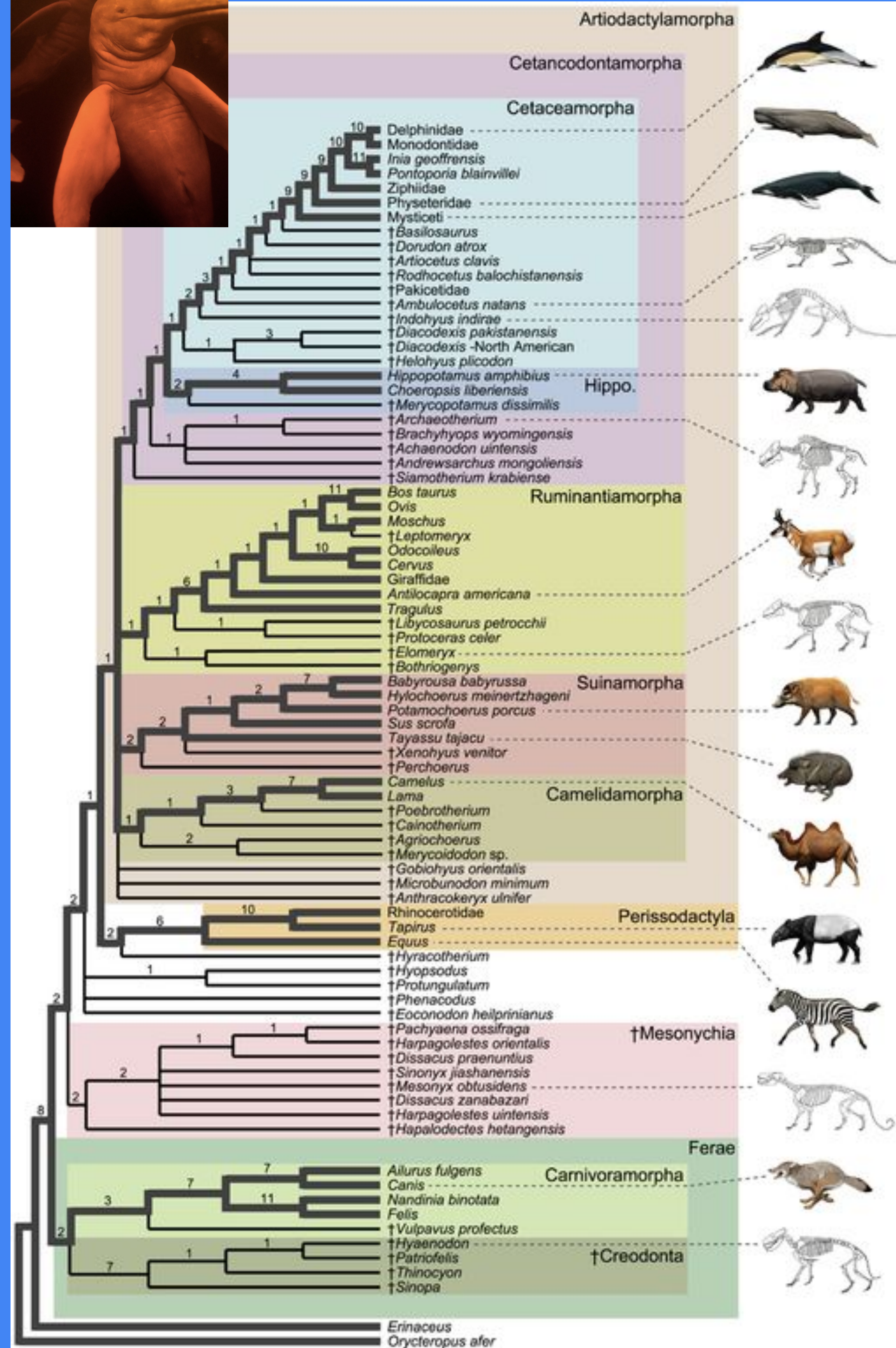


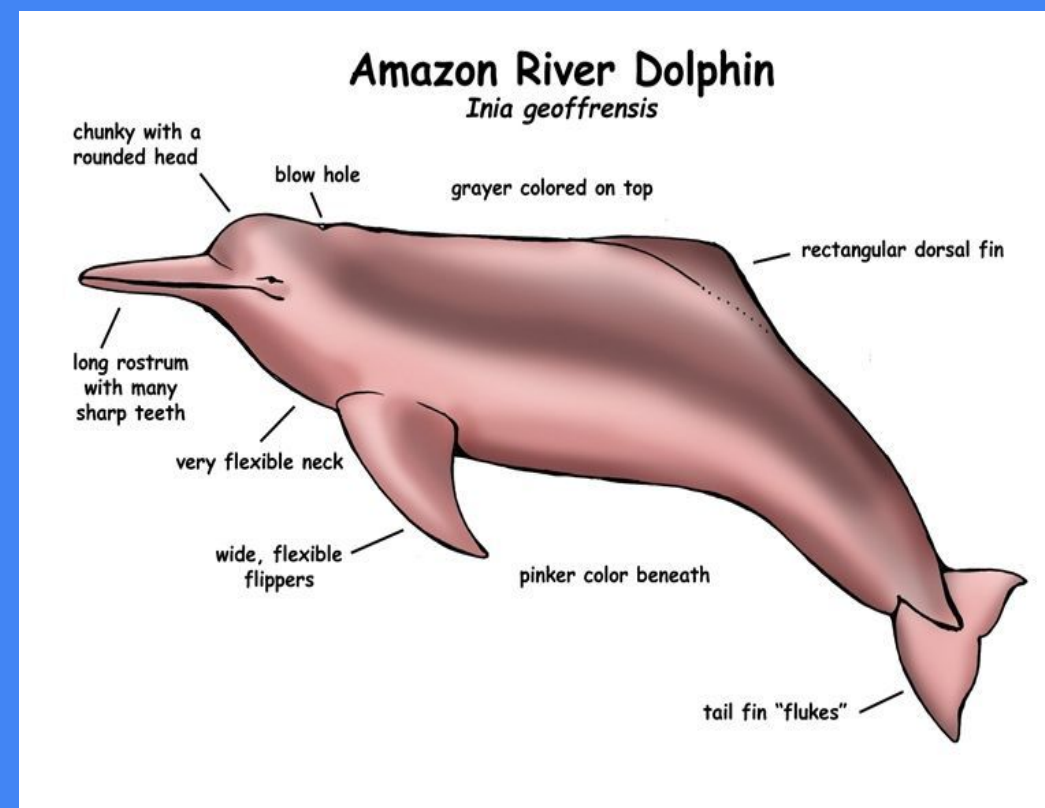
The Amazon River Dolphin: *Inia Geoffrensis*

Evolution:



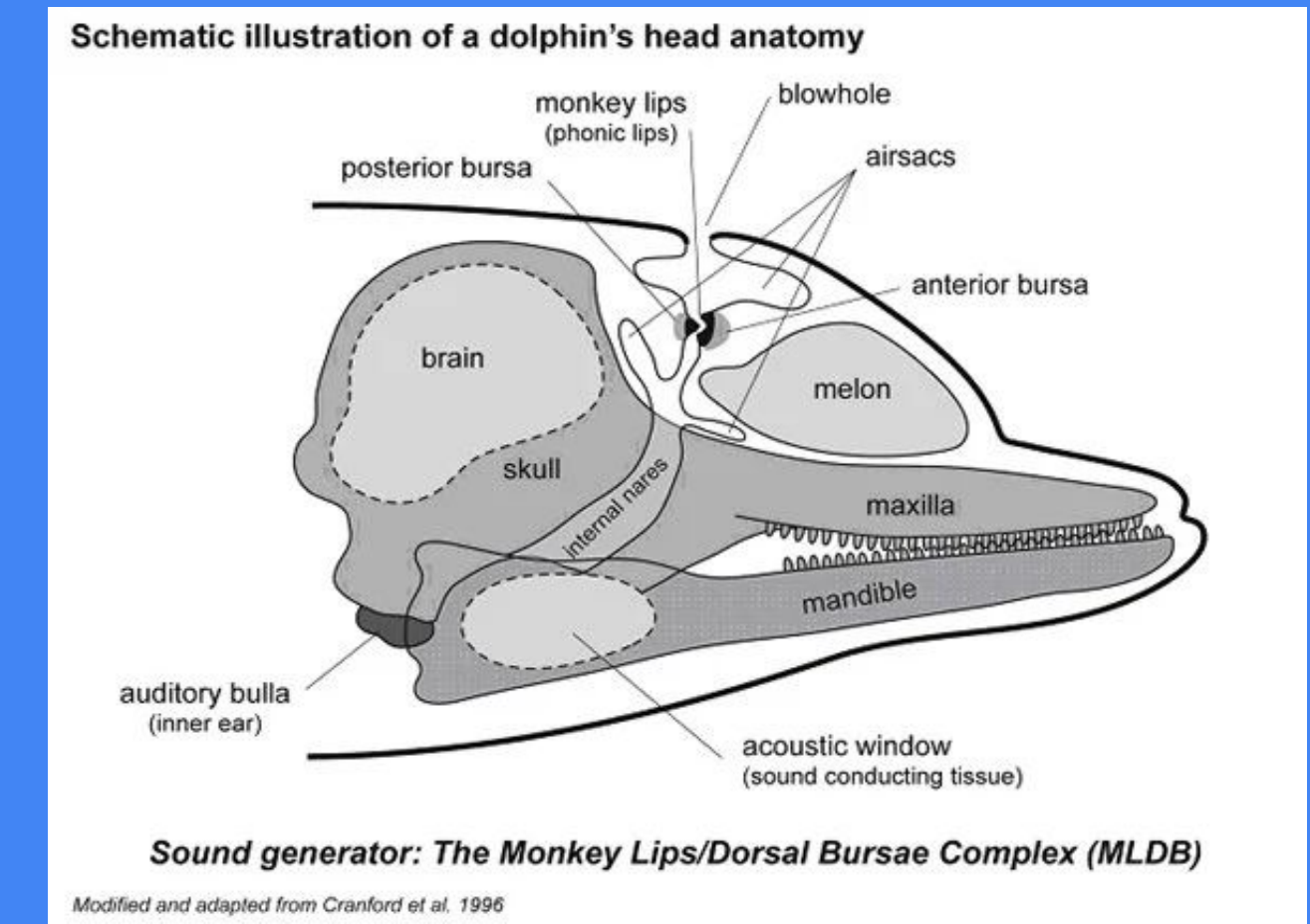
- The Amazon River Dolphin known as the Boto (*Inia Geoffrensis*) is in the Iniidae family, the Family Animalia and the order Artiodactyla. This dolphin is more commonly specified in the species of toothed whales ("Amazon River Dolphin | Mammal"). Botos inhabit freshwater habitats ranging around the Amazon area such as rivers, lakes, wetlands and other freshwater bodies like flooded forest and grassland throughout the year. The pink dolphin inhabits 6 countries in South America: Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela (Amaral et al.). The origin of the Amazon river dolphin took place in the Miocene Epoch about 23 million years ago to 5.3 million years ago ("Amazon River Dolphin | Mammal"). Dolphins are said to have originated from hooved animals (*Artiodactyla*) in the Eocene epoch about 50 million years ago. The early forms of dolphins are related to amphibious small deer-like, hooved, mammals that slowly acquired adaptations to thrive in aquatic environments morphing into a more specialized infraorder (*Cetaceans*) (Thewissen et al.). The early ancestors of this dolphin traveled up freshwater systems during high sea levels. From there they are said to have remained isolated for millions of years until they became morphologically and genetically different from their saltwater relatives (Silva et al. pp 21-24).

