always significantly smaller). *Anolis agassizi* is an exception. The largest third of the males averages 105.4 mm SV, the maximum is 114 mm. The comparable female average is 85.2 mm SV with a recorded maximum at 87 mm. Thus *A. agassizi* is about the size of the Lesser Antillean giants *A. richardi* and *A. bimaculatus*, both of which are sympatric with smaller species.

Two hypotheses come to mind to explain the larger than predicted sizes of *A. agassizi*: (1) There was a congener on the island that is now extinct. This is unknowable, but unlikely. The very remoteness of the island makes the probability of a second colonization extremely low; and insertion of a new colonist onto a small, already occupied island is the exception rather than the rule for West Indian *Anolis*, where competitive exclusion seems to prevail (Williams, 1969; Gorman and Boos, 1972). (2) The average prey size is larger on Malpelo than in the Antilles. This is simply not the case (see below).

Any number of additional hypotheses to explain the body-size anomaly could be conjured up (e.g., selection to resist predation; intense sexual selection), but we have only our ignorance of the historical factors that have acted during the evolution of this species with which to discuss such hypotheses. Thus we resign ourselves to the observation that *A. agassizi* is large.

Food and Feeding

FIELD OBSERVATIONS AND ANALYSIS OF STOMACH CONTENTS.—The stomachs of 43 anoles were examined and the contents identified by H. Wolda, who collected invertebrates on Malpelo (see Wolda's paper herein). Most of the species of invertebrates that he found on Malpelo, except earthworms, were represented in the *Anolis*' guts. Major groups taken by the anoles include: snails, juvenile land crabs, isopods, millipedes, centipedes, spiders, pseudoscorpions, ticks, and insects. The insects included beetles, flies, true bugs, caterpillars, ants, crickets, and Thysanurians. Many of these animals are cryptic. They were found under rocks and in crevices. Anoles certainly do enter crevices and holes in the rocks where they probably catch some prey.

The most common items in the stomachs were ants. These occurred in all guts and in larger numbers than any other prey. The next most common items were beetles, both larvae and adults, which occurred in 72 percent of all guts. Together, beetles and ants made up the majority of the food eaten and probably more than half of the biomass.

The food items were small, nothing longer than 20 mm, few over 10 mm. The majority of the items and probably of the volume was in the 5 mm class.

This range of prey corresponds with our subjective impressions of what was available. We saw almost no invertebrates longer than 20 mm except earthworms, which were perhaps too well concealed to be captured, and the large land crabs, which were too big to be taken.

As previously pointed out, *A. agassizi* is larger than might be predicted on the basis of Schoener's (1969) study of single species anole communities. The feeding data, however, do not support the hypothesis that *A. agassizi* is larger because it feeds on unusually large prey. No precise comparisons can be made, but the food of *A. agassizi* is certainly smaller than that of the smaller mainland species *A. polylepis* (Andrews, 1971), and on the same order as that of the smaller *A. roquet*, which is alone on the island of Martinique (Schoener and Gorman, 1968).

Anoles made repeated efforts to catch a hookless trout fly which we presented to them. They jumped into the air for it when the artificial fly was dangled overhead. One suspects that they may gather at a bird carcass to feed on the invertebrates which also gather there. In this situation, they may leap into the air to catch circling flies.

A small series of anoles was taken from one of the south rocks, where grass and bushes grew much more abundantly than on Malpelo itself. All of these anoles had their lower intestines packed with grass seeds which appeared to be undigested.

About 60 percent of the guts contained a few (1 to 4) small, presumably parasitic, nematodes.

FEEDING EXPERIMENTS.—As pointed out above, the anoles seemed particularly bold and curious, and often came to us and even jumped on us. Casual observation implied that they were particularly attracted to the color orange. Thus, they seemed especially interested in a Kodak film package and in an orange screw-cap on a container of suntan lotion. This led us to perform two very simple field experiments.

The Orange Experiment: On several occasions in and near the study area, we set a half of an orange on a rock. Anoles from the surrounding areas gathered at the orange to lick repeatedly at the cut surface, and to bite, pull off, chew, and swallow, bits of the pulp (Figure 14). They also licked the peel, but did not persist in this. The anoles were intially attracted by the bright color of the orange, and persisted because of its taste.

We saw lizards come to the orange from as far as 15 meters across the rock face. Five or ten individuals would feed at the orange itself at one time, while another 10 to 20 remained within a 2 meter radius of it. There was almost no aggression shown at the orange though a male occasionally spread his small throat fan or bobbed.

The anoles seemed attracted to the area of the orange by the activities of the anoles already there, as well as by the orange itself. On one occasion we saw a succession of anoles drinking (1 to 4 at a time) from a small wet spot on the rocks. Again we had the impression that these lizards were attracted by the activities of other individuals.

Anoles did not stay at the orange for more than a few minutes though the same lizard might have returned several times in the course of an hour or two.

