



ReefGame Computer Operator's Guide

v1.0

Prepared by

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FOUNDATION



About this guide

This guide accompanies the ReefGame Software and Tool Demonstration Guide, also downloadable from www.gefcoral.org

Mac and Linux users will need to install VisualWorks Community Edition (freely downloadable from the Internet) to run ReefGame.

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About ReefGame

REEFGAME was developed with support from the Australian National University, the University of the Philippines Marine Science Institute and the Coral Reef Targeted Research & Capacity Building for Management (CRTR) Program. The CRTR Program is a partnership between the Global Environment Facility, the World Bank, The University of Queensland (Australia), the United States National Oceanic and Atmospheric Administration (US NOAA) and approximately 50 research institutes and other third-parties around the world. Contact: Coral Reef Targeted Research & Capacity Building for Management Program, c/o Global Change Institute, Gehrmann Building, The University of Queensland, St. Lucia, Queensland 4072, Australia. Tel: +61 7 3346 9942 Fax: +61 7 3365 4755 Email: info@gefcoral.org.au; Internet: www.gefcoral.org

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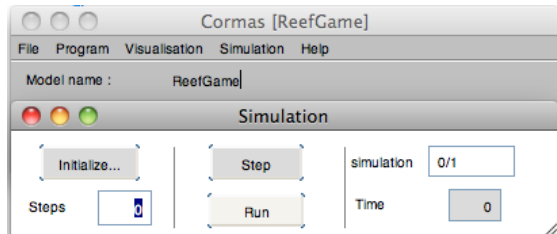
Part 1: Starting up and setting initial values

1. Transfer the ReefGame software folder from your ReefGame CD on to your computer, or download 'ReefGame software' from <http://philcrm.org>
2. Double click the ReefGame.exe icon (Windows users) or the ReefGame.im icon (Mac). Mac users will need to have VisualWorks Community Edition (free and downloadable from the internet) installed on their machine.



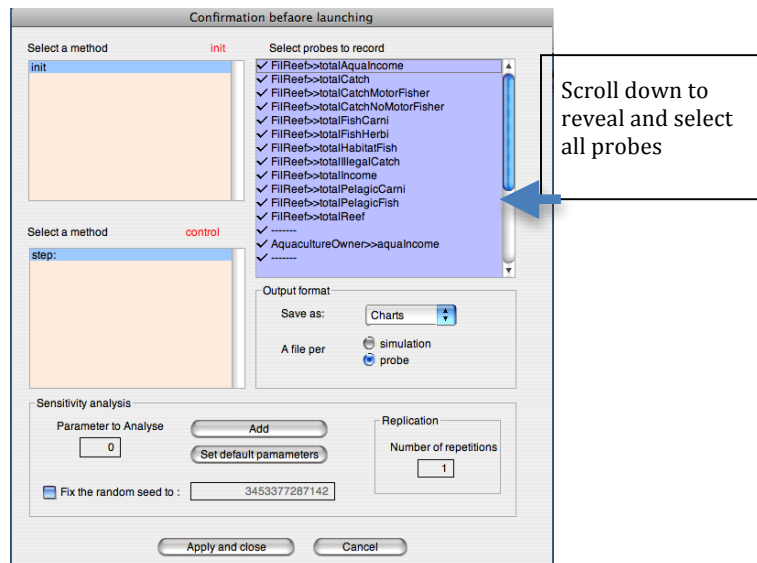
ReefGame icon

Result: the ReefGame window and the simulation window appears



Cormas main window with ReefGame launched

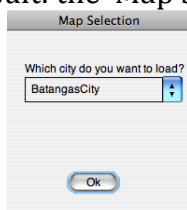
3. Click 'initialize'
4. Select the 'init' and 'step' methods (click on the method to highlight it) when the initialization window appears.
5. If the probes are not ticked already, select all the Probes, holding down shift or control to select multiple Probes. Remember to scroll down to select



Initialisation window, showing the init and step: methods highlighted, and all the probes ticked.

