*Plestiodon inexpectatus* (Taylor, 1932)



## Identification

This is a smooth, shiny-scaled lizard with 5 light lines extending from the head, over the body and onto the tail base. Hatchlings, juveniles, and young adults usually have blue tail tips but this color may not be evident in older specimens. The middle row of scales under the tail base is the same width or only slightly wider than the scales in adjacent rows. The dorsolateral light lines are on rows 4 or 4 and 5 and do not involve the 3rd row (counting from the mid-back). The head is small. Colors of adult males fade with age and the head becomes orange during the breeding season. Adult females retain their stripes.

## Similar species

Southeastern Five-lined Skinks differ from Common Five-lined Skinks in having the median row of subcaudal scales either the same size or slightly larger than the scales in adjacent rows (See p.21, Fig. 9). They differ from Broad-headed Skinks in being smaller and in having the median row of subcaudal scales either the same size or slightly larger than the scales in adjacent rows. The Southeastern Five-lined Skinks differ from Coal Skinks and Little Brown Skinks in having a median white dorsal stripe.

## Taxonomic comments

No subspecies are presently recognized. This species is in the Family Scincidae Gray, 1825. These skinks were recently classified in the genus *Eumeces* Wiegmann.

## General Comments

Southeastern Five-lined Skinks are most commonly found along the sun-exposed margins of pine and/or pine-mixed hardwood forests. They are not likely to be found under deep-shaded canopy or in small clearings within dense forest. Individuals are usually associated with rotting logs and there may be a preference for sandy hillsides. Spiders, insects, and other small invertebrates are the major prey. Snakes, birds, and certain mammals (e.g. feral & domestic cats) are the major predators. Little is known about courtship and mating which occurs in late March or in April. Soon after mating, 4 to 9 or more eggs are deposited in rotting logs or stumps. The eggs usually hatch 4 to 6 after egg deposition. The hatchlings look very much like adults but the tails are very bright blue or purple and the colors are often darker.

# BROAD-HEADED SKINK

*Plestiodon laticeps* (Schneider, 1801)





## Identification

This is the largest of the smooth, shiny scaled, five-lined skinks. Except for older specimens, this lizard has 5 light lines extending from the rear of the head, over the body and onto the tail base. Hatchlings, juveniles, and young adults have blue tail tips but this color may not be evident in older specimens. The middle row of scales under the tail base is conspicuously wider than the scales in adjacent rows. The dorsolateral light lines are very narrow and usually on the 5th scale row only or the 5th and lower part of the 4th. The head is very large, particularly in adult males. Colors of adult males fade with age, the stripes are lost and the head becomes vivid orange during the breeding season. Adult females retain the stripes. These skinks typically have 5 supralabial scales anterior to the subocular and either one very small or no postlabials.

## Similar species

Broad-headed Skinks differ from Common Five-lined Skinks in being larger and having 5 supralabial scales anterior to the subocular and either none or one very small postlabial scale (p. 23, Fig. 12). The species differs from Coal Skinks and Little Brown Skinks in having a mid-dorsal white stripe. Broad-headed Skinks can be distinguished from Southeastern Five-lined Skinks in being larger and having the median row of caudal scales conspicuously wider than the rows on either side (p. 22, Fig. 10).

## Taxonomic comments

No subspecies are presently recognized. This species is in the Family Scincidae Gray, 1825. Until recently, these skinks were in the genus *Eumeces* Wiegmann.