The "Chuckles" Experiment: To test the possibility that the anoles actually showed a color preference in making initial feeding choices, we used the jellied candy called "Chuckles." A package of this candy contains five colors (flavors): red, green, black, orange, and yellow. Comparisons of different colored candy were made by setting out pairs of equal sized bits of candy close together in areas where we had not conditioned the lizards to oranges. We noted which bit of candy was selected by the first lizard to approach (Figure 15).

FIGURE 14.—*Anolis agassizi* gathered about an orange half.

FIGURE 15.—*Anolis agassizi* making a choice between two equal sized pieces of "Chuckles."

The results (Table 2) show that yellow and orange are equivalent and that they both are chosen more frequently than the other colors ($p < 0.01$). Of the remainder, red and green are about equal, and both preferable to black, though the difference is not significant ($p > 0.05$). We hasten to add that this appears to be a color preference and not a taste preference, for once the less optimal candy was licked by the lizard, it was immediately eaten.

We cannot separate hue from brightness in these color choices, but all candies presented were conspicuous.

TABLE 2.—*Candy color preferences of* Anolis agassizi (numerator is the number of times "Color selected" was chosen before "Other color in test pair"; denominator is the total number of trials)

Color selected	*Other color in test pair*			
	Yellow	*Red*	*Green*	*Black*
Orange	3/7	3/3	6/6	6/8
Yellow	–	5/6	4/6	6/6
Red	–	–	2/6	5/6
Green	–	–	–	4/6

The preference for orange and yellow seems most peculiar because there are certainly no fruits of this color on the island. The only objects that we could find in this color range were the large land crabs, and the anoles showed not the least interest in these. One possible explanation is that the anoles are attracted to and feed on the yolks of broken seabird eggs. Many boobies nest on Malpelo and broken eggs may be a frequent occurrence at certain times of year.

Predation

The most conspicuous potential anole predators on the island are the large lizards, *Diploglossus*, the land crabs and the birds. The seabirds could certainly eat anoles, but Neal Smith (pers. comm.) says this is unlikely. The peregrine falcon (*Falcon peregrinus*) has been recorded on the island (Bond and deSchauensee, 1938), but it is normally a bird predator. The land crabs were everywhere. We saw a small group tearing apart and eating a still living anole (see p. 23). How it was caught is unknown for the crabs are relatively slow moving animals.

The *Diploglossus* appear to depend largely on the exuvia of boobies and on land crabs for food, and they gather where an adult booby is feeding its young. They do occasionally eat anoles, however, for a specimen in the American Museum of Natural History collections had one in its stomach (C. Meyers, pers. comm.). The *Diploglossus* could not be induced to eat oranges, but one big male repeatedly approached an orange that had attracted a large group of anoles, and the *Anolis* hurriedly fled at each approach. Though this *Diploglossus* was much swifter than the land crabs, the anoles were even faster and easily evaded him by keeping about a meter ahead of him on the rocks.

There is strong circumstantial evidence that predation is important. Approximately 85 percent of the anoles that we examined had their tails broken and regenerated. Given the low level of aggressiveness that we observed and the fact that females showed as high a precentage of breakage as males, the implication is that the breakage was not caused by interaction with conspecifics, but rather by predation attempts. Pianka (1970) has argued for a correlation between frequency of tail breakage and intensity of predation in lizards of the western United States.

If, as it seems likely, crabs and *Diploglossus* are the important predators of anoles, it is likely that they catch more small than large ones. The color patterns of *Anolis* are highly cryptic on the rocks, suggesting selection by a visually hunting predator.

Adult males with their permanently erect nuchal crests and black heads are very striking and are more conspicuous than females and juveniles. Adult males of many Antillean *Anolis* also are more conspicuous than females, presumably because sexual and social selection favors conspicuousness in males and the larger size of the males reduces their predation and consequently the selection against being conspicuous.

Temperature

An open question in our minds, before seeing the anolès of Malpelo in the field, concerned temperature adaptations. This species lives on bare rock near the equator. Would *A. agassizi* prefer high body temperatures? Would it be able to resist high environmental temperatures?

Our short-term, relatively simple studies indicate conclusively that with respect to temperature *A. agassizi* is a rather typical anoline lizard. Forty body-temperature measurements of active animals were taken in the field with a Schultheis thermometer. The mean temperature, representing pooled samples of several mornings and early afternoons was 30.6°C (24–38°C) with a standard deviation of 1.8. We believe that this approximates the preferred body temperature as, quite obviously, the lizards could easily have had higher body temperatures by sunning themselves briefly on exposed rocks. Conversely, by spending more time in crevices, lower body temperatures could have been maintained. The *A. agassizi* temperatures were very similar to the Lesser Antillean species *A. richardi* and *A. aeneus* (Schoener and Gorman, 1968), and comparable to, but slightly lower than, *A. homolechis* on Cuba (Ruibal, 1961), a filtered sun animal.

Anolis agassizi does not show a temperature adaptation to particularly high or low temperatures. This is what one might expect from the structure of the island, which receives a great deal of insolation but also provides a great many hiding