CFAES
OHIO STATE UNIVERSITY EXTENSION
4-H 624

OUTDOOR ADVENTURER

INTERMEDIATE FISHING

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Name _____

Age (as of January 1 of current year) _____

County _____

Club name _____

Advisor _____

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Author Tory Gabriel with a Northern Pike.

The Ohio State University

Special thanks the Ohio Department of Natural Resources for permission to use the filleting images on pages 49–50 from their publication *Sport Fish of Ohio Identification*. The illustrations on pages 33–39 and the blade bait image are from The Ohio State University. All other images are from iStock.com.

CONTENTS

NOTE TO THE PROJECT HELPER

Congratulations! A 4-H member has asked you to serve as a project helper. You may be a parent, relative, project leader, friend, club advisor, or another person important in the 4-H member's life. Your duties begin with helping the youth create and carry out a project plan, as outlined in the Member Project Guide.

As a project helper, it is up to you to encourage, guide, and assist the 4-H member. How you choose to be involved helps to shape the 4-H member's life skills and knowledge of the importance of fishing, outdoor recreation, and natural resources.

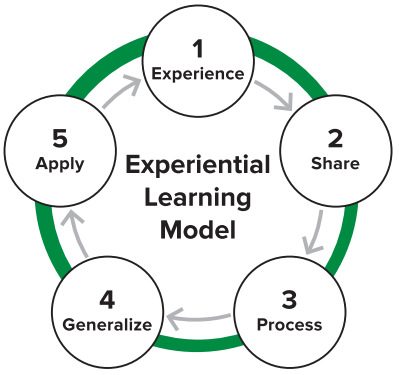
Your Role as Project Helper

Your contributions are critical to delivery of the 4-H program, which is committed to providing experiences that strengthen a young person's sense of belonging, generosity, independence, and mastery. Your interactions should support positive youth development within the framework of the Eight Essential Elements (also known as the Eight Key Elements):

1. A positive relationship with a caring adult
2. An inclusive environment
3. A safe emotional and physical environment
4. Opportunity for mastery
5. Engagement in learning
6. Opportunity to see oneself as an active participant in the future
7. Opportunity for self-determination
8. Opportunity to value and practice service to others

For more information on the Eight Essential Elements, please refer to the *Ohio 4-H Volunteer Handbook* available online at **ohio4h.org**. On a practical level, your role as a project helper means you will strive to do the following:

- Guide the youth and provide support in setting goals and completing this project.
- Encourage the youth to apply knowledge from this project book.
- Serve as a resource person.
- Encourage the youth to go beyond the scope of this 4-H project book to learn more about fishing, outdoor recreation, and natural resources.



Pfeiffer J.W., and J.E. Jones, *Reference Guide for Handbooks and Annuals*.

What You Should Know About Experiential Learning

The information and activities in this book are arranged in a unique, experiential fashion (see model). In this way, a youth is introduced to a particular practice, idea, or piece of information through an opening (1) **experience**. The results of the activity are recorded on the accompanying pages. The member then (2) **shares** what he or she did with the project helper and (3) **processes** the experience through a series of questions that allow him or her to (4) **generalize** and (5) **apply** the new knowledge and skill.

What You Can Do

- Review the Learning Outcomes (project skill, life skill, educational standard, and success indicator) for each activity to understand the learning taking place. See the inside back cover for the Summary of Learning Outcomes.
- Become familiar with each activity and the related background information. Stay ahead of the learner by trying out activities beforehand.
- Begin the project by helping the learner establish a plan. This is accomplished by reviewing the Member Project Guide.
- After each project area is completed, conduct a debriefing session that allows the learner to answer the review questions and share results. This important step improves understanding from an experiential learning perspective.
- Help the learner celebrate what was done well and see what could be done differently. Allow the learner to become better at assessing his or her own work.
- In the Member Project Guide, date and initial the activities that have been completed.

MEMBER PROJECT GUIDE

Welcome to *Outdoor Adventurer: Intermediate Fishing*! Since you're here, you already have a good background in the basics of fishing. This project is going to help you dig a little deeper into the sport with activities about fish basics, about fishing methods and equipment, and about the care and cleaning of your catch.

Outdoor Adventurer: Intermediate Fishing is intended for youth of all ages who already have some fishing experience. This project can be repeated as long as you can show new experiences and learning each year.

The amount of time for each activity varies, and the project is easily completed within one year.

Check your county's project guidelines (if any) for completion requirements in addition to the ones below, especially if you plan to prepare an exhibit for the fair.

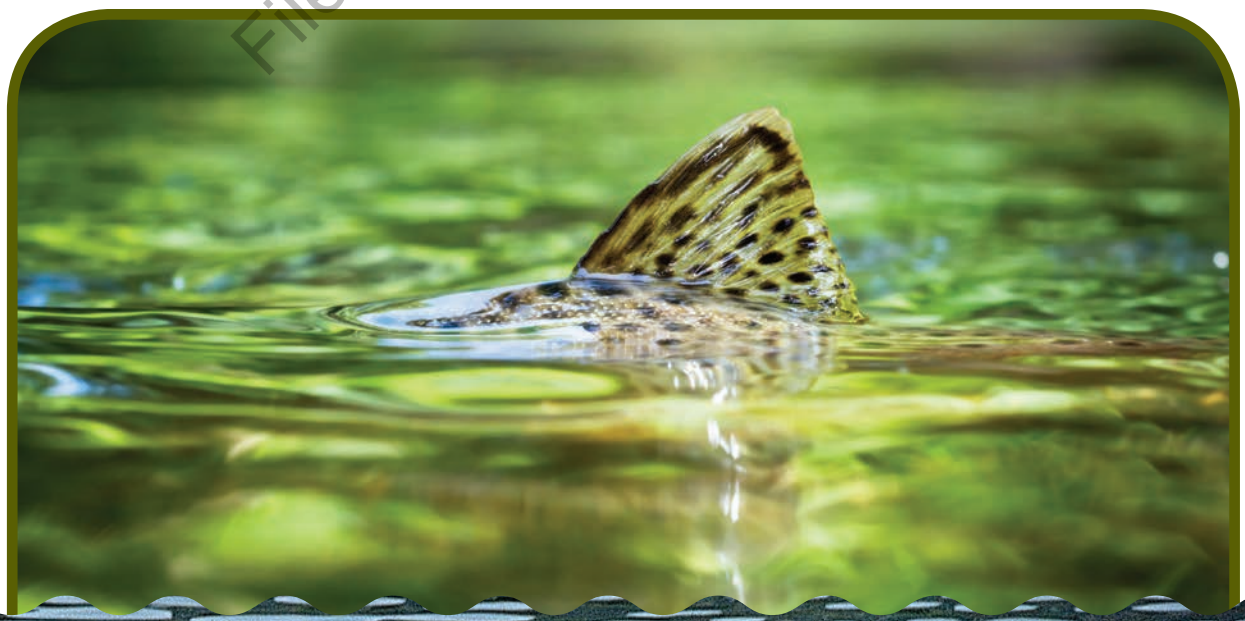
Project Guidelines

Step 1: Complete **all 11** activities and **all** of the Talking It Over questions.

Step 2: Take part in **at least two** learning experiences.

Step 3: Become involved in **at least two** leadership/citizenship activities.

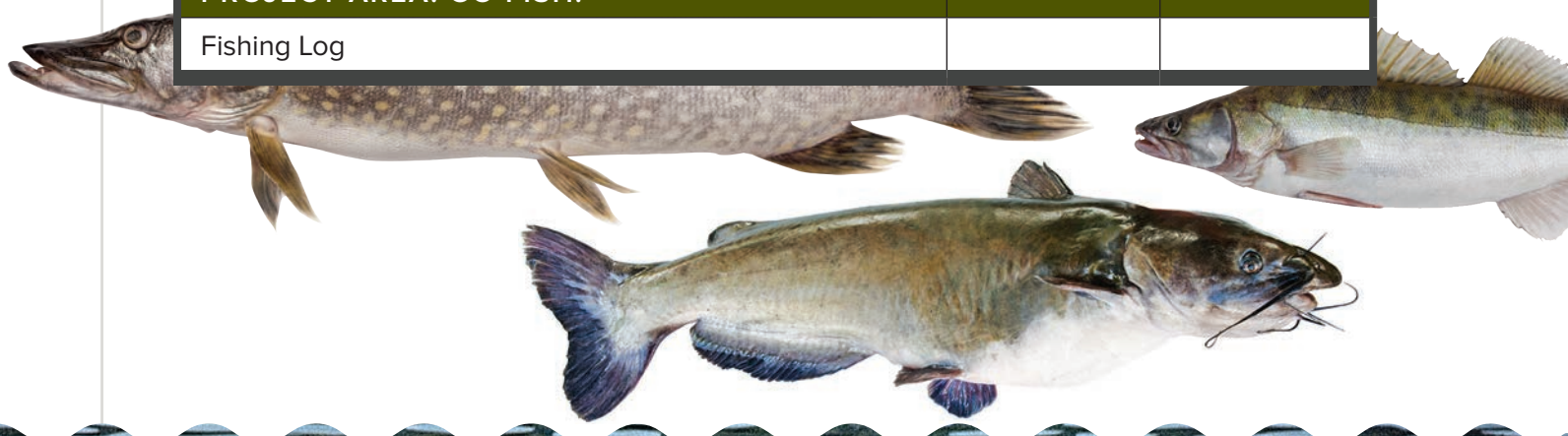
Step 4: Complete a project review.



STEP 1: PROJECT ACTIVITIES

Complete **all 11** activities, all of the Talking It Over questions, and the Fishing Log. The More Challenges activities are optional. As you finish activities, review your work with your project helper. Then ask your project helper to initial and date your accomplishment.

