Spinning the Sea

The Story of the Fishing Industry

by Jodi Forschmiedt

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Water World

The vast and sparkling blue oceans cover most of Earth. The oceans are so huge that we haven't yet learned about all of the creatures that live in them. Scientists think that 99 percent of all the life-supporting **habitats** are in the sea.

Naturally, early humans turned to the sea to find food. Prehistoric people ate shellfish, such as clams and mussels. Piles of shells have been found in the places where they lived. Shellfish can be easily collected by hand from the rocky shore. Even without tools, humans took food from the sea.

In Japan, people were fishing 10,000 years ago. They had weights to make nets sink and floats to hold them up. They also had **harpoons**, fishhooks, and dugout canoes.

Over time, humans got better and better at fishing. They learned to build bigger, stronger boats. They invented new materials to weave into long-lasting nets. High-tech gadgets helped them find their way around the immense oceans.

Fishing in the 21st century is oddly similar to fishing in ancient times. We still use traps, nets, and hooks. Those early humans caught fish to feed themselves or their tribes. Modern-day fishermen use technology to catch fish and other sea creatures in huge numbers to sell all over the world.

Earth and its oceans

Gillnetting

Native Americans have used this clever fish trap for hundreds of years. Fishermen still use it to catch salmon.

The gillnet hangs vertically in the water. It may be pulled behind a boat or staked in one spot. The openings in the mesh are just big enough for salmon heads. Unfortunately for the fish, the rest of their bodies can't squeeze through. When they try to back up, their gills catch on the mesh. They are stuck until the fishermen pick them out.

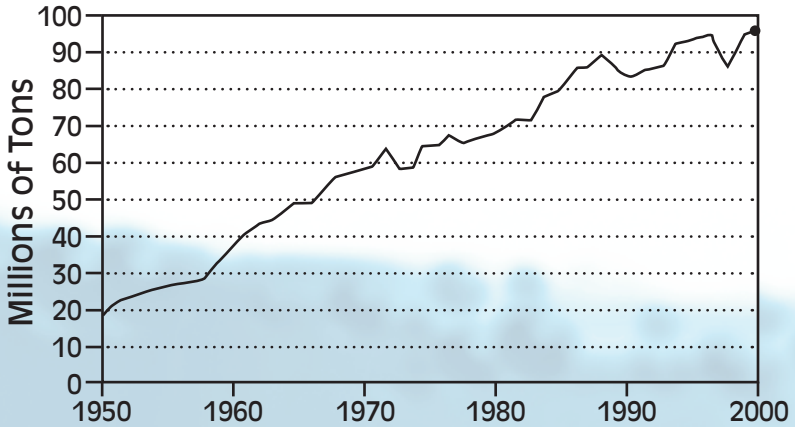
A whole lot of fish

The worldwide fish catch is much bigger than it used to be. Modern technology has made it much easier to catch fish. Global Positioning Systems, or GPS, help fishermen find exact spots in the immense oceans. Video fish finders locate the sea life far below.

Fishing boats have gotten bigger. Some even have factories on board. These boats can stay at sea for months at a time. They catch many more fish than smaller boats.

Overfishing is causing the **populations** of some fish to crash, or become too small. Much of commercial fishing today is unsustainable and can't be continued because the fish will disappear.

World Fish Catch, 1950–2000



A Day in the Life of a Fisherman in Alaska

A crew working on deck

A fisherman snores in his bunk. His body just barely fits in the narrow space and his feet hang off the edge. He sleeps only a few hours at a time, and not always at night.

At a holler from the skipper, the fisherman leaps out of bed. His crewmates do the same. They slip on their rain gear and make their way to the deck. When the salmon are jumping, there's no time to sleep.

Out on the deck, the Alaskan air blows chilly. The water is icy cold. Four deckhands work together to set the seine and haul the net full of flapping fish onto the deck. The crew puts the fish on ice in the ship's hold, its lower storage area.

Fishing for dolphins

Yellowfin tuna swim with dolphins in the Pacific Ocean. Dolphins swim near the surface. They jump in the air to breathe. Yellowfins swim underneath them. Nobody knows why.

Tuna fishermen look for jumping dolphins. They know they can find tuna below. Fishermen use fast boats to chase the dolphins. It tires them out. Tired dolphins are easier to catch. The yellowfins stay with the dolphins through the chase.

The fishermen surround the dolphins with a seine net. The net surrounds the tuna, too. The fishermen pull the net tight. Then they release the dolphins. Sometimes the dolphins are alive. But often they are not. This method of seining for tuna is called dolphin sets. It used to kill 500,000 dolphins per year.

