

MONSTERS

OF THE ABYSS

AQUATIC PREDATORS PAST + PRESENT

Educator Guide



Oregon Museum of Science and Industry

About the Exhibit



Highlights

- Full size replica skeletons
- Hands-on interactives
- Seven live animal habitats
- Megalodon jaw photo op
- Passport stations
- Educational curriculum K-8
- Estimated dwell time: 30 – 45 minutes
- Included with admission

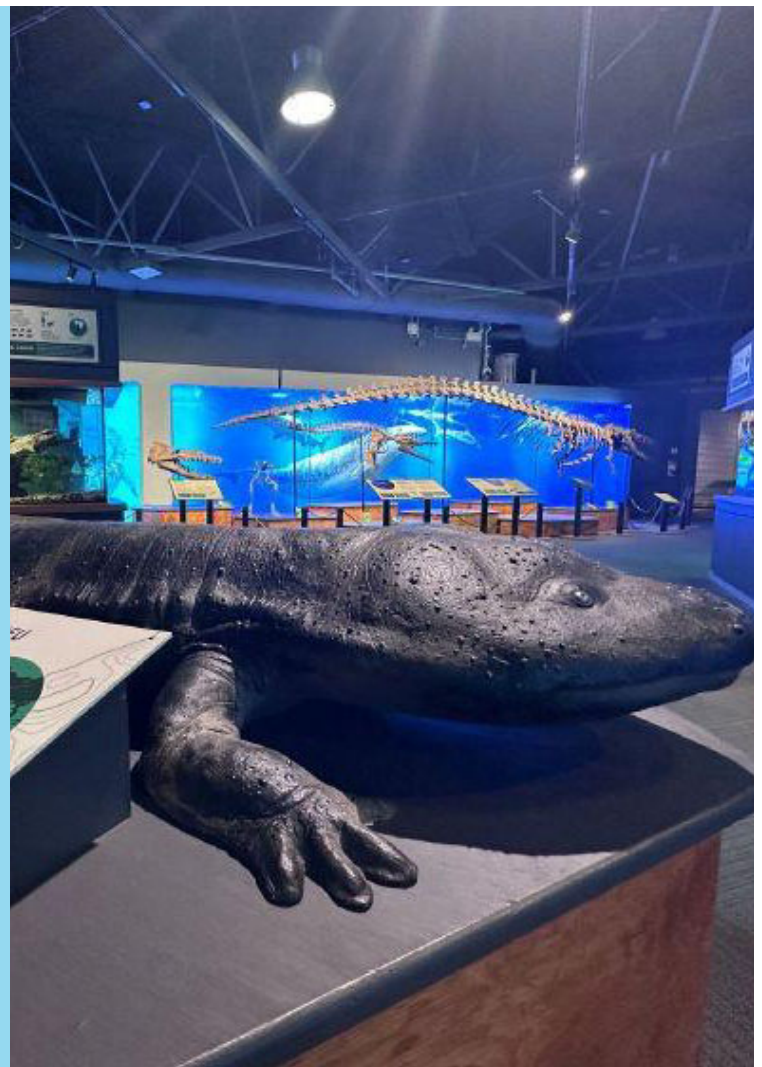


Exhibit Themes

- Ocean Conservation
- Climate Change
- Evolution
- Paleontology
- Adaptations
- Mass Extinction Events



Dive back in time to explore what lurked beneath the surface in *Monsters of the Abyss: Aquatic Predators Past + Present*, an immersive experience for all ages. Through fossils, daily programming, and live animals, you can witness the rise and fall of Earth's most awe-inspiring aquatic creatures and their present-day descendants.



Key Educational Messages

Visitors dive into the history of aquatic predators, learning about their ecology and why they were so feared.



Morocco Fossil Site - Khouribga

Goal: Understand how mass extinction events gave rise to new and diverse ecosystems, shaping the environment and life forms we see today.

