



## Lemur Search Zahamena 1999

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### The Aim

*The aim of this study was to assess the difference in the distribution of species inhabiting two areas. The first area was within the Zahamena National Park, North-eastern Madagascar and the second area was South of Zahamena within the corridor forest connecting the Betampona Nature Reserve with Zahamena. This second area of forest is currently unprotected.*

*Lemur censuses were carried out to gain accurate estimates of lemur density and distribution within the two areas (Fig1).*

### Introduction

#### **Madagascar's unique biota**

Madagascar is famed for its unique flora and fauna, with nearly 100 % of Lemurs, 95% of reptiles and 86% of plants found nowhere else in the world (Randrianarijaona UNRISD 1991).

Madagascar is the primate conservation capital of the world with high diversity and unmatched endemism. Even though it is only 7% of the size of Brazil, Madagascar is the third most primate diverse country behind Brazil and Indonesia. All of its 32 species and 50 distinct taxa are 100% endemic.

Of the island's 50 Lemur taxa, 10 are considered critically endangered, 7 endangered and another 19 vulnerable. Eight genera and at least 15 species of Lemur have already gone extinct since the human race reach the island 2000 years ago (Mittermeier et al 1994). 70% of those remaining are under threat and several species are on the verge of extinction (Sleeper 1997).

#### **The Lemur Study**

Madagascar's arboreal lemurs are the largest vertebrates on the island and have large territories relative to other animals in the forests (Vasey, 1996). By aiding the conservation of these species other species of animals and plants that have smaller territories or ranges may be also aided. Lemurs also have a key role to play in the forests ecosystems as pollinators of some canopy trees (BBC), seed dispersers of many forest trees, sources of prey for fosses and birds of prey etc. This mean that a reduction in the lemurs numbers could drastically alter the ecosystem of these forests. This will therefore lead to a change in the structure, composition and function of the forests. The lemurs could therefore be used to monitor the changes in the ecosystem and whether current management techniques are working.

#### **The conservation problem**

The economic pressures on Madagascar's rural population are more serious now than they have ever been. The struggle to survive has lead to an ever-increasing use of the forest, the one free resource available. The forests have been used mainly been depleted or destroyed for hardwoods, fuel-wood (charcoal), for agriculture (rice), pasture or for mining. This has meant that man for extraction has converted 80% of Madagascar's original forest cover in to bare land.

The Eastern rainforest, where Zahamena is found, has been reduced to 50% of its former cover in just 35 years, until 1985 the forest was only declined by 34% of its original cover (Mittermeier *et al*, 1994). This has therefore lead to extreme habitat loss and fragmentation for the lemur species.

In addition Low level removal of certain species of timber and non-timber products from the forests may also be influencing Lemur viability. This is through the selection of certain commercial species which may be

important nesting or feeding trees. The selective removal of certain species may affect the movement of some of the larger lemur species such as *Indri indri* or *Varecia* Spp.

Hunting worldwide is the second most important threat to primate populations. Immigrant hunters from the towns are the main source of hunters yet the local people benefit from this as they are often hired as local guides. In Madagascar the main hunting pressures is on *Indri indri*, *Eulemur* Spp, and *Varecia* Spp. In Zahamena the local people, the Betsimasarka people, revered the *Indri indri* and so this species is relatively free from persecution with this area of Madagascar. However the Aye Aye is believed to be a bad omen warning of impending death or disaster. This means that should an Aye Aye be seen the local people will kill it.

### **Conservation measures**

Active protection of Madagascar's biota began as early as 1881, with a code of articles, condemning anyone who cut down forest. Ten Nature Reserves were founded in 1927, this has increased to approximately 34 in recent years.

The increasing conservation impetus of the Malagasy government is likely to have been strongly fuelled by the possibility of generating large revenues through tourism as has been achieved in Africa. However the increased protection of forest areas and extension of their boundaries has increased pressure on local communities. Tavy is cited as the most common problem with respect to conservation management and policy measures stress the need to remove villagers from the boundaries of protected areas, to create a buffer zone. Many marginal areas, used by people for dwellings, fallow cultivation, grazing and collection of forest products are steadily incorporated into parks, whilst villagers are displaced and left with few alternative means of survival.