Activity	Date Completed	Project Helper Initials
PROJECT AREA: SAFETY WHILE FISHING		
1. Some Reminders		
Talking It Over		
PROJECT AREA: FISH BASICS		
2. Aquatic Ecology		
3. Fish 101		
4. Bite, Fishy, Bite		
5. Structure and Habitat		
6. Getting to the Fish		
Talking It Over		
PROJECT AREA: FISHING METHODS AND EQUIPMENT		
7. Casting		
8. Knots and Lines		
9. Bait		
Talking It Over		
PROJECT AREA: CARE AND CLEANING OF THE CATCH		
10. Keep or Release?		
11. Cleaning Your Fish		
Talking It Over		
PROJECT AREA: GO FISH!		
Fishing Log		



STEP 2: LEARNING EXPERIENCES

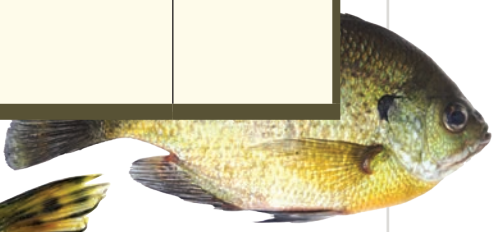
Learning experiences are meant to complement project activities, providing the opportunity for you to do more in subject areas that interest you. What are some learning experiences you could do to show the interesting things you are learning about? Here are some ideas:

- Attend a clinic, workshop, demonstration, or speech related to fishing, outdoor recreation, and natural resources.
- Help organize a club meeting based on this project.
- Go on a related field trip or tour.
- Prepare your own demonstration, illustrated talk, or project exhibit.
- Participate in county judging.

Once you have a few ideas, record them here. Complete **at least two** learning experiences. Then, describe what you did in more detail. Ask your project helper to date and initial in the appropriate spaces below.

Plan to Do	What I Did	Date Completed	Project Helper Initials
Demonstration	*Showed club members the basic fishing equipment.*	*5/5/YR*	*T.G.*



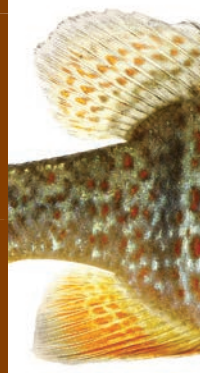




STEP 3: LEADERSHIP AND CITIZENSHIP ACTIVITIES

Choose **at least two** leadership/citizenship activities from the list below (or create your own) and write them in the table below. Record your progress by asking your project helper to initial next to the date as each one is completed. You may add to or change these activities at any time. Here are some examples of leadership/citizenship activities:

- Teach someone about fishing.
- Help another member prepare for his or her project judging.
- Host a workshop to share tips about fishing.
- Encourage someone to enroll in fishing projects.
- Arrange for a fishing, outdoor recreation, or natural resource speaker to visit your club.
- Plan your own leadership/citizenship activity.

Leadership/Citizenship Activity	Date Completed	Project Helper Initials
Organized a club field trip to Little Beaver Creek.	*6/12/YR*	*T.G.*



STEP 4: PROJECT REVIEW

All finished? Congratulations! After you've completed the activities in this book, you are ready for a project review. This process will help assess your personal growth and evaluate what you have learned.

Use this space to write a brief summary of your project experience. Be sure to include a statement about the skills you have learned and how they may be valuable to you in the future.

Now, set up a project evaluation. You can do this with your project helper, club leader, or another knowledgeable adult. It can be part of a club evaluation or it can be part of your county's project judging.

Project Area: Safety While Fishing

1 SOME REMINDERS

You have heard it before, but it bears repeating. When you are fishing, your safety and the safety of those around you depend in large part on YOU.

What to Do

Estimated time: 20 minutes

Staying safe while fishing requires a few basic rules. Review this list with your project helper and sign below to indicate your agreement. Ask your project helper to sign too.

FISHING SAFETY PLEDGE

I pledge to handle hooks, knives, and other fishing equipment carefully.

I will always be mindful of my surroundings and make sure there is no one close to me or behind me when I cast.

I will wear proper clothing and equipment such as hats and sunglasses to protect myself from both hooks and the sun.

I will practice sun safety and water safety.

I will learn how to handle each species of fish properly to keep both myself and fish safe.

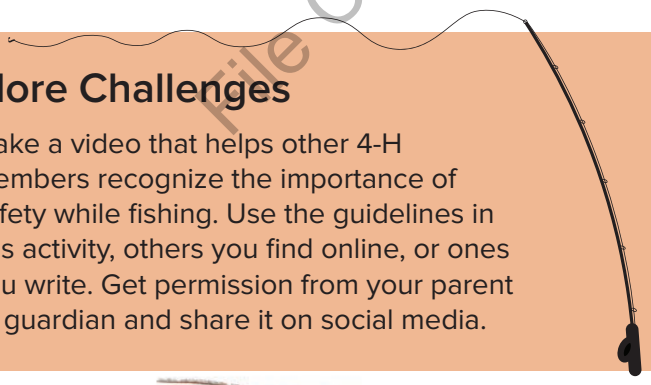
I will be an environmental steward and keep our waterways clean by not littering and by picking up litter, even if it is not mine.

I will be mindful to not spread invasive species by making sure my equipment is clean, drained, and dried before using it in another body of water.

I will never move live or dead fishes, bait, aquatic plants, or other organisms from one body of water to another.

Signature of 4-H Member:_____ Date: _____

Signature of Project Helper: _____ Date: _____



More Challenges

Make a video that helps other 4-H members recognize the importance of safety while fishing. Use the guidelines in this activity, others you find online, or ones you write. Get permission from your parent or guardian and share it on social media.

Words in **bold** throughout this book are defined in the glossary.

Learning Outcomes

Project skill: Recognizing safe behavior while fishing **Life skill:** Being responsible **Educational standard:** SHAPE S4.E5.4. Exhibits etiquette and adherence to rules in a variety of physical activities. **Success indicator:** Agrees to fishing safety pledge

Background

Before we go any further, here are some other important reminders. The first is to prepare your gear before you head out for a day on the water. Use this familiar checklist for some of the basic gear you need to take with you.

- ☐ Rod
- ☐ Reel
- ☐ Fishing line
- ☐ Hooks
- ☐ Bait
- ☐ Sinkers
- ☐ Floats, bobbers, or fishing weights
- ☐ Swivels or snaps
- ☐ Tackle box
- ☐ Regulations booklet
- ☐ Fishing license (for those 16 or older)
- ☐ Line clippers
- ☐ Needle-nose pliers
- ☐ Sunglasses
- ☐ Hat
- ☐ Sunscreen

You also should remember to always:

- Keep your line tight! If there is slack in your line, you are not going to feel the bite.
- Set the hook! Fish mouths can be pretty tough. It's going to take some force to get the hook through. When you feel a bite, pull up hard and fast to make sure you connect. Not sure it's a bite? Set the hook anyway. It doesn't cost you anything, and better to set the hook because you felt the bottom than not set the hook and miss a fish.
- Be safe! Water, weather, and sun safety is no joke. Take time to prepare properly for your trip and ensure you have a safe and fun time.
- Enjoy nature! The fish aren't always going to cooperate. That is why they call it fishing and not catching. A large part of the fishing experience is being outdoors and connecting with nature. It can make you a better person. While you are out, learn to identify birds and make lists, watch for other wildlife along the shoreline, take a hike through the woods, or just take a few minutes to breathe the fresh air and appreciate life.

Now that we're all caught up, let's get started on our Intermediate Fishing journey. Tight lines!

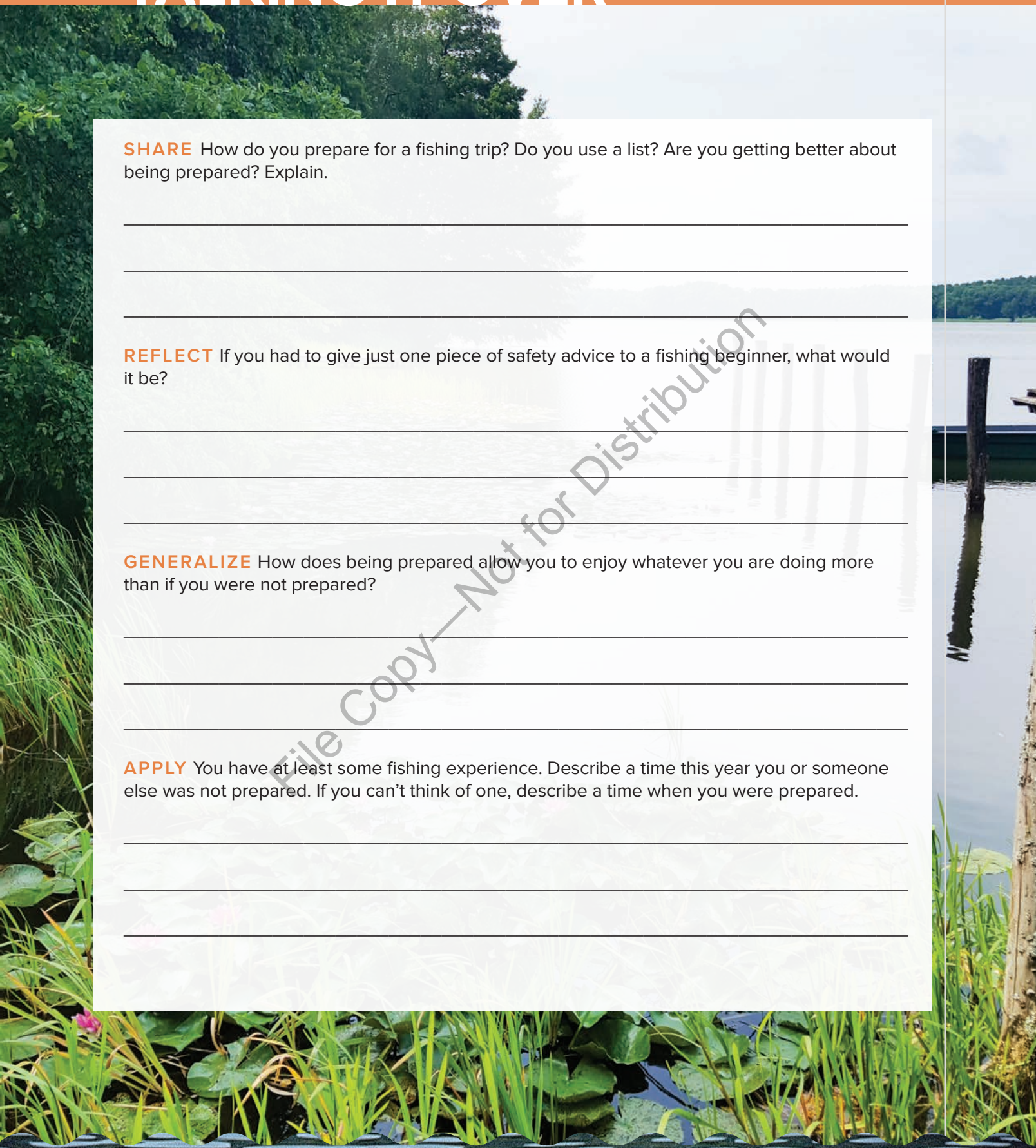
Did you know?

