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VOLUME XXIX

# MARYLAND NATURALIST

Nos. 1 — 4

1959



The Natural History Society of Maryland





THE MARYLAND  
NATURALIST

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EDITORIAL STAFF: John E. Cooper (Editor), Haven Kolb and Herbert C. Moore (Associate Editors).

COVER: A sure sign of spring in Maryland is the strange voice of the male Fowler's toad, *Bufo woodhousi fowleri*, emanating from ponds and swamps throughout the state. This specimen was photographed at Massey, Kent County, by Dr. Robert S. Simmons.

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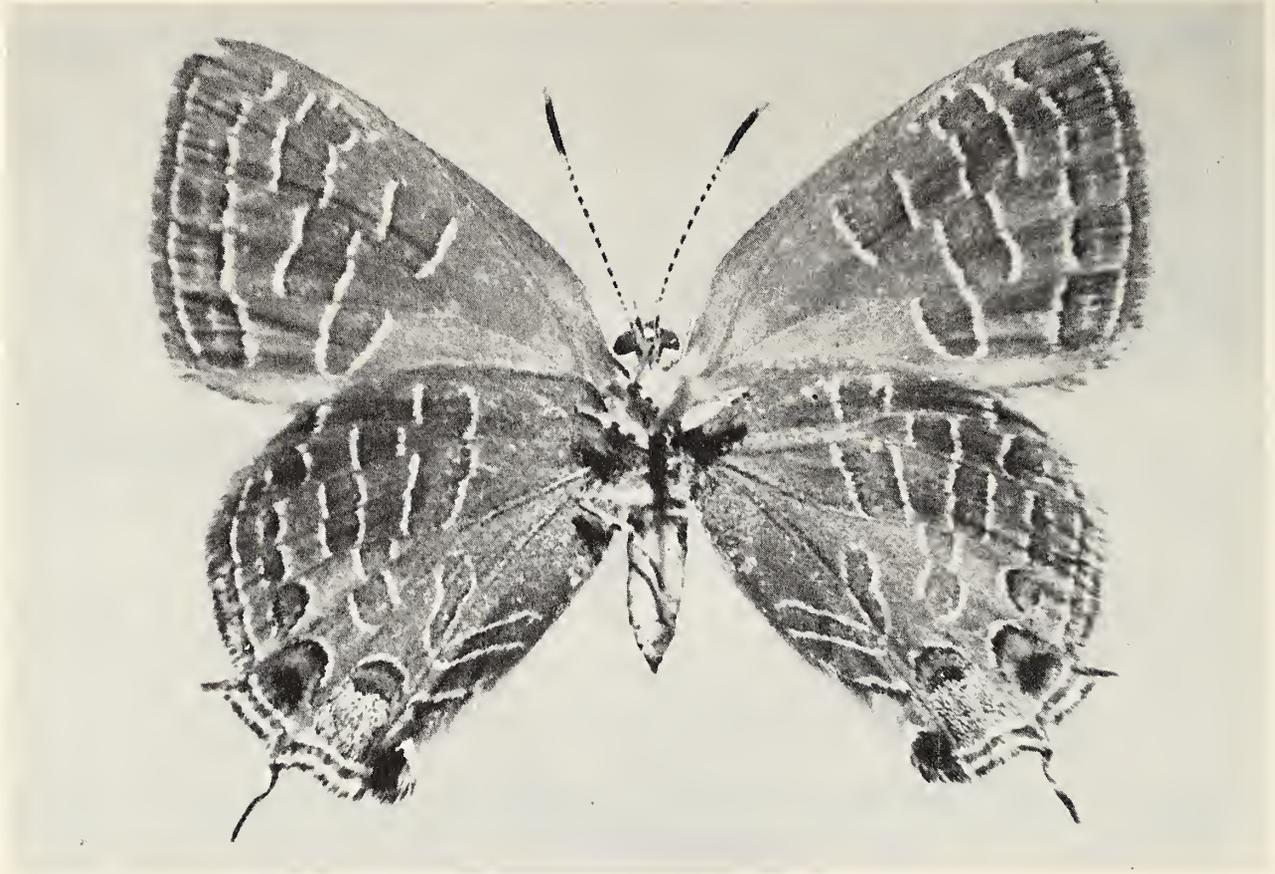


Figure 1. *Strymon liparops strigosus*, X4. Female venter; forewing length 14 mm. Near Odenton, Anne Arundel Co., Md., July 7, 1950.



Figure 2. *Feniseca tarquinius tarquinius*, X4. Dorsum; forewing length 15 mm. Near Fort Meade, Anne Arundel Co., Md., August 7, 1950. Black areas extensive, with reduction in orange; black submarginal spots of hindwing especially extensive or fused.

# NEW STATE AND COUNTY BUTTERFLY RECORDS FOR MARYLAND<sup>1</sup>

by Robert S. Simmons<sup>2</sup>

On July 7, 1950, the author captured a single female *Strymon liparops strigosus* Harris near Odenton, Anne Arundel County, Maryland. The specimen was first observed playing about a small open area ten feet above the ground in heavy second growth composed primarily of Huckleberry, Virginia Creeper, Wild Cherry, Loblolly Pine, Scrub Oak and Honey Locust. The open area in which it was flying was the only sunny spot in the immediate vicinity. No flowers of any type were present; the capture was made at 1:00 PM. Daily investigation over a four-week period could yield no more. The forewing length was 14 mm. (see Figure 1).

This record constitutes the second reported find for the species in Maryland and establishes a new county record for this rare little butterfly. The first reported specimen was captured by Warren H. Wagner on Aster flowers near a bog at Hyattsville, Prince George's County on June 10, 1935; he reported it in *Entomological News* for November, 1941. The capture was first recorded several years prior to Wagner's publication by Austin H. Clark in a paper read to the Entomological Society of Washington, D. C. and consequently incorporated into the Minutes of the meeting, being published as such (1935, *Proc. Entom. Soc. Wash.*, Vol. 37, No. 8, November).

A field trip was made by Dr. William A. Andersen and the author to Allegany County, Maryland on July 26, 1955. Each of us captured a female *Strymon titus titus* Fabricius at the edge of a Hawthorn thicket bordering a small bog near Flintstone. Both specimens were flying about a small Wild Cherry tree. Their forewing lengths were 14 and 15 mm. (see Figures 5, 6, 7 and 8). Dr. Andersen and I also took a series of this subspecies at Wolf Swamp, Garrett County, on July 17, 1956.

Although *Strymon titus mopsus* Huebner is known from many localities in Maryland, these are the first records for its northern counterpart, *S. t. titus*

While checking Catoctin Ridge in Frederick County on April 28, 1955 for new forms, I was fortunate in finding a small colony of *Feniseca tarquinius* Fabricius near Foxville. Although five were observed, only two were captured. Both specimens were absolutely perfect replicas of the northern subspecies, *Feniseca tarquinius nova-scotiae* McDunnough (see Figures 3 and 4). Compared to a large series of the latter in the collection of Mr. Franklin H. Chermock they are inseparable. A captured male had a forewing length of 14 mm., a female 17 mm.

On May 12, 1955 while on a field trip with Dr. William A. Andersen to Allegany County, the author netted another *F. tarquinius* near Flintstone. This

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<sup>1</sup>Contributions to the knowledge of Maryland butterflies, No. 2. (Contribution No. 1 was: Notes On Ten New Butterfly Records For The State Of Maryland, *Lepidopterist's News*, Vol. 10, 157-159, May 8, 1957).

<sup>2</sup>Natural History Society of Maryland.

specimen, a male with forewing length of 16 mm., was, like the others from Catoctin, a perfect match for *F. t. nova-scotiae*. Mr. Chermock captured a series of this form in the mountains of West Virginia near Ice Mountain, Hampshire County, on April 27, 1957.

Whether or not one can justifiably call these specimens *nova-scotiae* is probably a matter for debate. Both localities were in the mountains where many northern forms extend their ranges quite a distance south. *F. t. nova-scotiae* is undoubtedly a temperature induced form. If so, then the ecological conditions in the mountains of Maryland, especially in the Spring, are probably similar to those in which *F. t. nova-scotiae* is typically found. On this basis, it is not so surprising to find a form paralleling *F. t. nova-scotiae* existing in the mountains of Maryland representing the Spring brood. These records constitute the first reported finding of this form in Maryland.

Summarized, the new records are:

<i>Strymon liparops strigosus</i>	Odenton, Anne Arundel Co.	July 7, 1950
<i>Strymon titus titus</i>	Flintstone, Allegany Co.	July 26, 1955
	Wolf Swamp, Garrett Co.	July 17, 1956
<i>Feniseca tarquinius</i> , form <i>nova-scotiae</i>	Foxville, Frederick Co.,	April 28, 1955
	Flintstone, Allegany Co.	May 12, 1955



Figure 3. *Feniseca tarquinius nova-scotiae*, X4. Dorsum of worn specimen; forewing length 17 mm. St. Johns, Newfoundland, June, 1929. Black areas very reduced, with extension of orange; black submarginal spots of hindwing especially reduced.



Figure 4. *Feniseca tarquinius*, form *nova-scotiae*, X4. Dorsum of fresh specimen; forewing length 17 mm. Foxville, Frederick Co., Md., April 28, 1955. Despite extensive individual variation in this species, Figures 3 and 4 are nearly identical and, without the data could be suspected of originating from the same locality.

