

# Science for Environment Policy

## Areas surrounding tropical forest nature reserves also need protection

**To preserve rich biodiversity** in protected areas of tropical forests, safeguarding the surrounding area can be just as important as safeguarding the park or reserve itself. This is according to a new study, which assessed the ecological health of 60 protected areas across the tropics.

**Tropical forests** sustain some of the biologically richest ecosystems in the world, and provide a number of vital ecosystem services. Protected areas have therefore been established in many tropical forests to safeguard them from human pressures and to conserve this biodiversity. Globally, threats from human activities, such as deforestation, are increasing and it is not clear whether protected areas can adequately preserve tropical biodiversity and all of its ecosystem services.

In the first major study of its kind, the researchers assessed changes in tropical forest ecosystems across the globe over the last 20-30 years, not only in protected areas, but also in a 3 kilometre-wide zone surrounding each protected area. They wanted to determine whether protected areas in the tropics can act as refuges for vulnerable species and natural ecosystems, whether different protected areas suffered from similar or differing kinds of threats, and what drivers of change and characteristics of the reserves can be used to predict whether they will be successful in protecting biodiversity.

Information was collected from a questionnaire and interviews with over 250 experienced biologists or environmental researchers. Each researcher has been working for several decades in one of the 60 protected areas, which span the tropical regions of Africa, the Asia-Pacific and the Americas. The protected areas included both high-protection and multi-use (where some sustainable activities are allowed for local inhabitants) areas.

The study focused on long-term changes to 31 groups of animal and plant species. It found that there is a wide variation in the health of tropical protected areas. Around half have exhibited a relatively serious decline in their original biodiversity, with many species, including top predators, primates, old-growth trees, freshwater fish and amphibians, being negatively affected.

Of 21 potential environmental drivers of change identified inside the protected areas, the most important drivers identifying deteriorating reserve health were declining natural forest cover, increased hunting, increased logging and harvesting of non-timber forest products.

In addition, changes to the landscape and habitats immediately outside the protected areas were very influential. As there are established links between a protected area and its surrounding environment, changes nearby will affect the biodiversity within. For example, if threats such as fires and logging are prevalent outside a protected area, they will also likely to penetrate inside it, to some degree. Irrespective of the size of the protected area, the external threats cannot be ignored.

Notably, over the past 2-3 decades, surrounding forest cover has declined for 85% of the protected areas, and increased in only 2% of these areas. Thus, the protected areas are becoming increasingly isolated and surrounded by land uses that are hostile to forest biodiversity.



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