

COLOR and Learn

all about

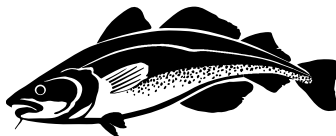
Sharks
of

Massachusetts

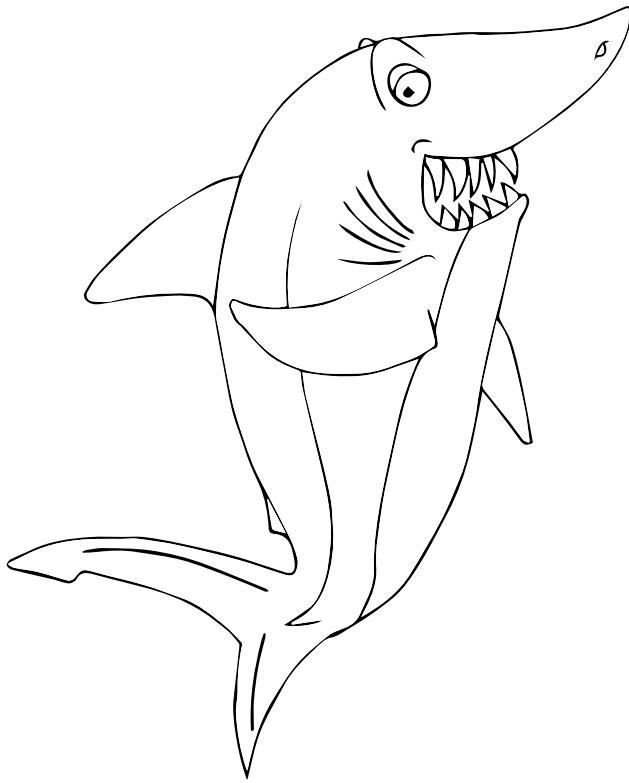
This book belongs to: _____



Marine Fisheries
Commonwealth of Massachusetts



What is a shark?

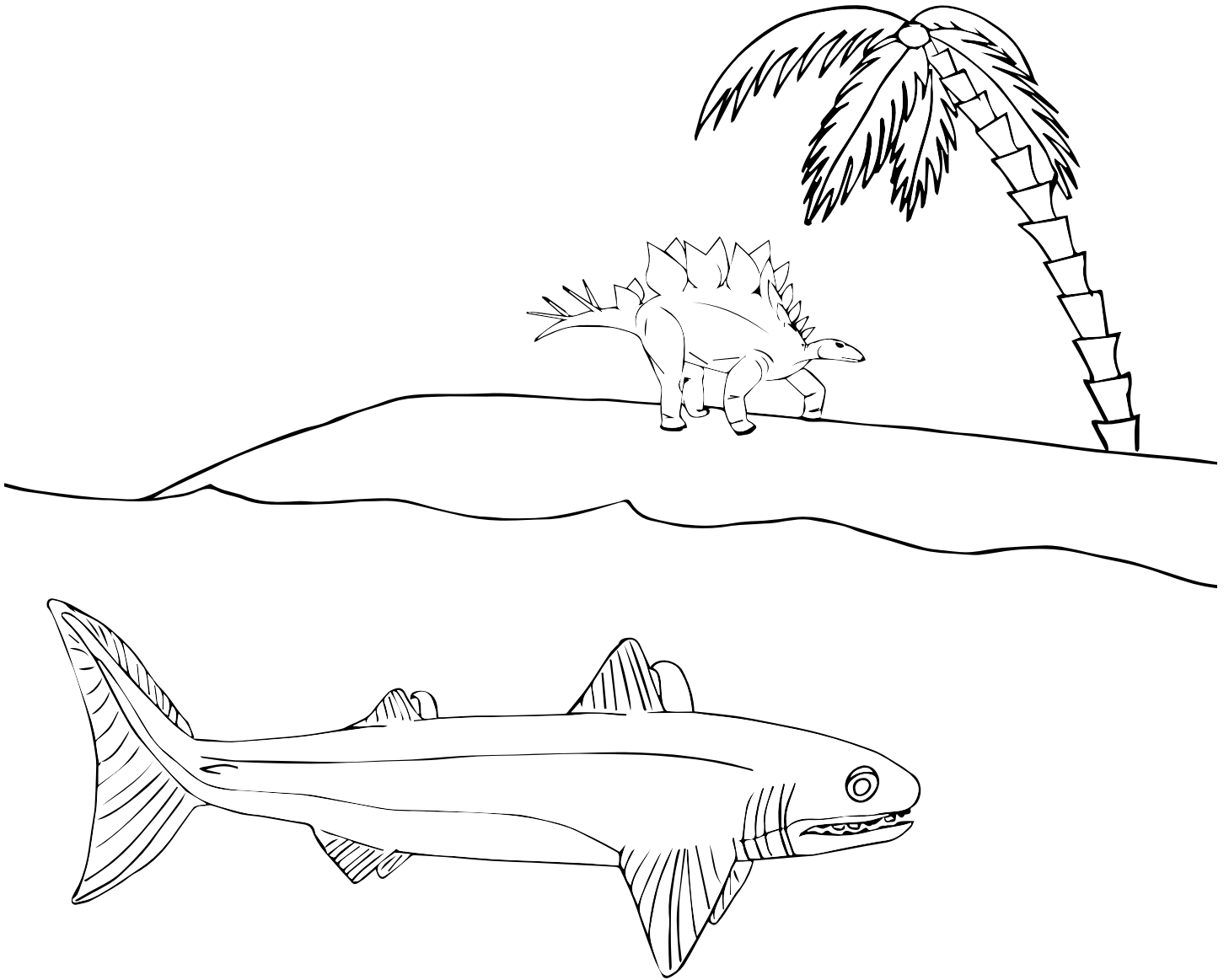


Sharks are a kind of fish. They are **animals** that have **vertebrae** just like you and me! Unlike us and most fish, sharks have no bones! Their skeletons are made up of cartilage. Is there anywhere on your body that has cartilage? Your nose, ears, and between all your joints are all places where you have **cartilage**!

There are over 400 **species** of sharks in the world. They live everywhere from very cold waters of the arctic and antarctic to the warm waters in tropical seas. Massachusetts has their very own shark visitors all year around! Let's learn a little more about sharks and which ones visit Massachusetts...



How long have sharks existed?

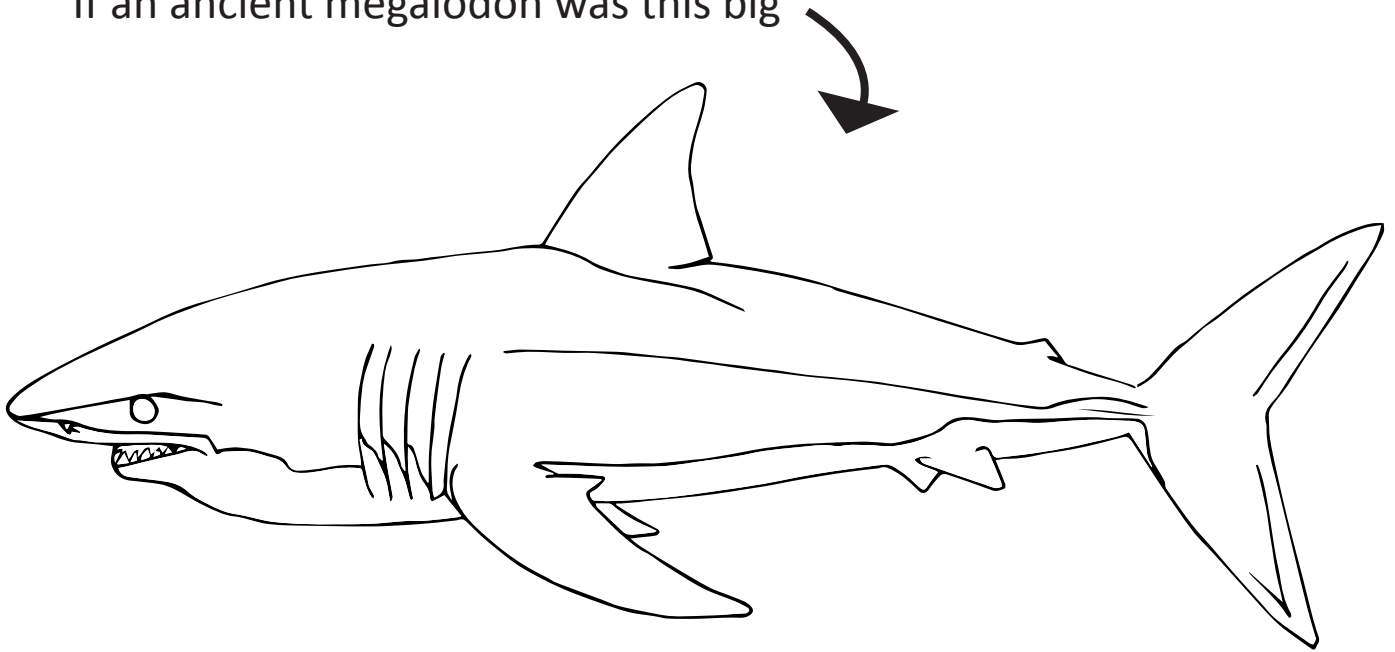


Sharks have been on Earth since before the dinosaurs! Some of the earliest known sharks were called **cladoselache** (clay-doe-SELL-ah-kee). Scientists only know about these animals from fossils they have left behind. These early sharks lived about 370 million years ago. Dinosaurs showed up 230 million years ago and only survived to 65.5 million years ago while sharks are still around today!

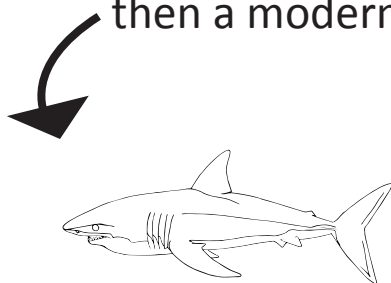
What is a Megalodon?

The most famous extinct shark is the **Megalodon**. It was an ancient shark living 20 to 2 million years ago. Its name means 'big tooth', a good name for a shark that grew to almost 60 feet long! Megalodons lived throughout the oceans and is thought to have looked like a bigger version of the white sharks we see today.

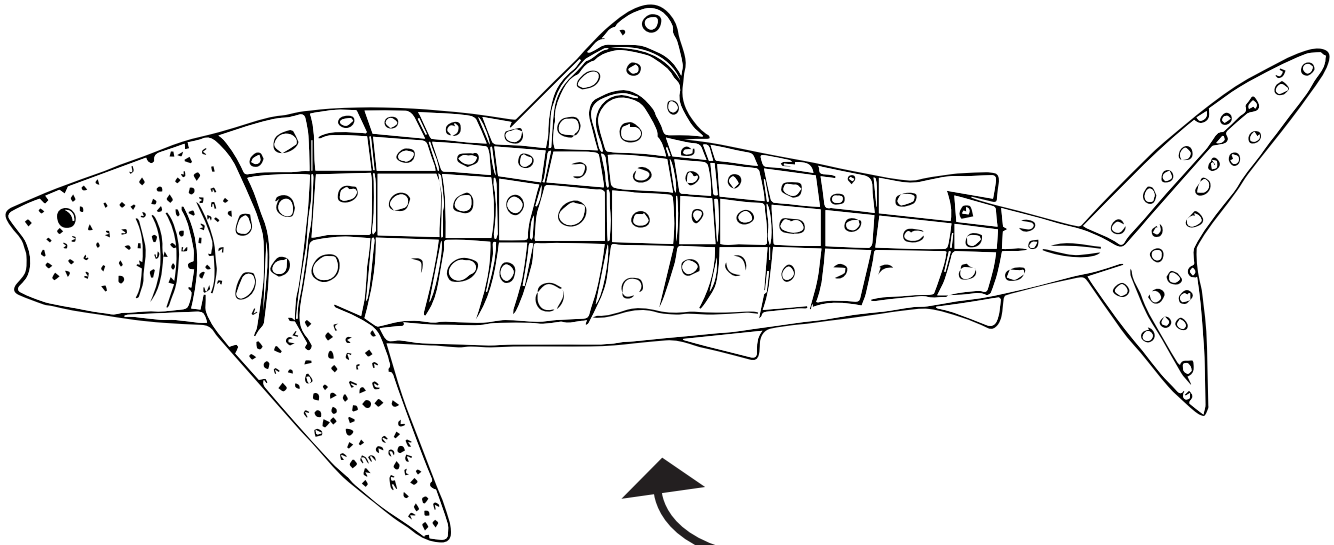
If an ancient megalodon was this big



then a modern day white shark would be this big!