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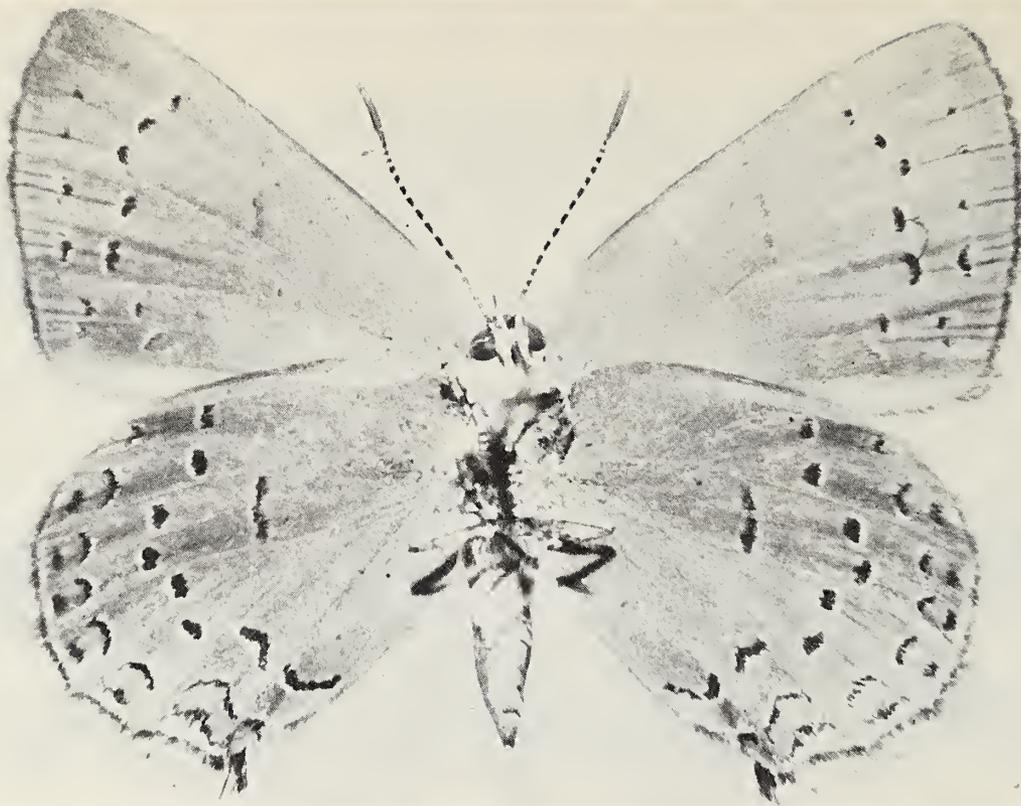


Figure 5. *Strymon titus titus*, X4. Female venter; forewing length 15 mm. Flintstone, Allegany Co., Md., July 26, 1955. Black spots on underside of hindwings ringed with pale brown and rings inconspicuous against ground.

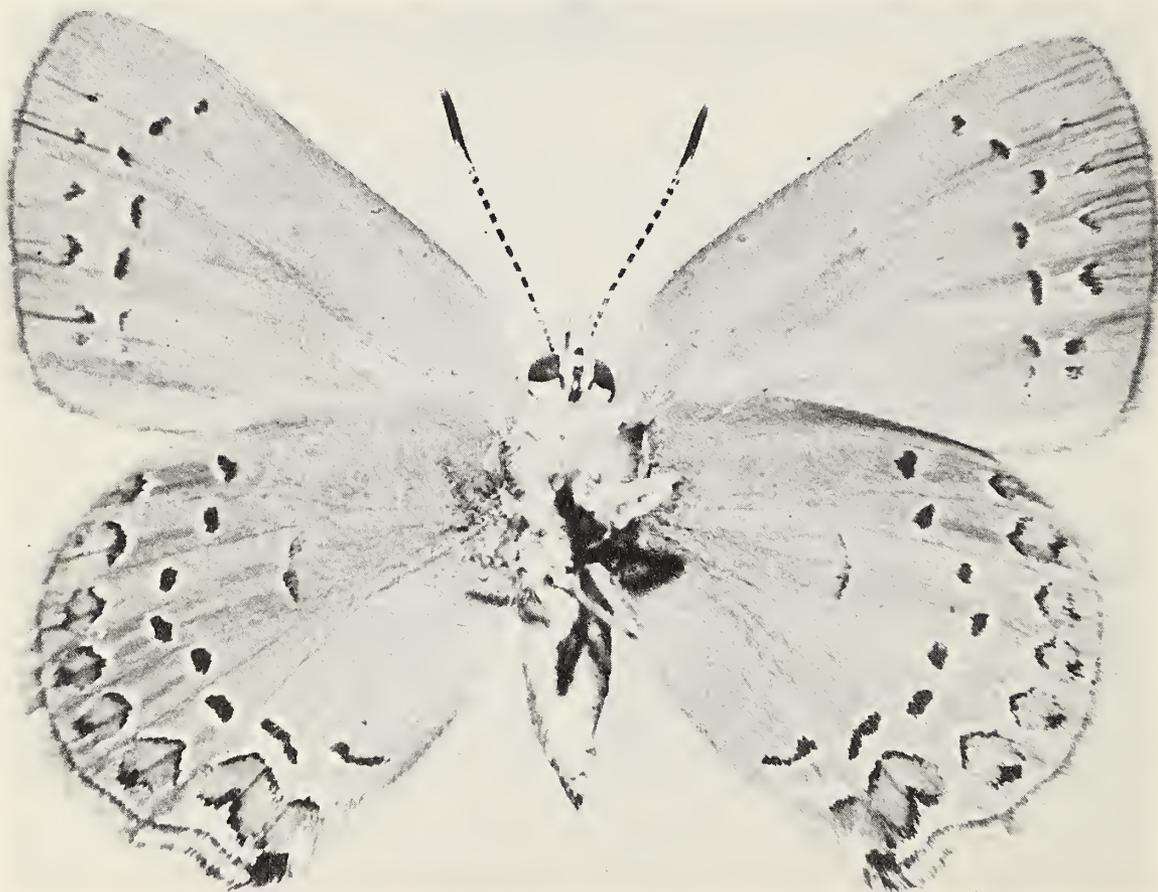


Figure 6. *Strymon titus mopsus*, X4. Female venter; forewing length 16 mm. Priest Bridge, Anne Arundel Co., Md., June 30, 1955. Black spots on underside of hindwings conspicuously ringed with white against ground color.

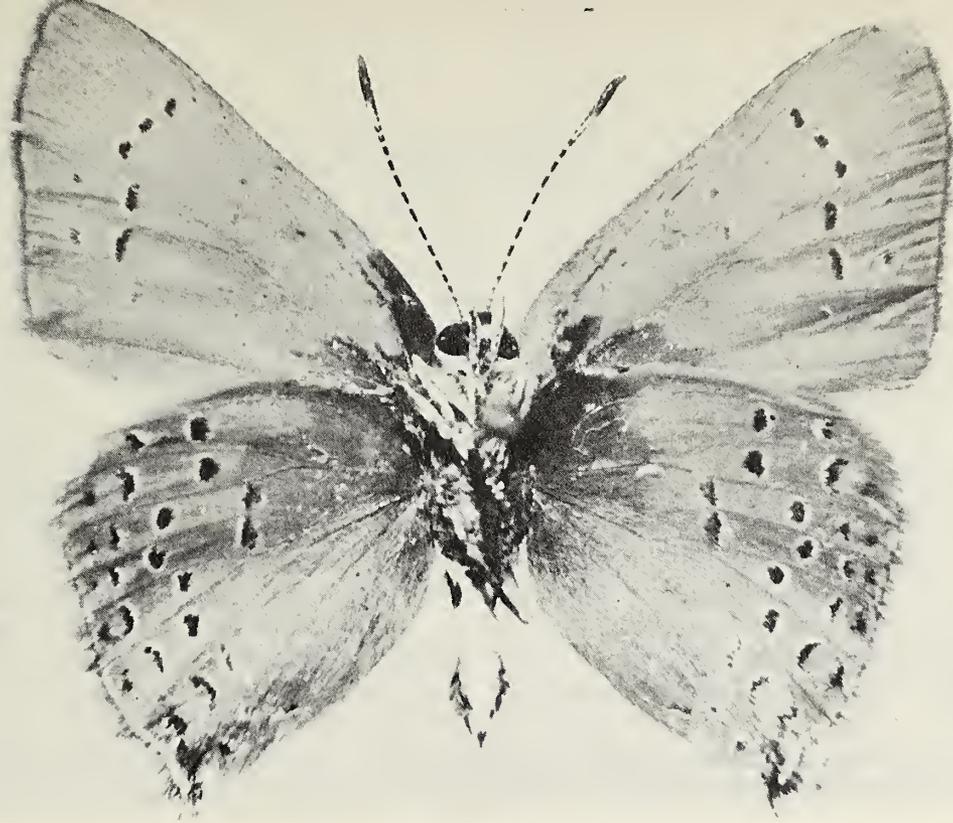


Figure 7. *Strymon titus titus*, X4. Male venter; forewing length 15 mm.  
Wolf Swamp, Garrett Co., Md., July 17, 1956.



Figure 8. *Strymon titus mopsus*, X4. Male venter; forewing length 16 mm.  
Northwood, Baltimore City, Md., July 1, 1957.

NOTES ON THE BURROW OF THE WOLF SPIDER, *Lycosa aspersa* Hentz, IN MARYLAND - On October 10, 1956, I collected a large female *Lycosa aspersa* which was looking out from the mouth of its burrow in the soft humus of a pine forest close to an artificial lake on the Beltsville Research Station of the U. S. Department of Agriculture, Beltsville, Maryland. The burrow slanted down from the entrance and extended for about  $1\frac{1}{2}$  feet in a straight line. Most of its length was nearly parallel to the surface of the soil and not more than two inches under the surface at its deepest point. A thin sheet of webbing lined the back of the burrow.

On September 23, 1956, two females of this species were taken directly from their burrows. The burrows were in hard, dry soil which was in the form of a small plateau beneath some pines bordering a road bank close to Glenn Dale Hospital, Glenn Dale, Maryland. Three different entrances served a network of communicating tunnels. Two of the entrances, about a foot apart, were near the top of a gentle slope that limited the plateau on the northern side. The third entrance was around the corner from the other two, about four feet away, and near the top of a steep gulley bank which marked the western boundary of the plateau. In general the tunnels were between two and three inches below the surface, and none was more than four inches deep. In two places, tunnels dipped under small roots. Webbing lined burrow walls in only a few places.

Muma, in his study of Maryland spiders (1945, *Md. Agr. Expt. Sta. Bull.*, A-38) states that he did not come across the burrows of this species. The individuals that he saw were "found in fields and grasslands near woodland." All specimens which he collected were from "recently plowed or excavated fields." - Donald H. Lamore, Department of Biology, Cottey College, Nevada, Missouri.



THE REPTILES OF MARYLAND  
AND THE  
DISTRICT OF COLUMBIA

by Robert H. McCauley, Jr.  
United States Public Health Service

A carefully detailed coverage of the distribution and life histories of Maryland snakes, lizards and turtles. Contains 194 pages, 46 distribution maps, black and white photographs of 43 forms, and a comprehensive bibliography to 1945. Members price, \$1.60 postpaid; non-members, \$1.75 postpaid. Order from: Natural History Society of Maryland, 2101-03 Bolton Street, Baltimore 17, Maryland.