According to the National Weather Service, there are about 25 million cloud-to-ground lightning strikes in the United States each year. Don't be a statistic! Always look up weather forecasts and radar before and during fishing trips. Be safe. Never fish in or near storms.

Resources

Learn more about lightning safety from the experts at the National Weather Service at **weather.gov/iln/lightningsafetyweek**.

TALKING IT OVER



SHARE How do you prepare for a fishing trip? Do you use a list? Are you getting better about being prepared? Explain.

REFLECT If you had to give just one piece of safety advice to a fishing beginner, what would it be?

GENERALIZE How does being prepared allow you to enjoy whatever you are doing more than if you were not prepared?

APPLY You have at least some fishing experience. Describe a time this year you or someone else was not prepared. If you can't think of one, describe a time when you were prepared.

Project Area: Fish Basics

2 AQUATIC ECOLOGY

First, we need to appreciate that fish exist because of all the other organisms living in the water. Fish are fairly high on the aquatic **food web**. They rely on many other forms of life and on healthy habitats to stay alive. Let's learn to love–or at least appreciate–some of the lesser-known characters in the aquatic realm.

What to Do

Estimated time: 40 minutes, not including exploration

Visit a favorite fishing spot and find as many living aquatic organisms as possible. Flip over rocks and logs, use a minnow trap or **seine**, go fishing, or just observe.

Create an aquatic food web describing this ecosystem. To do so, list the organisms you found on the table below under the correct heading. Sketch or list them in order.

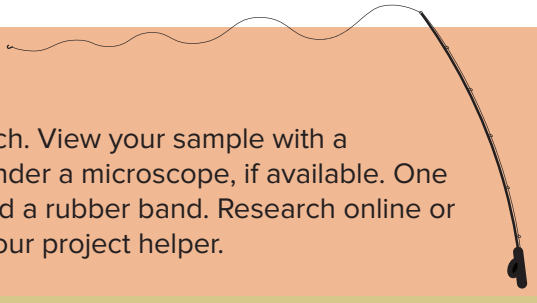
Producers	Herbivores	Predators	Top Predators
These organisms make their own food. Plants and algae are good examples.	Animals that feed only on plants.	Animals that hunt, kill, and eat other animals.	Animals at the top of the food chain, with no natural predator.

Learning Outcomes

Project skill: Recognizing fish environments and ecosystems **Life skill:** Navigating your environment **Educational standard:** SHAPE S4.M1.6. Exhibits personal responsibility by using appropriate etiquette, demonstrating respect for facilities, and exhibiting safe behavior. **Success indicator:** Designs a food web based on the fish ecosystem explored

Now, make a food web by writing down all your organisms on the blank space below, spread them out across the space. Draw arrows between each one for every connection you see. Who is eating whom? Once you build your web, think about each connection. Imagine what would happen if the ecosystem was disturbed (by pollution, disease, invasive species, etc.) and one of those organisms went away. How would that affect the others?

More Challenges



Create your own **plankton** net and see what you catch. View your sample with a magnifying glass or your eyes. The best viewing is under a microscope, if available. One idea for a net is to use a plastic bottle, pantyhose, and a rubber band. Research online or think of your own design. Share what you see with your project helper.

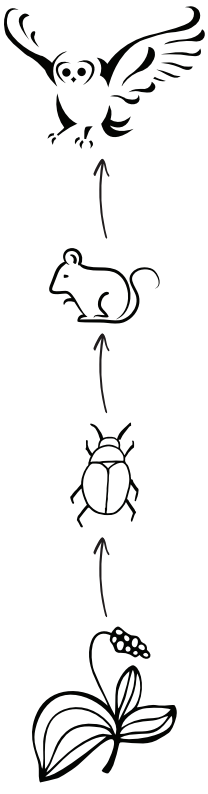
Did you know?

Phytoplankton and aquatic plants are important to fish because they provide much of the dissolved oxygen in aquatic environments. They are important to you because they provide roughly 70 percent of the oxygen in the atmosphere you breathe!

Resources

Interested in aquatic biology or aquatic science in general? If you are thinking about going into aquatic science for a career, be sure to check out Stone Laboratory. Stone Lab is Ohio State University's island campus in Lake Erie. They offer a variety of college courses during the summer, some available to high school students. See if they have a class for you at **stonelab.osu.edu**.

Background



Land-based Food Chain

Most people are familiar with a **food chain**. It is a list of organisms that shows what consumes what, starting with producers and ending with top predators. A food web is a combination of food chains. Picture this as a sort of map showing how connected and complex the relationships are between organisms in an ecosystem. Whether it's a pond, lake, river, or other body of water, the basic aquatic food web is no different than a land-based one. It starts with producers and ends with top predators—just add water!

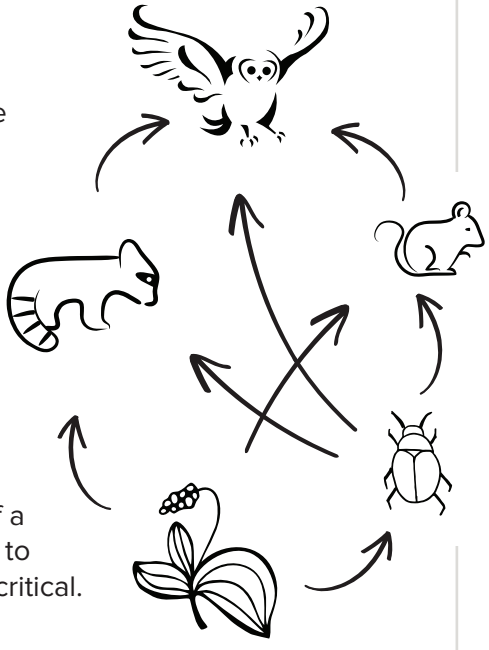
It all starts with algae. Algae sometimes gets a bad reputation, but without this major food producer, not much else would be living in the water. Thousands of kinds of algae, some attached and some free-floating (called **phytoplankton**), serve as the base of the aquatic food web. Through **photosynthesis**, they produce the oxygen that most aquatic life needs to survive. Aquatic **macrophytes**, or rooted plants, also provide oxygen, food, and shelter.

Next up is **zooplankton**, which are microscopic animals and mostly **crustaceans**. They feed on phytoplankton and transfer energy to the rest of the food web as they are eaten by predators.

Macroinvertebrates are another group that may feed on algae and phytoplankton, but some can be predators or decomposers. One example is crayfish, which serve as herbivores, predators, and decomposers all in one! **Amphibians** like frogs and salamanders, and **reptiles** like snakes and turtles also play multiple roles in the aquatic food web.

This leads us to the fish. Most are predators whether they eat plankton, macroinvertebrates, or other fish. Forage fish are those that eat lower in the food web, but then are eaten by larger fish. We often consider them baitfish, though smaller game fish like yellow perch and bluegill can be in this category too. Many of our larger game fish species are considered top predators. Other aquatic top predators include birds like herons, ospreys, and eagles. However, large adult game fish like walleye, largemouth bass, northern pike, and many more get big enough that they don't have to worry about many predators. Of course, in many cases humans end up being the top predator!

As you can see, a lot is going on under the water. While this project focuses on fish, it's important to recognize all the parts of a healthy aquatic ecosystem. Without them there would be no fish to catch. Being good stewards of our planet's aquatic resources is critical.



Land-based Food Web

Source

"Save the Plankton, Breathe Freely." Accessed August 22, 2018. nationalgeographic.org/activity/save-the-plankton-breathe-freely.

3 Project Area: Fish Basics
FISH 101

Now that you are familiar with the aquatic ecosystem, it's time to focus on the fish. They come in many sizes, shapes, and colors. Each species have unique features that help it survive. Knowing what these features are can help you figure out where a fish lives and what it eats, which is very important information to have if you want to catch it. Let's learn some fishy facts.

What to Do

Estimated time: 30 minutes

List at least three species of fish you want to catch over the course of this project. They can be your favorite fish or something you have never had a chance to fish for but always wanted to catch. List the preferred habitats, prey items, and some adaptations that help it fit in its habitat or capture its prey. If you take this project more than once, select three different species of fish each year.

Species of Fish	Habitat	Prey Items	Additional Information

Learning Outcomes

Project skill: Researching and identifying similarities and differences among types of fish **Life skill:** Processing information **Educational standard:** NA
Success indicator: Creates an informational list of three species of fish

More Challenges

You are probably familiar with the major sport fish species in your area, but chances are there are many more species in your state, many of them not considered sport fish. Ohio, for example, has well over 100 species of fish. Check out some field guides that include your area and see what species live around you. Better yet, get a seine, see what you can find, and use the field guides to identify your catch. Here are some good resources to get you started:

For North America:

Peterson Field Guide to Freshwater Fishes: North America by Lawrence M. Page and Brooks M. Burr

For Ohio:

Fish are one of the many species listed in this Species Guide Index: **wildlife.ohiodnr.gov/species-and-habitats/species-guide-index**

Stream Fishes of Ohio: Field Guide published by the Ohio Division of Wildlife and available at no charge.

Background

With about 32,000 known species, fishes come in a wide variety of sizes, shapes, and functions. It's actually hard to define what makes something a fish. Most are **ectothermic** (or cold-blooded), have backbones, live in the water, breathe with gills, and have fins. After that, things can get weird. There are even exceptions to those common characteristics. Some have cartilage skeletons, while most have bone. Most need oxygenated water to survive, but some also can breathe air. Other variations and adaptations among species are body type, fins, mouths, scales, and many more.

Fishes also have a variety of senses to help them survive. Much like you, most use sight, smell, hearing, taste, and touch to navigate their habitat. Many have an additional sense called a lateral line system that senses pressure and vibrations in the water. Some can even detect electrical currents in the environment. Just as species have different physical adaptations, they have differing sensory adaptations as well. Some fish, like largemouth bass, are visual predators, while fish like catfish rely heavily on well-developed senses of smell and taste.

Many of these differences can give you a clue as to where a species lives and what they eat, which can help you figure out how to catch them.

Did you know?

