# oceans: invasive species from the AQUARUM TRADE

#### INTRODUCTION:

Invasive species are nonnative species that can harm ecosystems. The way invasive species commonly end up in ecosystems they do not belong is due to the transport of these species from their native habitat, to a place they are not normally found in order to be domesticated or kept for personal enjoyment. The aquarium trade has inadvertently caused people to release non-native species out into the ocean because as fish and other aquatic animals are transported to areas they are not originally from, the people that buy the animals sometimes release them into the oceans located near them, and the marine animal ends up becoming dominant in their new environment due to the lack of natural predators they are exposed to.

The concentration of our research is focused on the negative impacts of invasive aquatic species on different oceanic environments and the way the aquarium industry influences invasive species being released into improper oceanic environments.



LIONFISH (*TEROIS VOLITANS*) GREEN CRAB (*CARCINUS MAENAS)* SEA WALNUT (*MNEMIOPSIS LEIDYI)* 

### RESEARCH QUESTIONS

- How can we address the aquarium trade to reduce invasive species?
- 2. How do these invasive species negatively impact the new environments they're in?

### Source of Data/Information

Various articles and data collected from government sources have been obtained and implemented such as the National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (USFWS), U.S. Geological Survey (USGS). Additionally, peer-reviewed articles from the University of Washington were obtained.







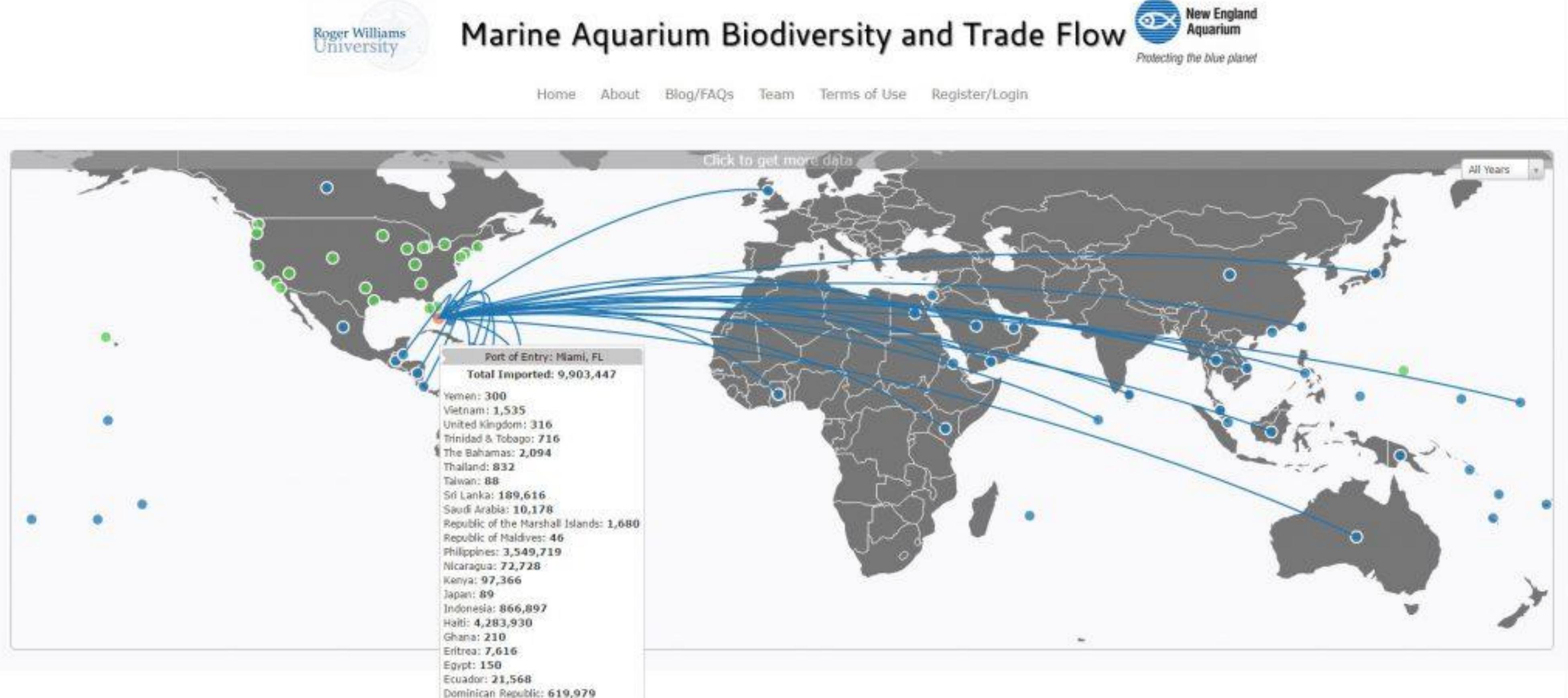
# FINDINGS:

Due to the enticing possibility of having an exotic pet, some have smuggled exotic animals into other countries creating invasive species. Plants have also been brought through human transportation that have caused plant invasive species.

"A survey of aquarists (people who keep fish) in Texas, cited in the UC Davis report, found 20 to 69 percent of them admitted dumping"

This and other sources all have similar information about the aquarium trade. If aquariums have too many of a species, or if a buyer no longer has interest in owning the animal, they get dumped at any close beach, whether the animal came from that area or not.

The photo below reveals how various species have been exported from Miami, FL to various parts of the world.

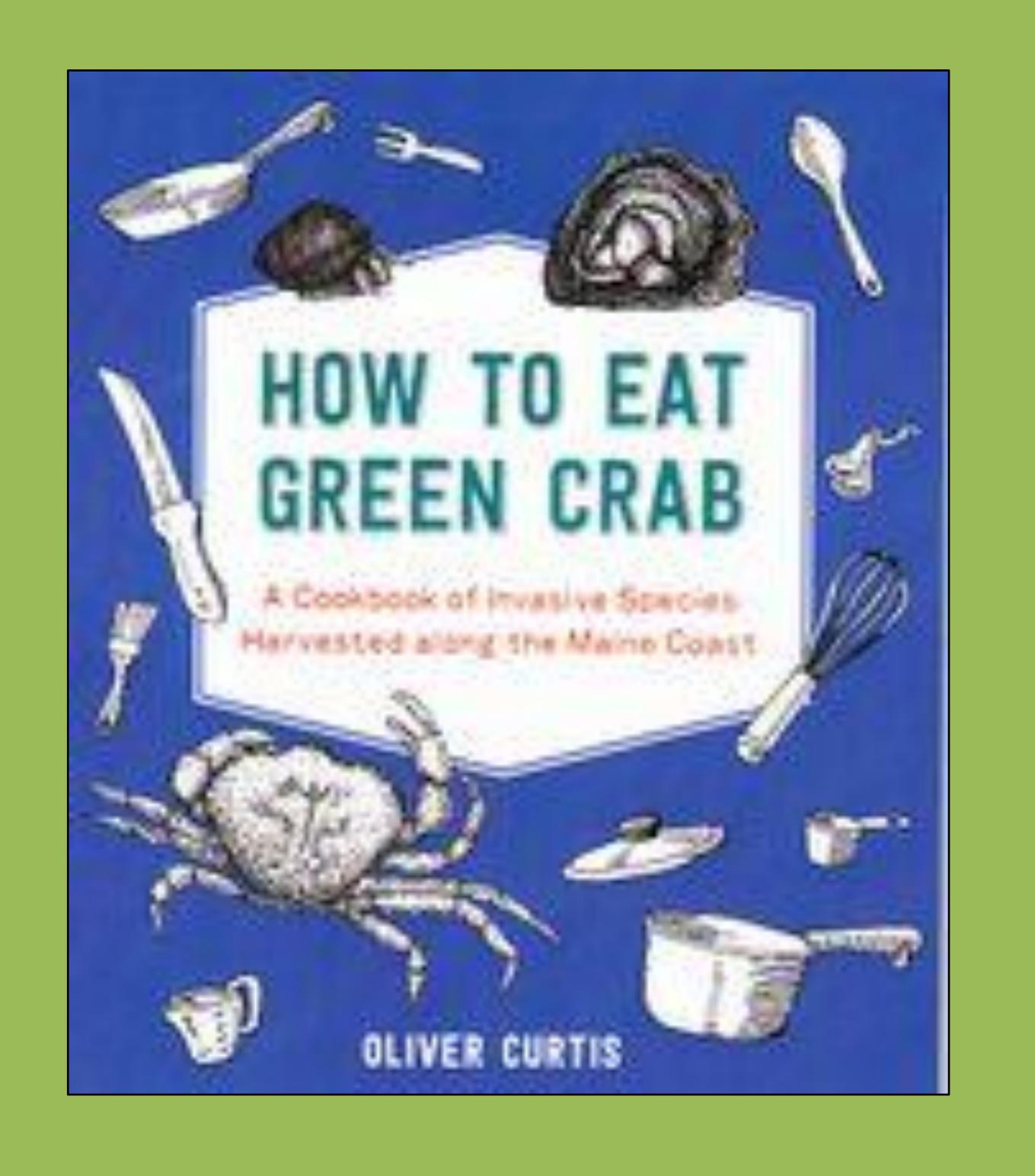