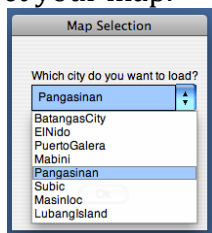
6. Click 'apply and close'

Result: the 'Map Selection' window appears



Map selection window

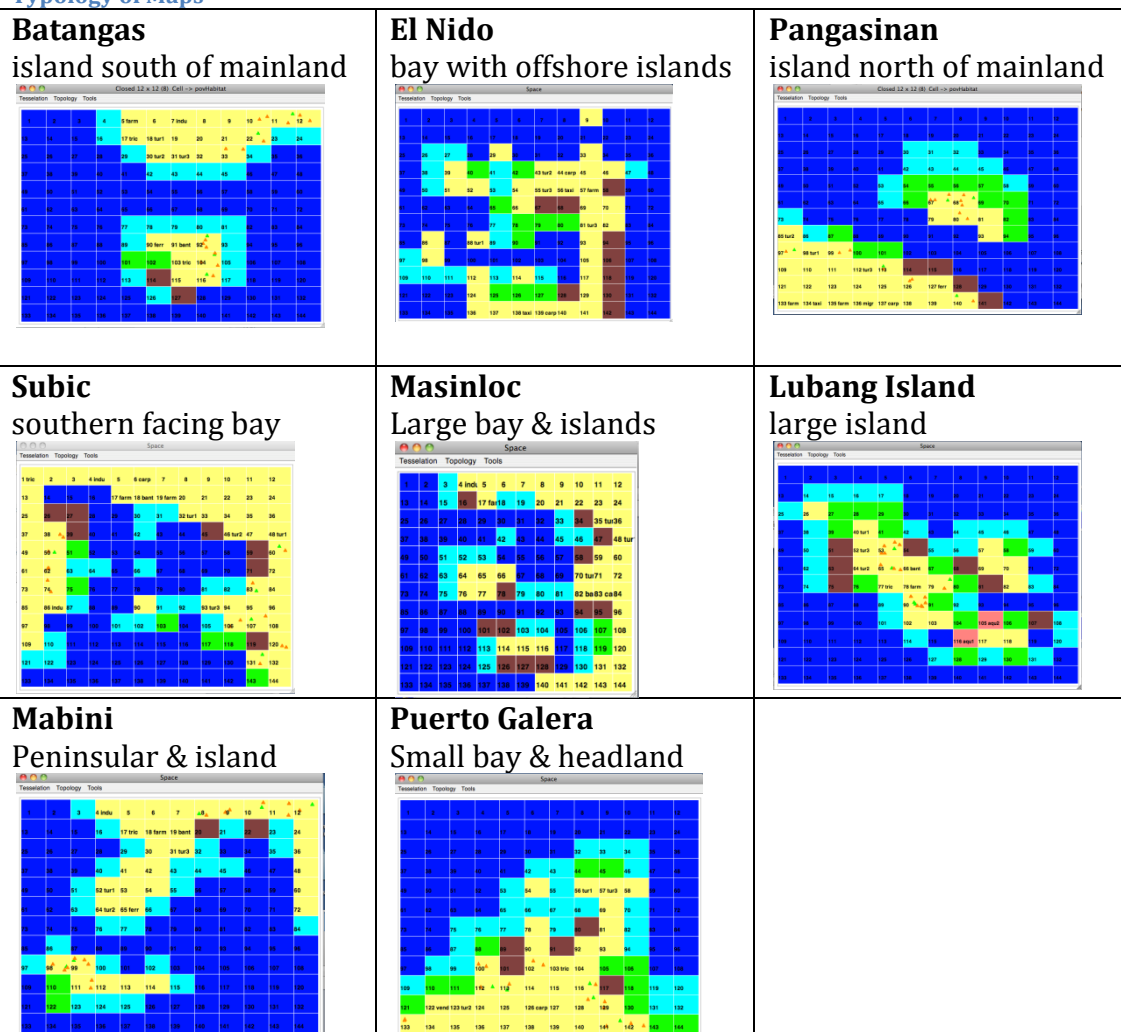
7. Select your map.



