ENDANGERED RESCUE

Chambered Nautilus Trivia

Explore the hidden world of the chambered nautilus and its cephalopod cousins: deep-sea habitats, remarkable senses, survival challenges, and surprising memory skills.

A companion to Science Friday's **Endangered Rescue: Chambered Nautilus** game created in partnership with Grand Gamers Guild, a part of Cephalopod Week.

15 questions

Words to Know

Cephalopod
A type of ocean animal that has arms or tentacles around its mouth, such as an octopus, squid, cuttlefish, or nautilus.

Lineage
A line of ancestors and their descendants stretching through time.

Mature
To reach adulthood; here, to become able to reproduce.

Molt
To shed an outer layer periodically, or the outer covering shed during molting.

Overfishing
Catching animals from the water faster than their populations can replace them.

Population
Members of the same species living in a particular area.

Rhinophore
A body part that helps a nautilus sense chemicals in the water, much like smelling, so it can find food.

Spatial memory
Remembering where things are and how to move through a place.

The chambered nautilus is a type of cephalopod. Which animal below is NOT a cephalopod?

- ▲ Cuttlefish
- ◆ Starfish
- ● Squid
- ■ Octopus

QUESTION 1 · ANSWER

The chambered nautilus is a type of cephalopod. Which animal below is NOT a cephalopod?

- ▲ Cuttlefish
- ◆ Starfish ✓
- ● Squid
- ■ Octopus

Why? Cephalopods are ocean animals with arms or tentacles around their mouths, such as the octopus, squid, cuttlefish, and nautilus. Starfish are not part of this group.

Science Friday

Cephalopods usually have highly developed senses, a large brain, and...

- ▲ A backbone
- ◆ Tentacles
- ● Scales
- ■ A prominent head

QUESTION 2 · ANSWER

Cephalopods usually have highly developed senses, a large brain, and...

- ▲ A backbone
- ◆ Tentacles
- ● Scales
- ■ A prominent head ✓

Why? Cephalopods are known for their prominent heads, highly developed senses, and large brains. They are curious creatures that are good at exploring and solving problems.

The nautilus lives 1,000 to 2,000 feet underwater. What is that environment like?

- ▲ Extremely dark
- ◆ Many plants
- ● Warm water
- ■ Many predators

QUESTION 3 · ANSWER

The nautilus lives 1,000 to 2,000 feet underwater. What is that environment like?

- ▲ Extremely dark ✓
- ◆ Many plants
- ● Warm water
- ■ Many predators

Why? At these depths the ocean is extremely dark, which helps keep the nautilus safe because predators are less likely to spot it. Recreational divers only go about 100 feet down.

Science Friday

Nautiluses don’t occupy the entirety of their shells.

◆ True

▲ False

QUESTION 4 · ANSWER

Nautiluses don’t occupy the entirety of their shells.

- ◆ **True** ✓
- ▲ **False**

Why? The nautilus lives in only part of its spiral shell. When threatened, it can retract its full body into the shell.

About how big is the largest known chambered nautilus shell?

- ▲ About 1 inch
- ◆ About 12 inches
- ● About 3 feet
- ■ About 6 feet

QUESTION 5 · ANSWER

About how big is the largest known chambered nautilus shell?

- ▲ About 1 inch
- ◆ About 12 inches ✓
- ● About 3 feet
- ■ About 6 feet

Why? A nautilus shell usually ranges from 4.5 to 10 inches. The largest known nautilus shell specimen is about 12 inches in diameter.

How many tentacles can a chambered nautilus have?

- ▲ Fewer than 10
- ◆ Up to 30
- ● About 60
- ■ As many as 90

QUESTION 6 · ANSWER

How many tentacles can a chambered nautilus have?

- ▲ Fewer than 10
- ◆ Up to 30
- ● About 60
- ■ As many as 90 ✓

Why? A chambered nautilus typically has 90-94 tentacles, which it uses to find food and to find a mate. Other species of nautilus may have between 50 to over 90.

Science Friday

The spiral of a nautilus shell is a perfect example of the golden ratio.

◆ True

▲ False

QUESTION 7 · ANSWER

The spiral of a nautilus shell is a perfect example of the golden ratio.

◆ True

▲ False ✓

Why? Close, but not quite! The nautilus's distinctive spiral shell is almost, but not exactly, an example of the golden ratio.

Test it yourself: Myth or math? Is the nautilus shell's golden ratio real?

Nautiluses have a sensory structure called a rhinophore. What does it help them do?

- ▲ See
- ◆ Hear
- ● Smell
- ■ Touch

QUESTION 8 · ANSWER

Nautiluses have a sensory structure called a rhinophore. What does it help them do?

- ▲ See
- ◆ Hear
- ● Smell ✓
- ■ Touch

Why? The rhinophore is a body part that helps a nautilus sense chemicals in the water, much like smelling. Along with its tentacles, the nautilus uses it to search out food.

