

SEAFOOD Eat Food

Local Fresh Safe

Becoming a Fish Farmer

“Aquaculturist”

Introduction

Often referred to as fish-farming, aquaculture is the rearing of animals and the cultivation of plants in any aquatic (water) environment. The global production of seafood on farms (aquaculture) has been growing rapidly to meet a growing demand for seafood products. The production of fish on farms takes place in stages, which include spawning, nursery, and grow-out facilities.

Summary

The Aquaculture Modeling activity introduces the different fish-farming (aquaculture) methods that produce much of the seafood consumed throughout the world. Students will construct their own models to test the different strengths and weaknesses of different aquaculture models in terms of variables like flotation and wave intensity. It also acts as a great platform for further class discussion about these topics, which are explained in more detail in the Aquaculture Curriculum.

Objectives

After this activity, students will:

- Be able to define aquaculture (fish-farming) and have a better understanding of what it is.
- Be introduced to several aquaculture systems.
- Understand differences and trade-offs between the systems.
- Explain the key considerations an aquaculturist must address in their operation.

Step 1

Read Backstory

Oh NO! You were captaining a vessel across the Atlantic Ocean before striking a submerged reef! Luckily the reef borders an island and you were able to safely make it to land before your vessel sank. You and the crew are combing through the wreckage to salvage anything you can to help you survive on the deserted island. After several weeks stranded, food stores are getting low and you need to start thinking of how you will feed your crew until help arrives. You know you are surrounded by water teeming with life, but the big fish that make a great meal are farther out at sea. Without your large vessel, daily trips on your makeshift rafts are too difficult. If you are going to survive much longer you will have to find an alternative.

On your last voyage you heard stories about a new kind of farmer, fish farmers. You remember others talking about the success of these farms and decide that if you can create your own farm on this island you can ensure that your crew are well fed until help arrives. You decide that if you can catch more than you need on one trip and keep them alive you can then hold the extra fish for another day. This will help to limit how often you need to go out fishing and give you and the crew more time to focus on creating shelter and searching for help. You even have a biologist on your crew who bred fish in the past and he thinks he could even use the fish you catch to spawn more, which you can grow to adults.

In order to construct a fish-farm, or aquaculture operation, you must build infrastructure that can contain the fish in the ocean and allow them to grow without escaping into the wild. Your job now is to use the materials you salvaged from your ship to build a structure that can hold your fish.

Step 2

Build Your Fish Farm

Teachers can gather any materials for students to use during this activity. The majority of NY Sea Grant’s kit materials are craft supplies from the dollar store. If feasible you could even couple this activity with an actual beach cleanup and use the materials scavenged to build your models.

Step 3

Test Your Fish Farm

Each student/group should place their creation into a small pool or container full of water to test for stability and floatation. You can also use the water beads provided as fish to determine if the system can successfully contain them.

Note: It may be useful to introduce the materials and have students sketch designs for the models they plan to build. In addition to testing their predictions, this could be a way to break up this activity for multiple class periods.

Step 4

Discuss

Discuss what worked about your farm and what did not. What would you change to make your farm better. The discussions can lead to more questions and you may even consider allowing for adjustments to each student/group’s model afterwards. Guiding questions and additional information to consider during the discussions can be found in the lesson plan.

Step 5

Expand

After testing your farm you can consider the following to expand on the lessons:

Resistance to wave action and storms can be simulated by shaking or rocking the bin.

You can test how well the system holds fish by adding the water beads and seeing if they stay in the system (with and without waves).

You can emphasize the importance of hatcheries using the water beads and mesh supplied in the kit.

Check out the curriculum to learn more.

Image 1: Mini Kit

Mini Kit includes NY Sea Grant carabiners and towels with a USB containing the curriculums and lesson plans for seafood science and aquaculture.

