

## Species chart for Chesapeake Bay fisheries

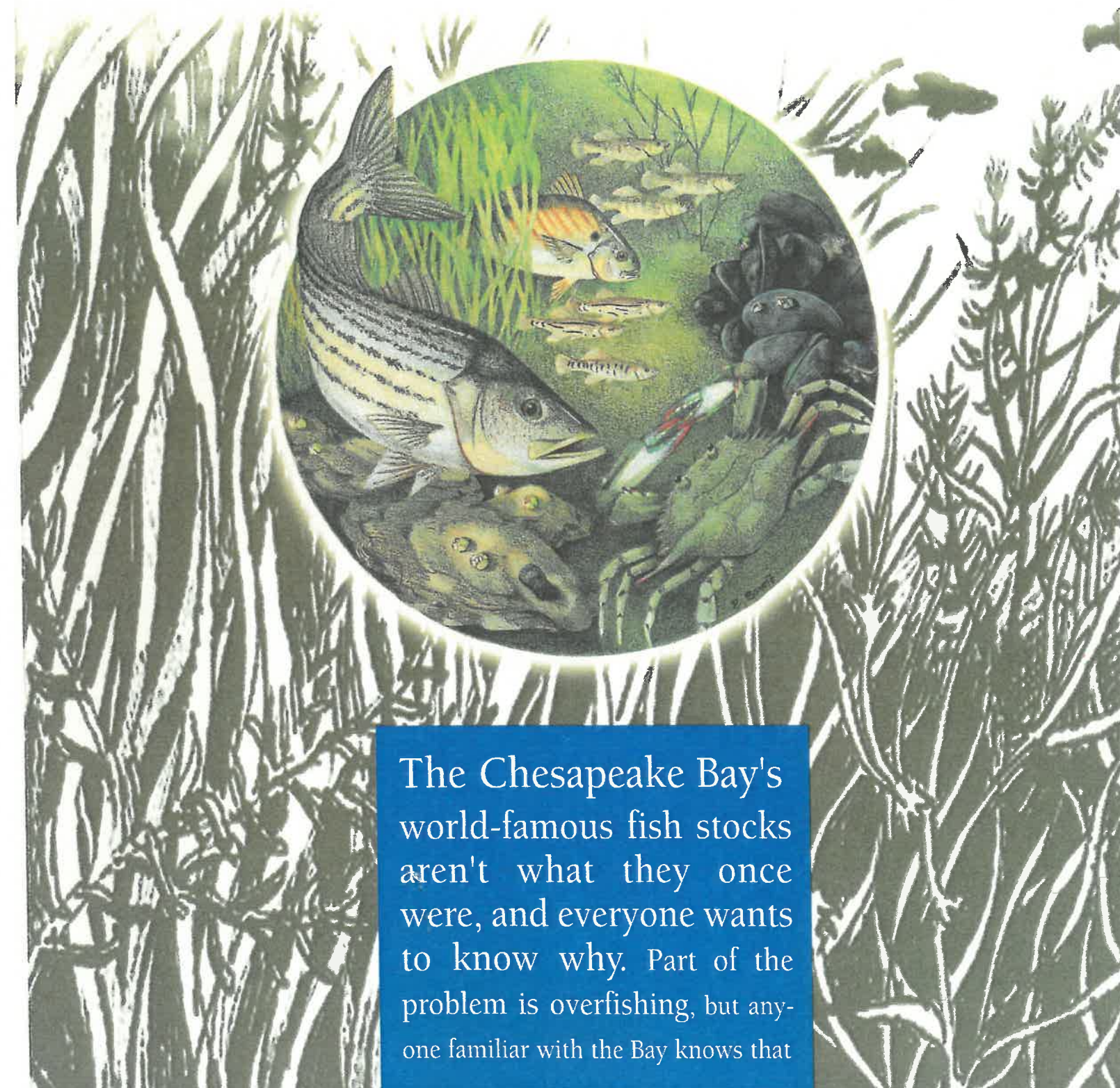
The species chart is important to Chesapeake Bay fisheries. Black dots illustrate direct habitat problems that research has shown. Use this table to find the problems faced by your favorite species. You may find that fish and their habitats are much more interrelated than it first appears.