## MARYLAND SHREWS

by John L. Paradiso<sup>1</sup>

Among the animals occasionally seen but not generally recognized by many Maryland outdoorsmen are the shrews, the smallest and fiercest of North American mammals. Although they superficially resemble mice, and often are confused with them, they actually are related to the moles, being members of the insect-eating order of mammals, the Insectivora. One species, the short-tailed shrew, may well be the most abundant mammal in Maryland, yet due to its small size and secretive habits it is not often observed and is little known. This shrew is the only known poisonous North American mammal, the poison being used to paralyze and kill insects, snails, worms and small mammals. Its bite may cause considerable discomfort to a human being, but because of the shrew's diminutive size there is little to fear other than the possibility of infection. It appears that the poison is a neurotoxin, similar to that of certain snakes, particularly the cobra.

All of our Maryland shrews are characterized by small size, sharply pointed muzzles and soft, velvet-like fur. Their nests are composed of leaves and grasses and usually are placed beneath a log or stump in a hollow burrow. Here the young are born, from spring until early fall, with generally four to ten offspring per litter. They usually are solitary, ill-tempered creatures, but occasionally are found in groups, particularly in winter. The short-tailed and least shrews appear at times to be quite gregarious. Little is known of their homelife, and a careful study of their habits would greatly repay the student.

The food of shrews consists of mollusks, insects, earthworms, salamanders and small mammals. Even in winter shrews usually find sufficient dormant insects to supply their needs. They do not damage crops, and it is seldom that they eat any vegetable matter. Altogether, they perform a useful service by decreasing the number of insects in our fields and woods.

Maryland is particularly rich in the number of forms of shrews found within its borders. Seven species have been taken in the State, and it is probable that one more will eventually be found, since it is recorded from nearby areas of adjacent states.

Of the seven species occurring in Maryland, the short-tailed shrew, *Blarina brevicauda*, is the most abundant. It is rather large, measuring about five inches in total length, including the one-inch tail. The fur is dark slate colored, somewhat paler on the abdomen. It is found in a wide variety of habitats, from coastal marshes to woods, meadows and overgrown fields, and has been taken in every county in Maryland. In the southern part of the State (Calvert, Charles and St. Marys counties) this shrew is smaller and darker than in the north.

The least shrew, *Cryptotis parva*, is a close relative of the short-tailed shrew, from which it may be distinguished by its smaller size, averaging about three inches in total length, with the tail measuring about six-tenths of an inch. The least shrew probably is state-wide in distribution and in some

<sup>1</sup>  
Bureau of Sport Fisheries and Wildlife

areas is very numerous, especially in the old fields and marshes of southern Maryland and the Eastern Shore. Specimens have been taken in Worcester, Baltimore, Anne Arundel, Prince Georges, Calvert, Charles, Montgomery and Garrett counties.

Two races of the masked shrew, *Sorex cinereus*, occur within the State. This is one of the smallest shrews, averaging about four inches in length, of which an inch and a half are tail vertebrae. The coloration is sepia brown, paler on the abdomen, and there is only slight seasonal variation. The typical form, *Sorex cinereus cinereus*, has been taken only in Garrett County. A somewhat smaller, shorter-tailed subspecies, *Sorex cinereus fontinalis*, occurs in the eastern part of the State, having been taken in Worcester, Dorchester, Kent, Baltimore, Prince Georges and Montgomery counties. The masked shrew is cosmopolitan in its habitat preferences, but does not seem to be an abundant species anywhere within the State.

The smoky shrew, *Sorex fumeus*, has been recorded only from Garrett County, but perhaps occurs east to the mountainous portions of Frederick County, in shady, damp woods. This is a rather large, long-tailed shrew, averaging about  $4\frac{1}{2}$  inches in length with tail vertebrae of an inch and a half. The winter coloration is dark mouse gray, with the abdomen considerably paler. In summer it is brown and resembles the masked shrew.

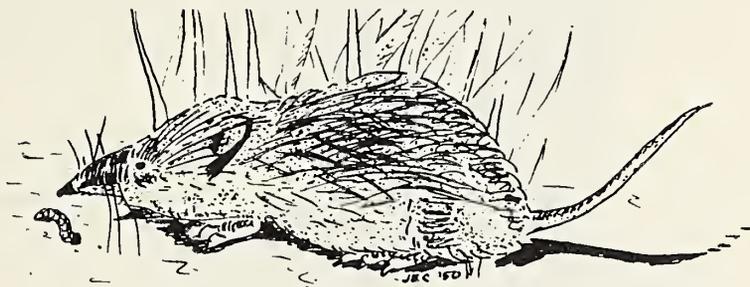
Bachman's shrew, *Sorex longirostris*, is found in southern and central Maryland, where it occurs in bogs and damp woods. It has been taken in Prince Georges, Calvert and Montgomery counties. This shrew is similar to the eastern Maryland subspecies of the masked shrew, and when more specimens become available, so that individual variation can be better judged, it may be found that they are the same. The Bachman's shrew is described as being smaller and more reddish than the masked shrew.

The rock shrew, *Sorex dispar*, favors rocky areas, and the crevices between boulders. It is similar to the smoky shrew in winter, but has a longer tail and slimmer body, and the color of the abdomen nearly matches that of the back. The total length of this shrew is about 5 inches, with a tail length of approximately  $2\frac{1}{2}$  inches. It has been taken in Garrett County and nearby areas of Pennsylvania and West Virginia.

The pigmy shrew, *Microsorex hoyi*, is the smallest North American mammal, and one of the rarest. Although it may be expected almost anywhere in the State, it has been taken only once, on January 24, 1910, at Berwyn, Prince Georges County, in the decayed heart of a dead chestnut tree. It is very similar to the smaller long-tailed shrews, but differs considerably in dental and cranial characters.

The water shrew, *Sorex palustris*, which has not as yet been taken in Maryland but should be looked for along the banks of mountain streams and in swampy areas, is large, and adapted for an aquatic life. The feet are broad and are fringed with a row of short, stiff hairs. The third and fourth toes are united at the base and somewhat webbed. This shrew averages about  $6\frac{1}{2}$  inches in length, with a  $2\frac{1}{2}$ -inch tail. The coloration is dusky; some of the hairs are white-tipped so as to produce a frosted appearance. It has been taken one mile SSE. of Cranesville, Preston County, West Virginia, only a few feet from the Maryland boundary, and may occur throughout the mountains of Garrett County.

Because of the close similarity of many of these species it is often difficult to make identifications in the field. Interested persons who may find shrews are urged to send them to a museum for positive identification. The scientific staff of the Bird and Mammal Laboratories of the U. S. Fish and Wildlife Service, Room 61, U. S. National Museum, Washington 25, D. C., will be pleased to make such identifications. The specimens may be preserved by making a small slit in the belly and immersing the animal in a 70 percent solution of ethyl alcohol. If ethyl alcohol is not available, isopropyl (rubbing) alcohol may be used. After allowing several days for preservation, the animal may be wrapped in cloth which has been soaked in the alcohol, placed in a jar and sent to the above address. If the specimen is too desiccated to be preserved in alcohol, it may still be of value since frequently the skull and skeleton can be removed for study.



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## A MARYLAND NATURALIST IN THE WEST INDIES



*Highlights of a  
one-man lizard  
hunt in the Dom-  
inican Republic  
and Puerto Rico*

by

*Charles L. Smith<sup>1</sup>*

A grizzled Dominican soldier came up out of the darkness of the government airfield, aimed his rifle at my head, and grunted something in Spanish. Despite my lack of familiarity with the language it didn't take me long to understand that he meant "Hands up!" I complied with his terse request and he cautiously approached, his light playing thoroughly over my person.

Half an hour of frustrating parlance followed. I'll never quite know how, but, despite the camera hanging around my neck, I managed to convince him that I was not necessarily an enemy of the Republic. The bags of lizards and toads dangling from my belt must have been the real clinchers. When I opened one of them and showed him what I was really doing, he fairly erupted into gales of laughter. The thought that a grown man would risk being shot for a bag full of everyday *sapos* (toads) and *lagartijas* (lizards) really struck his funny bone hard.

This was typical of the situation that I, as a naturalist-photographer interested in the land, animals and peoples of the West Indies, had encountered in the politically tense atmosphere of the Dominican Republic.

I had come to Dominica on a personal expedition to collect reptiles and amphibians, and to photograph some aspects of life in the Island. A previous expedition to the tropical jungles of Panama, Colombia and the San Blas

<sup>1</sup>Natural History Society of Maryland

Islands of Central America had whet my appetite for exploring. The West Indies, with their countless varieties of interesting subjects, drew my attention. Of course, one of the drawbacks of being a naturalist is that there are comparatively few things in nature that do not captivate an interest. One must practice discipline and restrict his activities in order to accomplish original purposes in the limited time available.

My first move was to contact an experienced collector and traveller, Mr. Arthur Watson, Director of the Baltimore Zoo. We discussed necessary equipment and some potential collecting areas. Equipment for such a trip must consist of the barest essentials, especially if one travels alone. Keeping weight to a minimum is important, but not always possible. I took the following items; (see photograph p. 16) sleeping bag (temperature during the day remains in the nineties, but sinks quite low at night), snake hook, cloth and plastic bags for specimens, formalin and hypodermic for preserving, heavy khaki field clothing, first aid kit, halizone tablets for water purification, headlamp for night collecting and cave exploring, and photographic equipment.

On May 29, 1959, I embarked for the Dominican Republic by night flight out of LaGuardia Field, New York. I arrived at Ciudad Trujillo early the next day. Since I had been asked by a religious publication to photograph the consecration of a local bishop and the Catedral de Santa Maria, which allegedly houses the bones of Christopher Columbus, I found it necessary to remain in the Capital City of Dominica for several days. The areas surrounding the city proved fruitful in that many species of lizards, including the iguana, *Cyclura*, (a giant that sometimes weighs in at 130 pounds), were found there in abundance. Colorful geckos, *Aristelliger* exotic tree lizards, *Anolis*, and myriads of other multi-colored saurians scurried across the jungle floor as I moved along. Also, since these areas were in the rain forest belt and consequently quite damp, they proved to be an excellent habitat for various amphibians. Tiny tree frogs echoed their musical refrains from the tree-tops, while large frogs boomed from pools in the jungle floor.