Map selection window showing 'Pangasinan' selected

Note: This version of ReefGame does not allow you to choose your own maps. However, there are eight pre-programmed maps, which correspond to a range of different coast line typologies. These are presented below.

Typology of Maps



Result: the 'Initial Values' window appears

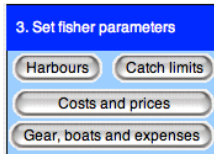
initial values interface.

8. Check the values on your 'Initial Values' interface, adjusting where necessary.
- The next sub-steps explain the different parameters you can choose, following the instructions on the 'Initial Values' interface.
 - Usually the only values you will want to adjust are the catch limits per gear, based on local fishing ranges (**step 8c**) and the livelihoods and wages (**step 8d**)
 - If you do not want to change any of the initial values, continue to **step 9**.

Changing initial values (Steps 8(a)-8(e))

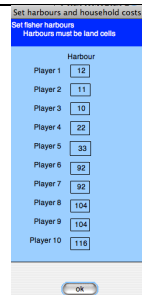
<p>8a</p>	<p>Set number of Aquaculture operators</p> <ul style="list-style-type: none"> This needs to be between 1 and 4 (they can remain idle, so even if you don't have 4 players, you can leave it at 4)
<p>8b</p>	<p>Set number / type of tourism operators</p> <ul style="list-style-type: none"> Tourism operators: between 1 and 3 (can also remain idle, so usually leave at 3); Tourism operator types: each tourism operator can either have a resort or operate tourism boats (for transport or sight-seeing) <p>Note: These need to match the tourism profiles that you give the tourism players. Sample profiles are available in your ReefGame starter kit. For more information on tourism players and profiles, see the ReefGame Tool Demonstration Guide.</p>

8c



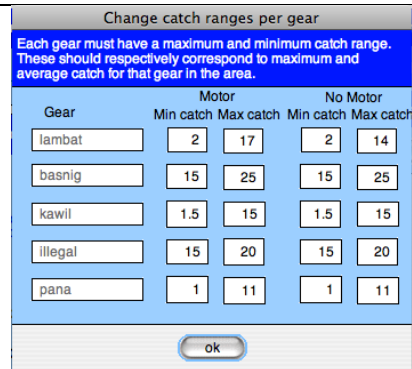
Set fisher parameters

- Click on the buttons to adjust each group of parameters in turn
- These should match the profiles given to the fishers. Sample profiles (in Filipino) are available in your ReefGame starter kit.
- See the ReefGame Tool Demonstration guide information about profiles and role-playing



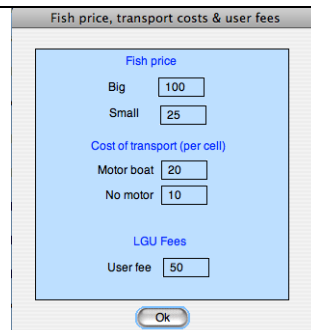
Set harbour

Harbour: adjust the fishers' harbour cells



Change catch range per gear

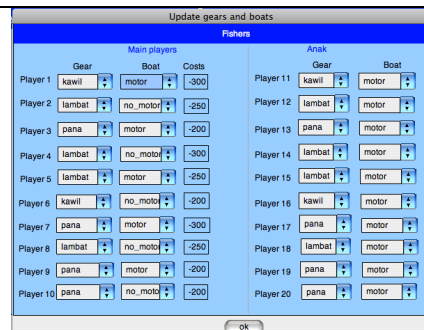
Catch limits: sets the catch limits for any gear. This should roughly correspond with the maximum daily catch (max) and the mean daily catch (min) for each gear type.



Fish prices, transport costs & user fees window.

