

ReefRanger

Authoring Tools



**F. C. Gayanilo, Jr., W. Cooper, M. Brandt,
A. Yñiguez and J. W. McManus**

NATIONAL CENTER FOR CORAL REEF RESEARCH (NCORE)

*University of Miami—Rosenstiel School of Marine and Atmospheric Sciences
4600 Rickenbacker Causeway, Miami, FL 33149*

ReefRanger: Authoring Tool

F. C. Gayanilo, Jr.
W. Cooper,
M. Brandt,
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Cover: Wade Cooper (NCORE) surveying a reef with a CobraTac.

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Introduction

The *Reef Ranger* includes a tool to allow researchers, managers, teachers and other educators to edit, create, and submit management scenarios into the *Reef Ranger* game that others may utilize in future play or to configure the game to a suite of prevailing condition. This is termed as the “Authoring Tool” that includes a scenario authoring form. For example, the authoring form would permit a participant to build a scenario featuring undergrowth clearing in forests upland of the coral reef. Of course, familiarity with the issues involved in the scenarios built would be appropriate. This document details the simple steps by which these individual scenarios can be edited or created and implemented in the *Reef Ranger* game.

Getting Started

The *Reef Ranger Authoring Tool* can be accessed from the *Programs* menu or by double-clicking on the top header of the *Reef Ranger* program (Figure 1).

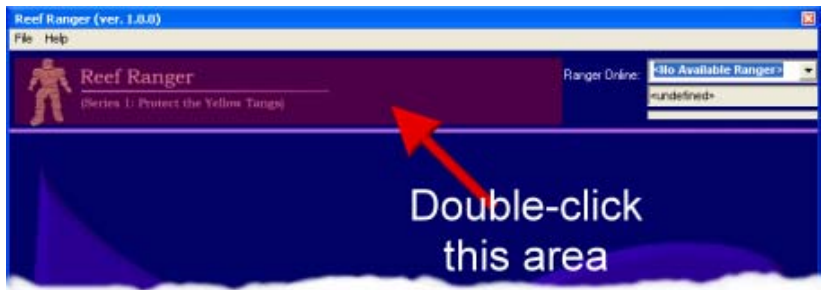


Figure 1. Reef Ranger’s startup screen. Double-click the header area to enter the authentication code.

The user will be prompted for an authentication code. Please write to HICRI-RP (hicri_rp@hawaii.edu) to obtain the authentication code.

A valid authentication code will open the *Scenario Authoring Form* (Figure 2) which is the mechanism by which to edit, build and submit individualized scenarios.

Scenario Authoring Form

File

SCENARIO AUTHORIZING FORM

SCENARIO TITLE:

General | Option 1 Details | Option 2 Details | Option 3 Details | Option 4 Details

Select the area where this scenario applies: (U:4 L:3 C:4 O:3)

Select the scenario: +

What are the possible responses?

Option 1:

Option 2:

Option 3:

Option 4:

Test Display

<possible response not available>

What will a SCIEINTIST advise in such scenario?

What will a KAPUNA advise in such scenario?

Help Notes

Clicking the 'Close' button will close this form without saving any change made.

Figure 2. The Scenario Authoring Form to edit, create and submit scenarios to Reef Ranger.

Before building a scenario, it is important to note that all of the scenarios (built-in or otherwise) are hypothetical. No matter how much effort is made, the real-life scenarios can never be simulated using the algorithm employed in this game software.

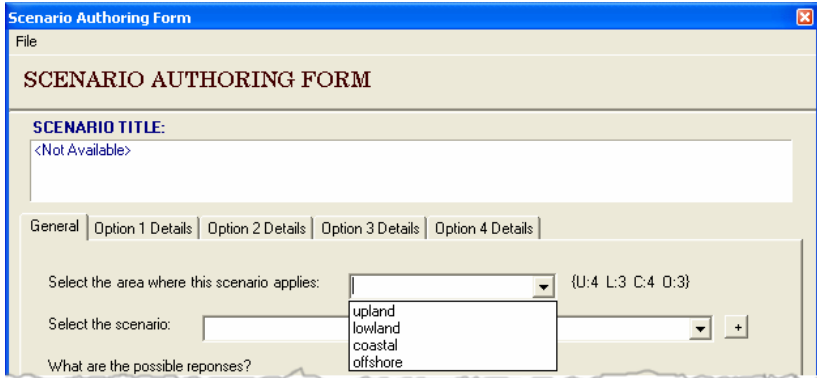
Step 1: Select Area

The current version of the Reef Ranger has four view ports. These cameras are positioned to view and monitor the: **upland**, **lowland**, **coastal** and **offshore** areas (Figure 3) that one would encounter around the islands.



