

Trophic cascades and fisheries

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2 ABSTRACT

3 Fishing can change the whole system

4 **Keywords:** Fish, Fisheries, Trophic

1 INTRODUCTION

5 Marine reserves can yield benefits to tourism (Viana et al., 2017). People have looked at the ideal size
6 of TURFs (Aceves-Bueno et al., 2017). Also, Szuwalski et al. (2017) showed that reducing predator
7 abundances can increase catches of lower-trophic level fish.

2 MATERIALS AND METHODS

8 We will use a two-species predator-prey model, described by:

$$\begin{aligned}\frac{dA}{dt} &= I_A A - d_A A - aAS \\ \frac{dS}{dt} &= ar_S AS - d_S S - fS\end{aligned}\tag{1}$$

3 RESULTS

9 Using Equation 1 we obtain the dynamics of the system, shown in Figure 1. The stable equilibrium values
10 are shown in Table 1.

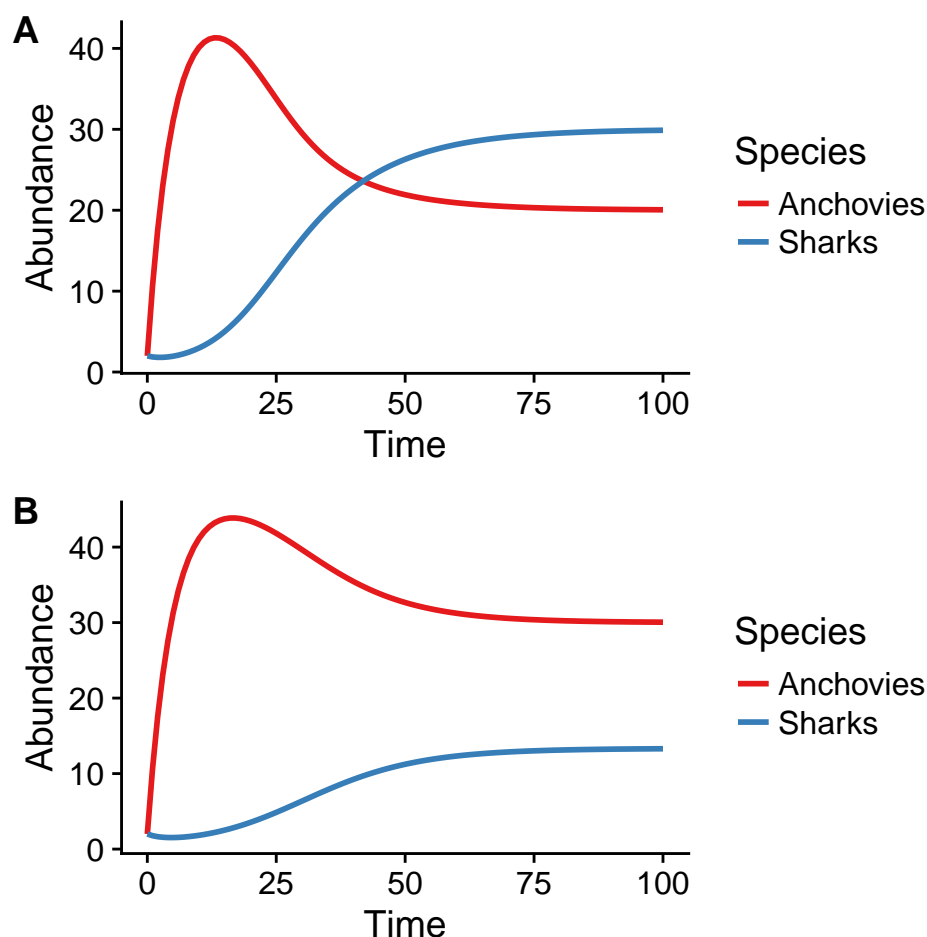


Figure 1. State variable dynamics through time for an ecosystem without fishing (A) and with fishing (B).

Table 1. Stable equilibrium values for Sharks and Anchovies under fishing and no fishing conditions

Species	Fishing	No Fishing
Anchovies	30.05	20.05
Sharks	13.29	29.88

4 DISCUSION AND CONCLUSION

11 Our results are not novel, because they had been shown before (Szuwalski et al., 2017).

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