

SOURCING SUSTAINABLE FEED FOR ANIMALS IN OUR CARE

2024 PROJECT REPORT



**Aquarium
Conservation
Partnership**

As leaders within the [Association of Zoos and Aquariums](#) (AZA), we must evaluate and responsibly source the seafood products we purchase to feed the animals in our care. Individual animals may eat 20+ pounds of food daily, and some AZA institutions purchase 50+ tons, or 100,000+ pounds, of food *annually*. Since many animal feed items are not found on menus, these products may be unrated and lack a sustainability assessment. By assessing the sustainability of seafood we are purchasing as feed, we have taken a first step to ensure that nutritionally necessary food will be available for the animals in our care, and their wild counterparts, well into the future.

In this pilot project we have engaged **54 ACP and SAFE Shark and Ray** partners to:

- Assess and evaluate the sustainability of seafood products they are currently sourcing,
- Use the results to Pilot a Joint Business Commitment to Feed Sustainable,
- While monitoring and evaluating the impact and success of pilot facilities that make this commitment, and lastly,
- Create a pathway to include the broader AZA community in this initiative.



WHY?

Overfishing is the greatest threat to sharks and rays and AZA institutions can work to reverse this trend by adopting sustainable seafood business commitments and encouraging our audiences to do the same.

Collective steps by AZA facilities to make purchasing choices that support fishery sustainability will push suppliers to source more sustainably harvested products, which will have a positive impact on the ocean. Studies have shown that sustainable fisheries help to protect shark and ray populations through science-based catch limits, bycatch reduction, and habitat protection.

Participating Institutions

Adventure Aquarium
Alaska Sea Life Center
Aquarium of the Pacific
Audubon Aquarium of the America's
Butterfly House and Aquarium
Cabrillo Marine Aquarium
California Science Center
Cameron Park Zoo
Columbus Zoo and Aquarium
Disney's The SEAS with Nemo and Friends
Florida Aquarium
Fresno Chaffee Zoo
Georgia Aquarium
Jenkinson's Aquarium
Kansas City Zoo and Aquarium
National Aquarium
National Mississippi River Museum & Aquarium
North Carolina Aquarium Fort Fisher
North Carolina Aquarium Pine Knoll Shores
North Carolina Aquarium Roanoke Island
Minnesota Zoo
Monterey Bay Aquarium
Mote Marine Laboratory
Mystic Aquarium
New England Aquarium
WCS/New York Aquarium
OdySea Aquarium
Omaha's Henry Doorly Zoo and Aquarium

Oregon Coast Aquarium
Point Defiance Zoo and Aquarium
Phoenix Zoo
Potter Park Zoo
Saint Louis Zoo
Santa Barbara Zoo
SEA LIFE Arizona
SEA LIFE Grapevine
SEA LIFE Kansas City
SEA LIFE Michigan
SEA LIFE Minnesota
SEA LIFE New Jersey
SEA LIFE Orlando
Shark Reef Aquarium at Mandalay Bay
Shedd Aquarium
Smithsonian's National Zoo & Conservation Biology
Institute
South Carolina Aquarium
Tennessee Aquarium
Texas State Aquarium
Virginia Aquarium and Marine Science Center
Wonders Of Wildlife National Museum & Aquarium
Oregon Zoo
Seattle Aquarium
Steinhart Aquarium/California Academy of
Sciences
Zoo Tampa at Lowry Park
Zoo Miami

*Our thanks and gratitude to the 54 organizations
that participated in this project!*





Data Collection

With support from the AZA Conservation Grants Fund, this project used the [FishChoice "My Assessment"](#) tool which enabled participating partners to upload purchasing data for one year's worth of seafood products purchased and used as feed in their zoo/aquarium.

We partnered with the [AZA Nutrition Advisory Group](#), [Seafood Watch](#) and feed suppliers and vendors, to develop a list of the top sustainably sourced products in use during the data collection period. Additional actions, outlined below, can also help us to make better, more sustainable choices for the animals in our care.

Nutrition Recommendations

1

Diversify your diets - all piscivorous animals should be eating at least 3 different types of seafood, 4-5 if you can. This can help ensure diet sustainability in a landscape where seafood types can become unavailable with little notice.

2

Work with your vendors to expand your available options and select alternatives to red/avoid listed species

3

Weigh all seafood waste from each of your animal areas annually and evaluate opportunities to reduce or repurpose wasted seafood.

Store and rotate your frozen seafood by catch date, not delivery date to maximize quality and minimize waste.

4

Review updated USDA guidelines - new slightly longer thaw times for non-marine mammal feeds and ability to repackage frozen items can help reduce waste.

