

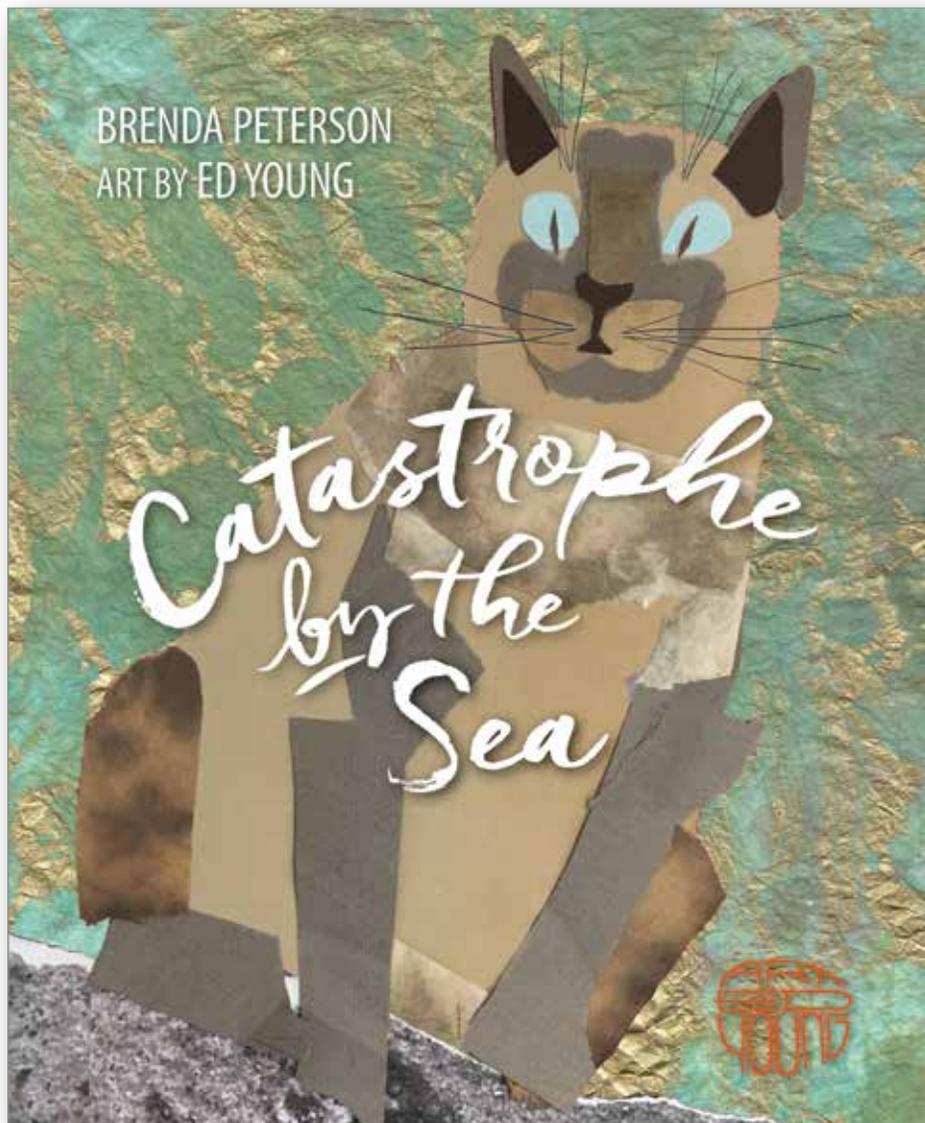


BOOK GUIDE FOR *Catastrophe by the Sea*

Written by Brenda Peterson

Illustrated by Ed Young

Guide created by the Seattle Aquarium



Fry Readability: 4

Lexile Measure: 650L

Suggested for Grades 1 to 4

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SUMMARY

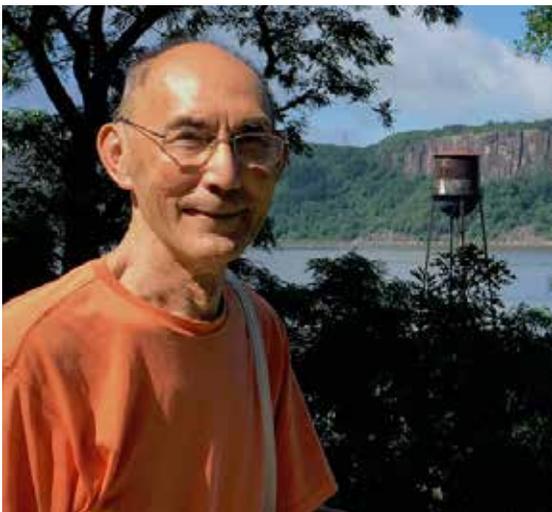
A lost cat named Catastrophe roams the tide pools, pawing relentlessly at the small creatures who live there. One day an anemone confronts him and asks why he is alone before befriendng him. From her and the barnacles, crabs, octopus, and others, Catastrophe learns about the unique powers of survival from his new friends in the tide pool. Finally, two children recognize the lost cat and return him home.

In partnership with the Seattle Aquarium, *Catastrophe by the Sea* is a poignant story of redemption through empathy and compassion found in the most surprising places. The book delivers a powerful message of friendship; it also educates children on the varied wildlife brimming in tide pools and provides a rich understanding of small creatures who live in a dangerous tidal zone.



About the Author

Brenda Peterson is an award-winning nature writer, children's book author, novelist, memoirist, conservationist, and educator. For the past two decades she has studied and written about animals and nature, and is the founder of the conservation group Seal Sitters. She lives in Seattle, Washington. Visit her at brendapetersonbooks.com.



About the Illustrator

Ed Young has been honored the Caldecott Medal for his illustrations and has published over 80 books for children. Born in Tientsin, China, he graduated from Art Center in Pasadena, California, and has taught art at several universities, including Pratt, Yale, Naropa, and UC Santa Cruz. Ed believes challenge and growth are central to his illustrations and hopes to expand awareness through them. He lives in New York. Learn more at edyoungart.com.

