THE MAMMALS OF NORTHEASTERN BRAZIL: A PRELIMINARY ASSESSMENT

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ABSTRACT

Mammals were collected in northeastern Brazil between 1975 and 1978. Research was concentrated in the State of Pernambuco in the environs of the Municipality of Exu and in the State of Ceará, in the Municipality of Crato. Additionally, a representative sample of mammals collected throughout the Caatingas and housed in the National Museum in Rio de Janeiro and the Museum of Zoology of the University of São Paulo was examined. Distributional data as well as ecological notes are presented in this preliminary report. Major collecting localities are also described.

INTRODUCTION

Background

In 1974, initial efforts were made to examine various aspects of mammalian biology in the semiarid Caatingas of northeastern Brazil. This area is of particular interest because it is an extensive tropical...
pocket of aridity bordered by more mesic habitat and may be important from a biogeographic perspective (Müller, 1973). Although the Caatingas has long played an important role in the culture and economy of Brazil (see for example James, 1942), the region has not been well studied, particularly from the point of view of its mammal fauna. Further, the entire region is greatly affected by human activities (agriculture, ranching, hunting), making it imperative to examine the area as soon as possible. Despite its broad extent and unique climate, previous studies have found that the Caatingas does not support significant numbers of endemic bird species (Sick, 1965) or lizards (Vanzolini, 1974). In this report we give a preliminary accounting of the mammals of the Caatingas, particularly those inhabiting the geographical center of the region near Exu, Pernambuco, and Crato, Ceará. We also include habitat descriptions and ecological notes on several species.

**Objectives**

The major objective of our research was to examine the distribution and ecology of the mammals of the Caatingas. Although we originally intended to continue the field research beyond 1978, difficulties in funding ended field work in May of that year. During the two years of greatest activity (1976–78), we were able to examine the mammal fauna of the environs of the Municipality of Exu in some detail. We were also able to initiate detailed treatments of the behavioral ecology of *Kerodon rupestris*; the habitat selection and interspecific aggression of *Thrichomys aperoides*, *Galea spixii*, *Monodelphis domestica*, and *Didelphis albiventris*; and the community ecology and reproductive biology of the bat faunas of habitats supporting Caatingas and Cerrado vegetation. Finally, we hope to be able to clarify various taxonomic problems concerning Caatingas species, as well as to offer new data on the distribution and natural history of many species of mammals from this largely unstudied region. This preliminary report on the mammals of the Northeast will be a forerunner of more extensive faunal analyses which will appear as the final preparation of specimens is completed.

**Personnel**

The primary field researchers involved in this study were Michael R. Willig, Karl E. Streilein, and Thomas E. Lacher, Jr. In addition, some specimens were collected by Michael A. Mares, and all of the above examined various localities throughout much of the Caatingas. Employees of AGGEU, under the direction of Celio Rodrigues de Almeida, occasionally provided specimens collected from the Municipality of Exu. Several specimens were collected by Alfred L. Gardner during a visit to Exu. Finally, some specimens were collected by Laurie J. Vitt. The project was coordinated by Mares, and at least one full-time field assistant was available for each investigator.
Collections

Most of our collecting was done in the immediate area of the Municipality of Exu, Pernambuco, and the Municipality of Crato, Ceará, particularly on the Chapada do Araripe. Occasional collecting trips were made to other areas, but in comparison with the work performed in the Exu-Crato area, these were minor in scope. In order to obtain a better idea of mammal distribution patterns in the Caatingas, we examined the extensive collection of Caatingas mammals housed in the National Museum of Rio de Janeiro and the Museum of Zoology of the University of São Paulo. We also attempted to collect specimens in most of the major macrohabitats of the Northeast. The Northeast of Brazil contains five principal vegetation zones including: Rainforest along the Atlantic coast, Cerrado, Caatingas, Cerrado-Caatingas contact zone, and Palm Forest. We were able to do some collecting in each of these regions, but our samples are far from adequate to arrive at a definitive faunal assessment for any region.

During this study, 6576 mammal specimens representing seven orders, 21 families, 56 genera, and 74 species were collected. An additional 630 specimens representing four orders, six families, 16 genera, and 17 species were examined in museum collections. Upon completion of museum specimen processing, half of our collection will be housed in the Zoology Museum of the University of São Paulo and half will be housed in the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

A complete list of species, including those observed but not captured, is as follows:

Order Marsupialia
Family Didelphidae
  Monodelphis domestica
  Marmosa cinerea
  Marmosa karimii
  Didelphis albiventris

Order Chiroptera
Family Emballonuridae
  Saccopteryx bilineata
  Saccopteryx leptura
  Peroptyerys macrotis

Family Nectarionidae
  Noctilio leporinus

Family Mormoopidae
  Pteronyctis daevi
  Pteronyctis pardellii
  Pteronyctis personatus

Family Phyllostomidae
Subfamily Phyllostominae
  Micronycteris minuta
  Micronycteris sp.
  Lonchorhina aurita
  Tarsius bidens
  Tarsius brasiliense
  Mononcriterium tenuatum
  Phyllostomus discolor
  Phyllostomus hastatus
  Trachops cirrhosus

Subfamily Glossophaginae
  Glossophaga soricina
  Longechophylla mordax
  Anoura geoffroyi

Subfamily Carollinae
  Carollia perspicillata

Subfamily Stenodermata
  Desmodus rotundus
  Diaemus youngii
  Diphylia ecaudata

Family Natalidae
  Natalus stramineus

Family Furipteridae
  Furipterus horrens

Family Vespertilionidae
  Myotis nigricans
  Eptesicus furinalis
Description of Study Sites

The Caatingas is a vast semiarid region of northeastern Brazil (Fig. 1), occurring between approximately 35° and 45° west longitude and 3° and 16° south latitude (Reis, 1976). The area encompasses about 650,000 km² (Frota-Pessoa et al., 1971), or about 10% of the territory of Brazil (Reis, 1976). The region is rather anomalous in that it is the largest dry region contained within the tropics and is bordered by much more mesic habitats.

The climate of the Caatingas has been extensively studied by Markham (1972; see also Markham and McLain, 1977). Most of the Caatingas receives less than 500 mm of precipitation per year, although some areas receive more than 1600 mm of rain per year. The whole region is subject to unpredictable periods of aridity when rainfall over large areas will not exceed 200 mm per year. This has given the Caatingas the name Polygon of Drought (for example, Frota-Pessoa et al., 1971), and the effects of the periodic extreme aridity on the human populace are pronounced (James, 1942), particularly in localities in which annual rainfall plummets to zero for an entire year. Gener-
Fig. 1.—The Caatingas of Brazil (area enclosed by the dotted line) occupies an area of 650,000 km², contained for the most part in the nine states of the Northeast. Ally, most rainfall over much of the Caatingas falls between December and April or May, with showers commencing in October (James, 1942). In particularly wet years, there may be no drought period at all, although usually each year contains at least several months with little or no precipitation when deciduousness is pronounced.
Fig. 2.—The windward side of large chapadas and serrotes (indicated by thick black lines) receive appreciable amounts of orographic rainfall due to the adiabatic cooling of rising air currents (arrows). This in turn produces a rain shadow (shaded area) throughout the interior of the Northeast which is unpredictably subject to periods of severe drought (Adapted from Markham, 1972).

There is marked topographic relief across the Caatingas as hills, low mountain ranges, and rocky knobs protrude above the gentle plain. These are all the result of differential erosion and provide sites of increased rainfall (orographic precipitation) due to upwelling air currents caused by the rocky barriers (Fig. 2). The largest of these, the Chapada do Araripe, was located within our principal collecting area and provided a mesic enclave within the overall semiarid region. Because of the effect of the Chapada do Araripe and other associated rocky hills, the Exu-Crato region provides a large diversity of habitat types, varying from very dry localities to quite mesic sites; vegetation on these sites varies in accordance with precipitation and is described below (Fig. 3). During the period of intensive study (1976–78), the Exu-Crato region experienced two years of high precipitation without a well-delineated drought period. The vegetation during this time did not undergo pronounced deciduousness.

A description of each collecting locality and a faunal list for each area follow.
Fig. 3.—Graphic representation (adapted from Willig, unpublished manuscript) of the mosaic of habitats in the Caatingas and their proximity to cerrado vegetation on the Chapada do Araripe and to humid forest in areas of orographic rainfall. Key to habitat types—A, Caatinga Baixa; B, Serrate; C, Caatinga Alta; D, Lajeiro; E, Cerrado; EE, Disturbed areas of Cerrado; F, Cerradão; G, Humid Forest.

Table 1.—Common plants of Caatinga Baixa habitats in the Município de Exu, Pernambuco.

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassia excelsa</td>
<td>Leguminosae</td>
</tr>
<tr>
<td>Cereus jamacaru</td>
<td>Cactaceae</td>
</tr>
<tr>
<td>Cnidoscolus urens</td>
<td>Euphorbiaceae</td>
</tr>
<tr>
<td>Cordia globosa</td>
<td>Boraginaceae</td>
</tr>
<tr>
<td>Croton campestris</td>
<td>Euphorbiaceae</td>
</tr>
<tr>
<td>Croton jacobinensis</td>
<td>Euphorbiaceae</td>
</tr>
<tr>
<td>Phaseolus peduncularis</td>
<td>Leguminosae, Papilionaceae</td>
</tr>
<tr>
<td>Piptadenia sp.</td>
<td>Leguminosae, Mimosoideae</td>
</tr>
<tr>
<td>Piptadenia zehntneri</td>
<td>Leguminosae, Mimosoideae</td>
</tr>
<tr>
<td>Ziziphus joazeiro</td>
<td>Rhamnaceae</td>
</tr>
</tbody>
</table>
I. The Remnant Atlantic Rain Forest

A short time (5 days) was spent making a preliminary survey of the mammal fauna of the Estação Ecológico do Tapacurá, located west of Recife, Pernambuco. This area is contained within the zone of what was previously dominated by the Atlantic Rain Forest; today it is limited to only the small patches of the original vegetation which have escaped destruction (compare James, 1942; Frota-Pessoa et al., 1971). Most of the region supports sugar cane or other crops and orchards; the effect of agricultural activities on the present-day remnants of the forest fauna are unknown.

The Atlantic Rain Forest is characterized by a high diversity of mesophytic broadleafed trees. Although the canopy may reach a height of 35 m, it rarely exceeds 25 m. Within the rainforest, ground cover is sparse and vines often form complex networks from ground level through the canopy.

A list of mammal species either collected or sighted follows. For this and other localities, we have included a subjective assessment of abundance, with U = unknown, R = rare, C = common, and A = abundant.

<table>
<thead>
<tr>
<th>Species</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monodelphis domestica</td>
<td>(U)</td>
</tr>
<tr>
<td>Didelphis albiventris</td>
<td>(U)</td>
</tr>
<tr>
<td>Peroptyeryx macrotis</td>
<td>(U)</td>
</tr>
<tr>
<td>Micronycteris minuta</td>
<td>(U)</td>
</tr>
<tr>
<td>Phyllostomus hastatus</td>
<td>(U)</td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(U)</td>
</tr>
<tr>
<td>Carolia perspicillata</td>
<td>(U)</td>
</tr>
<tr>
<td>Sturnira lilium</td>
<td>(U)</td>
</tr>
<tr>
<td>Artibeus cinereus</td>
<td>(U)</td>
</tr>
<tr>
<td>Artibeus jamaiicensis</td>
<td>(U)</td>
</tr>
<tr>
<td>Artibeus liuratus</td>
<td>(U)</td>
</tr>
<tr>
<td>Desmodus rotundus</td>
<td>(U)</td>
</tr>
<tr>
<td>Diaemus youngii</td>
<td>(U)</td>
</tr>
<tr>
<td>Myotis nigricans</td>
<td>(U)</td>
</tr>
<tr>
<td>Lasiusurus borealis</td>
<td>(U)</td>
</tr>
<tr>
<td>Molossops greenhalli</td>
<td>(U)</td>
</tr>
<tr>
<td>Akodon sp.</td>
<td>(U)</td>
</tr>
<tr>
<td>Galea spixii</td>
<td>(U)</td>
</tr>
<tr>
<td>Trichomys apereoides</td>
<td>(U)</td>
</tr>
</tbody>
</table>

II. Caatingas

The semiarid region of anomalous drought in the Northeast of Brazil encompasses a wide range of plant communities which are collectively known as Caatingas (Fig. 3). In general, Caatingas are assemblages of xeric-adapted plants, however, these communities need not be dominated by members of the Cactaceae.

