

Sustainability of hunting in the Amanã Sustainable Development Reserve

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In the forests of the Amanã Reserve hunting is an important activity for the subsistence economy and culture of the local human population. Although the consumption of game species for subsistence and for commercial use is being monitored in four communities of the Reserve, there is a complete lack of knowledge about the population parameters of the species exploited. Together with the fast advance of the legal situation of hunting in Brazil, they make up a challenging scenario for the establishment of a program for the sustainable use of this resource, where research is a crucial tool for managers to determine sustainable limits of harvest.

Other characteristics of the Reserve, such as the presence of large tracts of untouched forests, low human density, low intensity of commercial hunting and the participation of local people in the activities of management and conservation, suggest that hunting in Amanã may be sustainable. Sustainability of this activity, nonetheless, will depend on the development of a program for the management of game species that will take into account the relationship between biological, anthropological and local knowledge, together with public policies. The program will also need to be able to generate strategies addressed to game species and the local characteristics of the environment. With that it should guarantee sustainability of the hunting activity in the long run, as well as quality of life for the local human population.

In general aspects hunting in the Amanã Reserve follows the main hunting pattern observed in the Amazon region, where herbivorous mammals and large and medium-sized birds represent the largest portion of the biomass harvested. If the hunting activity in the Reserve is a sustainable activity, game species and their populations should maintain present numbers. And this can only be evaluated if biological and population parameters of each species exploited are properly estimated.

The objective of this project is to develop a model of participative production for the local communities of the Amanã Sustainable Development Reserve based on solid scientific research, trying to minimize impacts on the ecosystems explored and promoting quality of life and social inclusion for the people involved.

Specific objectives

- i. To estimate density and abundance of the main game species, in order to determine the impact of hunting on their populations;
- ii. To evaluate the sustainability of hunting using the population parameters estimated with known production and population models, aiming to maintain this traditional activity;

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Methods

Estimating abundance of game species

Density and abundance data of game species will be gathered through the line transect method in trails opened around Lake Amanã. The line transect method consists of walking very silently along a straight trail and recording all the animals sighted during the survey. For each animal sighted the observer also notes the perpendicular distance from the trail and the angle of sighting in relation to the trail. Trails are one meter wide and are cleaned regularly to facilitate movement and to allow the observation of signs. This data is then used to estimate density and abundance of game species using software DISTANCE.

When possible transects from past studies and areas where little information about density of some mammal species in the reserves exist will be used, but when necessary, new transects can be opened.

Preliminary results

In the Amanã Reserve two trails from previous studies were recovered by December 2006, one with 10 km (Ubim trail) and the other with 9,5 km (Bacaba trail), totaling 19,5 km of linear transects. At the beginning of 2007 a third trail, the Capoeirinha trail, was recovered. Located in the Baré Igarapé, in a community use area, this trail is 5 km long but will have its length doubled. Trails were run by a biologist and a local community member at three days intervals, to assure the independence of data.

Approximately 150 kilometers of trails have been surveyed so far, and 763 observations were made (table 1). More than 70 species, between mammals, birds and reptiles, were recorded during the surveys. The two largest groups observed were of black uakaris (*Cacajao melanocephalus*) and squirrel monkeys (*Saimiri cassiquiarensis*), both with close to 100 individuals.

Table 1. Preliminary results of the fauna surveys in Amanã Reserve using the line transect method, from September to December, 2006.

