

GET TO KNOW

Salmon Sharks



What to expect from this educational packet

Through this worksheet you will:

- Learn about the life history of salmon sharks, their relatives and their role in the ecosystem
- Explore Indigenous cultural connections
- Do some fun activities including drawing, crosswords and word searches
- Reflect on what you've learned with our discussion questions

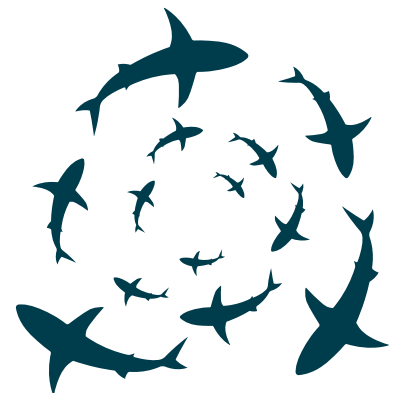
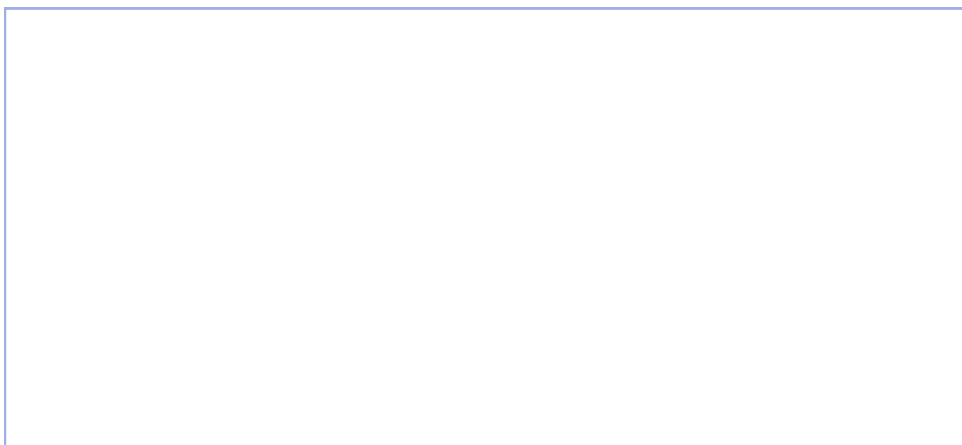
Introduction

Sharks have a bad reputation, especially salmon sharks. People often associate them with shark attacks, when in reality there are only about 60 shark attacks per year worldwide. On the flip side, humans kill about 100 million sharks annually. Salmon sharks have never been associated with a shark attack but many people still consider them to be scary animals. This is likely because they are sister species to great white sharks and mako sharks.

These sharks are resilient and adaptable beings who are caretakers and protectors of the systems they inhabit. Through this packet we will learn more about the gifts of salmon sharks, why they are important for ecosystems, and sharks' importance to First Nations. We hope that through learning together, we can help to dispel their scariness.

What do you you know about sharks?

Write down some things you already know about sharks in the space below. Come back to this at the end of your learning to see what you can add!



All about salmon sharks



Where do they live?

Salmon sharks (*Lamna ditropis*) primarily live in the North Pacific Ocean, from the Bering Sea to British Columbia down to southern California, and from Japan to the Aleutian Islands. They are highly migratory and may spend the spring and summer in more northern areas, then migrate south to breed.

They inhabit coastal and oceanic waters, often near the surface, where they can find their prey! They get their name from their diet, which is largely made up of Pacific salmon. They also eat sea otters, birds, squid, sablefish, herring, lancet fish, mackerel and a variety of other fish. Unlike most fish, salmon sharks are endothermic, which means that they can regulate and maintain their core body and stomach temperatures well above the surrounding water temperature. This gives them extra power and speed when swimming!



What are salmon shark families like?

Salmon sharks are ovoviviparous, which means that female sharks lay eggs and keep them inside their body until the gestation period has passed, after which they give birth to live young! The gestation period is the length of time that the female shark carries their developing young pups in their uterus before giving birth. Salmon sharks have a gestation period of about 10 months, and their litter sizes range from 2-5 pups. Salmon sharks give birth once every 1-2 years, usually in the late summer to autumn. The young sharks are completely independent from birth.