People like dolphins. They are cute and playful. They have smiling faces. Many people wanted to protect the dolphins. So in 1972, the United States passed the Marine Mammal Protection Act.

A dolphin

This law banned dolphin sets. American fishermen changed their methods. But fishermen in other countries did not.

American consumers still wanted to eat tuna. But they didn't want the dolphins to get hurt. There was no way to tell where the tuna in the cans came from. Tuna from other countries looked just like tuna caught by U.S. fishermen. So, the canned tuna companies put a "dolphin safe" label on their cans. It shows that no dolphins were harmed to catch the fish. The U.S. government also made a new law. No one could **import** tuna caught with dolphins. Many people felt happy for the dolphins. But solving one problem created others.

More danger for dolphins

The United States sells many things to other countries. Other countries sell many things to the United States. Selling between countries is called trade. And sometimes countries disagree about what can be sold.

Mexico trades with the United States. But some Mexican fisheries still use dolphin sets to catch tuna. So Mexican tuna can't be sold in the United States, because it's not dolphin safe. The government of Mexico complained. They said the United States wasn't trading fairly.

President Clinton tried to compromise. He changed the law. An observer had to ride on each boat. If the observer said no dolphins had been hurt, the tuna could be sold in the United States, even if dolphin sets were used.

People were upset. They didn't believe you could fish this way without hurting the dolphins. They didn't trust the observers to tell the truth. Judges struck down the law. They decided the dolphins still needed protection.

Chapter 5

A Whale of a Tale

J.J. the gray whale

The infant gray whale washed up on a California beach. She was only one week old. Whale experts took her to SeaWorld in San Diego.

The staff named her J.J. They fed the baby a mixture of cream, clams, and powdered milk. She gained two pounds an hour!

J.J. lived at SeaWorld for 14 months. Then her caretakers put her back in the ocean. They hoped she would join a group of gray whales migrating north. They hoped she would find enough food for herself. And they hoped she would not be eaten by killer whales. Nobody knows for sure if J.J. learned to live in the wild. But we hope she survived. Every whale is precious.

Four centuries ago, whalers killed too many gray whales. Now the Atlantic Ocean gray whales are **extinct**. The gray whale population in the Pacific Ocean is recovering. Whalers are no longer allowed to hunt them. Humans have been whaling for 8,000 years. Only the Atlantic gray whales are extinct, but many species are endangered.

Some whales are immense. Blue whales are the biggest animal that ever lived on Earth. They are bigger than the biggest dinosaurs. Their size didn't protect them. Even the huge blue whales almost became extinct.

Right whales, wrong whales

In the 11th century whalers hunted "right whales." They used that name because it was the right kind of whale to go after.

Right whales swim close to the shore. They're not very fast. Most importantly, after they are killed, their bodies float.

Whalers killed so many right whales that they became scarce. The whaling nations agreed to stop hunting right whales in 1937. In the meantime, the whalers learned new techniques so they could go after other whale species. The learned to kill faster whales in deeper waters.

The cycle repeated itself over and over. Each species came close to extinction from the relentless hunting. Then whalers switched to a different kind of whale.

Why the whales need saving

Early whalers took only the blubber, or fat, of the whales. It was turned into oil and used to light lamps. The rest of the carcass would be dumped back into the sea. They couldn't use the meat because it spoiled too quickly.

When the whalers learned how to preserve meat, they began using more of the whales. Whale oil brought a high price until gas lamps were invented in the 19th century. Then many whalers quit. They couldn't make enough money.

Spotlight on
Mangroves

Along muddy coasts and estuaries, a funny-looking tree grows. Mangroves stand up on tall roots like stilts. The roots travel down through the water into the mud below. Mangrove forests grow in warm climates. They play an important role in the tropical **ecosystem**.

Mangroves protect the shore from **erosion**. Their roots nurture oysters, barnacles, sponges, and other life forms. When big storms such as hurricanes threaten the coast, the dense mangrove forest helps slow them down. These amazing trees are not bothered by the salt in the water. Their roots filter most of it out. Any salt that does get into the plant comes out of the leaves. Many birds and animals inhabit the mangrove forest. The trees make hard wood. It can be used for building or burned for fuel. And the fruit of the mangroves is said to be delicious.

Nearly four million acres of the world's mangroves have been cleared away to make ponds for aquaculture. In Thailand the coastline has been given over to shrimp farms. More than half of the country's mangrove forest has been razed. Most shrimp farms in Thailand do not create food for local people. They raise shrimp to export to other countries. The farms provide jobs for the villagers.

Mangroves offer spawning grounds for many fish. Without mangroves, the fish populations suffer. Villagers may get jobs as shrimp farmers. But the fishermen may lose their jobs.

