

## Section 3.2

### PROCEDURE #1

# CURRENT POPULATIONS SHEET

Procedure:

1. Place the *Reef Survey Sorting Sheet* into the cardboard tray.
2. Write your assigned sampling zone on the *Reef Survey Data Sheet*.
3. Empty the canister onto the tray to reveal the starting population of Goby, Seaweed and Coral in your region.
4. Sort the counters into the appropriate square marked on the *Reef Survey Sorting Sheet*. The “DISCARD” area should be empty.
5. Count the number of counters representing each organism. Multiply the number of Goby counters by 100. Multiply the number of Coral counters by 10.
6. Record the data on your *Reef Survey Data Sheet*.
7. Keep the counters in each of their squares for the next part of the investigation.

## SECTION 3.3

### PROCEDURE #2

### YEAR 1 SIMULATION SHEET

#### Procedure:

1. Place your empty canister on top of the DISCARD area on your *Reef Survey Sorting Sheet* with the screw-lid off.
2. Remove two (2) Goby counters for every one (1) Fishing Crew counter you have.  
*Example: If you have 2 fishing crew counters, you would remove 4 Goby counters*
3. Place the Goby counters in the DISCARD canister. Leave the Fishing Crew counters in their square.
4. Count the number of Goby counters remaining in the square, and multiply by 100 (recall each purple counter represents 100 Goby).
5. Record the number in the Projected Population Data Table for Year 1.
6. Remove one (1) Seaweed counter for every one (1) Goby counter you have.
7. Place the Seaweed counters in the DISCARD canister. Leave the Goby counters in their square.
8. Count the number of Seaweed counters remaining in the square, and record the number in the Projected Population Data Table for Year 1.
9. Remove one (1) Coral counter for every one (1) Seaweed counter remaining.
10. Place the Coral counters in the DISCARD canister. Leave the Seaweed counters in their square.
11. Count the number of Coral remaining in the square, and multiply by 10 (recall each pink counter represents 10 feet of coral).
12. Record the number in the Projected Population Data Table for Year 1.

## SECTION 3.4

### PROCEDURE #3

### YEARS 2-5 SIMULATION SHEET

#### Procedure:

1. Return two (2) Goby counters, five (5) Seaweed counters, and one (1) Coral counter from the canister and place them on the correct squares on the sorting sheet. This represents the organisms reproducing from one year to the next. If you do not have enough counters in the canister let your teacher know.
2. Remove two (2) Goby counters for every one (1) Fishing Crew counter you have.  
*Example: If you have 2 fishing crew counters, you would remove 4 Goby counters*
3. Place the Goby counters in the DISCARD canister. Leave the Fishing Crew counters in their square.
4. Count the number of Goby counters remaining in the square, and multiply by 100 (recall each purple counter represents 100 Goby).
5. Record the number in the Projected Population Data Table for Year 2.
6. Remove one (1) Seaweed counter for every one (1) Goby counter you have.
7. Place the Seaweed counters in the DISCARD canister. Leave the Goby counters in their square.
8. Count the number of Seaweed counters remaining in the square, and record the number in the Projected Population Data Table for Year 2.
9. Remove one (1) Coral counter for every one (1) Seaweed counter remaining.
10. Place the Coral counters in the DISCARD canister. Leave the Seaweed counters in their square.
11. Count the number of Coral remaining in the square, and multiply by 10 (recall each pink counter represents 10 feet of coral)
12. Record the number in the Projected Population Data Table for Year 2.
13. Repeat steps 1-12 for Years 3-5, beginning each round with the animal and plant reproduction.  
If there are not enough counters left to remove in one category, just remove what you have left.

## SECTION 4.5

### PROCEDURE #4

# FISHING PERMITS SIMULATION SHEET

#### Procedure:

1. Obtain the canister labeled Region D from your teacher. In the canister, you will find the counters indicating the number of Goby, Seaweed clumps, and feet of healthy Coral currently in that area.
2. Read the description of the region.
3. Sort your Goby, Seaweed, and Coral into the proper squares on the *Reef Survey Sorting Sheet* as you did previously.
4. Record "Region D" under Reef Location on the paper version of the *Coral Reef Permit Impact Decision Matrix*.
5. Count the number of Goby, Seaweed, and Coral counters that are in your canister, and record those numbers in the yellow "Initial" row in your digital *Coral Reef Permit Impact Decision Matrix*.
6. Decide how many Commercial Permits and how many Individual Permits you would like to give out. Type those numbers into the yellow boxes under the permit name on the digital *Coral Reef Permit Impact Decision Matrix*.
  - When making those choices, you should take into account who lives and works in that community, and what their interests might be.
  - If you want the area to be a Recreational Water Use only area, then give out zero Commercial or Individual Permits.
7. You will see that the matrix automatically fills in all the predicted numbers for you for 10 years, and shows which populations are good (**green**) and which are poor (**red**).
8. Change the number of permits until you reach the result you want for the reef that matches the economic needs of the region.
9. Transfer that final information onto the paper copy of the *Coral Reef Permit Impact Decision Matrix*. Color code the boxes **green** or **red**, as appropriate.
10. Repeat for Regions E & F.