Caatinga Baixa.—Throughout the lower elevations in Pernambuco and parts of Ceará and Bahia, Caatinga Baixa, or Low Caatinga communities predominate. Although the species composition may shift considerably between widely separated localities, trees are generally xerophytic and reach a height of 3 to 5 m with occasional emergents reaching a height of 8 m. Large cacti, such as Cereus jamacaru (Mandacaru), Cephalocereus gounellei (Xique-Xique), and Zehntherella squamulosa (Facheiro), are common components in Low Caatinga communities (Figs. 4 and 5). Substantial variation in the types of vegetation within a single locality is the rule rather than the exception in Caatinga Baixa. Minor differences in topography, variation in soil parameters, prior utilization by man, and differential exploitation by domestic animals are among the primary factors which generate the characteristic microhabitat mosaics. This complex of microhabitats is often too diverse to be easily categorized with a few broad generalizations. Some of the more common plants in Caatinga Baixa are listed in Table 1. The mammals of Caatinga Baixa are as follows:
Monodelphis domestica (C) Rhogeessa tumida (U)
Marmosa karimii (R) Lasiurus egas (R)
Didelphis albiventris (C) Molossus ater (R)
Noctilio leporinus (C) Molossus molossus (R-C)
Pteronotus personatus (R) Callithrix jacchus (R)
Trachops cirrhosus (R) Dasyxus novemcinctus (C)
Glossophaga soricina (C) Euphractus sexcinctus (C)
Lonchophylla mordax (C) Sylvilagus brasiliensis (U)
Anoura geoffroyi (R) Calomys callosus (R)
Carollia perspicillata (C) Wiedomys pyrrhorhinos (R)
Uroderma bilobatum (R) Galea spixii (R)
Vampyrops lineatus (C) Cerdocyon thous (C)
Artibeus jamaicensis (R) Procynx cancriterus (R)
Artibeus lituratus (R) Galictis vittata (U)
Desmodus rotundus (C) Conepatus semistriatus (U)
Myotis nigricans (R-C) Felis yagouaroundi (U)

Caatinga Alta.—Large xerophyllic trees which annually lose their leaves in synchrony during the dry season predominate and form a closed canopy in the wet season. These trees range in size from 10 to 12 m tall and are less densely packed than trees in Caatinga Baixa habitats (Fig. 6). The understory is usually poorly developed, but varies greatly in both composition and density from locality to locality. Caatinga Alta communities are restricted to higher elevations, hillsides, or the perimeters of valleys. The common plants in these communities are listed in Table 2. Locations which support Caatinga Alta communities are generally more mesic than Low Caatinga sites, but are drier than nearby serrotes. Rock outcroppings are often dispersed throughout the forest floor, but they are rarely very large. A list of mammals occurring in Caatinga Alta is as follows:

Monodelphis domestica (C) Desmodus rotundus (A)
Didelphis albiventris (C) Diphylla ecaudata (R)
Noctilio leporinus (C) Myotis nigricans (R-C)
Pteronotus davii (R) Molossops planirostris (R)
Micronycteris minuta (R) Neoplatymops mattrugrossensis (R)
Micronycteris sp. (R) Molossus molossus (R-C)
Tonatia bidens (C) Cebus apella (R)
Tonatia brasiliensis (R) Callithrix jacchus (C)
Mimon crenulatum (R) Tamandua tetradactyla (R)
Phyllostomus discolor (R) Euphractus sexcinctus (R)
Glossophaga soricina (C-A) Dasyprocta prymnolopa (R)
Lonchophylla mordax (C) Cerdocyon thous (C)
Carollia perspicillata (C-A) Galictis vittata (U)
Sturnira lilium (R) Felis yagouaroundi (U)
Vampyrops lineatus (C) Felis onca (U)
Artibeus jamaicensis (C) Mazama gouazoubira (R)
Artibeus lituratus (R-C)
Fig. 4.—Although dense deciduous trees and shrubs form the dominant thorn scrub component of Caatinga Baixa, cacti such as Xique-Xique (shown in this photograph) are prevalent in many localities. Municipio de Serra Talhada, Pernambuco.

Fig. 5.—Much of the Caatingas is being altered by human activities. The effects of slash and burn agriculture (on the right of the photograph) are contrasted with the dense vegetation of Caatinga Baixa. Municipio de Exu, Pernambuco.
Fig. 6.—Granitic substrates (seen in the foreground) often delimit the edge of Caatinga Alta habitats at higher elevations on serrotes. Notice the large trees (seen in the background) typical of Caatinga Alta vegetation. Municipio de Exu, Pernambuco.

Fig. 7.—A rocky serrote interrupts the flat plain of Caatinga Baixa habitat. Photograph taken during the dry season of 1975. Municipio de Serra Talhada, Pernambuco.
Fig. 8.—Extensive lajeiros studded with cacti (Mandacaru and Palma) and bromeliads are frequently encountered in the Caatingas. At this particular site, the top of the lajeiro is slightly elevated above the plain of the surrounding thorn scrub. Depressions and crevices on the surface often fill with water in the wet season and persist for a variable amount of time in the dry season. Municipio de Senhor do Bom Fim, Bahia.

The upper limit of Caatinga Alta habitat; hence the vegetation of the serrotes may be considered a mixture of Caatinga Alta and more mesic elements such as palm trees. The mammals of the serrotes include the following:

| Monodelphis domestica | (A) | Artibeus lituratus | (C) |
| Didelphis albiventris | (A) | Desmodus rotundus | (A) |
| Peropteryx macrotis | (R) | Diphylleia ecaudata | (R) |
| Micronycteris sp. | (R) | Furiipetes horrens | (R) |
| Tonatia bidens | (C) | Myotis nigricans | (R-C) |
| Tonatia brasiliense | (R) | Molossops temminckii | (R) |
| Phyllostomus discolor | (R) | Neoplatynops mattogrossensis | (R) |
| Phyllostomus hastatus | (R) | Euphractus sexcinctus | (R) |
| Trachops cirrhosus | (C) | Kerodon rupestris | (A) |
| Glossophaga soricina | (A) | Thrichomys apereoides | (A) |
| Lonchophylla mordax | (C) | Cerdocyon thous | (C) |
| Anoura geoffroyi | (R-C) | Galictis vittata | (C) |
| Carollia perspicillata | (A) | Conepatus thousiani | (U) |
| Vampyrops lineatus | (A) | Felis yagouraroudi | (U) |
| Artibeus jamaicensis | (A) | |

Lajeiros.—Lajeiros are rock outcroppings primarily distributed throughout low lying areas of the Caatingas. They vary in complexity from simple unbroken rock faces, to
Fig. 9.—Lajeiros composed of large boulders are also common in the Caatingas (background of photograph). The foreground is occupied by an abandoned agricultural field which is in an early successional stage of development, while the lajeiro harbors a flora more typical of Caatinga Baixa vegetation. Município de Senhor do Bom Fim, Bahia.

Table 2.—Common plants of Caatinga Alta habitats in the Município de Exu, Pernambuco.

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
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</thead>
<tbody>
<tr>
<td>Bauhinia sp.</td>
<td>Leguminosae, Caesalpinioideae</td>
</tr>
<tr>
<td>Cavanillesia arborea</td>
<td>Bombacaceae</td>
</tr>
<tr>
<td>Cordia sp.</td>
<td>Boraginaceae</td>
</tr>
<tr>
<td>Craetava tapia</td>
<td>Capparaceae</td>
</tr>
<tr>
<td>Croton argyrophylloides</td>
<td>Euphorbiaceae</td>
</tr>
<tr>
<td>Croton jacobinensis</td>
<td>Euphorbiaceae</td>
</tr>
<tr>
<td>Erythroxylum sp.</td>
<td>Erythroxylaceae</td>
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<tr>
<td>Piptadenia zehntneri</td>
<td>Leguminosae, Mimosoideae</td>
</tr>
<tr>
<td>Pterogyne nitens</td>
<td>Leguminosae, Papilionoideae</td>
</tr>
<tr>
<td>Schinus terebinthifolius</td>
<td>Anacardiaceae</td>
</tr>
</tbody>
</table>
range of sizes whose upper limit includes extensive formations best measured in hectares. Complex lajeiros greatly enhance the horizontal and vertical complexity of the Caatingas. Mammals frequenting lajeiros include the following:

<table>
<thead>
<tr>
<th>Species</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Monodelphis domestica</td>
<td>(A)</td>
</tr>
<tr>
<td>Didelphis albiventris</td>
<td>(A)</td>
</tr>
<tr>
<td>Peropteryx macrotis</td>
<td>(R)</td>
</tr>
<tr>
<td>Micronycteris sp.</td>
<td>(R)</td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(C)</td>
</tr>
<tr>
<td>Carolia perspicillata</td>
<td>(C-A)</td>
</tr>
<tr>
<td>Vampyrops lineatus</td>
<td>(C)</td>
</tr>
<tr>
<td>Molossops temminckii</td>
<td>(R)</td>
</tr>
<tr>
<td>Neolatymops mottogrossensis</td>
<td>(C)</td>
</tr>
<tr>
<td>Kerodon rupestris</td>
<td>(A)</td>
</tr>
<tr>
<td>Galea spixii</td>
<td>(C)</td>
</tr>
<tr>
<td>Trichomys apereoides</td>
<td>(A)</td>
</tr>
<tr>
<td>Cercocyon thous</td>
<td>(C)</td>
</tr>
<tr>
<td>Galictis vittata</td>
<td>(C)</td>
</tr>
</tbody>
</table>

Areas dominated by human activity.—Agricultural practices have greatly altered the natural state of the Caatingas (Fig. 10). Fruit orchards may predominate in the more mesic areas, especially along streams, where a wide variety of fruits such as oranges, papayas, bananas, and mangos are cultivated.

The standard procedure for establishing an agricultural field entails clear-cutting sections of Low or High Caatinga, removing the large pieces of wood for fuel, and burning the remaining material on the site. Subsequent utilization varies, depending upon both the site and crop planted. Corn and beans are the most common and transient crops grown in Low Caatinga habitats, whereas cotton and Opuntia plantings may persist for years. Grass pastures also last for many years, due in part to occasional burning and constant grazing by cattle and horses, which prevent the reestablishment of Caatingas vegetation.
Ground cover is very dense and short, rarely exceeding 1 meter in height. Members of the Poaceae (Aristida, Brachiaria, Cenchrus, Panicum, and Rhynchelytrum) and herbs generally predominate; small shrubs, tree seedlings, and cacti are scattered throughout the area.

Ground cover continues to be well developed. Malavaceous herbs (Gaya, Bogenhardia and Sida) are predominant. Tree saplings, shrubs, and herbs frequently exceed a height of one meter.

Ground cover diminishes concomitantly as shrubs (particularly Solanum spp) and trees (typically legumes or euphorbs such as Cassia, Piptadenia or Croton) attain heights between two and three meters.

Ground cover is sparse due to the enlarging area shaded by the canopy. A well developed shrub component is present but rarely exceeds a height of two meters; species of the Acanthaceae (Jacobina and Ruella) are of increasing importance.

Ground cover is generally weakly developed or nonexistent. The shrub layer varies in density but is typically 1 to 3 meters high. Trees dominate the flora, the majority of them attaining a height between 3 and 5 meters. Occasional emergents exceed 5 meters in height, but these are rare.

Fig. 11.—Much of the Caatingas occurs in one of the seral stages of ecological succession graphically illustrated above. (Adapted from Willig et al., unpublished manuscript.)

Abandoned agricultural fields proceed through a number of successional stages. The amount of time during which a particular sere persists is extremely variable, primarily because vegetative growth is directly linked to the amount and timing of annual rainfall. Due to the magnitude of human activity in recent history, much of the Caatingas is in a disturbed state, existing in one of the seral stages discussed in Fig. 11. Mammals found in disturbed habitats include the following:

<table>
<thead>
<tr>
<th>Buildings</th>
<th>Trees</th>
<th>Shrubs</th>
<th>Herbs</th>
<th>Grass</th>
<th>Cacti</th>
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<tr>
<td>Monodelphis domestica</td>
<td>(R)</td>
<td>Tadarida lactucauda</td>
<td>(R)</td>
<td></td>
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</tr>
<tr>
<td>Didelphis albiventris</td>
<td>(R)</td>
<td>Molossus ater</td>
<td>(R)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peropteryx macrotis</td>
<td>(R)</td>
<td>Molossus molossus</td>
<td>(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(A)</td>
<td>Promops sp.</td>
<td>(R)</td>
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<tr>
<td>Carollia perspicillata</td>
<td>(C)</td>
<td>Rattus rattus</td>
<td>(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myotis nigrics</td>
<td>(C-A)</td>
<td>Mus musculus</td>
<td>(R)</td>
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</tbody>
</table>
Fig. 12.—Cerrado vegetation on the Chapada do Araripe in the Floresta Nacional Araripe-Apodi is dominated by grass and trees and is quite similar to the savanna of Africa. Município de Crato, Ceará.

Agricultural fields

<table>
<thead>
<tr>
<th>Species</th>
<th>Condition</th>
<th>Species</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monodelphis domestica</td>
<td>(R)</td>
<td>Oryzomys subflavus</td>
<td>(R-C)</td>
</tr>
<tr>
<td>Didelphis albiventeris</td>
<td>(R)</td>
<td>Bolomys lasiurus</td>
<td>(R-A)</td>
</tr>
<tr>
<td>Oryzomys eliurus</td>
<td>(R)</td>
<td>Galea spixii</td>
<td>(A)</td>
</tr>
</tbody>
</table>

Fruit orchards

<table>
<thead>
<tr>
<th>Species</th>
<th>Condition</th>
<th>Species</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monodelphis domestica</td>
<td>(R)</td>
<td>Anoura geoffroyi</td>
<td>(R)</td>
</tr>
<tr>
<td>Didelphis albiventeris</td>
<td>(C)</td>
<td>Carollia perspicillata</td>
<td>(C)</td>
</tr>
<tr>
<td>Phyllostomus discolor</td>
<td>(C)</td>
<td>Vampyrops lineatus</td>
<td>(C)</td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(C)</td>
<td>Lasiurus ega</td>
<td>(R)</td>
</tr>
</tbody>
</table>

Abandoned fields

<table>
<thead>
<tr>
<th>Species</th>
<th>Condition</th>
<th>Species</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monodelphis domestica</td>
<td>(C)</td>
<td>Bolomys lasiurus</td>
<td>(R-A)</td>
</tr>
<tr>
<td>Marmosa karimii</td>
<td>(R)</td>
<td>Calomys callosus</td>
<td>(R)</td>
</tr>
<tr>
<td>Didelphis albiventeris</td>
<td>(C)</td>
<td>Galea spixii</td>
<td>(A)</td>
</tr>
<tr>
<td>Dasyptus novemcinctus</td>
<td>(U)</td>
<td>Cerdoyon thous</td>
<td>(C)</td>
</tr>
<tr>
<td>Euphractus sexcinctus</td>
<td>(U)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. The Chapada do Araripe

The Floresta Nacional Araripe-Apodi contains most of the collection sites examined on the Chapada do Araripe. The topography of the plateau is exceedingly flat, with a thin layer of sandy red soil covering a hard sandstone substrate. Permanent bodies of
Humid forest occupies areas of orographic rainfall on the windward side of the Chapada do Araripe. Municipio de Crato, Ceará.