In the Capital City, Trujillo, I was fortunate enough to meet, through the interest of the Most Reverend Archbishop Pettini, Father John McCarthy, a Canadian Missionary. Father John, who knew the area and the terrain quite well, took time from his regular duties to guide me to many interesting places.

I left the big city and its environs, heading for the high mountain peaks of the Sierra de Ocoa range bordering the town of Azua. To accomplish part of this journey I attempted to rent a mule from one of the natives, who, not comprehending any English or my "pidgin Spanish", thought I wanted to buy a wagon-load of bananas. I found it easier to walk.

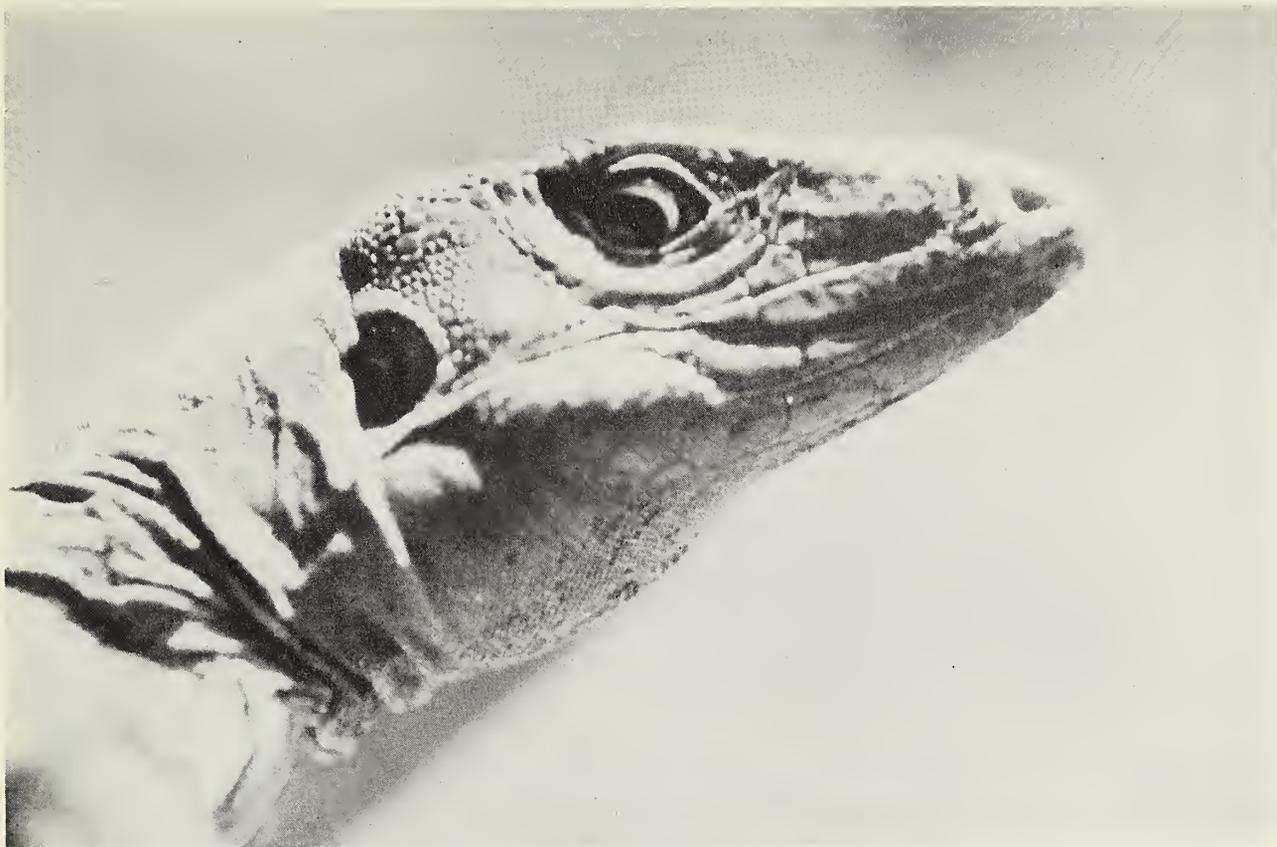
The mountains held a bountiful supply of interesting lizards, and I hated to leave them. I descended to the town of Azua and was met there by a veritable army of small boys, each bearing lizards and frogs and toads for sale to the "American scientist". Word gets around quickly in little wilderness towns when there's money to be made. I bought all of the really outstanding specimens, thereby sticking my two bits or more into the local economy.



Tower karst, an unusual Puerto Rican geological formation, is indicative of cave country. These rock outcroppings are very steep and are only partly covered with plant life.



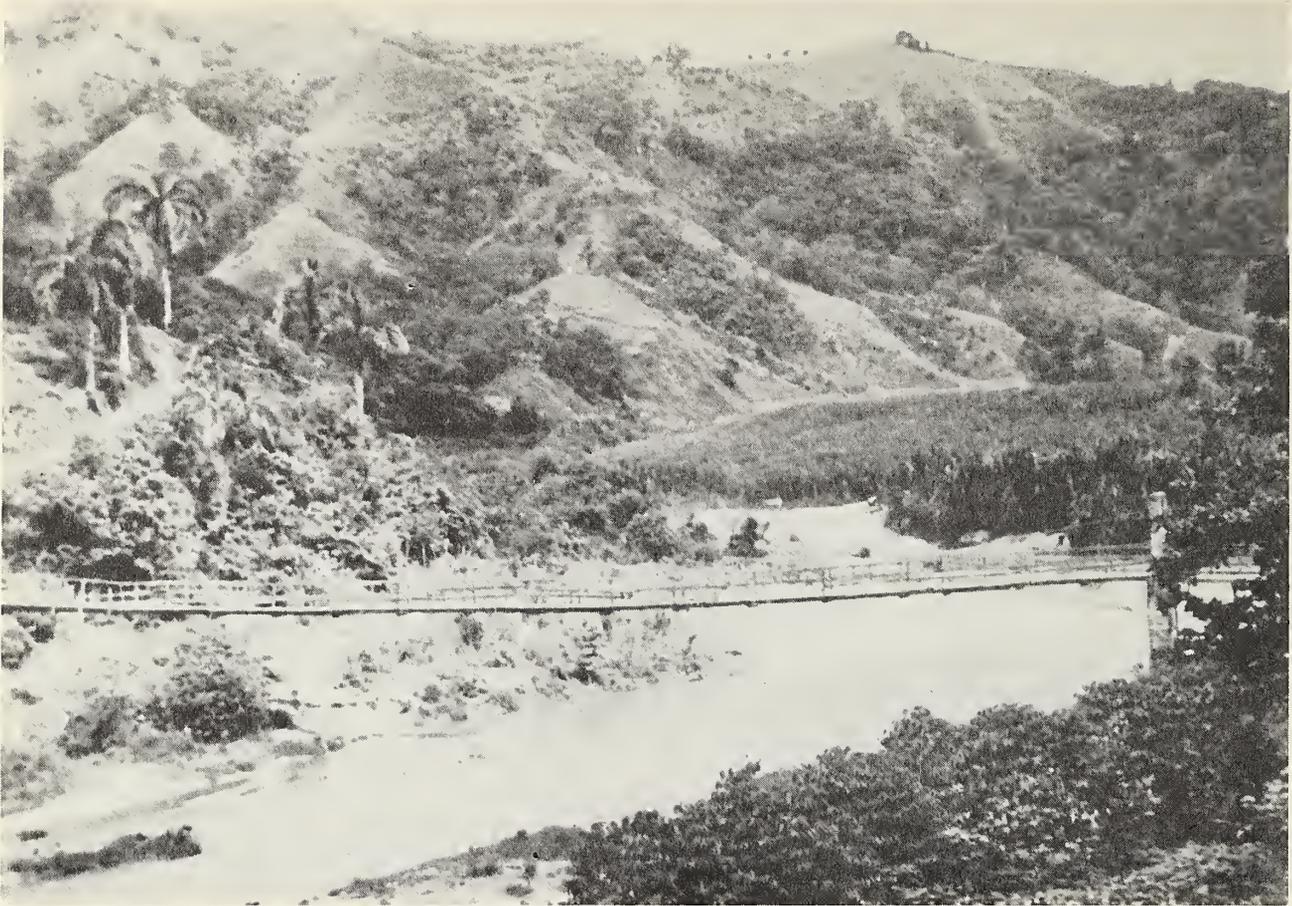
The author, surrounded by a small army of local "collectors" all anxious to help him gather specimens, displays a Dominican iguana, *Cyclura*.



Looking more like a dangerous relic of long bygone days than a harmless racerunner, *Ameiva exul* views the camera suspiciously.



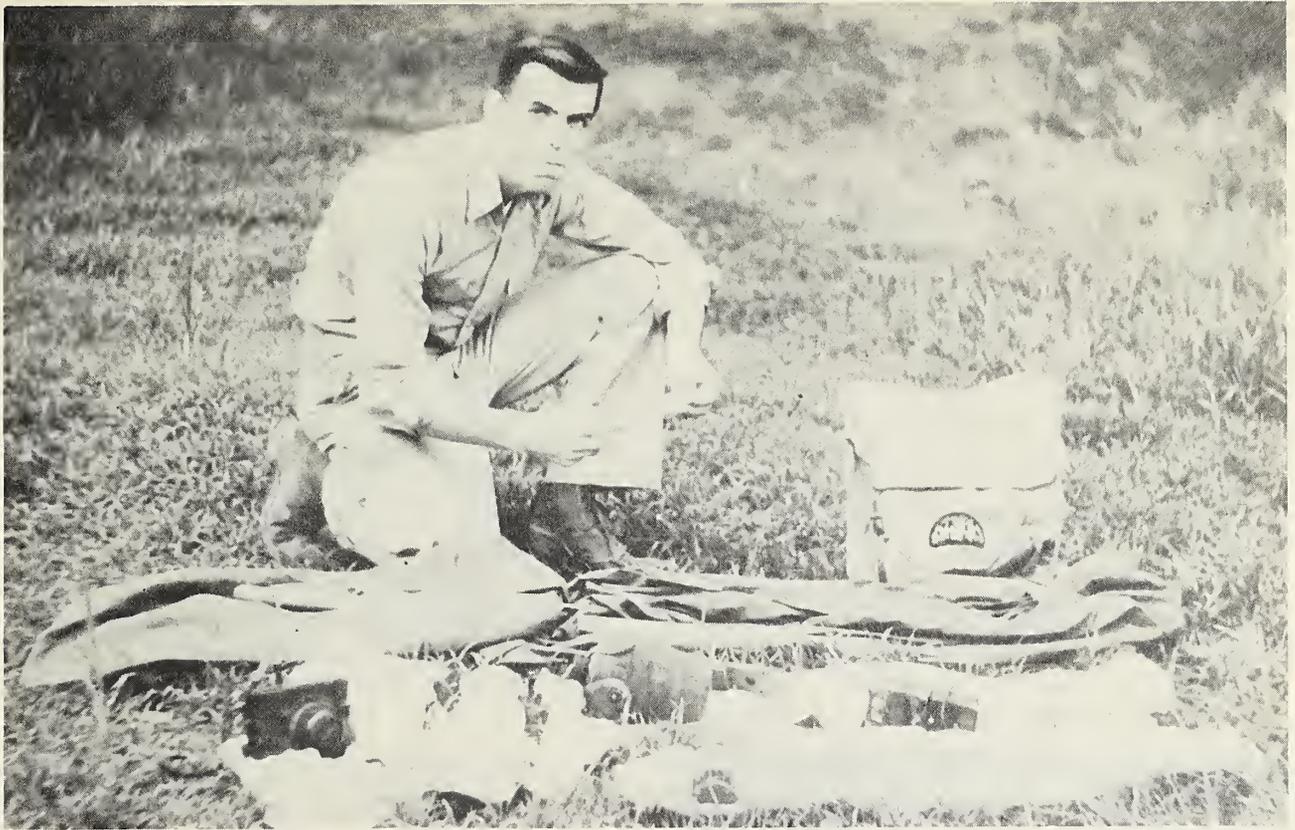
A typical log, mud and thatch hut in a remote sector of the Dominican Republic.