PRE-READING DISCUSSION

These questions focus on natural history and biodiversity of the tidepool ecosystem, highlighting the similarities humans share with tidepool invertebrates.

Celebrating the biodiversity of animals and people.

(Supports Next Generation Science Standard 2-LS4-1)

- Review with the class what a habitat is.
- Do all animals live in the same place/habitat?
- What does a tidepool look like?
- What makes the mountains different from a tidepool? Or the tidepool and a desert?
- Can you find the same animals and plants in both habitats?
- What's an animal or plant you will find in the tidepool that you can't find in the mountains, or the desert?

Introduce the concept of cultural identity by beginning first with how important it is to help others feel supported, safe, and valued. (Teach kindness in responses: "That's cool!" "I never knew that before!" "I like..." "Can you tell me more?") Emphasize how brave it is to share stories that make each person unique.

- What do you think your strengths are?
- Do you have any special passions or talents?
- Does everyone have the same strengths, passions, or talents?
- How does it feel to be different from other people?
- Is it cool or scary? Why?
- What are some interesting facts about you? Your family?



Considerations of adaptations and the tidepool habitat: feeding, outer covering; shells vs. skin, scale, growth development comparison molting vs. human development. (Supports Next Generation Science Standard 3-LS3-2 and 3-LS4-3)

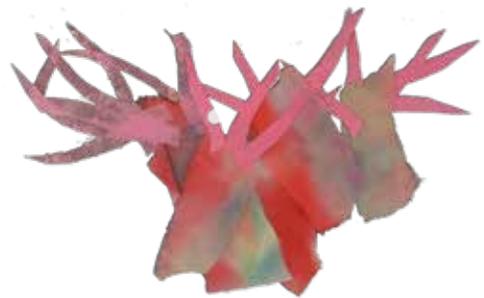
- How are crabs, or barnacles, or sea anemones and people the same?
- When you grow, what bigger things do you need?
- When you go to sleep where do you sleep?
- How do you eat your food?
- How does a sea anemone eat their food? What about the other tide pool creatures?

