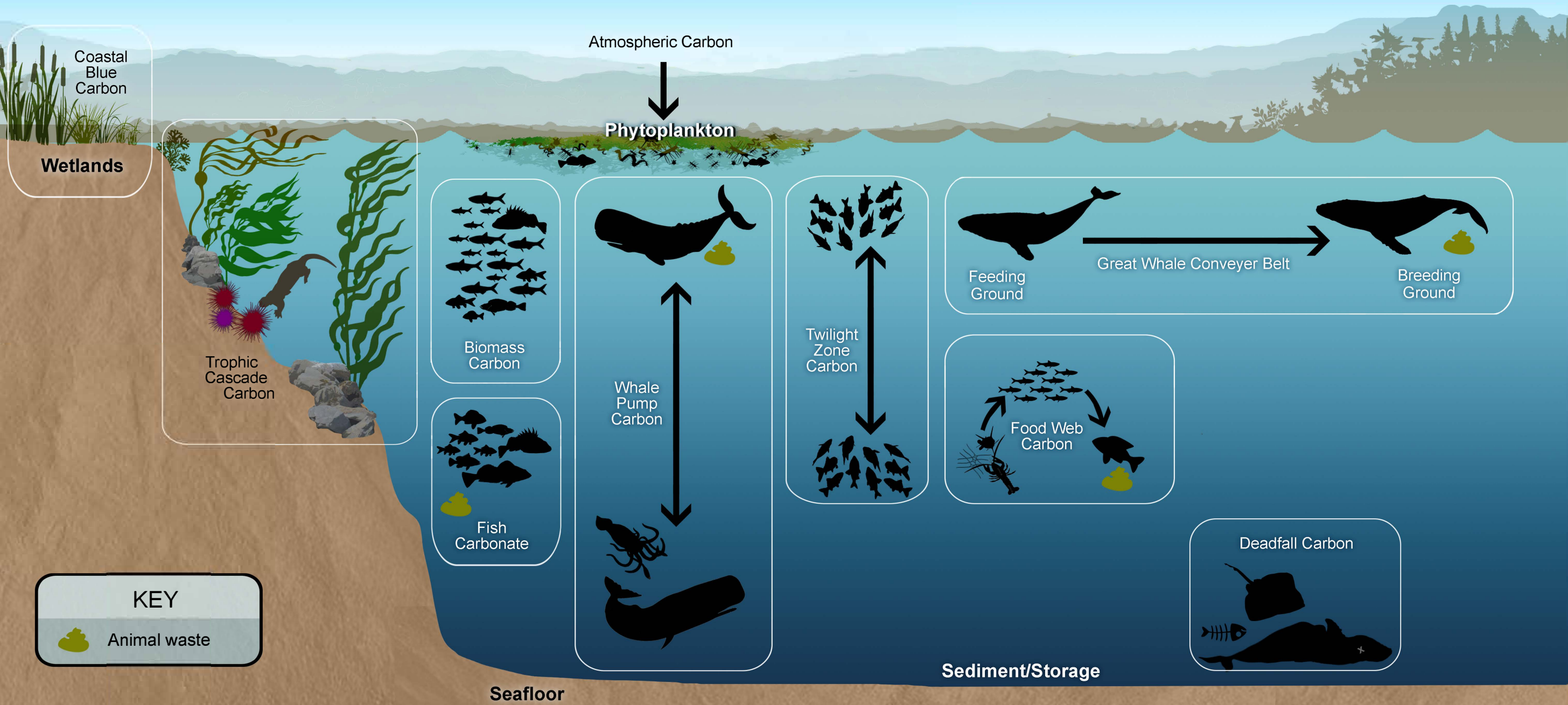
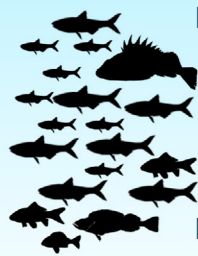