Figure 3. Camera positions available to the *Reef Ranger* are displayed in the game software as view ports.

The first step in the *Scenario Authoring Form* is to choose the area (upland, lowland, coastal, or offshore) the specific scenario will target. To do so, click on the dropdown list and select the area of interest (Figure 4).



.Figure 4. Selecting an area for the scenario to play from.

Step 2: Select Scenario

On the right of the dropdown list for the area is a label with the format "{U:9 L:9 C:9 O:9}". This is a count of the number of scenarios stored in the system for each area. For example, if the label reads "{U:4 L:3 C:0 O:3}" as in Figure 4, this implies that there are 4 scenarios that can be played from upland areas, 3 in the lowland, 4 in the coastal area and 3 in the offshore. If there are saved scenarios, then the author would be able to select them for editing from the dropdown list (e.g., UP07520 in Figure 5).

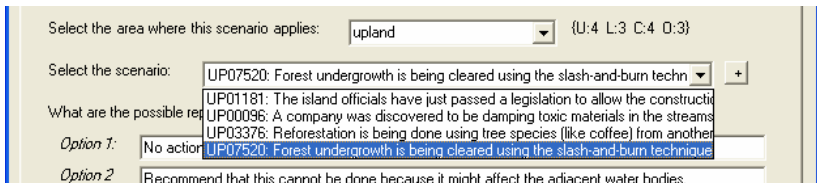


Figure 5. Selecting a scenario to edit. The "+" button may be used to add a new one.

To add a new scenario, simply click on the "+" button that is located on the right side of the dropdown scenario list. A pop-up box will appear in which you can add a title for the scenario (Figure 6).

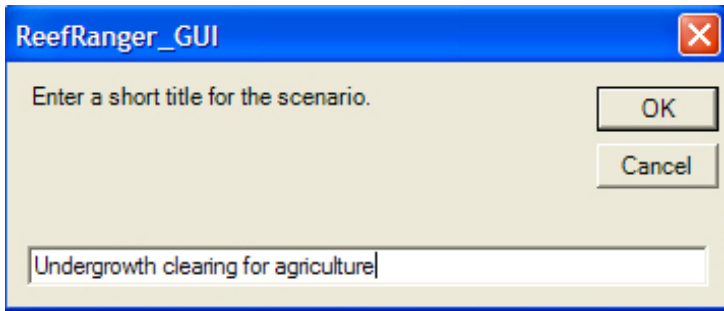


Figure 6. Dialog box to enter the title of the scenario.

It is important to note here that this is the label the player will read when first beginning the simulation. The example above (“*Undergrowth clearing for agriculture*”) may be sufficient for some players who know how clearing is done and what agriculture means. However, this may make no sense to someone who does not know the procedures employed locally for clearing the forest undergrowth. A better title would be “*The governor has approved the clearing of the undergrowth in the forest to make way for the planting of pineapple. Clearing is done through the cutting down of small trees and controlled burning of the area.*”

WARNING! The program is not capable of controlling the type of scenario a user can create, such as the inclusion of illicit material. Therefore, all scenarios created by or intended for youngsters should be monitored.

After entering the title and clicking the OK button, the title will appear in the SCENARIO TITLE box (Figure 7) and the list updated. The program will generate a random number for the scenario with the first two letters of the area beforehand (**UP07520** in this example). An asterisk (“*”) will appear before the scenario title to signify that this is a new, un-saved scenario.

Figure 7. Scenario title box shows the complete label. Note that new scenarios will have an '*' preceding the title to indicate that the record is not saved.

WARNING! If you have not saved the scenario, clicking the dropdown list again will delete all entries.