- When you get too hot or thirsty, what do you do?
- When a barnacle gets too hot or thirsty, what do you think they do?
- Where are some good places to find crabs, anemones, and barnacles?
- Can barnacles be found any place other than the tidepool?
- What body part makes this animal perfectly designed for living in the tidepool?
- Consider surviving the elements, like the sun and predators.
- How do you protect yourself from the sun?
- How do you think barnacles, sea anemones and crabs protect themselves from the sun?

Post-Reading Discussion

These questions relate students' emotions to the tidepool animal's emotions.

- How does Naimonee show that she is happy? Scared? Angry?
- Practice different emotions with a mirror. How do you show when you are happy, scared, angry, etc?
- How did Naimonee feel when Catastrophe pawed at her in the beginning of the book?
- How did Catastrophe change his actions to help the tidepool animals feel better?
- What would you say to Catastrophe if you were a tide pool creature?
- How do you know if something is an animal? How do you know it has feelings?
- What did Catastrophe feel when the children were running down the beach towards him?
- How should we, as humans, act on the beach around all the tide pool animals?
- How many of Catastrophes' friends can you remember?
- Can you think of a time you made a new friend?
- What is the nicest thing a friend has done for you? How did it make you feel?
- How do you know when you have a best friend?
- Is it ever hard being a friend? How do you handle those situations? How can you be a better friend?



Vocabulary/Animal ID Section

Adaptation - Modification of an organism or its parts that makes it more fit for existence under the conditions of its environment; a heritable physical or behavioral trait that serves a specific function and improves an organism's fitness or survival.

Barnacle - Suspension feeders, sweeping small food into their mouths with their curved 'feet.' They are cemented to rock (usually), and covered with hard calcareous plates, which they shut firmly when the tide goes out. ([click here](#) to be redirected to Seattle Aquarium's website information)

Biodiversity - The diversity of life forms on earth or part of the earth, including diversity of species, genes, and ecosystems, esp. when regarded as providing the optimal conditions for evolution.

Giant Pacific Octopus - An octopus found in the coastal North Pacific who averages 90 pounds. They can change their color and texture, and manipulate their body form to fit small spaces. ([click here](#) to be redirected to Seattle Aquarium's website information)

Habitat - The place or environment where a plant or animal naturally or normally lives and grows.

Invertebrate - An animal who does not have a backbone or skeleton inside its body. Insects, spiders, worms, snails, clams, crabs, and squids are some kinds of invertebrates.

Nematocysts - When small fish or crustaceans pass by and touch the tentacles around their mouths, sea anemones shoot a harpoon-like spear or "nematocyst" into their prey, injecting a paralyzing neurotoxin. They then use their tentacles to guide the food into their mouths. Luckily, only a few have stinging polyps that are harmful to humans.

Oystercatcher - A bird found on the North American Pacific coast named for its good appetite for mollusk-type invertebrates. The bird uses a strong beak to open mussel shells and eat the animal inside. ([click here](#) to be redirected to Seattle Aquarium's website information)

Plankton - Organisms who aren't capable of swimming against a current. ([click here](#) to be redirected to Seattle Aquarium's website information)

Purple Shore Crab - A common crab found sheltering under rocks in intertidal areas along the west coast of North America, from Alaska to Baja California in Mexico. This crab primarily eats sea lettuce and other green algae, and occasionally scavenges dead animals. ([click here](#) to be redirected to the Seattle Aquarium's website information)

Sea Anemone - A group of marine animals closely related to coral and jellyfish. They catch their food with their stinging tentacles that inject neurotoxins in passing small fish or crustaceans. ([click here](#) to be redirected to Seattle Aquarium's website information)

Tentacles - Long thin body parts on the head or around the mouth of some animals. Tentacles are used for feeling or taking hold of things.