Costs and prices

- **Fish price:** big and small fish – should correspond to local prices for high and low value fish.
- **Cost of transport:** should reflect actual daily costs of going fishing. It is a 'per cell' transport cost (eg 10 pesos per cell travelled away from harbour.)
- **LGU User Fee:** the environmental fee charged to tourists by the Local Government Unit (LGU)



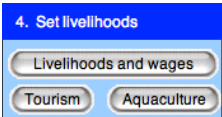
Update gears and boats window

Boats, gear and expenses

Gear: each fisher can either use kawil, pana, lambat, basnig or 'illegal' (eg dynamite/blast or cyanide fishing). Usually only legal gears will be assigned, but it depends on facilitators)

Boats: each fisher can either have a motor or non-motor (no_motor) boat

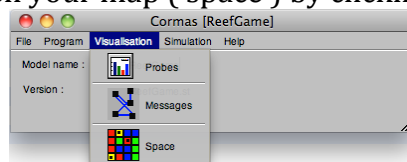
Costs: each fisher family/pair has a cost which corresponds to their households expenses. They give this amount to the market each round (see ReefGame Tool Demonstration Guide)

<p>8d</p> 	<p>Set livelihoods (see Part 3: Adding different livelihoods and enterprises/small businesses, p12)</p> <ul style="list-style-type: none"> • Default livelihoods are set for each map. To view these, click the livelihoods and wages button. • Tourism operators also have default locations. To view these, click the tourism button. • Aquaculture operators do not have default locations. To set these, click the aquaculture button • Further instructions on adding and changing livelihoods can be found in the ReefGame Tool Demonstration Guide
<p>8e</p>	<p>Set State of the sea (pelagic and reef): this determines the initial state of your resources (good, medium or bad)</p>

9. Click Ok

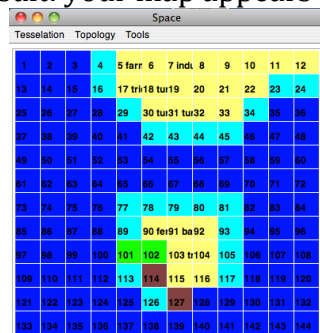
Result: the window closes, and you are left with only the simulation window and main cormas window open

10. Open your map ('space') by clicking 'visualisation' > 'space'



opening your map through the visualisation>space menu path

Result: your map appears

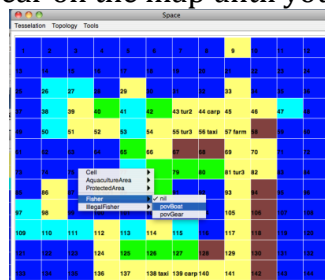


example map (Batangas City)

11. Show the location of your fishers by:

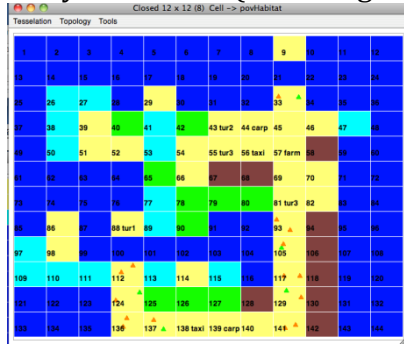
- right clicking anywhere on the map
- selecting fisher > pov boat

Note: you can do the same with illegal fishers. However, they may not appear on the map until you play the first round.



selecting fisher>povBoat to reveal the fishers

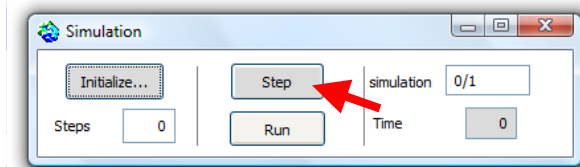
Result: your fishers (red and green triangles) will appear



Example map (El Nido), showing the location of the fishers (red and green triangles)

Part 2: Completing one round ('step') of ReefGame

1. Click step on the simulation window



Simulation window showing the step button

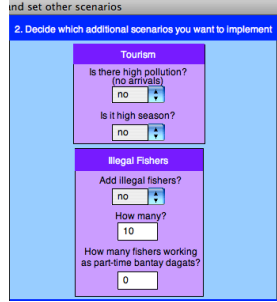
Result: the 'move players and set other scenarios' window appears

'Move players and set other scenarios' window

2. Type in the cell/grid numbers of where your players want to fish / work in alternative livelihoods, as per their tokens on the board game (see ReefGame Tool Demonstration Guide for more information.)

