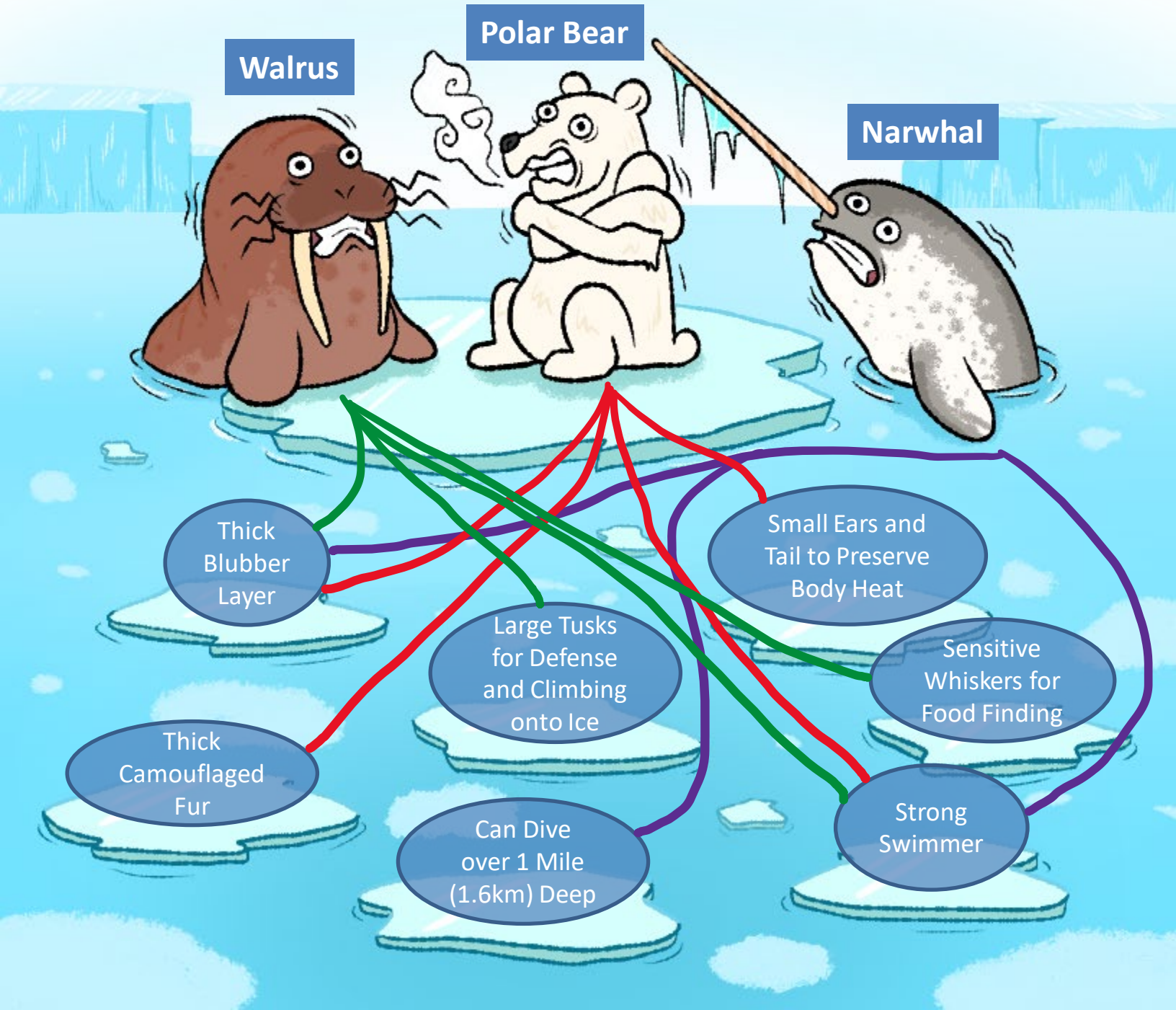
The Marine Mammal Center

The Marine Mammal Center advances global ocean conservation through marine mammal rescue and rehabilitation, scientific research, and education.

Arctic Adaptations: Answer Key

1. a) Extreme Adaptations: Winter is coming in the Arctic, and temperatures can reach as low as -94˚ C (-137˚ F)! Brrrrr… On top of that, animals in the arctic face limited space as sea ice continues to melt, and stark competition over scarce resources such as food, mates and shelter. Our marine mammal friends need some seriously extreme adaptations to survive! Match each Arctic animal with one or more adaptations that they possess in order to combat the cold. For help finding answers, and to learn about more arctic and polar species, click here.



Arctic Adaptations: Answer Key

1. a) Extreme Adaptations (Cont.): For each animal on the previous page, pick one adaptation you assigned to it, and give a brief explanation as to how you think it helps that arctic mammal survive in such a harsh environment.

a. Walrus: The thick blubber layer keeps the walrus warm when on extremely cold ice floats or in sub-zero water.

b. Polar Bear: The higher the surface area to volume ratio, the more an animal will lose body heat, so small ears and tail reduce heat loss.

c. Narwhal: Competition for food is tough in arctic, so they can dive over a mile deep to find hunting grounds that most animals can't reach.

1. b) Extreme Local Adaptations: Just because arctic animals have special adaptations to survive one of the harshest environments in the world doesn't mean they don't also have some traits in common with our local marine mammals further South. One of our frequent patients at The Marine Mammal Center, the Northern elephant seal, shares some adaptations with our Arctic friends. From the previous page, choose one adaptation that you think is shared by the Northern elephant seal, and explain why. For some help, check out the Northern elephant seal page on our website.

a. Northern elephant seal adaptation: Thick blubber layer

b. Why might they need this adaptation?

Elephant seals can dive 1 mile (1.6 km) deep in search of food. The water gets so cold at this depth that a thick blubber layer is necessary.

Arctic Adaptations: Answer Key

2. It's What's on the Inside that Counts: This statement is especially true for many marine mammals, who spend most if not all their lives in cold waters, often diving to frigid depths in search of food. Based on their appearance and distribution, rank the following mammals in terms of blubber thickness (1 being the thinnest, and 4 the thickest).

Common Dolphin

Found in all tropical and warm-temperate waters

2

The common dolphin has a thin layer of blubber to keep them warm in temperate waters.

California Sea Otter

Found off the California Coast

1

Otters have no blubber at all, and instead rely on extremely dense fur, which is why you often see them grooming to keep it in tip top shape.

Northern Elephant Seal

Found eastern and central North-Pacific Ocean

3

Elephant seals rely on inches-thick blubber to stay warm at over a mile deep as they search for food.

Bowhead Whale

Found in the Arctic Circle

4

Bowhead whales may only dive to 500 ft. or so, but in the artic circle, a nearly 2-foot-thick blubber layer is crucial to stay warm at any depth.