

TALK SCIENCE

A CHANGE IN ONE PART OF THE FOOD WEB AFFECTS THE WHOLE FOOD WEB

WHY?

In a marine food web, when a species is added or removed, it can affect the abundance of other species in the food web. This is because each species has a role to play in the food web, and if one species is removed, the roles of the other species are affected.

What are 'Jellies'?

Jellies are gelatinous animals that live in the water column. They are found in all parts of the world's oceans and are an important part of the marine food web. Some jellies are harmless, but some can be dangerous to humans. Jellyfish stings can cause pain, itching, and allergic reactions. Some jellies, such as the Portuguese man-of-war, can be deadly.



OSU Yale

The land Use and Population Impact of a Large Dam in the Northern California Coast

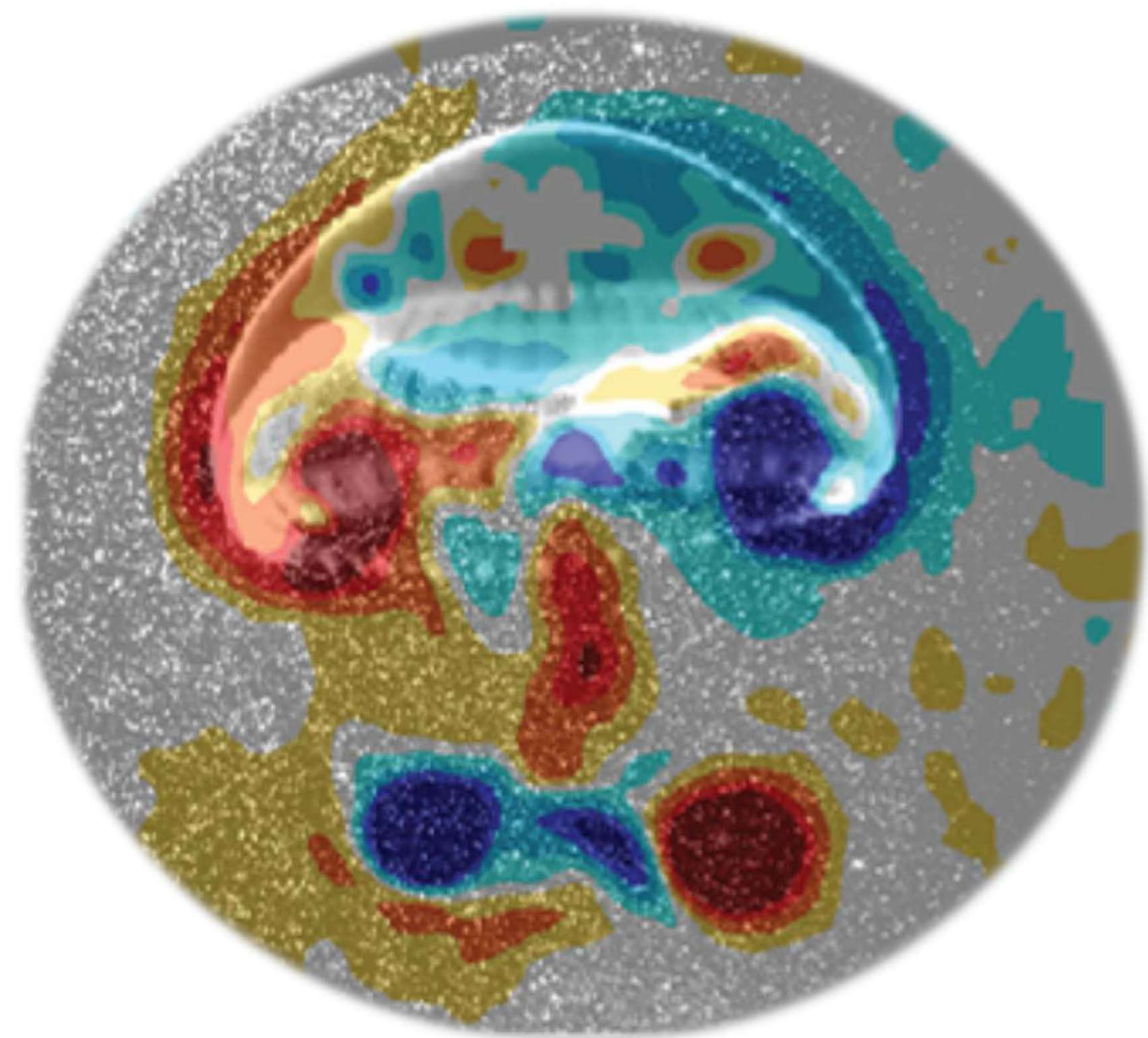


JELLIES

Are jellyfish picky eaters?

Pacific sea nettles are the most numerous jellyfish off of the Oregon coast. They appear each spring and reach peak numbers during the summer.

Researchers: Kelly Sutherland, Samantha Zeman, Keats Conley, Ric Brodeur



The water motion produced by this jellyfish resembles counter-rotating smoke rings, shown in blue and red.

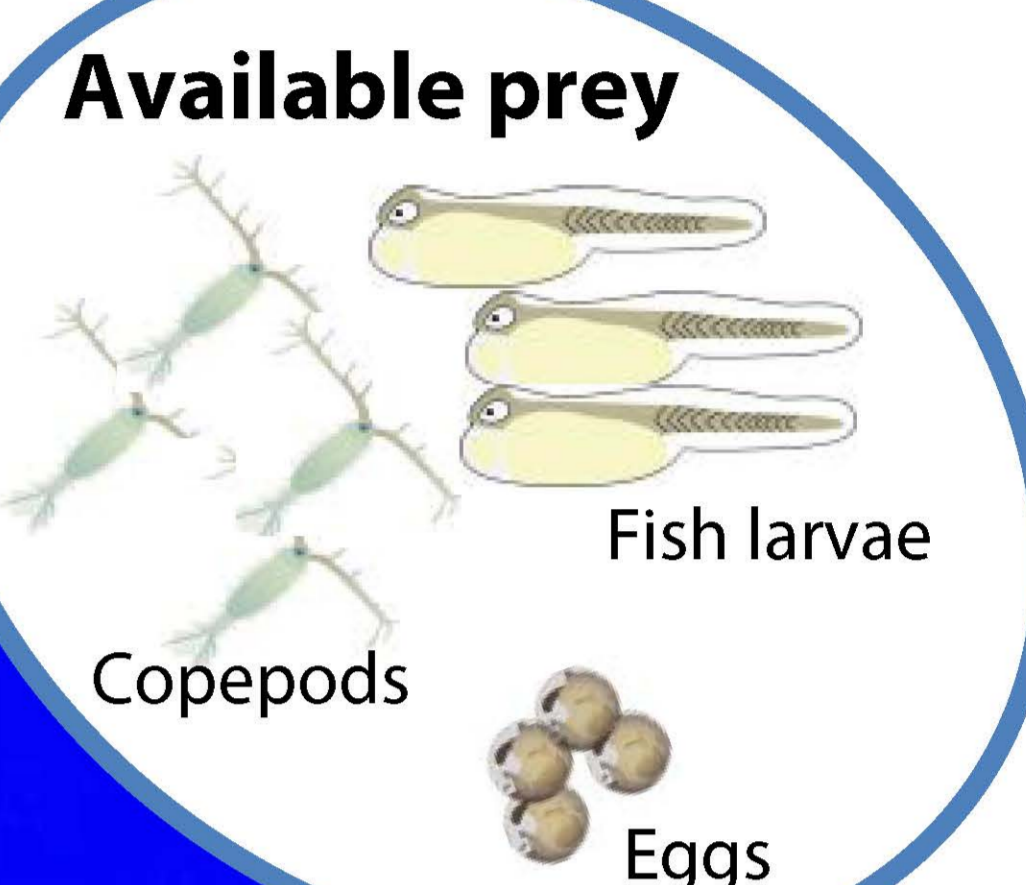
How do they feed?