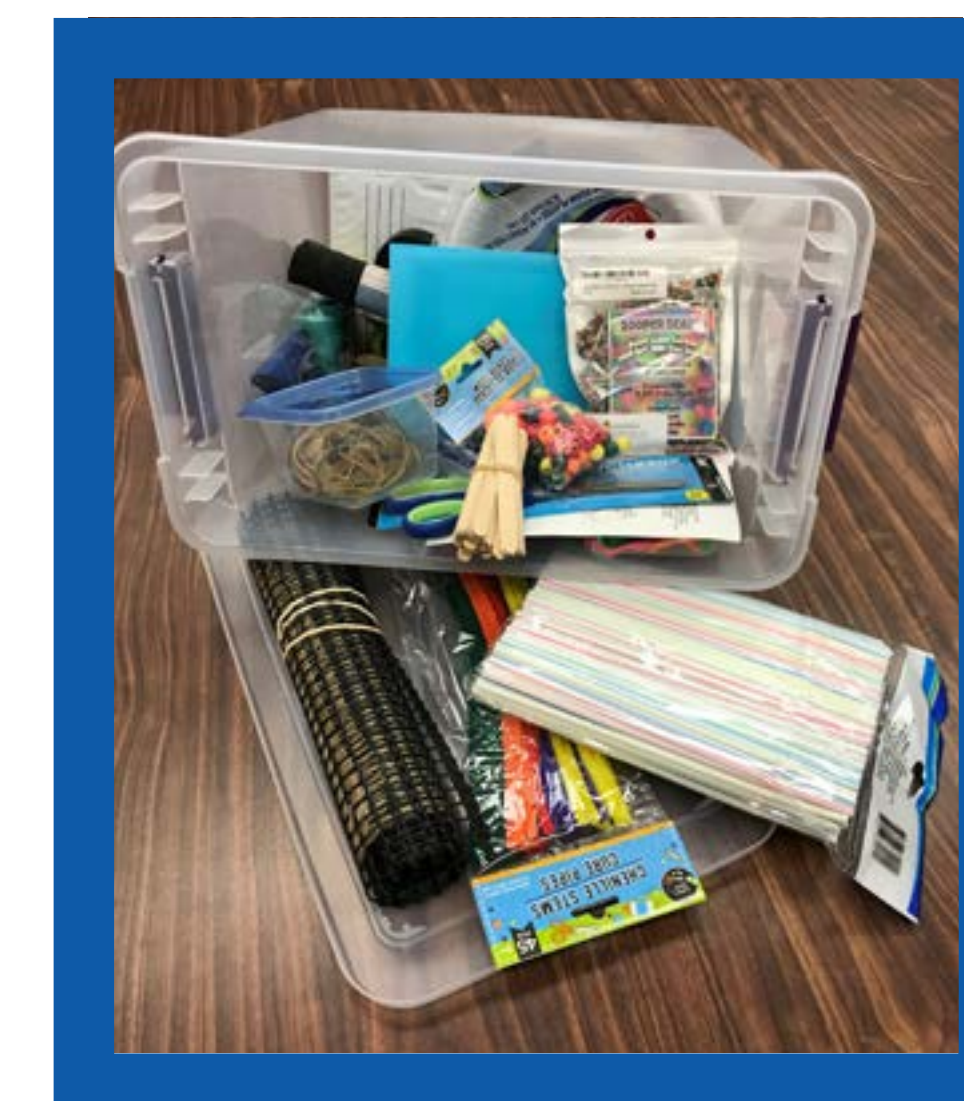
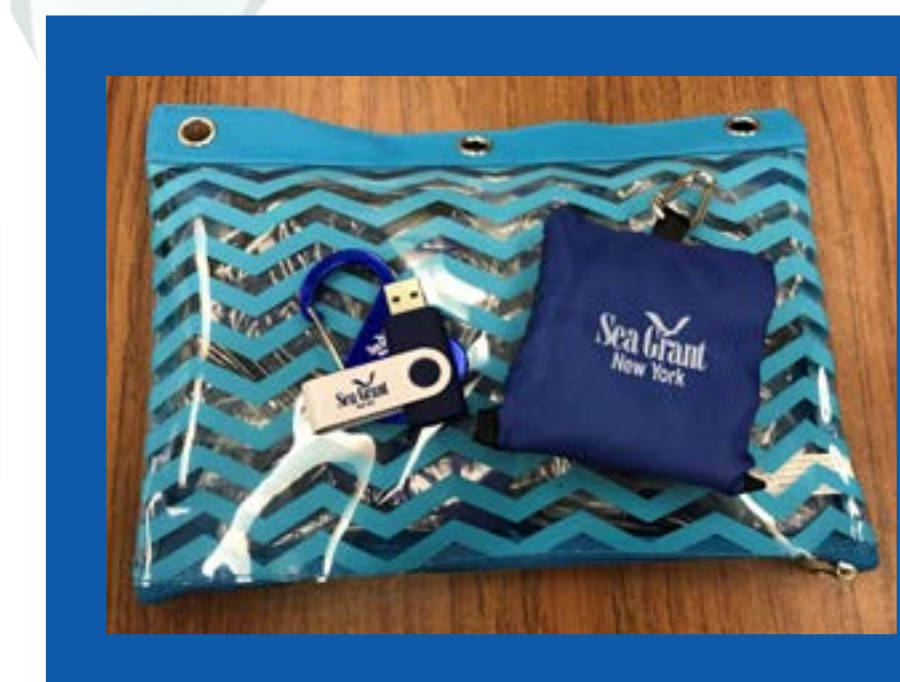
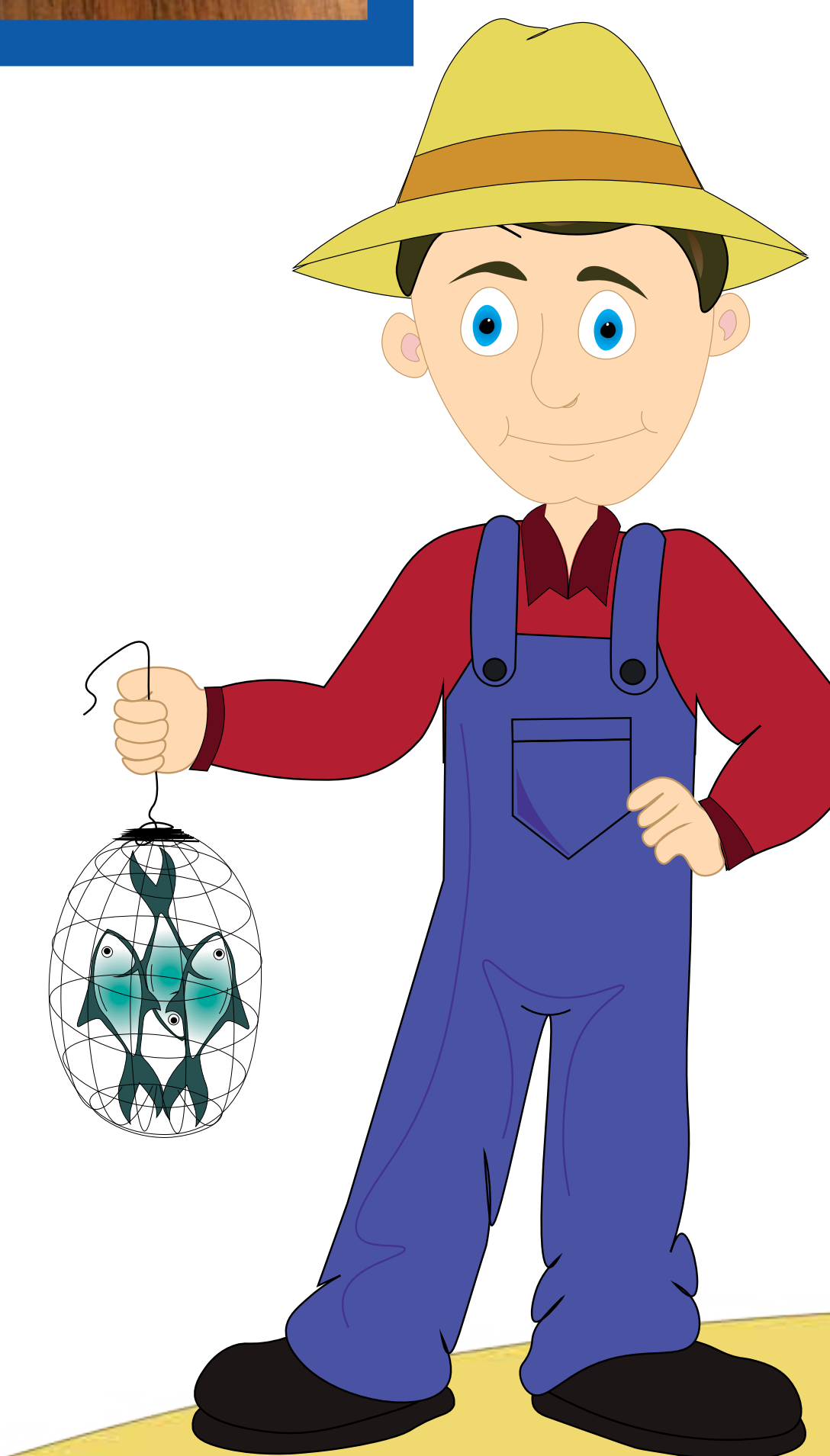


Image 2: Full Kit

The whole kit includes the materials from the mini kit along with the craft materials for students to use when designing and developing their fish farm. The materials represent those scavenged from the wreckage of the ship.



Check out the Lesson Plan and Curriculum online at:
www.nyseagrant.org/seafood
 on the publications page.

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