Step 1: Type in the desination cell number for each player

3. Decide whether to implement the illegal fishing scenario: adjust the presence and numbers of illegal fishers accordingly.



Step 2: decide which additional livelihoods you wish to implement

If **yes:**

- a) change the 'Add illegal fishers' field to 'yes'
- b) type in the number of illegal fishers that will be active (up to 10)
- c) type in the number of fisher-players working as part-time coast guards/bantay dagats (ie while fishing): this won't normally occur until a couple of rounds into the game

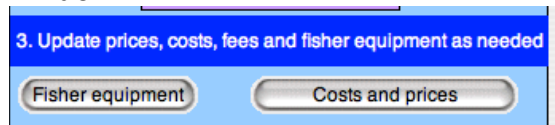
If **no:** leave defaults

4. Decide whether to implement the high season or high pollution scenario for tourism, and adjust the fields accordingly.

Note: More tourists arrive in the high season. No tourists arrive if there is high pollution.

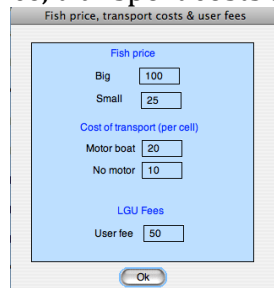
5. Decide whether you want to adjust the user fees, fish prices or transport costs. If not, go to the next step. If so:

- a) click the costs and prices button on the 'move players' window



Step 3: Update prices, costs, fees and fisher equipment as needed

Result: fish price, transport costs and user fees window appears

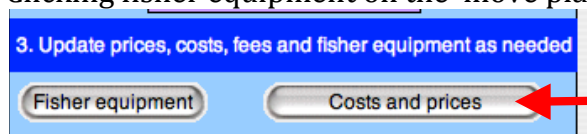


Fish prices, transport costs & user fees window.

- b) adjust the prices as desired
- c) click ok, returning you to the 'move players' window

6. Check whether any fishers have bought new gears or boats. If not, go to the next step. If so, adjust these by:

- a) Clicking fisher equipment on the 'move players' window



Step 3: Update prices, costs, fees and fisher equipment as needed

Result: update gears and boats window appears

Update gears and boats window

b) Adjusting the gear and boat of the players that have changed.

c) Clicking ok, returning you to the 'move players' window

Note: if players sell their boat, they can't go fishing. However, you don't need to change their boat status inside the model

7. Add/change livelihoods, small businesses, tourism and/or aquaculture cells (see Part 3: Adding different livelihoods and enterprises/small businesses, p12 and also the ReefGame Tool Demonstration Guide)

Step 4: Add/change livelihoods, tourism or aquaculture

8. In the 'move players' window, click ok

Result: the 'Update salary' window appears.

9. Update the salary of any players not receiving the default amount. This may be because they have negotiated an alternative salary level with the LGU, tourism, industry or aquaculture operators. For example, fishers may receive an honorarium for becoming part-time coast guards (bantay dagats).

10. Click ok on the 'Update salary' window

Result: the 'ReefGame Results' window appears

ReefGame Results Resulta ng ReefGame												
Mga Mangingisda												
	Combined catch		Kita - Main player			Kita - Anak			Totals			
	Majaking isda	Mallit na isda	Fishing income	Alternatibong hanapbuhay	Kunin ang pera sa	Fishing income	Alternatibong hanapbuhay	Kunin ang pera sa	Kitang Total	Gastos sa bahay	Multa?	
Team 1	7	3	0	300	Market	715	0	Fish Buyer	1015	-300	0	
Team 2	11	5	0	300	Market	1185	0	Fish Buyer	1485	-250	0	
Team 3	0	0	0	300	Market	0	250	Market	550	-200	0	
Team 4	12	8	360	0	Fish Buyer	880	0	Fish Buyer	1240	-300	0	
Team 5	3	2	175	0	Fish Buyer	115	0	Fish Buyer	290	-250	0	
Team 6	4	5	285	0	Fish Buyer	50	0	Fish Buyer	315	-200	0	
Team 7	1	1	45	0	Fish Buyer	-60	0	Fish Buyer	-15	-300	0	
Team 8	18	8	740	0	Fish Buyer	1060	0	Fish Buyer	1800	-250	0	
Team 9	15	6	725	0	Fish Buyer	845	0	Fish Buyer	1570	-200	0	
Team 10	7	3	0	300	Market	745	0	Fish Buyer	1045	-200	0	
Tourism			Aquaculture			LGU			Illegal fishers			
San Juan Tourism (1)	Santo Tourism (2)	Tres Tourism (3)				User fees						
Tourists 3	Tourists 5	Tourists 5	Op 1	Op 2		Fisher rating of LGU			Illegal fish catch			
Income 330	Income 600	Income 550	Op 3	Op 4		Environment rating			Illegal fishers caught			
												ok