Salmon sharks are relatively solitary but may gather in areas with abundant food sources, particularly during the salmon run! They can live as long as 25 years.



Who are salmon sharks related to?

Lamnid sharks belong to the family Lamnidae, also known as mackerel sharks. These relatives are large, fast-swimming fish found in oceans around the world. Generally, they have large, stout bodies. They have a pointed snout and a large mouth at the bottom of their head. These sharks are fast and powerful. They are unique in their ability to maintain their core body temperature above that of the surrounding water, which enables them to swim faster and with more strength and endurance than other fish without this ability.

There are four other sharks in the Lamnidae family, closely related to the salmon shark: The great white shark (featured to the left), the shortfin mako shark, the longfin mako shark and the porbeagle shark.



What role do they play in the ecosystem?

Salmon sharks play an important role in maintaining the natural ecosystem. They are apex predators, which means they do not have a natural predator of their own. Salmon sharks maintain local fish populations with their diet. Many sharks don't only eat healthy fish, they also will eat fish that are sick and dying. By doing this, sharks contribute to a healthier ecosystem, where disease is not spread amongst fish. This can help bolster populations for generations to come! By maintaining predator and prey populations, nature can maintain a delicate balance that preserves biodiversity and encourages adaptability.

How does climate change impact salmon sharks?



Warmer ocean temperatures due to climate change will impact the migratory patterns of sharks. Lamnidae sharks do not have endothermic capability when they are young, and only develop it when they are in adulthood. This means that young sharks rely more on warm ocean water than adult sharks. This could explain why there are now more salmon sharks in arctic areas than before.

Endothermic capability means that these sharks can keep their body temperature warmer than the surrounding water! This gives them the advantage in cold water, as they have greater metabolism and stamina than the surrounding fish. However, if the water around them also heats up, they have to exert more energy to deliver oxygen throughout their bodies.

Exploring Indigenous cultural connections

When learning about ecosystems and the plants and animals that inhabit them, we believe it is equally as important to understand the ways humans have lived in relationship with these lands and beings since time immemorial. Indigenous stewardship has adapted in many ways with increased climate impacts across the landscape. Sierra Club BC aims to honor Indigenous voices and to ensure that unique Nations and worldviews are respectfully acknowledged.

While we've shared some publicly available resources below as a starting point, it's best to engage with local Indigenous communities. Each Nation has distinct perspectives, cultures and governance systems, meaning that different communities will have different relationships with beings like sharks. Many Nations have websites with a wealth of publicly shared knowledge that you can check out, or you could attend a public event hosted by the community. If you don't know whose territory you live on, you can visit Native-Land.ca to learn more.



This next section includes website links for deeper learning. To explore these resources, please visit sierraclub.bc.ca/salmon-shark-resource



Haida story of Dogfish Woman

Sharks exist in stories and symbols throughout many First Nations. Haida iconography of the Dogfish (a kind of shark) crest and Dogfish woman exist in many places. However, this story is lost to time. You can read more about it [here](#) or with the QR code above.

A Mi'kmaq story about the *keegunibe*

Read this Mi'kmaq story about ["a ferocious fish."](#)

Indigenous stewardship is critical to the health of oceans

Pacific salmon populations are decreasing along the B.C. and Yukon coastline. The loss of these species has rippling effects on salmon sharks and other predators and prey in the ecosystem. [This article](#) talks about how Indigenous stewardship is critical for the health of ocean communities.

Activities

Watch a tutorial
on how to draw
salmon sharks!



Draw salmon sharks!

