AMPHISBAENIANS, popularly known as worm-lizards (or in Trinidad, two-headed snakes), belong to the reptile order Squamata where they share an equivalent status with snakes and lizards. There are about 140 species, found mainly in the Americas and Africa, and all are blind burrowing animals. Many possess keel- or shovel-snouted heads to facilitate movement through soils and, although very little is known of their ecology, most appear to exploit the properties of tunnel systems, feeding on a variety of animal prey species such as worms and arthropods.

Two amphisbaenians, *Amphisbaena alba* and *A. fuliginosa*, occur on the island of Trinidad and also on the mainland of South America. They are unlikely to be confused as adults since *A. alba* is up to 70 cm in length, creamy white, pink or red-brown in colour, whereas *A. fuliginosa* is usually no longer than 30 cm and is strikingly blotched in a random black and white pattern.

*Amphisbaena alba*, the subject of this communication, is one of the world’s largest worm-lizards and, though much feared in Trinidad, is entirely without venom. However, it does possess powerful jaws and will bite if carelessly handled although only able to inflict superficial wounds. Despite its large size and uniform colouration it is rarely seen in Trinidad: it can occasionally be glimpsed crossing roads or jungle paths, particularly during the wet season, and its unusual mode of progression makes it instantly recognizable. It does not wriggle; instead, waves of muscle contraction pass along the body enabling it to progress in a straight line. This type of rectilinear locomotion is unique amongst the vertebrates and allows amphisbaenians to move backwards or forwards with equal facility. If annoyed or alarmed the head and tail are held aloft. Since both are bluntly rounded and the eyes are scarcely developed, this behaviour is thought to confuse an aggressor into attacking the “wrong end” so that the head can then be used in defence.

A search of the scientific literature revealed that virtually nothing is known of the habits of *A. alba*, apart from two very obscure references to its possible association with the nests of leaf-cutting (bachac) ants. Subsequent conversation with Trinidadians well acquainted with the jungle confirmed this fact and accordingly, in 1980, we began a study of this animal by (in the first instance) attempting to dig it out of ant nests.

The ant in question, *Atta cephalotes*, builds large nests, up to 30 m across, that appear in the jungle as conspicuous mounds of excavated earth often covered by defoliated vegetation. The ants cut leaves of forest plants into fragments and take them into the nest where they use them to make a compost upon which a special fungus is cultivated; the fungus is used by the ants as their sole food source. Fungus cultivation is carried out in numerous underground chambers interconnected by wide passageways (a large nest can contain several hundred chambers, each as big as a football) and, as the compost becomes exhausted it is cut up and stored in even larger underground chambers which serve as refuse dumps.

An early dig (by hand) of an *Atta* nest in the Maracas Valley produced a clear and unmistakable sighting of a large amphisbaenian travelling rapidly along a gallery beyond a fungus chamber which had just collapsed. Although we failed to catch it, it seemed that the story of an association with ants was true. In a subsequent excavation in the Arima Valley, this time with an overloader driven by Krishna Ramdial of the SRC Quarry, Blanchisuisse Road, another large specimen was dug out unharmed. In all, seven excavations have yielded 3 worm-lizards.

These findings raise an obvious question; simply put, What is *A. alba* doing in ant nests? Is it feeding on ants and their grubs? To answer these questions we began a careful analysis of the intestinal contents, or faeces, of several amphisbaenians derived from a variety of sources (road kills, excavated specimens, and preserved museum specimens). Ants are frequently found in the intestines of these animals (in 7 out of 11 specimens) but usually in very low numbers and they do not seem to be a significant food item. Beetles and their larvae, by contrast, were quite commonly found and these comprise an important part of their diet.

Further research showed that certain of the beetles found in the intestines of *A. alba* (most notably the three-horned rhinoceros beetle *Coelosis biloba*, L.) only occur in the nests of leaf-cutting ants where they apparently feed on the spent compost stored in the underground refuse chambers. Our evidence indicates that the worm-lizards inhabit ant nests because these sites support this protected food source of beetles and their larvae. The ants themselves appear to be consumed only accidentally by the worm-lizards. Other surface-dwelling beetles are also preyed upon and we surmise that the animals also occasionally forage above ground.

The eyes of *Amphisbaena alba* are vestigial and the question of how the worm-lizard locates ant nests was solved by an interesting series of experiments. In 1983 three specimens were caught whilst on the surface in a cocoa plantation in the Maracas Valley and they were kept in captivity for some months in order to study their behaviour: they readily adapt to captivity and can be maintained on a diet of liver. We were able to show that the lizards could follow the foraging trails of ants by using odours liberated by the ants themselves.

The worker ants of *Atta cephalotes* do not forage in the
An unusual prey for the Marine Toad, Bufo marinus.

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IN their review of the natural history of the marine toad, *Bufo marinus*, which in Trinidad is called “crapaud”, Zug and Zug (1979) say that it “will apparently eat almost every animate object it can catch” and “although terrestrial arthropods form the bulk of its diet, snails, earthworms, and small vertebrates are also engulfed”. Grant (1946) also noted that it would eat noxious biting or stinging prey. It is easy to believe that among the vertebrates other species of amphibian, and perhaps its own young, would be included, as has been reported, even that the occasional lizard could be consumed. For instance, Pippet (1975) records three skinks among the stomach contents of marine toads in Papua New Guinea. It is surprising that venomous snakes could, even occasionally, form part of its diet, yet Richard ffrench (pers. comm) has seen a marine toad eating a small coral snake, *Micrurus pyxys circinalis*, and it is hard to imagine that birds could fall prey to it, yet this is exactly what this note records.

On my return home on the night of 10th July 1983 a strange animal that seemed to have wings sprouting from its head leapt away from the vicinity of the kitchen door and disappeared in the darkness. Getting a flashlight I located the animal again and found it to be a marine toad, not quite fully grown, that must have fallen out of the wrens’ nest below the garage roof. The head and neck were covered in mucus and seemed damaged, and the breast had lost a lot of feathers. The bird could not hold up its head and I doubted that it would live but I put it out of reach of the toad and went to bed.

The next morning the bird was holding its head up and the wrens were feeding it. The following day it disappeared into the nearby vegetation but its calls and those of the wrens indicated that it was still being fed and must have recovered completely.

I have seen so many animals, lizards, snakes and even birds, swallow prey that appeared to be too big for them that I have no doubt that had I not intervened the toad would eventually have managed to manoeuvre the bird down its throat especially since toads can use their hands to help them get their food in. Thus, we can now add young birds to the list of vertebrates that toads will eat if they can get them.

REFERENCES