Water of any size are absent from the Chapada do Araripe; during the rainy season, temporary pools of water may form in low-lying depressions. There are no rocks, boulders or even stones on the top of the Chapada. In general, the vegetation is sclerophyllous and semideciduous. Trees and shrubs may lose their leaves each year, but leaf loss is asynchronous both inter- and intraspecifically.

Cerrado.—The Cerrado of the Chapada do Araripe is physiognomically an open tree and shrub woodland with a pervasive grass component (Figs. 3 and 12). Taller trees, rarely exceeding a height of 15 m, are scattered throughout the area. Smaller trees of various sizes (3 m to 5 m) and shrubs (.5 m to 3 m) comprise about 50% of the plant
cover, while grass species occupy the remaining area. As such, the canopy is irregular and undulating in profile, with numerous areas lacking woody plants. Taller trees and shrubs often have characteristically twisted trunks and branches. The most common trees, shrubs, and grasses are noted in Table 3, while the mammals of the Cerrado portion of the Chapada do Araripe include the following:

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annona sp.</td>
<td>Annonaceae</td>
</tr>
<tr>
<td>Byrsonima sericea</td>
<td>Malpighiaceae</td>
</tr>
<tr>
<td>Caryocar coreaecrum</td>
<td>Caryocaraceae</td>
</tr>
<tr>
<td>Casearia dentata</td>
<td>Flacourtiaee</td>
</tr>
<tr>
<td>Casearia grandiflora</td>
<td>Flacourtiaee</td>
</tr>
<tr>
<td>Cassia speciosa</td>
<td>Leguminosae, Caesalpinioideae</td>
</tr>
<tr>
<td>Cassia splendida</td>
<td>Leguminosae, Caesalpinioideae</td>
</tr>
<tr>
<td>Dioecia bicolor</td>
<td>Leguminosae, Papilonoideae</td>
</tr>
<tr>
<td>Fagana gardneri</td>
<td>Rutaceae</td>
</tr>
<tr>
<td>Hirtela glandulosa</td>
<td>Chrysobalanaceae</td>
</tr>
<tr>
<td>Hirtela racemosa</td>
<td>Chrysobalanaceae</td>
</tr>
<tr>
<td>Hypsis umbrosa</td>
<td>Labiatae</td>
</tr>
<tr>
<td>Miconia c.f. albicans</td>
<td>Melastomaceae</td>
</tr>
<tr>
<td>Miconia ligustroides</td>
<td>Melastomaceae</td>
</tr>
<tr>
<td>Myrcia sp.</td>
<td>Myrtaceae</td>
</tr>
<tr>
<td>Ocotea pallida</td>
<td>Lauraceae</td>
</tr>
<tr>
<td>Parkia platicephala</td>
<td>Leguminosae, Mimoseoideae</td>
</tr>
<tr>
<td>Stygymaphilon</td>
<td>Malpighiaceae</td>
</tr>
<tr>
<td>Vismia</td>
<td>Guttiferae</td>
</tr>
</tbody>
</table>

Cerradão.—Certain sections in the Floresta Nacional Araripe-Apodi differ substantially from the Cerrado vegetation in both density, physiognomy, and species compo-
sition. Stands with many trees, few shrubs and little grass are herein referred to as Cerradão. The Cerradão is composed of larger trees which form a more or less continuous canopy between 12 and 17 m high, and the trees do not have the twisted appearance characteristic of the Cerrado. Tree density is much greater in the Cerradão than in the Cerrado. The understory may vary considerably from quite dense to sparse; in either case however, shrubs less than 1 m in height and grasses are quite rare. Mammals of the Cerradão portion of the Chapada are as follows:

Didelphis albiventris (A) Artibeus jamaicensis (A)
Saccopeteryx bilineata (R) Desmodus rotundus (R)
Noctilio leporinus (R) Myotis nigricans (R-C)
Pteronotus davii (R) Eptesicus brasiliensis (R)
Micronycteris sp. (R) Lasiusus borealis (R)
Micronycteris minuta (R) Molossops temminckii (R)
Phyllostomus discolor (A) Tadarida sp. (R)
Phyllostomus hastatus (A) Molossus molossus (R-C)
Glossophaga soricina (A) Callithrix jacchus (R-C)
Anoura geoffroyi (A) Euphractus sexcinctus (U)
Carollia perspicillata (A) Dasyprocta prymolophra (C)
Sturnira lilium (R-C) Proechimys sp. (U)
Vampyrops lineatus (A) Cerdocyon thous (C)
Artibeus concolor (R) Felis concolor (U)
Artibeus lituratus (A) Mazama gouazoubira (R-C)

IV. Cerrado-Caatingas Contact Zone

The area around Valença do Piauí, Piauí, was chosen as a Caatingas-Cerrado contact zone because it had been previously used by Vanzolini (1976) in his analysis of the herpetofauna of the Caatingas and Cerrado of Brasil. Vanzolini discussed the flora and geomorphology of the area in some detail; it is sufficient here to point out that the area contains a number of contact zones between Caatingas and Cerrado habitats (that is, Cerrado without Caatingas enclaves, Cerrado with Caatingas enclaves at upper elevational limits, and Cerrado with Caatingas enclaves at the lower elevational limits). The total amount of time spent in the area of Valença do Piauí was limited, hence the absence of a species from the collection is not indicative of its absence from the area. More intensive field work is required to substantiate the abundance and distribution of mammals in these contact zones. Mammals whose occurrence in this region we were able to document include:

Monodelphis domestica (U) Lasiurus ega (U)
Didelphis albiventris (U) Molossops abrasus (U)
Pteronotus davii (U) Molossus ater (U)
Pteronotus parnellii (U) Molossus molossus (U)
Pteronotus personatus (U) Eumops sp. (U)
Phyllostomus discolor (U) Kerodon rupestris (U)
Lonchorhina aurita (U) Galea spixii (U)
Glossophaga soricina (U) Trichomys apereoides (U)
Artibeus jamaicensis (U)

V. Humid Forest

The plant community along the base of the Chapada do Araripe in the Municipality of Crato, Ceará, may be classified as a humid forest. The forest forms an irregular band
Fig. 14.—More mesic inland portions of the Northeast may support extensive palm forests such as that seen here. The sandy area in the foreground is a dried river bed. Across the state border from Teresina, Piauí, in the state of Maranhão.

which circumscribes the base of the Chapada do Araripe in the state of Ceará. Precipitation on the Crato side of the Chapada do Araripe is higher than in contiguous areas due to orographic rainfall patterns (Markham, 1972). Only a small amount of time was spent in the area, so extensive information about the vegetation is lacking. Many planted palms were evident, and the vegetation was dense and luxuriant (Fig. 13). Substantial areas that were once forested have been altered by human activity. A preliminary list of mammals of the humid forest is as follows:

<table>
<thead>
<tr>
<th>Species</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Didelphis albiventris</td>
<td>(U)</td>
</tr>
<tr>
<td>Saccopteryx leptura</td>
<td>(U)</td>
</tr>
<tr>
<td>Micronycteris sp.</td>
<td>(U)</td>
</tr>
<tr>
<td>Phyllostomus hastatus</td>
<td>(C)</td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(A)</td>
</tr>
<tr>
<td>Lonchophylla mordax</td>
<td>(U)</td>
</tr>
<tr>
<td>Anoura geoffroyi</td>
<td>(U)</td>
</tr>
<tr>
<td>Carolia perspicillata</td>
<td>(A)</td>
</tr>
<tr>
<td>Sturnira lilium</td>
<td>(U)</td>
</tr>
<tr>
<td>Vampyrops lineatus</td>
<td>(C)</td>
</tr>
<tr>
<td>Artibeus jamaicensis</td>
<td>(C)</td>
</tr>
<tr>
<td>Artibeus lituratus</td>
<td>(U)</td>
</tr>
<tr>
<td>Desmodus rotundus</td>
<td>(U)</td>
</tr>
<tr>
<td>Myotis nigricans</td>
<td>(U)</td>
</tr>
<tr>
<td>Molossus molossus</td>
<td>(C-A)</td>
</tr>
<tr>
<td>Callithrix jacchus</td>
<td>(U)</td>
</tr>
<tr>
<td>Cercocyon thous</td>
<td>(U)</td>
</tr>
</tbody>
</table>

VI. Palm Groves

In the extreme northwest of the Caatingas an extensive forest of palm groves occurs in the more mesic areas (Fig. 14). In an attempt to make a preliminary collection of specimens from the area and select possible future study sites, we visited a few locations in the Municipality of Terezina, Piauí. More extensive work is required to characterize
the flora and fauna of the area, although we were able to establish the occurrence of a few species of mammals, including:

- **Glossophaga soricina** (U) **Artibeus fuliginosus** (U)
- **Carollia perspicillata** (U) **Artibeus jamaicensis** (U)
- **Uroderma magnirostrum** (U) **Artibeus lituratus** (U)

### Accounts of Species

**Order Marsupialia**

**Family Didelphidae**

**Monodelphis domestica** Wagner, 1842

This marsupial is a common inhabitant of the Caatingas. Favored habitats include rocky serrotes and lowland rock outcroppings. Reproduction is relatively aseasonal; the young are not protected by a marsupium. Although they are good climbers, they are principally terrestrial; they are also nocturnal. Laboratory animals accepted a wide variety of food items including various vertebrates, invertebrates, and fruits.

*Specimens collected.—Pernambuco* (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (26); Fazenda Batente, 5.5 km SE of Exu (12); Fazenda Pinheira, 1.5 km SW of Exu (13); Município de Exu (11); (Município de Serra Talhada), Fazenda Saco, 6.6 km N of Serra Talhada (5). *Piauí* (Município de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (1).

*Specimens examined.—Alagoas* (Limoeiro da Anadia), Sítio Barracão (1); (Palmeira dos Indios), Sítio Capuma (1); Sítio Dormião (1); Sítio Panelas (1); Sítio Ribeira (1); Sítio Sabiá (3); (Santana do Ipanema), Sítio Lagoinha (1); (Viçosa), Sítio Cachoeira Grande (1). *Bahia* (Feira), Fazenda Capoeira do Rosario (1); Fazenda Cazumba (1); Fazenda Jacú (1); Fazenda Salgado (1); (Serrinha), Fazenda Cacuã (1); Fazenda Outeiro (2); Fazenda Umburana (1); no locality (2). *Ceará* (Campo Sales), Sítio Volta (1); (Cra-to), Sítio Constantino (1); no locality (1); Sítio Olaria (1); (Jardim), Sítio Cereado (1); (Milagres), Sítio Camara (1); (Missão Velho), Sítio Araruna (1); Sítio Emboscada (1); Sítio Lapinha (1); (São Benedito), Sítio Cinta da Solidade (1). *Pernambuco* (Bodoco), Sítio Belem (1); Sítio Lopes (1); Sítio Paus Preto (1); Sítio São Gonçalo (1); Sítio Xique-Xique (1); (Garanhuns), Sítio Riacho Fundo (1); no locality (1); (Pesqueira), Fazenda Caianinha (1); Fazenda Sororoca (1); (Triunfo), Sítio Boa Esperança de Jerico (1); Sítio Borgens (2); Sítio Cana Brava de Jerico (2); Sítio Corredor do Vento (1); Sítio Macaco de Baixa Verde (1); Sítio Novo (1); Sítio Oiti (2); Sítio São Mateus (1).

**Marmosa cinerea** Temminck, 1824

*Specimens examined.—Bahia* (Ilheus), Aritaqua Urucutuca (1); Banco da Vitoria, Pirataquisse (1); Buerarema Ribeirão da Fortuna (1); Rio do Braço, Fazenda Almeida (1); no locality, (11). *Pernambuco* (dois Irmãos) (1).

**Marmosa karimii** Petter, 1968

This small marsupial was rare. Specimens were collected only in Low Caatinga and perennial shrub/low tree dominated successional
stages. An individual kept in the laboratory was adept at capturing insects and subsisted on insects and occasional hylid frogs and geckos; small amounts of fruit were eaten at times.

Specimens collected.—PERNAMBUCO (Município de Exu), 0.5 km S of Exu (1); Escola Agrícola de Exu, 0.7 km S of Exu (1); Fazenda Guarani, 2.9 km N of Exu (1); Município de Exu (1).

**Didelphis albiventris** Lund, 1841

This large marsupial is a habitat generalist and ranges throughout the Caatingas. In the Exu area, it inhabited all microhabitats in addition to more mesic Cerrado localities, such as the Chapada do Araripe (occurring there both in Cerrado and Cerradão habitats). Microhabitat utilization and population density may exhibit seasonal shifts in Caatinga habitats corresponding to seasonal climatic changes. Reproduction is strongly synchronized, with the birth peak occurring during November and December; a marsupium is present. This species is mostly nocturnal and terrestrial in the Caatingas, and is broadly omnivorous.

