

Conservation Note

Some Observations on the Present Distribution and Conservation of *Alouatta* and *Ateles* in Southern Mexico

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Some information on the past and present distribution of *Alouatta* and *Ateles* in southern Mexico and on the impact of habitat destruction on their future existence is presented. Three surveys of primate populations and forest habitats were carried out between 1981 and 1983 in southeastern Mexico. Rapid destruction of the forest is reducing the number of forested areas where *Alouatta* and *Ateles* can exist and co-occur. Illegal hunting of the two primates also contributes to their rapid decline. *Alouatta* and *Ateles* live a precarious existence in a few large and small islands of forest, and efforts are needed to set aside some of these areas as reserves so that their future survival is ensured.

Key words: conservation, tropical rain forest, *Alouatta palliata*, *Alouatta pigra*, *Ateles geoffroyi*, Mexico

INTRODUCTION

In Mexico, remnants of tropical rain forest presently exist in the southern states of Veracruz, Tabasco, Campeche, Oaxaca, and Chiapas [Estrada & Coates-Estrada, 1983]. These forested areas are inhabited by primates of the genera *Alouatta* and *Ateles*. Due to their large sizes (about 7.5 kg) and general behavior, these are two of the most evident diurnal arboreal mammals in the existing forest regions of southern Mexico. Both primates are, however, in danger of extinction as a result of illegal hunting and the rapid destruction of their natural habitats.

The purpose of this paper is to present information regarding the following: (1) the results of a preliminary survey of *Alouatta* and *Ateles* in southern Mexico; (2) their past and present distribution in the country; and (3) the potential impact of habitat destruction on their future existence.

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METHODS

During 1981–1983, preliminary surveys were carried out in forested areas in the states of Veracruz, Tabasco, Campeche, Chiapas, and the southern portion of the Yucatan Peninsula. The surveys (July 1981: 30 days; July 1982: 25 days; and August–September 1983: 20 days) were carried out on foot and horseback and by boat and motor vehicle. Sightings of *Ateles* and/or *Alouatta* were recorded as our group of four observers moved through forested areas following the procedure described in Estrada [1982]. No attempts were made to obtain detailed information on the number and structure of the troops, as our objective was to detect presence or absence of the primates in as many forested areas as possible.

RESULTS AND DISCUSSION

Taxonomy

Mexico harbors two species of howling monkeys: *Alouatta palliata* (*A. palliata mexicana*) and *Alouatta pigra* (= *A. villosa*) [see Smith, 1970; Hershkovitz, 1977; Napier, 1976; Mittermeier & Coimbra-Filho, 1981]. In the past, *A. palliata* was more widely distributed in southern Mexico than was *A. pigra*, which was restricted to the southern parts of Tabasco and Campeche [Hill, 1962; Smith, 1970]. Today *A. pigra* and *A. palliata* are sympatric in areas in the southern part of the state of Tabasco and in southern Campeche bordering with Guatemala [Smith, 1970; Horwich, personal communication].

Spider monkeys are represented by two subspecies: *Ateles geoffroyi vellerosus* (Mexican spider monkey), whose distribution is from southern Tamaulipas to Chiapas; and *Ateles geoffroyi yucatanensis* (Yucatan spider monkey), which is restricted to the Yucatan peninsula [Kellog & Goldman, 1944; Hill, 1962].

Rain Forest Distribution in Mexico

Accelerated destruction of the tropical rain forest in Mexico in the past 30 years has greatly reduced its original extension. Replacement of the natural ecosystem by agricultural crops such as coffee, sugar cane, corn, etc.; destruction as a result of large-scale logging and cattle ranching; and recent oil exploration and discovery in the states of Tabasco, Campeche, and Chiapas have significantly added to the massive destruction of forested areas in low and high elevations. The rate of conversion of the tropical rain forests of Mexico is very high. For example, of the original one million hectares of the Lacandon Forest, only 75,000 ha had been dedicated to agriculture by 1970. By 1973, however, 376,000 ha had been converted to agricultural practices, and by 1980, 526,000 ha had gone through the same process (Ing. J. Mauricio, Centro de Investigaciones Ecológicas del Sureste, Chiapas, personal communication), with the expected losses in plant and animal species.