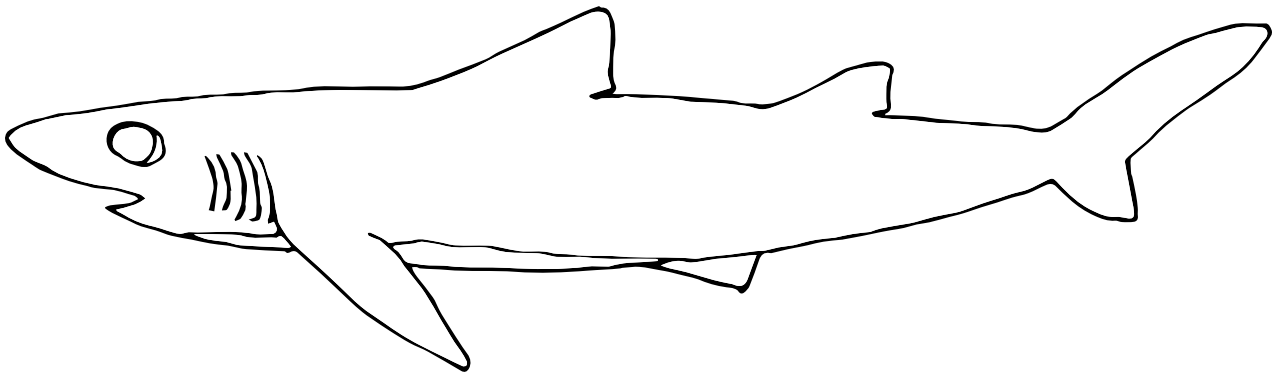


How big do sharks get?



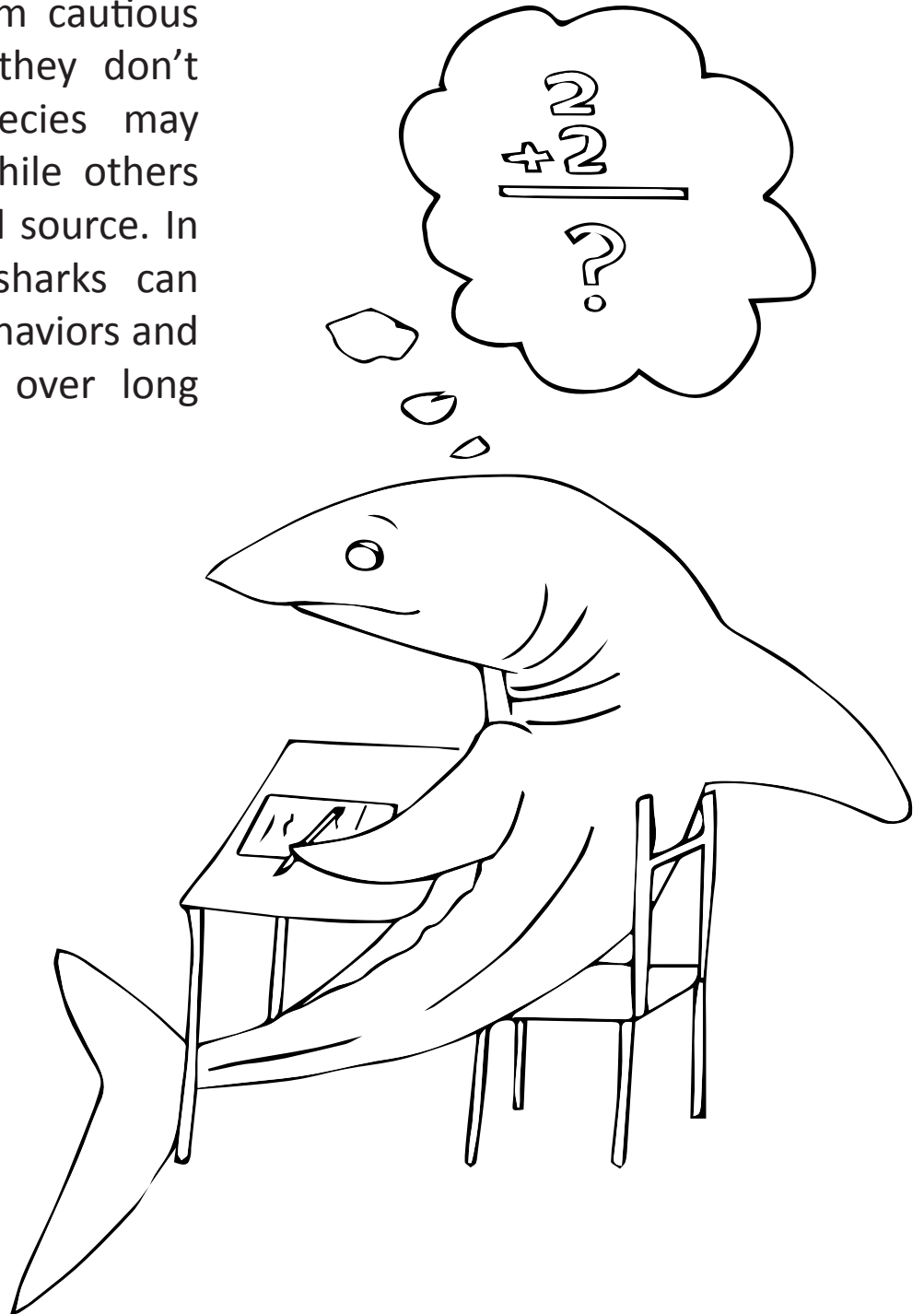
The largest shark in the world is the **whale shark**. It can grow to over 40 feet long!

The smallest shark in the world is the dwarf lantern shark which can only grow to about 8 inches long!

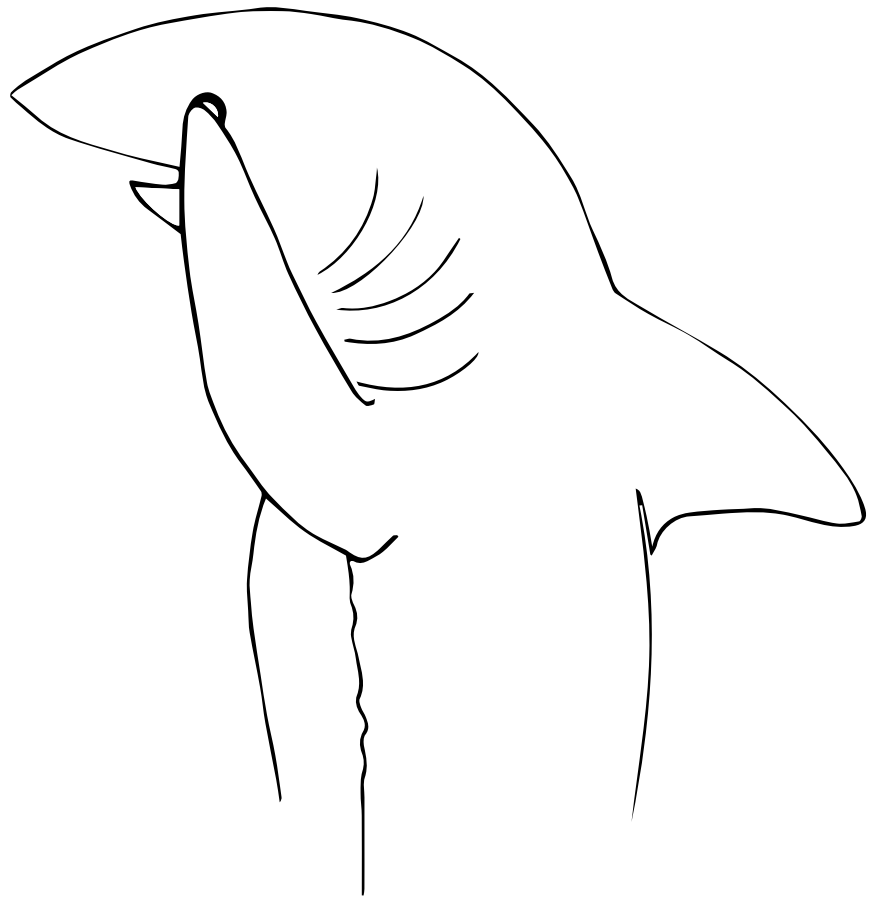
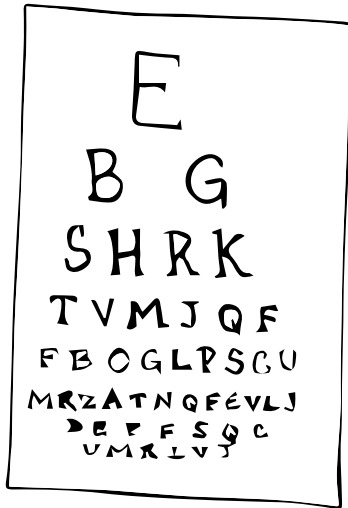


Are sharks smart?

They may not know the state capitals, but sharks aren't just mindless eating machines! Some sharks seem curious while others seem cautious around animals they don't know. Some species may work together while others protect their food source. In captivity, some sharks can learn different behaviors and remember them over long periods of time!

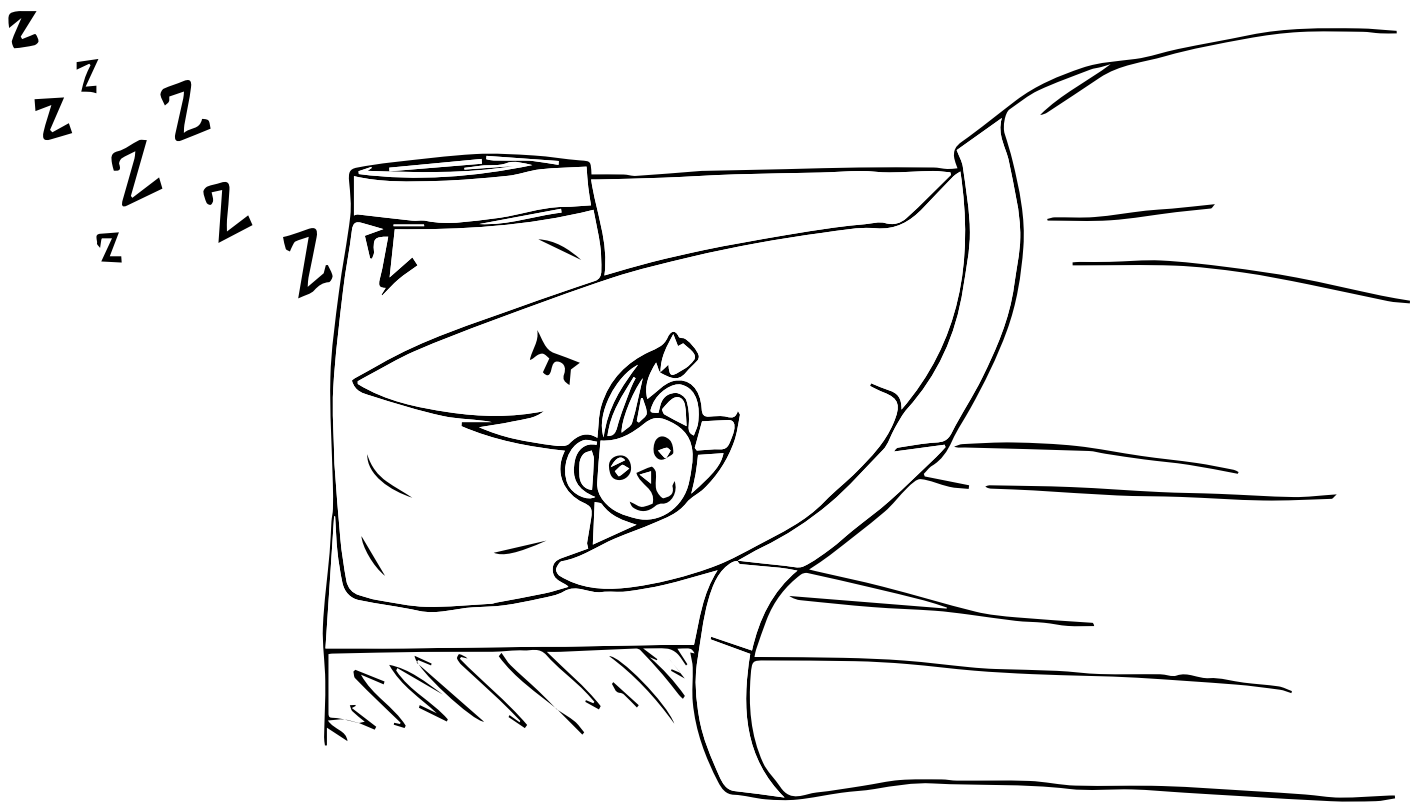


Do sharks have good vision?



