



BIG SKATE (*Beringraja binoculata*)



Big Skate come in a variety of dark colors including brown, gray, olive and black on their topside and are whitish on the bottom. They often have both bright dots and dark mottling. Big Skate have pointed snouts and two “eye spots” one on each of their pectoral fins. Unlike the closely related longnose skate, Big Skate do not have a prominent notch on the trailing edge of their pelvic fins. Their bodies are flattened. They live on the bottom in sandy or muddy habitats both in estuaries and off the coast.

OVERVIEW

- **Oregon Conservation Strategy Species**
- **Size:** Up to 8 feet long
- **Weight:** Up to at least 200 pounds
- **Lifespan:** At least to 30 years
- **Key Strategy Habitats:** Nearshore, Estuaries
- **Similar Species:** Longnose skate

RANGE AND DISTRIBUTION

In Oregon: Big Skate can be found throughout the state’s marine waters and in estuaries.

Everywhere Else: Big Skate range from the Bering Sea and Aleutian Islands to Baja and into the Gulf of California. They are more common and abundant from Gulf of Alaska southward to Point Conception. The depth range reported for this species is to depths of 2,600 feet, but they are usually found at depths less than 390 feet.

FUN FACTS

Favorite Food: Shrimps, crabs, and a variety of fish. Big Skate also eat clams, amphipods, isopods and snails.

- Big Skate have cartilage skeletons with no bone, like all skates, sharks and rays.
- Big Skate are often buried in sand or mud with just their eyes showing.
- Eggs are fertilized inside the mother, then encapsulated in an egg case which is deposited on the sea floor where embryos develop and hatch.
- Big Skate egg cases can be almost 1 foot long and hold up to 7 embryos, but 3-4 is more typical. Nicknamed the mermaid’s purse, egg cases from several different shark and skate species sometimes wash ashore and are found on Oregon beaches.

LIFE HISTORY AND ECOLOGY

Skates do not spawn which refers to the release of sperm and unfertilized eggs into the environment. Skate eggs are fertilized inside the mother’s body. Males use their claspers to deliver their sperm into the body of females. Females can store sperm for long periods of time. The fertilized eggs are encapsulated into an egg case which is deposited on the sea floor. Big Skate produce one of the largest egg cases or any skate species, reaching lengths of almost one foot. Big Skate are only one of



BIG SKATE (*Beringraja binoculata*)

two species of skate that encapsulate more than one embryo per egg case and they can have from 1 to 7 embryos in the egg case. Egg cases can be deposited any time of year. Big Skate may use discrete areas for depositing their egg cases. Research off the Oregon coast in the 1960s found two sandy bottom areas where Big Skate egg cases were abundant at depths of 210 feet. Big Skate are slow growing and late maturing with females generally maturing at 12 to 13 years of age and males reaching maturity at 7 to 8 years. They can live to at least 30 years old. Relatively little is known about their movements, but one study used satellite tags on eight Big Skate in the Gulf of Alaska to investigate this aspect of their lives. Three individuals showed long range movements, with one traveling at least 1,300 miles in a year, while three others stayed close to their tagging locations over that time period. Two tags did not provide any data in this study and similar work in other areas has yet to be done.

Known predators of Big Skate or their eggs and young include Brown Rockfish, Broadnose Sevengill Sharks, Steller sea lions and juvenile northern elephant seals. Snails will drill holes in the egg cases and eat developing embryos and their yolk sacs.

DIET AND FORAGING

Big Skate eat worms, shrimps, crabs, and a variety of fish species. They will also eat snails, amphipods, isopods, and mysids.

HABITAT CHARACTERISTICS

Big Skate live on sandy or muddy bottom habitats in estuaries, the coastal ocean, and out into deeper waters. Although they spend most of their time on or near the bottom, they do utilize the whole water column.

CONSERVATION AND MANAGEMENT

Threats: Big Skate are moderately susceptible to overfishing based on productivity and susceptibility analysis. They are slow growing and late to mature. They are caught in trawl fisheries, long line fisheries, and occasionally by recreational fishermen.

Conservation and management: Big Skate are included in the federal Pacific Coast Groundfish Fishery Management Plan administered by the Pacific Fishery Management Council (PFMC). The Oregon Department of Fish and Wildlife works in concert with PFMC and manages fisheries within state waters. The PFMC conducts stock assessments to ensure that fisheries for this species are sustainably managed. Stock assessments for Big Skate utilize data from fishery catches and fishery-independent data as well as biological information. PFMC utilizes assessment results to set limits on catch for Big Skate. There is much still unknown about this species.



BIG SKATE (*Beringraja binoculata*)

REFERENCES

- Chiquillo, K. L., D. A. Ebert, C. J. Slager, K. D. Crow. 2014. The secret of the mermaid's purse: Phylogenetic affinities within the Rajidae and the evolution of a novel reproductive strategy in skates. *Molecular Phylogenetics and Evolution*. 75:245-251.
- Hitz, C. R. 1964. Observations on egg cases of the Big Skate (*Raja binoculata* Girard) found in Oregon coastal waters. *Journal of the Fisheries Research Board of Canada*. 21(4):851-854.
- Farrugia, T. J., K. J. Goldman, C. Tribuzio, and A. C. Seitz. 2016. First use of satellite tags to examine movement and habitat use of big skates *Beringraja binoculata* in the Gulf of Alaska. *Marine Ecology Progress Series*. 566:209-221.
- Love, M. S. 2011. Certainly more than you want to know about the fishes of the Pacific Coast. A postmodern experience. Really Big Press, Santa Barbara, CA.
- <https://www.pcouncil.org/stock-assessments-star-reports-stat-reports-rebuilding-analyses-terms-of-reference/groundfish-stock-assessment-documents/>
- https://www.pcouncil.org/managed_fishery/groundfish/