Footbridge across the Rio Grande de Arebico, above the hydroelectric plant at Dos Bocas, Puerto Rico.



The author discusses classification of Dominican lizards with Dr. Doris Cochran of the United States National Museum, an eminent authority on the amphibians and reptiles of tropical areas.



The author displays some of the equipment required for a collecting trip, including sleeping bag, headlamp, hypodermic, pack, canteen, formaldehyde and camera equipment.



Scene along the Rio Grande de Arecibo, in Puerto Rican cave country. The author explored Cueva del Pan, not far from this locality.

Rooming facilities in Azua proved to be better than I expected. My room was enclosed in a small "boarding house", which had space enough for a drab kitchen that doubled as a bedroom for late night guests. There was sufficient mosquito netting to keep out most of the hordes of insects that plagued the town. The bedroom provided excellent opportunities for collecting small lizards which scurried across my bed and up the walls. Meals consisted of fried bananas, roasted bananas, broiled bananas, rice, beans, mashed bananas and sancoche (a type of soup, undoubtedly made with bananas). Foodwise, I was sort of glad to head back to Ciudad Trujillo, on my way to Puerto Rico.

As I stepped from the plane onto the free soil of Puerto Rico, I breathed a figurative sigh of relief. In San Juan, the Capital City of Puerto Rico, I engaged a guide named simply "Carlos", who led me to many interesting areas around the island. One of these places was a fascinating cave which I explored quite thoroughly. After I had come out of this cave Carlos informed me very casually that it is often suddenly drowned by flash floods!

The areas around Mayaguez were exceptionally interesting and picturesque. They were also quite productive of specimens, providing me with boas, *Epicrates inornatus*, lizards, huge marine toads, *Bufo marinus*, tree frogs, *Leptodactylus*, and other forms of life.

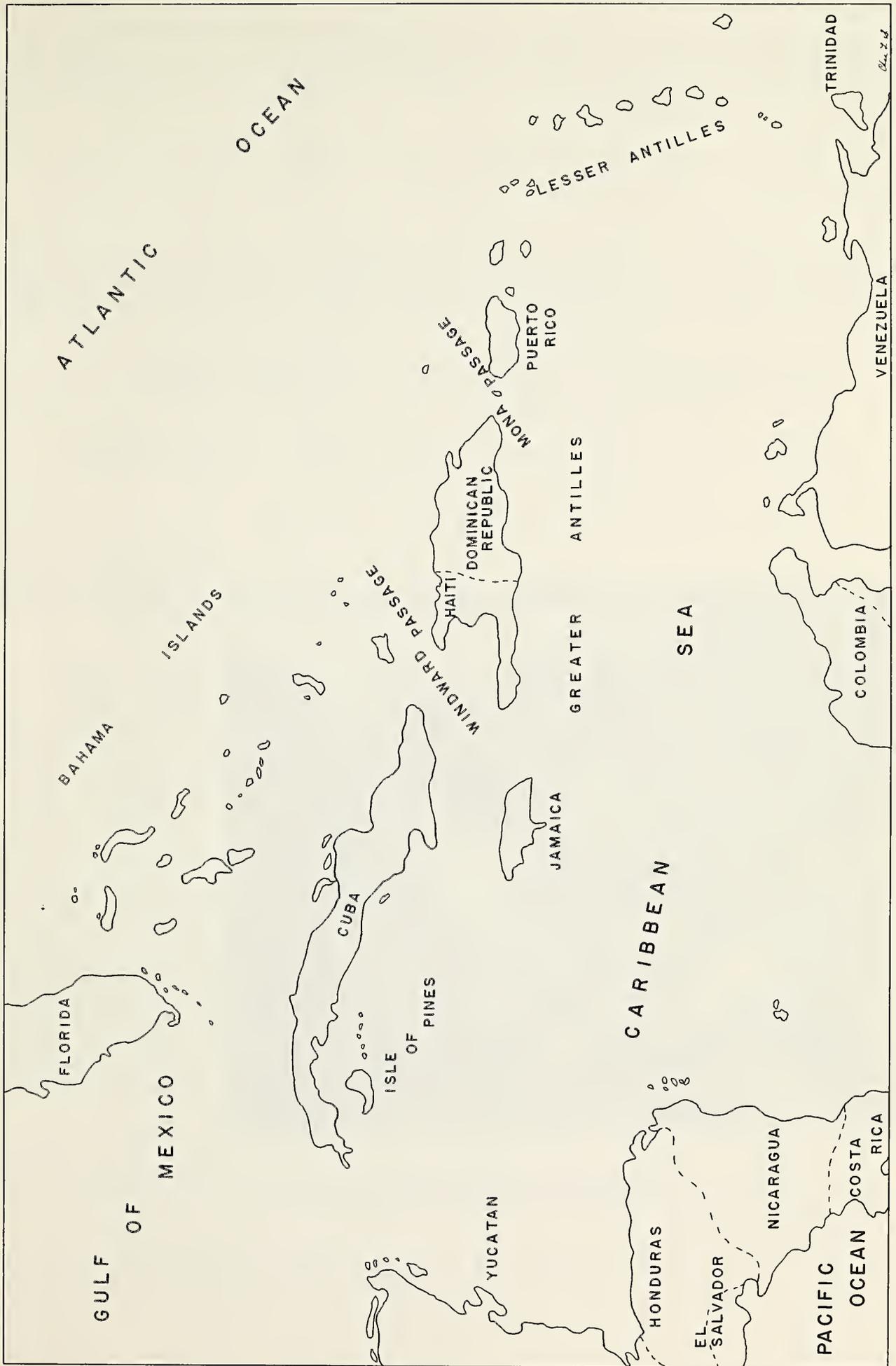


Collecting the marine toad, *Bufo marinus*, at night in the Dominican Republic.

On June 13, I bade Carlos "Adios", and left Puerto Rico, bound for home. I was sorry to go.

The specimens obtained have been deposited in the Smithsonian Institute, United States National Museum, in Washington, D. C., where they will be studied by Dr. Doris Cochran, and other eminent authorities on West Indian amphibians and reptiles.

In terms of specimens and photographs obtained, the trip as a whole was very fruitful. However, the greatest value of this "one-man expedition" lay in the personal experiences gained from the venture.



OBSERVATIONS ON A PIGEON NEST - On May 29, 1957 an interesting pigeon nest, constructed against an air conditioner, was removed from the north-side window ledge of Room 504, Osler Building, The Johns Hopkins Hospital, Baltimore. This side of the building faces an enclosed court, the only flying entry being over an eight-story high roof.

The nest (see Figure), approximately eight inches in diameter and two inches thick, included two whole eggs which were removed and hatched under artificial light on the same day.

Nest materials were divided into two categories: materials with specific gravity greater than one, and lighter materials with specific gravity less than one (water separation). After washing with acetone and drying in air the nest construction materials were weighed, with the following results:

Weight of material sp. g. greater than 1 - 1797 gms (97.3%).

Weight of material sp. g. less than 1 - 50 gms ( 2.7%).

Ratio of first to second - 36:1.

Heaviest piece, sp. g. > 1, corroded iron wire, 4 x 115 mm., 8.5 gms

Heaviest piece, sp. g. < 1, wood section, 7 x 12 x 160 mm., 8.1 gms.



The heavier materials were mainly corroded nails of various sizes and types; razor blades, screws, broken glass, roofing metal, wire, washers, rubber bands, and a few sundry bits of metal made up the remainder. Lighter materials consisted of feathers, wood (mainly ice cream spoons), a small paint brush, cloth and small assorted bones (principally wing and leg bones).  
- William F. Seip,  
Curator, Department  
of Mollusks, NHSM.

Nest of a pigeon on a north-side window ledge at The Johns Hopkins Hospital. Note the array of unusual building materials.

NOTES ON A SPECIMEN OF THE LEAST SHREW - The least shrew, *Cryptotis parva*, appears to be one of Maryland's more difficult to find small mammals. In twelve years of zoological collecting I have found this species but twice; once on July 7, 1946 under a board at Cove Point, Calvert County, and again on October 1, 1955 at Savage, Anne Arundel County. The latter specimen was a 72 mm. (total) female with seven suckling young. The following notes concern these specimens.

The shrews were found in the afternoon under a board on an earth bank just above a dirt road at the Savage Mill. They were in a leaf-filled hollow in the earth, and the dirt and leaves under the board were filled with open runs. When caught (by hand) the female was not given opportunity to bite, but she exuded a characteristic musky shrew odor. In the container, despite its being opened and the contents examined periodically, some of the young shrews resumed suckling. Several earthworms were placed with the shrews and one of these was later seen to have been halved, although none was eaten. During the trip back the female ate one of the young, all but its head. I do not know if she killed the juvenile or if the young shrew had died and then been eaten.

