SEACOLOGY Marine Life Supply

A Commitment to Excellence in the Supply of Temperate Marine Biota

I can not overstate state the value of taking children to the beach. Allowing them to explore and provide them with on site supervised instructional learning. Lesson plans and background material is available if you consult and explore various web sites like <u>www.oceanexplorer.noaa.gov</u>, Project W et <u>www.projectwet.org</u> and Project wild <u>www.projectwild.org</u>.

If you want to keeping cold water marine life in the classroom here are two approaches:

1) Simple Basic

Collect (get a sport fishing licence - allows you to collect but not sell) and keep hardy intertidal life for example: eelgrass, Zostera japonica (exotic species); sea lettuce, Ulva sp.; Turkish washcloth, Mastocarpus papillatus; mussels, Mytilus edulis; Varnish clams, Nuttalia obscurata (exotic species); purple snails Nucella spp.; hairy hermit crabs, Pagurus hirsutiusculus; shore crabs, Hemigrapsus spp.; mussel worms, Nereis spp.; picklebacks, Anoplarchus purpurescens and others; and sticklebacks, Gasterosteus aculeatus.

Provide passive cooling and circulation

Cooling

Passive cooling can be achieved by placing a glass aquarium against north facing window in a classroom maintained at a cool temperature. Warmer classrooms may require insulation to keep the warmer classroom from overheating the tank. Place a lid on the tank to minimize heat gain into the tank. Try to maintain the temperature in the tank below 15 Celsius. Circulation

A simple under gravel filter with an air lift can provide filtration, aeration and cooling. By placing the air pump in a cool place (outside the heated building) you can bubble cooling air into the tank.

2) Technological Fix

You can purchase or build an aquarium system to display cold water marine life from our coast. Design or plan the system to keep water temperature in the aquarium below 10 Celsius. Design temperature stability into your water cooling system. When cold water is brought into most classroom environments the problem of condensation on the outside of the tank becomes a challenge that must also be addressed. Cold water in an uninsulated aquarium will cause moisture (humidity) in the classroom to condense on the outside viewing surfaces of an uninsulated tank.

The main components

Chiller unit with a Titanium or specially coated heat exchanger. Insulated Aquarium, thermal insulated glass verses acrylic tank debate. Pumps with plastic encased or ceramic parts in contact with the water. Filtration, biological filter, activated carbon, trickle filter, foam fractionator Calcium Carbonate buffer - crushed coral or crushed shell material Air pumps Lids Stands must be resistant to highly corrosive salt water

Challenges

Where do you get water? A very comprehensive article on artificial verses natural Salt Water:

http://www.reefkeeping.com/issues/2003-03/rs/feature/index.php

Maintenance: regular cleaning of the aquarium and filter media, access to marine life to replace mortalities. Feeding and husbandry of your marine life requires you to learn about your tanks occupants.

Options to buy an aquarium: Seacology Specialized aquarium stores Scientific supply warehouse suppliers like; Boreal, Carolina, Ward's Seafood display builders like: Aqua Logic, Poseidon, Universal Marine Industries (UMI)

Please feel free to contact me to discuss your specific requirements.