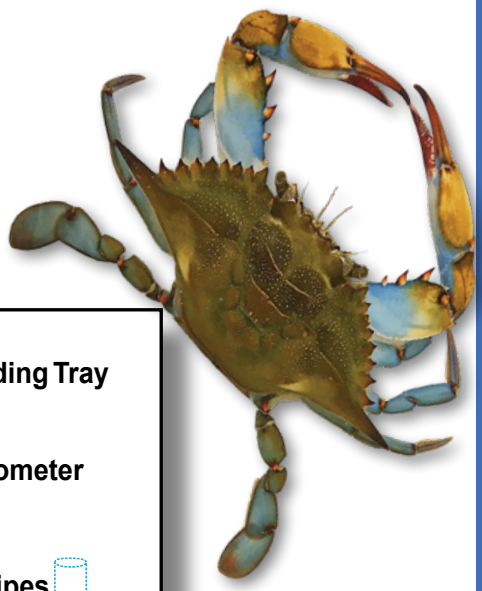
Blue Crab Shedding

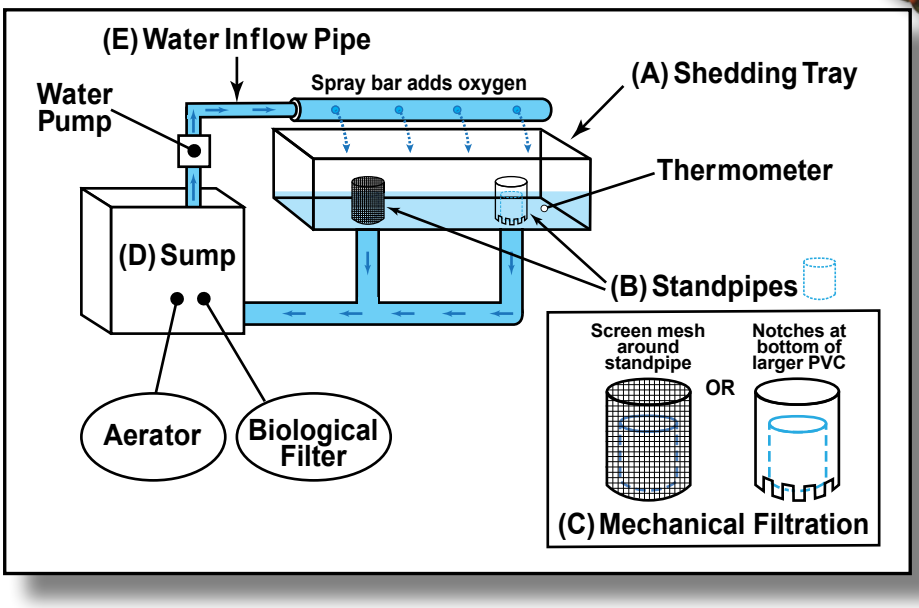
The Components of Recirculated Systems



Recirculated System Objectives:

1. Hold large number of crabs,
2. Prevent escape of crabs, and
3. Provide easy access and viewing for the operator.

Recirculated System Design



Recirculating System Descriptions

(A) Shedding Trays

The dimensions of common, commercial shedding trays are approximately 3 feet by 8 feet. Tank walls should be smooth and be at least 12 inches high to prevent the escape of crabs. The tank width should allow you to reach crabs anywhere in the tray. A shedding tray of this size can typically hold 150 crabs, depending on filtration.

Shedding trays are often constructed out of molded fiberglass or fiberglass coated wood. Fiberglass coated wood trays are less expensive, but usually require replacement after several years.

Shedding trays are often equipped with aerators to enhance dissolved oxygen in the water and thermometers to monitor water temperature. Water that is too low in oxygen and too high in temperature stresses crabs and increases mortality. If water flows back in through a spray bar, additional aeration is often not necessary.

(B) Standpipe

Standpipes are commonly made of PVC and are open at the top to regulate water height within the shedding tray and prevent complete accidental draining. Standpipes are joined to drainage pipes using threaded couplings to circulate water from the shedding tray to the sump. Do not seal or glue the standpipes to the couplings so that they can be removed for drainage of the shedding tray or flushing of the sump.

(C) Mechanical Filtration

Mechanical filtration involves the separation and removal of unwanted particulates such as crab waste (i.e., feces, broken shell pieces).