ReefGame Results window

11. Communicate the results to your participants.

Fields in the results window:

- **Big fish:** how many big fish caught by the pair
- **Small fish:** how many small fish caught by the pair
- **Fishing income:** how much earnt from fishing, with the cost of transport already deducted (itemised per main player/ child)
- **Alternative income:** how much earnt from other livelihoods (itemised per main player/ child)
- **Who to get your money from:** option of tourism, aquaculture, fish buyer and market (for all other livelihoods)
- **Total income:** fishing income plus alternative income for each pair
 - **Household expenses:** the amount each pair will need to pay to the banker for their daily expenses.
- **Multa:** this shows whether a fisher should receive a fine, and only applies to illegal fishing in protected areas.

12. Press ok, returning you to the simulation window

13. Continue steps 1 to 11, adjusting parameters according to the options and scenarios described here and in the ReefGame Toolkit.

Part 3: Adding different livelihoods and enterprises/small businesses

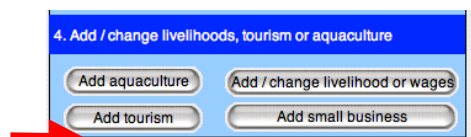
Use these instructions to change the environment to add livelihoods (including payao), tourism, and aquaculture cells.

These instructions give more details about what to do at step 7, p11

This means the 'move players and set other scenarios' window should be visible. If it is not, follow the instructions from Part 2 from the beginning.

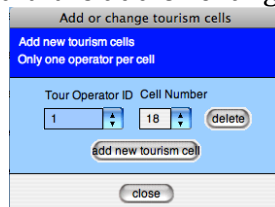
Adding, removing or changing tourism cells (for tourism operators)

1. Click the 'add tourism' button



Showing add tourism button on the 'move players and set other scenarios' window

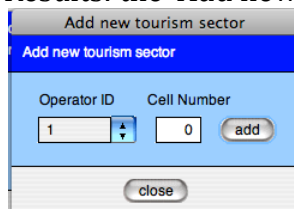
Result: the add or change tourism cells window appears



Add or change tourism cells window

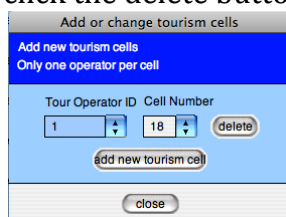
2. To add a tourism cell: from the 'add or change tourism cell' window, shown above, click the 'add new tourism cell' button.

Results: the 'Add new tourism sector window' appears



Select the operator id and the cell number that they have put their new tourism venture on. The new cell must not have any other livelihoods and must be a land cell. Click the 'add' button.

3. To remove a tourism cell: from the 'add or change tourism cell' window select the operator number and the cell number you wish to delete, then click the delete button.



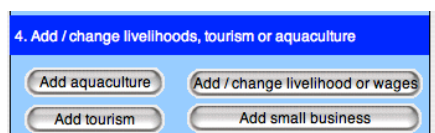
Adding aquaculture

There are two kinds of aquaculture cells. Ones owned by the Aquaculture Operator players (AOP) and the ones owned by fishers, who have bought them as an alternative or supplementary livelihood.

Aquaculture encompasses all kinds of aquaculture, including seaweed cultivation.