What was once a continuous corridor of tropical rain forest in southern Mexico [see Miranda & Hernandez, 1963; Pennington & Sarukhan, 1968; Estrada & Coates-Estrada, 1983] now consists of large and small islands of forest in which the flora and the fauna live a precarious existence. Very few of these forested areas have been set aside as nature reserves. Today only two reserves exist: one in the area of Los Tuxtlas in Veracruz and another (Montes Azules) in Chiapas in the Lacandon Forest (Fig. 1).

The Present Distribution of Primates in Mexico

The rapid disappearance of forested areas in Mexico has greatly reduced the original distribution of *Alouatta* and *Ateles*. The past distribution of these two primates was determined in part by the distribution of the high evergreen and low

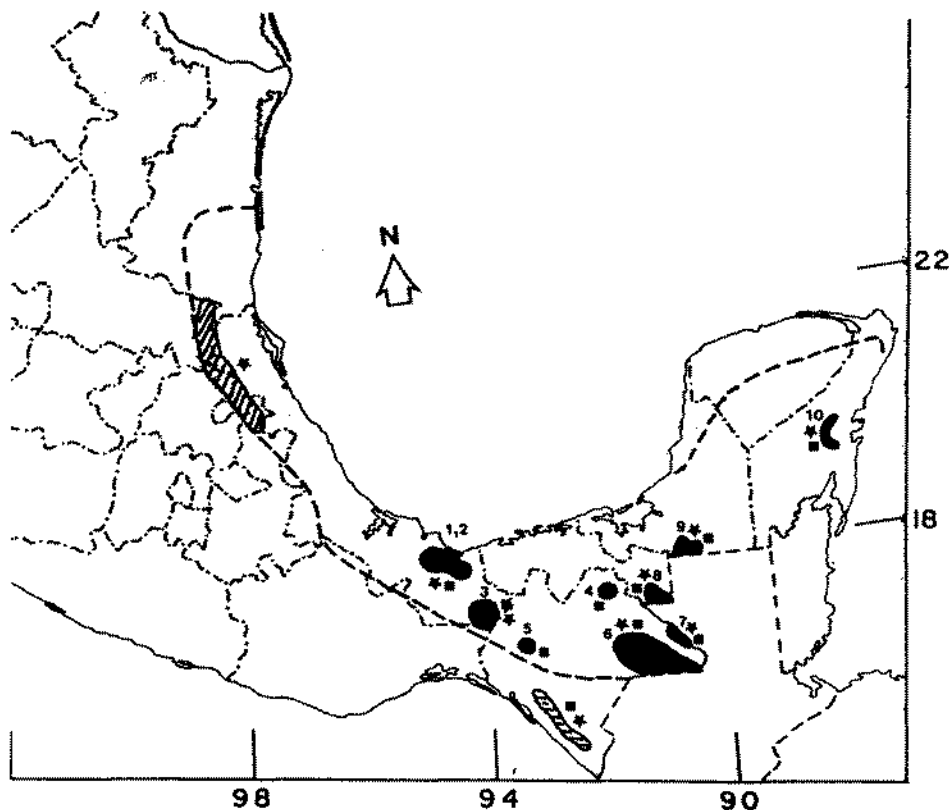


Fig. 1. Past and estimated present distribution of *Ateles* and *Alouatta*. This original distribution also reflects the past distribution of suitable habitats for these two primates. ■, *Alouatta*; *, *Ateles*. The hatched areas indicate probable occurrence of *Ateles* and/or *Alouatta*. 1, Biological reserve Los Tuxtlas; 2, Santa Marta Range (in the area of Los Tuxtlas); 3, Uxpanapa area (Isthmus); 4, Palenque; 5, Sumidero; 6, Lacandon Forest; 7, Yaxchilán/Bonampák; 8, Tenosique; 9, Candelaria; 10, Petcacabé. The thick dashed line indicates the past extension of *Ateles* to the north and of *Alouatta* and *Ateles* to the south. *Alouatta*'s northernmost extension has always been the area of Los Tuxtlas in Veracruz.

semi-evergreen rain forest [see Pennington & Sarukhan, 1968]. While both primates occupy these two vegetation types, *Alouatta* has had a more limited distribution in Mexico, with its northernmost limit in the area of Los Tuxtlas [Leopold, 1959]. On the west coast, near Barra de Navidad in Jalisco, a group of about eight *Ateles* was reported by Villa in 1955 [quoted in Leopold, 1959]. Our surveys, however, in the same area in March 1982 and May 1983 did not locate any *Ateles*.

