**How Can You Model A Balanced Biome?**

**I. Introduction**

 In this lab, you will create and maintain a marine biome in the form of a reef tank. Creating and maintaining a healthy reef tank takes time and attention to detail.

 In order to set up a reef tank, you will need a tank, heaters, filters, and light. You need to mix the saltwater and add the sand, and then let this solution settle. These tasks have already been set up for you in the lab. You will need to populate and maintain a reef tank for 12 weeks. You will test the reef tank’s water each week and record your test results in the table.

**II. Procedure**

 1. Start the activity by going to the following website :

<http://glencoe.mheducation.com/sites/dl/free/0078802849/383927/BL_24.html> .

 2. Read the Reef Tank Guide to learn how to maintain a healthy reef tank environment. The

 Fish Guide provides a description of the fishes and invertebrates that are available for your

 tank. The Shopping Cart icon, which is located below the tank on the bottom left corner,

 allows you to select the fishes and invertebrates that you want to include in the reef tank.

 3. Use the water quality testing strips to measure the concentrations of ammonia, nitrite, and

 nitrate in the water. To do this, drag the strips from the shelf to the reef tank. The strips will

 change color. Match the strip colors to the colors on the test kit display to determine the

 water’s ammonia, nitrite, and nitrate values. Record these values in the Table for each week.

 4. Use pH paper to determine the water’s pH. To do this, drag the pH strips from the shelf to the

 reef tank. The strips will change color. Match the strip color to the colors on the pH test kit

 display to determine the water’s pH value. Record these values in the Table for each week.

 5. Use the hygrometer to find the specific gravity (S.G.). Read the temperature. Record these

 values in the Table for each week.

 6. To advance to the next week, click the Week button, which is located below the tank on the

 bottom right corner.

 7. In Week 1, add live rock to the reef tank. This is a 60 gallon tank. It can accommodate up to

 75 pounds of rock (each rock weighs 25 pounds). Click the Shopping Cart icons to open the

 store. Then drag the rocks you’ve selected to the reef tank.

 8. In Week 2, read the section about the nitrogen cycle in the Reef Tank Guide and then read the

 Fish Guide to help you select the first fish for the tank. Add 4 fish to the tank by clicking the

 Shopping Cart icon to open the store. Then drag the fish you’ve selected to the reef tank.

 9. Repeat steps 3-6 until the nitrogen cycle is complete.

 10. In Week 8, you may populate the reef tank. The reef tank holds 60 gallons. One guideline

 for maintaining a healthy 60 gallon reef tank is to measure the length of all the fish that will

 live in the tank. It is recommended you populate this size reef tank with no more than 42

 inches of fish. When selecting your fish, pay attention to how many inches of fish that are

 already in the reef tank. Because this tank is new, it is not wise to put all 42 inches of your

 fish and invertebrates in at once. A good rule of thumb is to put in half of the amount inches

 of fish that is recommended for your size of tank.

 11. Continue to monitor the reef tank and collect data about ammonia, nitrite, nitrate, pH values,

 S.G., and temperatures for three weeks. In Week 11, you may add more fish and

 invertebrates to the reef tank.

 12. In Week 12, continue to collect the data and then answer the questions.

**III. Analysis & Conclusions**

 **1. List the fish and invertebrates you selected after the nitrogen cycling process.**

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 **2. What changes did you make to your reef tank during the 12 weeks and why did you**

 **make them?**

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 **3. What problems, if any, did you have with any of the fish or invertebrates in the reef**

 **tank?**

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 **4. Describe the final population of the reef tank.**

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 **5. Compare the initial and final populations. What changes did you make to make to keep**

 **the fish and invertebrates alive?**

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 **6. Study the data you collected. Describe the occurrences of ammonia, nitrite, and nitrate**

 **in your tank.**

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 **7. Study the data you collected. Why is the population in the reef tank stable?**

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