**Outline**

Introduction

Conservation investment. Insufficient funding for conservation – shortfall. Conservation has to invest resources efficiently and effectively to maximise gains. Short overview of studies that have looked into conservation investment over space. Used advanced tools to decide where to invest resources. But no studies have focussed on the question of conservation funding over time. i.e. once conservationists have decided to invest in an area, what are the implications of finite resources and unpredictable investment over time in a given area? The problem is that projects often don’t have much of a choice about when to invest because they have unpredictable resources over the medium to long-term. Therefore investment decisions are based on the availability of resources at any given time. This is largely due to the funding regimes that exist for conservation. In some countries conservation landscapes have reliable budgets that are provided by governments via statutory bodies and so long term strategic investment planning is an option. Yet in many parts of the world, particularly in developing countries where conservation funding provided by governments is very low, the management of landscapes relies on externally leveraged funding, often by NGOs.

Paragraph on funding cycles.

Different versions/strategies of the funding cycles. Large, longer grants. Take a lot of time and energy to apply for – time consuming project development. Often larger orgs that have dedicated fundraising teams that can lead on development of such grants. Smaller, shorter term grants (often piled on top of each other). E.g. multiple species-specific grants, where cores budgets are made up of small administration slices of multiple grants. Smaller orgs with fewer staff and no dedicated fundraising teams will often be forced to rely on small grants, or they will choose to because they don’t have the administrative capacity to easily manage large grants. Finally, often the reality is that project budgets will be made up of a combination of large and small grants, and the competitive nature of grants means that when the next big pot of cash is coming is not known. This makes strategic investment challenging.

The implications of conservation by grant cycles has not been quantified. We do not know which strategy is most effective, or which one produces the best outcomes for biodiversity. This is particularly true in the context of increasing threats. Forest landscapes are under increasing pressure from a range of drivers and threats, and it is challenging for conservation projects to implement effective interventions when funding is unpredictable and variable. The lack of studies reflects the challenges in gathering data on a sufficient number of conservation landscapes over a sufficient period of time to investigate these questions. Simulations, powered by mechanistic models have become more widespread as computing power has increased. They provide the ability to design simplified examples of real-world situations where concepts and questions can be explored without the need for empirical data. They have limitations – it is impossible to simulate the real world and all of the complexities, and you have to make lots of assumptions. But this can be seen as an advantage – using very simplified versions of reality allow you to make generalisations and to control which parts of reality you want to test, and which parts you want to make complex/simple.

In this study we investigate the effects of different forms of conservation investment over time. We have made the investment strategies be governed by simplified, but common, funding regimes that reflect grant cycles. We created a landscape that could reflect any number of real-world conservation landscapes, and we investigate what effect these different regimes have on deforestation in the context of increasing human pressure.