Like other jellyfish, sea nettles produce swirling water currents shaped like smoke-rings as they swim that bring prey into contact with the tentacles. The tentacles are covered in tiny stinging cells that stun prey on contact.

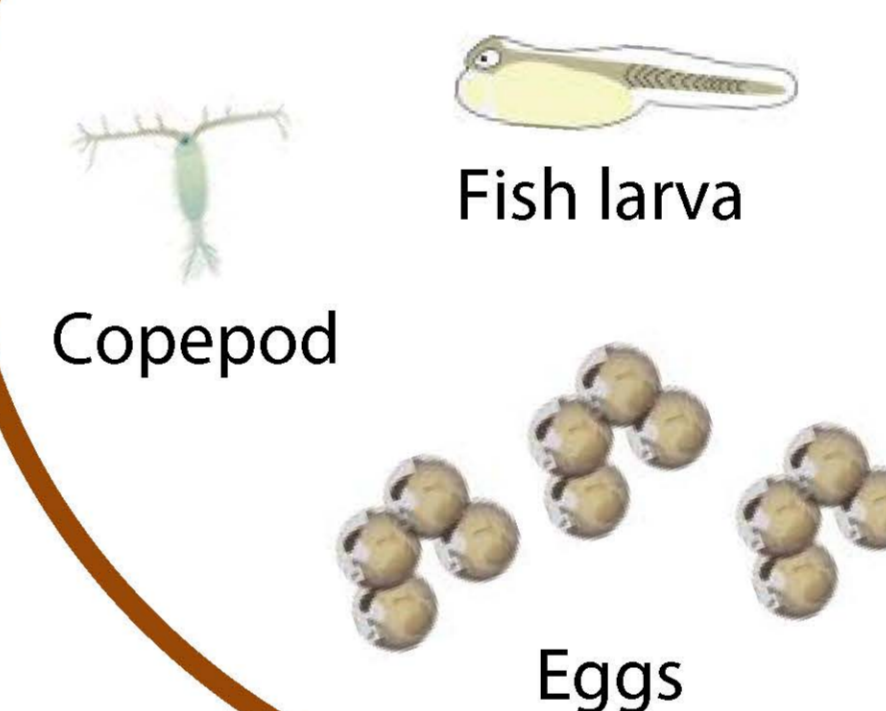
What do these jellyfish eat?

Jellyfish eat small crustaceans (shrimp-like animals), larvae (the babies of adult organisms) and fish eggs. Interestingly, the food that ends up in their stomachs doesn't always represent the food surrounding them in the water. **Are jellyfish picky eaters?** Or, is there some other reason that they end up with more of some prey items in their stomachs and less of others?

Pacific Sea Nettles (*Chrysaora fuscescens*) end up with more of some prey types in their stomachs compared to the available food.