Specimens collected.—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apodi (13). PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (3); Fazenda Batente, 5.5 km SE of Exu (5); Fazenda Uruguai, 4.8 km NE of Exu (1); Município de Exu (9); Serrote das Lages, 18 km S of Exu (3).

Specimens examined.—PERNAMBUCO (Garanhuns) (1).

Order Chiroptera

Family Emballonuridae

**Saccopteryx bilineata** (Temminck, 1838)

Absent from the Caatingas; rare on the Chapada do Araripe.

Specimens collected.—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apodi, 9 km S of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (1).

**Saccopteryx leptura** Schreber, 1774

Specimen collected.—CEARÁ (Município de Crato), Sítio Luanda, 4 km S of Crato (1).

**Peropteryx macrotis** (Wagner, 1843)

Uncommon in the Caatingas. Roosts in small groups of up to 10 individuals, often occupying large openings inside rockpiles or culverts. Absent from Cerradão and Cerrado habitats on the Chapada do Araripe.

Specimens collected.—BAHIA (Município de Senhor do Bom Fim), Fazenda Lajeido, km 147 on Route BA 130 (5). PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (1); Fazenda Batente, 5.5 km SE of Exu (3); Fazenda Pomonha,
21 km SSW of Exu (7); Serrote Gamba, 19 km SSW of Exu (4); (Municipio de São Lourenço da Mata), Estação Ecológico do Tapacurá (2); Mata do Camocim (7).

Family Noctilionidae

Noctilio leporinus (Linnaeus, 1758)

Rare in the Cerradão of the Chapada do Araripe where it probably occurs as a transient in the dry season. Common in the Caatingas where it roosts during the day in groups of up to 30 individuals in large hollow hardwood trees. A single night roost under a bridge containing over 100 individuals was consistently utilized from 1976 to 1978. The large accumulation of fecal material under the roost suggests that it had been in use for many years previous to our arrival in 1976.

Specimens collected.—CEARÁ (Municipio de Crato), Floresta Nacional Araripe-Apodí, 9 km S of Crato (4); Floresta Nacional Araripe-Apodí, 21 km SSW of Crato (1). PERNAMBUCO (Municipio de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (1); Fazenda Alto de Ferreira, 5 km SW of Exu (14); Fazenda Batente, 5.5 km SE of Exu (1); Fazenda Cândida, 5.5 km S of Exu (136); Fazenda Guarani, 2.9 km N of Exu (6); Fazenda Pinheira, 1.5 km SW of Exu (12); Fazenda São José, 1.5 km N of Exu (2).

Family Mormoopidae

Pteronotus davyi Gray, 1838

Very rare in the Caatingas where it is found only in Caatinga Alta habitats. Also rare in Cerrado and Cerradão habitats of the Chapada do Araripe.

Specimens collected.—CEARÁ (Municipio de Crato), Floresta Nacional Araripe-Apodí, 8 km S of Crato (1); Floresta Nacional Araripe-Apodí, 9 km S of Crato (4); Floresta Nacional Araripe-Apodí, 8 km SSW of Crato (5); Floresta Nacional Araripe-Apodí, 17 km SSW of Crato (1). PERNAMBUCO (Municipio de Exu), Fazenda Cantareno, 4.5 km NNE of Exu (1). PIAUÍ (Municipio de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (1).

Pteronotus personatus (Wagner, 1843)

Absent from the Chapada do Araripe and the Caatingas. Netted only in a mesic Caatinga-Cerrado contact zone in Piauí.

Specimens collected.—PIAÚ (Municipio de Valença do Piauí), Fazenda Olha da Agua, 2 km N of Valença do Piauí (2).

Pteronotus personatus (Wagner, 1843)

Absent from the Chapada do Araripe; present, but rare, in some localities of the Caatingas. In all cases it has been netted near streams or lakes.

Specimens collected.—PERNAMBUCO (Municipio de Serra Talhada), Fazenda Saco (I.P.A.), 6.6 km NNE of Serra Talhada (1). PIAÚ (Municipio de Valença do Piauí), Fazenda Olha da Agua, 2 km N of Valença do Piauí (3).
Family Phyllostomatidae
Subfamily Phyllostomatinae

**Micronycteris minuta** (Gervais, 1855)

*Specimens collected.*—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apodí, 9 km S of Crato (1); Floresta Nacional Araripe-Apodí, 8 km SSW of Crato (1). PERNAMBUCO (Município de Exu), Fazenda Cantareno, 4.5 km NNE of Exu (2); Serrote das Lajes, 17 km S of Exu (5); Serrote Gamba, 19 km SSW of Exu (1); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (1).

**Micronycteris** sp.

Rare in the Caatingas where it was usually captured near serrotes or lajeiros. Rare on the Chapada do Araripe. This group of specimens appears not to conform in detail with the presently recognized species in the genus; further analysis is required to define the systematic affinities of this collection.

*Specimens collected.*—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apodí, 8 km SSW of Crato (1); Sitio Luanda (Itaitéira), 4 km S of Crato (1); (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (3). PERNAMBUCO (Município de Exu), Fazenda Alto de Ferreira, 5 km SW of Exu (2); Fazenda Cantareno, 4.5 km NNE of Exu (1); Fazenda Pomonha, 21 km SSW of Exu (5); Serrote das Lajes, 17 km S of Exu (2).

**Lonchorhina aurita** Tomes, 1863

Absent from the Chapada do Araripe and the Caatingas. Present in areas of the Caatinga-Cerrado contact zone in Piauí.

*Specimen collected.*—PIAÚ (Município de Valença do Piauí), Fazenda Olho da Água, 2 km N of Valença do Piauí (1).

**Tonatia bidens** (Spix, 1823)

Absent from the Chapada do Araripe. Distribution primarily restricted to serrotes in the Caatingas.

*Specimens collected.*—PERNAMBUCO (Município de Exu), Fazenda Manicoba, 13.7 km SSW of Exu (5); Fazenda Pomonha, 21 km SSW of Exu (5); Serrote das Lajes, 17 km S of Exu (8); Serrote das Lajes, 17.7 km S of Exu (21); Serrote Gamba, 19 km SSW of Exu (6); Serrote Gritadeira, 18 km SSW of Exu (4).

**Tonatia brasiliense** (Peters, 1866b)

Absent from the Chapada do Araripe. Uncommon in the Caatingas where it is found either in Caatinga Alta habitats or near serrotes.

*Specimens collected.*—PERNAMBUCO (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (1); Fazenda Cantareno, 4.5 km NNE of Exu (2); Fazenda Guarani, 2.9 km N of Exu (1); Serrote Gritadeira, 18 km SSW of Exu (2).
Mimon crenulatum (E. Geoffroy, 1810)

Rare in the Caatingas where it is found almost exclusively in Caatinga Alta habitats. Absent from the Chapada do Araripe.

Specimens collected.—PERNAMBUCO (Município de Exu), Fazenda Cantareno, 4.5 km NNE of Exu (3); Fazenda Colônia, 5.5 km S of Exu (1); Fazenda Paus Grandes, 14.2 km E of Exu (3).

Phyllostomus discolor (Wagner, 1843)

Locally common in banana and mango orchards in the Caatingas. Abundant and widespread throughout both Cerrado and Cerradão habitats of the Chapada do Araripe. It feeds primarily on fruits, although at least part of the year it appears to be nectarivorous and/or pollenivorous.

Specimens collected.—CEARÁ (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (3); Floresta Nacional Araripe-Apodi, 8 km S of Crato (7); Floresta Nacional Araripe-Apodi, 9 km S of Crato (113); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 11 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (5); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (18); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (14). PERNAMBUCO (Município de Exu), Fazenda Alto de Ferreira, 5 km SW of Exu (1); Fazenda Bom Jesus, 8 km NNW of Exu (11); Fazenda Manicoba, 13.7 km SSW of Exu (9); Fazenda São José, 1.5 km N of Exu (4); Serrrote das Lajes, 17 km S of Exu (1); Serrrote das Lajes, 17.7 km S of Exu (1); Serrrote Gâmba, 19 km SSW of Exu (3); Serrrote Gritadeira, 18 km SSW of Exu (1). PIAUÍ (Município de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (1).

Phyllostomus hastatus (Pallas, 1767)

Occasionally present in the Caatingas, but probably a transient from the Chapada do Araripe. Widespread and common throughout the Chapada in both Cerrado and Cerradão habitats. A colony of over 100 individuals of both sexes was found roosting inside an archway at the entrance to the Colégio Agrícola de Crato. The diet appears to be primarily frugivorous, although some insect remains were observed in its feces.

Specimens collected.—BAHIA (Município de Juazeiro da Bahia), Fazenda Barrinha (2). CEARÁ (Município de Crato), Colégio Agrícola de Crato, 5 km W of Crato (102); Floresta Nacional Araripe-Apodi, 8 km S of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 9 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (16); Floresta Nacional Araripe-Apodi, 9 km W of Crato (1); Floresta Nacional Araripe-Apodi, 10 km W of Crato (2). PERNAMBUCO (Município de Exu), Fazenda Bom Jesus, 0.8 km NNW of Exu (1); Fazenda Colônia, 5.5 km S of Exu (1); Serrrote das Lajes, 17 km S of Exu (1); Serrrote Gâmba, 19 km SSW of Exu (1); (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (3).
Trachops cirrhosus (Spix, 1823)

Absent from the Chapada do Araripe. Distribution in the Caatingas restricted to serrotes or areas containing rocky outcroppings.

Specimens collected.—BAHIA (Municipio de Juazeiro da Bahia), Fazenda São Raimundo, km 216 on Route BA 130 (1). PERNAMBUCO (Municipio de Exu), Fazenda Batente, 5.5 km SE of Exu (5); Fazenda Colônia, 5.5 km S of Exu (1); Fazenda Guarani, 2.9 km N of Exu (3); Serrote das Lajes, 17 km S of Exu (26); Serrote das Lajes, 17.7 km S of Exu (1); Serrote Gritadeira, 18 km SSW of Exu (2).

Subfamily Glossophaginae

Glossophaga soricina (Pallas, 1766)

Abundant and ubiquitous in Cerrado, Cerrado, and most habitats of the Caatingas. At times found roosting with Carollia perspicillata in caves and man-made structures. Present in all other major vegetation zones of the Northeast.

Specimens collected.—BAHIA (Municipio de Senhor do Bom Fim), Fazenda Flamengo, km 150 on Route BA 130 (1); Fazenda Morro da Imburana, km 145 on Route BA 130 (1). CEARÁ (Municipio de Crato), Aeroporto de Crato, 10 km SW of Crato (14); Colégio Agrícola de Crato, 5 km W of Crato (285); Fazenda Fundão, 3 km SSE of Crato (11); Floresta Nacional Araripe-Apodi, 8 km S of Crato (21); Floresta Nacional Araripe-Apodi, 9 km S of Crato (52); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (25); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (10); Floresta Nacional Araripe-Apodi, 11 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (35); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 9 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (18); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (3); Floresta Nacional Araripe-Apodi, 14 km SW of Crato (10); (Municipio de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (9). PERNAMBUCO (Municipio de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (236); Fazenda Barracão, 19.8 km SW of Exu (2); Fazenda Batente, 5.5 km SE of Exu (3); Fazenda Bom Jesus, 0.8 km NW of Exu (23); Fazenda Colônia, 5.5 km S of Exu (1); Fazenda Guarani, 2.9 km N of Exu (3); Fazenda Manicoba, 13.7 km SSW of Exu (3); Fazenda Pomonha, 21 km SSW of Exu (13); Fazenda São José, 1.5 km N of Exu (22); Serrote das Lajes, 17 km S of Exu (22); Serrote das Lajes, 17.7 km S of Exu (3); Serrote Gamba, 19 km SSW of Exu (5); Serrote Gritadeira, 18 km SSW of Exu (12); (Municipio de São Lourenço da Mata) Estação Ecológico do Tapacurá (13); (Municipio de Serra Talhada), Fazenda Salto, 35 km NNE of Serra Talhada (1). PIAUÍ (Municipio de Teresina), km 18 on Route BR 316 (1); (Municipio de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (2); (Watering hole), 5 km W of Valença do Piauí (1).

Lonchophylla mordax Thomas, 1903

Common in the Caatingas, especially near serrotes. Absent from Cerrado and Cerrado habitats of the Chapada do Araripe.

Specimens collected.—BAHIA (Municipio de Juazeiro da Bahia), Fazenda São Raimundo, km 216 on Route BA 130, (1). CEARÁ (Municipio de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (9). PERNAMBUCO (Municipio de Exu), Fazenda
Cantareno, 4.5 km NE of Exu (1); Fazenda Colônia, 5.5 km S of Exu (2); Fazenda Guaraní, 2.9 km N of Exu (1); Fazenda Manicoba, 13.7 km SSW of Exu (2); Fazenda Pomonha, 21 km SSW of Exu (9); Serrote das Lajes, 17 km S of Exu (41); Serrote das Lajes, 17.7 km S of Exu (6); Serrote Gambá, 19 km SSW of Exu (5); Serrote Gritadeira, 18 km SSW of Exu (5).

**Anoura geoffroyi** Gray, 1838

Uncommon in the Caatingas where it is usually associated with serrote habitats. Locally abundant in more open areas of Cerradão or in the Cerrado areas of the Chapada do Araripe.