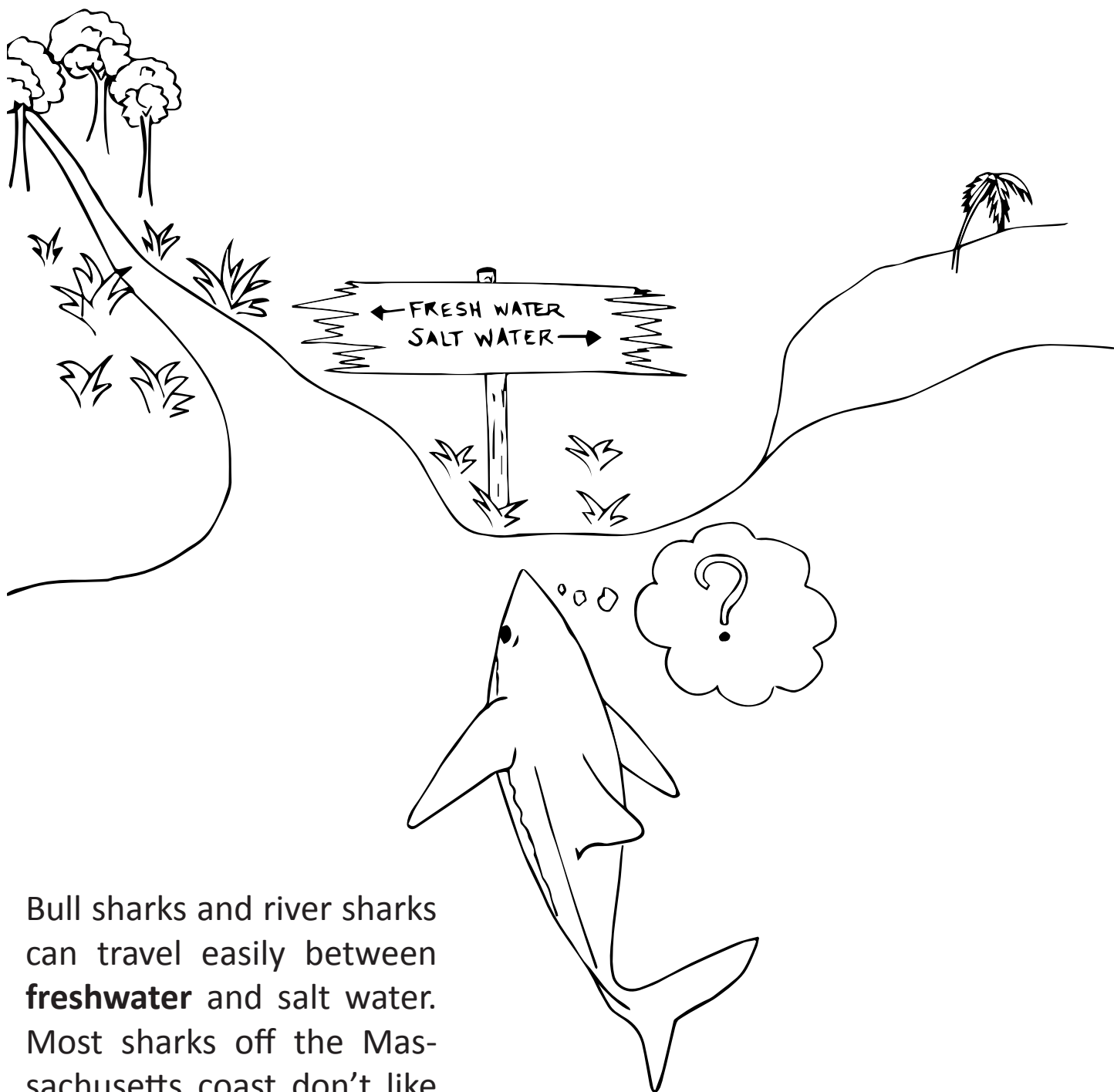
Most sharks can see very well. Some have better vision at night while others have better **vision** during the day. Shark eyes are about 10 times more sensitive than human eyes! They can dilate and contract their pupils, like humans, to help see better!

Do sharks sleep?



While some sharks can lay still and rest, many sharks have to keep swimming in order to breathe. This is called **obligate ram ventilation**. Most sharks rest parts of their brain at a time. They never fully fall asleep like we do!

Can sharks live in freshwater?



Bull sharks and river sharks can travel easily between **freshwater** and salt water. Most sharks off the Massachusetts coast don't like freshwater.

Do sharks have scales?

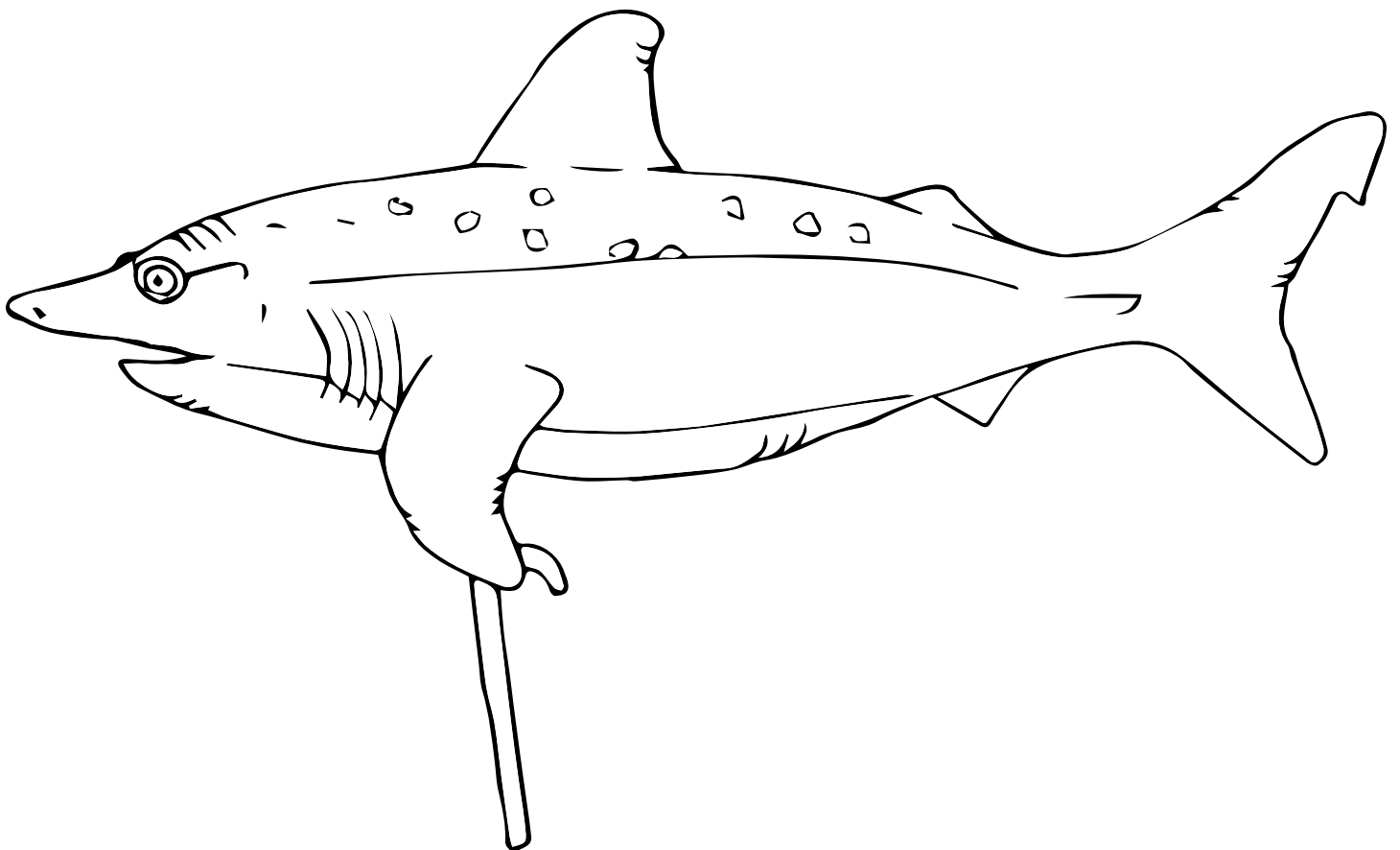
Like most fish, sharks do have scales! They are very small and are called **denticles**. Denticles are like teeth that grow in the skin! These scales help protect sharks and make swimming much easier!



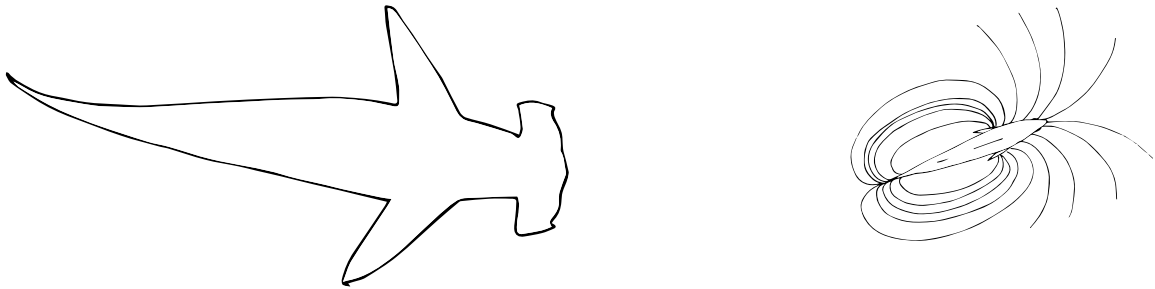
How old do sharks get?



