

MI222 The effect of degradation and land use on reptile communities in the spiny forest of Ifotaka, southern Madagascar

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Madagascar, with an incredibly high level of endemism and an exceptional loss of habitat, is one of the five hottest biodiversity hotspots in the world. The annual percentage of habitat loss is even higher in the spiny forest of the southeast. Measuring the value of protected areas for biodiversity conservation is the most important objective for a successful monitoring program. In this context, researchers often concentrate on certain target or flagship species (e.g.: lemurs, trees, birds) to evaluate the success of protected areas. Apart from tortoises, reptiles are rarely considered as bioindicators for forest health and the effect of land use. However, recent studies have shown that reptiles are eminent bioindicators, especially for arid habitats. They are highly abundant and often highly specialised concerning habitat requirements.

In Madagascar, most herpetofaunal studies dealt with issues of taxonomy and distribution, resulting in many new species discoveries, especially during the last decade. The IUCN red list already includes some of the species found in the spiny forest of Ifotaka but there is still a big lack of ecological research. For most species, data are insufficient to evaluate an IUCN red list status, but they are obviously rare, inhabiting only intact habitats. More studies have to be conducted to show the value of the protected area for rare reptile species.

More than 36 reptile species are known to occur in the Ifotaka-North Protected Area including three chameleons, two tortoises, eight snakes, ten geckos, two plated lizards, seven skinks and four iguana species. There are even more species expected to be found in future studies.

The occurrence of species itself (e.g.: a presence/absence matrix) is insufficient to reveal the actual condition of reptile communities. A highly dominant species is integrated in the results the same way as a very rare, sporadic species. However, this is still a common method for simple inventories all over Madagascar.

A more meaningful method is to include the abundance of all reptiles found in habitats with a different degree of degradation. Several transects will be installed in different habitats within different zones of the Ifotaka-North Protected Area. Each transect will cover an area of 0.25 ha (2500 m²) and will be repeated three times to make sure that all (or most) species are found. The method to find the species will be active searching with habitat examination (under tree bark, in leaf litter, in leaf axils, in trees, in deadwood, in driftwood, in rotten tree trunks and under rocks). All species will be identified directly in the field. We will take photographs of all species where a definite identification is doubtful, for further certainty. Additionally, night transects will be conducted for nocturnal species and sleeping chameleons.

A second method is pitfall lines with drift fences. We will use a plastic sheet (100 m long) with buckets every ten meters to capture nocturnal, fossorial and ground dwelling reptiles like blind snakes, limbless skinks and ground geckos. This method is highly efficient for reptile species that are hardly seen during the day.

The data analysis will include reptile diversity and relative abundance for habitats with a different degree of degradation. The dominance of species is a key factor to calculate the species diversity index (Shannon-Weaver-Index) and the evenness.

This study is part of the monitoring program for the Ifotaka-North Protected Area. It offers the possibility to contribute to the monitoring and the potential to set new standards for similar projects. It is also a fundamental study to provide more ecological data on reptiles concerning the IUCN red list. Furthermore, this study will help to identify more reptile species as bioindicators for forest health, land use and the recovery of formerly used forest patches.

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