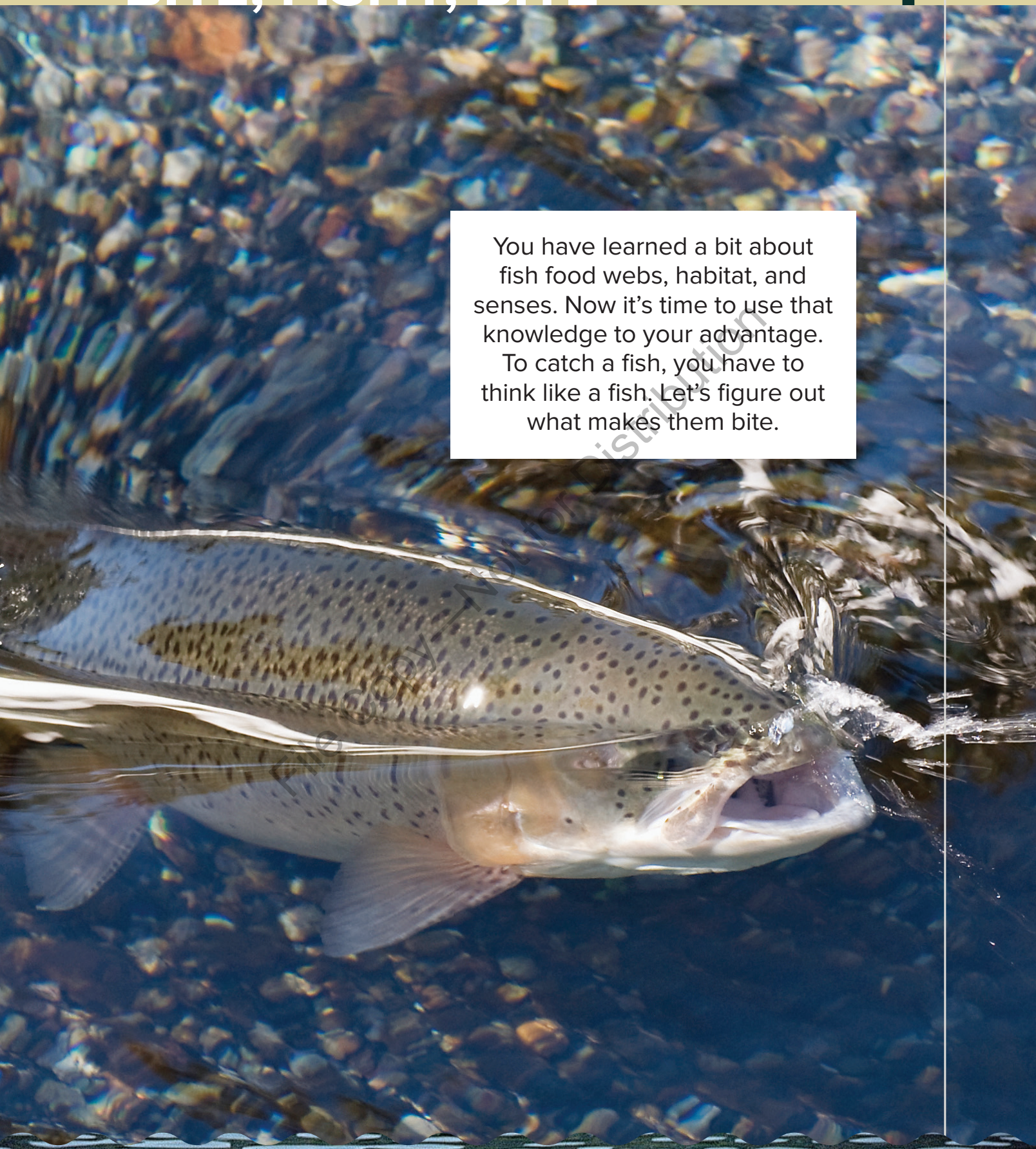
- Some fish, like salmon, use forces such as the Earth's magnetic field to direct their migration in the ocean, according to **fishbio.com**.
- The American eel can detect concentrations as sparse as one part per trillion! Premier Fishing Tips offers this tip and many others at **premier-fishing-tips.com/fish-facts.html**.

Source

Nelson, Joseph S. *Fishes of the World*. Hoboken, New Jersey: John Wiley & Sons, 2016.

BITE, FISHY, BITE

4



You have learned a bit about fish food webs, habitat, and senses. Now it's time to use that knowledge to your advantage. To catch a fish, you have to think like a fish. Let's figure out what makes them bite.

What to Do

Estimated time: 60 minutes over one week

Some days it seems as if the fish bite anything you throw in the water, and other days it seems as if their mouths are glued shut. What do you think convinces a fish to bite?

Environmental factors such as weather certainly play a role. One part of weather that is easy to observe is **barometric pressure**.

Define barometric pressure. Why might it affect fish?

_____

_____

_____

Locate a manual or electronic barometer or check any weather website that shows barometric readings. Record these a couple of times a day for at least a week. Do you have an aquarium or know someone who does? Observe the fish over time and over different barometric pressures. Do you notice any differences in their behavior or predictive patterns?

Date	Barometric Pressure		Observations

Learning Outcomes

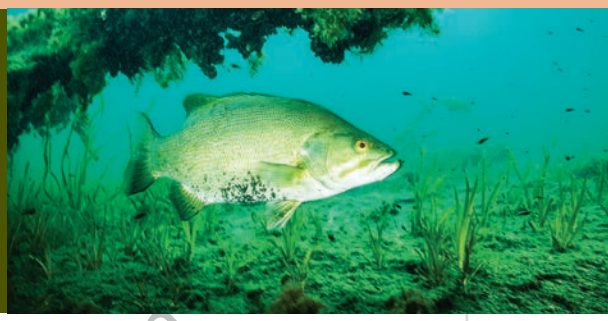
Project skill: Identifying what makes fish bite **Life skill:** Managing resources **Educational standard:** SHAPE S4.M7.8. Independently uses physical activity and fitness equipment appropriately and identifies specific safety concerns associated with the activity. **Success indicator:** Compiles a list of what makes fish bite

More Challenges

Lake Erie and other waterbodies across Ohio have experienced an increase in harmful algal blooms, or HABs, over the past few years. Research what a HAB actually is, why they form, and how they affect humans, fish, and the aquatic environment. Share your findings with your club members.

Did you know?

In some species, including those in the sunfish family (Centrarchidae), females lay eggs in a nest and leave all the parental care up to the males. Males aggressively defend the eggs and young from potential predators and anything else that gets too close for comfort.



Background

What makes a fish bite? Figure that question out and you will be a millionaire. The truth is many factors go in to whether or not a fish bites. It is impossible to know the exact reasons why. Obviously, a hungry fish is probably looking for food, but that doesn't guarantee it will bite your hook. If you make a fish mad (without scaring it), sometimes a fish bites out of aggression. Fish also can be territorial, so you might entice them to bite if they think your bait is threatening their territory, nest, or young. Or, they just may not be in the mood to eat what you are serving them for dinner.

Environmental factors can play a role, too, and can influence those moods. Because fish are ectothermic, they generally become more active in warmer water. However, as water warms it has less ability to hold dissolved oxygen. At some point, it gets too warm and fish conserve energy. Water clarity is important because stained or muddy water makes it harder for some fish to see the bait, but it can also help by making it harder to see you sneaking up on them.

Weather patterns can have a big effect. It is often best if weather is consistent for several days. Sometimes, however, fish seem to go on a feeding frenzy before a pressure front. Sometimes, if weather fluctuates often, their mouths seem locked.

While it may be impossible to figure out what factors made a fish bite, it is possible to know what you did that caused the strike. That is important if you want to make it happen again. Use the fishing log at the end of this book to keep notes. That way you have a better chance of catching more fish!

Resources

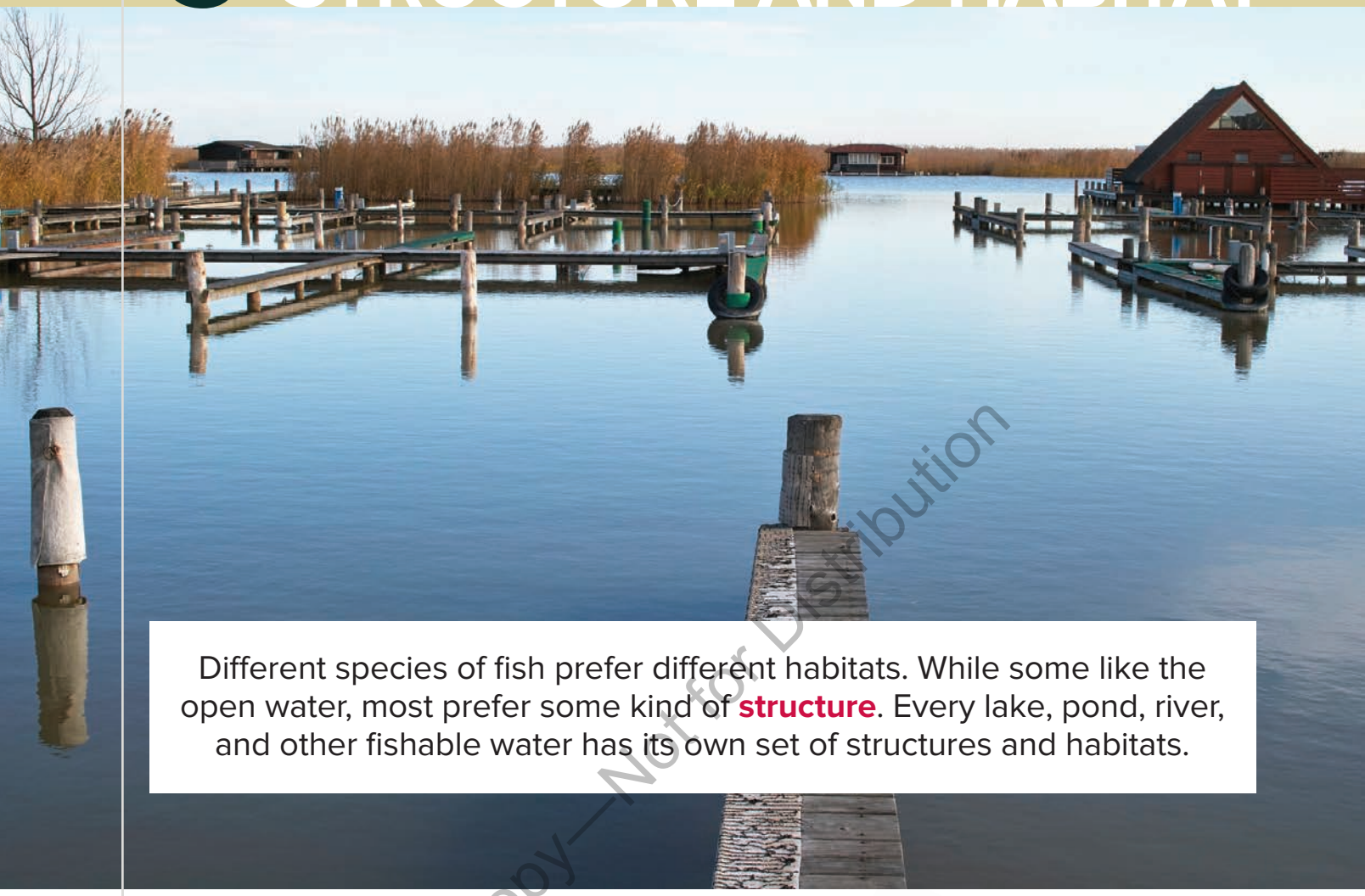
Always check the weather when planning to fish. Try these two trusted websites:

Intellicast: the Authority in Expert Weather, **intellicast.com/National/Radar/Current.aspx**

National Oceanic and Atmospheric Administration—Marine Forecasts, **nws.noaa.gov/om/marine/zone/gtlakes/leopen.htm**

Project Area: Fish Basics

5 STRUCTURE AND HABITAT



Different species of fish prefer different habitats. While some like the open water, most prefer some kind of **structure**. Every lake, pond, river, and other fishable water has its own set of structures and habitats.

There are many public fishing access areas in every state. However, if you want to fish a private body of water you need permission from the owner! Look for public access areas on the website of your state's Department of Natural Resources. In Ohio, go to **wildlife.ohiodnr.gov/public-hunting-fishing-wildlife-viewing-areas/lake-and-reservoir-fishing-maps** and **wildlife.ohiodnr.gov/public-hunting-fishing-wildlife-viewing-areas/lake-and-reservoir-fishing-maps/river-and-stream-fishing-maps**.

What to Do

Estimated time: variable

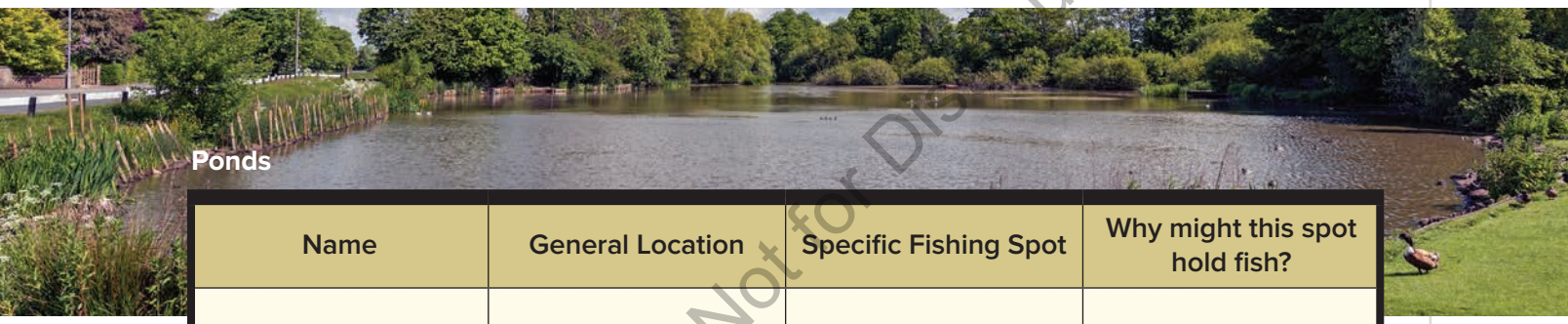
Locate possible fishing spots to try out over the course of this project. For simplicity, use three main categories: lakes, ponds, and rivers or streams. Identify at least one place from each category and explore it in person, with a map, or both! Do you see any spots you think will hold fish? Why? Write these exact locations in the table below.

Learning Outcomes

Project skill: Identifying fish habitats and needs **Life skill:** Navigating your environment **Educational standard:** SHAPE S4.M1.6. Exhibits personal responsibility by using appropriate etiquette, demonstrating respect for facilities, and exhibiting safe behavior. **Success indicator:** Identifies differences among various fishing locations

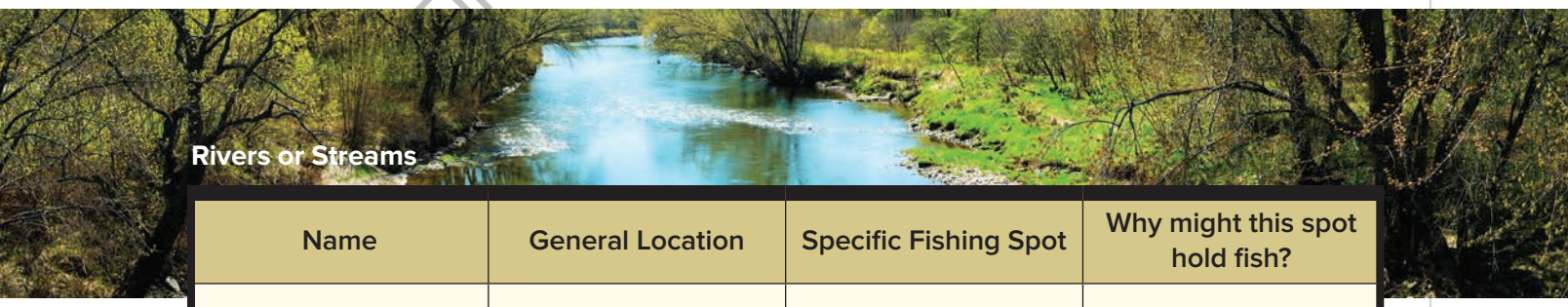
Lakes

Name	General Location	Specific Fishing Spot	Why might this spot hold fish?
1.			
2.			
3.			



Ponds

Name	General Location	Specific Fishing Spot	Why might this spot hold fish?
1.			
2.			
3.			



Rivers or Streams

Name	General Location	Specific Fishing Spot	Why might this spot hold fish?
1.			
2.			
3.			

More Challenges

Imagine you just dug a new pond in your backyard. Now what? What species should you stock, and how many? What are some other factors to think about when you are managing a pond? If possible, visit a pond and see if it seems well managed. Check out **senr.osu.edu/extensionoutreach/ponds-fisheries-aquatics** to learn more. Share your discoveries with your project helper.

Background

Each species of fish has a preferred habitat. The preferred habitat is often related to food and/or protection, and structure can play a big role. Structure is any feature or change in the physical habitat, and there are many examples. Let's look at structure and habitat in a few common bodies of water.

Lakes

Lakes are a relatively large, deep body of water. In Ohio, many lakes called reservoirs were created by putting dams on rivers, filling up the area behind the dam with water. Structure can include the following:

- Gravel bars—submerged mounds of sand, gravel, and rock at varying depths. Serve as habitat for aquatic insects, crayfish, and other macroinvertebrates, which makes them productive feeding areas for fish.
- Drop-offs—areas where the depth changes abruptly from shallow to deep. May be the edge of gravel bars. These can be identified by the darker water due to increased depth. Baitfish may school along the edge, and predator fish often hang out in the depths until they travel up to feed.
- Weedy shallows—food production areas abundant with life, including algae, zooplankton, macroinvertebrates, and bait fish looking for food and shelter. Some predator species use weeds as cover to ambush prey.
- Fallen trees—Provide shade and cover similar to weeds, and can attract macroinvertebrates and baitfish that in turn attract predators.
- Underwater reefs—Function similar to gravel bars, but are basically underwater islands. Common and important fishing areas in Lake Erie.
- River mouths—Whether flowing into or out of the lake, river mouths may provide current, warmer or cooler water, different oxygen levels, and nutrients that attract prey items and predators. Often a combination of other habitats including gravel bars, drop-offs, weedy shallows, and fallen trees.
- Docks—human-made structures that act similar to fallen trees, providing shade and cover that attract macroinvertebrates, baitfish, and predators.

Common lake species in Ohio include walleye, yellow perch, black and white crappie, and even muskellunge. If you are not in Ohio, check with your state's Department of Natural Resources on this link, **wikipedia.org/wiki/Category:Natural_resources_agencies_in_the_United_States**.

Ponds

Ponds are usually smaller bodies of water, often dug out by excavators. Structure can include the following:

- Weeds—ponds are typically shallow enough that aquatic vegetation can be found in them. They serve as food production areas abundant with life, including algae, zooplankton, macroinvertebrates, and baitfish looking for food and shelter. Some predator species use weeds as cover to ambush prey.
- Rock piles—Similar to gravel bars and underwater reefs in lakes. Submerged mounds of sand, gravel, and rock. Serve as habitat for aquatic insects, crayfish, and other macroinvertebrates, which makes them productive feeding areas for fish.
- Fallen trees—Provide shade and cover similar to weeds, and can attract macroinvertebrates and baitfish that, in turn, attract predators.
- Artificial structures—Pond owners sometimes create or purchase artificial structures to attract fish to certain locations. They are often made of plastic for durability, but other materials may be used. They can be shaped to mimic natural structures, and often function like fallen trees, weeds, or rock piles.

Common pond species in Ohio include largemouth bass, bluegill, and channel catfish. If you are not in Ohio, check with your state's Department of Natural Resources.

Rivers and Streams

Rivers and streams are flowing bodies of water that are fed by smaller streams, and feed into larger ones, eventually emptying into a lake or ocean. Structure can include the following:

- Riffles—Ripples or tiny waves formed by shallow rocks or other objects under the surface. The turbulence helps get oxygen in the water, and many invertebrates and small, well-adapted species of fish live here.
- Runs—Main body of river with no riffles or pools. Fish will use these areas, but generally not preferred habitat.
- Pools—Deeper areas with slower water carved out of the streambed by currents wrapping around rocks and logs. The slower water and cover attracts baitfish and other prey, so this is the most likely area to find sport fish.
- Cut-away banks—Formed similar to pools, areas where the water carves out the sides of the riverbed forming holes under the banks or trees above.
- Fallen trees—Provide shade and cover similar to weeds, and can attract macroinvertebrates and baitfish that in turn attract predators. In rivers, they force currents to form pools.
- Dams/waterfalls—Major obstructions in a river that are usually unpassable to fish. There can be pools on both sides, and fish may concentrate in these areas. In some instances, it is illegal to fish within a certain distance of a dam, so check your regulations.

