

## Virginia Coastal Zone Management Program Educational Activity

### “Build-A-Bed”

Designed by the Virginia CZM Program with assistance from the Virginia Institute of Marine Science. If you have any questions about this activity, please call Virginia Witmer at the Virginia CZM Program at (804) 698-4320.

#### **Basic Objective of Activity: \*\***

By illustrating one of the ways that SAV is restored, this activity teaches one primary message - *SAV is important habitat*. Once they help restore an SAV bed, children also learn to identify some of the animals that rely on SAV for shelter and as a food source.

Other main messages of this activity are:

- SAV needs sunlight. SAV grows where light can penetrate the water. Oyster reefs help SAV by filtering the water and enhancing this penetration of light. (This is our connection between the Build-A-Reef activity and our seagrass activity.)
- SAV provides critical food and shelter for fish and wildlife in Virginia, especially blue crabs and even seahorses!
- SAV helps remove harmful nutrient and sediment pollution from Virginia’s coastal waters.
- SAV stabilizes sediments and reduces wave energy and erosion of beaches and the shoreline.
- SAV today covers only about 10% of its historic acreage.
- We need to restore SAV! Virginians must protect our remaining seagrass beds, reduce polluted runoff, and eventually restore seagrasses to areas where they historically grew. Every plant planted helps us reach this goal!

#### **Conducting Activity:**

This is a fairly basic and simple activity that presents an opportunity to capture your young audience’s imagination and curiosity and allows you to communicate some of the important facts about SAV outlined above.

Children are presented with two pools of water with a sand bottom layer.

**Pool A.** Pool A is set-up with a model SAV bed – ribbon tied to washers portray *eelgrass* – one of the most common grasses found in the higher salinity waters of Virginia. In the bed are some of the many species that rely on the shelter of SAV including those listed below.

**Pool B.** Pool B is empty. After showing how Pool A demonstrates the habitat value of SAV, the child is asked to help restore SAV to the coastal area – empty Pool B – devoid of SAV. They can either be given a single “eelgrass plant” from a supply at hand – representing a plant grown in nursery conditions – or, in order to illustrate that sometimes SAV is transplanted from one location with abundant, healthy beds of SAV to another area where SAV needs to be restored – children can help remove an “eelgrass plant” from pool A and plant it in pool B.

(Lessons learned from previous game trials:

- It’s a good idea to have a bag of SAV and distribute individual “plants” – this is the way it is done in the real world - we found that kids grabbed handfuls if left to take their own, particularly little ones who just throw the “plants” in the water.
- Place separate signage around the activity to emphasize key messages. This helps reinforce what you say.
- Let “eelgrass plants” dry in between use – when water-logged the ribbon does not float in the water as well. There should be plenty of “eelgrass plants” to allow this step.

The child is then welcome to choose an animal to populate the new SAV bed from a basket of animals. Name the animal as you distribute it and any little tidbits you can about its lifecycle or uniqueness, or how it attaches or hides on the SAV bed, e.g. seahorse and snails attach to the SAV or clams lay in borrow in sand in between plants.

**Audience:** general public, K – 6

**Activity Materials/Construction:**

**Pools** - standard kiddie pool with a layer of sand substrate and about 5 – 6 inches of water.

**SAV, eelgrass plants** – created using green Christmas ribbon (suitable for eelgrass due to the plant's ribbon-like structure – ribbon is what VIMS uses during trial/training activities), brown pipe cleaner for the vertical root structure and a ¾” washer to hold the “eelgrass plant” down in the sand.

**Animals** – a representative assortment of animals that use SAV as shelter, including:

Bay Barnacle  
Ivory Barnacle  
Atlantic Bay Scallop  
Sea Squirt  
Northern Pipe Fish  
Common Razor Clam  
Lined Seahorse  
Threespine Stickleback  
Bay Anchovy  
Blue crab  
Grass shrimp  
Volcano Sponge  
Sun Sponge  
Redbeard sponge  
Northern Quahog  
Rough-back nudibranch (sea slug)  
Atlantic moon snail  
Atlantic Oyster Drill  
Common jingle shell  
Emerald sea slug  
Silverside  
American croaker  
Red drum  
Silver perch

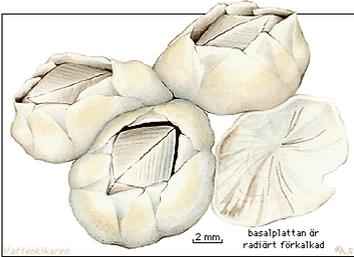
These animals were created by cutting out photographs of the animals, laminating the two-sided two- dimensional shape and attaching it to stiff wire and a washer so that it can be placed within the pool's water column and the SAV.

