AQUACULTURE
Family Coloring Book

EAT MIDWEST FISH
Each portion of this book is separated into two parts: an advanced reader section on the left (for grown-ups) and a beginning reader section on the right. We hope that you will enjoy reading and coloring this book together.

To find local fish, recipes, and cooking demonstrations visit EatMidwestFish.org
Aquaculture species come in many shapes, colors, and sizes—and they change throughout their lifespans! Consider borrowing a field guide from your local library or visiting https://eatmidwestfish.org/coloring-guide for reference material.
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AQUACULTURE

is the breeding, growing, and harvesting of fish, shellfish, algae, and other aquatic organisms in all types of water environments. Aquaculture can also be called fish farming or fish culture. Fish and other aquatic animals raised by farmers can be sold as food, bait, pets, or for stocking.

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American Paddlefish
*Polyodon spathula*

American paddlefish (*Polyodon spathula*) are one of the largest freshwater fishes in the world, reaching over 150 pounds. They have grey, shark-like bodies with white bellies. A distinguishing feature of paddlefish is their paddle-shaped noses, also known as their rostrum. The rostrum is covered in electric sensors that help them detect food. Paddlefish are typically found in large rivers like the Wabash and Mississippi Rivers. They filter zooplankton—small, drifting or floating organisms—from the water using their gill rakers. They are slow-growing and vulnerable to overfishing, and listed as endangered in some parts of their geographical ranges. Paddlefish are predominantly captured for their black eggs, sold as caviar, or they are farmed or “ranched” for both eggs and meat.

Paddlefish are unique and one of the largest freshwater fishes in the world. They have shark-like bodies with a long, flat “paddle” off their noses that they use to sense food. They are an ancient fish and have lived in North America for at least 65 million years.

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Arctic Char
Salvelinus alpinus

Arctic char (Salvelinus alpinus) are native to alpine lakes and arctic and subarctic coastal waters. Their color changes based on the time of year and their environment. When in salty coastal waters, they have a silvery hue that shines in the sunlight. As they migrate upstream to spawn, their backs darken and undersides turn a vibrant shade of orange or red. Because they need cold water to live and grow, they are a species of interest for farmers with indoor controlled environment systems, primarily in Canada, Iceland, and the U.S. They have a delicious, mild flavor that is more like trout than salmon.

Arctic char are cold-water fish that are related to trout and salmon. They can hide from predators by changing color to blend in with their surroundings, just like chameleons and seahorses.

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Atlantic salmon (Salmo salar) are native to waters off the Northeastern United States, Canada, Greenland, and Iceland. Atlantic salmon were once heavily targeted by commercial fishers, but due to overfishing, the fishery was closed in the U.S. in 1948. Now they are commercially farmed worldwide. In landlocked states, Atlantic salmon are grown in indoor systems where farmers can control the temperature of the water to mimic the natural environment. They are the most common species of salmon to farm.

Atlantic salmon are also known as the "King of Fish" and change color as they grow. Young fish are colorful and have 8 to 11 dark stripes on their sides, while adults are silver with small black spots. Young fish eat small things like insects and plankton, and adults eat small fish like herring and capelin. Plankton are the tiny, microscopic organisms that float in the water.

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Australian Redclaw Crayfish

*Cherax quadricarinatus*

Australian redclaw crayfish (*Cherax quadricarinatus*) are native to freshwater lakes and billabongs, isolated ponds left behind after a river changes course, in northern Australia and Papua New Guinea. The terms carnivore and herbivore might sound familiar, but redclaw crayfish are detritivores—meaning that they typically eat dead and decaying plants and animals. As a popular recreational species in Australia, they’re caught in small traps and nets. They are also grown in aquaculture facilities in Australia and have been introduced to other countries, including the United States. This species grows up to 1 pound per crayfish and tastes delicious boiled, steamed, or grilled.

Australian redclaw crayfish are a freshwater, lobster-like animal found in Australia. These crayfish are brown, blue, or green in color, and males have a red tip on their claws. They crawl across the bottom of lakes and often make burrows, or underground nests, in the mud.

