

Surfrider School December 2025: Migratory Species

Migratory ocean species are some of the most remarkable and enigmatic inhabitants of our seas. This month, we'll embark on a captivating voyage into the world of migratory ocean species, understanding what they are, why they embark on epic journeys, their significance to marine ecosystems, uncovering fascinating facts about them, exploring diverse examples, and discovering how we can contribute to their conservation.

Instructions:

1. Read our migratory species overview.
2. Check out some of the provided resources to learn more about migratory species.
 - a. 360 videos, virtual reality, scrolly-telling, interactive media, etc.
 - b. Optional: do the activities associated with the media
3. Attend our end-of-the-month Surfrider School discussion and have all your questions answered by an expert!

Migratory Species Overview:

Part 1: What are Migratory Ocean Species?

1.1 Definition:

Migratory ocean species, often referred to as ocean migrants, are a diverse group of marine animals that undertake remarkable journeys across the world's oceans. These species include fish, mammals, birds, reptiles, and even some invertebrates. What sets them apart is their regular, often seasonal, long-distance migrations between different oceanic regions. These migrations are an integral part of their life cycles and survival strategies, and they can cover thousands of miles.

1.2 Why Do They Migrate?

Reproductive Purposes:

Many migratory species undertake their journeys primarily for reproduction. They travel to specific breeding or nesting grounds where environmental conditions are optimal for the survival of their offspring. These areas may offer protection from predators, abundant food resources, or suitable substrates for laying eggs. For example, sea turtles like the loggerhead turtle migrate to their natal beaches to lay eggs. After hatching, their hatchlings face the perilous journey back to the sea.

Feeding and Foraging:

Other migratory species migrate in search of abundant food resources. They journey to regions where environmental conditions support the growth of plankton, fish, or other prey species

essential for their survival. For instance, the iconic humpback whales migrate from polar feeding grounds to warmer tropical waters to give birth. While in these temperate regions, they fast and rely on their energy reserves, highlighting the importance of these areas for nurturing their young.

Environmental Factors:

Some migrations are triggered by environmental cues, such as changes in water temperature, daylight hours, or lunar cycles. These cues serve as signals for the species to initiate their journeys. For example, certain species of eels migrate thousands of miles across the Atlantic Ocean to their breeding grounds in the Sargasso Sea. They are believed to follow the Earth's magnetic field as a navigational aid.

Understanding why migratory ocean species undertake these awe-inspiring journeys is essential for appreciating the complexity of their lives and their interconnectedness with ocean ecosystems. These migrations are driven by a combination of instinct, adaptation, and the need to ensure the survival of their species, making them one of the most captivating phenomena in the natural world.

Part 2: The Vital Role of Migratory Species in Ecosystems

2.1 Biodiversity and Food Webs:

Migratory ocean species are pivotal actors in the intricate dramas of marine food webs. Their movements bridge different ecosystems, connecting distant regions of the ocean. As they journey between feeding and breeding grounds, they interact with a wide array of species. This interaction promotes biodiversity and sustains the health of marine ecosystems.

Consider the journey of a migratory bird like the Arctic Tern. These remarkable birds migrate from the Arctic to the Antarctic and back each year, covering an astounding distance. Along their route, they feed on fish and plankton, becoming part of multiple food webs. Their predation helps regulate prey populations and ensures that no single species becomes dominant. This delicate balance is crucial for the overall stability of ocean ecosystems.

2.2 Nutrient Transport:

Migratory species are nature's couriers, transporting essential nutrients across vast oceanic expanses. This nutrient transport occurs in several ways:

Excretion: Many migratory species excrete waste, including nutrient-rich feces, during their journeys. These waste products serve as a source of nutrients for phytoplankton and other marine organisms.

Predation: Migratory predators feed on prey species at various points in their migrations. When they return to different areas, they carry nutrients from one ecosystem to another. For example, salmon that spawn in freshwater rivers after their oceanic migrations release nutrients into these habitats, benefiting local ecosystems.

Trophic Cascades: The presence or absence of migratory predators can trigger trophic cascades, where changes in one trophic level affect others. For instance, the migration of whales to feeding areas results in decreased pressure on prey species, allowing their populations to rebound.

