# Intro: Duration: (\_\_\_)

Hi! My name is Lindsay and I'm an intern at Aquarium of the Bay. You're listening to episode 5 of Beyond the Pier. This is a new podcast that features the incredible animals at Aquarium of the Bay. Each episode will feature an animal highlight filled with fun facts about the animal, how it is cared for in the Aquarium, and what we can do to help these species in the wild. Do you have a question about one of the featured animals? Send it our way to be included in the episode conversation. And with that, let's dive in!

#### **Opening music jingle & sound effects**

#### [Lead into episode's content]

Todays episode is about sea jellies! You may know them as jellyfish, but they're not actually fish, which I'll explain in a bit, so we'll be referring to them as jellies. You should too!

## <u>Topic 1 (Animal Description):</u> Duration:(\_\_\_\_)

- 1. Main point/question: So, if jellies aren't fish, what are they?
- 2. Supporting points: Jellies are what we call cnidarians. Cnidarians are a group of aquatic invertebrates, or animals without backbones, that also include sea anemones and corals. True fish have backbones, which is why the term "jellyfish" is incorrect. All cnidarians also have a form of stinger- in fact, "cnidarian" means stinging nettle in Greek.
- 3. Jellies are exceptionally diverse- some live for a few weeks, while others survive for decades. There are deep sea jellies and jellies that prefer shallow coastal waters. The smallest jellies are the size of a grape, while the largest can be the size of a car. Despite these differences, jellies share some common characteristics that we'll take a look at. For many of us, when we think of jellies, we think of the dome-shaped animal with trailing tentacles. This is called the medusa phase of a jellies life cycle. That characteristic bell is filled with a substance called mesoglea, which gives structure to the jelly, since they don't have supportive structures like bones. This mesoglea is also how jellies get their name- it looks and feels a lot like jelly!

Also in the bell are structures called the gastrodermis and the neural net. Gastrodermis is just a fancy way to say digestive system. It can sometimes be seen in the bell of a jelly, where it is shaped like rings. The neural net is what jellies have instead of a brain. A brain is a clump of neurons, whereas a neural net is more of a web. The neural net is the simplest form of a nervous system that we know of, but it's allowed jellies to thrive for millions of years.

The bell is also home to muscles that allow the jelly to pulse and move. They're not very strong swimmers, though- jellies are planktonic, which means they can't swim against a current. They're drifters, just going where the current takes them!

Under the bell are small tentacles and large oral arms. Sometimes the oral arms are just used to move food into the jellies mouth, but sometimes they're covered in stinging cells, like I mentioned earlier. One of the most common stinging structures is called a nematocyst. It works like a microscopic harpoon, injecting venom into whatever it touches. Jellies use this incredible adaptation to catch prey, such as fish, and protect themselves from predators. It's also what gives jellies their characteristic sting. Some jelly stings are harmless to humans, while others, like the box jelly, can be very dangerous.

Despite all these structures, jellies are still 95% water!

Now that we've taken a closer look at what's in a jelly, we'll talk with \_\_\_\_\_, a jelly expert and caretaker at Aquarium of the Bay. (credentials)

**Segue** (can be a sound effect, short musical clip, or a phrase)

#### Topic 2 (How does the Aquarium care for the animal?): Duration:( \_\_\_\_)

- 1. Main point/question: How are the jellies in the aquarium cared for?
- 2. Supporting points:
  - How many types of jellies are in the aquarium?
  - Where do they come from? Other aquariums?
  - What do they eat, and how often?
  - How smart is a jelly?
  - How do you protect yourself from getting stung?
  - What's your favorite type of jelly to work with, and why?

**Segue** (can be a sound effect, short musical clip, or a phrase)

#### <u>Topic 3 (Conservation and solutions):</u> Duration:(\_\_\_\_)

- 1. Main point/question: Jellies are doing fine, but other cnidarians might not be.
- 2. Supporting points:
  - Jellies are versatile animals that have survived for more than 500 million years. While climate change is causing problems for other marine species, it's creating opportunities for jellies. Ocean acidification and warming temperatures makes it more difficult for many species to reproduce and survive. This combined with overfishing leaves an opening in the food chain that jellies are eager to fill. With less outside competition for food and fewer predators, jelly populations have been exploding. Large groups of jellies, also known as a smack, can wash up on beaches, clog power plants and filtration systems, and interfere with commercial fishing.

- While jellies thrive in a changing ocean, other cnidarians are dangerously susceptible to climate change. Corals, for example, survive by providing a home for algae that in turn helps them make food. Warming oceans cause corals to become stressed, which sometimes makes them kick the algae out. This is known as coral bleaching, and it can be fatal.
- We also learned earlier that jellies are planktonic, or drifters. Unfortunately, trash tends to drift too. A plastic bag can look a lot like a jelly, which is confusing for predators such as sea turtles. A sea turtle that fills up on plastic bags instead of jellies could be in danger of starving.
- 3. So what are some things we can do to help?
  - First, eat sustainable sea food! Commercial fishing removes large numbers of predator fish such as tuna and salmon. With fewer predators in the ocean to eat jellies, their population can grow unchecked. By eating sustainable seafood you are helping to maintain a healthy balance between jellies and who eats them!
  - Also be aware of your waste and recycling. Once of the best things you can do is reduce your use of single-use plastics! For example, use a refillable water bottle or pass on plastic straws and lids.
  - Next, do your part to combat climate change! Many species that are struggling to survive in warming oceans are jelly predators who are vital in controlling jelly populations. By doing everything we can to slow the effects of climate change we are helping to protect the health and balance of the oceans.
  - And finally, vote! Support legislators who will do their part in protecting and conserving our oceans. Make your voice heard!

**Segue** (can be a sound effect, short musical clip, or a phrase)

## <u>Questions from Listeners:</u> Duration:(\_\_\_)

## Outro: *Duration:(\_\_\_\_)*

• Closing remarks (summarize episode themes)

Today we learned what makes up a jelly, how they're cared for at Aquarium of the Bay, and how they're adapting to our changing oceans. We learned that corals and jellies are closely related, but face very different challenges when it comes to climate change. We also talked about some ways we can help combat jelly overpopulation. We covered a lot! I hope this helped you gain a better understanding of the awesome, ancient animals we call jellies. Thanks so much for listening! We hope to see you again next week on Beyond the Pier.

## **Closing music jingle/sound effects**

#### Citations:

https://arxiv.org/pdf/1908.04202.pdf https://www.nytimes.com/2018/09/28/science/jellyfish-predators-oceans.html https://www.britannica.com/science/mouth-arm https://www.chasingcoral.com/2018/05/23/reef-safe-sunscreen-need-know/ https://www.nationalgeographic.com/environment/2018/10/climate-change-increasingvenomous-creatures-ocean-warming/

https://ocean.si.edu/ocean-life/invertebrates/jellyfish-and-comb-jellies

# Aquarium of the Bay Background Info

https://en.wikipedia.org/wiki/Plankton#:~:text=Plankton%20are%20the%20diverse%20collection ,to%20swim%20against%20a%20current.&text=Planktonic%20organisms%20include%20bacte ria%2C%20archaea,or%20bodies%20of%20fresh%20water.