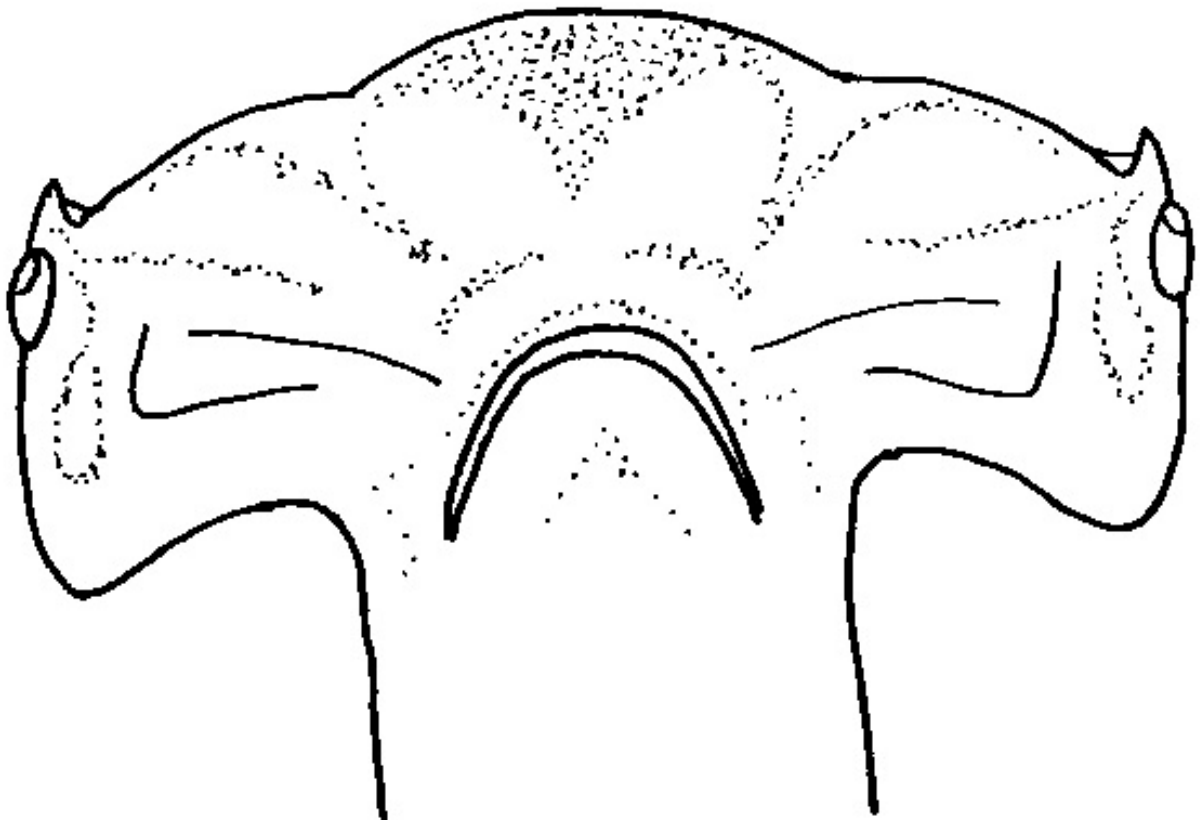
Most sharks live somewhere between 20 and 30 years. Some can live much older than that. Spiny dogfish are known to live to over 70 years while **Greenland sharks** and whale sharks can live to over 100!



Do sharks really have a 6th sense?



We share **five senses** with sharks: sight, smell, taste, touch, and hearing. Sharks have another sense called electroreception. This sense helps sharks find their prey with electricity through the jelly-filled pores on their snouts called the ampullae of Lorenzini.



The underside of a smooth hammerhead showing the **ampullae of Lorenzini**.

Can you find all of the sharks names?

Look up, down, diagonally, and backwards!

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

Basking

Dwarf Lantern

Sandbar

Spiny Dogfish

Blue

Greenland

Shortfin Mako

Tiger

Common
Thresher

Porbeagle

Smooth Dogfish

Whale

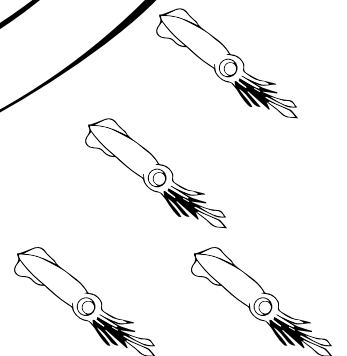
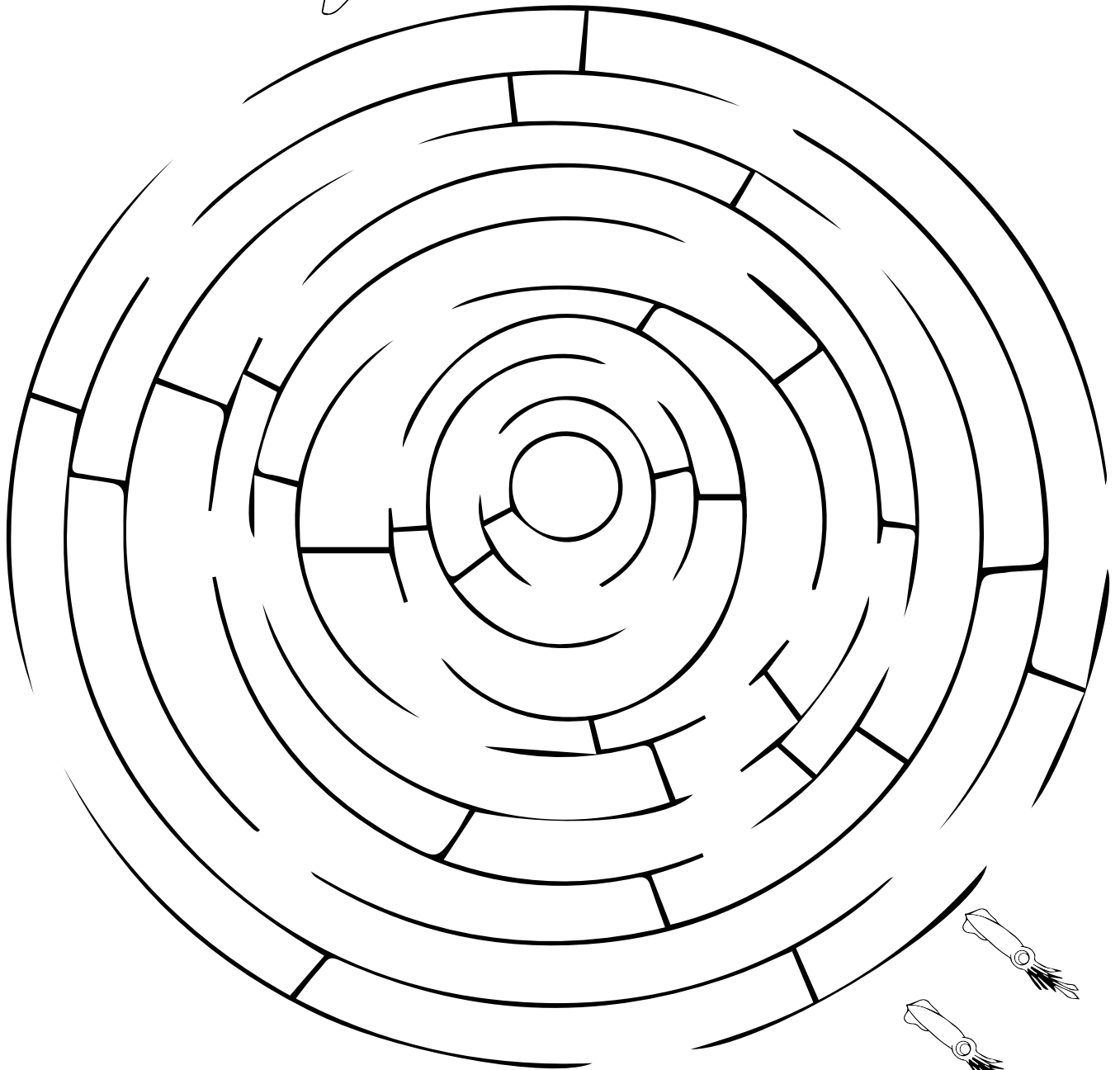
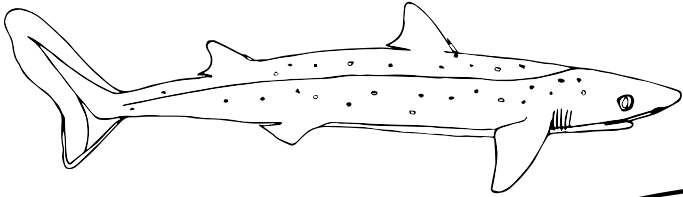
Dusky

Sand Tiger

Smooth
Hammerhead

White

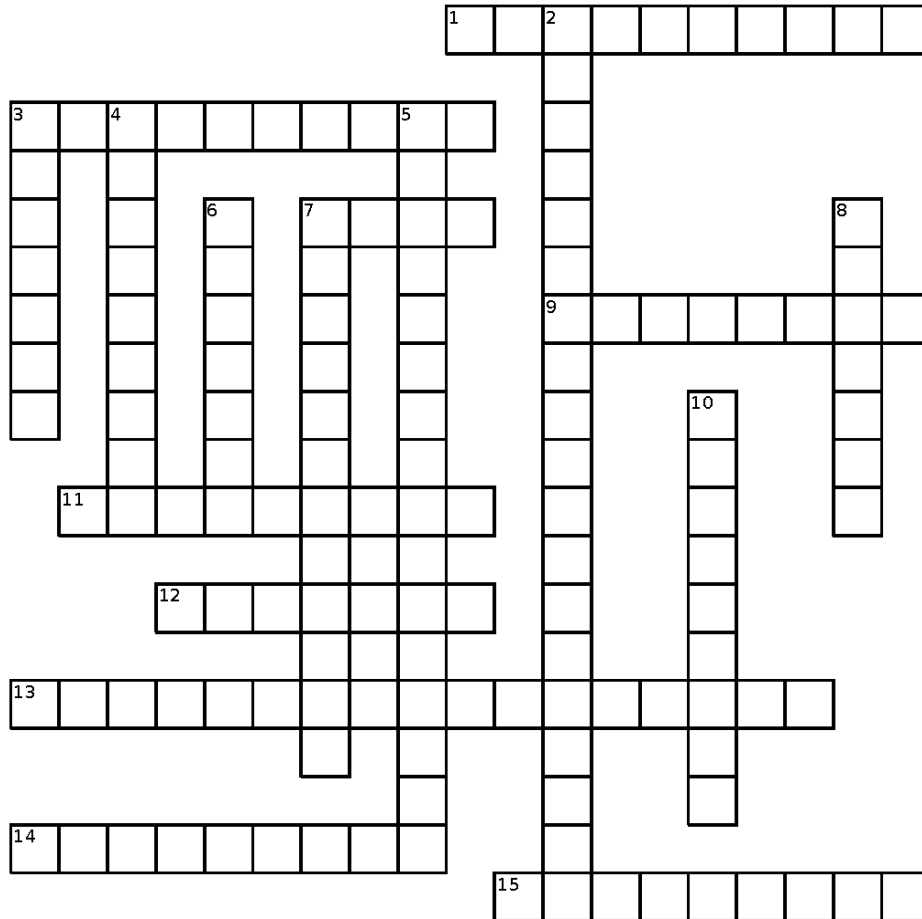
Help the spiny dogfish through
the maze to find the squid!



Crossword

Figure out the clues below to fill in the crossword!

(If you need help, look for the **bold** words in this book!)