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Barramundi (Lates calcarifer) are large, predatory fish that can grow to over 120 pounds. They are found in both saltwater rivers or bays and in freshwater lagoons, often migrating between them. The ability to survive in a wide range of environments has made them perfect for aquaculture—they’re grown in fish farms in many countries around the world, including the United States. In freshwater systems, they typically grow to a size of 1-2 pounds and are sold to restaurants and grocery stores. Barramundi have white, flaky flesh that is mild in flavor and can be cooked in many different ways, including sautéed or in one-skillet meals.

Barramundi (pronounced bear-uh-mun-dee) are a large, silver fish native to Australia and southeast Asia. They are popular for fishing and delicious to eat. Farmers buy young barramundi, called fry, and fly them from Australia all the way to the United States, where they spend the rest of their lives on fish farms.

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Black Crappie

Pomoxis nigromaculatus

Black crappie (Pomoxis nigromaculatus) are one of two crappie species found in freshwater systems throughout North America. They are characterized by their large mouth, thin body and large fins. To reproduce, male crappie will build their nests near other nests or in a colony to attract females. Once the eggs are laid and fertilized, the male is responsible for protecting the eggs and the newly hatched juveniles. They eat a wide range of fish and invertebrates, and can be caught using bait or artificial lures. Black crappie are a popular, tasty, recreational fish species. Crappie are a challenging fish to culture for food, so farmers grow them in ponds more for stocking than as a food fish.

Black crappie (pronounced krah-pee) are round, thin fish that have lots of black speckles all over their body. Their name comes from a French-Canadian word for sunfish. Sunfish are the family of fishes tending to have round, thin "pancake-like" bodies with a back fin, called a dorsal fin, that has both soft points and sharp spines. They come in many interesting color patterns and are common in lakes and reservoirs throughout the United States.
Bluegill
*Lepomis macrochirus*

Bluegill are small sunfish found in ponds and lakes. They get their name from a small blue or black flap on the side of their head, near their gills. They are a great fish for kids to catch using a worm and a bobber, and they taste great cooked.
Channel Catfish

Ictalurus punctatus

Channel Catfish (Ictalurus punctatus) are one of more than 3,000 catfish species worldwide. They are freshwater catfish that live in large creeks, rivers, ponds, lakes, and reservoirs east of the Rocky Mountains. Channel catfish are the most common species of catfish to be found in the United States and are so well-liked in certain parts of the country that they have become the official state fish for five states: Kansas, Missouri, Iowa, Nebraska, and Tennessee. Additionally, “catfish country” is considered to be Alabama, Arkansas, and Mississippi as catfish grow faster and bigger in warmer waters. It’s not surprising that this popular commercial and recreational species has captured the attention of the aquaculture industry. Channel catfish are top on the list, by volume, of U.S. farmed food fish. Catfish are farmed for food, for stocking into lakes and ponds, and for fee-fishing businesses.

Channel catfish are grey/brown fish that get their name from four pairs of whiskers they have around their mouth. These whiskers are covered with taste buds to help them smell and taste food in murky water. They like to eat small fish, crayfish, clams, snails, and insects. On farms they also eat catfish food—pellets made especially for them with all the nutrients they need. Channel catfish are fun to catch and great to eat!

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Coho salmon (Oncorhynchus kisutch) are found throughout the rim of the Northern Pacific Ocean—from Japan to the Bering Sea between Alaska and Russia, and south to Monterey Bay, California. Coho salmon are anadromous, meaning that they start their lives in freshwater, migrate to the ocean, and return to freshwater to spawn. They have adapted physiologically and behaviorally to live in both environments. The species can control the levels of salts in their cells through osmoregulation, which helps when migrating between fresh and saltwater. For example, they can choose to either drink water, which can offset the dehydrating effects of saltwater, or not to drink when they return to freshwater. Coho salmon have been introduced to the Great Lakes for recreational fishing and can be farmed in indoor tank systems. They're prized for their fight and flavor. They have a sweet, mild salmon flavor and an oily richness.