Form and Function:



- Unlike the usual dolphin the Boto has adapted a variety of different anatomical differences in order to thrive in its freshwater river environment. The Boto has a longer, more plump shape and instead of a large pronounced dorsal fin they have a long ridge running down their back and unfused vertebrae ("A Study of the Boto, or Amazon River Dolphin (*Inia Geoffrensis*), in the Mamirauá Reserve, Brazil: Operation and Techniques," 1999). These adaptations allow them to bend in a 90-degree angle and have a much higher level of maneuverability than their saltwater counterparts. Their foreheads are much more bulbous, allowing them to have a higher sense of sonar to find their way and track prey through muddy waters that they live in (*Amazon River Dolphins (Boto)*, n.d.). Similar to saltwater species the Boto has powerful flippers and tail flukes with a concave trailing edge that allow them quick bursts of speed in order to capture prey. Botos use a technique called subcutaneous suffusion in order to regulate heat. This is where excess heat produced internally by the metabolism is excreted through the blood by the dilation of blood vessels in the dermal layers of the skin (Cozzi et al., 2017). This process of thermoregulation gives dolphins their unique trait of being pink.

Communication and behavior:



- Although this species does form pods they are mostly solitary with exclusion to mother and offspring pairs due to male "playful" aggression called tooth raking (Amorim et al., 2016b). When breeding, males have been recorded carrying objects like sticks and rocks in a form of courtship. According to a study conducted in 2008, scientists came to conclusions that object carrying is almost entirely performed by adult males, and is related to the presence of females, or multiple females (Martin et al., 2008). These mammals communicate intraspecifically through a fleshy organ called a "melon" located on the anterior portion of their head (Soltseva & Rodionov, 2007). These clicks are emitted through air being pushed through the nasal passages creating a vibration and emitting through their melon (Soltseva & Rodionov, 2007). The melon of a dolphin has the unique capability of directing and focusing sounds, giving it an advantage when navigating and communicating in its aquatic environment. The Boto receives the incoming frequencies through their jaws (Soltseva & Rodionov, 2007). The teeth of the Amazon River Dolphin are arranged in a special way that allows them to receive incoming frequencies in the water, which are then passed into their jaw bone. This jaw bone has sound receptors that transmit incoming information directly to the middle ear where it is then processed (Ary et al., 2016).

Conservation and management:



- Conservation and management of the Amazon river dolphin is an understudied topic. Surveys done to study population density of the boto are sporadic and infrequent (Reeves et al. 2008). The Boto has a number of threats considering that it has no natural predators. These management issues include human interaction (illegal poaching/harvesting), human encroachment on habitat, climate change, pollution, and decreased habitat productivity (Martin et al. 2004). Studies are still being conducted in order to gain further information on population size and density, and which environmental factors relate to the density and group size of the Boto (Salazar et al. 2011). These studies are being conducted in order to initiate the creation of Freshwater Protected Areas, by researchers (Salazar et al. 2011).