In essence, the movements of migratory species are like a nutrient redistribution system, enriching ecosystems along their routes and sustaining the web of life in the ocean.

2.3 Cultural Significance:

Migratory species hold profound cultural importance in many coastal communities around the world. They are celebrated in myths, legends, and traditional practices. For example:

- In the Pacific Northwest, indigenous communities have deep cultural connections to Pacific salmon, holding ceremonies to honor their return and recognizing them as symbols of renewal and abundance.
- In the Arctic, the annual migration of bowhead whales is a central element of indigenous cultures, with songs and stories passed down through generations.
- In various coastal regions, sea turtles are revered as symbols of wisdom, long life, and protection.

These cultural connections highlight the enduring significance of migratory species and underscore the importance of conserving them for future generations.

Part 3: Fascinating Facts and Remarkable Examples

3.1 Leatherback Sea Turtles:

Leatherback sea turtles (*Dermochelys coriacea*) are among the ocean's most impressive migratory creatures. These ancient mariners can weigh up to 2,000 pounds (900 kilograms) and are the largest sea turtles globally. They embark on extraordinary journeys that span entire ocean basins. Some leatherbacks migrate from their nesting beaches in the Caribbean to feeding grounds in the Arctic or Antarctic, covering thousands of miles. What makes them even more remarkable is their ability to dive to astounding depths, exceeding 4,200 feet (1,280 meters), searching for their primary prey, jellyfish. Leatherbacks are true ocean wanderers, navigating the high seas with remarkable precision.

3.2 Humpback Whales:

Humpback whales (*Megaptera novaeangliae*) are renowned for their melodious songs and long-distance migrations. These majestic giants undertake one of the most impressive annual migrations in the animal kingdom. They travel between their polar feeding grounds and tropical breeding areas, covering distances of up to 16,000 miles (25,000 kilometers) in a single round trip. What makes their migration even more awe-inspiring is the fact that humpback whales do not feed during their breeding season, relying on their energy reserves for several months. These migrations serve both reproductive and feeding purposes, making them a captivating species to study and protect.

3.3 Arctic Terns:

Arctic terns (*Sterna paradisaea*) are known for holding the record for the longest migration among birds. These agile flyers breed in Arctic regions during the Northern Hemisphere's summer and then embark on an astonishing journey to the Antarctic, covering over 44,000 miles (70,000 kilometers) round-trip. They navigate this immense distance to take advantage of the continuous summer sunlight and bountiful food resources at both poles. This remarkable migratory feat showcases the endurance and navigational abilities of these small birds, emphasizing the interconnectedness of global ecosystems.

3.4 Pacific Salmon:

Pacific salmon, including species like Chinook, coho, and sockeye, exhibit some of the most well-known migrations in the fish world. Born in freshwater rivers, they journey to the ocean to mature and grow, then return to their natal rivers to spawn and complete their life cycle. These homing abilities are nothing short of astonishing. The returning salmon bring with them a wealth of nutrients from the ocean, enriching freshwater ecosystems and serving as a vital food source for bears, eagles, and other wildlife. The intricate dance of Pacific salmon migrations is a testament to the intricate relationships between terrestrial and aquatic ecosystems.

These examples provide a glimpse into the extraordinary journeys of migratory ocean species. Their migrations inspire awe and wonder, highlighting the remarkable adaptations and survival strategies that have evolved over eons. Understanding and appreciating these migratory marvels are essential steps in ensuring their conservation and the health of our oceans.

Part 4: Conservation and Taking Action

4.1 Threats to Migratory Species:

Migratory ocean species face a host of challenges on their epic journeys. Human activities have exacerbated these threats, endangering their survival:

Habitat Loss and Degradation: Coastal development, habitat destruction, and pollution can disrupt critical breeding and feeding areas for migratory species. Wetlands, mangroves, and estuaries, which many species rely on, are particularly vulnerable.

Overfishing: Overharvesting of prey species and bycatch in fisheries can deplete vital food sources for migratory species, leading to population declines.

Climate Change: Rising sea temperatures, ocean acidification, and altered ocean currents can affect migratory patterns and disrupt food sources.

Pollution: Plastic pollution, oil spills, and contaminants in coastal areas can harm migratory species through ingestion, entanglement, or habitat degradation.