*This activity was designed and funded by the Virginia Coastal Program through a grant from NOAA, in support of Virginia Coastal Program Outreach and Education. If you use this activity, please credit the Virginia Coastal Program. Thank you.*

# Build-A-Bed Photo Identification



Bay Scallop



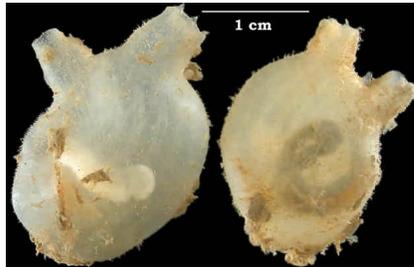
Bay Barnacle



Ivory Barnacle



Atlantic Bay Scallop



Sea Squirt



Northern Pipe Fish



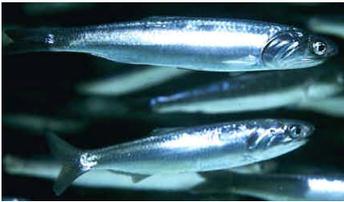
Common Razor Clam



Lined Seahorse



Threespine Stickleback



Bay Anchovy



Blue Crab



Grass shrimp



Grass Shrimp



Volcano Sponge



Sun Sponge



Redbeard sponge



Northern Quahog



Rough-back Nudibranch



Rough-back Nudibranch



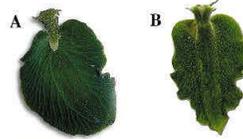
Atlantic moon snail



Atlantic Oyster Drill



Common jingle shell



Emerald Sea Slug



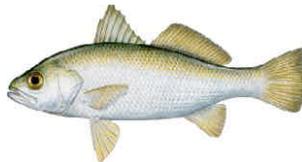
Silverside



American Croaker



Red Drum



Silver Perch

## **SOME SAV FACTS\*\***

Take advantage of curious minds that want to know more!

### **Importance of Underwater Grasses**

- Underwater grasses, SAV for short, are (flowering vascular) plants that grow under the surface in shallow water. The presence, abundance, diversity and health of SAV is one of the primary indicators or barometers of the health and quality of Virginia's coastal waters because they are associated with clear water and their presence helps improve water quality.
- Underwater grasses filter polluted runoff, provide food for waterfowl, and provide essential habitat for blue crabs, juvenile rockfish (striped bass) and other aquatic species including seahorses!
- There are more than a dozen varieties of underwater grasses that grow in shallow water regions of the Bay, its rivers and on Virginia's seaside.
- SAV leaves and stems baffle wave energy, help settle out sediments and the roots and rhizomes bind the substrate.
- Underwater grasses also uptake nitrogen and phosphorus that, in overabundance, lead to algal blooms that can impair water quality. Decomposing underwater grasses provide food for benthic (bottom-dwelling) aquatic life.
- Migrating waterfowl such as ducks and geese eat underwater grasses.
- The Virginia Coastal Program is working to restore SAV to Virginia's portion of the Chesapeake Bay and on Virginia's seaside. The Program works side by side with other partners like CBF to help meet the Bay Program's 2010 goal of 185,000 acres of underwater grasses covering the bottom of the Bay and its tidal tributaries.

### **Chief Threat: Poor Water Quality**

- At its most pristine the Bay may have supported several hundred thousand acres of underwater grasses.
- Since the 1950s, there has been a tremendous decline of grass beds due to degraded water quality. In 1972, incredible amounts of rainfall and runoff caused by Tropical Storm Agnes dealt a devastating blow to many grass beds.
- Underwater grasses continued to decline to a documented low of 38,000 acres in 1984. From 1984 to 1993, underwater grasses increased to 73,000 acres.

### **Current Status: Mixed**

- Based on aerial surveys and ground-truthings scientists estimate the total acreage of SAV for the Bay in 2002 at 89,658 acres. A prolonged drought that kept polluting nutrients locked in the soils the past few years was the key reason underwater grasses increased in the Chesapeake Bay and its tributaries in 2001 and 2002.
- The 2002 annual survey, conducted by the Virginia Institute of Marine Science, showed an increase of 20,532 acres or a 30% improvement in Bay grasses since 2000.
- In contrast, reef restoration efforts on the seaside of Virginia's Eastern Shore have proven highly successful.

**Sources: Chesapeake Bay Program, Chesapeake Bay Foundation, Virginia Seaside Heritage Program**