Step 3: Possible Responses

The third step is to enter the four possible responses that the player can choose from when they encounter this particular scenario. Option 1 is the default response of “*No action taken or required.*” That assumes that the player who selects this response believes that by taking no action, this scenario will have no effect on the biomass of the yellow tangs. To complete the other 3 possible responses, click within the appropriate box, and type the responses in each box (Figure 8).

When authoring the possible choices a player can make it is important to keep in mind the target audience. In the example above, “*Recommend suspension of activity pending environmental impact assessment*” may not be understandable to all players and a rephrasing or further explanation may be necessary.

As the cursor moves from one box to another, a test display is presented to the author (Figure 8) for clarity. Up to 104 characters can be entered but authors are encouraged to make the statements as short as possible.

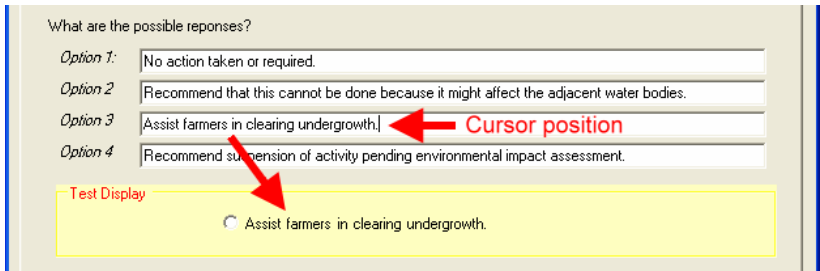


Figure 8. Choices the player can have in response to the scenario. A test display is also presented to the author as the cursor moves to any of the possible choices. Note that the first response of "No action taken or required" cannot be edited.

Step 4: Scientific Advice

Before choosing their response, the player has the option to seek scientific advice. In Step 4, the author can type a message which will be displayed to the gamer during play if they elect to seek a scientist's advice. It is recommended that this message include useful information but avoid leading directly to the correct answer. It is good practice to include at the end of the message the author's initials in case inquiries are made with regards to the posted advice (Figure 9).

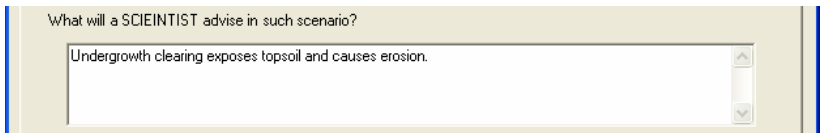


Figure 9. Example of a scientific advice without revealing the choice to be made.

Step 5: Kapuna Advice

Along with scientific advice, the player has the option to seek advice from the local Kapuna. In Step 5, the author can type a message which will be displayed to the player during play (Figure 10).

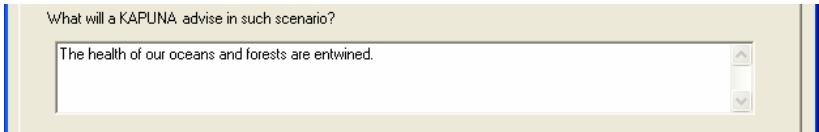


Figure 10. Example of advice from a Kapuna.

Step 6: Probabilities of Success for each Option

The likelihood that a particular response will be implemented can be set as a function not only of the quality of the response but also of the rank of the player. Click the tabs (Figure 11) to enter these values for each of the four options. In the scenario example below, the author has set the probabilities of success such that the responses of a *Junior Reef Ranger* will have a lower probability of being implemented than actions taken by *Reef Rangers*, *Senior Reef Rangers* or *Park Manager*. However, any success probability can be given for any response at any experience level. To set the probability levels, click on the dropdown list for each response box and choose the probability (in %). In this example (Figure 11), a *Junior Reef Ranger* that recommends response (b) will have a 30% chance that this response will actually be implemented. If the response is not implemented, the default response (a) of “No action taken or required.” will be automatically chosen by the system instead.