## General Comments

Broad-headed Skinks are usually associated with open areas of pine-mixed hardwood or mixed hardwood forests. They are much more arboreal and secretive than other area skinks and, perhaps because of this, usually a less conspicuous component of an area's fauna. They are frequently found on or near upright, dead trees with obvious cavities and/or loose bark. These skinks eat many invertebrates and will often forage in woodland debris for their prey. They are also known to eat other lizards, small mammals, and the berries of many plants. Snakes, birds, and mammals, particularly house cats, are their major predators. Courtship and mating takes place from late March into early May. Males may fight over territory and females during the breeding season. Five or more eggs are deposited in dead tree cavities or in rotting logs at ground level. The female remains with the nest both for protection and turning the eggs. The eggs hatch in one to two months, probably depending upon temperature. The young are vividly striped with bright blue tails as in young adults

# LITTLE BROWN SKINK

*Scincella lateralis* (Say in James, 1823)



## Identification

This is the smallest of the smooth scaled skinks. It varies from medium to very dark brown in color and has a wide, darker, dorsolateral stripe. In very dark skinks, the stripe may blend in with the ground color. This lizard has no light stripes. The rostral scale touches the nasal scale laterally and the frontonasal dorsally. This is the only local skink that lacks supranasal scales. The belly is white or cream. Each lower eyelid has a transparent window that permits the lizard some vision with the eyelids closed.

## Similar species

The absence of light colored dorsal stripes and supranasal scales plus the presence of a transparent window in the eyelid will separate this lizard from the other skinks.

## Taxonomic comments

No subspecies are presently recognized. This species is in the Family Scincidae *Gray, 1825*.

## General Comments

Little Brown Skinks have been referred to as "Ground Skinks" by some authorities. These diurnal skinks are somewhat cold tolerant as they may be active during all months of the year. They can be found within pine and pine/mixed

hardwood forests and within forbs and grasses complexes. They are common around homes in municipalities. Brown Skinks forage within leaf litter and rarely climb. They may enter water on their own initiative or as a means to escape predators. They swim well and will even dive and remain a short time under water. The main prey are insect larvae and adults, millipedes, centipedes, and earthworms. Large lizards, snakes, litter-searching birds, and domestic cats are the main predators. Courtship and mating occurs as the weather warms up in early spring. Females lay only 2 or 3 eggs at a time usually within a rotting log or under loose bark. They sometimes deposit eggs in loose sand or soil. Females may lay several clutches a year and they do not remain with the nests. Sometimes more than one female will deposit eggs at a given nest site. The nesting season is from June into August with most of the young hatching in late July and August. The young resemble the adults.

# SIX-LINED RACERUNNER

*Aspidozelis sexlineatus* (Linnaeus, 1766)



## Identification

This is a stream-lined, fast moving lizard with six yellowish dorsal stripes extending from the head and body onto the tail. Darker areas between the stripes are greenish-brown, brown, black, or combination of these colors. The scales appear granular dorsally. The belly is white in juveniles and females and partly blue-green in males. The belly scales are rectangular and in 8 parallel rows.

## Similar species

No other area lizard has six dorsal stripes and quadrangular belly scales in more or less even rows.

## Taxonomic comments

Three subspecies are currently recognized. The one at the field station is *Aspidoscelis sexlineatus sexlineatus* (Linnaeus, 1776), the Eastern Six-lined Racerunner. There is some disagreement in the literature on the spelling. Some authorities refer to this taxon as *Aspidoscelis sexlineata sexlineata*. These lizards are in the Family Teiidae Gray, 1827 and were, until recently, in the genus *Cnemidophorus* Wagler.

## General Comments

These are medium-sized, ground-dwelling, exceptionally fast moving lizards. They are common on the sun-exposed

margins of wooded hillsides and along the peripheries of fields and gravel and dirt roads. Softer, sandy soils seem to be preferred. They are sometimes called "whiptails" because of their long flexible tails. They are mostly active on very warm days and are often not found when temperatures drop even during mid-summer. They are among the first lizards to enter hibernation when chilly weather arrives. They forage widely in search of grasshoppers, caterpillars, and various insect larvae. Predators include glass lizards, snakes, birds, and domestic cats. Courtship and mating occur in April and May. Shortly thereafter, females deposit from 2 to 8 eggs in loose soil, leaf piles, and mats of rotting humus or sawdust. One authority noted their use of mole tunnels to lay eggs. Hatching takes place in August and