Coho salmon are also called silver salmon because they have shimmering silver sides with black spots along their backs and sometimes the tops of their tails. They spend part of their lives in the ocean and the rest of their lives in freshwater rivers and lakes.
Florida Pompano
Trachinotus carolinus

Florida Pompano (Trachinotus carolinus) are a marine species in the Jack family. They can be found in the Western Atlantic from Massachusetts to Brazil. Adults live in coastal areas with sandy beaches or near inlets as well as in bays and estuaries. They like to eat clams, crabs, and other benthic (i.e., bottom-dwelling) invertebrates. Pompano are highly prized for their rich, sweet, crab-like flavor. There are a few ways they can make it to your plate—they are commercially harvested, farm-raised, and caught by recreational anglers. Before eating fish caught in the wild, it is recommended to check local fish consumption advisories.

Florida pompano are saltwater fish that are silvery to bluish-green, with yellow on their bellies and fins. They are made for speed and move fast through the water. It is common to see one flying out of the water and skipping across the surface of the water like a stone.

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Freshwater prawns (Macrobrachium rosenbergii) are crustaceans native to freshwater lakes and rivers in Southern Asia from Pakistan to Vietnam, in northern Australia, and in Papua New Guinea. They are highly mobile and change location based on their needs. While adults spend most of their lives in freshwater, juveniles can be found in brackish water estuaries. They are typically bottom-dwelling but can walk on land and even climb small waterfalls. Freshwater prawns were brought to the United States in the 1970s as a part of a commercial-scale hatchery project, and now they are commonly pond raised in the south but can also be farmed in the Midwest.

Freshwater prawns are also called giant river prawns because they are really big shrimp. They have five pairs of blue and orange legs that they use to walk across the bottom of lakes and rivers, and even over land. On one pair of their walking legs are long, slender claws that they use to catch and eat food. They also have two long, blue antennae that help them find their way in the dark.

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Grass carp (Ctenopharyngodon idella) are large, torpedo-shaped fish that can reach 100 pounds. They prefer slow-moving water in ponds, lakes, and the backwaters of rivers. Grass carp are native to eastern Asia but have been introduced to dozens of countries, including the United States, as a biological control for problematic aquatic vegetation. Because carp are prolific breeders, scientists have developed sterile grass carp so that if they escape into other lakes and rivers they cannot reproduce. They are a popular target species for bowfishing, a type of fishing where people shoot fish with arrows and reel them in with a thin rope. Once captured, it’s recommended to remove the head, tail, and internal organs to minimize the earthy flavor of the flesh. Another tip is to soak fillets (with skin removed) in milk and lemon juice to improve the flavor.

Grass carp are large vegetarian fish that eat aquatic plants and algae. They sometimes even eat grass growing next to the water. Their dark green bodies are covered with large scales to help protect them. Grass carp have lots of bones, so be careful when eating them!

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Hybrid striped bass (Morone chrysops × saxatilis) are called “hybrid” because they are the offspring of two different fish: striped bass (M. saxatilis) and white bass (M. chrysops). Hybrids, as they are commonly called, look similar to their parent species but can be distinguished by a few broken stripes along their bodies. They’ve been favored for recreational fisheries because they grow fast, get to large sizes and are great fun to catch. Hybrid striped bass are also a popular species to farm for people to eat, with over 8 million pounds produced annually. They have a firm, white flesh that tastes great grilled, baked, or fried.

Hybrid striped bass are large, silver or white fish with thin, horizontal stripes along their bodies. They mostly live in freshwater lakes and rivers throughout North America but can also live in slightly salty water. They grow up to 30 pounds and can be a lot of fun to catch because they are such strong fighters!

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Largemouth Bass

*Largemouth bass (Micropterus salmoides)* are native to freshwater areas of North America and have been introduced to other countries such as Japan and Africa. They are found in almost every type of freshwater environment, from tiny ponds and streams to tidal estuaries and the Great Lakes. Largemouth bass create nests just like crappie and bluegill, but instead of building nests in colonies, each male will select his own nesting site. While largemouth bass are important to catch-and-release fisheries, they are also grown in aquaculture and taste similar to hybrid striped bass.

*Largemouth bass* are one of the most popular sport fish species in the world. As their name suggests, they have a large mouth that they use to eat crayfish, fish, frogs, birds, and even snakes! Their body is green, yellow, and white, and they have a single dark stripe running horizontally from head to tail. People love to fish for largemouth bass as they put up a great fight and are known to jump out of the water when hooked.