Common river and stream species in Ohio include smallmouth bass, flathead catfish, and multiple sunfish species. If you are not in Ohio, check with your state's Department of Natural Resources.

Did you know?

Marine debris is anything made by humans that ends up in a body of water. Most of it is plastic or other trash, including fishing line and gear, that is harmful to the habitats and organisms. Always pick up and dispose of any trash small enough to carry out. You might find larger items like barrels and fencing, especially in rivers around populated areas. While not good for the environment, fish actually might be using these for structure! Learn more at **marinedebris.noaa.gov**.

GETTING TO THE FISH 6

Have you ever been fishing and noticed a good-looking structure just out of reach? Perhaps while fishing from shore, you noticed a fish rise on the other side of the river. Or, while getting permission to fish a pond, the owner mentioned a rock pile in the center of the pond. Fishing from shore is sometimes your best—and only—bet. Depending on the situation, however, you might have other options.

What to Do

Estimated time: 30 minutes

If you have been fishing, you have probably fished from shore. Have you ever fished from any other platform? Think of three options that could help you get to a good fishing spot. What are the advantages and disadvantages to each?

Scenario	Advantages	Disadvantages
Fishing from shore.	*No special equipment needed.*	*Can only reach fish near shore.*
1.		
2.		
3.		

More Challenges

Identify at least one **aquatic invasive species (AIS)** living around your fishing spots. What is its impact? How did it get there? What can you do to stop its spread? These resources can help:

- Habitattitude: Protect Our Environment, **habitattitude.net**
- Stop Aquatic Hitchhikers!, **stopaquatichitchhikers.org**
- Ohio Field Guide to Aquatic Invasive Species, **ohioseagrant.osu.edu/products/4j7wz/ohio-field-guide-to-ais**
- Aquatic invasive Species in the Great Lakes, **ohioseagrant.osu.edu/products/6bdd5/ais-in-the-gl**

Background

Shoreline fishing is a popular activity. It also can be very productive, because structure like fallen trees, weeds, and drop-offs are close to shore. Even so, you are bound to find spots that are difficult or impossible to reach from shore, especially if the shore has steep banks or lots of plants.

One option is a good pair of waders. Waders are popular with people who fish rivers because they keep you dry while getting you just a bit offshore. This gives you room to back-cast and reach a bit farther out.

Another option is a pier or a dock open to public fishing. Similar to waders, these structures allow you to get offshore and reach more possible fish habitat. Docks and piers are fish habitat themselves, so you may find fish are actually attracted to these platforms.

When most people think of fishing offshore they think of boats. Motorboats are great because they get you to far-off fishing holes in a hurry, but they are expensive. More affordable options like canoes and kayaks also can do the job. As an added bonus, they make for a fun adventure even without fishing and allow you to get some physical activity while enjoying nature. Some people take this to the extreme and fish from stand-up paddleboards or even from specialized fishing float-tubes that are paddled around with snorkeling fins!

Getting offshore is not necessary to catch fish, but it can definitely help you find more spots and catch more fish.

Did you know?

In Ohio and other northern locations, fishing is a year-round sport. When the weather turns cold, ice fishing is a popular way to get offshore. You know what that means—a new spot and the possibility of more fish! Ice fishing takes some special gear and can be dangerous if you are not careful. Read up on ice fishing at **wildlife.ohiodnr.gov/fishing/ice-fishing**, and BE SAFE!

Resources

Many online resources allow you to read fishing reports from fellow anglers. One good place to start is Ohio Game Fishing at **ohiogamefishing.com/forums**.

Learning Outcomes

Project skill: Identifying and fishing from new fishing areas **Life skill:** Solving problems **Educational standard:** SHAPE S5.E2.3. Discusses the challenge that comes from learning a new physical activity. **Success indicator:** Fishes from a new platform or structure

TALKING IT OVER

SHARE What did you find most interesting this year about the various challenges with getting fish to bite?

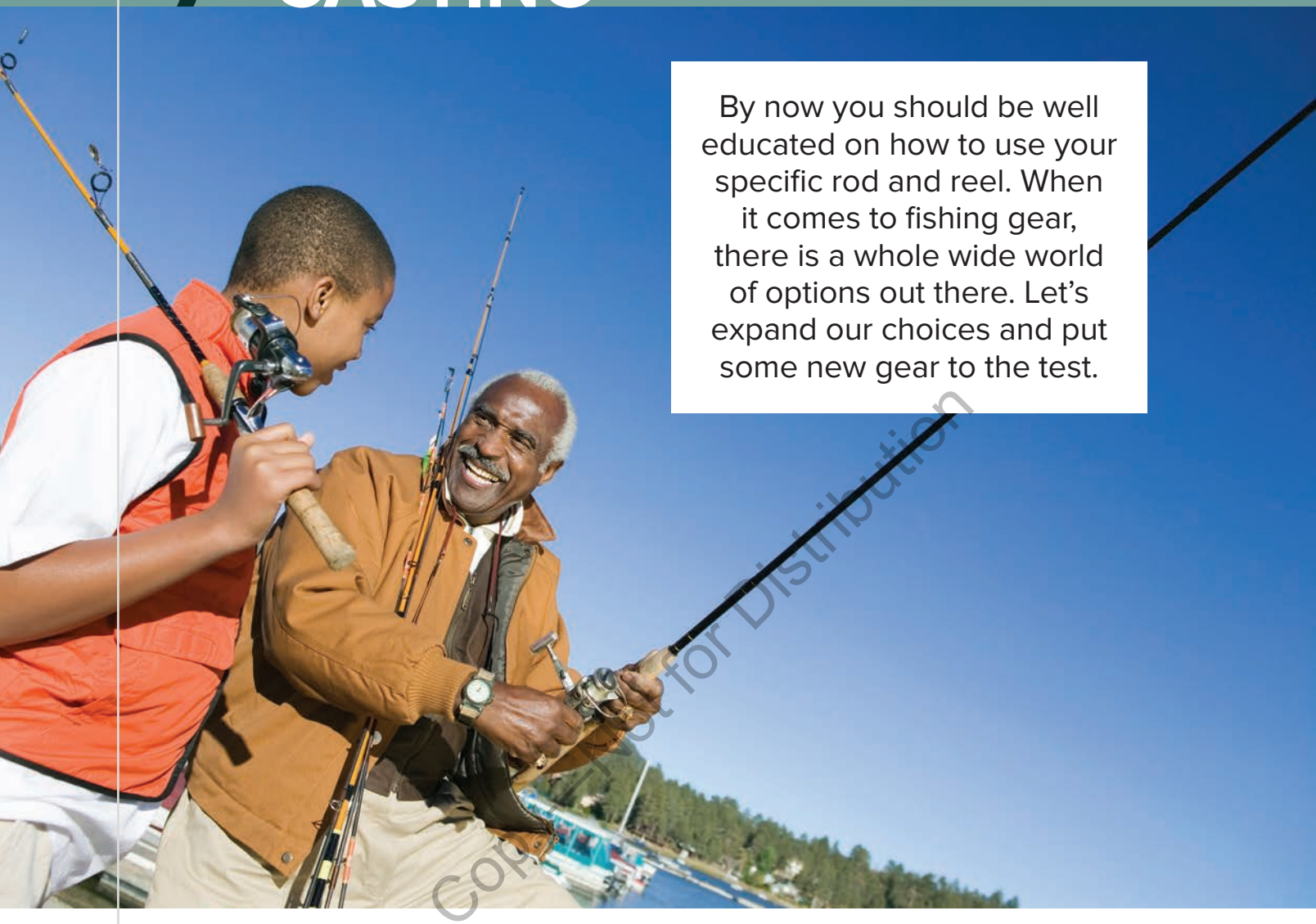
REFLECT How did you decide which species you were fishing for and where to catch them this year?

GENERALIZE In the last year, what key points have you learned about fish and their environment?

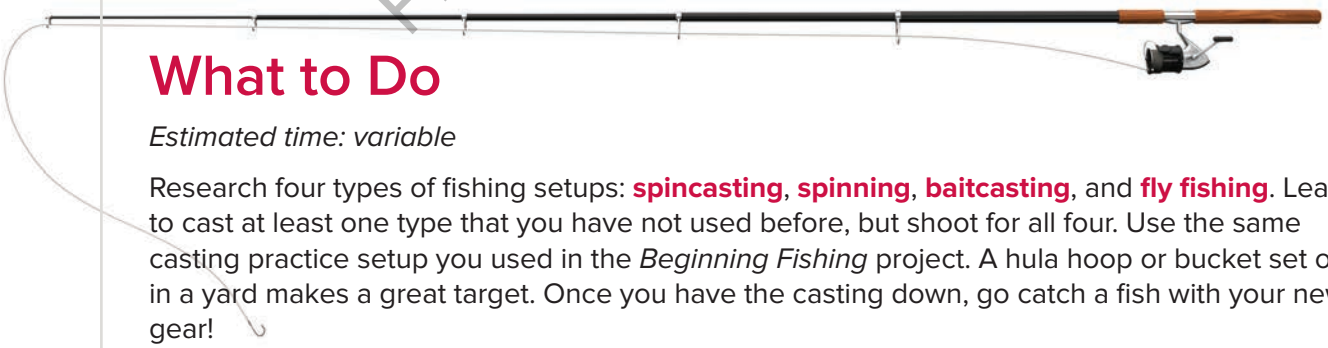
APPLY Why does understanding a fish's habitat help you when trying to catch that species of fish?

Project Area: Fishing Methods and Equipment

7 CASTING



By now you should be well educated on how to use your specific rod and reel. When it comes to fishing gear, there is a whole wide world of options out there. Let's expand our choices and put some new gear to the test.



What to Do

Estimated time: variable

Research four types of fishing setups: **spincasting**, **spinning**, **baitcasting**, and **fly fishing**. Learn to cast at least one type that you have not used before, but shoot for all four. Use the same casting practice setup you used in the *Beginning Fishing* project. A hula hoop or bucket set out in a yard makes a great target. Once you have the casting down, go catch a fish with your new gear!

