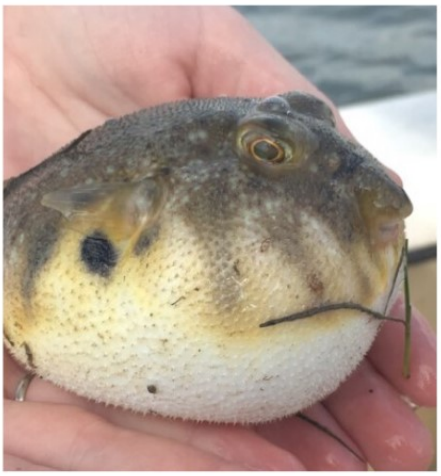
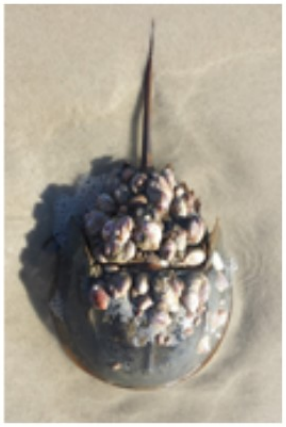
MCBP PRESENTS THE

COASTAL BAYS FIELD GUIDE





MARYLAND COASTAL BAYS PROGRAM

FOR MORE INFORMATION PLEASE VISIT OUR WEBSITE WWW.MDCOASTALBAYS.ORG

ATLANTIC BAY SCALLOP

IUCN RED LIST: Not listed
THREATS: None known
THREATS IN OUR BAYS: Habitat loss

(Argopecten irradians)

Kingdom	ANIMALIA
Phylum	MOLLUSCA
Class	BIVALVIA
Order	PECTINIDA
Family	PECTINIDAE
Genus	ARGOPECTEN
Species	IRRADIANS

Fun Facts:

Other species of scallop are bound to some substrate, but bay scallops are free-swimming and can move short distances through the water. They typically swim in response to predators; they swim away by jetting water through their valves.

During 1997 and 1998, a re-establishment attempt was made in Chincoteague Bay by the MD Department of Natural Resources Shellfish Program, and by 2002, live scallops were recorded for the first time north of the Ocean City Inlet.

Description: Bay scallops have thin, lightweight, and strong shells (bivalve) that open and close at a hinge. They have 13 to 22 symmetrical radial ribs all along their shells and the marginal wings are slightly different in size and shape. They vary in color from brown, grey and black to red, orange, and yellow. They have 30-40 blue eyes surrounding the rims of their shells (these can be seen in the photo to the left).

Geographic Range: Massachusetts to Texas. In the state of Maryland, they only occur in the Coastal Bays, and near the salty mouth of the Chesapeake Bay.

Habitat: These scallops prefer the higher salinity shallows of bays and estuaries. They are frequently found in eelgrass beds, where young scallops attach to blades of eelgrass with thin byssal threads.

Lifespan: The bay scallop has a short lifespan of only 12 to 26 months

Reproduction: Scallops are hermaphroditic organisms, meaning they have both male and female reproductive organs. They lay their eggs on the bottom of the bay where they are then fertilized. These fertilized eggs develop into swimming larvae, complete with tiny shells. A one-year old scallop produces approximately 16 million eggs.

Growth: Adults grow to approximately 3 ½ inches (90mm). Bay scallops reach sexual maturity at 2 ¼ inches (55mm).

Diet: They are filter feeders who eat plankton, algae, and other organic matter.

Predators: People, birds, fish, crabs. When bay scallops suspend themselves above the substrate, they are able to avoid the bottom-dwelling predators, such as crabs.

Resources: 3, 12

ATLANTIC BRIEF SQUID

(Lolliguncula brevis)

Kingdom	ANIMALIA
Phylum	MOLLUSCA
Class	CEPHALOPODA
Order	MYOPSIDA
Family	LOLIGINIDAE
Genus	LOLLIGUNCULA
Species	BREVIS

Fun Facts:

They can change color by contracting and expanding their chromatophores, which are dark pigment-filled spots.

When they are threatened, they can emit an ink cloud to distract predators.

Beware! They may nip using their beak when being held.

IUCN RED LIST: Not evaluated
THREATS: None
THREATS IN OUR BAYS: None

Description: The Atlantic brief squid is a small mollusk with a short mantle and short rounded fins that are less than half the length of the mantle. They are covered in dark pigment spots that can expand and change colors. They are also cephalopods, meaning their shells are internal, supporting their soft bodies. They are osmoconformers, meaning their bodies salinity matches ambient water salinity.

Geographic Range: They are found in the Atlantic Ocean, typically from the Delaware Bay to Brazil.

Habitat: They prefer warm, shallow water, but can move around in the open ocean by ejecting jets of water to propel themselves.