The specimens were placed in a box with the original dried leaves from under the log, and part of a dried tree limb, flat and partially hollow, as cover. When placed in the box, the young had been separated from the mother. She picked one after another up in her mouth and carried them frantically around the box for as long as 20 to 25 seconds each. Before long she had situated herself, with the young, beneath the limb section. For the most part the young stayed with the mother. Occasionally, when the box lid was lifted, one or two could be found lying off by themselves.

Several earthworms and "sowbugs," *Armadillium*, were placed in the box and the female went after one of the worms, biting it several times but not eating it. Later, several half-alive crickets, *Gryllus*, and several dead ones were placed with the shrews. The female grabbed one cricket after another, biting each in the head and neck voraciously several times; and then going on to another. Perhaps this is a tactic employed in nature when the shrew comes upon a congregation of prey, since its high metabolic rate requires it to eat almost constantly. All of the crickets were gone the following morning.

On the morning of October 2 a medium-sized live marbled salamander, *Ambystoma opacum*, about the same size as the shrew, was placed in the box. No food was available to the shrew. When examined about eight hours later the female was in a corner of the box with the leaves gathered in around her young and herself. The salamander was alive and apparently untouched. On the evening of this same day, six crickets were placed with the shrews, and they were gone the next morning. The female also accepted beef. On October 3 no trace could be found of two of the young, and the female was found off in one corner of the box, the young lying in another. The young were moved into a group and covered with leaves. An hour later the mother and young were together.

On the night of October 2, one of the young was placed with a twenty inch Coastal Plain milk snake, *Lampropeltis doliata temporalis*, and, although the snake showed some interest, it refused to eat the young shrew. This snake has since regularly eaten immature mice the size of the young shrew.

By October 4 all of the young had, at one time or another, been handled by me. When caught on October 1, they were estimated to be about nine days old (based on Ernest Walker's material, Washington, D. C.). They were well-furred,

but their eyes were not open. Some of them would cling tenaciously to the females mammae and often, when running or crawling around the box, she would drag one or more clinging young with her. The mammae were not counted, but they were very much enlarged. I can find no reference to more than six young.

When the box was examined at 5:00 p.m. on October 4, all of the remaining young were nursing. Later, five crickets were put in with the shrews and the female grabbed one immediately. She also killed and ate a moth.

On October 5, despite a steady diet of crickets and occasional beef, the female had eaten another of the young. At 1:30 p.m., Dr. C. J. Stine came and photographed the shrews, and, although constantly handled, the female responded to a grasshopper and several crickets as soon as they were offered. The young were handled a good bit, and, on one occasion the female came from under the limb and carried one of the young off the photographic stage.

Three young remained alive on October 6; they were as yet unweaned. The female was accepting and eating meal-worms, larvae of the beetle *Tenebrio*, in addition to the regular cricket fare. On October 7 none of the young were left, a head and several patches of furred skin were all that remained of them. Later in the day, despite the fact that crickets and meat were available, as well as peanut butter (a favorite bait in small mammal traps), the female died.

For anyone with limited time to devote to their maintenance it is obviously difficult to "keep ahead" of these rapidly metabolizing mammals. The adult specimen under discussion remained alive in captivity for about seven days. - *John E. Cooper, Curator, Department of Herpetology, NHSM.*

A RECORD LENGTH NORTHERN RED-BELLIED SNAKE FROM MARYLAND. - On August 25, 1958 a very large female *Storeria occipitomaculata occipitomaculata* (Storer) was taken from under a rock in a sphagnaceous bog near the Swallow Falls Park, Garrett County, Maryland. The snake measured 413 mm. ( $16\frac{1}{2}$  inches), 30 mm. longer than the largest (383 mm., female) recorded by Trapido (1944, *Amer. Mid. Nat.*, 31:24). Wright and Wright (1957, *Handbook of Snakes*, Comstock, 714) and Conant (1958, *Field Guide to Reptiles and Amphibians*, Houghton Mifflin, 129) both give the largest recorded length as 16 inches. The largest previously recorded Maryland specimen was 356 mm. in length (McCauley, 1945, *Reptiles of Md. and D. C.*, pub. by author, 117).

The locality from which this snake was taken is in the Alleghany Plateau at about 2500 feet elevation. A large, dark, black-bellied example was taken, along with eight other large dark specimens, in the same area on the same date. Genetic differences between the upland populations of the Alleghany Plateau and the other populations in Maryland (notably those of the Coastal Plain) are grossly reflected in the exceptionally large size and preponderance of melanin in the former. Netting (in Trapido, *Op. cit.*, 25) has previously found dark coloration in this form to be associated with higher altitudes in West Virginia. He presumably did not mention greater size. I have never seen individuals quite like the Alleghany Plateau specimens from anywhere else in the state, and I have never seen a light-colored specimen (typical of the lower Piedmont and Coastal Plain populations) from the Alleghany Plateau. The frequency of appearance of the two color phases is under investigation. -- *John E. Cooper.*

FLYING SQUIRRELS IN CAPTIVITY - Although I have kept many varieties of pets, I never thought I would ever maintain pet mammals that could "fly." That is, not until four month-old flying squirrels, *Glaucomys volans*, literally poured out of my front-yard maple one Sunday afternoon in late summer, leaving behind their home which had previously been used by a family of starlings.

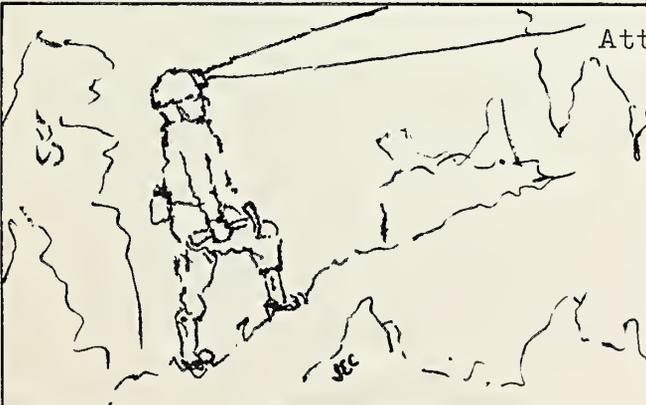
When I had finally managed to catch them, glad of the opportunity to observe them closely, I placed the young squirrels in a screen-covered box, and they immediately jumped onto the wire and hung on with their claws, making chirping, cricket-like sounds.

The first food I gave them was dilute, warm evaporated milk, fed to them in nipples doll bottles. Later, I added Karo syrup to the milk. After a week they seemed tamer. I held them and they were very alert, crawling into my sleeves and pockets. Their appearance was mouselike at a glance, with "shoe button" eyes and very small ears. Their coats were unlike those of other squirrels I had encountered; dark stripes flowed down their sides from fore to hind feet. The webs of skin used for their leaping glides or "flying" were dark.

The presence of fine, sharp teeth was no indication of age, since the young squirrels had them from birth. The flat, beaver-like tail was erect when the squirrels were in action. In order to keep them warm I put the box down into a tin-covered enclosure. This was kept near a coal-burning stove at night, and near a sunny window in the daytime. Occasionally, at night, I would place a hot water bottle with them.

In their third week with me I introduced the squirrels to the proverbial squirrel food - acorns. Dry pablum flakes, bits of banana, and other nut-meats were used and accepted also. When eating, the squirrels sat with their fore-paws lifted in typical squirrel posture. Mild feedings were given at 9 AM and 9 PM, and the animals thrived on this routine.

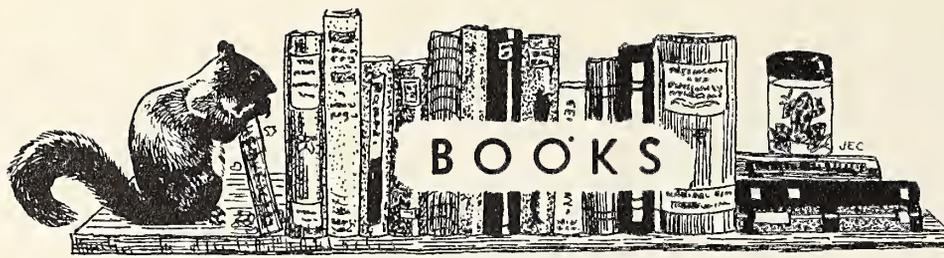
Before long, when the weather warranted, I released the young squirrels. They were certainly the most interesting animals I have ever observed and cared for. I hope they will return for an occasional visit. - Ruth K. Stroh, 13 Sherwood Road, Cockeysville, Maryland.



Attention Naturalists and Spelunkers

THE CAVES OF MARYLAND  
by William Davies

Contains the locations and descriptions of all Maryland caves known to 1950. Includes discussion of cave formations, origins and fauna. Order from the Society.



SOONDAR MOONI by E. O. Shebbeare. Houghton Mifflin Co., \$3.50.

The author of this fascinating book undoubtedly knows more about the large mammals of India and Malaya, particularly elephants, than any other living white man. This wealth of knowledge about wild creatures derives from thirty-two years of work with the Indian Forest Service and nine with the Malay Game Department. In this forty-one years, lived mainly in and around forest and jungle, Mr. Shebbeare has also acquired a spell-binding facility with narrative. Gems of phrasing highlight his language, such as, ". . . fork-tailed king-crows wheeled and hovered and swooped, hawking the homeless insects." Thus, we have an experienced man who writes exceptionally well about his experiences - eminent qualifications for an author - sharing with us some of the wonder of his life in this story of Soondar Mooni, an Indian elephant whose name means "Beautiful Disposition." From the thread of this tale, mostly fact but necessarily part fiction, is woven a fabric of adventure, sometimes humorous, sometimes disastrous, but always thrilling and interesting. The main stream of the story, however, is secondary to the wonderful episodes surrounding it and giving it depth.

While often indulging in "high-class" speculation concerning the "thoughts" and actions of wild animals, the author carefully avoids, even works to dispel, the overt anthropomorphisms which make irritating reading of so many partially fictionalized natural histories. The fabled intelligence of elephants is somewhat debunked, and light is shed on many facets of elephant lore. For example, the herd leader, too often viewed as an innately "shrewd" and conniving male, is usually the herd matriarch whom the other animals follow unconsciously and who can interpret every lay of the land by dint of sheer experience.