This increases the conflict between conservation and villagers and may cause the villagers to either disregard the policies applied more pressure on the remaining unprotected areas of forest and the species that are found within the forest.

The Lemur species composition and densities of two areas of forest close to a village, one found within a protected area and the other within an unprotected area both was measured by this project. The data was then used together with data on the villager's use of the forests to ascertain whether the different usage of the forest was altering the stability of the forest's ecosystem.

### **Site**

Lemur censuses were completed at two sites. The first site was in the 73,000 ha. Zahamena National Park. The park has limited access, admitting only government department officials and scientific researchers. Despite strict legislation however Zahamena, like many other protected areas has suffered severe forest encroachment due to agriculture. Part of the reserve has been declassified as a result. The region where Zahamena is situated has little flat land, making it tough to cultivate, unfortunately tavy is the easiest method under such conditions and has become a serious threat.

The second site was situated in the Mantadia - Zahamena corridor ~20Km from the base village metanauka. This area is as yet unprotected and is therefore the local village has free access to the forest. The site was however further away from the main village than the first site within the protected area.

### **Census Method**

The lemurs were censused using the line transect method. There were three transects at each site that looped away from the central camp and then looped back towards camp (fig1). Most of the transects were along pre-existing trails along ridge lines. Using ridge line transects while censuring the lemur groups was however advantageous because calls could be heard well from the ridge tops while visibility was also improved of the slopes below. (Merenlender *et al*, 1998)

Transects were between 2.5 and 1.4 Km long. This was shorter than originally expected, however this was due to the steep terrain. All transects were walked each day of the study at an average rate of 1.2Km per hour. The Transects were surveyed equally both directions and in the morning between 8.30 and 9.30 am