5

Ensure diet sustainability is considered in your institutional collection planning process.

Assessment Results

Data as of 09/2024

Top-ten reported Aquarium feeds (by volume)

1. Capelin
2. Pacific Herring
3. Atlantic Herring
4. Rainbow Smelt
5. Northern Shortfin Squid
6. Atlantic Surf Clams
7. California Market Squid
8. White Shrimp
9. Antarctic Krill
10. Pacific Mackerel

Seafood Watch Sustainability Ratings of Aquarium feeds (by volume)

Best Choice

Buy first. Green-rated seafood is well managed and caught or farmed in an environmentally responsible manner. It poses a low environmental risk.

Good Alternative

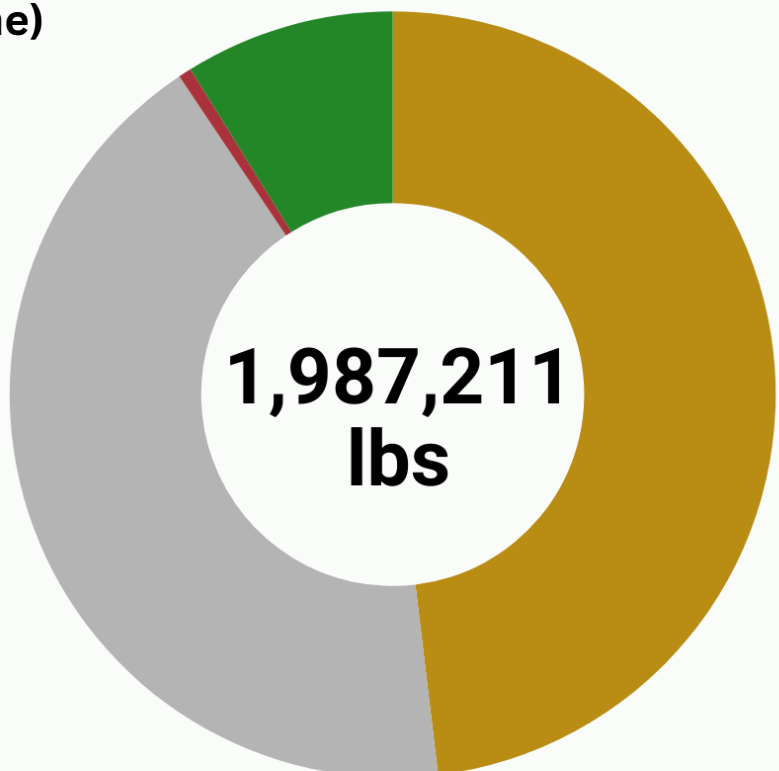
Buy if a green-rated option is not available. This seafood poses a moderate environmental risk.

Avoid

Take a pass on this red-rated seafood for now because it poses a high risk to the environment. It's overfished, lacks strong management or is caught or farmed in ways that harm other marine life or the environment.

Unrated

These products have not been assessed by Seafood Watch for sustainability criteria. Detailed information about annual protocols for updating assessments can be found [here](#).



Assessment Results

Data as of 09/2024

Top Aquarium feeds according to Seafood Watch Ratings

Rated Best Choice

Top Five Products

1. California Market Squid
2. Atlantic Herring*
3. Rainbow Trout
4. White Shrimp
5. Atlantic Salmon

Rated Good Alternative

Top Five Products

1. Capelin*
2. Pacific Herring
3. Rainbow Smelt*
4. White Shrimp
5. Antarctic Krill

Rated Avoid

Top Five Products

1. Jonah Crab
2. Blue Crab
3. Mahi-Mahi
4. Atlantic Mackerel
5. Brown Shrimp

Unrated

Top Five Products

1. Atlantic Herring
2. Capelin
3. Pacific Herring
4. Pacific Mackerel
5. Summer Flounder*

*Individual species reported above vary by catch methods and locations.
As of this report in Q1 2025, some ratings have changed based on updated assessments. Current recommendations can be found on the following pages.