Across

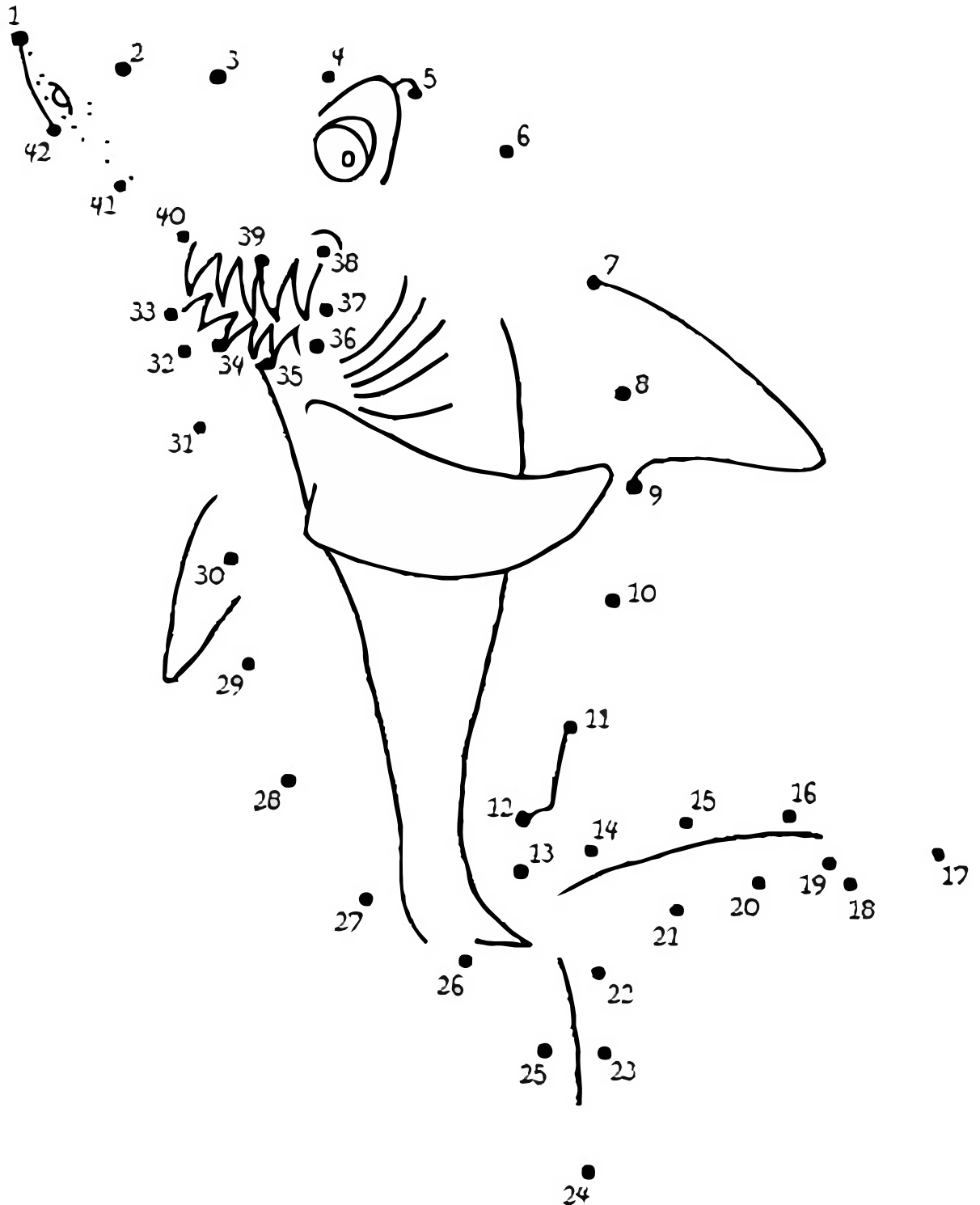
- 1 The largest known modern shark
- 3 Hearing, sight, smell, touch, taste
- 7 What predators hunt
- 9 Massachusetts is on the ____ ocean
- 11 Teeth that grow on a shark's skin
- 12 Generally, a king of animal
- 13 Smallest species of shark
- 14 The largest shark that we know of in history
- 15 Sharks have been around longer than these giant animals that used to rule the land

Down

- 2 Jelly-filled pores on a shark
- 3 We know about Megalodon by finding ____
- 4 Backbone
- 5 Sixth sense
- 6 An animal that is not living on Earth anymore is ____
- 7 The largest modern ocean
- 8 Humans, sharks, and dinosaurs are all kinds of ____
- 10 What our nose and ears are made of, also a shark's skeleton

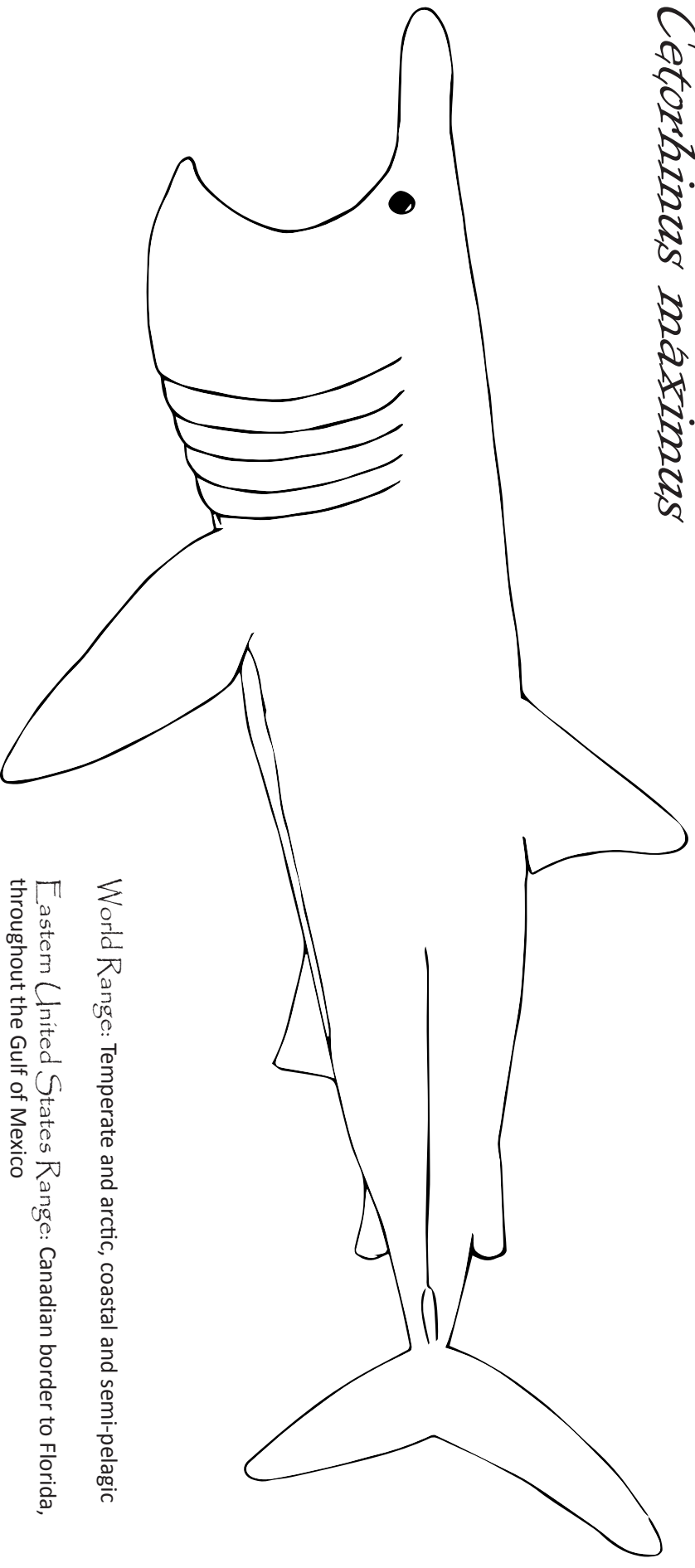
Connect the Dots!

Connect the dots to see Sheldon Shark!



Basking Shark

Cetorhinus maximus



World Range: Temperate and arctic, coastal and semi-pelagic

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Up to 40 feet long, second largest fish after the whale shark!

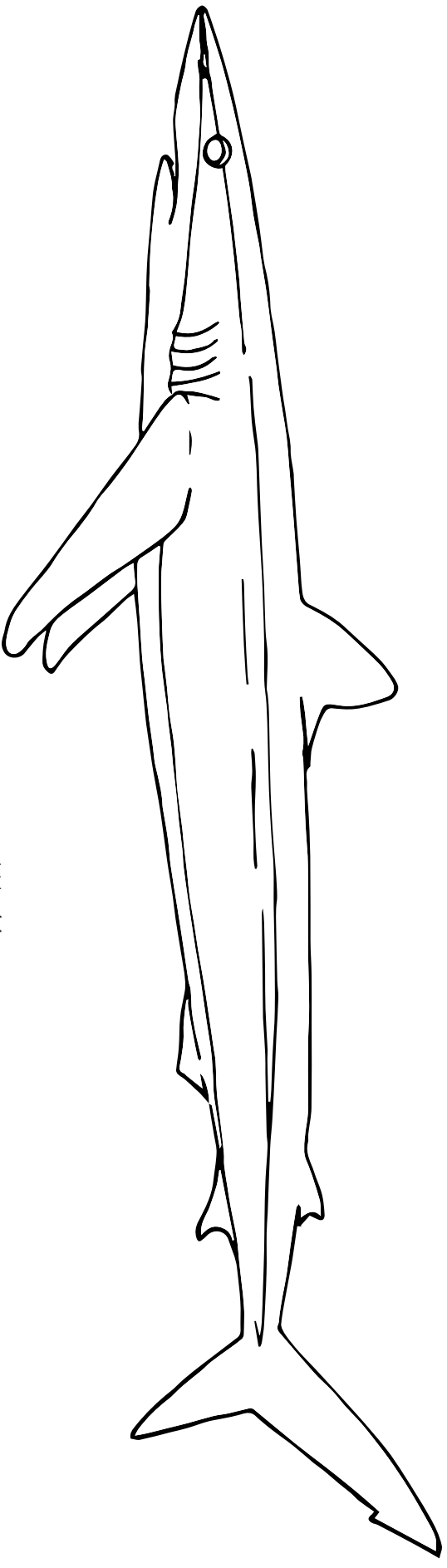
Color: Light brown to dark gray or black on top; the same color to almost white on the belly

Food: Filter-feed on zooplankton (small animals drifting in the water like fish eggs and young fish and crustaceans)

Predators: No known predators

Blue Shark

Prionace glauca



World Range: Temperate and tropical pelagic

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Over 12 feet!

Color: Dark, vivid blue on top; bright blue on the sides; white underneath

Food: Smaller bony fish like herring and sardines, invertebrates like squid and octopus

Predators: White shark, shortfin mako

Common Thresher

Alopias vulpinus

World Range: Temperate and tropical, coastal and pelagic

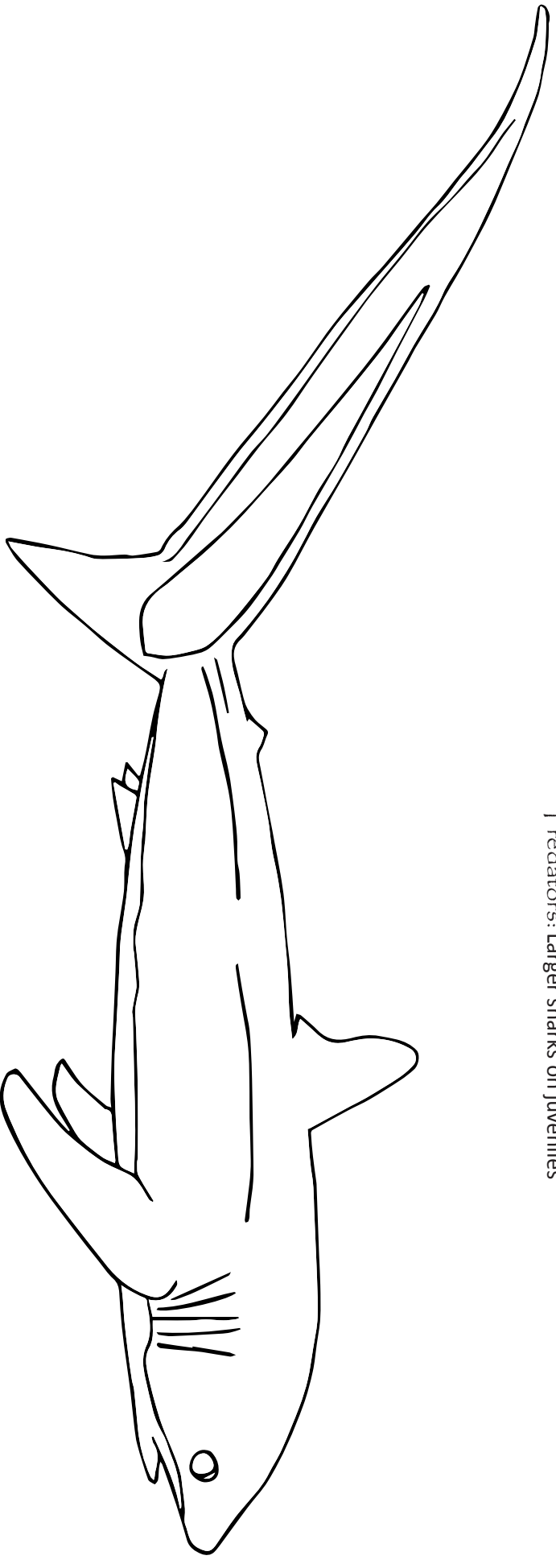
Eastern United States Range: Canadian border to Florida and into the Gulf of Mexico; mostly found in New England waters

Size: Up to 20 feet; half their length is their tail!