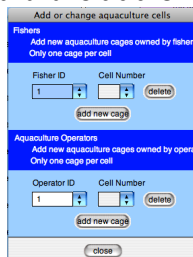
Adding aquaculture (for fishers)

1. Click the 'add aquaculture' button



Showing add aquaculture button on the 'move players and set other scenarios' window

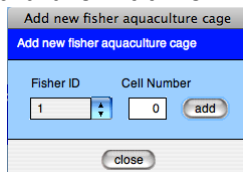
Result: the add or change aquaculture cells window appears



Add or change aquaculture cells window

2. To add an aquaculture cell: from the 'add or change aquaculture cell' window, shown above, click the 'add new cage' button.

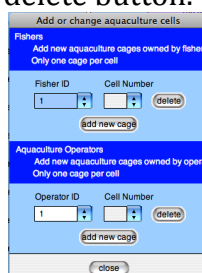
Result: the 'Add new fisher aquaculture cage window' appears



Add new fisher aquaculture cage window

Select the fisher id and the cell number that they have put their new aquaculture venture on. The new cell must not have any other livelihoods already. Click the 'add' button.

3. To remove a cage: from the 'add or change aquaculture cage' window select the fisher id and the cell number you wish to delete, then click the delete button.

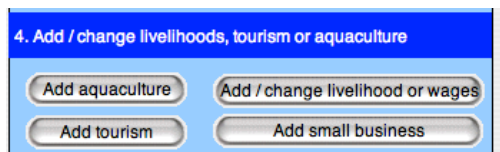


Add or change aquaculture cells window, showing delete buttons

- The livelihood code for Fishers who buy aquaculture cells is #aqu, followed by their ID number. Eg Fisher 1 is #aqu1 if they buy a cage. Fishers do not get income from the cage unless they or their son is caretaker, ie chooses the cell where their cage is located as their destination cell in any one round. Eg If Fisher 1 has a cage on cell number 144, either Fisher 1 or Son (Anak) 1/Fisher 11 will need to go to cell 144 to receive the income from aquaculture, every round of the game.
- After you've added an aquaculture cell, the chosen cell should turn pink and display the livelihood code (e.g. aqu1)

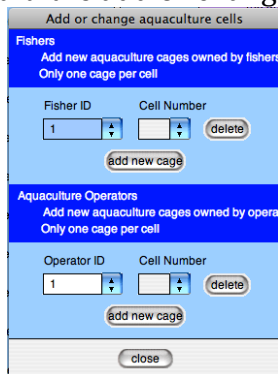
Adding aquaculture cells (for aquaculture operators)

1. Click the 'add aquaculture' button



Showing add aquaculture button on the 'move players and set other scenarios' window

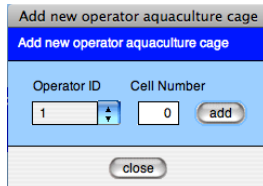
Result: the add or change aquaculture cells window appears



Add or change aquaculture cells window

2. To add an aquaculture cell: from the 'add or change aquaculture cell' window, shown above, click the 'add new cage' button.

Results: the 'Add new operator aquaculture cage window' appears



Add new operator aquaculture cage window

Select the operator id and the cell number that they have put their new aquaculture venture on. The new cell must not have any other livelihoods already. Then click the 'add' button.

- To remove an aquaculture cage: from the 'add or change aquaculture cell' window select the operator number and the cell number you wish to delete the cage from, then click the delete button.

Add or change aquaculture cells window, showing delete buttons

- The livelihood code for the map for Aquaculture Operators is #aop, followed by their number. Eg Aquaculture Operator 1 is #aop1 if they want to add a cage.
- The chosen cell should turn pink and display the livelihood code (e.g. aop1)

Adding small businesses

- Click the 'add small business' button

Showing add small business button on the 'move players and set other scenarios' window

Result: the add small business window appears

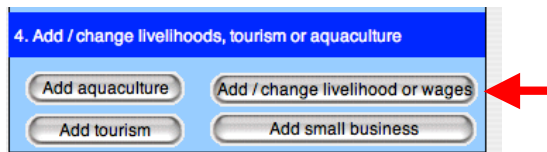
Add small business window

- Next to the corresponding player/fisher id, type in the cell (grid) number where the fisher will set up his business, followed by a minimum and maximum income amount

3. Click ok to implement the changes and close the window.
 - The livelihood code which appears on the map for Fishers who set up a business is #neg, followed by their ID number.
 - Fishers do not get income from their businesses unless they or their son ('anak') works there, ie chooses the cell where their business is located as their destination cell in any one round. Fisher 1's business will be #neg1, and both player 1 and anak 1/player 11 will receive income if they land on that cell.