	Sediment	Nutrients	Dredging	Toxins	Acid rain	Oil spills	Spawning access	Oyster bars	Wetlands/forests	Underwater grasses
Yellow perch	●	●	●	●	●	●	●	●	●	●
White perch	●	●	●	●	●	●	●	●	●	●
Atlantic sturgeon	●	●	●	●	●	●	●	●	●	●
Striped bass	●	●	●	●	●	●	●	●	●	●
Oysters	●	●	●	●	●	●	●	●	●	●
Blue crabs	●	●	●	●	●	●	●	●	●	●
American shad	●	●	●	●	●	●	●	●	●	●
Hickory shad	●	●	●	●	●	●	●	●	●	●
Hard clams	●	●	●	●	●	●	●	●	●	●
Soft clams	●	●	●	●	●	●	●	●	●	●
Weakfish	●	●	●	●	●	●	●	●	●	●
Speckled trout	●	●	●	●	●	●	●	●	●	●
Menhaden	●	●	●	●	●	●	●	●	●	●
Bluefish	●	●	●	●	●	●	●	●	●	●
Atlantic croaker	●	●	●	●	●	●	●	●	●	●
Spot	●	●	●	●	●	●	●	●	●	●
Summer flounder	●	●	●	●	●	●	●	●	●	●
Red drum	●	●	●	●	●	●	●	●	●	●
Black drum	●	●	●	●	●	●	●	●	●	●
Alewife	●	●	●	●	●	●	●	●	●	●
Blueback herring	●	●	●	●	●	●	●	●	●	●
Freshwater bass	●	●	●	●	●	●	●	●	●	●
Freshwater trout	●	●	●	●	●	●	●	●	●	●

ILLUSTRATION BY ALICE JANE LIPSON

# HABITAT

## Fish Can't Live Without It



The Chesapeake Bay's world-famous fish stocks aren't what they once were, and everyone wants to know why. Part of the problem is overfishing, but anyone familiar with the Bay knows that



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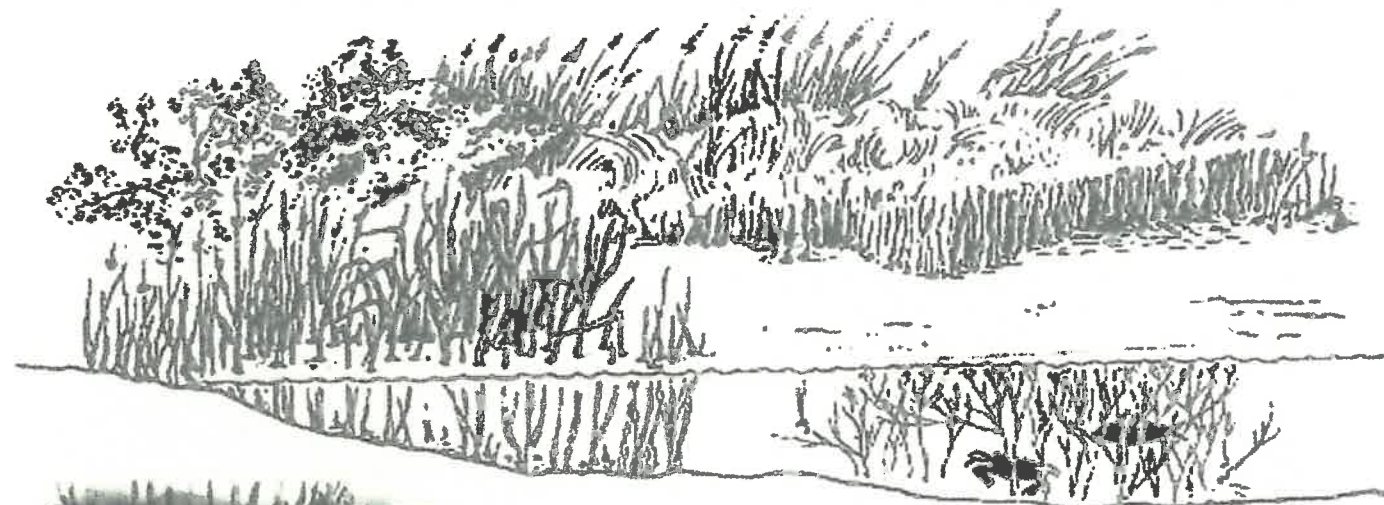
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there are other problems – pollution and wetland destruction. Fertilizers, soil, sewage, poisons, oil and trash that wash off the land and fall from the air pollute the water where fish live.

Wetlands are destroyed by human activities. The places where fish live, where they feed, spawn and hide, are called habitat.

When habitat is destroyed, one way or another, fish are hurt too.



### WETLANDS & FORESTS

Wetlands and forests filter runoff before it gets in the Bay. They can help prevent the problems associated with nutrients, toxics and sediment. Poorly planned land use that destroys wetlands and bordering forests affects fish habitat by reducing water quality in the Bay and its tributaries.

Marshes are essential nursery habitat for many fish and crab species. They provide places to hide and plant material and small animal life for food. Bulkheads and rip-rap don't have nearly the habitat value of wetlands. The destruction of wetlands and bordering forests leads to fewer fish as water quality and habitat are diminished.