Mr. Shebbeare vividly presents all the details of the capture, auction and training of elephants. The chase, seen from the "elephant's viewpoint", takes on a ghost-like quality, with the herd being pursued by silent, half-seen men, erupting into almost a nightmare of noise and frightening sights. All the color and pageantry of the elephant fairs, whose dates are fixed by the phases of the moon, is present, along with the intricate formalities of buying and selling beasts, and information on the religious significance of elephants. The thrill and art of the tiger drive and shoot, particularly one shoot involving three of the most fantastically clever and courageous tigers ever encountered on the printed page, make superb reading. And the almost ludicrous, yet somewhat poetic, practice of "ghooming", riding an elephant through the forest and grassland, mingling with beasts who cannot suspect a human presence, and becoming, as it were, part of the forest.

Mr. Shebbeare skillfully takes his readers into the world of the elephant, the tiger, the rhino, the gaur and the myriad other beasts that comprise the fauna he knows so well. Those who embark on this journey will find it gratifying. And, if we are lucky, Mr. Shebbeare is sitting even now with pen in hand, capturing more of his thrilling years for us.

*John E. Cooper*

A FIELD GUIDE TO REPTILES AND AMPHIBIANS OF EASTERN NORTH AMERICA by Roger Conant, Houghton Mifflin Co., Boston, Mass. 1958: 366 pp., 40 plates. \$3.95

One of the minor phenomena of recent years has been the tremendous increase of popular interest in the study of reptiles. Time was when reptile and reptile student alike were regarded as somewhat abnormal creatures, odd fellows who lived under rocks and swallowed their young for protection. Now, with their new-found popularity and with their functions in life better understood, both have come to enjoy the same respectability hitherto only accorded to such similar groups as birds and bird watchers.

This trend is clearly reflected in the rash of popular volumes dealing with reptiles and their relatives, the amphibians, that have been published during the past decade or so. No less than ten such works are in current circulation. The latest of these --- and unquestionably the best, for our money --- is A *Field Guide to Reptiles and Amphibians of Eastern North America*, written by Roger Conant and illustrated by Isabelle Hunt Conant.

With an economy of words that is downright niggardly, Mr. Conant tells in his book all that needs to be known, essentially, about the reptiles and amphibians occurring in North America east of the 100th meridian. Once one has identified the snake or frog in hand (and identification is made easy by excellent photographs and lucid verbal description), one learns it's size, geographical range, habitat and something of it's general habits. There is an appended section of distributional maps where one can see at a glance the geographical range of each form and the introductory chapters include concise notes on such subjects as collecting, maintaining captive specimens, snake-bite treatment and similar items of general interest.

The book is as comprehensive as it is concise. Thus all species found within the designated area are treated and even subspecies come in for brief comment. All, or nearly all, are pictured, many in color. The color reproductions are particularly noteworthy, since they were originally taken in black-and-white then hand-dyed to insure a highly accurate likeness and to avoid the exaggeration too often present in color photography.

The only aspect of this book that might come in for advance criticism is the format, specifically the arrangement of the illustrations in relation to the text. It is somewhat disconcerting to become engrossed in an account of the four-toed salamander only to turn the page and be confronted by a formidable-looking cotton-mouth -- in color, yet! This arrangement obtains throughout the volume and necessitates considerable page turning in order to compare pictures with written descriptions. However, in view of the excellence of the book as a whole, it is perhaps quibbling to mention this minor inconvenience. Too, there are probably good technical reasons, in the province of the printer and binder, for such an arrangement.

This fine handbook, then, is heartily recommended to the amateur herpetologist (even the professional will find it useful), the outdoorsman, the nature enthusiast and to anyone whose pursuits may bring him into contact with reptiles and amphibians.

*Frank Groves*

*Baltimore Zoo*

THE REPTILE WORLD by Clifford H. Pope, Alfred A. Knopf, New York. 1956: xxv + 325p., 222 illus. \$7.50

*The Reptile World* presents each major group of reptiles as an evolutionary unit. It is divided into five sections: Crocodylians, Tuatara, Turtles, Snakes and Lizards. The author gives a good general account under each, which includes the usual categories, i.e. food, reproduction, origin, physical characteristics, relations to man, etc. The accounts by families which follow are discussed to genera, and in some cases, to species. Because it is such a small group, Mr. Pope was able to discuss each of the crocodylian species in some detail, and this account of this most unloved and unlovable group of beasts is one of the best this reviewer has seen in popular works. Each section ends with its own bibliography, a good feature of the book.

With each form, the author gives both scientific and common names in vogue at the time (taxonomists have rearranged things somewhat since then, particularly on a sub-and familial level in the snakes) and points out the problems that exist in the classification of anomalous or specialized types.

Works such as *The Reptile World* are bound to be frustrating to a student of the subject, in that the author, for lack of space, must skim the surface in order to present a comprehensive picture of the whole. The author walks a tight-rope between generalization and specificity, and is always open to and helpless against the criticism that he should have written a different book than he did write. This is not fair. A book should be judged for itself, and on this basis Pope's *Reptile World* shines. It was directed to the layman, and it is excellent. Mr. Pope is a very careful, accurate and delightful writer. I found no errors, but a multitude of fascinating facts, interpretations and suggestions, based on a vast literature and the author's extensive scientific background both in the field and as a museum curator. From the hand of a poor writer such a book could easily be merely a hodge-podge of collected information. Mr. Pope's forceful and yet whimsical style reduces this danger considerably. A few quotations will perhaps serve to illustrate his very individualistic style of writing, to which many people as well as I have always responded favorably:

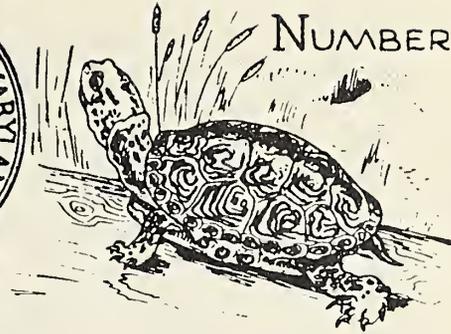
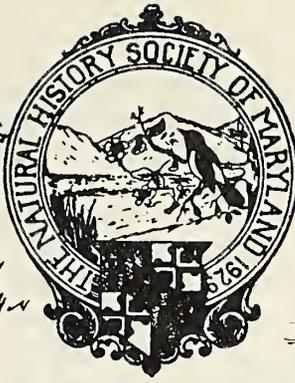
"...the catlike appearance of the great majority of gecko eyes is due to vertical-slit pupils. This type of pupil is well known to be associated with night life, which is something that most geckos indulge in. The gecko has not been satisfied to have an ordinary, run-of-the-mill slit pupil; the slit is often lobed, a condition thought to be the last word in gecko eye development."...

"As egg laying is the rule (in lizards), I should dwell on this, but, being a mammal myself, I am prejudiced in favor of live-bearing and shall emphasize it regardless of all criticism."

The book is profusely illustrated with excellent black and white identification-type photographs, many of which have also been reproduced in other works. The frontis-piece is pretty bad, both in color reproduction and technical and artistic quality. It was an unfortunate choice as a frontispiece and jacket picture.

The herpetological world looks forward to the publication late this year of the author's next *opus*, *The Giant Snakes: A Natural History of the Boa Constrictors, the Anaconda, and the Largest Pythons* (Knopf). Since Mr. Pope obviously writes out of an affection for his subjects, let us hope that he will help dispel the fear and repugnance which the public displays toward the "giant snakes" with the skill and easy sense of humor he uses in making a point. (Reprinted From the Bulletin of the Philadelphia Herpetological Society Vol. 8 No. 2 1960).

Norma Rothman



# MARYLAND NATURE LEAFLET

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## MARYLAND OAKS

by Haven Kolb

"Great Oaks from little acorns grow." But it takes a long time, for most kinds of oak grow slowly compared to many other trees. If you should plant an acorn this fall the tree would not yet be in its prime when you are old and gray. The person who plants oak trees must take a long view of things: he must have the pleasure and profit of his children and grandchildren in mind.

Both pleasure and profit can come from these trees. Oaks are among the finest of shade trees and oak lumber easily finds a market at a good price. Oak timbers are the preferred materials for boat building and railroad ties, for flooring and many kinds of fine furniture. Yet, because of the long years between planting and harvest, most oak lumber is still produced from naturally grown trees. Tree-farming, which has become so important in conserving many cone-bearing trees, has not yet been started with oaks in this country.

Not all kinds of oaks are equally valuable and not all grow equally well in all places. If you should wish to plant an oak tree at your home or school you should first decide where it is to grow and for what purpose you are planting it. Then consult the State Department of Forests and Parks in Annapolis. The State foresters will be glad to advise you.

*Quercus* is the name used by botanists for all oaks. How can we tell an oak from other trees? Practically the best way is by the acorn, a somewhat egg-shaped seed with a tough outer rind borne in a woody cup. Almost everyone knows acorns without any need of this description. Most boys have made pipes of them. Some of you may have tried nibbling on them, but they are usually very bitter. Nevertheless, the Indians pounded them up into a meal when other foods were scarce. Many animals do not seem to mind the bitterness. In any case, oaks may be identified by their acorns: if a tree bears acorns it is an oak.

There are many kinds to consider. Botanists have listed 21 species of oak growing wild in the woods of Maryland. In parks you may find several more species which have been brought here from other parts of the world. One species was named for our State in the system of names used by plant scientists. It is called *Quercus marilandica*. In English it is usually called the blackjack oak.

Our Maryland namesake is not a large tree as oaks go, nor is its wood of value. It is usually found growing on poor, stony, or rocky soil where

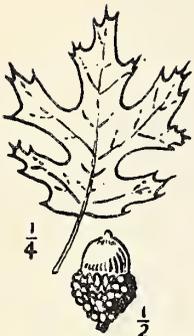
*Illustrated by Robert Bowen*

few other trees can survive. In such places it may serve to hold the soil in place and protect it from the force of heavy rains. It is, however, a scraggly tree which no one would pick as a favorite, so it is hardly surprising that it was not considered when the people of our State were considering the choice of a State Tree.

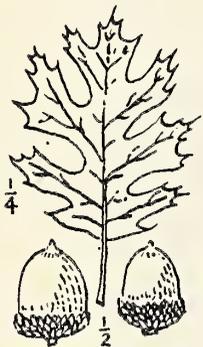
The tree that was chosen was an oak, however: the beautiful, stately, and valuable white oak. One reason for the choice, perhaps, was the great Wye Oak, a famous example of this species which is the largest known white oak in the world. A whole State Park has been created to preserve it near Wye Mills on Maryland's Eastern Shore. White oaks produce excellent timber. Furthermore, they are very common in woodlands almost all over Maryland, but since they grow best on the better soils many thousands of acres which support white oaks in colonial times have now been changed into farmlands.