Lifespan: Their lifespan is short around 100-200 days.

Reproduction: Their mating behavior includes the males putting on a display to attract the females. After copulation, the females lay egg masses that attach to hard structures. Their embryos hatch in a planktonic stage and once they grow become benthic.

Growth: They grow to be about 5 inches.

Diet: They typically eat bottom-dwelling crustaceans, small fish, and larvae. Some examples include grass shrimp, killifish, and sheepshead minnows.

Predators: Carnivorous fish often eat them. They are also known to be cannibalistic.

Resources: 4, 6, 10

ATLANTIC HORSESHOE CRAB

(Limulus polyphemus)

Kingdom	ANIMALIA
Phylum	ARTHROPODA
Class	MEROSTOMATA
Order	XIPHOSURA
Family	LIMULIDAE
Genus	LIMULUS
Species	POLYPHEMUS

Fun Facts:

HSCs are visible under black light!

HSCs hemolymph (their blood) contains special amebocytes that act similar to white blood cells. These amebocytes contain a chemical called coagulogen, a clottable protein that immobilizes bacteria and hinders their spread. The protein is used in the medical field to test pharmaceutical products for bacterial endotoxins.

If a HSC is alive and flipped upside down, please flip it over using the sides, not the tail!

Their scientific name roughly means "askew giant".

IUCN RED LIST: Vulnerable

THREATS: Habitat loss, unsustainable harvest, pollution

THREATS IN OUR BAYS: Stranding, habitat loss

Description: Known for its distinctive horseshoe-shaped helmet of a shell, horseshoe crabs (HSCs) are not even crabs at all. In fact, they are more closely related to spiders and scorpions. However, they remain harmless, despite their appearance. Their tough shells protect them from predators, their sharp tails (telson) assist with navigation, and their claws are used solely for feeding and walking. Their carapace, or shell, ranges in color from light tan to dark brown, and are usually covered in other organisms such as barnacles, slipper shells, and algae. The exoskeleton is made up of three sections: the prosoma (cephalothorax), opisthosoma (abdomen), and telson (tail). They also have a total of ten eyes found around their bodies that are using for sensing light and finding mates.

Population: Persisted for more than 300 million years (Mesozoic Era), there are currently four species of horseshoe crabs worldwide (one in the Atlantic region, and three in Southeastern Asia region)

Geographic Range: Gulf of Maine to the Yucatan Peninsula

Habitat: winter: deep waters (usually up to 20 m), summer: shallow, sandy, coastal habitats like tidal marshes

Lifespan: ~ 20 years, but can be known to live +30 years

Reproduction: Increased water temperatures influence the HSCs to migrate from deeper waters (winter) to shallow waters where they spawn. HSC like to spawn during high evening tides on protected sandy beaches. From state to state, site selection can be explained by beach morphology, wave energy, and geochemistry. Females arrive on beaches with males attached to their posterior opisthosomal spines. Males have a modified pedipalp that allows them to latch onto the female. Females deposit up to 88,000 eggs approximately 5 to 20 cm deep into the sand. Males fertilize the eggs as they are begin deposited. Eggs will hatch after ~ 20 days.

Growth: Unfertilized eggs are greenish blue or gray in color. Egg development depends on temperature, moisture, oxygen, and salinity. Once hatched, larvae settle within a week and begin to molt. HSCs will shed their exoskeletons (ecdysis) ~17 times over the course of ~10 years before reaching sexual maturity. Males will remain ~20% smaller than females. The average size of an adult female HSC is 24 inches long, by 12 inches wide.

Diet: Smaller benthic organisms such as worms and mollusks, but can also feed on algae and detritus. Since they lack jaws, the horseshoe crab will crush food with their legs before passing it into their mouth.

Resources: 2, 8, 9, 10

BIGCLAW SNAPPING SHRIMP

(Alpheus heterochaelis)

Kingdom	ANIMALIA
Phylum	ARTHOPODA
Class	MALACOSTRACA
Order	DECAPODA
Family	ALPHEIDAE
Genus	ALPHEUS
Species	HETEROCHAELIS

FUN FACTS:

The snapping shrimp ambush their prey and use their modified claw to "snap" and create a jet of water that kills or stuns the prey.

The bigclaw is the largest of all species of snapping shrimp, with some adults growing to be 10 cm in length.

IUCN RED LIST: Not evaluated
THREATS: None
THREATS IN OUR BAYS: None

Description: The most distinct characteristic of the bigclaw snapping shrimp is the large modified snapping pincer (the modified pincer can be found on the left or right hand side of their bodies). The modified pincer (claw) can be "snapped" by both digits coming together. The male's modified snapping claw is slightly larger than that of the female's. The bigclaw snapping shrimp's coloration ranges from dark blue-green to gray and they have concentrations of orange on the top of the head behind the eyes, at the tip of the tail, and on the larger modified claw.