Fig 2

Altitude of Transect A

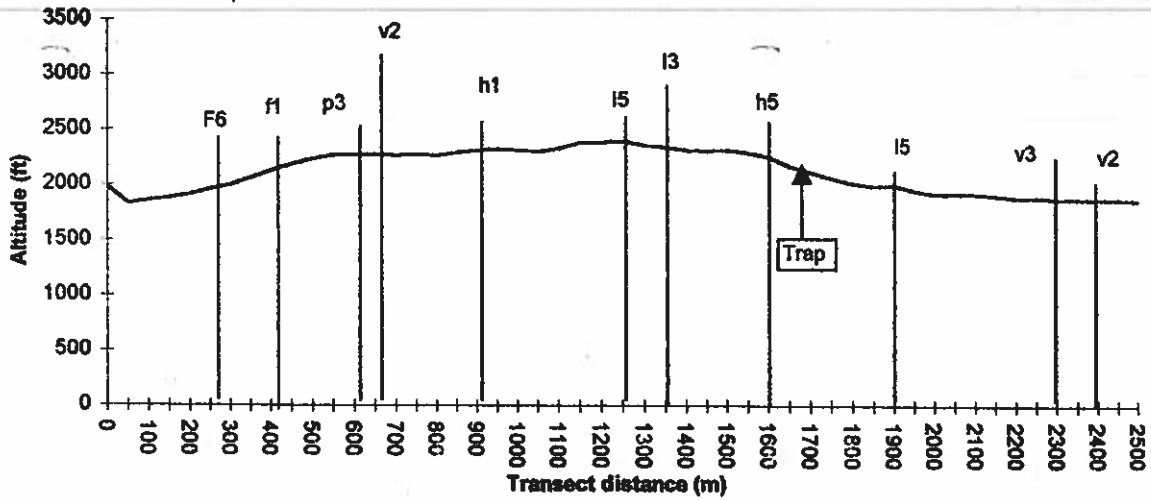


Fig 3

Altitude of Transect B

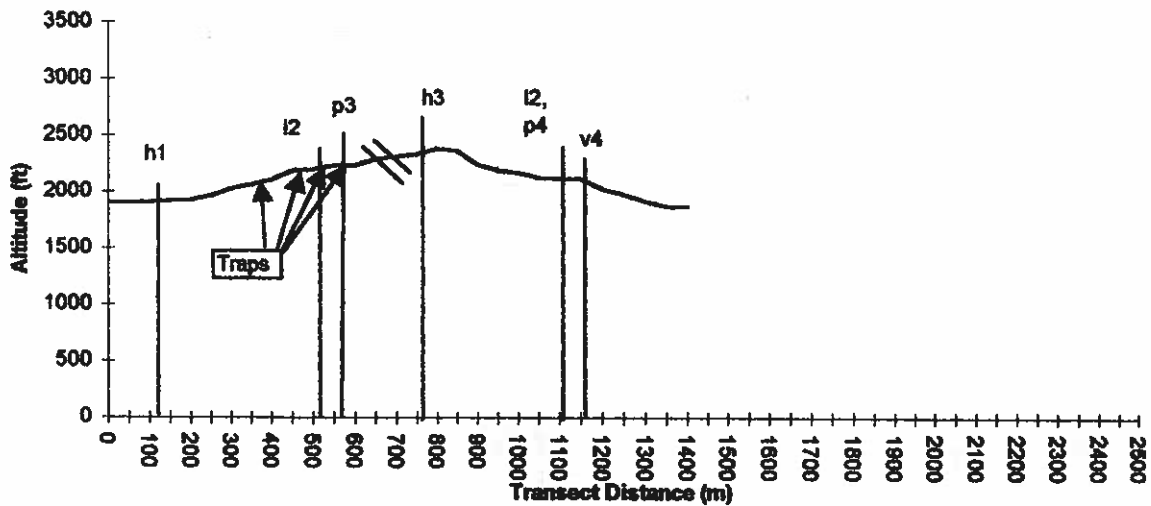


Fig 4

Altitude of Transect C

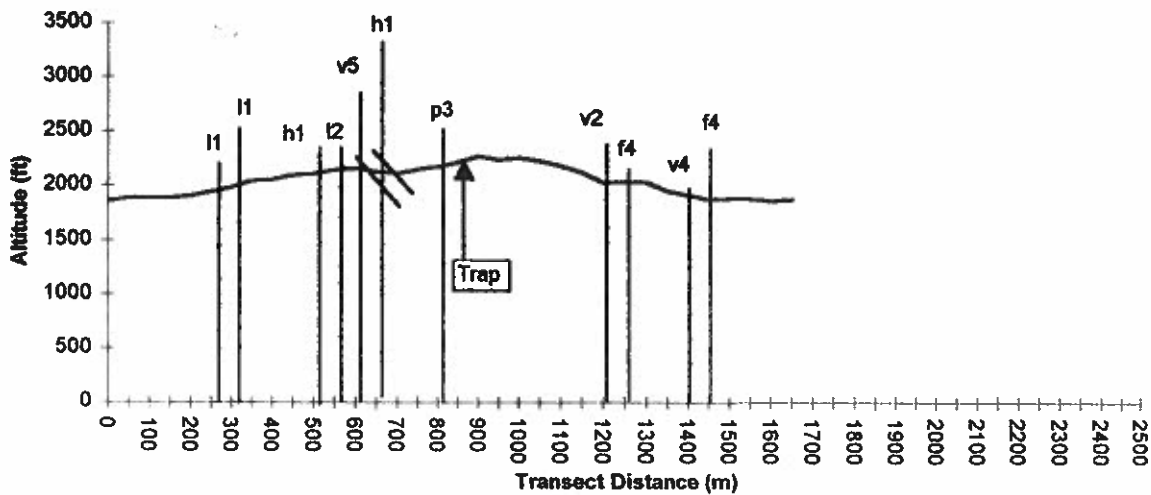