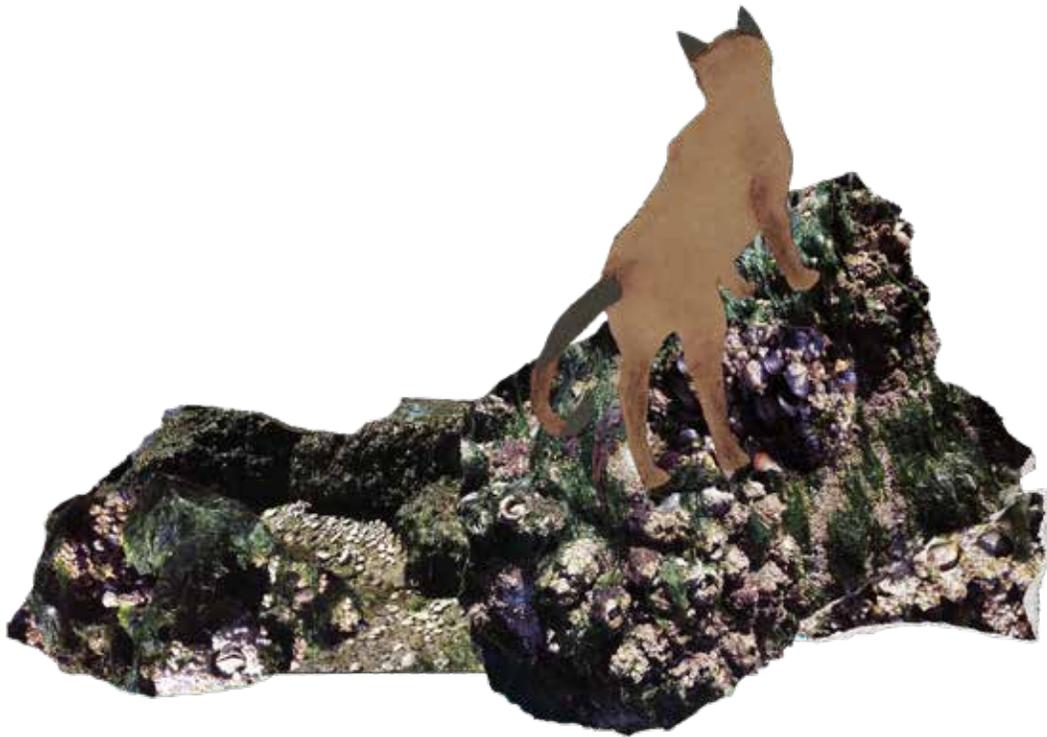
Tides - The rise and fall of the levels of the ocean. They are caused by the gravitational pull of the sun and moon as well as the rotation of the Earth.

Tide Pool - A pool of salt water that is left behind when the tide goes out and in which small sea animals (such as snails, crabs, and barnacles) are often found. ([click here](#) to be redirected to Seattle Aquarium's website information)

Critical Thinking Section

This section focuses on social-emotional learning in relation to self-esteem, loneliness, bullying, and keeping a healthy world.

- Is being alone and being lonely the same thing? How do you feel when you are lonely?
- Can you think of a time when someone helped you when you felt lonely? Did you feel better?
- What are some ways you can help others when they feel lonely?
- Discuss the value and importance of friendship. How do friends support each other?
- What is respect? How do you show respect to people? Animals? Plants?
- Sometimes people who are very lonely or don't like something about themselves hide how they feel by bullying others. What is the impact of bullies? How can you avoid being a bully to people as well as to nature?



Visit a Tide Pool

Research online to find nearby tide pools or aquariums that mimic tide pool habitats that you can visit. This would be a good opportunity for a class to see and learn more about tide pools, from what they are to what animals live there. Educators can visit [Seattle Aquarium Teacher Resources](#) for more information.

Tide Pool Etiquette: Follow these guidelines to keep yourself and the animals on our beaches safe.