Geographic Range: Native to the western Atlantic Ocean, particularly the Gulf of Mexico. The bigclaw snapping shrimp is also frequently found along the Atlantic coast of the United States, from Maryland to the southern point of Florida. The species has been documented to live as far south as the Brazilian coast.

Habitat: Typically found in shallow waters where rocks, seaweed, and other cover is present. They burrow under rocks/shells for protection during the day and are commonly found on oyster reefs.

Lifespan: Average lifespan in the wild is 4 years.

Reproduction: Bigclaw snapping shrimp are monogamous and the brief period after the female molts is when they are sexually receptive. The "snapping" of the modified pincer is the chemosensory and mechanosensory messengers that signal when this mating window is open.

Growth: The average adult bigclaw snapping shrimp range in length from 3.0 cm to 5.5 cm (from rostrum to tail). Both males and females mature to approximately the same size.

Diet: They are omnivores and feed on a variety of small marine animals including worms, crustaceans, shellfish, and small fish, along with grazing on algae.

Predators: They are the prey of many larger fish, including weakfish

Resources: 1, 7

NORTHERN PUFFERFISH

IUCN RED LIST: Least concern
THREATS: None
THREATS IN OUR BAYS: None

(Sphoeroides maculatus)

Kingdom	ANIMALIA
Phylum	CHORDATA
Class	ACTINOPTERYGII
Order	TETRAODONTIFORMES
Family	TETRADONTIDAE
Genus	SPHOEROIDES
Species	MACULATUS

Fun Facts:

Pufferfish do not have scales and are not good swimmers.

They swim in schools when young, but are solitary when older.

Unlike other pufferfish, the northern puffer does not have toxic flesh.

Description: The pufferfish has a tiny mouth and has a thick body that is either gray, brown, or olive with a yellowish lighter colored underside. Several irregular black bars or blotches cover the sides. Body is covered in small spines or prickles. It has small dorsal fins with 8 soft rays and an anal fin with 7 soft rays, just before the squared caudal fin. When provoked pufferfish will inflate themselves by drawing water or air into a specialized chamber near the stomach and their resulting prickly ball-shape deters predators.

Geographic Range: Found along the northwestern Atlantic coasts, from northeast Florida all the way to Newfoundland.

Habitat: Bottom dwelling fish that are usually found in calm, shallow regions of bays and estuaries.

Lifespan: Up to 10 years.

Reproduction: Spawning occurs between May and August. The females lay the eggs and the fertilizing males watch and protect them until hatching occurs after many weeks.

Growth: Average 20-25 cm long, but have been known to reach lengths of 36 cm.

Diet: Feeds on shellfish, mollusks, crustaceans, and other invertebrates.

Predators: The puffer scares off many of its predators by inflating, but sharks, large fish, and humans are known to eat them.

Resources: 10, 11

PINK COMB JELLY

IUCN RED LIST: Not listed
THREATS: None
THREATS IN OUR BAY: None

(Beroe ovata)

Kingdom	ANIMALIA
Phylum	CTENOPHORA
Class	TENTACULATA
Order	LOBATA
Family	BOLINOPSIDAE
Genus	BEROE
Species	OVATA

Fun Facts:

While they are similar to jellyfish, pink comb jellies are not true jellyfish as they are harmless due to their lack of stinging tentacles.

At night, the color bands (combs) of the comb jelly can give off a different color.

Description: Pink comb jellies are spherically-shaped invertebrates. They are transparent and jelly-like, with noticeable pink or yellow color bands dividing their bodies into eight symmetrical parts. There are tiny hairs along each band, or "comb", called cilia, that assist in locomotion. The cilia, when beating, create a rainbow-like iridescence.

Geographic Range: Off the coasts of North and South America in the western Atlantic Ocean

Habitat: They live near the surface in shallow and deep areas of saltwater, commonly in bays.

Lifespan: Ranging anywhere between a month and 3 years

Reproduction: Comb jellies are hermaphrodites, meaning they have both male and female reproductive parts. Because of this, comb jellies release eggs and sperm which find other eggs and sperm to reproduce with. They are self-fertilizing and spawn approximately 2 weeks after birth. Each jelly spawns about 8,000 eggs. Spawning tends to take place at night during the summer months.

Growth: Upon hatching, they are about .4 mm. Their length tends to be between 100-120 mm when mature.

Diet: Zooplankton, other comb jellies (sea walnuts). In addition to locomotion, their cilia also assist in pumping water into their body cavities, pushing in food with it.

Predators: Other jellyfish, sea turtles, and some fish.

Resources: 5, 10

RESOURCES

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