Our surveys revealed that, as a result of the reduction of forested areas in southern Mexico, the populations of *Alouatta* and *Ateles* are in rapid decline. In some of the more accessible forested areas, we observed many fragmented troops consisting of two to four individuals. In some extreme cases, only one individual inhabited these islands of forest. Larger populations, detected by sightings and vocalizations, were located in very remote forested areas quite far from human settlements, particularly in the following areas: Los Tuxtlas, Veracruz; the mountainous areas of Canon del Sumidero; the Lacandon Forest and in Yaxchilán/Bonampák in Chiapas; the area of Candelaria bordering with Guatemala in Campeche;

the area of Tenosique (along the Usumacinta River toward the Guatemalan border) in Tabasco; and southern Quintana Roo in the area of Petcacabo (Fig. 1 and Table I).

Contributing to the attrition of the remaining primate populations is occasional illegal hunting of both species as a source of meat by the local people. Apparently, *Ateles* was and remains the preferred monkey (because, we have often been told, its meat is more palatable than that of howling monkeys). However, in those areas in which the forest has been partly destroyed and in which *Ateles* no longer exists, *Alouatta* is hunted and the meat sold at restaurants as spider monkey meat. Although the hunting-regulations in the past (1959) allowed hunting of howling and spider monkeys from November to February (two males per day), today regulations enforced through the Ministry of Wildlife of Mexico prohibit their hunting. Law enforcement, however, is lax in the areas of southern Mexico where these two primates still occur, indiscriminate hunting of animals of both sexes and various ages is still carried out. The protection of *Ateles* is a very urgent need as many populations have been exterminated from areas where they were previously sympatric with *Alouatta*.

The illegal trafficking of infants as pets is another cause of primate mortality. In this case, the mother is shot and the suckling infant taken. The survival of these infants is very rare as a result of inadequate feeding, stress, and parasite contamination. The latter results from contact with domestic animals such as pigs, cattle, dogs, etc, at the ranches where the captured primates are kept prior to their transportation to nearby towns to be sold. Obviously, shooting the mother contributes to extinction of the reproductive base for the species.

The stronger impact of habitat destruction on *Ateles* than *Alouatta* may be related to the different diets of these two primates. Our observational data in the area of Los Tuxtlas indicate that the howling monkeys spend a considerable amount of time eating leaves complemented with fruit throughout the year. The troops' home ranges are in the order of about 40-60 ha, within which they can find the resources they need from year to year [Estrada, 1984]. Spider monkeys in contrast, as reported for localities in Central and South America [Hladick & Hladick, 1969; Klein & Klein, 1977; Milton, 1981], are mainly frugivorous in their feeding habits and supply areas for troops are in the order of several square kilometers. As a result of the almost total dependence of *Ateles* on very patchy dietary resources (ie, ripe fruit), the animals need to monitor larger areas of forest in the daily search for food.

TABLE I. List of Areas Surveyed in Southern Mexico Where Populations of *Alouatta* and/or *Ateles* Were Found

Site	State	W long.	N lat.
Reserve Los Tuxtlas	Veracruz	95°04'	18°34'
Santa Marta Range	Veracruz	95°07'	18°22'
Uxpanapa (Isthmus)	Veracruz	95°46'	17°39'
Tenosique	Tabasco	92°37'	17°27'
Palenque	Chiapas	93°57'	17°30'
Sumidero	Chiapas	94°52'	16°51'
Lacandon Forest ^a	Chiapas	92°09'	16°46'
Yaxchilan/Bonampak	Chiapas	91°02'	16°45'
Candelaria	Campeche	91°15'	18°07'
Petcacabó ^b	Quintana Roo	89°30'	19°30'

^aLargest area of tropical rain forest remaining in México.

^bSouth central Quintana Roo state.

Thus, any significant destruction of their habitat presents a more serious problem to them than to howling monkeys, who spend at least half their annual feeding time eating a more predictable food item (ie, leaves).

In view of the rapid rate of conversion of the tropical rain forest in southern Mexico, we estimate that forested areas will be greatly reduced in size or will no longer exist by the end of the century. This means that there is an urgent need to set aside areas of rain forest in southern Mexico where populations of *Alouatta* and *Ateles* are currently preserved, and other areas where relocation and/or reintroduction of these two primates can be carried out to ensure their future existence. The value of these propositions can be ascertained in reserves such as UNAM's in Los Tuxtlas, where continuity of research in long-term studies of *Alouatta* and *Ateles* is ensured as a result of the protection of the forest and its primate fauna [Estrada, 1983; Estrada & Coates-Estrada, 1983].

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