Stomach contents

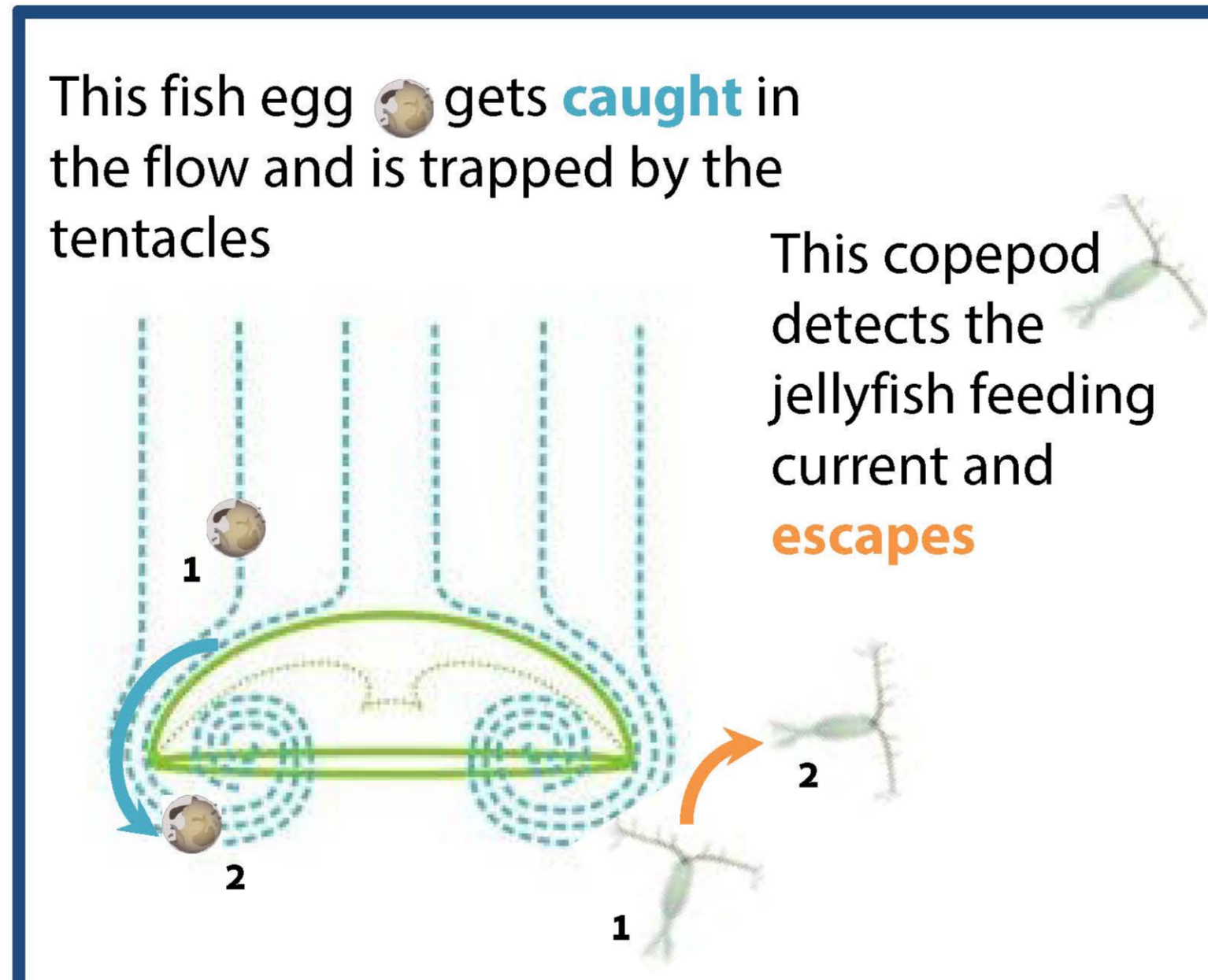


Why do jellyfish eat more of some things than others?

Jellyfish might be capable of actively choosing certain prey and avoiding others. But, research has shown that water currents produced during swimming will draw in any prey that become entrained in the flow.