Learning Outcomes

Project skill: Trying various casting and reeling setups **Life skill:** Mastering technology **Educational standard:** SHAPE S1.M24.7. Demonstrates correct techniques for a variety of skills in one self-selected individual performance activity. **Success indicator:** Practices correct casting technique

Fishing gear can get expensive, so if you do not own one of the gear types, ask to borrow it from a friend or relative. Better yet, ask this angler to help you learn to use it. If you still cannot find one of the types, visit a local bait shop or retailer. They may not let you cast it, but they would be happy to show you how it works and answer any questions you have about the equipment.

Fishing Setup	What do you like?	What do you dislike?
Spincasting		
Spinning		
Baitcasting		
Fly fishing		

Which setup do you like best? Why?

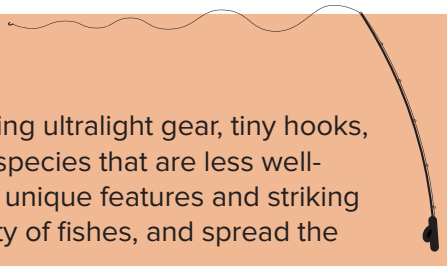
_____

_____

_____

_____

More Challenges



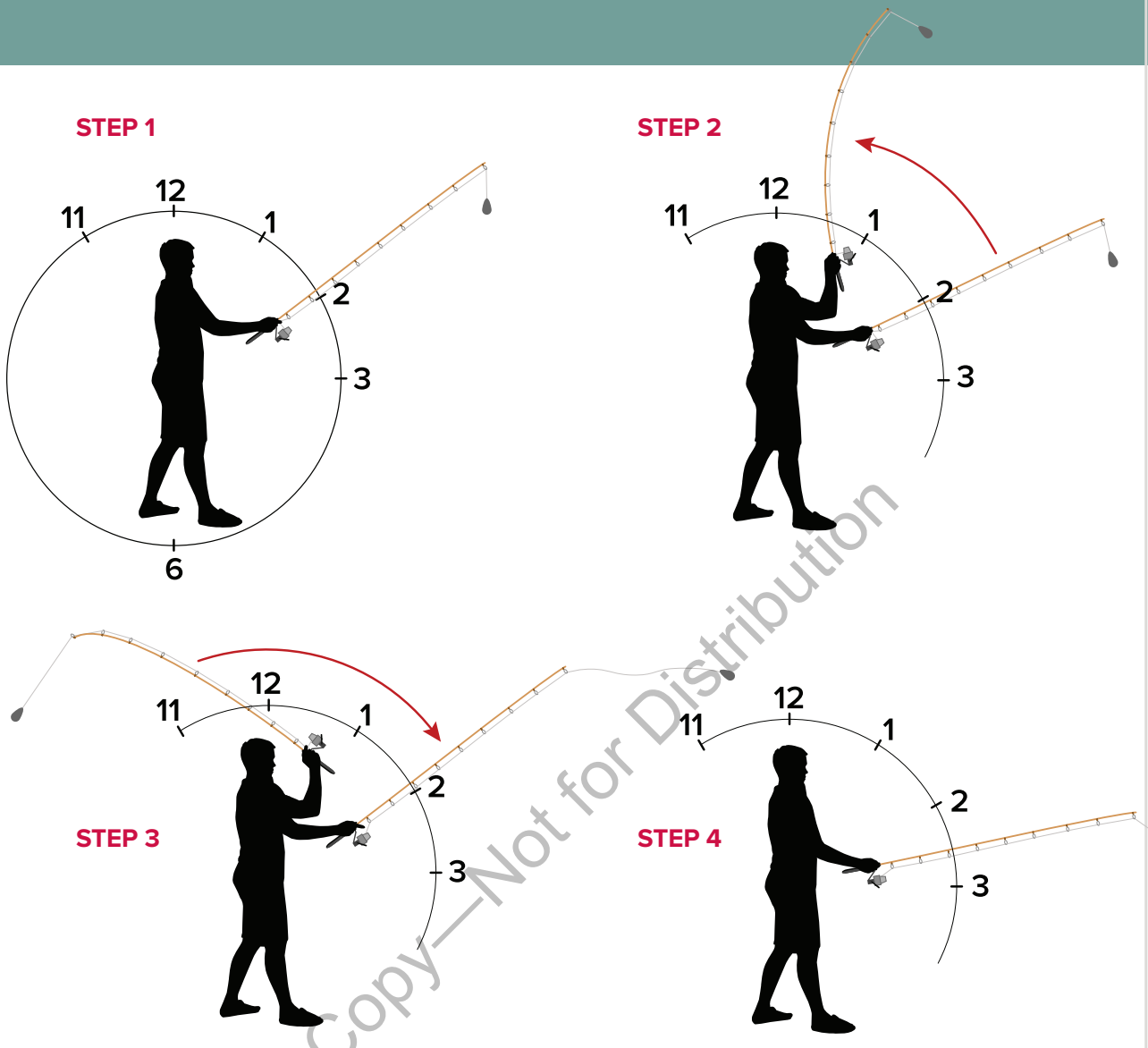
Microfishing has become a popular sport. Using ultralight gear, tiny hooks, and bait, the objective is to catch a variety of species that are less well-known. Many of them are relatively small with unique features and striking coloration. Get out and appreciate the diversity of fishes, and spread the word to other club members!

Background

There are many ways for an angler to catch a fish. The most common way is with a rod and reel, but which type should you choose? Each has its own set of positives and negatives, and some are better for certain situations than others. Below are four common types of fishing rod and reel setups. While most anglers have a favorite, many are experienced with multiple types of gear. Knowing how to use different setups will give you more options, and can help you catch more fish.

Rods and reels are offered in many sizes and weights. The most important thing is to get a rod and reel that are matched to each other, but it is also important to get a setup that is geared to the type of fish you are going to catch. A good general setup is one that is around 6 feet long, medium power, and fast action. This will work for anything from bluegills to trophy walleyes. For fly rods, a 9-foot, 6-weight setup is good for many species.

General directions on how to cast each type are provided. As you learn your gear, try casting at different angles and positions. You are likely to find yourself in places with trees, shrubs, and other obstacles that do not allow for the perfect form cast. Practice now so you are ready when it counts.

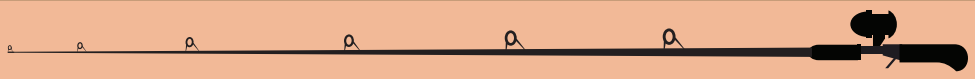


When casting any gear, it can be helpful to think of yourself as standing in the face of a clock. Your head is at the 12 o'clock position, you are looking at the 3 o'clock position, and your feet are at the 6 o'clock position. This will help you picture how to time your backcast and forward cast. In general, your backcast should stop at about the 11 o'clock position, and you should release the line for your forward cast at around the 2 o'clock position. This example is simply for practice casting the gear. On the water, different casting angles, distances, and lures will require different backcasts and release points, so don't worry if you're not right at these positions every time. Use them as a guide to start and then do what works for you.

Did you know?

Drag is a friction mechanism on fishing reels that you can set to help you fight fish. You want it set so when a big fish pulls hard enough, the drag lets a little line come off your reel instead of snapping the line. You can read more at **takemefishing.org/how-to-fish/how-to-catch-fish/how-to-set-the-drag**.

Spincasting



Basic and easy to use, this is the setup of most beginning anglers.

Use a casting rod so the eyes of the rod are facing up and the reel is mounted on top of the handle or reel seat.

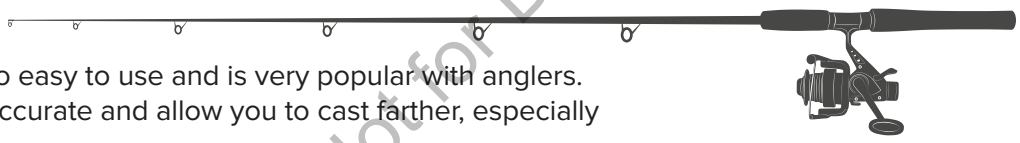
The simple design and closed-face reel makes it easy to cast and less likely to get a line tangled in the reel known as **backlash**.

To cast:

- Leave around 6 inches of line between the rod tip and the bait.
- Press and hold the button down with the thumb on your casting hand.
- Hold the button down through your backcast.
- Quickly bring the rod forward and release your thumb from the button.
- As the lure hits the water, turn the handle until it clicks. This will stop the line from spooling out. Reel until your line is tight.

See how to cast a spincasting setup at **youtu.be/NqQ0vi-dpSA**.

Spinning



This setup is also easy to use and is very popular with anglers. It can be more accurate and allow you to cast farther, especially with lighter lures.

Use a spinning rod so the eyes of the rod are facing down and the reel is mounted underneath the handle.

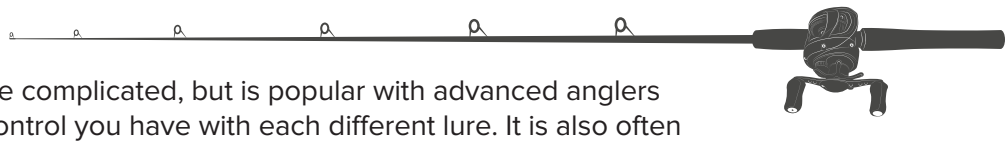
The open-faced reel makes backlashes more likely, but it also allows you to see and fix line problems before they become a backlash.

To cast:

- Leave around 6 inches of line between the rod tip and the bait.
- Use the index finger on your casting hand to hold the line just above the reel and keep it here.
- With your other hand, flip the wire bail.
- Keep holding the line with your index finger through your backcast.
- Quickly bring the rod forward and release your index finger from the line.
- As the lure hits the water turn the handle until it clicks or flip the bail back closed with your non-casting hand. This will stop the line from spooling out. Reel until your line is tight.

See how to cast a spinning setup at **youtu.be/HsinhazI3rE**.

Baitcasting



This setup is more complicated, but is popular with advanced anglers because of the control you have with each different lure. It is also often used for **trolling**.

Use a casting rod so the eyes of the rod are facing up and the reel is mounted on top of the handle.

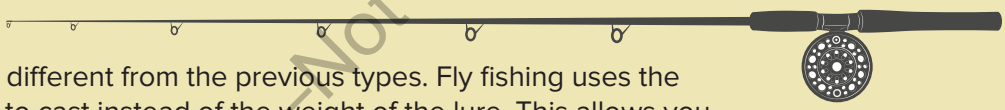
This reel has brakes that allow you to set it for each individual lure. It offers much more control, but if you do not get it set exactly right each time, a backlash is very likely.