- Walk carefully; there is life beneath your feet.
- Touch gently with one wet finger.
- Observe animals where they are and avoid picking them up.
- Only move rocks that are small enough to be moved with one hand.
- Carefully return rocks to exact position you found them in.
- Do not remove anything natural from the beach. Many of the beaches are protected by law, and the items found there are usually homes for other animals and/or are vitamins for the beach.
- Carry a small garbage bag to pick up trash.
- Students will naturally be drawn to animal life and its paraphernalia. We also like to look at empty shells on the beach and talk about hermit crabs and the need to leave shells on the beach for them.
- For the older kids, crabs and echinoderms are great for talking about different kinds of symmetry (vertical, horizontal, radial), or shapes and colors for the younger students. Most students seem to engage with the idea of camouflage as well.

At the tide pool, encourage students to take a silent moment looking at a specific focused area, approximately two feet by two feet.

- What's going on in this section of tidepool? Teachers should paraphrase each student's comments neutrally.
- What do you see that makes you say that? Teachers should encourage students to provide evidence for what they see.
- What does this [insert subject] remind you of?
- What does this [insert subject] make you wonder about?
- What more can we find? Teachers should thank each student for their comments and encourage further exploration.
- Tell me about the color and texture of the living things that you can see. How does their color and texture help them?
- Did you find different animals/algae near each other? How many? Why might that be?
- Are the organisms alive? How can you tell?
- Why is this a good habitat for that animal/algae?

- How does this animal move/eat/protect itself?
- Use one gentle finger to touch. How do you think this will feel? Is it what you expected it to feel like?
- Use your senses (except for taste!). What do you see? What do you hear? (Listen for barnacles!) What do you smell?
- Where along the beach do you find the different animals/algae? Up shore? Near the water line?
- What will happen to the living things in this tide pool when the tide comes in?
- Focus on one creature.
- Where do you think this creature lives?
- Who eats it? What does it eat?
- How do you think low tide/high tide affects the life of this creature?
- How do you think we affect these animals?
- What are some things that you have in common with this animal?
- Does this animal remind you of any other animals? Why? Could you sort them into groups of similar animals?
- (If students are ELL) This is called a [insert subject] in English. Do you call it something different? Tell me another word for it.
- After visiting the tide pool, return to the library and research the following:
 - What are the different zones?
 - How do the animals differ in the different zones?
 - Are some animals better adapted than others?
 - How do humans interact with and affect the intertidal zone?
 - Research the role the moon plays in creating tides. Why do we get two high tides and two low tides when most coastlines only experience one?



Make Your Own Catastrophe the Cat and Naimonee the Sea Anemone!

Follow the steps below to bring these two friends to life in the classroom. You can print out the templates, trace them onto colorful construction paper, or decorate them however you want.

You will need:

- Cat and sea anemone templates
- Scissors
- Hole puncher
- Brads



To start:

1. Using scissors, cut out the templates for the cat and/or the sea anemone.
2. Take the hole puncher to punch out holes of the circles on the templates.