A screen mesh is often used to cover standpipes to prevent large pieces of waste (and crabs) from entering and clogging drainage pipes and pumps. A larger, second PVC pipe (2-4 inches larger in diameter and 2 inches longer than the standpipe) with a notched (or serrated) bottom can be used instead of mesh to prevent particulates from entering the standpipe. The notched end of this pipe should be placed along the bottom of the tank.

(D) Sump

A sump is a secondary tank that receives water from the shedding trays, filters and provides a source of water for the pump intake. The sump is any large container (i.e., water drums) to hold water and located below or next to a shedding tray. The size of the sump is dependent upon the

Note: It takes time to build up bacteria populations in a recirculating system. Before starting shedding operations, operators can jump start bacteria growth by placing a few adult blue crabs in their shedding tanks 4-6 weeks prior operation. Additional fact sheets on water quality and start up are available at *http://www.laseagrant.org/outreach/projects/soft-shell-crab/*

number of shedding trays and the flow rate of water required in the shedding system. It is recommended that 3 foot by 8 foot shedding trays have a minimum flow rate of three gallons per minute. The sump for that one tray should hold at minimum enough water for the pump to run for five minutes. It is advantageous to use as large of sump as possible to help maintain temperature and water quality. Sumps should have a removable lid to prevent foreign matter from entering the system and a bottom drain to ease in sump cleaning and flushing.

If possible, it can be advantageous to plumb in two separate sumps. This allows you to have ample water on standby that you could switch to if water quality becomes a serious problem.

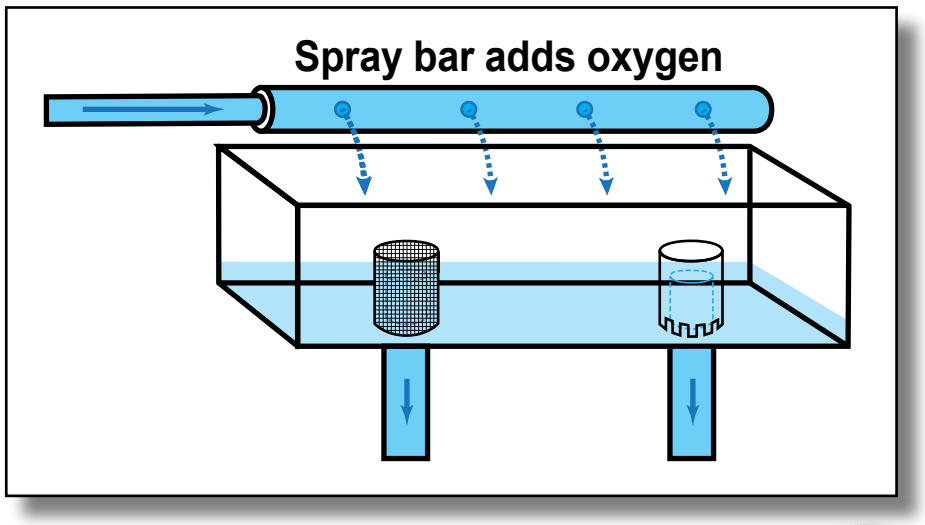
Water pumps are required to push water from the sump into the water inflow pipes and back into the trays. They are typically constructed from low-head centrifugal pumps, i.e., pool pumps. Pumps must be designed for continuous operation and be made of corrosive-resistant materials designed for saltwater. The pump output depends on the operational pressure of the system.

Biological filters are used to break down waste produced by blue crabs. The greater the surface area of filter media (e.g., oyster shell, bio balls, plastic forks, rock) the greater the population of bacteria available to convert nitrogenous waste. The bacteria break down the waste product of ammonia into nitrite and the less toxic form of nitrate. Oxygen is essential in the breakdown of nitrogenous waste. Aeration can be added to the sump to aid in bacterial growth and waste breakdown.

(E) Water Inflow Pipe

Water from the sump pump is transferred to the shedding trays through the water inflow pipe, often PVC. It is recommended that a spray bar is used to distribute water into the shedding tray. This helps oxygenate water and promotes water circulation throughout the tank reducing the occurrence of low-oxygen areas. Low oxygen conditions increase stress in blue crabs.

Note: The system, including the sump, should be in shaded or covered space to reduce water temperatures and algal growth.



Sea Grant Louisiana

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

http://www.laseagrant.org/outreach/projects/soft-shell-crab/

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