*Specimens collected.*—Ceará (Município de Crato), Floresta Nacional Araripe-Apodi, 8 km S of Crato (1); Floresta Nacional Araripe-Apodi, 9 km S of Crato (3); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (59); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km W of Crato (1); Sítio Luanda (Itaitereia), 4 km S of Crato (1); (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (23). Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (1); Fazenda Bom Jesus, 0.8 km NNW of Exu (4); Fazenda Pomonha, 21 km SSW of Exu (10); Fazenda São José, 1.5 km N of Exu (1); Serrote das Lajes, 17 km S of Exu (1); Serrote das Lajes, 17.7 km S of Exu (1).

**Subfamily Carolliinae**

**Carollia perspicillata** (Linnaeus, 1758)

Abundant and ubiquitous in all habitats of the Caatingas, Cerrado, and Cerradão. Present in all other major vegetation zones. Found roosting in both man-made structures and caves, sometimes in association with Glossophaga soricina.

*Specimens collected.*—Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (19); Colégio Agrícola de Crato, 5 km W of Crato (19); Fazenda Fundão, 3 km SSE of Crato (1); Floresta Nacional Araripe-Apodi, 8 km S of Crato (51); Floresta Nacional Araripe-Apodi, 9 km S of Crato (181); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (58); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (37); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (22); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (23); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (7); Floresta Nacional Araripe-Apodi, 9 km SW of Crato (16); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (120); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (12); Floresta Nacional Araripe-Apodi, 9 km W of Crato (36); (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (1). Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (10); Fazenda Alto de Ferreira, 5 km SW of Exu (1); Fazenda Cantareno, 4.5 km NNE of Exu (11); Fazenda Colônia, 5.5 km S of Exu (14); Fazenda Guaraní, 2.9 km N of Exu (5); Fazenda Manicoba, 13.7 km SSW of Exu (22); Fazenda Paus Grandes, 14.2 km E of Exu (1); Fazenda Pomonha, 21 km SSW of Exu (26); Fazenda São José, 1.5 km N of Exu (2); Fazenda São Pedro, 1 km ESE of Exu (1); Fazenda Santa Helena, 1 km NE of Exu (1); Serrote das Lajes, 17 km S of Exu (108); Serrote das Lajes, 17.7 km S of Exu (35); Serrote Gambá, 19 km SSW of Exu (5); Serrote Gritadeira, 18 km SSW of Exu (28); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (19). Piauí (Município de Teresina), km 18 on
Subfamily Sturnirinae

**Sturnira lilium** (E. Geoffroy, 1810)

Uncommon in the Caatingas where it is primarily restricted to Caatinga Alta habitats. Uncommon in both Cerradão and Cerrado habitats of the Chapada do Araripe.

**Specimens collected.**—CEARÁ (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (2); Floresta Nacional Araripe-Apodi, 9 km S of Crato (4); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (7); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (2); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (4); Floresta Nacional Araripe-Apodi, 9 km W of Crato (1); Sítio Luanda (Itaitereira), 4 km S of Crato (9). PERNAMBUCO (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (1); Fazenda Cantareno, 4.5 km NNE of Exu (3); Fazenda Maniçoba, 13.7 km SSW of Exu (3); (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (4).

Subfamily Stenodermatinae

**Uroderma bilobatum** Peters, 1866a

Very rare both in the Caatingas and on the Chapada do Araripe.

**Specimens collected.**—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (1). PERNAMBUCO (Município de Exu), Açude Itamaragi, 0.5 km S of Exu (1); Fazenda Pomonha, 21 km SSW of Exu (1).

**Uroderma magnirostrum** Davis, 1968

**Specimen collected.**—PIAUI (Município de Terezina), km 18 on Route BR 316 (1).

**Vampyrops lineatus** (E. Geoffroy, 1810)

Very abundant and widespread in both Caatingas and Chapada habitats. In the Caatingas, it has been found roosting in caves in groups of no more than 12 individuals.

**Specimens collected.**—CEARÁ (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (31); Colégio Agrícola de Crato, 5 km W of Crato (18); Floresta Nacional Araripe-Apodi, 8 km S of Crato (4); Floresta Nacional Araripe-Apodi, 9 km S of Crato (18); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (35); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (43); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (6); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (16); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (8); Floresta Nacional Araripe-Apodi, 9 km SW of Crato (4); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (9); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (20); Floresta Nacional Araripe-Apodi, 9 km W of Crato (6); Sítio Luanda (Itaitereira), 4 km S of Crato (10); (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (6). PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (4); Fazenda Batente, 5.5 km SE of Exu (4); Fazenda Bom Jesus, 0.8 km NNW of Exu (8); Fazenda Cantareno, 4.5 km
NNE of Exu (2); Fazenda Colônia, 5.5 km S of Exu (4); Fazenda Gravata, 3.1 km NW of Exu (2); Fazenda Guaraní, 2.9 km N of Exu (16); Fazenda Manicoba, 13.7 km SSW of Exu (9); Fazenda Pomonha, 21 km SSW of Exu (49); Fazenda São José, 1.5 km N of Exu (42); Fazenda Santa Helena, 1 km NE of Exu (8); Serrote das Lajes, 17 km S of Exu (108); Serrote das Lajes, 17.7 km S of Exu (20); Serrote Gambá, 19 km SSW of Exu (13); Serrote Gritadeira, 18 km SSW of Exu (13).

**Artibeus cinereus** (Gervais, 1856)

Absent from habitats in both the Caatingas and the Chapada do Araripe. Present in remnant Atlantic Tropical Forest and in palm groves.

*Specimens collected.—Pernambuco (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (6). PIAÚ (Município de Teresina), km 18 on Route BR 316 (5).*

**Artibeus concolor** Peters, 1865a

Present but rare on the Chapada do Araripe in Cerrado habitats. Absent from all habitats of the Caatingas.

*Specimens collected.—Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (4); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (1).*

**Artibeus fuliginosus** Gray, 1838

Present in palm groves but absent from all habitats of the Caatingas and Chapada do Araripe.

*Specimen collected.—Piauí (Município de Teresina), km 18 on Route BR 316 (1).*

**Artibeus jamaicensis** Leach, 1821

Abundant and ubiquitous in both Cerrado and Cerradão habitats; present throughout the Caatingas but locally abundant on, or near, serrotes. Present in all other major vegetation zones.

*Specimens collected.—Bahia (Município de Juazeiro da Bahia), Fazenda Barrinha (5); Fazenda São Raimundo, km 216 on Route BA 130 (1). Ceará (Município de Crato), Colégio Agrícola de Crato, 5 km W of Crato (10); Floresta Nacional Araripe-Apodi, 8 km S of Crato (37); Floresta Nacional Araripe-Apodi, 9 km S of Crato (66); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (50); Floresta Nacional Araripe-Apodi, 11 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (8); Floresta Nacional Araripe-Apodi, 21 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (11); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (4); Floresta Nacional Araripe-Apodi, 9 km W of Crato (5); Sítio Luanda (Itaitere), 4 km S of Crato (5); (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (9). Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (1); Fazenda Alto de Ferreira, 5 km SW of Exu (1); Fazenda Cantareno, 4.5 km NNE of Exu (5); Fazenda Colônia, 5.5 km S of Exu (4);
Artibeus lituratus (Olfers, 1818)

Abundant and widespread on the Chapada do Araripe in both Cerrado and Cerrado habitats. Widespread, but uncommon, throughout the Caatingas. Present in remnant Atlantic Forest and palm grove habitats.

Specimens collected.—CEARÁ (Municipio de Crato), Aeroporto de Crato, 10 km SW of Crato (24); Floresta Nacional Araripe-Apodi, 8 km S of Crato (24); Floresta Nacional Araripe-Apodi, 9 km S of Crato (43); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (8); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (5); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (8); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (14); Floresta Nacional Araripe-Apodi, 21 SSW of Crato (12); Floresta Nacional Araripe-Apodi, 9 km SW of Crato (5); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (90); Floresta Nacional Araripe-Apodi, 11 km SW of Crato (16); Floresta Nacional Araripe-Apodi, 14 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 19 km SW of Crato (1); Floresta Nacional Araripe-Apodi, 9 km W of Crato (25); (Municipio de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (2). PERNAMBUCO (Municipio de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (2); Fazenda Alto de Ferreira, 5 km SW of Exu (3); Fazenda Batente, 5.5 km SE of Exu (2); Fazenda Bom Jesus, 0.8 km NNW of Exu (2); Fazenda Cantareno, 4.5 km NNE of Exu (9); Fazenda Guaraní, 2.9 km N of Exu (12); Fazenda Maniçoba, 13.7 km SSW of Exu (2); Fazenda Paus Grandes, 14.2 km E of Exu (2); Fazenda Pomonha, 21 km SSW of Exu (11); Fazenda São José, 1.5 km N of Exu (3); Serrato das Lajes, 17 km S of Exu (2); Serrote das Lajes, 17.7 km S of Exu (34); Serrote Gamba, 19 km SSW of Exu (5); Serrote Gritadeira, 18 km SSW of Exu (28); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (23). PIÁUI (Municipio de Teresina), km 18 on Route BR 316 (2); (Municipio de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (17).

Subfamily Desmodontinae

Desmodus rotundus (E. Geoffroy, 1810)

Common in the Caatingas where it is locally abundant on serrotes. Rare on the Chapada do Araripe, perhaps due to the paucity of livestock.

Specimens collected.—BAHIA (Municipio de Senhor do Bom Fim), Morro da Imbura, km 145 on Route BA 130 (1). CEARÁ (Municipio de Crato), Floresta Nacional Araripe-Apodi, 8 km S of Crato (1); Floresta Nacional Araripe-Apodi, 9 km S of Crato (4); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (2); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (3); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (1); (Municipio de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (32). PERNAMBUCO (Municipio de Exu), Fazenda Alto de Ferreira, 5 km SW of Exu (3); Fazenda Batente, 5.5 km SE of Exu (2); Fazenda Bom Jesus, 0.8 km NNW of Exu (3); Fazenda Cantareno, 4.5 km NNE of Exu (1); Fazenda Maniçoba, 13.7 km SSW of Exu (73); Fazenda Paus Grandes, 14.2 km E of Exu (4);
Fazenda Pomonha, 21 km SSW of Exu (2); Serrote das Lajes, 17 km S of Exu (49); Serrote das Lajes, 17.7 km S of Exu (225); Serrote Gamba, 19 km SSW of Exu (4); Serrote Gritadeira, 18 km SSW of Exu (5); (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (5).

**Diaemus youngii** (Jentink, 1893)

Absent from both Caatinga and Chapada habitats. Present in remnant Atlantic Rain Forest.

*Specimen collected.—Pernambuco* (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (1).

**Diphylla ecaudata** Spix, 1823

Rare in the Caatingas; absent from the Chapada do Araripe.

*Specimens collected.—Pernambuco* (Município de Exu), Fazenda Maníçoba, 13.7 km SSW of Exu (2); Serrote das Lajes, 17 km S of Exu (1); Serrote Gritadeira, 18 km SSW of Exu (1).

**Family Natalidae**

**Natalius stramineus** Gray, 1838

Rare on the Chapada do Araripe; absent from the Caatingas.

*Specimens collected.—Ceará* (Município de Crato), Floresta Nacional Araripe-Apodi, 8 km S of Crato (2); Floresta Nacional Araripe-Apodi, 9 km S of Crato (1).

**Family Furipteridae**

**Furipterus horrens** (F. Cuvier, 1828)

Absent from the Chapada do Araripe. Rare in the Caatingas, where it was only captured on serrotes. Flies at dusk.

*Specimens collected.—Pernambuco* (Município de Exu), Serrote das Lajes, 17 km S of Exu (1); Serrote das Lajes, 17.7 km S of Exu (1).

**Family Vespertilionidae**

**Myotis nigricans** (Schinz, 1821)

Rare to common in both Caatinga and Chapada habitats where it was found to roost in buildings under roofing tiles.

*Specimens collected.—Ceará* (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (9); Floresta Nacional Araripe-Apodi, 9 km S of Crato (13); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (10); Floresta Nacional Araripe-Apodi, 11 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 13 km SSW of Crato (2); Floresta Nacional Araripe-Apodi, 17 km SSW of Crato (1); Floresta Nacional Araripe-Apodi, 10 km SW of Crato (12); Sítio Luanda (Itaíteira), 4 km S of Crato (8). Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (184); Fazenda Batente, 5.5 km SE of Exu (11); Fazenda Bom Jesus, 0.8 km NNW of Exu (1); Fazenda Cantareño, 4.5 km NNE of Exu (5); Fazenda Pomonha, 21 km SSW of Exu (1); Fazenda São José, 1.5 km
N of Exu (2); Serrote das Lajes, 17 km S of Exu (2); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (3); (Município de Serra Talhada), Fazenda Saco (I.P.A.), 6.6 km NNE of Serra Talhada (2).

**Eptesicus furinalis** D’Orbigny and Gervais, 1847

Absent from the Caatingas. Present on the Chapada do Araripe where it is found roosting in buildings.

*Specimens collected.* — Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (2); Floresta Nacional Araripe-Apodí, 9 km S of Crato (4); Floresta Nacional Araripe-Apodí, 10 km SW of Crato (16); Floresta Nacional Araripe-Apodí, 11 km SW of Crato (1).

**Rhogeessa tumida** H. Allen, 1866

Absent from habitats of the Chapada do Araripe and from the Caatingas in the vicinity of Exu, Pernambuco.

*Specimen collected.* — Bahia (Município de Juazeiro da Bahia), Fazenda São Raimundo, km 216 on Route BA 130 (1).

**Lasiurus borealis** (Müller, 1776)

Absent from the Caatingas; rare on the Chapada do Araripe.