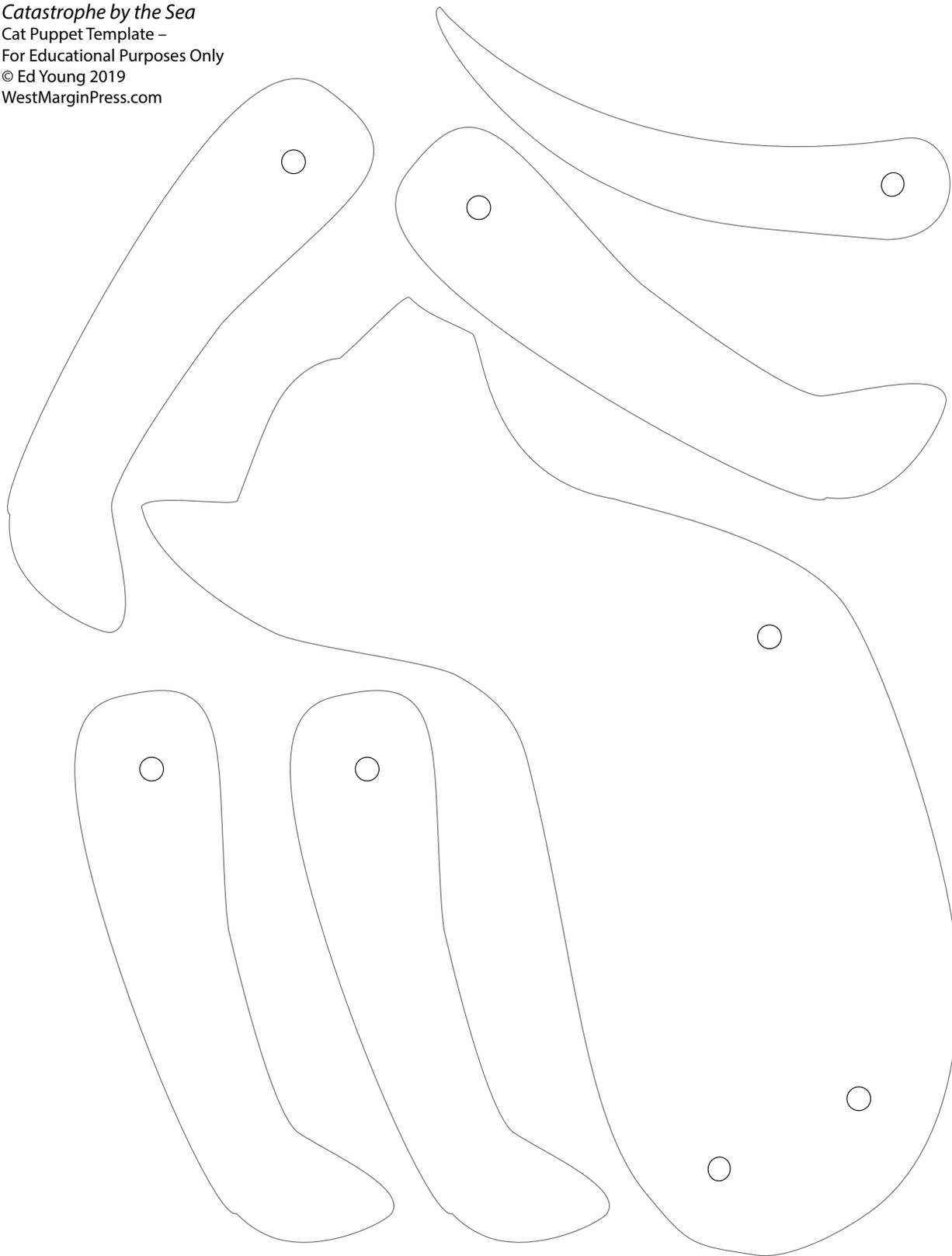
To assemble the cat:

1. Starting with the front legs, place one leg on top of the body and one below the body. Line up the holes, and attach together with a brad.
2. Repeat with the hind legs. Place one leg on top of the body and one below. Line up the holes, and attach together with a brad.
3. Place the tail above the legs, lining up the holes again. Attach with a brad.