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Pacific white shrimp (Litopenaeus vannamei) are found in the eastern Pacific Ocean’s tropical marine waters. Life for shrimp starts in the open ocean when they emerge from their eggs. As they grow and change to look like a small version of their parents, their needs change too. Young shrimp, also known as post-larvae, will move inshore to seek food and the relative safety of estuaries, lagoons, and mangroves until they are ready to return to the ocean. On farms, shrimp also change locations depending on their ages. They start their life cycle as an egg collected from a breeding tank. Once hatched, they move from hatchery to nursery, then to “grow-out” ponds or tanks. Pacific white shrimp are a popular species of shrimp to farm because of their delicious flavor and tender texture. Midwest farm-raised shrimp are commonly sold live farm-to-table, in sizes from 30- to 20-count or bigger. Shrimp are typically measured in “counts,” which means the number of shrimp you get per pound. For example, 20-count shrimp means you get 20 shrimp per pound.

Pacific white shrimp are small and can be found in the ocean and on shrimp farms. They are long animals with protective shells, like suits of armor. A shrimp’s protective shell is called its exoskeleton. The exoskeleton is what you take off when you peel and eat it.

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Brook trout, brown trout, and rainbow trout are just a few kinds of trout that you can find in the United States. Some trout may grow naturally nearby where you live, while others are brought from far away and put into a local waterway. For example, brook trout are native to the Great Lakes and Eastern Canada, but brown trout are native to Europe and were brought to the United States in the 1800s.
Tilapia

*Nile (Oreochromis niloticus), Blue (O. aureus), and Mozambique (O. mossambicus)* tilapia are all members of the Cichlidae family. Small and colorful cichlid species are commonly sold as ornamental fish for aquariums. The Nile, Blue, and Mozambique tilapia are less colorful and are typically hybridized for faster growth and to make them better suited for aquaculture. Tilapia has become a general term for many different hybrids and pure strains of fish in the Cichlidae family. While these fish prefer tropical waters and are most commonly produced in ponds in Africa, Central and South America, and Asia, they can also be found in the U.S. as farmers often sell their fish live to ethnic markets, where they are held in tanks until purchased. This ensures the freshest possible product. Tilapia are a well-known, mild-flavored white fish commonly found in grocery stores and on restaurant menus. Hybrid tilapia are also farmed for private pond stocking. If legal in your area, they can be a tool for managing pond algae because tilapia like to eat algae, detritus, cyanobacteria, and zooplankton. When the water begins to cool, tilapia will start to swim near the surface, making them easy to collect with a small net for your next meal.

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Walleye
*Sander vitreus*

*Walleye* (Sander vitreus) are one of the largest members of the perch family. They have a mottled green-brown back and a yellow-white underside. They predominantly feed at night, eating smaller fishes and crayfish. Walleye prefer cooler climates and are found across the northern part of the United States and in Canada. The species is worth millions of dollars to commercial and recreational fisheries, and they’re also grown in hatcheries and for food. Walleye have a mild white flesh and are delicious cooked in many different ways, including pan-seared and in fish cakes.

Walleye are a large fish found in freshwater lakes and rivers. They get their name because their eyes point out each side "toward the walls." Their eyes are also shiny like cat eyes, which help them see in the dark. Walleye are fun to catch, but watch out for their sharp teeth and spines!

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Yellow perch (Perca flavescens) are a medium-sized perch found in the cooler areas of North America. They have vibrant yellow sides with 6-7 dark vertical bands and dark green or black backs. Yellow perch eat a wide variety of food including small fish, crayfish, snails, insects, and even microscopic animals called zooplankton. They have a unique reproductive strategy where the female lays her eggs in a large sticky ribbon that she attaches to logs or plants. Yellow perch are valuable to commercial and recreational fisheries, and they’re also grown in aquaculture. Yellow perch are closely related to walleye and taste very similar, with mild white flesh that can be cooked in many different ways, including fried and in fish chowder.

Yellow perch are a common fish found in freshwater lakes. They get their name from their yellow bodies, which also have some dark vertical stripes and a spiky fin on their backs. Yellow perch like to spend time with friends, often hanging out in large groups—called schools—of 50 to 200 or more fish.

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