### UNDERWATER GRASSES

Grasses once covered much of the Bay floor but today only ten percent of the grass beds remain. Loss of grass beds means a loss of nursery habitat for young fish and crabs.

Underwater grasses absorb nutrients from the water and in the process produce oxygen. They also can sift sediments from the water and help to hold them in place on the bottom.

### SEDIMENT

When we cut forests or fill wetlands in the process of construction or farming, we are affecting more than the animals and plants that live there; we are also unleashing a lot of soil into the Bay.

Soil washing in the Bay, or sediment, can smother the eggs and very young of oysters, hard clams, white perch, striped bass and yellow perch.

Sediment can completely bury oyster bars. Also, sediment clouds the water and prevents light from reaching underwater grasses.

### NUTRIENTS

Fertilizers from farms and lawns, waste from animals and humans and air pollution (mainly from car exhaust and power plant emissions) all put nutrients into the water.

In excessive amounts, nutrients cause algae (tiny, floating plants) to grow in great blooms which cloud the water and block the sunlight from underwater grasses. When the algae die, they fall to the bottom and are consumed by bacteria. In this process, the bacteria use a lot of oxygen, sometimes all of it, leaving little for fish to breathe.

Low oxygen can force fish like striped bass and white perch to move from their normal habitat. Many fish may have to move into the same area, increasing competition for space and food. Low oxygen can also kill crabs in pots and schools of menhaden trapped in coves.

### TONICS

Poisonous chemicals, known as toxics, enter the Bay from many sources, including industry, homes, autos, sewage treatment plants, storm drains, agriculture and boats. The effects of toxics on fish depend on the fish's eating habits, the amount and type of chemical present, the presence of other chemicals and the saltiness and temperature of the water. Recent research suggests that toxics may reduce the ability of oysters to fight off disease.

Very little is known about how the hundreds of toxics that enter the Bay affect fish. TBT, once

common in boat bottom paints, is dangerous to oysters and both hard and soft shell clams. Clams are also sensitive to mercury and copper, which stunt their growth. Very young blue crabs are affected by some metals and by kepone, an ant and roach killer. Spot, white perch, and striped bass are affected by various forms of chlorine. Striped bass and oysters are sensitive to cadmium.

### ACID RAIN

Acid rain is caused by air pollution from fossil fuel burning in cars, power plants and factories. Acidic waters can kill the eggs and young of white perch, striped bass, blueback herring and yellow perch. In a strange twist, acid rains can release naturally occurring aluminum from soils. The aluminum can kill young herring, striped bass and yellow perch.

### OIL SPILLS

Whether it is a leaky transmission or a large scale spill, automobiles, pleasure boats, tankers and barges all put petroleum products into the Bay through leaks and spills. These inadvertent acts are compounded by the home mechanic who pours oil down a storm drain. Petroleum products can be deadly to shellfish like the oyster and soft clam. They also are known to have negative effects on spawning, eggs and young of hard clams. Spills can wipe out wetland and bottom communities which are essential to young fish as nurseries and food resources.

### DREDGING

Dredging the bottom to create deeper water for navigation disrupts bottom habitat and may destroy sensitive areas. Soft bottom areas may recover quickly, but oyster bars and underwater grasses are usually destroyed or covered with sediment. Deepening of shallow areas may prevent the growth of underwater grasses, which require light from the sun.

The disposal of dredged material can destroy habitat as well. Dredging polluted areas also raises concerns

about stirring up and spreading toxics which may have collected on the bottom.

### SPAWNING BLOCKAGES

Dams, culverts and other obstructions on waterways can have drastic effects on fish populations. All fish need to lay their eggs in places that provide certain conditions of temperature, currents, saltiness, type of bottom and cover. Many fish need to go upstream to find the right spawning conditions. Barriers can block access to traditional spawning habitat for striped bass, hickory shad, yellow perch, alewife, American shad, Atlantic sturgeon, white perch and blueback herring.

### OYSTER BARS

Many decades of oyster harvesting combined with sedimentation and disease have dramatically reduced the acreage of oyster bars in the Chesapeake Bay. Oyster bars provide essential habitat for many bottom dwellers that are important food for blue crabs, black drum, red drum, striped bass, weakfish and croakers. Historically, oysters formed reefs in the Bay, the Chesapeake version of the coral reef. Those reefs, once extremely valuable habitat, are largely gone today.

The loss of oyster bars in the Bay has also meant the loss of a tremendous filter. Oysters filter the water for their food and in the process they remove pollutants from the water, much like a filter in a fish tank. As in a fish tank, less filtering means more problems with nutrients and sediments.

Misused harvesting equipment can cause habitat destruction too. Harvesting soft shell clams too close to oyster bars or underwater grasses can kill them by smothering them with the sediment stirred up by the hydraulic equipment used.