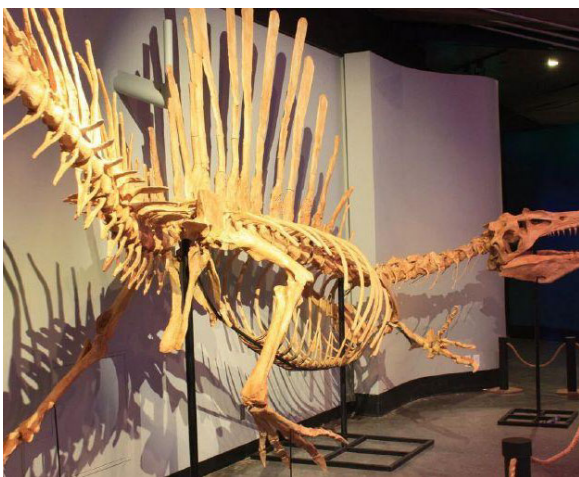
Outcome: Visitors will identify key mass extinction events and explore how these events led to the emergence of new species and ecosystems, deepening their understanding of Earth's evolutionary history.



Megalodon jaw photo opportunity

Goal: Inspire respect for marine life and promote the conservation of aquatic ecosystems.

Outcome: Visitors will leave with a deeper appreciation for marine organisms and be motivated to take personal or collective action to support the health and sustainability of aquatic life and habitats.



Morocco Fossil Site - Kem Kem

Goal: Recognize how place-based stories and cultural connections to the ocean contribute to scientific knowledge and encourage stewardship of marine environments.

Outcome: Visitors will explore cultural relationships with waterways to better understand their role in ocean ecosystems, and how personal and community action support ocean health.

Live Animal Displays

Seven* live animal habitats will engage students with opportunities to connect past to present.



False Water Cobra
Hydrodynates gigas

Asian Water Dragon
Physignathus cocincinus

Asian Water Monitor
Varanus salvator

Pixie Frog
Pyxicephalus adspersus

Diamondback Terrapin
Malaclemys terrapin

Eastern Garter Snake
Thamnophis sirtalis

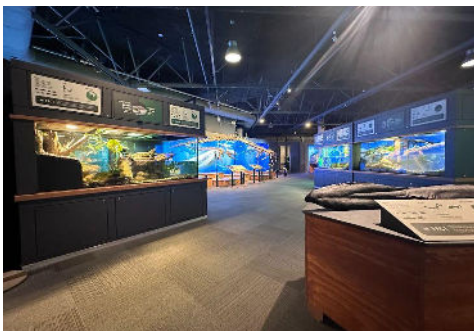
Caiman Lizard
Dracaena guianensis

*All animals may not be available every day based on care plans

NGSS Science Standards Aligned



- **LS1-1:** *Students can observe how animals in the deep ocean meet their basic needs for survival.*
- **ESS3-1:** *Discover how certain animals are specifically adapted to live in dark, high-pressure ocean environments.*
- **ESS3-3:** *Encourages curiosity about ocean ecosystems and invites follow-up discussions about how we can help protect these environments.*



Pre-Visit Activity Idea: Standard: LS1-1

Students can observe how animals in the deep ocean meet their basic needs for survival.

Lesson Focus: *How do deep-ocean animals get food, water, shelter, and oxygen?*

Activity Idea: “Survival Sort”

- Students explore a set of cards or images of different ocean animals and their survival needs (e.g., whale shark – filter feeding plankton, anglerfish – lure for prey, deep-sea crab – scavenger, etc.). They match animals with how they meet their needs.

Differentiation:

- **K-1:** Use picture cards with simple words. Students match needs (food, air, shelter) to animal pictures. Teacher-led group discussion.
- **2-3:** Students create a needs chart (animal → need → how it’s met). Encourage drawing or labeling.
- **4-5:** Research stations with short passages about different ocean animals. Students compare strategies (predators vs. filter feeders vs. scavengers).
- **6-8:** Students analyze energy transfer (producers, consumers, decomposers) in deep-sea food webs. Write a short explanation of trade-offs in survival strategies.

Pre-Visit Activity Idea: Standard ESS3-1

Discover how certain animals are specifically adapted to live in dark, high-pressure ocean environments.

Lesson Focus: *What special adaptations help deep-sea animals survive where humans cannot?*

Activity Idea: “Adaptation Simulation”

- Teacher creates 3–4 quick experiments or demos to mimic deep-sea challenges:
 - Darkness → Students try to find objects by touch or use a flashlight under a box.
 - Pressure → Compare a marshmallow both without and with weight applied (i.e., pressure). Then remove the weight/pressure again and observe.
 - Cold → Place hands in cold water with/without a “blubber glove” (glove lined with shortening).

Differentiation:

- **K-1:** Do all demos as teacher-led demonstrations; students share how animals might “fix” those problems.
- **2-3:** Small groups rotate through stations. Students record observations with words or drawings.
- **4-5:** Students match demos to real adaptations (bioluminescence, body shape, antifreeze proteins).
- **6-8:** Students explain how adaptations evolved over time in response to selective pressures; write hypotheses about what would happen if conditions change (e.g., warming oceans).