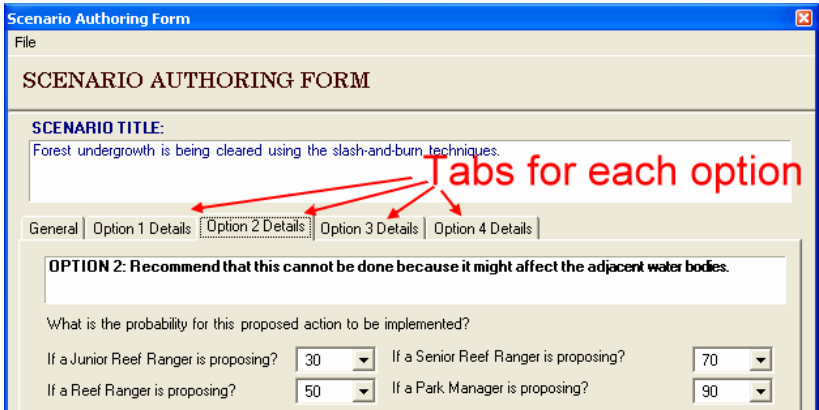


Figure 11. Entering the probability of success for each option and rank.

Step 7: Parameters if Option is Implemented

Figure 12 contains the parameters to direct the response of the system if the option selected is implemented. This contains the following:

The screenshot shows a window titled "Management Agrees with Player's Proposed Action". It contains the following elements:

- A text input field with the prompt "What will be the reason why this proposed action was implemented." and the text "Management stopped the land clearing, leading to clean water for the tangs." A red arrow labeled 'A' points to this field.
- A dropdown menu with the prompt "If this proposed action is implemented what is the long term effect to the biomass (%)" and the value "20". A red arrow labeled 'B' points to this dropdown.
- A dropdown menu with the prompt "If this proposed action is implemented what is the long term effect to the reef environment?" and three options: "<No change>", "Clear water", and "Algae rare". A red arrow labeled 'C' points to this dropdown.

Figure 12. Example of parameters that the program will use if the option selected is implemented by the program.

A: The message that will be presented to the player on why management decided to implement the option regardless of whether it had a negative or positive impact to the yellow tangs and the resulting scene.

B: The impact each individual response will have on the biomass of the yellow tang, a percent change in either the positive or negative direction.

C: The scene that will be shown for each response that is selected. Three variables can be selected which will be shown in a single scene: (1) the coral condition (standing corals, part rubble, rubble, or no hard coral), (2) the turbidity of the water (clear water, slightly turbid, or very turbid), and (3) the condition of the algal community (algae rare, some algae, algae dominated, all algae, or no algae). To set the scene that will be shown, click on the dropdown list for each variable and select the appropriate level. If a particular variable does not change based on the response, leave the default as <No change>, and that variable will remain in its current condition. While it may be true that it takes decades or perhaps centuries for hard corals to recover, it is assumed here that in the *Reef Ranger* world, hard coral can recover in an instant. For

example, once pristine coral habitat can turn into rubble after one scenario or vice versa.

NOTE: *Reef Ranger* does not make use of real time to simulate the changes. When completing this part of the form, you must assume that the effects of the response implemented (whether action has been taken or not) acts immediately on the reef and the yellow tang habitats.

Step 8: Parameters if Option is Not Implemented

This step is the opposite of Step 7. If the response selected by the player was not implemented and the program defaulted, the same set of parameters are required (see above for details on the required inputs).

Management DID NOT Implement the Proposed Action

What will be the reason why this proposed action was NOT implemented by management.

Management did nothing, so the undergrowth was cleared, causing erosion.

If this proposed action is NOT implemented what is the long term effect to the biomass (%)?

-20

If this proposed action is NOT implemented what is the long term effect to the reef environment?

<No change> Very turbid <No change>

Figure 13. Sample parameters that the program will use if the option selected is NOT implemented by the program.

Step 9: Save

This is the last step in the process. Click the **Save** button and all inputs and edits will be saved to a file that the *Reef Ranger* can use. If this is a new scenario, the asterisk (“*”) beside the scenario title will disappear indicating that the file has been successfully saved.

The file that was saved may also be imported in other computers through the Import utility found in the File dropdown menu.

Reef Ranger: Authoring Tool

F. C. Gayanilo, W. Cooper, M. Brandt,
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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.



Hawaii Coral Reef Initiative Research Program

University of Hawaii at Manoa

Social Science Research Institute

2424 Maile Way, #704, Honolulu, Hawaii 96822