Color: Dark brown to gray on top; white on the belly

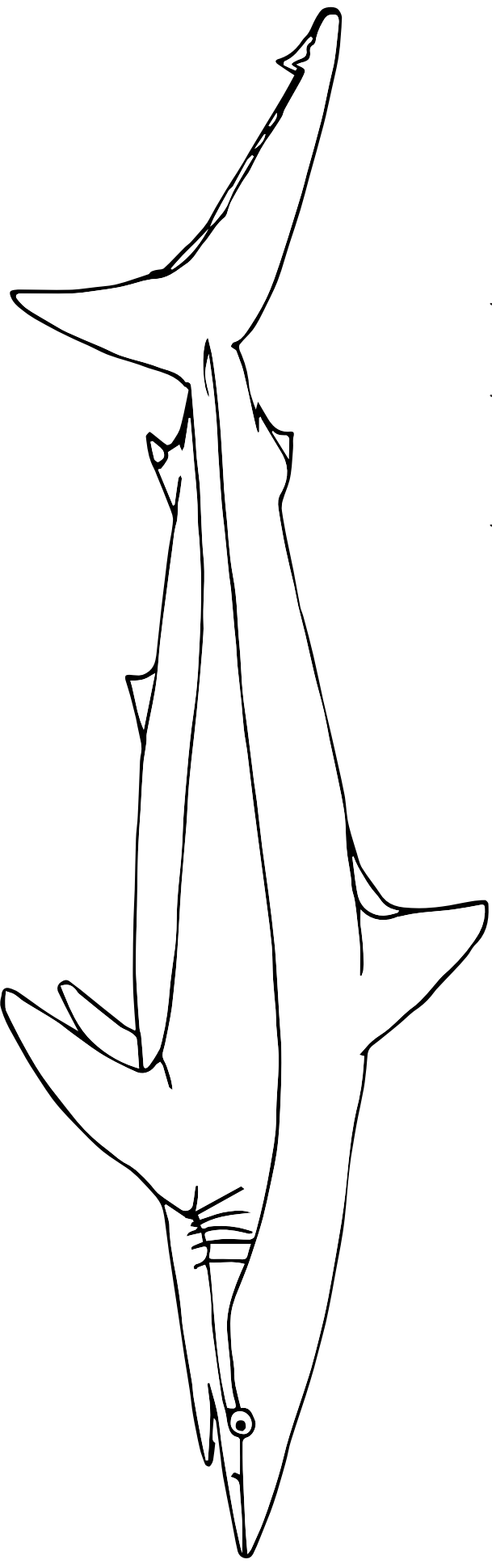
Food: Squid and schooling fish like menhaden, herring, and mackerel; they stun prey with their tails!

Predators: Larger sharks on juveniles



Dusky Shark

Carcharhinus obscurus



World Range: Temperate and tropical, continental coastlines

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Over 12 feet!

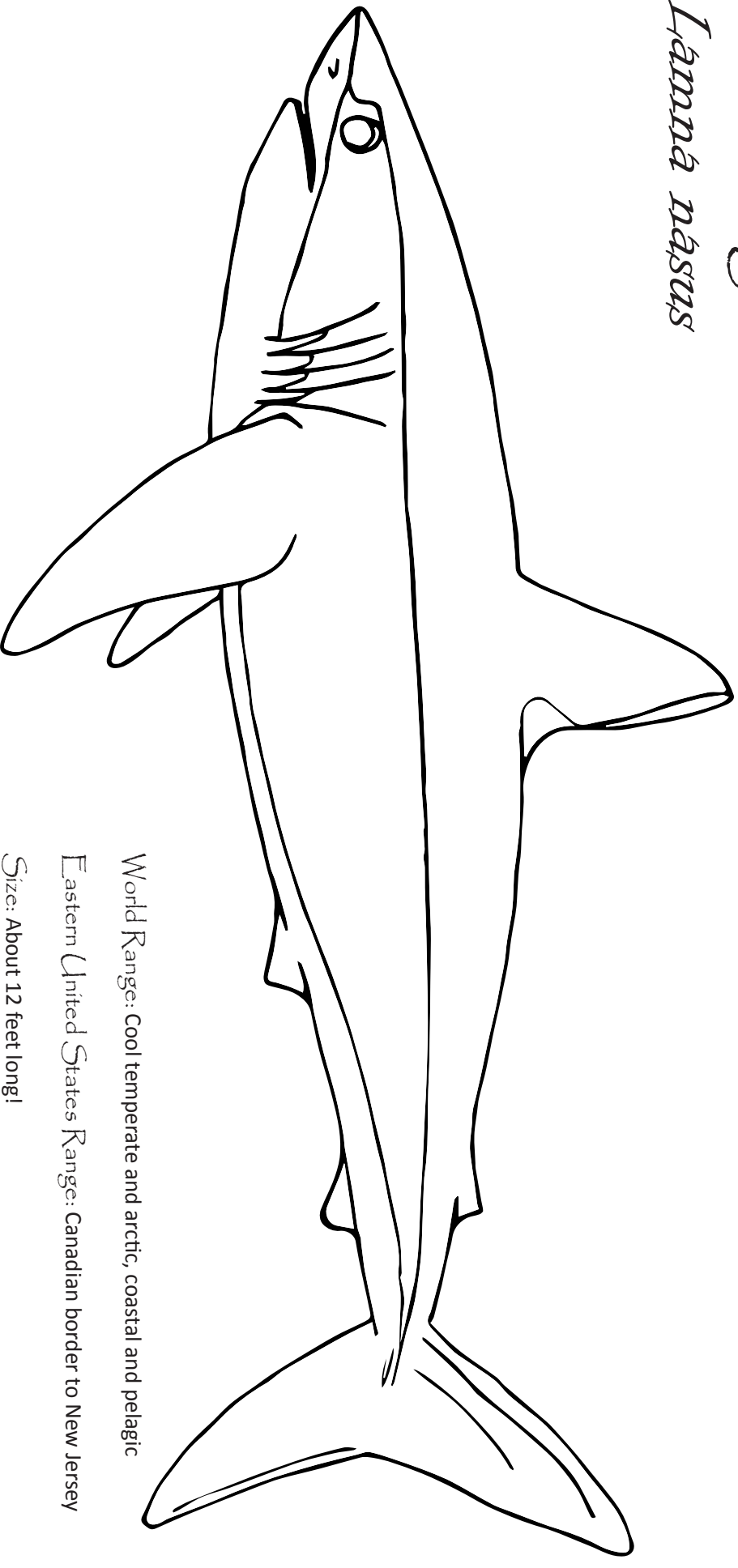
Color: Blue-gray or bronze-brown on top; white on the belly

Food: Bony fish like herring and tuna, other sharks and rays, invertebrates like crabs, squid, and sea stars

Predators: Larger sharks on juveniles

Porbeagle

Lamna nasus



World Range: Cool temperate and arctic, coastal and pelagic

Eastern United States Range: Canadian border to New Jersey

Size: About 12 feet long!

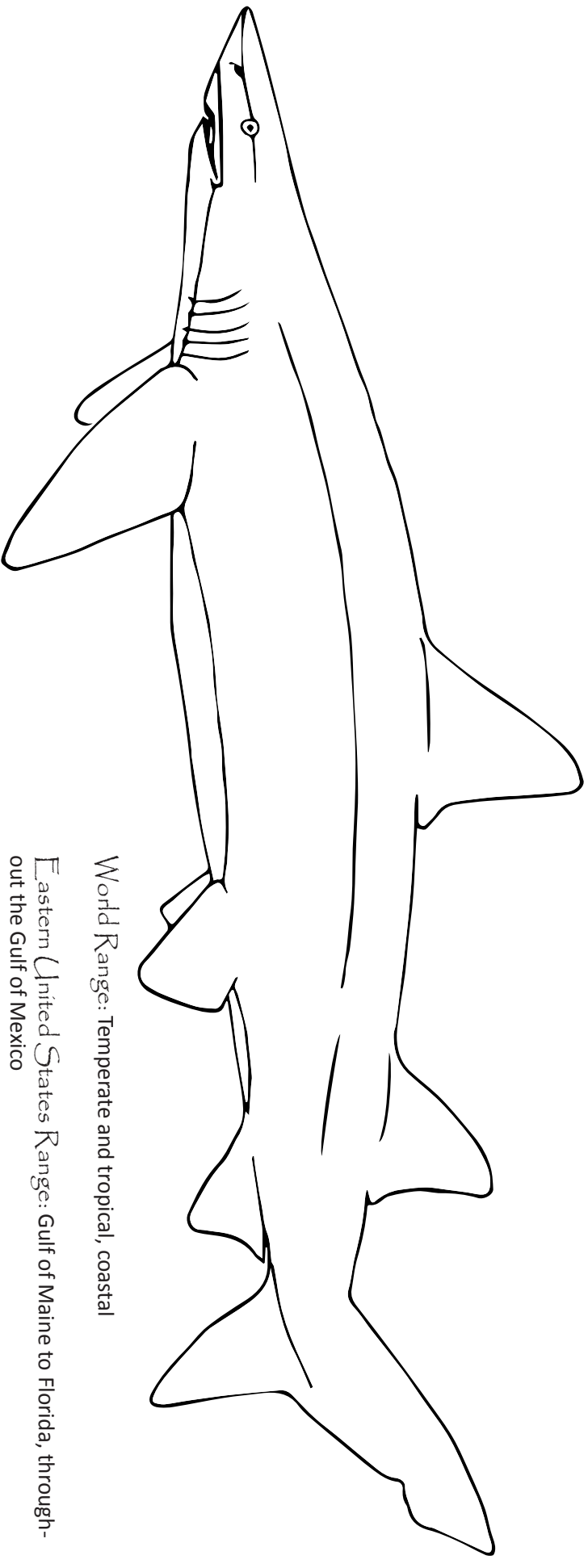
Color: Dark blue to blue-gray, the first dorsal has a white or light gray patch, white on the belly

Food: Fish like herring and mackerel in the spring, sand lance and flounder in the fall, squid year-round

Predators: Possibly white sharks and killer whales, but no predation confirmed

Sand Tiger Shark

Carcharias taurus



World Range: Temperate and tropical, coastal

Eastern United States Range: Gulf of Maine to Florida, throughout the Gulf of Mexico

Size: Over 10 feet!