## LIZARD SPECIES MOST LIKELY TO BE ADDED TO THE UNIVERSITY OF MISSISSIPPI FIELD STATION FAUNA

Only one lizard species not occurring at the field station can be found in nearby Lafayette County. Keiser (1984) reported the presence of a breeding colony of the nocturnal Mediterranean Gecko, *Hemidactylus turcicus* (Linnaeus, 1758), in a residential area of Oxford, Mississippi. On a number of occasions since that time, these geckos have been found elsewhere in Oxford and on the Oxford campus of the University of Mississippi. Since this established lizard in our area is not known to occur at the field station, the identification key in this booklet does not include this species. However, it is easy to identify. It is a small, gray or pinkish-white lizard with a thin almost transparent skin. Tiny dark spots are usually scattered over the dorsum and sides. The skin has a warty appearance because of many small tubercles scattered over the body. The eyelids are trans-

parent and cover the eyes thus the lizard cannot blink. Males vocalize by emitting a peep. This lizard is primarily nocturnal and it usually is found on homes and buildings that are well enough lighted to attract flying insects.

There are known instances of these geckoes, probably by chance, moving to other localities by hitching rides in cars and trucks. Vehicular traffic occurs almost daily between the University campus and the field station, thus there is the possibility that these lizards may eventually find their way to the field station if they are not there already. Night searches, particularly around lighted buildings, have been made at the field station. These lizards have, as yet, not been found.

This lizard is native to southern Europe, the Mediterranean, and the Red Sea countries. In recent years, colonies have become established in many parts of the southern United States.



Photo by Tom Mann

## AMERICAN ALLIGATORS AT THE UNIVERSITY OF MISSISSIPPI FIELD STATION

The American Alligator (*Alligator mississippiensis*) is common resident of many Mississippi rivers, swamps, marshes, canals, bayous, and lakes. Does this species occur within the lands of the University of Mississippi Field Station?

Prior to 1985, when the field station lands and ponds were devoted to commercial minnow farming, there were reported sightings of small alligators in the site's ponds and in the drainage swamp lying on either side of immediately adjacent County Road 235. Rumors at that time were that biologists of the state wildlife agency had released young alligators on the lands as an attempt to encourage recovery of a then-threatened Mississippi population. At that time, this author made casual attempts to see if the rumors were true but state authorities denied any official release of alligators on these lands. On the other hand, intentional

or accidental release by individuals could not be ruled out.

At the time the University of Mississippi acquired the former minnow farm for developing a field station (1985), most of the ponds on the lands were maintained full of water and many were covered with thick mats of water hyacinths.

After the acquisition of these lands by the University of Mississippi, ever so often someone would mention seeing an alligator at the field station. No reports were verified by the capture of a specimen and no photographs of field station alligators are known to exist. The most recent and perhaps the most reliable sighting was by a University of Mississippi graduate student in the spring of 1997. This student had experience with alligators and field identifications of reptiles.

While uncommon, alligators today occur in the Little Tallahatchee River and its swamplands a



few miles north of the field station. I am aware of four confirmed sightings within the Lafayette County part of the Little Tallahatchee River basin between 2008 and 2010. Hunters have also mentioned the presence of alligators at Springdale Wildlife Management Area in Lafayette County south of Oxford.

As a field biologist, I am always skeptical about hearsay sightings. Despite spending many nights searching for animals along the shorelines of field station ponds, I have never once spotted an alliga-

tor or the eye shine of an alligator. On the other hand, alligators definitely occur within Lafayette County and the appearance of an occasional juvenile in station ponds is possible.

Thus there are two questions to answer on field station alligators. Were there alligators at the station in 1997 and previously? The answer is most likely. Are there small alligators still present for brief periods of time at the field station? Not likely is my guess.