A Healthy Coast and Ocean Stores Blue Carbon

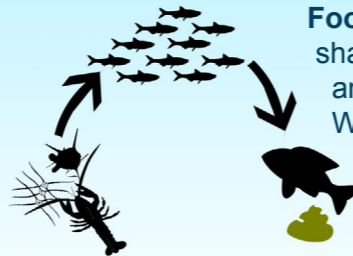


A Healthy Coast and Ocean Stores Blue Carbon

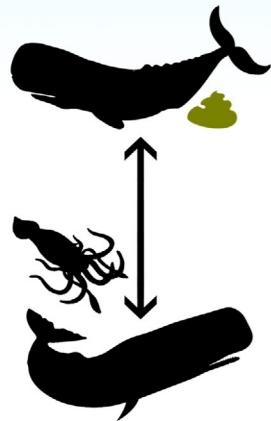
Blue carbon is carbon absorbed and stored in ocean waters, marine organisms, and sediments. By protecting estuaries from draining and development, prohibiting sediment disturbing activities like gas and oil exploration, restoring eelgrass and reducing pressures on marine life, national marine sanctuaries support long-term carbon storage.



Biomass carbon: Carbon is an important element in all living things, which serve as carbon reservoirs throughout their lifespans. The larger and more long-lived the animal, the more and longer carbon is stored in their body. Over half of the world's biological carbon is stored in living marine organisms.



Food web carbon: When predators such as whales, sharks and large fish consume their prey, the energy and nutrients become part of the predator's biomass. When these large animals die, their remains sink to the seafloor (deadfall carbon). Decomposers consume them, transferring carbon into their own biomass and release fecal matter at lower depths where it remains.



Whale pump carbon: Some whales consume carbon-rich amphipods and other benthic invertebrates in deep-water feeding areas and expel the remains as fecal matter near the surface. This provides a rich nutrient supply for phytoplankton, the foundation of most ocean food webs.



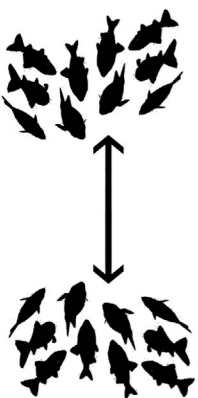
Deadfall carbon: When marine animals die, their carcasses sink to the seafloor and decompose. The carbon in the animal biomass becomes part of sediment on the seafloor, where it can remain for millions of years.



Coastal blue carbon: Shallow salt marshes, seagrass beds, and mangroves absorb carbon dioxide from the air and water through their leaves and roots, where it can remain stored for hundreds or even thousands of years.

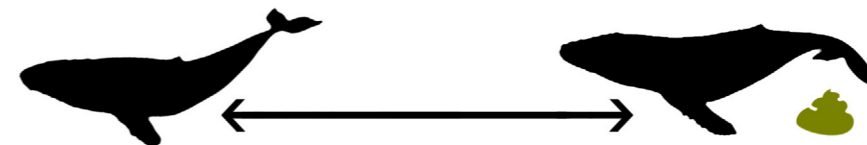


Trophic cascade carbon: Kelp and other algae growing on rocky nearshore reefs absorb atmospheric carbon dioxide through photosynthesis. Sea urchins consume kelp, and too many urchins can have detrimental impacts on a robust kelp forest. Key predators like sea otters and sunflower stars in Pacific coastal waters may eat healthy sea urchins. The presence of predators helps to keep the ecosystem in balance, allowing kelp forests to flourish and trap more carbon dioxide.



Twilight zone carbon: Many fish and other marine predators migrate up and down the water column. During the day, they feed on carbon-rich plankton at the surface, where light is plentiful. At night they travel as far as 2.5 miles deep, into the twilight zone where light levels are low. The carbon consumed at the surface is released as animal waste into the deep ocean, where it sinks to the seafloor and may remain for hundreds or thousands of years.

Fish carbonate: Fish excrete large amounts of calcium and magnesium, which bind to carbon dioxide in the water, neutralizing ocean acidity. It is estimated that fish feces account for 3-15% of global carbonate production in ocean surface waters.



Great whale conveyor belt: Whales migrate between feeding and breeding areas, moving and releasing nutrients at the surface that stimulate phytoplankton growth, enhancing carbon absorption and storage.

KEY

 Animal waste

Animal Waste: All living things release carbon-rich fecal matter, where it circulates through food webs until finally sinking to the ocean floor where it is stored.