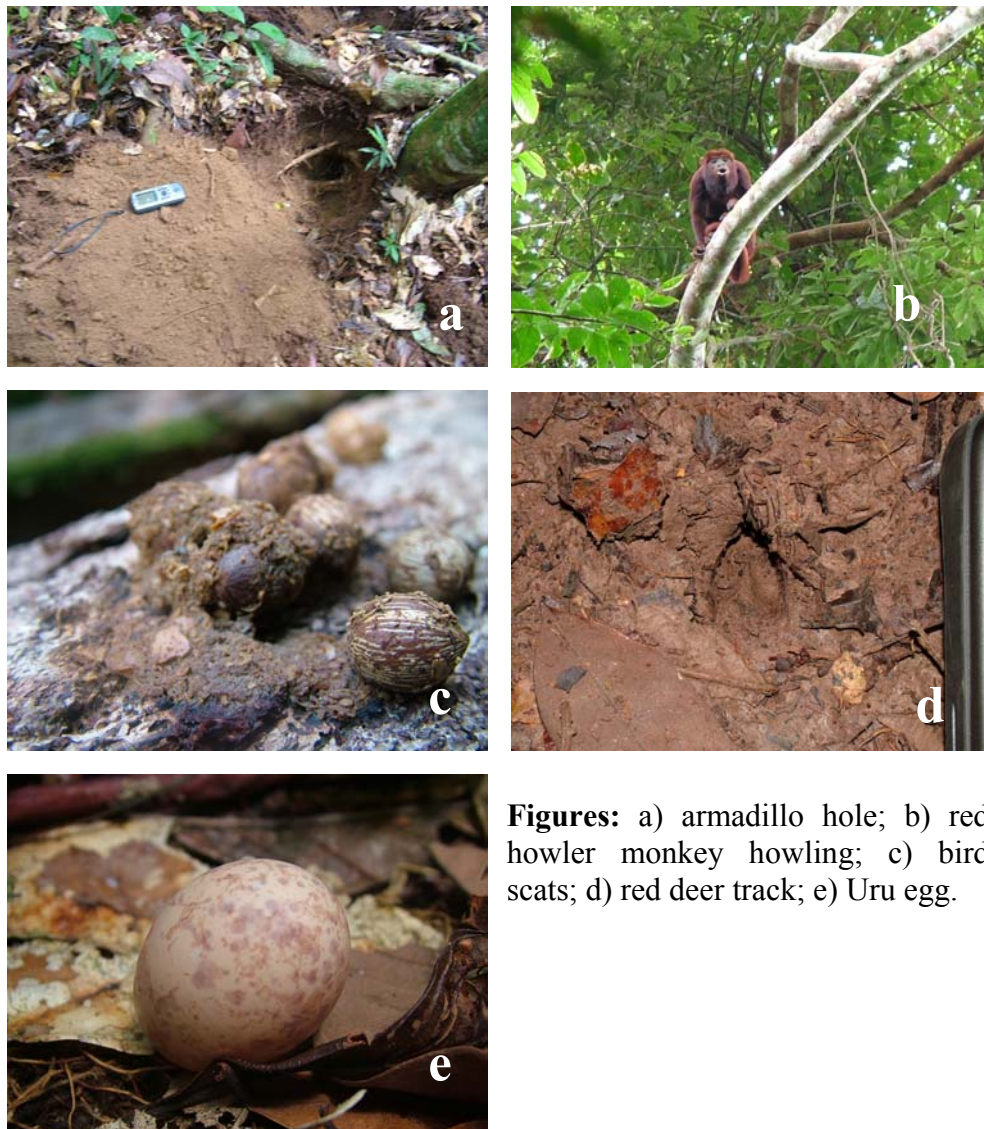
Trail	Days surveyed	Effort (km)	Sightings	Vocalizations	Signs
Bacaba	8	69	93	20	248
Ubim	8	80	96	9	297
Total	16	143,5	189	29	545

The recording of presence of some medium and large mammals, including some rare, elusive and endangered species, was only possible through signs (tracks, scats, scrapes, etc...). Examples are the jaguar (*Panthera onca*), the tapir (*Tapirus terrestris*), the giant anteater (*Myrmecophaga tetradactyla*) and the giant armadillo (*Priodontes maximus*).

Final considerations

The information generated by the Mamirauá Institute's Fauna Monitoring System (SMUF) together with the estimates of density and abundance of game species will allow the development of adequate conservation strategies and management of fauna resources.

It is expected that by the end of this project the Mamirauá Institute will have enough scientific information to orient research, as well as to promote new management programs of conservation or sustainable use, with the objective of benefiting local communities and some cities in the middle Solimões river region.



Figures: a) armadillo hole; b) red howler monkey howling; c) bird scats; d) red deer track; e) Uru egg.