frontiers

Trophic cascades and fisheries

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ABSTRACT

Fishing can change the whole system

Keywords: Fish, Fisheries, Trophic

1 INTRODUCTION

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

2 MATERIALS AND METHODS

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

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

3 RESULTS

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

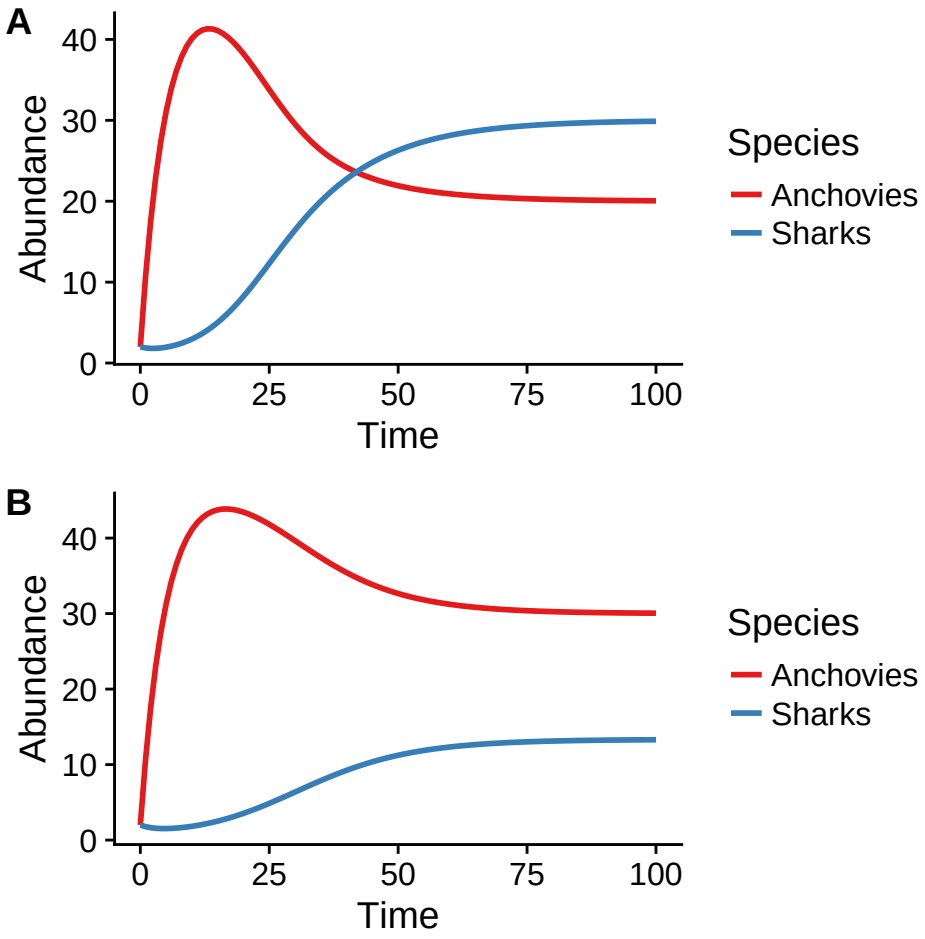

Figure 1. State variabel dynamics through time for an ecosystem without fishing (A) and with fishing (B).

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

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

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