Shrimp farms often operate for only a few years. The water becomes so polluted the shrimp can't survive. The farms are abandoned and new ones started elsewhere. Experts say it takes thirty years for the land to recover. They hope it will grow mangroves again.

Some countries now forbid converting mangrove forests into shrimp farms. When farms are owned by big companies, only the company profits. The local villagers lose their mangroves and get nothing in return.

fish. The farmer would lose a great deal of money and months of hard work.

Diseased farm fish can spread the sickness to wild fish. In 2000 a salmon disease hit fish farms in Maine. Two-and-a-half million fish had to be slaughtered to stop the disease from spreading further. Fish farmers use antibiotics to fight diseases. You might take antibiotics if you have an infection. But fish antibiotics are bad for humans.

Farmed fish may eat a lot of antibiotics. Some of the drug stays in their bodies. Eating those fish would not be healthy. The United States has rules about how much antibiotic farmers can feed their fish. Farmers in other countries may use more.

A dirty business

Where you have animals, you also have animal waste. Fish are no exception. In the huge oceans the fish move over large areas. The waste is not all in one place. Currents carry it farther away.

A mangrove forest

The Future of Fishing

Under the sea

One out of five people on the planet depend on fish as their main source of **protein**. Without it they would go hungry. Millions of people make their living by fishing. Many of them live in developing countries. There are no other jobs.

With so much at stake, the world's oceans and fish stocks must be protected. Experts say that 70% of the fish species in the world are fully used or depleted. That means many fish populations are falling. Others will fall too, if we don't make changes.

You may have learned about rainforests in school. Many people are concerned because the forests are being cleared. But the world's oceans are being cleared at twice the rate of the forests. Whole ecosystems have been quietly, invisibly destroyed.

Toward sustainable fishing

Four steps, none of them easy, must be taken to save the oceans.

1. **All over the world, people catch too many fish.**

   We must catch fewer. Fisheries set quotas to limit the number fishermen are allowed to take. To decide what the quotas should be, they look at catches from other years. They read reports from scientists. Everyone has an opinion. Fishermen want higher quotas so they can sell more fish. Consumers want to buy the fish they want. Managers of fisheries try to find a balance. In the end, they guess.

2. **Fishing of some species must be stopped.**

   Most of the whaling nations agreed to a ban on commercial whaling to give the whales a chance to recover.

   It's working. Several whale populations are increasing. Only one—the North Pacific gray whale—has been taken off the endangered species list. Others need more time.

   Some fish species may be fished into extinction. The bluefin tuna is critically endangered. Fisheries continue to catch the big fish because it brings in so much money.

3. **Illegal, Unreported, and Unregulated (IUU) fishing must be stopped.**

   Pirates ignore the quotas and catch more than they are allowed. Or they fish for species they are not allowed to catch at all. In the vast oceans, it is hard to enforce fishing laws.

4. **Fishing nations must work together.**

   Every country that catches or eats fish wants the oceans to be healthy. For a sustainable fishing plan to work, all fisheries must agree to it. People have fished for thousands of years, and they will continue to fish long into the future. As time goes on, we will come up with new ways of catching fish, which might be healthier for the fish and for the planet. The story of the fishing industry continues to be written.

Glossary

aquaculture: fish farming

bacteria: living things consisting of only one cell that can't be seen without a microscope and might cause diseases

bait: food used to attract a fish so you can catch it

biomedical companies: companies that use discoveries in biology to create medicine or medical supplies

buoy: a floating marker in the ocean or in a river

cabin: the living area inside of a ship

cannery: a factory in which fish is processed and canned

commercial fishermen: people who catch fish to sell

conch: a marine animal that lives in a spiral shell

coral: a substance found underwater, made up of the skeletons of tiny sea creatures

diversity: the whole range of plant and animal life on Earth

ecosystem: a community of animals and plants interacting with the environment

endangered species: types of plants or animals that are in danger of becoming extinct

erosion: the gradual wearing away of a substance by water or wind

estuaries: spots where rivers meet the ocean

exports: sends products to another country to be sold there

extinct: does not exist anymore

fishery: a group of catchers and buyers of fish in a particular place

habitats: the places and natural conditions in which plants or animals live

harpoons: long spears with ropes attached that can be thrown or shot out of a special gun

import: to bring into a place or country from elsewhere

migrate: to move from one region or climate to another

populations: the total numbers of species in a certain area

protein: a substance found in all living plant and animal cells, needed in the human diet

reproduce: to breed and produce offspring

skiff: a small boat

superstition: a belief that some actions not connected to future events can influence the outcome of the events

threatened species: a type of plant or animal that may soon be endangered because the population is shrinking

winched: moved by a machine that lifts or pulls heavy objects