

ReefRanger

User Guide (Series 1: Save the Yellow Tangs)



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Cover: Wade Cooper (NCORE) surveying a reef with a CobraTac.

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Introduction

Coral reefs are vital to the culture and economics of many places in the world, including Hawaii. The average person reaping benefits from reefs has only a vague concept of their importance, and a partial understanding of the complexity of the threats to these ecosystems. The *Reef Ranger* is an educational game designed specifically for teens (ages 13 and above) to give them a better understanding of the complexities involved in managing the coastal resources. This version (*Save the Yellow Tangs*) is focused on monitoring and managing the fish called yellow tangs.

The general objective is to select management options to ensure that the economically important fish industry of Hawaii is sustained and protected from human interventions.

What is a Yellow Tang



The yellow tang also formally called, *Zebrasoma flavescens* (Bennett, 1827) in the scientific community, is the most common aquarium fish in Hawaii. A close relative of the purple tang, they have a yellow body with a white scalpel-like spine on the tail used for defensive (or offensive) weapon. Yellow tangs do well in reef aquaria as they exhibit high tolerance and resiliency to changes in the environment. However, they also exhibit low tolerance and animosity to other fishes of their size and family (Acanthuridae) in an enclosed environment. Yellow tangs are largely herbivores (feeding on filamentous and frondose macroalgae on the reef bottom) and have been observed in an enclosed (tank) environment to occasionally feed on non-aquatic plants like lettuce as an alternative. In waters around Hawaii, their main predators include, among others, groupers, all species of jacks and pompanos, moray eels, and other carnivores that normally hunt for prey in reefs.

They are found in the Pacific and Indian oceans. Reports of yellow tangs in Florida have raised concerns that they have been introduced into the Atlantic (Myers, 1991). They inhabit both

contact the authors (ncore@rsmas.miami.edu) immediately to resolve the problem.

References

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The *Reef Ranger (Series 1: Save the Yellow Tangs)* is an educational game software that immerses the player in the complex world of coral reef management. The effects on coral reefs of human activities in the mountains all the way to the open ocean are simulated. The game illustrates how one entity in the ecosystem can have a large effect on the health of another, and how not only inaction but also inadequate management actions can lead to ineffectiveness and ultimately degradation of resources like the yellow tang.

The intelligence of the program is derived largely from constructed scenarios stored in the game software. The *Reef Ranger Authoring Tool* is a software that will give users the capability to edit, add and submit new scenarios to *Reef Ranger* to configure the game software to local conditions or even to a local language.



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