# GLOSSARY OF TERMS AND ABBREVIATIONS

Adult	A animal that is sexually mature.
Anterior	Toward the head end of the body.
Anal scale	Scale over cloacal opening (See Figs. 9, 10).
Cloaca	The common chamber into which the digestive, excretory, and reproductive ducts discharge their contents.
Clutch	Eggs deposited at one time by one female.
Diurnal	Active during daylight hours
Dorsal	Refers to the back region.
Dorsum	The back. (Dorsa = plural)
Ectotherm	Term applied to animals whose body temperatures are determined by the environment and the animals response to the environment. Sometimes called "cold-blooded."

Family	A taxon (group) that contains two or more genera.
Femoral pores	Integumentary glands which secrete and appear as small bumps on the femoral portions of some lizard legs. These pores are usually better developed in males than in females. The glands are more active during breeding seasons.
Genus	A taxon that contains one or more species.
Hatchling	A recently-hatched individual
Infralabials	Scales that line the lower lips (See Figs 1, 3)
Juvenile	A young animal that is not sexually mature.
Keels	Ridges down the center of epidermal scales (See Figs. 5, 13)
Lamella	A very thin plate-like scale (See expanded toe pads, Fig. 15)
Lateral	Toward the side.
Mid-dorsal	The mid-back region.

Mid-ventral	The mid-belly region.
Nocturnal	Active during night hours
Oviparous	A form of reproduction in which the young are encased in egg shells and deposited in a nest site.
Posterior	Toward the rear of the body.
Postlabials	Scales between the last supralabial scale and the ear opening (See Fig 11)
Postmental scale	Scale posterior to mental scale (See Fig. 3)
Scute	A large, flat scale.
Scutellation	A term referring to the scales of lizards and/or alligators.
Subocular scale	The most anterior supralabial scale that contacts scales underneath eye (See Figs 11, 12). May also refer to all small scales under the eye.
Subspecies	A distinct population, usually geographic, within a species.

Supralabials	Scales bordering the upper lip (See Figs. 1, 11, 12).
Supranasal	Scales between nasal scale and frontonasal (Figs. 2, 8).
UMFS	Abbreviation for the University of Mississippi Field Station.
Taxonomy	The naming and classification of organisms according to scientifically accepted rules and guidelines.
Ventral	Refers to the belly region.
Venter	The belly.

# RECOMMENDED SOURCES ON LIZARDS

Bartlett, R. D. and Patricia P. Bartlett. 2009. Guide and Reference to the Turtles and Lizards of Western North America (North of Mexico). University Press of Florida, Gainesville. 314 pp.

*[A well-illustrated guide to lizards of western North America.]*

Bogert, Charles M. And Rafael Martin Del Campo. 1950. The Gila Monster and its Allies. Bulletin of the American Museum of Natural History. Vol. 109: Articles 1. 242 pp.

*[Probably the best source for detailed information on the world's only venomous lizards.]*

Conant, Roger and Joseph T. Collins. 1998. A Field Guide to Reptiles & Amphibians, 3rd Ed. Eastern and Central North America. Peterson Field Guides, Houghton Mifflin Co., Boston and New York. 616 pp.

*[This is an excellent field guide to the identification of the eastern U.S. amphibians, and reptiles. It is available in most bookstores.]*

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*[An older and highly technical but detailed source on relationships of the lizard families.]*

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*[For those becoming initially familiar with lizards, this is by far the best source available. The book applies only to southern U.S. lizards and crocodilians and it is superbly illustrated and easy to comprehend.]*

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EDK

# Field Station

## *Our Mission:*

*To advance ecosystem stewardship by providing a natural laboratory for research, education, and service.*

The University of Mississippi Field Station is a 740-acre educational and research facility located approximately 11 miles from the UM campus in Oxford.

More than 200 spring-fed ponds and mesocosms and over 90 acres of diverse types of natural and constructed wetlands make the Field Station one of the foremost facilities of its kind in the world. This diverse, species-rich environment offers extraordinary opportunities for scientific training, educational outreach, and basic and applied research across an extensive range of disciplines.

