

## *Whale-y Big Ideas*

*Discover that it's fun to be creative and try out new ideas to create more sustainable systems and approaches!*

### Little boat, big impact

When marine mammals get entangled in fishing gear, The Marine Mammal Center is there to help. We rehabilitate seals and sea lions at our hospitals in California and Hawai'i, but can also do "house calls" on the water for animals that are too big to rescue... like whales! Whales often get caught in crab pots and other fishing gear with long ropes. If they don't see these ropes in the water, they can get tangled as they swim by, sometimes really badly. The debris can drag for miles exhausting the whale and damaging their tail flukes or bodies. When this happens, The Marine Mammal Center and our whale response partners have a special team--and a special little boat--we use to try to disentangle these animals.

### Rescue and research in action

If you're confused about how we disentangle enormous whales with tiny boats, we don't blame you. Check out [this video](#) of a humpback whale being disentangled to see for yourself! It takes a lot of time, teamwork, and patience to get whales free, and to do it safely. And also lots of gear! To get this unique job done, our team uses tons of different gear creatively designed for this special purpose or imaginatively repurposed from other applications. While you watch, see if you notice any of this special gear. What might it be made of? How are they using it? Bonus points if you notice the special "whale disentanglement" handshake some of our team uses once the job is done.

Disentangling whales takes some pretty special skills, and not everyone can (or should) do it. But everyone--including you!-- can help us care for whales by learning more about them. If you're ever in the San Francisco Bay Area and see a whale, dolphin, or porpoise in the bay or ocean, let us know [here](#)! By being a community scientist and sharing your sightings with us, you're helping collect valuable data about these animals' behaviors and movements. This information is just as useful in our work to protect whales as our little rescue boat. Thanks for your help!

### Fishing for the future

As much as we love disentangling whales, we'd love it even more if we never had to do it again. Because that would mean whales weren't getting caught in the first place! One of the best ways to make this a reality is to design and use whale-friendly fishing gear that doesn't get tangled on these big mammals so easily, or even at all. Researchers, fishers, and other people are working together to design fishing gear that is safer for humpback whales and other marine life. This is uncharted territory, and they could use your help!



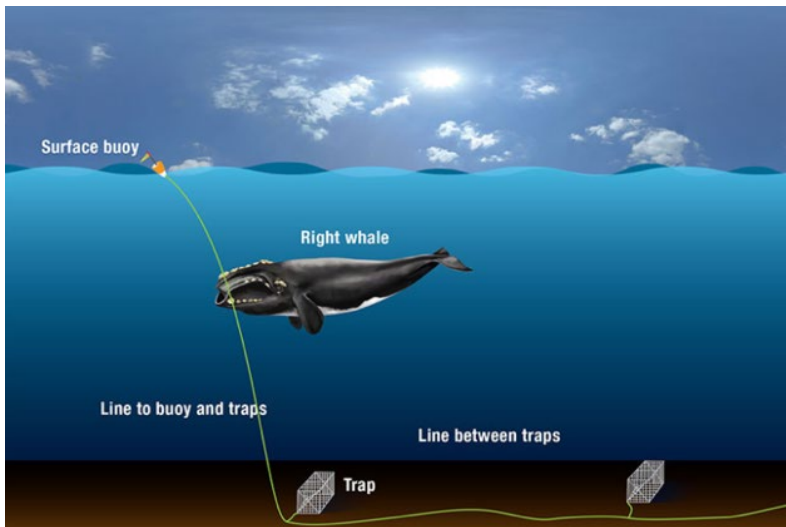
In 2019, [Denman Middle School students won a sustainability competition](#) by designing marine mammal-friendly nets to pick up marine trash. The nets would biodegrade within 4 years, making them much safer for whales and other marine mammals that can get tangled in them if they fall off boats as well as all marine life and those that depend on it like us. Can you follow in these students' wakes and design fishing gear that is equally whale-friendly? Put your thinking cap on and do your best to dream up new animal-friendly gear!

*Materials:*

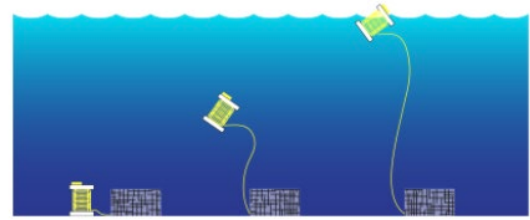
- Videos from the [All Caught Up](#) learning activity show other challenges with entanglement and different [types of fishing gear](#)
- Paper
- Coloring materials
- Crafting items (toilet paper rolls, take out containers, etc., if you want to make your design 3D!)
- Tape (if you go 3D!)

*Instructions:*

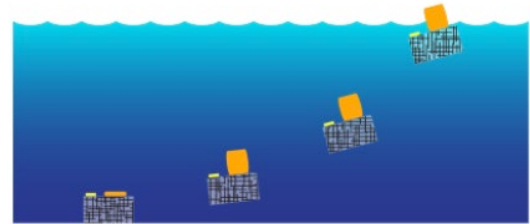
1. Think about how whales and other marine mammals hunt for prey and move through the water. How might these behaviors and movements lead to harmful interactions with fishing gear? Make a list of your ideas.
2. Brainstorm solutions to these harmful interactions with fishing gear. They can be solutions about recreational or commercial gear.
3. For solution inspiration, check out the videos from the [All Caught Up](#) learning activity. Notice the different ways fishing gear can harm marine mammals and consider ways we can limit their negative interactions.
4. For even *more* inspiration, check out the pictures below, which show harmful fishing gear and whale-friendly gear. What makes this gear more or less whale-friendly?
5. Now it's time to use all your brainstorming to make your model! Building models is an important step in the engineering process. By making a model or prototype first, you can find design flaws and test out different materials before building on a bigger scale. Sketch your model on paper, or better yet, construct it out of crafting supplies.
6. If the first prototype you make doesn't work out, don't worry! All engineers have to go back to the drawing board eventually, so it's ok if your first design isn't your best one. We only get better when we try again!
7. Once you've built your model, label the key parts of your design and describe how they keep marine animals safe.
8. Share your design with friends and family and get them excited to use sustainable gear when they fish, or buy seafood from businesses who use it!



Whales can easily get caught on ropes between buoys and traps.



Spool Trap



Trap

Some traps deploy ropes or floats when they're picked up. This is safer for whales because there is less—or even no!—rope to get tangled in.