A scuba diver is capturing a lionfish

Some invasive can be eaten such as the Green Crab. A cookbook was created, so the general public could help solve the invasive species problem with their stomach.

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#### <u>The Lion Fish (Terois volitans</u>)

Due to the enticing possibility of having an exotic pet, some have smuggled exotic animals into other countries creating invasive species.

#### <u>The Green Crab (Carcinus Maenas)</u>

The European Green Crab originated from Europe and northern Africa. They were introduced into North America via shipping. Specially, they were brought over to Cape Cod on a sailing ship.

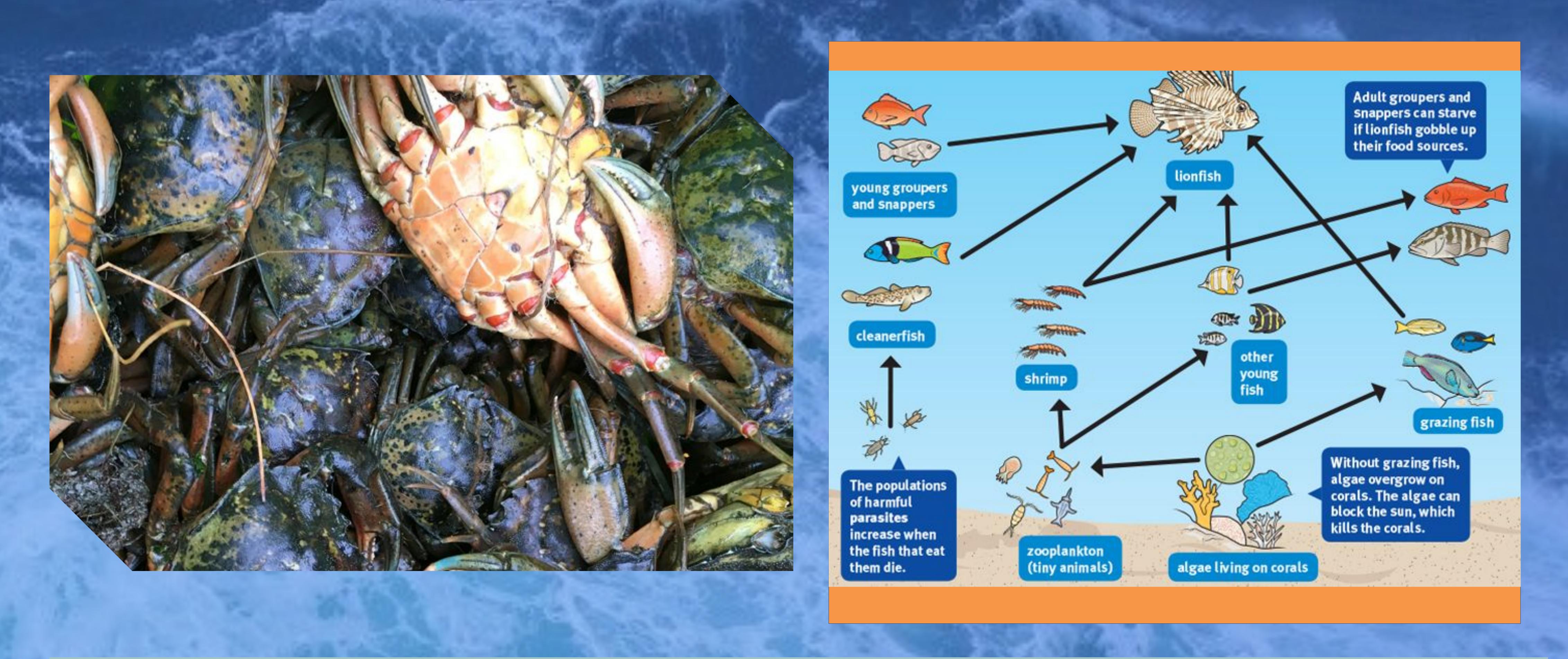
#### <u>Sea Walnut (Mnemiopsis leidyi)</u>