Which foods would a chambered nautilus use its tentacles and rhinophores to find?

- ▲ Algae and seaweed
- ◆ Large, fresh fish
- ● Clams and oysters
- ■ Decaying animals

QUESTION 9 · ANSWER

Which foods would a chambered nautilus use its tentacles and rhinophores to find?

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- ◆ Large, fresh fish
- ● Clams and oysters
- ■ Decaying animals ✓

Why? Though nautiluses occasionally hunt for small fish, shrimp, or crabs, they don't have great eyesight, so they mostly search out decaying food items dropped by other animals. They're like the ocean's little janitors!

Some call the nautilus a “living fossil.” How long has the nautilus lineage existed?

- ▲ 2,000 years
- ◆ 100,000 years
- ● 30 million years
- ■ 500 million years

QUESTION 10 · ANSWER

Some call the nautilus a “living fossil.” How long has the nautilus lineage existed?

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- ◆ 100,000 years
- ● 30 million years
- ■ 500 million years ✓

Why? The chambered nautilus lineage has existed with very little change to its anatomy for the last 500 million years.

How long can a nautilus hold information in its long-term memory?

- ▲ About 5 minutes
- ◆ Almost 1 hour
- ● Up to 24 hours
- ■ About 1 week

QUESTION 11 · ANSWER

How long can a nautilus hold information in its long-term memory?

- ▲ About 5 minutes
- ◆ Almost 1 hour
- ● Up to 24 hours ✓
- ■ About 1 week

Why? Drs. Jennifer Basil, Robyn Crook, and Gregory Barord found that nautiluses have a biphasic memory curve: short-term memory for up to an hour and long-term memory for up to 24 hours.

Dig deeper: Can a living fossil learn new tricks? Meet the nautilus!

Science Friday

Experiments show nautiluses have spatial memory. What do they use it for?

- ▲ Recognizing faces
- ◆ Navigating familiar places
- ● Changing shell color
- ■ Remembering sounds

QUESTION 12 · ANSWER

Experiments show nautiluses have spatial memory. What do they use it for?

- ▲ Recognizing faces
- ◆ Navigating familiar places ✓
- ● Changing shell color
- ■ Remembering sounds

Why? Spatial memory means remembering where things are and how to move through a place. Nautiluses use it to navigate familiar areas more efficiently, including mazes they have been through before.

Scientists can't tell a grown nautilus's exact age, but some believe nautiluses can live up to how long?

- ▲ Less than 1 year
- ◆ Up to 5 years
- ● About 10 years
- ■ 50 years or more

QUESTION 13 · ANSWER

Scientists can't tell a grown nautilus's exact age, but some believe nautiluses can live up to how long?

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- ◆ Up to 5 years
- ● About 10 years
- ■ 50 years or more ✓

Why? A nautilus can generally live more than 20 years, and some scientists believe it may live up to and beyond 50 years. Its lifecycle is much longer and slower than other cephalopods'.

What is the main reason the chambered nautilus is threatened in many ocean regions?

- ▲ Warming waters
- ◆ Loud boat noise
- ● Too little food
- ■ Overfishing

QUESTION 14 · ANSWER

What is the main reason the chambered nautilus is threatened in many ocean regions?

- ▲ Warming waters
- ◆ Loud boat noise
- ● Too little food
- ■ Overfishing ✓

Why? Overfishing means catching animals faster than their populations can replace them. Nautilus shells are sold for jewelry and décor. Despite CITES protection since 2017, over 10,000 were openly used in traded goods in 2024.

Why is slow reproduction such a serious problem when nautilus populations are overfished?

- ▲ More predators
- ◆ Eggs are destroyed
- ● Only live a short time
- ■ Cannot replace losses

QUESTION 15 · ANSWER

Why is slow reproduction such a serious problem when nautilus populations are overfished?

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- ● Only live a short time
- ■ Cannot replace losses ✓

Why? Nautiluses don’t lay eggs until they mature at about age 10, and the eggs take at least a year to hatch. Populations are being depleted much faster than they can recover.

TAKE ACTION

Help Save the Nautilus

Save the Nautilus is a nonprofit conservation organization dedicated to protecting chambered nautiluses. It was started by 11-year-old Josiah Utsch and his friend Ridgely Kelly to raise awareness and fund research on this 500-million-year-old creature.

Dr. Gregory Barord, the marine biologist who consulted on the game, is the Director of Science and Outreach for Save the Nautilus.

SAVE THE NAUTILUS

Write a letter

Ask retailers like eBay, Amazon, and Etsy to stop selling nautilus shells.

Find a sample letter at savethenautilus.com

Thanks for helping rescue the nautilus!

Play the game: **Endangered Rescue: Chambered Nautilus**

30% of proceeds from every game support Science Friday's free, accessible science journalism, educational resources, and experiences.