*Specimens collected.* — Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (1); Floresta Nacional Araripe-Apodí, 9 km S of Crato (2); Floresta Nacional Araripe-Apodí, 10 km SW of Crato (2); Floresta Nacional Araripe-Apodí, 9 km W of Crato (5).

**Lasiurus ega** (Gervais, 1856)

Present, but rare, in both Caatinga and Chapada habitats.

*Specimens collected.* — Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (1); Floresta Nacional Araripe-Apodí, 10 km SW of Crato (1). Pernambuco (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (1); Fazenda Bom Jesus, 0.8 km NNW of Exu (3); Fazenda São José, 1.5 km N of Exu (1). Piauí (Município de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (1).

Family Molossidae

**Molossops abrasus** (Temminck, 1826)

Absent from both the Chapada do Araripe and the Caatingas. Present in the Caatinga-Cerrado contact zone of Piauí.

*Specimens collected.* — Piauí (Município de Valença do Piauí), Fazenda Olho da Agua, 2 km N of Valença do Piauí (3).

**Molossops greenhalli** (Goodwin, 1958)

Absent from both Caatinga and Chapada habitats. Present in remnant Atlantic Rain Forest.
Specimen collected.—Pernambuco (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (1).

Molossops planirostris (Peters, 1865)
Rare in the Caatingas; absent from the Chapada do Araripe.

Specimens collected.—Pernambuco (Município de Exu), Fazenda Pau Ferrado, 2.6 km E of Exu (3).

Molossops teminckii (Burmeister, 1854)
Rare in the Caatingas, caught exclusively on serrotes or near rocky outcrops. Most active at dusk and early evening.

Specimens collected.—Ceará (Município de Crato), Floresta Nacional Araripe-Apodi, 9 km S of Crato (4); Floresta Nacional Araripe-Apodi, 10 km SSW of Crato (2); Floresta Nacional Araripe-Apodi, 8 km SSW of Crato (1). Pernambuco (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (2); Serrote Gambá, 19 km SSW of Exu (2).

Neoplatymops mattogrossensis (Vieira, 1942)
Absent from the Chapada do Araripe. Common in rocky habitats and on serrotes in the Caatingas. Roosts in low-lying rock crevices; flies at dusk and early evening.

Specimens collected.—Pernambuco (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (23); Fazenda Cantareno, 4.5 km NNE of Exu (11); Fazenda Maniquoba, 13.7 km SSW of Exu (5); Fazenda Pinheira, 1.5 km SW of Exu (1); Fazenda Pomerola, 21 km SSW of Exu (1); Serrote Gambá, 19 km SSW of Exu (3); Serrote Gritadeira, 18 km SSW of Exu (8).

Tadarida laticaudata (Geoffroy, 1805)
Specimens collected.—Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (3).

Tadarida sp.
Specimens collected.—Ceará (Município de Crato), Floresta Nacional Araripe-Apodi, 9 km W of Crato (1).

Eumops sp.
Absent from the Chapada do Araripe and the Caatingas. Present in the Caatinga-Cerrado contact zone of Piauí.

Specimen collected.—Piauí (Município de Valença do Piauí), (Watering hole), 5 km W of Valença do Piauí (1).

Molossus ater (E. Geoffroy, 1805)
Rare in the Caatingas.
Specimens collected.—Ceará (Município de Nova Olinda), km 19 on Route CE 96, 4 km SE of Nova Olinda (1). Pernambuco (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (1); Fazenda Guarani, 2.9 km N of Exu (1). Piauí (Município de Valença do Piauí), Fazenda Olho da Água, 2 km N of Valença do Piauí (1); (Watering hole), 5 km W of Valença do Piauí (3).

Molossus molossus (Pallas, 1766)

More or less common in both the Caatingas and Chapada habitats. It may, however, be locally abundant in either habitat near man-made structures which it utilizes as roosts.

Specimens collected.—Ceará (Município de Crato), Aeroporto de Crato, 10 km SW of Crato (11); Colégio Agrícola de Crato, 5 km W of Crato (138); Floresta Nacional Araripe-Apodí, 10 km SW of Crato (4). Pernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (62); Fazenda Batente, 5.5 km SE of Exu (1); Serrote das Lajes, 17 km S of Exu (1); (Município de Serra Talhada), Fazenda Saco (I.P.A.), 6.6 km NNE of Serra Talhada (45). Piauí (Município de Valença do Piauí), Fazenda Olho da Água, 2 km N of Valença do Piauí (13); (Watering hole), 5 km W of Valença do Piauí (2).

Promops sp.

Very rare in the Caatingas; found only in association with man-made structures. Absent from the Chapada do Araripe.

Specimens collected.—Pernambuco (Município de Exu), Cidade de Exu (1); Escola Agrícola de Exu, 0.7 km S of Exu (2).

Order Primates
Family Cebidae

Cebus apella Linnaeus, 1758

In general, C. apella is currently restricted to the more extensive, remnant pockets of Caatinga Alta. In the past, this species probably occurred in areas with riverine vegetation and palm forests (associated with the higher serrotes) which are contiguous with high Caatinga.

Specimens collected.—Pernambuco (Município de Exu), Fazenda Cantareno, 4.5 km NNE of Exu (3).

Family Callithricidae

Callithrix jacchus Linnaeus, 1758

This species may be locally abundant in the remaining pockets of Caatinga Alta which also harbor Cebus apella and in smaller pockets where Cebus is absent. The ability to utilize Caatinga Baixa to some extent accounts in part for the greater abundance of C. jacchus. Laboratory specimens accepted various insects and fruits as food.
Specimens collected.—PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (2); Fazenda Paus Grande, 14.2 km E of Exu (1); Fazenda Cantareno, 4.5 km NNE of Exu (8).

Specimens examined.—ALAGOAS (Manga Beiras), Usina Sinimbu (3); (Quebrangulo), Engenho Riachão (1); BAHIA (No locality), (1); (Rio Preto), Santa Rita de Cassia (1); CEARÁ (Crato), Chapada Araripe (1); (Pacoti), Sitio Alvoredo (1); Sitio Baixa Verde (3); Sitio Boa Vista (1); Sitio Coati (1); Sitio Flor (3); Sitio Goiabeira (2); Sitio Lorena (2); Sitio Mendoza (1); Sitio Umquaiana (5).

Order Edentata
Family Myrmecophagidae

Tamandua tetradactyla Linnaeus, 1758

Occurs primarily in pockets of Caatinga Alta and in the Cerrado portions of the Chapada do Araripe. Its distribution in the Caatingas is limited due to heavy hunting pressure.

Specimens collected.—PERNAMBUCO (Município de Exu), Fazenda Cantareno, 4.5 km NNE of Exu (2); Município de Exu (1).

Family Dasypodidae

Euphractus sexcinctus Linnaeus, 1758

This armadillo may be found in a wider range of habitats and soil types than Dasypus and may even extend onto the bases of rocky serrotes. It is not as readily eaten as is Dasypus, and thus it experiences less hunting pressure.

Specimen collected.—PERNAMBUCO (Município de Exu), Município de Exu (1).

Dasypus novemcinctus Linnaeus, 1758

Uncommon in Caatingas and Cerrado habitats due to heavy hunting pressures. In protected areas, such as the Floresta Nacional Araripe-Apodí, it may be locally abundant. Prefers open areas with soft soils.

Specimen collected.—PERNAMBUCO (Município de Exu), Município de Exu (1).

Order Lagomorpha
Family Leporidae

Sylvilagus brasiliensis Linnaeus, 1758

The single specimen was collected in a complex area of interdigitating cultivated fields, abandoned fields of various ages and low Caatinga.

Specimen collected.—BAHIA (Município de Senhor do Bom Fim), Route BA 130 (1).
Order Rodentia
Family Muridae
Subfamily Cricetinae

Oryzomys eliurus Wagner, 1845

Found in interface areas of thick brush and cultivated fields of grass with a relatively mesic microclimate. This species is less frequently encountered than *O. subflavus*.

Specimens collected.—CEARÁ (Município de Crato), Colégio Agrícola de Crato, 5 km W of Crato (1); Floresta Nacional Araripe-Apodi (2). PERNAMBUCO (Município de Exu), Município de Exu (1).

Specimens examined.—ALAGOAS (Quebrangulo), Engenho Juliana (1); (Viçosa), Fazenda São José (1). BAHIA (Campo Formosa), Fazenda Rapousa (1). PERNAMBUCO (Garanhuns), Sítio Cavaquinho (1); Sítio Inhumas (1).

Oryzomys subflavus Wagner, 1842

This rodent is essentially a commensal. The distribution typically is limited to plots of sugarcane although other cultivated fields may harbor a few individuals.

Specimens collected.—CEARÁ (Município de Crato), Colégio Agrícola de Crato, 5 km W of Crato (1); Floresta Nacional Araripe-Apodi (1). PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (1); Município de Exu (25); Fazenda Cana Mansa, 13.4 km SW of Exu (1); (Município de Serra Talhada), Fazenda Saco (I.P.A.), 6 km N of Serra Talhada (2); SUCAM (in the town of Triunfo), 28 km NNE of Serra Talhada (8).

Specimens examined.—ALAGOAS (Anadia), Sítio Brejo do Boi (1); (Palmeira dos índios), Sítio Ribeiro (1); (Quebrangulo), Sítio Barro Preto (1); Sítio Olho d’Agua do Monteiro (1); Fazenda Peri-peri (1); (Santana do Ipanema), Sítio Goiabeira (1); (Viçosa), Sítio São José (1); Fazenda São Pedro (1); Sítio Tangil 2° (2). BAHIA (Feira), Fazenda Cazumba (1); Sítio Tomba (1); Fazenda Três Riachos (3); (Serrinha), Sítio Baixa d’Agua (1); Fazenda Outeiro (1); Fazenda Tiririca (8); Fazenda Umburana (1). CEARÁ (Crato), Sítio Arisco (2); Sítio Constantino (1); Sítio Crispin (1); Sítio Grangeiro (1); Sítio Passagem (2); (Guaraciaba), Sítio Mazagão (1); (Pacoti), Sítio Ladeira (1); (São Benedito), Sítio Barra (1); Sítio Chora (3); Sítio Piraguara (1). PERNAMBUCO (Garanhuns), Sítio Cajarana (1); Sítio Cavaquinho (1); Fazenda Colônia da Serra (1); Sítio Engenhão do Manéan (1); Sítio Flamengo (1); Sítio Inhumas (1); Sítio Saco (1); Fazenda Serra da Pedra (1); Sítio Varzea-Ingá (1); Sítio Varzea-Redonda (1).
Rhipodomys mastacalis Lund, 1841

Specimens examined.—CEARÁ (Crato), Sítio Belo Horizonte (2); Sítio Caiano (1); Sítio Parque (1); Sítio Passagem (1); (São Benedito), Sítio Barros (1); Sítio Cantinho (1); Sítio Cegarro (1); Sítio Guaribas do Amaral (2); Sítio Macapá (1); Sítio Piraguará (3); Sítio São José da Boa Vista (1). PERNAMBUCO (Caruaru), Sítio Brejo do Buraco (3); Sítio Quandús (5); Fazenda Santa Maria (3); Sítio Serra dos Cavalos (4).

Akodon sp.

Specimens collected.—PERNAMBUCO (Município de São Lourenço da Mata), Estação Ecológico do Tapacurá (20).

Akodon arviculoides (Wagner, 1842)

Specimens examined.—ALAGOAS (Anadia), Sítio Brejo do Boi (1); (Vicosa), Fazenda Gitirana (4); Sítio Pedra da Fazenda dos Pereiras (3); Fazenda Poço-Feio (1); Sítio Timbó 2º (1). BAHIA (Serrinha), Fazenda Alagadiço Grande (1); Fazenda Europa (1); Fazenda João Congo (2); Fazenda Montanha (1); Fazendo Riacho Grande (1); Fazenda Tiririca (2). MINAS GERAIS (Conceição do Mato Dentro), Boca da Mata (2); Bocada Mulata (1); Mata do Dr. Daniel (7). PERNAMBUCO (Garanhuns), Sítio Brejo Grande (1); Sítio Camaquatuba (1); Sítio Cavaquinho (3); Sítio Varzea do Inga (3).

Bolomys lasiurus (Lund, 1841)

This species undergoes population eruptions of great magnitude at irregular intervals. Individuals inhabit cultivated (especially corn) and grass (maintained by grazing) fields or recently abandoned fields with thick ground cover. They are strictly terrestrial and sometimes construct “runways.” Captive specimens were essentially omnivorous.

Specimens collected.—CEARÁ (Município do Crato), Floresta Nacional Araripe-Apodi (1). PERNAMBUCO (Município de Exu), 0.5 km SW of Exu (3); 1 km S of Exu (10); 1 km SW of Exu (4); 1.5 km S of Exu (2); 1.5 km SW of Exu (6); Escola Agrícola de Exu (AGGEU lab specimens), 0.7 km S of Exu (429); Fazenda Pinheira, 1.5 km SW of Exu (12); Município de Exu (60); Town of Exu (6); (Município de Serra Talhada), Fazenda Saco, 6 km N of Serra Talhada (10); SUCAM (in the town of Triunfo), 28 km NNE of Serra Talhada (9).