The northern red oak has an even more desirable wood than the white oak. It is not as common a tree in our woods, however, for it does not like hot and dry locations so that other trees, especially other kinds of oaks, will crowd it out under natural conditions. When man protects it from competition it will thrive even along city streets. It is often planted along broad avenues where there is sufficient room for such a large tree and people are willing to wait for its slow growth to produce beautiful reddish buds in spring, cool green shade in summer, and fiery red foliage in the autumn.

We have scarcely begun to discuss the list of oaks, but to the lumberman there are only two kinds of oak timber, white and red. This does not mean that other oaks are not useful for lumber, but that their wood is much like that of the white oak or the red oak. For example, overcup oak, chestnut oak and swamp white oak are all sold as "white oak", while black oak, Shumard's oak and willow oak are marketed as "red oak". There are some good reasons otherwise for dividing the many oak species into two such groups. For example, the acorns of the trees in the "white-oak group" mature in one growing season, while those of the "red-oak group" require two seasons to ripen. So, if you find little acorns on a winter oak you will know it belongs to the "red-oak group". Another useful point for identification lies in the leaves. When the



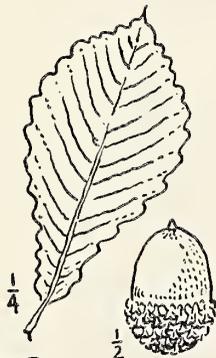
SCARLET



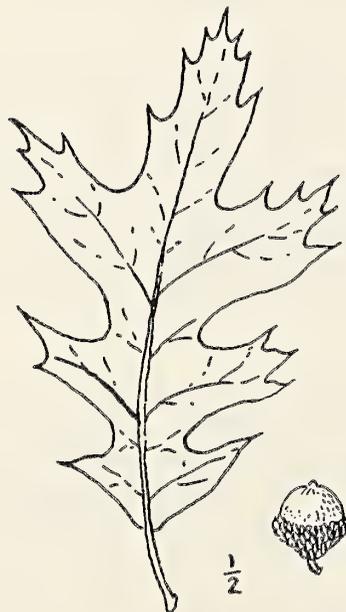
SHUMARD



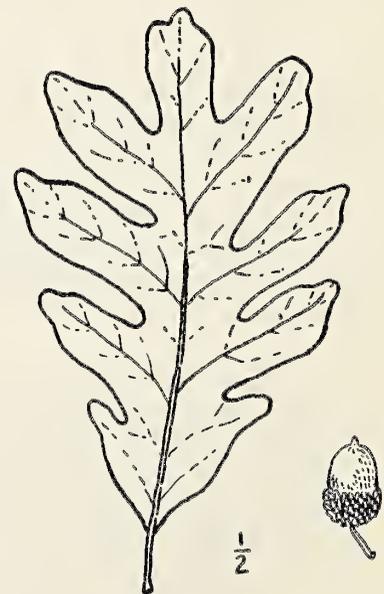
CHINQUAPIN



SWAMP  
CHESTNUT



PIN



WHITE

leaves are lobed (as they are in most of our species) the lobes are tipped by a little projection of vein in the "red-oaks" and not in the "white-oaks".

Our illustrations should help you to identify many of the oaks you will find in summer and fall. In the winter the matter is more difficult, but not at all impossible for twigs and bark are often quite characteristic, even though the characteristics are hard to picture. Foresters generally learn such things directly from other foresters.

Individual trees vary a great deal just as individual people do, so that our artist had to draw what he thought was a typical example of leaf and acorn. You may find many variations from the form illustrated; leaves of Shumard's, scarlet, northern red, and pin oaks are especially liable to be confused. You will need much experience and the aid of the references given at the end of this leaflet to study our oaks well.

Even when you have considerable experience, however, you cannot expect to identify all oaks you find. The oaks form a very closely related group and not infrequently they cross and produce offspring called hybrids. These hybrids may show combinations of the characteristics of their parents and even experts may be puzzled by them.

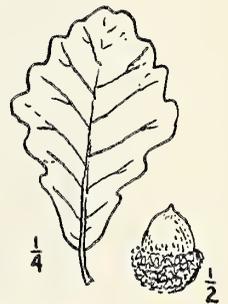
A clue to the identity of some oaks can be obtained from the places in which they are found growing. Pin oak, overcup oak, basket oak and willow oak usually grow in low wet situations or on poorly drained land. Post oak and chestnut oak grow on rough and steep hillsides where soil is thin and roots must twist about in the rocks to find a place to grow. Scarlet oak and southern red oak thrive on heavy clay soils. Geography also may be used to help you identify oaks if it can be sure that the tree was not planted by man. Thus you would not expect to find the willow oak in Garrett County since it is restricted to the coastal plain, as is the water oak. On the other hand the bur oak is a westerner and Shumard's oak seems to be found only in Southern Maryland. It is fitting perhaps that our State Tree, the white oak, is found in all sections of the state and growing well in many kinds of environment.



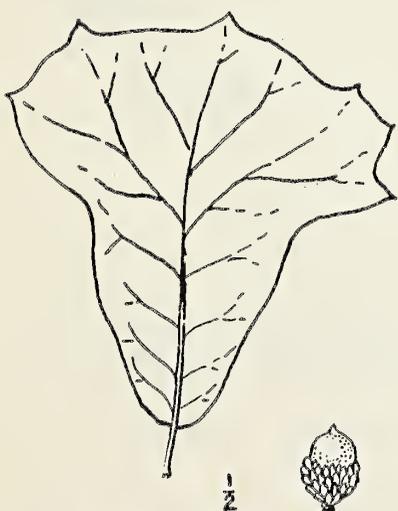
LAUREL



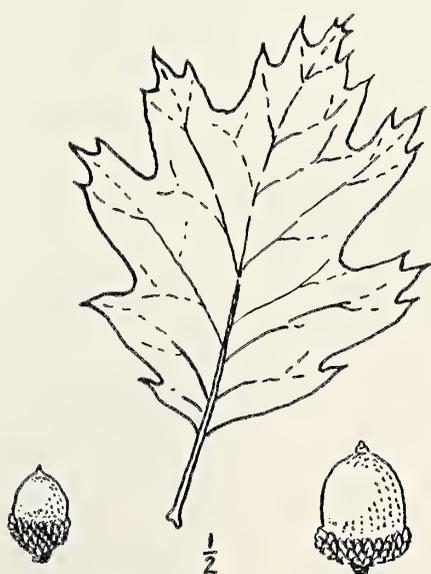
WILLOW



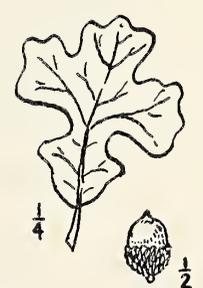
SWAMP WHITE



BLACKJACK

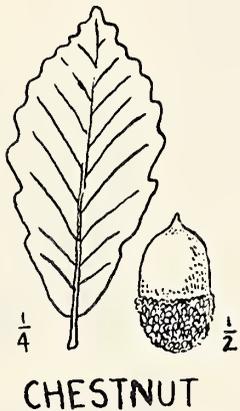
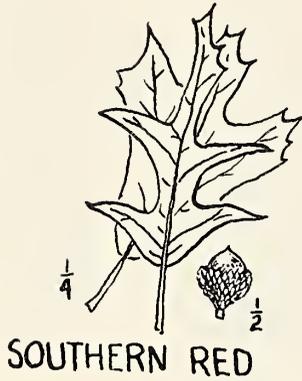


NORTHERN RED

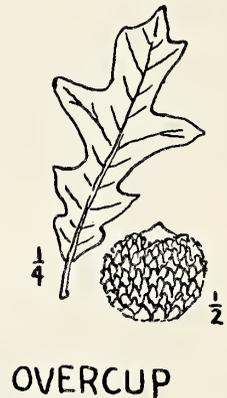
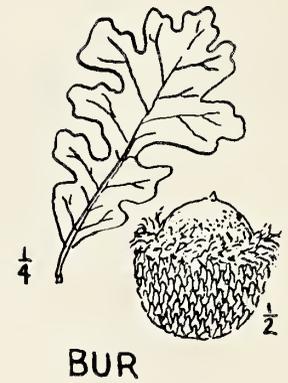
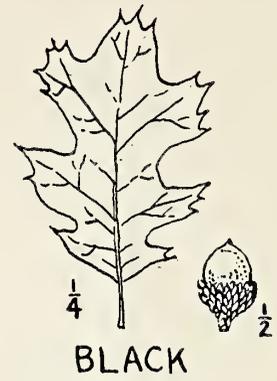


POST

Finally we give a list of the species of oaks known to grow without cultivation in our State. This should simplify your reading in the books suggested below.



- White Oak (*Quercus alba*)
- Swamp White Oak (*Quercus bicolor*)
- Northern Red Oak (*Quercus borealis*)
- Scarlet Oak (*Quercus coccinea*)
- Southern Red Oak (*Quercus falcata*)
- \* Bear Oak (*Quercus ilicifolia*)
- Shingle Oak (*Quercus imbricaria*)
- Laurel Oak (*Quercus laurifolia*)
- Overcup Oak (*Quercus lyrata*)
- Bur Oak (*Quercus macrocarpa*)
- Black Jack Oak (*Quercus marilandica*)
- \* Basket Oak (*Quercus Michauxi*)
- Chestnut Oak (*Quercus montana*)
- Swamp Chestnut Oak (*Quercus Muhlenbergii*)
- Water Oak (*Quercus mgra*)
- Pin Oak (*Quercus palustris*)
- Willow Oak (*Quercus phellos*)
- Chinquapin Oak (*Quercus prinoides*)
- Shumard's Oak (*Quercus Shumardii*)
- Post Oak (*Quercus stellata*)
- Black Oak (*Quercus velutina*)



\* - Not illustrated

Some books for reference:

Peattie, Donald C. - A Natural History of Trees of Eastern and Central North America - Houghton Mifflin Co.: 1950

Petrides, George A.- A Field Guide to Trees and Shrubs - Houghton Mifflin Co.: 1958

Harlow, William M. - Trees of the Eastern and Central United States - Dover Publications: 1958

Graves, Arthur - Illustrated Guide to Trees and Shrubs - Harper: 1956



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