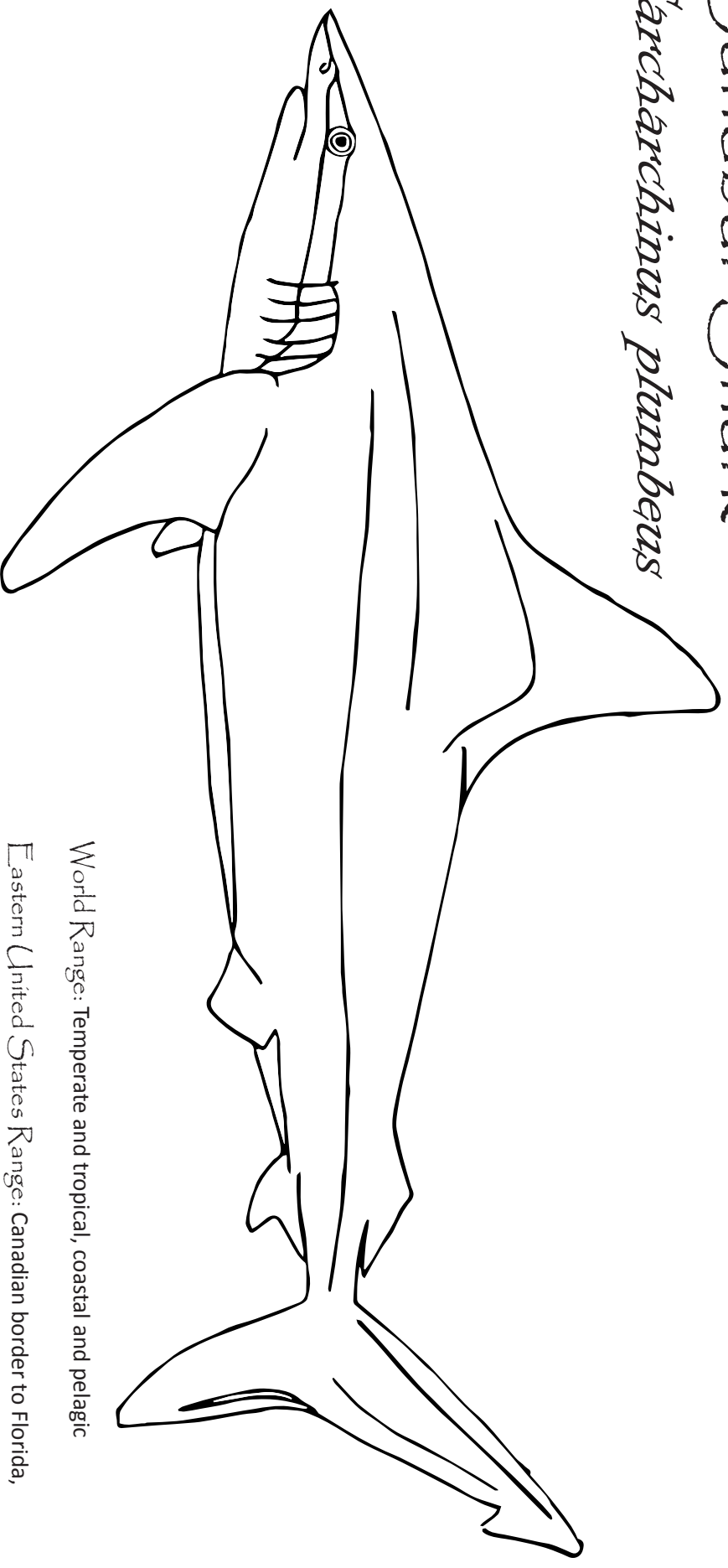
Color: Light brown to gray on top, light gray to white underneath

Food: Small bony fish like herring and flatfishes, rays, squid, lobster, and small sharks

Predators: Larger sharks on juveniles

Sandbar Shark

Carcharchinus plumbeus



World Range: Temperate and tropical, coastal and pelagic

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Over 7 feet long!

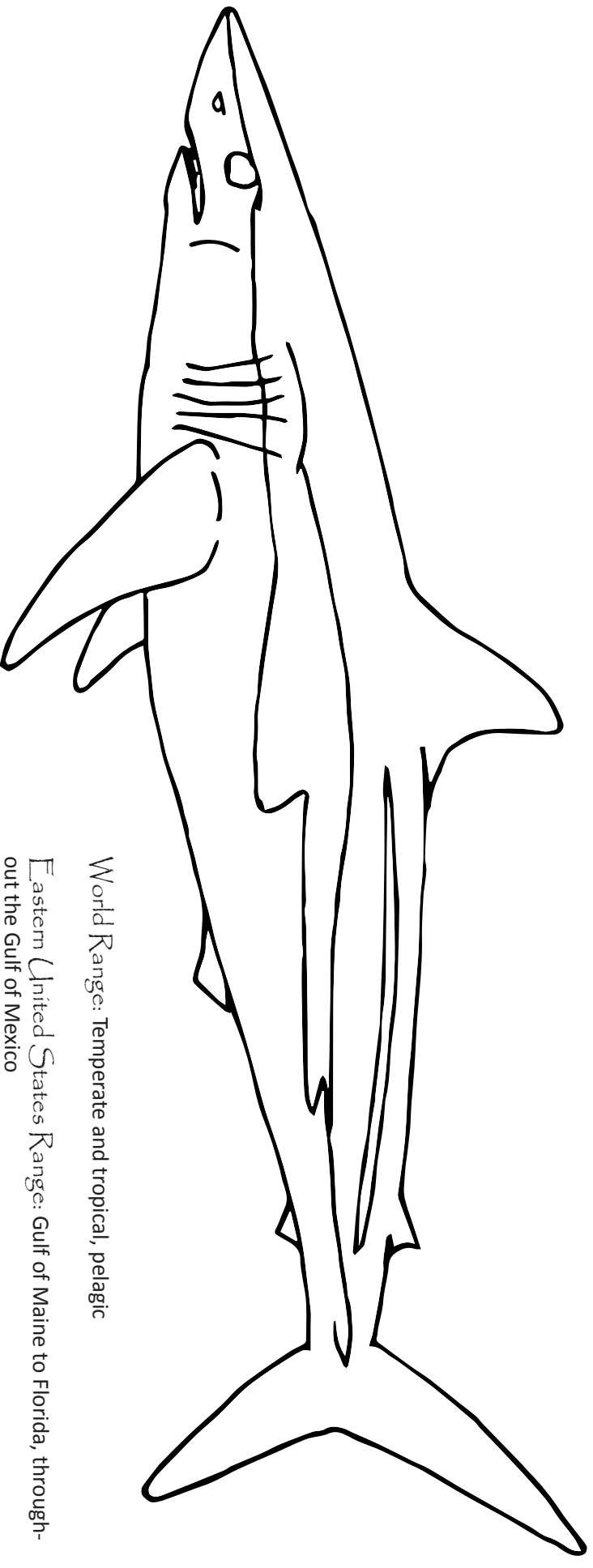
Color: Blue-brown on top, light blue-brown to white on the belly

Food: Small fish, mollusks, and crustaceans

Predators: Large sharks on juveniles

Shortfin Mako

Isurus paucus



World Range: Temperate and tropical, pelagic

Eastern United States Range: Gulf of Maine to Florida, throughout the Gulf of Mexico

Size: Over 12 feet!

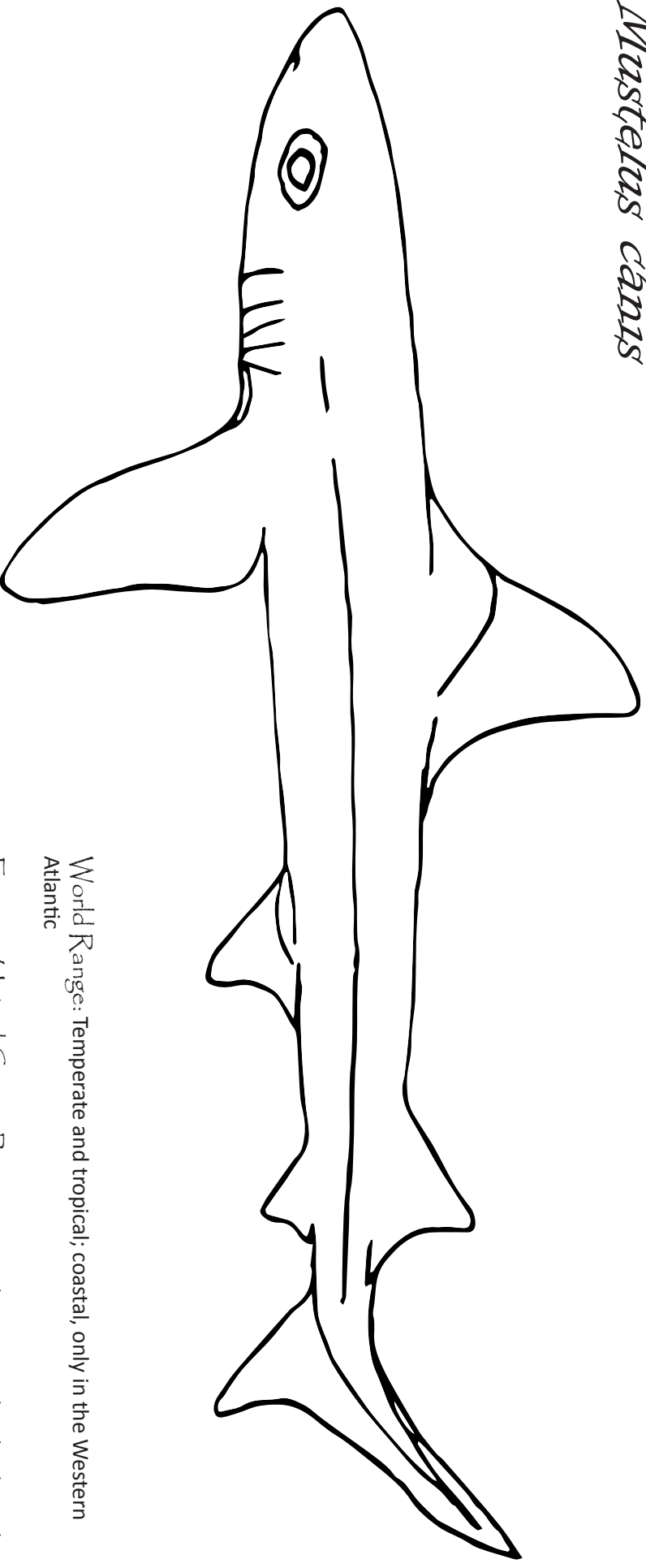
Color: Dark metallic blue on top with light metallic blue areas, white on the belly

Food: Fast pelagic fish like swordfish, tuna, and sailfish; squid

Predators: Larger sharks on juveniles

Smooth Dogfish

Mustelus canis



World Range: Temperate and tropical; coastal, only in the Western Atlantic

Eastern United States Range: Massachusetts to Florida, throughout the Gulf of Mexico

Size: Just under 5 feet long!