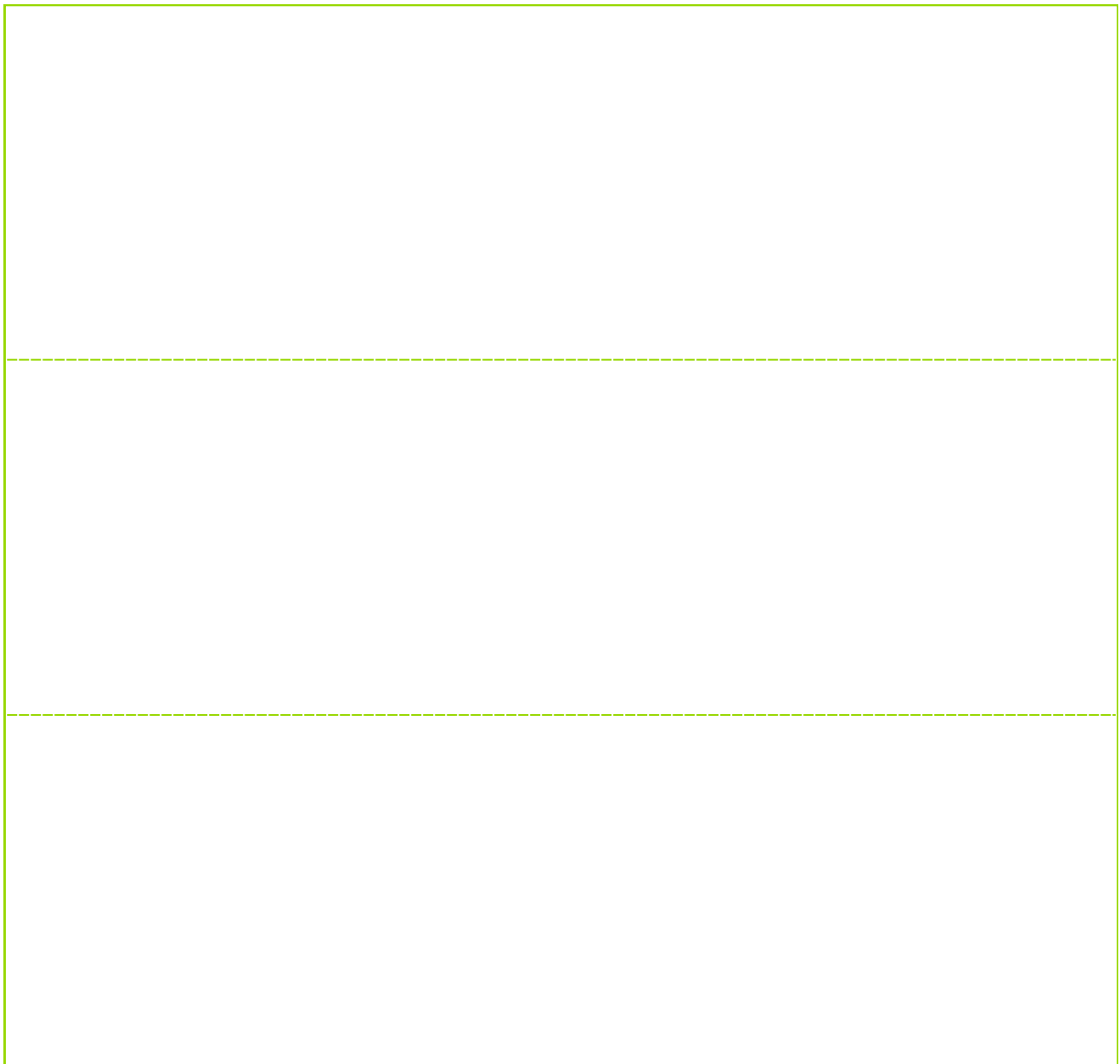
With this activity, we encourage you to draw salmon sharks and their ocean home. If you'd like a tutorial, we invite you to watch our *Learn to Draw Salmon Sharks* lesson with the QR code above or visit sierraclub.bc.ca/draw.

Make a conservation brochure!

In the space below, can you make a brochure for salmon shark conservation?

Instructions:

1. Cut out the box below and fold along the dotted lines (or you could use a blank page and fold it into thirds).
2. On one panel: Describe the salmon shark, include myths and truths about the species
3. On the middle panel: Describe where the salmon shark can be found and what it eats
4. On the third panel: Describe how we can protect these sharks
5. Include some lovely drawings on the remaining front two panels!
6. Send an image of it to us at education@sierraclub.bc.ca so that we can see your incredible artwork!