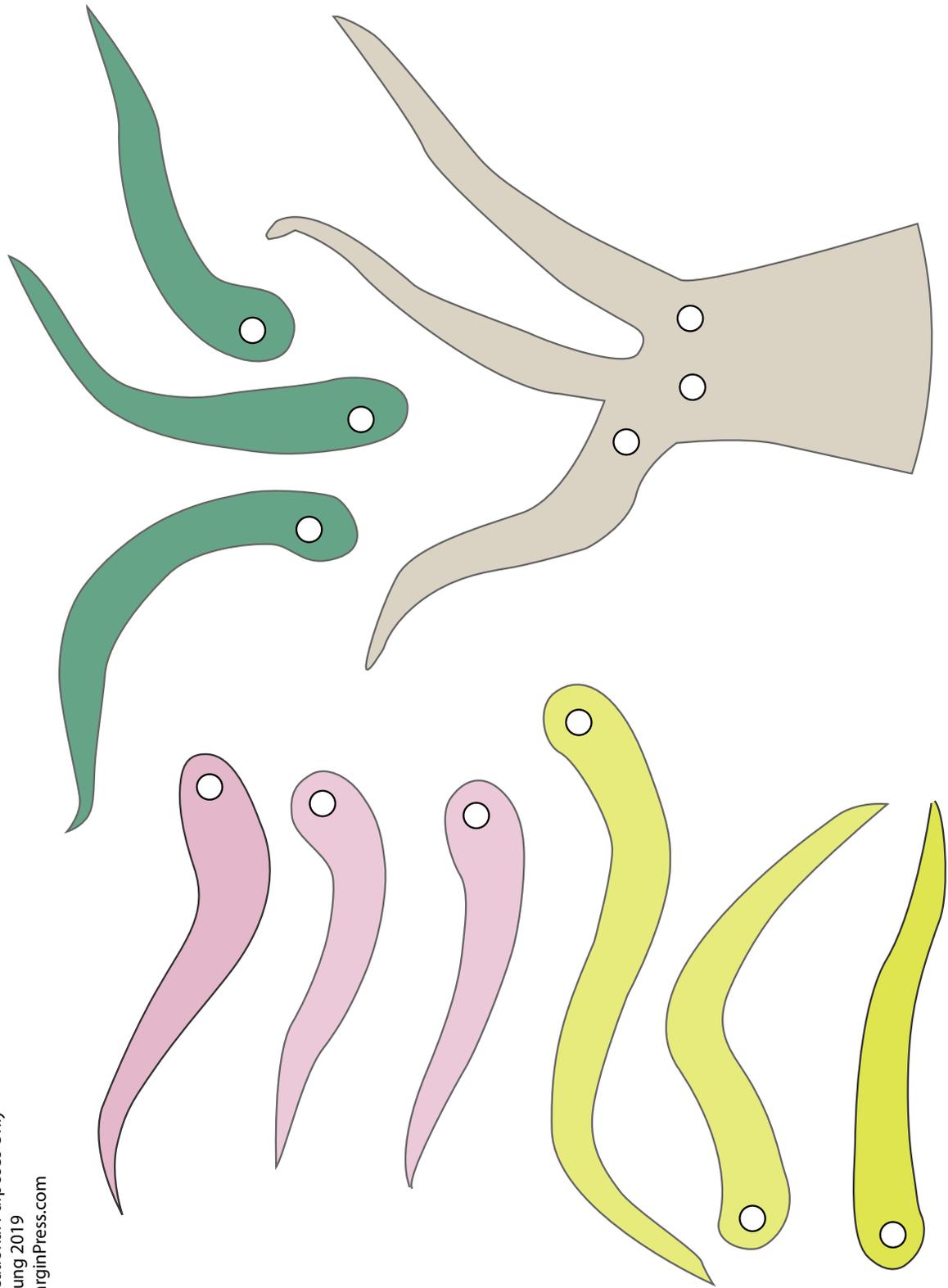
To assemble the sea anemone:

1. Starting with the pink tentacles, line the holes up with the top left hole on the body. Attach together with a brad.
2. Repeat with the yellow tentacles, lining the holes up with the middle hole on the body. Attach together with a brad.
3. Lastly, take the green tentacles and line up the holes on the right hole on the body. Attach together with a brad.

Catastrophe by the Sea
Cat Puppet Template –
For Educational Purposes Only
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Catastrophe by the Sea
Anemone Puppet Template –
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Additional Resources

Visit your local Aquarium and explore the tidepools and watch the Beach visit guidelines.

<https://youtu.be/MaI5HB5O6Zo>

Schedule a Hands on Tidepool class at the Seattle Aquarium or at an aquarium near you.

<https://www.seattleaquarium.org/education-programs#visit>

Visit with a beach naturalist at your local beach.

<https://www.seattleaquarium.org/events/meet-us-beach-low-tide-beach-walks-9>

Learn more about the animals.

<https://www.seattleaquarium.org/animals/all>