Pre-Visit Activity Idea: Standard ESS3–3

Encourages curiosity about ocean ecosystems and invites follow-up discussions about how we can help protect these environments.

Lesson Focus: *Why are ocean ecosystems important, and how can we help protect them?*

Activity Idea: “Ocean Stewardship Pledge”

- Students learn about threats (plastic pollution, climate change, overfishing) and brainstorm solutions. They create a class pledge mural or campaign.

Differentiation:

- **K–1:** Read aloud a picture book (e.g., *Somebody Swallowed Stanley* or *The Adventures of a Plastic Bottle*). Students draw one thing they can do to “help the ocean.”
- **2–3:** Make posters showing a problem and a solution (e.g., sea turtle vs. plastic straw → switch to reusable straw).
- **4–5:** Role-play as “ocean helpers” (scientist, fisherman, activist, policymaker). Debate choices and make a class list of top 5 actions to help oceans.
- **6–8:** Research current conservation efforts (MPAs, sustainable seafood, laws against single-use plastics). Write a persuasive letter, PSA script, or digital flyer to share with community/families.

Related Documentary Add-Ons

Engage your students' curiosity by booking a show in OMSI's Empirical Theater. Portland's largest film screen.

Shark Kingdom is a family adventure that reveals how sharks use hidden super senses to survive and shape marine ecosystems. From great whites in New Zealand to whaler sharks in Australia and black tips in Tahiti, each species shows unique adaptations. Filmed in top dive sites like The Bahamas and Cook Islands, it brings you face-to-face with these predators and the story of our shared oceans.

Runtime: 25 minutes and 45 minutes



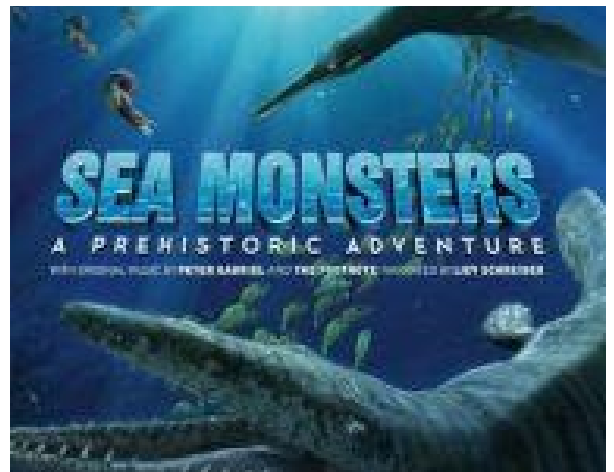
Blue Whales: Return of the Giants, narrated by Andy Serkis, takes viewers on an epic journey to explore the world's largest animal. Once nearly extinct, blue whales remain mysterious giants. The film follows two daring expeditions, including a mission to rediscover a population unseen for 50 years, offering a rare window into their lives and the challenges scientists face to study them.