Specimens examined.—ALAGOAS (Capela), Fazenda Serra Alegre (1); (Quebrangulo), Fazenda Dourado (4); Sítio Olho d’Água do Monteiro (1); Fazenda Peri-peri (1); Fazenda Poço da Serra (1); Fazenda Santa Cruz (3). BAHIA (Conquista), Fazenda Barra Moranga (1); (Palmeiras), Sítio Bouqueirão (6); Campo de São João (3); Fazenda Conceição (1). CEARÁ (Itapagé), Camarã (3); Sítio São João II (7). MINAS GERAIS (Alem Paraíba), Fazenda São Geraldo (5); (Volta Grande), Fazenda Paraíso (1); Fazenda Pombal (1). PERNAMBUCO (Caruaru), Sítio Pitombeira (1); Sítio Riacho dos Mocós (2); Fazenda Salgado (1); (Triunfo), Sítio Brejinho (1); Sítio Monte Alegre (1); Sítio Novo (1); Sítio Peri-peri (1); Sítio Salva Terra (1); Sítio São Bartolomeu (1).

Oxymycteris angularis (Thomas, 1909)

Specimens examined.—ALAGOAS (Quebrangulo), Engenho Riachão (2); (Vicosa), Sítio Amazonas (3); Sítio Bauuaua (1); Fazenda Cachoeira Grande (1); Sítio Cambuim II (2); Sítio Engenho São José (1); Sítio Estrada Nova (2); Sítio Gravatá (2); Sítio Pedra de F. dos Pereiros (1); Fazenda Pindobinha (2); Fazenda Poço Feio (1); Fazenda Riachão
II (1); Fazenda São Manoel (3); Sitio Tamandua (1); Sitio Urucuba (1); Sitio Vila Maria Lia (2). *Ceará* (São Benedito), Sitio Pedra de Côco (1). *Pernambuco* (Bonito), Sitio Rodiadouro (1); (Caruaru), Sitio Brejinho de Serra dos Cavalos (1); Sitio Brejo do Buraco (2); Sitio Capoeira (1); Fazenda Caruaru (7); Fazenda Santa Maria (3); Sitio Serra dos Cavalos (9).

**Calomys callosus** Rengger, 1830

Caatinga Baixa and the latter stages of old field succession are preferred habitats. *Calomys* is nocturnal and an agile, active climber.

*Specimens collected.—* **Pernambuco** (Municipio de Exu), 0.5 km S of Exu (1); Escola Agricola de Exu, 0.7 km S of Exu (8); Fazenda Santa Helena, 1 km N of Exu (1); Municipio de Exu (7).

**Calomys sp.**

*Specimens examined.—* **Bahia** (Conquista), Fazenda Agrião (3); Sitio Batalha (2); Fazenda Espírito Santo (6); Fazenda Felícia (2); (Jequié), Fazenda Santa Maria (11); Fazenda Pedra Redonda (1); (No locality) (14).

**Wiedomys pyrrhorhinos** (Wied, 1821)

Caatinga Baixa is the typical habitat of *Wiedomys*. This species is nocturnal and relatively rare.

*Specimens collected.—* **Bahia** (Municipio de Juazeiro da Bahia), Fazenda São Raimundo, km 216 on Route BA 130 (1). *Ceará* (Municipio de Crato), Floresta Nacional Araripe-Apodí (1). **Pernambuco** (Municipio de Exu), Escola Agricola de Exu, 0.7 km S of Exu (12); Fazenda Pinheira, 1.5 km SW of Exu (3); Municipio de Exu (2).

*Specimens examined.—* **Alagoas** (Palmeira dos Indios), Sitio Ribeira (1); (Quebranguelo), Fazenda Lagoa dos Bois (1); Fazenda Santa Cruz II (6); (Santana do Ipanema), Sitio Lagoinha (2). **Bahia** (Feira), Fazenda Tanque do Pasto (1); Fazenda Tres Riacho (3); (Seabra), Lagoa Seca (3); Varzea da Canabrava (3). *Ceará* (Campo Sales), Sitio Cantos (1); (Ipu), Cidade (1); Fazenda Lages (3); Sitio Pereiros (1); (Missão Velha), Sitio Açude Velho (1); Sitio Cachoeira (1); (São Benedito), Sitio Alto (1); Sitio Barros (1). **Pernambuco** (Caruaru), Sitio Canhoto (2); Sitio Gravatá (2); (Seabra), Lagoa Seca (3); Varzea da Canabrava (3). **Minas Gerais** (São Benedito), Sitio Catinguinha (1); Sitio Muricatuba (1). **Pernambuco** (Garanhuns), Sitio Cavaquinho (1); Fazenda Cristovão (1); Sitio Frieira (1); Sitio Inhumas (5); Sitio Laranja (1); Fazenda Trairãs (1).

**Holochilus brasiliensis** (Desmarest, 1819)

*Specimens examined.—* **Alagoas** (Quebranguelo), Fazenda Bento de Barros (2); Sitio Mauris (1); Fazenda Peri-peri (3); (Viçosa), Fazenda Pindobinha (1); Sitio Tangil (3). **Bahia** (Bom Jesus-Lapa), Ilha do Medo (7). *Ceará* (Barbalha), Sitio Barreiras (1); Sitio Tupinamba (3); (Crato), Sitio Passagem (4); (Ipú), Sitio Gagas (1); (Joazeiro), Sitio Boca das Cobras (5); (Pacotí), Sitio Espinho Vermelho (2); (São Benedito), Sitio Caranguêjo (1); Sitio Catinguinha (1); Sitio Municatuba (1). **Minas Gerais** (Santa), Bicas Lagoa (3). **Pernambuco** (Garanhuns), Sitio Cavaquinho (1); Fazenda Cristovão (1); Sitio Frieira (1); Sitio Inhumas (5); Sitio Laranja (1); Fazenda Trairãs (1).

Subfamily Murinae

**Rattus rattus** Linnaeus, 1758

This species is a common commensal. The current distribution includes man-made dwellings in towns and outlying fazendas. *R. rattus*
is of particular interest because it is a vector of an endemic form of bubonic plague.

*Specimens collected.*—PERNAMBUCO (Municipio de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (4); Fazenda Batente, 5.5 km SE of Exu (2); Fazenda Pinheira, 1.5 km SW of Exu (7); Município de Exu (170).

**Mus musculus** (Linnaeus, 1758)

This species is another commensal. Populations are concentrated in towns, but population levels are much lower than those of *Rattus*.

*Specimens collected.*—PERNAMBUCO (Município de Exu) (23).

**Family Caviidae**

**Kerodon rupestris** (Wied, 1820)

This species is normally found only on lajeiros and rocky serrotes. A population was established near Parnamirim, Pernambuco, in an old quixaba forest by introducing individuals. The relatively large size (up to 1,000 g), hunting pressure, and restrictive habitat requirements have contributed to localized extirpations throughout much of the Caatingas. Reproduction is not synchronized and animals are active both day and night. This species may be the only endemic Caatinga rodent.

*Specimens collected.*—PERNAMBUCO (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (4); Fazenda Batente, 5.5 km SE of Exu (5); Fazenda Cantareno, 4.3 km NE of Exu (5); Município de Exu (9); Serrote das Lages, 17.7 km S of Exu (1); (Município de Parnamirim) (1).

*Specimens examined.*—ALAGOAS (Santana do Ipanema), Sítio Goiabeira (1); Sítio Lagoinha (12); Sítio Riacho do Bode (2). BAHIA (Joazeiro) (1); (Vila Nova) (2). CEARÁ (Itapajé), Sítio Cachoeira (1); (Assaré), Sítio Caraco (1); Sítio Manuel Inácio (2); (Cama- po Sales), Sítio Acoci (18); Sítio Canto (8); (Crato), Serra do Juá (1); Sítio Boa Vista (2); (Itapajé), Sítio São João (1); (Milagres), Sítio Espinho de Judeu (2); (Missão Velho), Sítio Lapinha (2). MINAS GERAIS (Barro Alto) (1); (Rio do Cruz) (1). PERNAMBUCO (Bodocó), Sítio Belem (2); Sítio Lopes (2); Sítio Riacho da Melancia (1); Sítio Sabonete (6); Sítio Serra do Brejo (2); (Exu), Sítio Gravatá (4); (Pesqueira), Sítio Ceguinha (1).

**Galea spixii** (Wagler, 1831)

This is the only rodent in the Caatingas which utilizes a network of well-worn runways. Individuals are found only in low-lying areas. Peak densities are reached in certain cultivated or recently abandoned fields. Reproduction occurs throughout the year. Activity is mostly crepuscular although short periods of activity may occur at any time.

*Specimens collected.*—PERNAMBUCO (Município de Exu), 0.5 km S of Exu (3); 0.5 km SW of Exu (4); 1.0 km S of Exu (5); 4.0 km S of Exu (1); Escola Agrícola de Exu, 0.7 km S of Exu (27); Fazenda Batente, 5.5 km SE of Exu (10); Fazenda Pinheira, 1.5 km SW of Exu (6); Fazenda Manicoba, 10 km S of Exu (1); Município de Exu (106); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (170 m) (1).

*Specimens examined.*—ALAGOAS (Limoeiro de Anadía), Sítio Brejo (2); Sítio Brêu
Family Dasyproctidae

*Dasyprocta prymnolopha* (Wagler, 1831b)

Heavy hunting pressure has greatly reduced or eliminated populations in many localities. Remnant populations still persist in some pockets of Caatinga Alta and on isolated serrotas. In areas subject to minimal hunting pressure, such as the Floresta Nacional Araripé-Apodí, these large rodents may still be common residents.

*S*pecimens collected.—*Pernambuco* (Município de Exu), Fazenda Marçal, 14.2 km NW of Exu (2).

*S*pecimen examined.—*Pernambuco* (Dois Irmãos) (1).

Family Echimyidae

*Thrichomys apereoides* Lund, 1841 (see Fetter, 1973)

This echimyid is strictly associated with rocky habitats, such as serrotas and lajeiros. Reproductive periods are relatively synchronized and the young are very precocial. *Thrichomys* may be active for brief periods at any time but it is generally crepuscular. These animals are scansorial and are good climbers.

*S*pecimens collected.—*Bahia* (Município de Senhor do Bom Fim), Fazenda Flamengo, 10 km N of Jaguarari (3); Fazenda Morro daImburana, 15 km N of Jaguarari (2). *P*ernambuco (Município de Exu), Escola Agrícola de Exu, 0.7 km S of Exu (25); Fazenda Batente, 5.5 km SE of Exu (13); Fazenda Guarani, 2.9 km N of Exu (5); Fazenda Pinheira, 1.5 km SW of Exu (4); Fazenda Santa Helena, 1 km N of Exu (2); *M*unicípio de Exu (48); (Município de São Lourenço da Mata), Estação Ecológica do Tapacurá (170 m) (3).

Order Carnivora

Family Canidae

*Cerdocyon thous* (Linnaeus, 1766)

This species is ubiquitous and fairly common. Currently, *Cerdocyon* is the most abundant terrestrial predator (placental) in the Caatingas and on the Chapada do Araripe.
Fig. 15.—Mammal specimens were examined or collected from a broad area throughout most of the Northeast of Brazil. Major localities are indicated by a dot, with the appropriate numeral referencing the set of specific sites enumerated in the Gazetteer.
Specimens collected.—CEARÁ (Município de Crato), Floresta Nacional Araripe-Apopi, 9 km W of Crato (1). PERNAMBUCO (Município de Exu), Escola Agrícola de Exu (1); (Município de Serra Talhada), Município de Serra Talhada (1).

Family Mustelidae

Galictis vittata (Schreber, 1776)

Highest densities are apparently reached in rocky areas. This species is probably the most important mammalian predator of the rock-dwelling rodents Kerodon and Thrichomys.

Specimens collected.—PERNAMBUCO (Município de Exu), Fazenda Batente, 5.5 km SE of Exu (2).

Family Felidae

Felis yagouaroundi (E. Geoffroy, 1803)

Areas currently disturbed by man’s activities are usually not frequented by this species. It may occur in any of a variety of Caatingas and Chapada habitats.

Specimen collected.—PERNAMBUCO (Município de Exu), Escola Agrícola de Exu (1).

Gazetteer

All sites in the Gazetteer are represented by an alphanumeric code and are organized by municipality and state separately for specimens collected and specimens examined. For collected specimens, each site is indexed by a letter (A through L) followed by a number. The letter refers to a general locality (that is, a municipality), while the number refers to a distinct site within the locality. For specimens examined, each site represented is indexed by a number (1–52) followed by a letter. The number refers to a general locality written on the museum tags (presumably a municipality or city), while the letter refers to distinct sites within the locality. Sites may be located on the map in Fig. 15 by referring to the general locality index (the letter for specimens collected, the number for specimens examined).