Salmon Shark

WORD SEARCH

L I C W E C L I M A T E A V N R F V O Y
N T C K R J L A M N I D A E M R B J L N
W E Y B R B U V T W W H D K Y E K N U C
P Y B Q D V T W S Q B O D L P P W T O O
C D U M P Y G S P R Z J H A T R M P C A
M I P N P M S R Y Z H W Y D L O U A W S
L A M N A D I T R O P I S U G D R C J T
B W U C L Y Y P R E Y A C L F U E U X A
S U S O T P C Z V R L O W T M C N D M L
N T H R L I F E C Y C L E E G T O K K H
I P P J C A V Y F V M A M U O I R Z T I
B K Q D R P U X S H A R K N N O T W C O
Z I N O M D G F A B J V W X Q N H M E C
B F J W D R F T M M X Z I F P L P D U H
E L I P A Q E G B C Z A C G X U A Z Z O
M F W S F O O D C H A I N P E Z C R C G
R Z B A H X J E N D O T H E R M I C D L
M P R E D A T O R D J L I Y V Q F Z R G
T D T R U P F H I L N E D C R A I P T V
I F H Z M E I X M P S M Z X F K C H Z J

Prey: An animal which is food for another.

North Pacific: Part of the Pacific Ocean that lies north of the equator.

Adult: A fully grown or developed being.

Endothermic: An animal that can generate its own heat.

Predator: An animal that lives by killing and eating other animals.

Fish: Cold-blooded vertebrate animals with gills and fins that live their whole lives in water.

Life cycle: The series of changes in the life of an organism.

Lamna ditropis: The scientific name for salmon sharks.

Climate: Weather conditions prevailing in an area over a long period.

Lamnidae: The family of mackerel sharks known as white sharks.

Shark: Marine cartilaginous fishes of medium to large sizes.

Food Chain: A series of organisms that eat one another so that energy and nutrients flow from one organism to the next.

Coastal: Near a coast.

Reproduction: The action of producing an offspring.

Salmon: A family of large anadromous fishes.

Ecosystem: A biological community of interacting organisms.

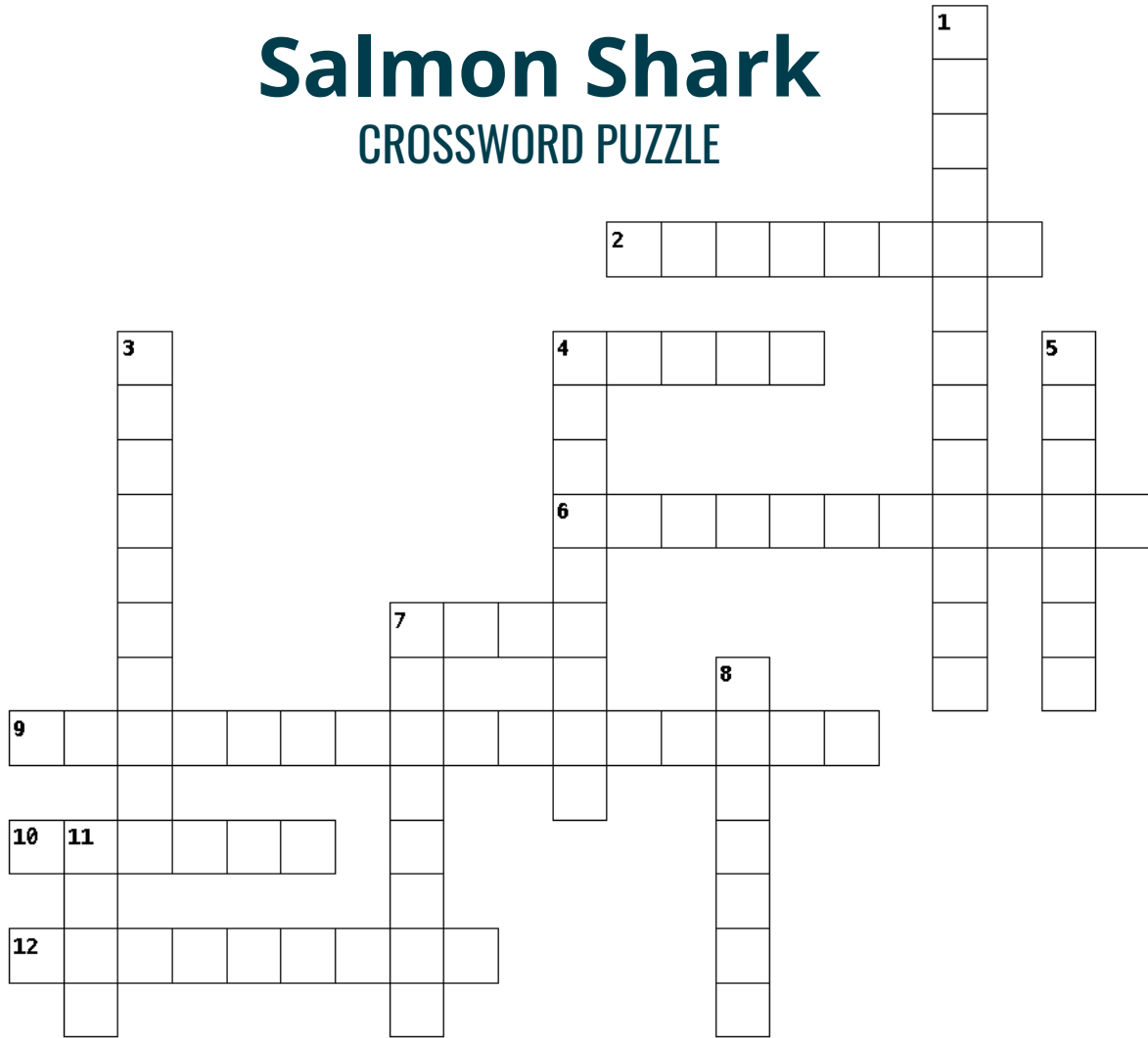
Oceanic: Of or related to the ocean.