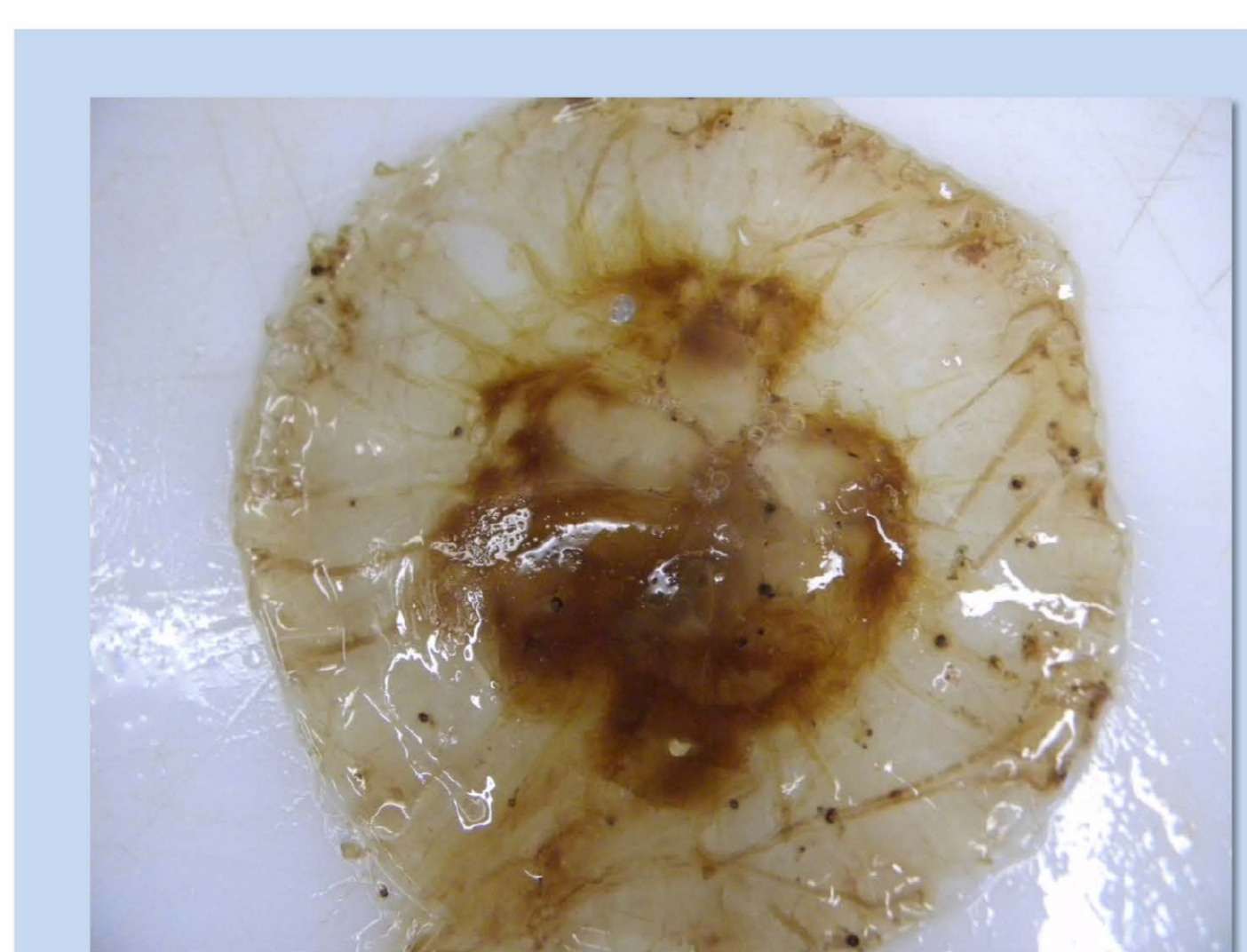
Are they really picky eaters?

The explanation for what appears to be picky eating may have more to do with prey behavior than jellyfish behavior. Some prey are better at escaping than others. Slow-swimming prey or prey that can't swim (e.g. fish eggs) are at a disadvantage and get swept up in the smoke-ring-like feeding currents. Copepods, on the other hand, are escape artists—scientists have observed that they can detect the water motion created by jellyfish and escape by jumping out of the way.



What's the impact of this picky eating?

Knowing what jellyfish eat improves our knowledge of their role in marine food webs. For example, when anchovy eggs are present, sea nettles consume them at higher rates than other prey types. Further studies will help us better understand how jellyfish impact early life stages of fish.



The remnants of this jellyfish's lunch can be seen on the tentacles, mouth arms and stomach.

Jellyfish and commercial fisheries

Jellyfish can occasionally interfere with fishing activity off the Oregon coast because fishers have to relocate to avoid blooms, or their gear becomes damaged. The economic impact—mostly to salmon trollers and pink shrimp fishers—is estimated to be more than half a million dollars each year. On the other hand, many fishers recognize that jellyfish are members of the marine ecosystem and view these encounters as part of their job. In a current project we are working with Oregon fishers to help us identify when and where jellyfish are located so that we can learn more about their distribution and diet.



Image credits:
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