Specimens Collected

Município de São Lourenço da Mata
Pernambuco

A1 Mata do Camocim (170 m)
A2 Estação Ecológico do Tapacurá (170 m)

Município de Serra Talhada
Pernambuco

B1 Fazenda Saco (I.B.A.), 6.6 km NNE of Serra Talhada
C1 Fazenda Salto, 35 km NNE of Serra Talhada
C2 SUCAM (in the town of Triunfo), 28 km NNE of Serra Talhada
Município de Parnamirim
Pernambuco
D1 Town of Parnamirim, 47.6 km W of Salgeiro

Município de Exu
Pernambuco
E1 Açu de Itamaragi, .5 km S of Exu
E2 Escola Agrícola de Exu, .7 km S of Exu
E3 Fazenda Alto de Ferreira, 5.0 km SW of Exu
E4 Fazenda Alto do Umbuzeiro, 1.4 km NW of Exu
E5 Fazenda Barracão, 19.8 km SW of Exu
E6 Fazenda Batente, 5.5 km SE of Exu
E7 Fazenda Bom Jesus, .8 km NNW of Exu
E8 Fazenda Cachoeira, 13.1 km SSW of Exu
E9 Fazenda Cana Mansa, 13.4 km SW of Exu
E10 Fazenda Cantareno, 4.5 km NNE of Exu
E11 Fazenda Colônia, 5.5 km S of Exu
E12 Fazenda Gravatá, 3.1 km NW of Exu
E13 Fazenda Guarani, 2.9 km N of Exu
E14 Fazenda Marçal, 10.5 km NW of Exu
E15 Fazenda Maniçoba, 13.7 km SSW of Exu
E16 Fazenda Pau Ferrado, 2.6 km E of Exu
E17 Fazenda Paus Grandes, 14.2 km E of Exu
E18 Fazenda Pinheira, 1.5 km SW of Exu
E19 Fazenda Pomonha, 21 km SSW of Exu
E20 Fazenda São José, 1.5 km N of Exu
E21 Fazenda São Pedro, 1 km ESE of Exu
E22 Fazenda Santa Helena, 1 km NE of Exu
E23 Fazenda Uruguai, 4.8 km NE of Exu
E24 Serrote das Lajes, 17.0 km S of Exu
E25 Serrote das Lajes, 17.7 km S of Exu
E26 Serrote Gamba, 19 km SSW of Exu
E27 Serrote Gritadeira, 18 km SSW of Exu

Município de Crato
Ceará
F1 Aeroporto de Crato, 10 km SW of Crato
F2 Colégio Agrícola de Crato, 5 km W of Crato
F3 Fazenda Fundão, 3 km SSW of Crato
F4 Floresta Nacional Araripe-Apodí, 8 km S of Crato
F5 Floresta Nacional Araripe-Apodí, 9 km S of Crato
F6 Floresta Nacional Araripe-Apodí, 8 km SSW of Crato
F7 Floresta Nacional Araripe-Apodí, 10 km SSW of Crato
F8 Floresta Nacional Araripe-Apodi, 11 km SSW of Crato
F9 Floresta Nacional Araripe-Apodi, 13 km SSW of Crato
F10 Floresta Nacional Araripe-Apodi, 17 km SSW of Crato
F11 Floresta Nacional Araripe-Apodi, 21 km SSW of Crato
F12 Floresta Nacional Araripe-Apodi, 9 km SW of Crato
F13 Floresta Nacional Araripe-Apodi, 10 km SW of Crato
F14 Floresta Nacional Araripe-Apodi, 11 km SW of Crato
F15 Floresta Nacional Araripe-Apodi, 14 km SW of Crato
F16 Floresta Nacional Araripe-Apodi, 19 km SW of Crato
F17 Floresta Nacional Araripe-Apodi, 9 km W of Crato
F18 Floresta Nacional Araripe-Apodi, 10 km W of Crato
F19 Sítio Luanda (Itaiteira), 4 km S of Crato

Município de Nova Olinda
Ceará
G1 Km 19 on Route CE 96 (outside of the town of Nova Olinda)

Município de Valença do Piauí
Piauí
H1 Fazenda Olho da Agua, 2 km N of Valença do Piauí
H2 (Watering Hole) 5 km W of Valença do Piauí

Município de Teresina
Piauí
I1 Km 18 on Route BR 316 (outside of the city of Teresina)

Município de Juazeiro da Bahia
Bahia
J1 Fazenda Barrinha
J2 Fazenda São Raimundo, Km 216 on Route BA 130

Município de Senhor do Bom Fim
Bahia
K1 Fazenda Flamengo, Km 150 on Route BA 130, 10 km N of the town of Jaguarari
K2 Fazenda Lajeido, Km 147 on Route BA 130
K3 Fazenda Morro da Imburana, Km 145 on Route BA 130
L1 Distrito de Juacema (on Route BA 130)

Specimens Examined
(National Museum in Rio de Janeiro)
Bodocó
Pernambuco
la Sítio Belem
lb Sítio Lopes
1c Sítio Paus Pretio
1d Sítio Riacho da Melança
1e Sítio Roncador
1f Sítio São Gonçalo
1g Sítio Sabonete
1h Sítio Serra do Brejo
1i Sítio Xique-xique

Bonito
Pernambuco

2a Sítio Rodiadouro

Caruaru
Pernambuco

3a Sítio Brejinha de Serra dos Cavalos
3b Sítio Brejo do Buraco
3c Sítio Canhoto
3d Sítio Capoeira
3e Fazenda Caruaru
3f Sítio Gravatá
3g Pingueiras
3h Sítio Pitombeira
3i Sítio Preguica
3j Sítio Quandús
3k Sítio Riacho dos Mocos
3l Sítio Roncaria
3m Fazenda Salgado
3n Fazenda Santa Maria
3o Sítio Serra dos Cavalos
3p Fazenda Serraria
3q No locality

Dois Irmãos
Pernambuco

4a No locality

Exu
Pernambuco

5a Sítio Gravatá
5b Sítio Alto do Umbuzeiro

Garanhuns
Pernambuco

6a Sítio Brejo Grande
6b Sítio Cajarana
6c Fazenda Caldeirão
6d Sítio Camaratuba
6e Sítio Canhoto
6f Sítio Capim
6g Sítio Cavaquinho
6h Fazenda Colônia da Serra
6i Fazenda Cristovão
6j Sítio Engenho do Manião
6k Sítio Flamengo
6l Sítio Frixeira
6m Sítio Inhumas
6n Sítio Jambelo
6o Sítio Lajeiro
6p Sítio Laranja
6q Sítio Riacho Fundo
6r Sítio Riacho Seco
6s Sítio Saco
6t Fazenda São Paulo
6u Fazenda Serra da Pedra
6v Fazenda Trairas
6w Sítio Varzea do Ingá
6x Sítio Varzea-Ingá
6y Sítio Varzea-Redonda
6z Fazenda Velha
6aa No locality

No Area
Pernambuco

No locality

Pesqueira
Pernambuco

7a Fazenda Caçimba Nova
7b Fazenda Caianinha
7c Sítio Carrapato
7d Sítio Isabel Dias
7e Sítio Maravilha
7f Fazenda Pitanquinha
7g Fazenda Quatro Cantos
7h Sítio Serrinha
7i Fazenda Sororoca

Triunfo
Pernambuco

8a Sítio Boa Esperança de Jérico
8b Sítio Borgens
8c  Sítio Brejinho
8d  Sítio Cana Brava de Jérico
8e  Sítio Corredor do Vento
8f  Sítio Lagoa do Almeida
8g  Sítio Macaco de Baixa Verde
8h  Sítio Monte Alegre
8i  Sítio Novo
8j  Sítio Oiti
8k  Sítio Peri-peri
8l  Sítio Salva Terra
8m  Sítio São Bartolomeu
8n  Sítio São Mateus

Araripe
Ceará

9a  Sítio Cachoeira

Assare
Ceará

10a  Sítio Caraco
10b  Sítio Manuel Inacio

Barbalha
Ceará

11a  Sítio Barreiras
11b  Sítio São Pedro
11c  Sítio Tupinamba

Brejo Santo
Ceará

12a  Sítio Cancela
12b  Sítio Massape

Campo Sales
Ceará

13a  Sítio Acoci
13b  Sítio Canto(s)
13c  Sítio Volta

Crato
Ceará

14a  Sítio Arisco
14b  Sítio Belo Horizonte
14c  Sítio Boa Vista
14d  Sítio Caiano
14e  Chapada Araripe
14f  Sítio Constantino
14g Sítio Crispin
14h Sítio Fabrica
14i Sítio Grangeiro
14j Sítio Miranda
14k Sítio Oiteiro
14l Sítio Olaria
14m Sítio Parque
14n Sítio Passagem
14o Sítio Sapuinho
14p Serra do Júá
14q No locality

Guaraciaba
Ceará

15a Sítio Mazagão

Itapagé
Ceará

16a Sítio Bom Jesus
16b Camará
16c Sítio Maia
16d Sítio São João II
16e Sítio São José
16f Sítio Trata

Itapipoca
Ceará

17a Sítio Jacú

Ipíu
Ceará

18a Cidade de Ipíu
18b Sítio Gagas
18c Fazenda Lages
18d Sítio Pereiros

Jardim
Ceará

19a Sítio Cereado
19b Sítio Engenho d’Agua
19c Sítio Olho d’Agua

Joazeiro
Ceará

20a Sítio Boca das Cobras
Milagres
Ceará
21a Sítio Camará
21b Sítio Espinho de Judeu

Missão Velho
Ceará
22a Sítio Açude Velho
22b Sítio Araruna
22c Sítio Cachoeira
22d Sítio Emboscada
22e Sítio Lapinha
22f Sítio Yamaleira

Pacoti
Ceará
23a Sítio Alvoredo
23b Sítio Baixa Verde
23c Sítio Boa Esperança do Lapis
23d Sítio Boa Vista
23e Sítio Coati
23f Sítio Espinho Vermelho
23g Sítio Flor
23h Sítio Goiabeira
23i Sítio Ladeira
23j Sítio Lorena
23k Sítio Mendoza
23l Sítio Ouro
23m Sítio Umquaiana

Santana do Cariri
Ceará
24a Cidade de Santana do Cariri

São Benidito
Ceará
25a Sítio Alto
25b Sítio Barra
25c Sítio Barros
25d Sítio Cantinho
25e Sítio Carangueijo
25f Sítio Catinguinha
25g Sítio Cegarro
25h Sítio Chora
25i Sítio Cinta da Solidade
25j Sítio Guaribas do Amaral
25k Sítio Macapá
25l Sítio Muricatuba
25m Sítio Pedra de Côco
25n Sítio Piraguará
25o Sítio São José da Boa Vista

Solonopole
Ceará

26a Sítio Cedrão
26b Sítio Inhuma
26c Sítio Passa Corrente
26d Sítio Veneza

Bom Jesus de Lapa
Bahia

27a Ilha do Medo

Campo Formosa
Bahia

28a Fazenda Rapousa

Conquista
Bahia

29a Fazenda Agrião
29b Fazenda Barra Morangoa
29c Sítio Batalha
29d Fazenda Espírito Santo
29e Fazenda Felícia

Feira
Bahia

30a Fazenda Capoeira do Rosario
30b Fazenda Cazumba
30c Fazenda Jacú
30d Fazenda Salgado
30e Fazenda Tanque do Pasto
30f Sítio Tomba
30g Fazenda Três Riachos

Ilheus
Bahia

31a Aritaque Urucutuca
31b Banco da Vitória, Pirataquissé
31c Buerarema Riberão da Fortuna
31d Rio do Braço, Fazenda Almeida

Jequié
Bahia

32a Fazenda Pedra Redonda
32b Fazenda Santa Maria

Joazeiro
Bahia

33a No locality

Mundo Novo
Bahia

34a Sítio Barra de Mundo Novo

No Area
Bahia

No locality

Palmeiras
Bahia

35a Sítio Bouqueirão
35b Campo de São José
35c Fazenda Conceição

Seabra
Bahia

36a Varzea da Canabrava
36b Fazenda Cocho do Malheiros
36c Fazenda Furados
36d Lagoa Seca

Serrinha
Bahia

37a Fazenda Alagadiço Grande
37b Sítio Baixa d’Agua
37c Fazenda Cacuá
37d Fazenda Bruzeiro
37e Fazenda Europa
37f Fazenda João Congo
37g Fazenda Montanha
37h Fazenda Oiteiro
37i Fazenda Riacho Grande
37j Fazenda Tiririca
37k Sítio Totonio
37l Fazenda Umburana

Vila Nova
Bahia

No locality

Anadia
Alagoas

38a Sítio Brejo do Boi

Capela
Alagoas

39a Fazenda Serra Alegre

Limoeira de Anadia
Alagoas

40a Sítio Barracão
40b Sítio Brejo
40c Sítio Brêu
40d Sítio Gameleira

Managabeiras (=Manguaba)
Alagoas

41a Usina Sinimbu

Palmeiras dos Indios
Alagoas

42a Sítio Capuma
42b Sítio Dormião
42c Sítio Panelas
42d Sítio Ribeira
42e Sítio Sabiá

Quebrangulo
Alagoas

43a Sítio Barra
43b Sítio Barra Preto
43c Fazenda Bento de Barros
43d Fazenda Dourado
43e Engenho Juliana
43f Engenho Riachão
43g Fazenda Lagoa dos Bois
43h Sítio Mauriras
43i Sítio Olho d’Agua do Monteiro
43j  Fazenda Peri-peri
43k  Fazenda Poço da Serra
43l  Fazenda Santa Cruz II

Santana do Ipanema
Alagoas

44a  Sítio Goiabeira
44b  Sítio Lagoinha
44c  Sítio Riacho do Bode

Viçosa
Alagoas

45a  Sítio Amazonas
45b  Sítio Bauauas
45c  Sítio Cachoeira Grande
45d  Sítio Cambuim II
45e  Sítio Canárias
45f  Sítio Estrada Nova
45g  Sítio Engenho São José
45h  Fazenda Gitirana
45i  Sítio Gravatá
45j  Sítio Pedra da Fazenda das Pereiras
45k  Fazenda Pedra do Fogo
45l  Fazenda Pindobinha
45m  Fazenda Poço Feio
45n  Fazenda Riachão II
45o  Sítio São José
45p  Fazenda São Manoel
45q  Fazenda São Pedro
45r  Sítio Tamanduá
45s  Sítio Tangil
45t  Sítio Tangil 2º
45u  Sítio Timbó 2º
45v  Sítio Urucuba
45w  Sítio Vila Maria Lia

Alem Paraíba
Minas Gerais

46a  Fazenda São Geraldo

Barro Alto
Minas Gerais

No locality
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