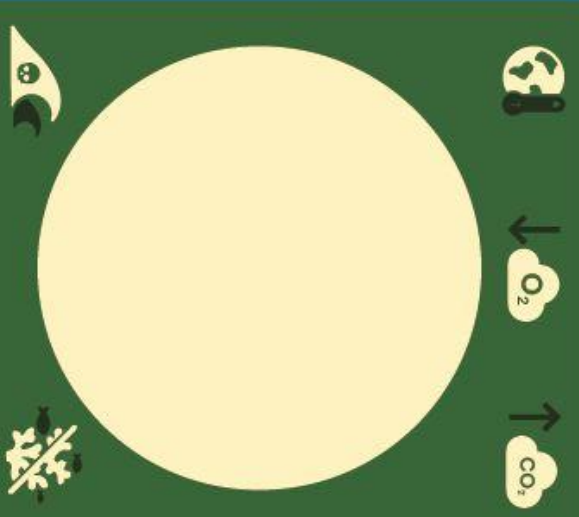
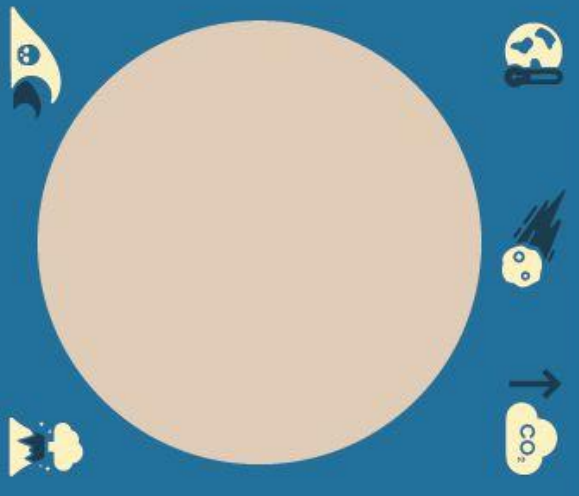
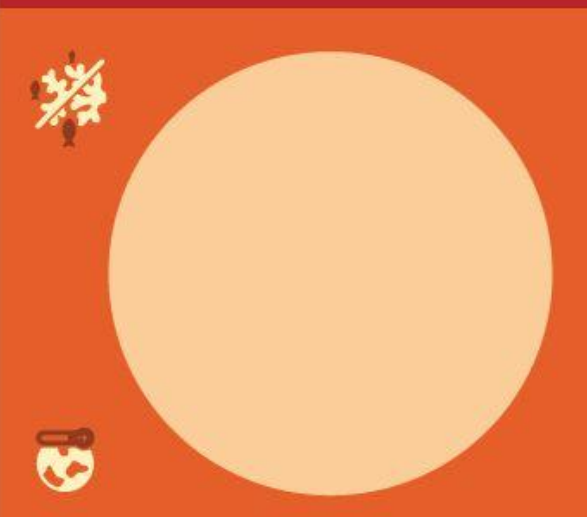
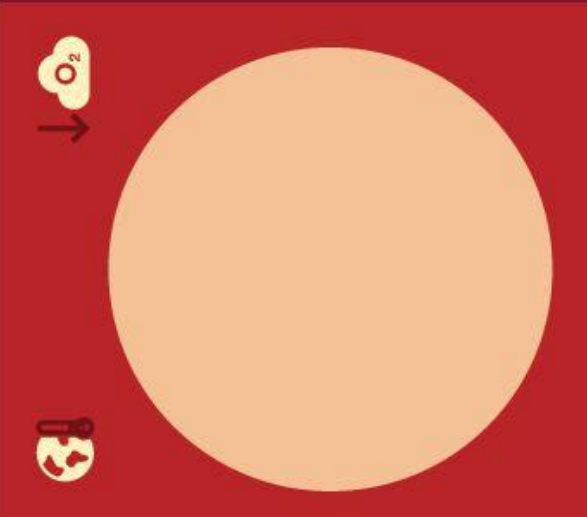
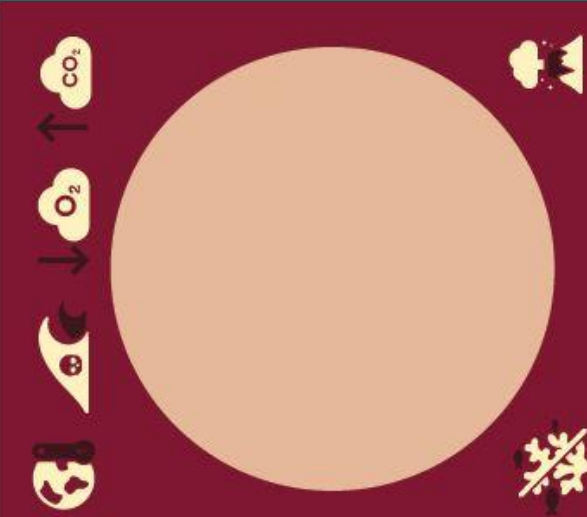
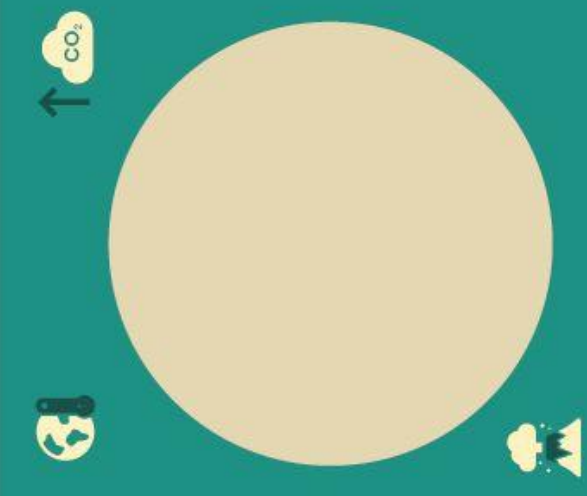
Runtime: 45 minutes



Sea Monsters: A Prehistoric Adventure takes audiences back to the Late Cretaceous, when a vast inland sea divided North America. Following a young dolichorhynchops through oceans filled with plesiosaurs, giant turtles, sharks, and the fearsome mosasaur, the film weaves thrilling encounters with real paleontology digs, revealing how scientists piece together this ancient world.