Water: A liquid formed from two hydrogen and one oxygen molecule.

Temperature: The degree or intensity of heat.

Salmon Shark

CROSSWORD PUZZLE



Across

2. The scientific species for salmon shark, meaning "two keel".
4. The scientific genus name for salmon shark, translated from Greek as "a voracious fish".
6. The ability of an organism to maintain a constant body temperature regardless of their ambient temperature.
7. Organisms that are hunted and killed by other organisms for food.
9. The ability of an organism to maintain a core body temperature.
10. The type of fish that salmon sharks primarily feed on.
12. The process or period of developing inside the womb between conception and birth.

Down

1. A mode of reproduction in which animals lay eggs and keep them inside the mother's body until hatching.
3. A second, short ridge running along the upper part of the lower lobe of the salmon shark's tail.
4. A series of developmental stages animals go through throughout life, beginning with fertilization and ending with death.
5. The primary ocean that salmon sharks live in.
7. Organisms that hunt and kill other organisms for food.
8. To pass, usually periodically, from one region or climate to another for feeding or breeding.
11. A type of predator at the top of the food chain, with no natural predators of their own.

Answers: 1. Oviparous, 2. Deltoid, 3. Double keel, 4. Lamna, 5. Pacific, 6. Poikilothermic, 7. Prey, 8. Migrate, 9. Thermoregulation, 10. Salmon, 11. Apex, 12. Gestation

Discussion questions

Write down your thoughts and reflections to the questions below.

- We are all connected. How are you connected to sharks and their habitats?
- Look at the drawings and images of salmon sharks on previous pages. What about this shark is unique? What can we learn from this being?
- Many plants and animals are lost from our communities because of climate change. How might the salmon shark be impacted by a changing climate?
- What are the repercussions if a species becomes locally extinct? How can we fix this?
- How can we learn from leaders in shark conservation? In what ways can we show dedication, creativity, and persistence in our daily lives?
- What are our responsibilities in protecting shark habitat?
- Some sharks travel incredible distances to increase their chances of survival. What lessons can we learn from these beings?
- What is a belief or worldview that is dissolving in you to make room for a caring future?
- What messages do you receive about sharks? How can we dissolve untruths about shark species?

Keep learning with us!

We wanted to express our sincere gratitude to all those who helped breathe life into this work.

To explore our resource list and additional learning materials, we invite you to visit sierraclub.bc.ca/salmon-shark-resource