Invasive Species: The introduction of non-native species into new areas can disrupt ecosystems and prey availability for migratory species.

4.2 Conservation Initiatives:

Efforts to protect migratory ocean species and their habitats have gained momentum in recent years. Key conservation initiatives include:

Marine Protected Areas (MPAs): Establishing MPAs in critical migratory corridors and breeding areas can provide refuge for these species. Examples include the Papahānaumokuākea Marine National Monument in Hawaii and the Great Barrier Reef Marine Park.

International Agreements: Global agreements like the Convention on Migratory Species (CMS) and regional initiatives such as the Agreement on the Conservation of Albatrosses and Petrels (ACAP) aim to coordinate conservation efforts across borders.

Scientific Research: Ongoing research into migratory patterns, breeding habits, and habitat use helps inform conservation strategies and identifies key areas for protection.

4.3 How We Can Help:

Individuals can play a crucial role in the conservation of migratory ocean species:

Support Conservation Organizations: Contribute to organizations dedicated to marine conservation and migratory species protection. Your support helps fund research, advocacy, and habitat restoration efforts.

Participate in Beach Clean-Ups: Get involved in local beach and coastal clean-up events to reduce pollution in migratory species' habitats.

Promote Sustainable Seafood: Choose sustainably sourced seafood to reduce the demand for overfished species that migratory species rely on.

Advocate for Policy Change: Support policies and regulations aimed at reducing habitat destruction, overfishing, and pollution in coastal areas.

Citizen Science: Participate in citizen science projects that track migratory species' movements and behaviors. Your observations can contribute valuable data to conservation efforts.

Educate and Raise Awareness: Share information about migratory species and their conservation with your community. Educating others about these creatures can foster a sense of responsibility for their protection.

By taking these actions, individuals can make a meaningful contribution to the preservation of migratory ocean species. Every effort counts in safeguarding these remarkable travellers and ensuring their continued existence in our oceans.

Conclusion:

Migratory ocean species are the champions of the open seas, embodying the wonder and resilience of marine life. Understanding their remarkable journeys, ecological significance, and the challenges they face is essential. In the May program, we'll embark on an educational odyssey, gaining a deeper appreciation for these extraordinary travellers and exploring how we can ensure their continued presence in our oceans.

Resources For December 2025:

Dive into Ocean School:

- [Secret Life of Sharks](#)
 - Description: Dive into the deep sea with student Sergio and scientist Boris! Join them as they reposition a lost receiver and dive deeper than they've ever been.
- [To the Continental Shelf and Beyond](#)
 - Description: Join Sergio and Boris as they journey to Cocos Island, Costa Rica, to learn why this island is a valuable rest stop for migratory marine species.
- [On the Island](#)
 - Description: Engage in this 360° tour of Cocos Island to discover the valuable nutrients that migratory species depend on for their long journeys through the open ocean.
- [Shark Tagging 360](#)
 - Description: Join Sergio and Boris as they learn all about tagging sharks! This is an important part of understanding shark behaviour and needs in order to protect them.
- [Seamount Science](#)
 - Description: Explore this immersive 360° video to learn how shark tagging allows scientists to track shark migrations and better protect these endangered species.
- [Nautical Network](#)
 - Description: Learn about migratory species in this video where a team of marine biologists recover a receiver that has been collecting data on scalloped hammerhead sharks.
- [Where do Babies Come From?](#)
 - Description: Where are migratory hammerheads and sea turtles born? Join Sergio and conservation scientist Randall Arauz to learn about nursery areas and how to protect them.
- [How to Build a Submarine](#)
 - Description: Dive into the deep sea with submarine pilot Shmulik Blum! Learn how the DeepSee submarine takes scientists deep underwater in this inspiring video.
- [Take Action for Migratory Species](#)
 - Description: Join Sergio to learn how you can help protect endangered migratory species! Now it's your turn. How will you take action?

Discussion:

- Why do migratory ocean species undertake long-distance journeys, and how do these migrations benefit their survival and reproduction?
- What are some examples of migratory ocean species, and what fascinating facts about their migrations have you learned that surprised you the most?
- How can individuals contribute to the conservation of migratory ocean species, and why is it important to protect these remarkable travellers?

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