Adding, changing and removing livelihoods (including payao)

1. Click the 'add/change livelihood or wages' button



Showing add/change livelihood or wages button on the 'move players and set other scenarios' window

Result: the add or change livelihoods and wages window appears

Add or change livelihoods & wages

Each livelihood must have:

a) unique land cell (one livelihood per cell)

b) a one-word, unique name

c) a minimum and maximum wage (these can be the same)

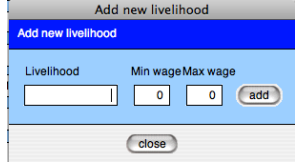
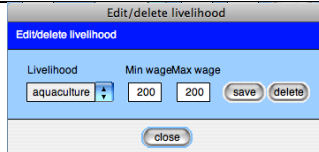
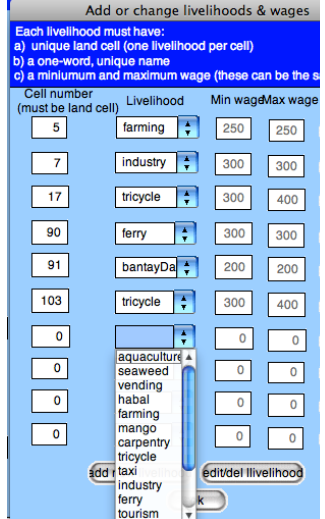
Cell number (must be land cell)	Livelihood	Min wage	Max wage	
5	farming	250	250	remove
7	industry	300	300	remove
17	tricycle	300	400	remove
90	ferry	300	300	remove
91	bantayDa	200	200	remove
103	tricycle	300	400	remove
0		0	0	remove
0		0	0	remove
0		0	0	remove
0		0	0	remove

add new livelihood
edit/del livelihood

ok

Add or change livelihood & wages window

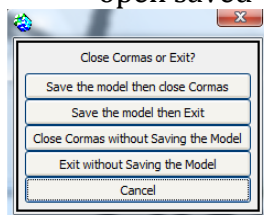
Follow the table below to add, change or delete

Task	How	Picture
Add a new kind of livelihood (ie one that is not on the drop-down list of livelihoods)	<ul style="list-style-type: none"> Click 'add new livelihood' Type in the new livelihood's name and income range (min and max wage) Click add Repeat steps for any other livelihoods you want to add Close the window 	
Change the income range of a livelihood	<ul style="list-style-type: none"> Click 'edit/del livelihood' button Type in the new income range in the edit/delete livelihood window Click save Close the window 	
Create or change the location of a livelihood	<ul style="list-style-type: none"> Use the drop-down menu to assign a different livelihood to a cell (shown at right) or simply type in a different cell/grid number Except for Payao (fish aggregating devices) and aquaculture, the cell chosen must be a land cell Only one livelihood per land cell 	
Remove a livelihood from the map	<ul style="list-style-type: none"> Click the remove button to the right of the livelihood you want to remove 	

Part 4: Closing the model

- Once you have finished ReefGame, close all the windows. On closing the Simulation window you will be asked whether you want to save the model. Click 'exit without saving the model'.

Unfortunately, the current version of ReefGame does not allow you to re-open saved versions of ReefGame.



Add or change livelihood & wages window

Part 5: Trouble shooting

The model freezes	Force quit (CTRL + ALT + Del). You will have to relaunch your model
You get an error message	Click 'proceed' and retry the step you were doing, taking extra care to put in the right variables. If the problem persists, close down and restart
The simulation window closes	To re-launch the interface stimulation window: click simulation > interface simulation from the main ReefGame menu