Runtime: 45 minutes





- ### DRIVERS OF EXTINCTION
- CLIMATE CHANGE
 - DECREASE IN OXYGEN (O₂)
 - RISE IN CARBON DIOXIDE (CO₂)
 - VOLCANIC ACTIVITY
 - METEOR IMPACT
 - HABITAT LOSS
 - OCEAN ACIDIFICATION

Mass Extinction
PASSPORT

MONSTERS
OF THE ABYSS

AQUATIC PREDATORS PAST + PRESENT

OMSI

INSTRUCTIONS

Collect all extinction stamps
Fold as seen below

What was your favorite Monster? _____

1

INSTRUCTIONS

- Collect all extinction stamps
- Fold as seen below

What was your favorite Monster? _____

2

TRIASIC Name Extinction Stamp Here	PERMIAN Name Extinction Stamp Here	DEVONIAN Name Extinction Stamp Here	ORDOVICIAN Name Extinction Stamp Here
  	  	  	  

3



4



Write your name



75 %
de las especies
desaparecieron.

Extinción masiva DEL TRIÁSICO

Extinción masiva DEL CRETÁCICO

70 %
de las especies
desaparecieron.



90 %
de las especies
desaparecieron.

Extinción masiva DEL PÉRMICO

Extinción masiva DE LOS TIEMPOS MODERNOS

?? %
de las especies
desaparecieron.



70 %
de las especies
desaparecieron.

Extinción masiva DEL DEVÓNICO



CAUSAS DE LAS EXTINCIONES



DISMINUCIÓN DEL OXÍGENO (O₂)



AUMENTO DEL DÍOXIDO DE CARBONO (CO₂)



ACTIVIDAD VOLCÁNICA



IMPACTO DE METEORITOS



PÉRDIDA DE HÁBITATS



ACIDIFICACIÓN DE LOS OCEANOS



85 %
de las especies
desaparecieron.

Extinción masiva DEL ORDOVÍCIO

PASAPORTE de las extinciones masivas



MONSTERS
— OF THE ABYSS —
AGUANTE: PREDATORS PAST + PRESENT

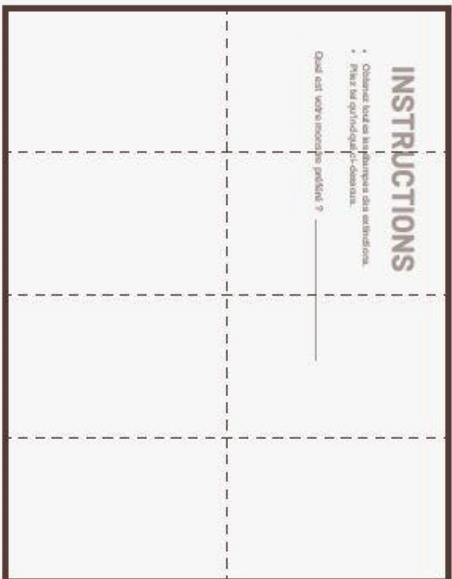
OMSI

INSTRUCCIONES

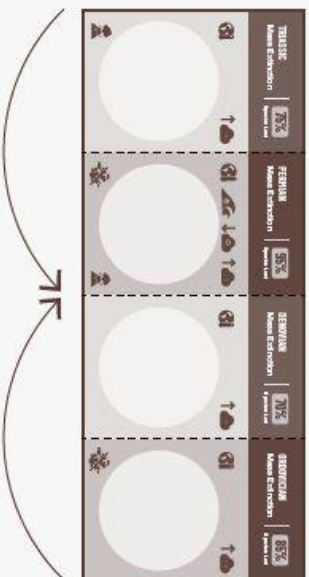
- Reúne los sellos de todas las extinciones.
- Dobra el pasaporte como se muestra abajo.

¿Cuál es tu monstruo preferido? _____

1



2



3



4



Escribe tu nombre.