Fig 5

Altitude of Transect D

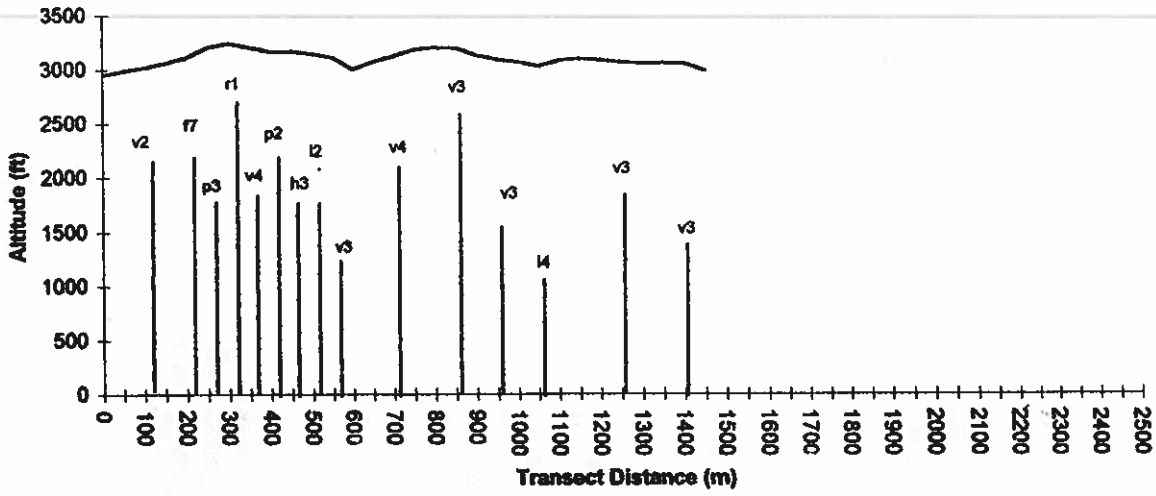


Fig 6

Altitude of Transect E

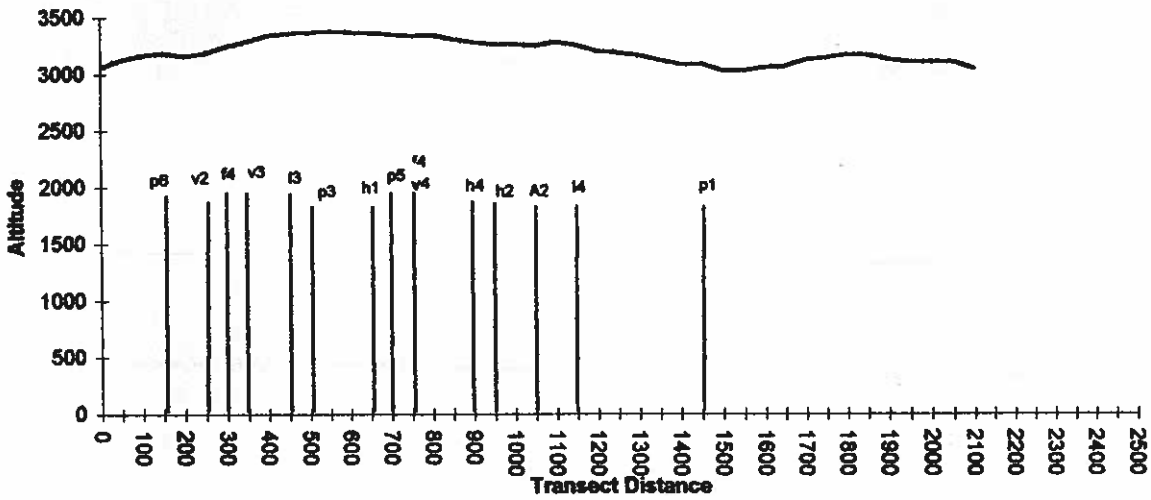


Fig 7.

Altitude of Transect F