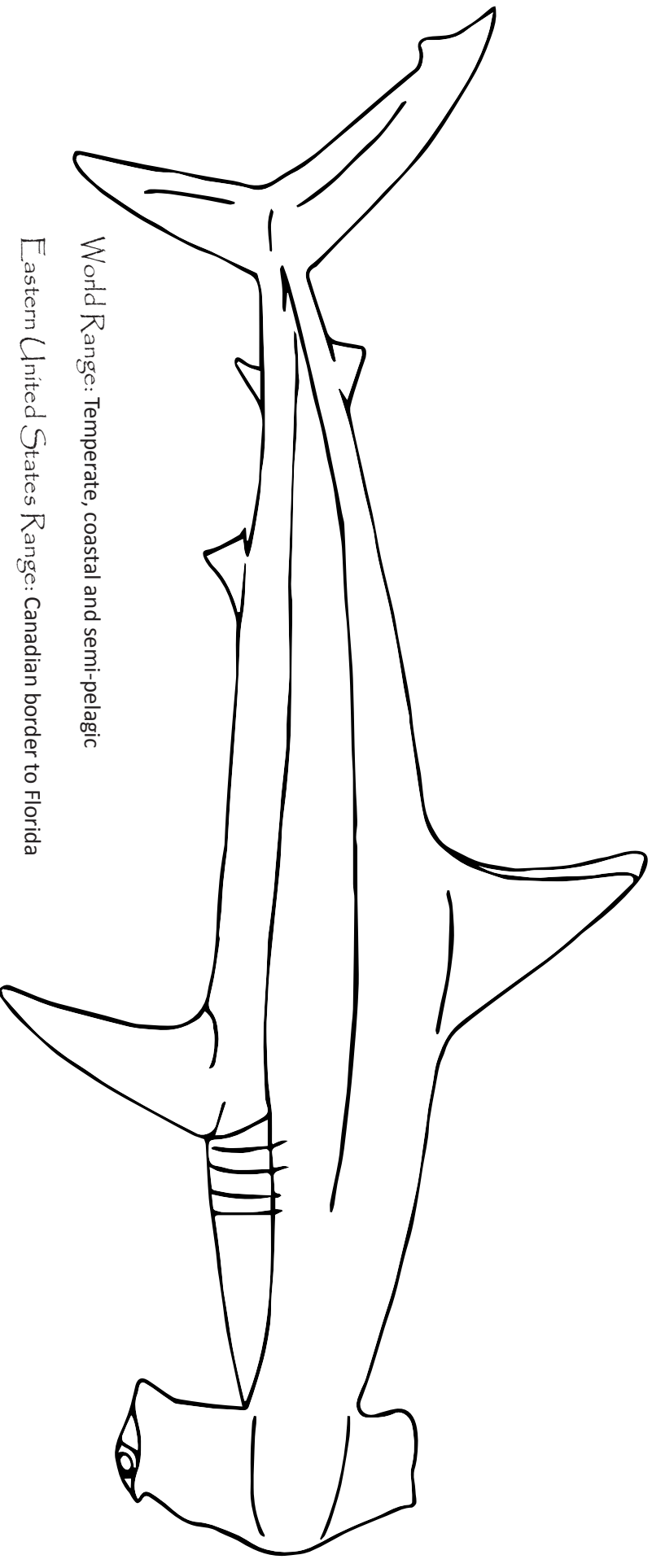
Color: Gray to brown on top, yellow-gray to white on the belly

Food: Large crustaceans like lobster and crab; fish and mollusks too!

Predators: Larger sharks like dusky, blacktip, and great hammerhead sharks

Smooth Hammerhead

Sphyrna zygaena



World Range: Temperate, coastal and semi-pelagic

Eastern United States Range: Canadian border to Florida

Size: Up to 16 feet long!

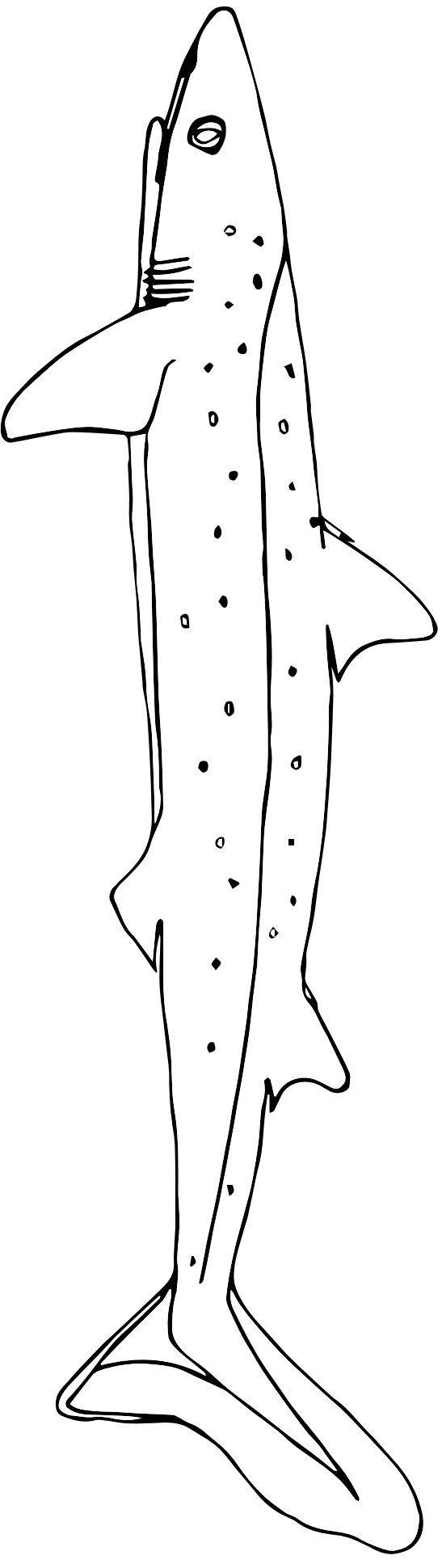
Color: Dark brown-green to brown-gray on top, white on the belly

Food: Bony fish, smaller sharks, rays, and skates

Predators: Larger sharks on juveniles

Spiny Dogfish

Squalus acanthias



World Range: Temperate and arctic, coastal

Eastern United States Range: Canadian border to Florida

Size: Under 4 feet long

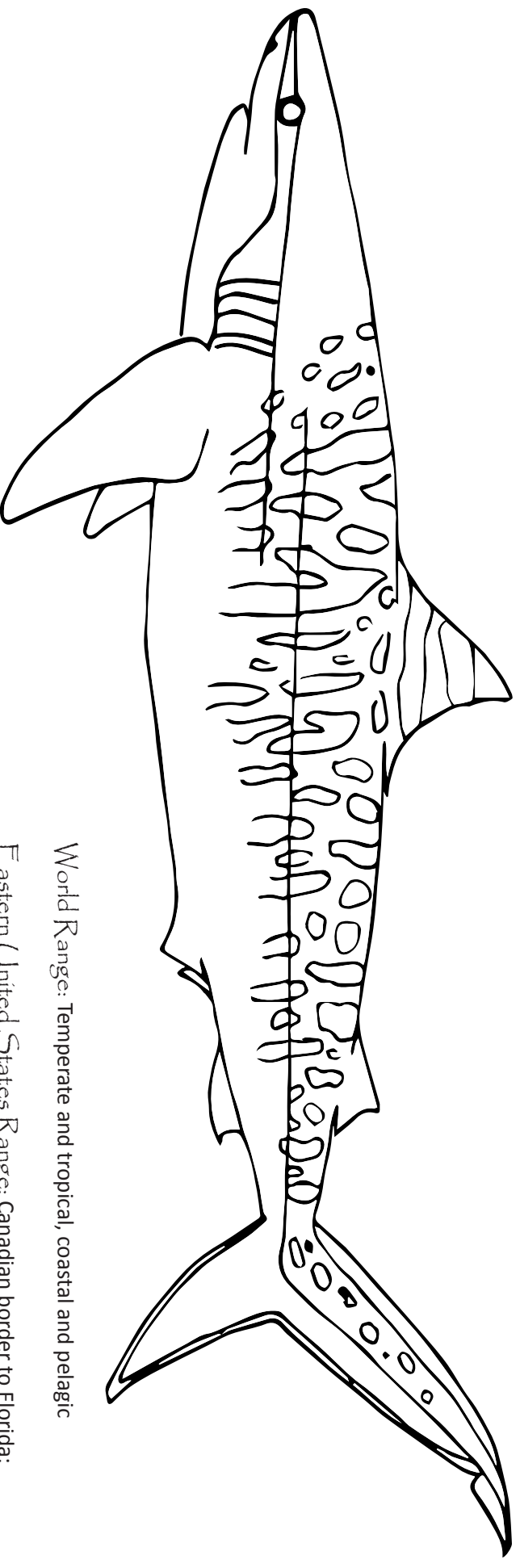
Color: Light to dark brown on top; light brown to white on the belly; white spots along the lateral line

Food: Schooling fish like herring, menhaden, and mackerel; may also eat wolffish, squid, sea jellies, and sea cucumbers!

Predators: Cod, hake, goosefish, larger sharks, sometimes seals and killer whales

Tiger Shark

Galeocerdo cuvier



World Range: Temperate and tropical, coastal and pelagic

Eastern United States Range: Canadian border to Florida; throughout the Gulf of Mexico

Size: Up to 14 feet long!

Color: Light brown to blue-green with darker splotchy spots on top and yellow-white on the belly

Food: Sea turtles, rays, other sharks, birds, dolphins, squid, and bony fish; also found with soda cans and bottles in their tummies!

Predators: Larger sharks on juveniles

White Shark

Carcharodon carcharias

World Range: Temperate and semi-tropical, coastal and pelagic

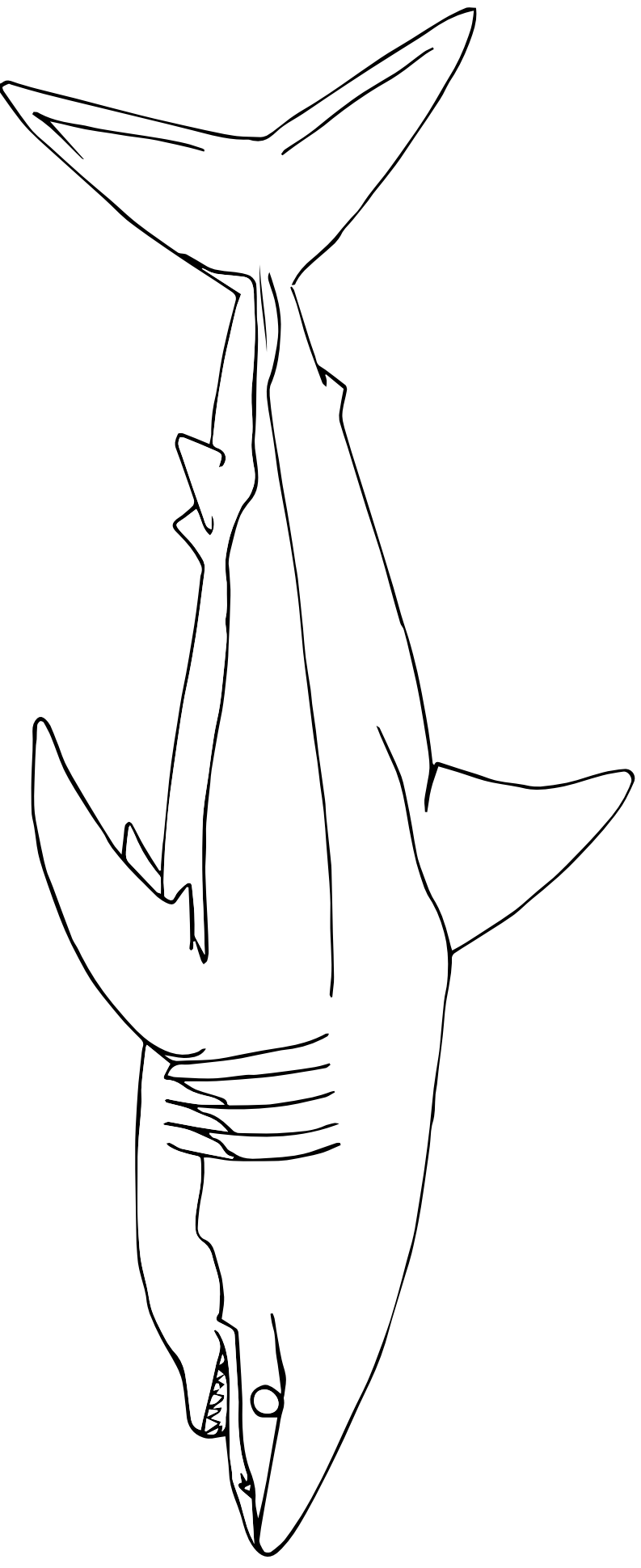
Eastern United States Range: Canadian border to Florida; throughout the Gulf of Mexico

Size: Over 22 feet!

Color: Blue-gray to gray-brown on top, white on the belly

Food: Marine mammals, other sharks, larger fish like tuna

Predators: Killer whales



Draw your own shark!

Use your imagination to think up your very own species of shark! Don't forget to add fins, a tail, and gills!

For more information, visit our website!
<http://www.mass.gov/marinefisheries>

All content including information, games, and images, are the creation of Elaine Brewer for the Massachusetts Division of Marine Fisheries. She can be reached at: elaine.brewer@state.ma.us

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Marine Fisheries
Commonwealth of Massachusetts