This species is native to western Atlantic coastal waters, but has been an invasive species in European and western Asian regions.



#### <u>Caulerpa taxifolia the "killer algae"</u>

Caulerpa taxifolia pushes out other algaes, seagrasses, and sessile invertebrates by taking over sources of food and light as well from the toxic properties of caulerpenyne compounds that are found within its vegetation. This toxic property is where this species gets its nickname "killer algae" from. Fish who then eat this algae are then no longer able to be consumed. Back in the 1980's, a strain of this algae created to resist cold waters was accidentally released into the Mediterranean Sea by an aquarium, and has now colonized thousand of hectares of the sea. This strain of algae is incredibly difficult to eradicate. An example of this can be seen when an aquarium owner illegally dumped their tank leading to the appearance of it in Southern California. It took the state six years and \$7 million dollars to fully eradicate the algae and was only able to due to the populations being small.



#### <u>CONCLUSIONS:</u>

When it comes to how the aquarium trade is handled, it is clear that there is a regulatory void. Invasive species have been introduced into the aquarium trade. According to our findings, there is a connection between the aquatic pet trade and the removal of some species from their natural environment, which then become invasive in other areas. This is due to pet owners abandoning their unwanted pets in local oceans or pet shops. Because of the unintended effects of possessing an exotic pet or plant and then releasing it into the open ocean, many plants and animals have become invasive species.

There are a number of policy proposals for the exotic pet trade, some of which include government intervention and others which are more incentive-based. "Cash for Critters" is a scheme in which aqaurists are compensated for returning their unwanted critters. The policy aids in the fight against invasive species in the oceans while also assisting pet owners with potential purchases. Yet another recommendation is the improvement on current legislation for the distribution and allocation of non-native species on a global, federal, and local level. Enhancing our scientific inquiry about these species and the environment would help policy and management to reduce exotic pet trade.

As you can see, the exotic pet trade has caused significant environmental damage to our oceans and climate. Many animals, such as the Green Crab and Lion Fish, will continue to become invasive, posing a problem that we might not be able to solve. The exotic pet trade will continue to damage the environment unless policy and management are enforced.

## **BIBLIOGRAPHY/SOURCES:**

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<u>https://www.fisheries.noaa.gov/southeast/ecosystems/impacts-invasive-lionfish</u>