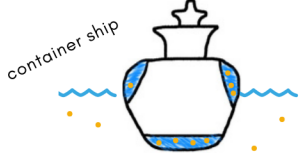




BALLAST WATER

Ships depend on ballast water to maintain stability so they're not too top-heavy. Special tanks in the ship hold ballast water, and crew members adjust the volume of water in the tanks depending on cargo load and how rough the voyage is. Though ballast water is crucial to ship safety, it contains millions of micro- and macro-organisms which can be introduced to areas they're normally not found and potentially harmful to that new environment.

1. EMPTY CARGO CARRIER



Ballast tanks full of water, micro- and macro-organisms

2. CARGO LOADED



Ballast water discharged from tanks

3. CARGO TRANSPORTED



Ballast tanks near-empty

4. CARGO OFFLOADED



Ballast tanks take on water, micro- and macroorganisms

Methods of Ballast Water Exchange:

1. Empty-Refill

Ballast water pumped in from the coast is emptied and replaced with open-ocean water. All of the ballast water has to be emptied before refilling.

2. Flow-through

Open-ocean water is pumped into a full ballast tank so that the coastal water flows out of an opening near the top of the ship. Three times the amount of ocean water needs to be pumped in.

Onboard Treatment Systems:



UV Radiation: High intensity UV light destroys the DNA of microorganisms, preventing them from reproducing. This is why we wear sunscreen to protect skin cells from the sun's UV rays!



Electro-chlorination: An electrical current is passed through salt water, creating chlorine compounds and sterilizing water.



Deoxygenation: Oxygen is removed from ballast tanks, killing the microorganisms in the process.

COMMON INVASIVE SPECIES TRANSPORTED



zebra mussels



dinoflagellates



rapa whelks



European green crab larvae

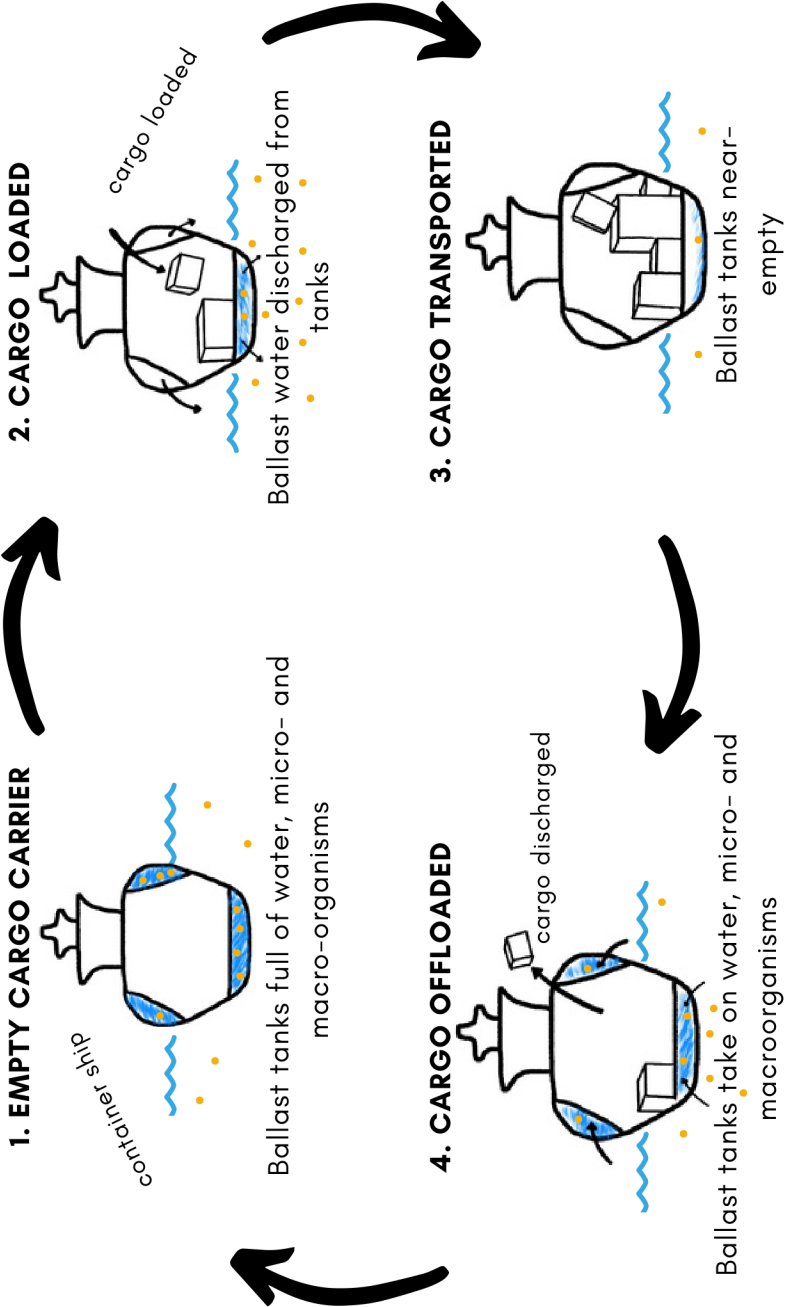
European green crabs



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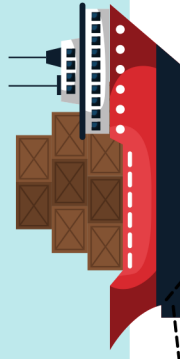
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