Seafood Watch Ratings

Data as of Q1 2025

Best Choice

1. **California Market Squid** (*Doryteuthis opalescens*, California Market Squid - USA - California - Wild - Purse Seine) All California Market Squid are rated Green.
2. ***Atlantic Herring** (*Clupea harengus* Atlantic Herring - USA - Northeast - Wild - Purse Seine) This rating has been **downgraded to Good Alternative**. There are many [Marine Stewardship Council](#)-certified sources of Atlantic Herring but as of this report, none are rated Green.
3. **Rainbow Trout** (*Oncorhynchus mykiss* Rainbow Trout - USA - Farmed - Ponds) All Rainbow Trout from the USA is Green Best Choice.
4. **White Shrimp** (*Litopenaeus setiferus* White Shrimp - Worldwide - Farmed - RAS - recirculating aquaculture systems (with wastewater treatment) Many sources of White shrimp are environmentally unsustainable. Learn more about shrimp by using the Seafood Watch [Shrimp Guide](#).
5. **Atlantic Salmon** (*Salmo salar* Atlantic Salmon - Worldwide - Farmed - RAS - recirculating aquaculture systems (with wastewater treatment) Many sources of Atlantic Salmon have different ratings. For help understanding the difference between salmon you can refer folks to the Seafood Watch [Salmon Guide](#).

Good Alternative

1. ***Capelin** (*Mallotus villosus* Capelin - Canada - Wild - Purse Seine) As of this report, this species has been **downgraded to Red** and is no longer a sustainable alternative.
2. **Pacific Herring** (*Clupea pallasii* Pacific Herring - Canada - British Columbia - Wild - Purse Seine) All assessed areas of Pacific Herring have a Good Alternative rating.
3. **Rainbow Smelt** (*Osmerus mordax* Rainbow Smelt - Canada - Lake Erie - Wild - Midwater Trawl) As of this report, this species has been **upgraded to Green**. Purchase Rainbow Smelt from Lake Erie and Lake Huron, avoid Rainbow Smelt from the Gulf of Saint Lawrence.
4. **White Shrimp** (*Litopenaeus setiferus* White Shrimp - USA - West Central Atlantic - Wild - Bottom Trawls) East coast bottom trawl and skimmer trawl fisheries for white shrimp have a good alternative rating. Purchase this species of shrimp when they are in season, typically from May-December.
5. **Anarctic Krill** (*Euphausia superba* Antarctic Krill - Southern Ocean - Wild - Midwater Trawl) Only one assessment by Seafood Watch, however there are two [Marine Stewardship Council \(MSC\) certifications](#) for this species.

Avoid

1. **Jonah Crab** (*Cancer borealis* Jonah Crab - USA - Atlantic - Wild - Pots) All sources of Jonah Crab are currently rated Avoid.
2. **Blue Crab** (*Callinectes sapidus* Blue Crab - USA - Florida (Gulf of Mexico)/Atlantic/South Carolina - Wild - Pot/Trap) More sustainable sources of Blue Crab can be sourced from Alabama, Delaware, Maryland, or New Jersey. Avoid all other sources of Blue Crab.
3. **Mahi-Mahi** (*Coryphaena hippurus* Mahi-Mahi - Peru - Wild - Drifting Longlines) In general, you can make sustainable choices by purchasing Mahi-Mahi from the United States and avoiding imported Mahi-Mahi. You can find more information by using the Seafood Watch [Mahi Guide](#).
4. **Atlantic Mackerel** (*Scomber scombrus* Atlantic Mackerel - Canada - Atlantic - Wild - Purse Seine) All sources of Atlantic mackerel are currently rated Avoid. It is recommended to swap for Pacific Mackerel for a sustainable alternative.
5. **Brown Shrimp** (*Farfantepenaeus aztecus* Brown Shrimp - Mexico - Gulf of Mexico - Wild - Bottom Trawls) Avoid Brown Shrimp from the Gulf of Mexico landed in Mexico. Opt for Brown Shrimp from the Gulf of Mexico landed by US vessels using Turtle Excluder Devices (TEDs), or East Coast of the USA as an alternative.

Unrated

1. **Atlantic Herring**- Many sources of Atlantic Herring are unrated, consider Pacific Herring as an alternative.
2. **Capelin** - Unassessed origin listed here- look for MSC certified Capelin.
3. **Pacific Herring**- Many Pacific Herring sources are unrated. Look for Pacific Herring from Canada.
4. **Pacific Mackerel** - There are many Good Alternative ratings for Pacific Chub Mackerel (*Scomber japonicus*); consider purchasing Pacific Chub Mackerel from Chile, Ecuador and Japan, or King Mackerel from the United States.
5. ***Summer Flounder**- Many, if not all, sources of Summer Flounder have been assessed, however there may have been an issue with this species and data entry within the FishChoice My Assessment tool. Look for Summer Flounder from the USA that do not use set gillnets.

Fisheries catch methods and locations change regularly. Continued data collection and assessments are vital to ensure that we are purchasing the most sustainable options that meet or exceed the nutritional needs for the animals in our care. The purpose of this project is to continue to work with partners to assess the needs of zoos and aquariums and provide accurate data to make informed, sustainable purchasing decisions now, and in the future.



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