To cast:

- Leave around 6 inches of line between the rod tip and the bait.
- Press and hold the button and the spool with the thumb on your casting hand.
- Hold the button and spool down through your backcast.
- Quickly bring the rod forward and slightly release your thumb from the spool keeping very light pressure on the spool as the line feeds out. Never take your thumb completely off the spool as this will cause major backlashes.
- As the lure hits the water turn the handle until it clicks. This will stop the line from spooling out. Reel until your line is tight.

See how to cast a baitcasting setup at **youtu.be/QG7eQqqaCYU**.

Fly Fishing



This setup is very different from the previous types. Fly fishing uses the weight of the line to cast instead of the weight of the lure. This allows you to cast much smaller baits, often resembling tiny insects.

Use a fly rod with eyes facing down, a fly reel mounted underneath the handle, and specialized line that needs to be matched with the rod. A lighter, usually transparent **leader** is also needed between your fly and this heavier line.

While you can use the reel to fight the fish in fly fishing, most people use their hands to bring the line in. In this case, the reel is just a place to store the line that you are not casting.

To cast:

- Grab the rod with your casting hand just above the reel and point it straight out in front of you.
- With your other hand, pull out as much line as you plan on casting through the rod tip and lay it on the lawn or water in front of you (15 to 20 feet may be a good start).
- As you pull the rod back for your backcast, pull in on the line with your non-casting hand just above the reel.
- Once you reach the end of your backcast, pause and let the line slide through your fingers.
- As the line straightens out behind you, bring the rod forward and stop it, letting the line straighten out in front of you. The fly should whip gently out on the water.

See how to cast a fly fishing setup at **howtoflyfish.orvis.com/video-lessons/13-fly-casting**. All the videos on this site are about fly fishing—from the basics to techniques for targeting certain species.

Project Area: Fishing Methods and Equipment

8 KNOTS AND LINES

Fishing line may be your most important equipment. No matter what rod you choose, the line connects you to the fish and helps you pull it in. Knots are needed to attach your lure, but a knot weakens any line. Some knots can slip, so using the right one is key. If you take care of your line and know the right knots, you are setting yourself up for success.

What to Do

Estimated time: hours, depending on time needed to learn knots

Many different knots can be used for fishing. You can get by knowing just a couple, but the more you know the more flexible you can be with your fishing **presentations**. Certain knots are better for certain line types, lures, rigs, and more. Learn the knots below and their purposes while fishing. Record the date you learn to tie each one.

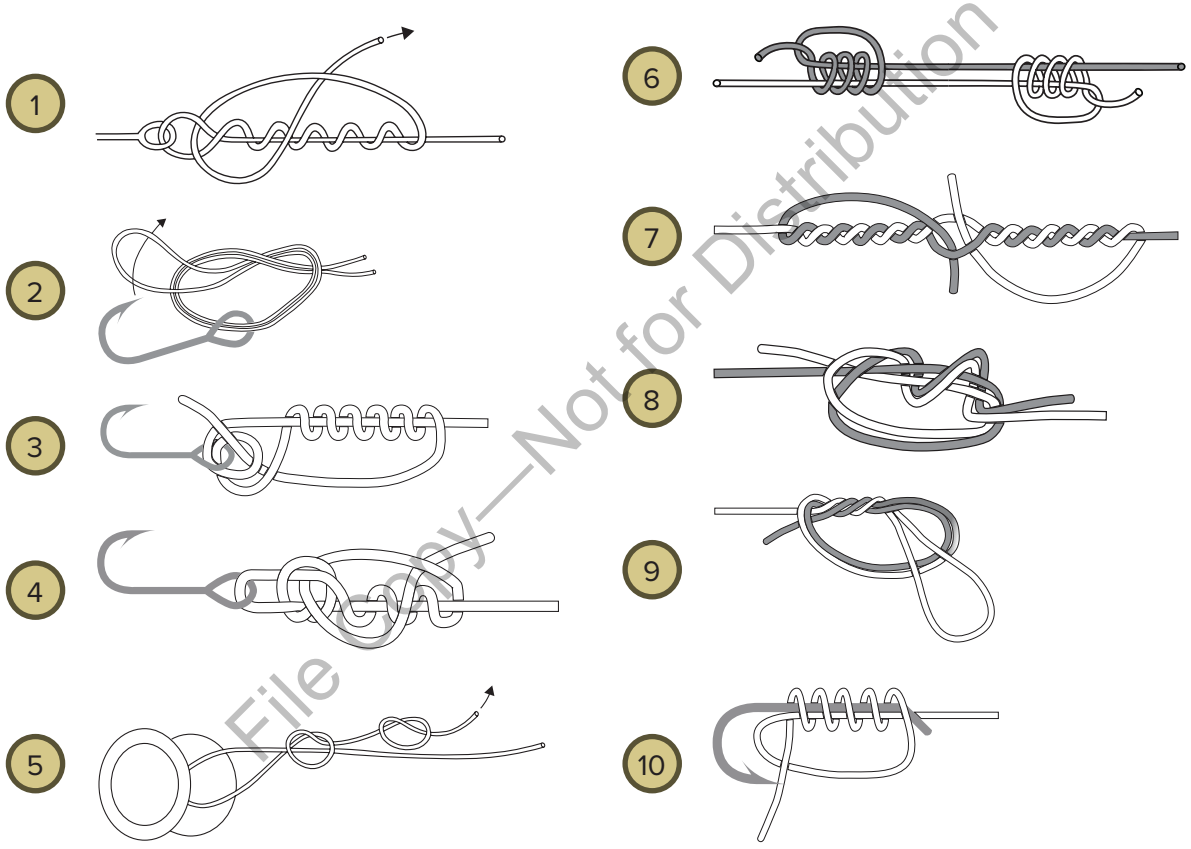
An internet search for directions for tying fishing knots gives many results. Find your own or use one of these sites:

- Take Me Fishing, **takemefishing.org/how-to-fish/fishing-knots-and-rigs**
- Animated Knots, **animatedknots.com/indexfishing.php**

Learning Outcomes

Project skill: Tying basic fishing knots **Life skill:** Mastering technology **Educational standard:** SHAPE S1.M22.6. Demonstrates correct techniques for a variety of skills in one self-selected outdoor activity. **Success indicator:** Ties knots without looking at directions

Knot Type	Date Mastered	Knot Type	Date Mastered
1. Improved clinch		6. Double uni	
2. Palomar		7. Blood	
3. Trilene		8. Surgeon's	
4. Rapala		9. Double surgeon's loop	
5. Arbor		10. Snell	



More Challenges

When it's left behind, discarded fishing line is an ugly sight. Even worse, it can be damaging to aquatic habitats and deadly to some organisms. Always clean up discarded fishing line when you come across it. If you get a snag and break off, take great effort to recover all or as much as you possibly can. Monofilament line can even be recycled! Go to **partnersforcleanstreams.org/events/reel-in-and-recycle** to see monofilament recycling locations, how your club can adopt a bin, and more.

Background

It bears repeating: Fishing line may be the most important fishing equipment you own. If it is not in good shape or is not strong enough, you are likely to lose a fish. Your great-grandparent's fishing line was basically just thin rope made of cotton or linen, but thanks to advances in chemistry we now have a variety of options with more popping up every year.

There is no right answer to which type of line you use. Each type has its own benefits and drawbacks. You will have to decide which works best for you. Many anglers even use different types in the same day depending on specific conditions.

When shopping for line look for two important measurements: pound-test (lb.) and diameter (dia.). Pound-test is the strength of the line. A 10-lb. line is able to withstand 10 pounds of pressure before it breaks. The diameter describes the line's thickness. Thinner line allows you to cast further and is less obvious to the fish, so the bait looks more natural.

Lines can also come in different colors. This can be helpful if you want to try to match the line color to the stain or clarity of the water you are fishing. Other line is made to be highly visible so you can see it in the water. This decision will come down to situation and personal preference.

Because spooling line onto a reel is time consuming, and you do not want to waste line, it is a good idea to have multiple rod and reel setups loaded with different line types. Some reels come with multiple spools so you can load them ahead of time and just swap out the spool as needed.

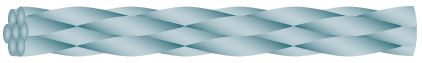
Monofilament

- Most common line type—a single strand made from nylon.
- Affordable, stretchy, and easy for tying.
- Can break down faster than other line types so needs to be changed more often.

Fluorocarbon

- Looks similar to monofilament, but is different chemically—a single strand made from fluorine, carbon, and hydrogen.
- More durable than monofilament and refracts light, making it almost invisible in water. Stretches a little and is heavier than monofilament.
- More expensive and denser, so can be more difficult to tie.

Braid



- Made of very strong, thin fibers of material braided together to form a main line. Material similar to that used in bulletproof vests.
- Stronger at smaller diameters than other line types. Does not twist as much or stretch. Sinks faster than larger diameter line. Does not break down with water or sunlight so can be used for multiple seasons.
- More expensive and "slippery," which requires certain knots. Difficult to cut. Not see-through like monofilament or fluorocarbon.

Fly Line

- Specialized and only used for fly fishing, fly line is thicker than other line types. Has a core of monofilament or braid, and is coated with a waterproof outer layer made of polyvinyl chloride (PVC).
- Comes in floating or sinking and different tapers for different applications. Needs a leader added (usually made of monofilament or fluorocarbon) to the end of the fly line to tie your fly and not spook the fish.
- Measured in weight instead of pound-test. Match the weight of fly line with the weight of fly rod.

Once you choose your line, it is time to learn some knots. Knots are the weakest point in your line, so tying the right ones is important. You will mostly use them to secure your lure to your line, but you can also use them to attach different line sizes or types to each other to make leaders for certain rigs and lure presentations. Some knots work better on one type of line than another, so be sure to do research and figure out which ones you need to know.

While fishing, check your line and knots frequently!

To check the knot, grab your lure in one hand (be careful to avoid the hooks!) and the line just above your lure in the other and give a couple slight, quick tugs. It should not break. Even if it still seems strong, you should re-tie your knot every hour to be sure. Do not forget to moisten the knot before tightening.

To check the line, grab it with your thumb and index finger just above the lure. Slide your fingers up the line about 10 feet. If you feel any nicks or bumps, cut that section off and re-tie your lure. Do this at least every hour, or more often if you are fishing in heavy cover or on the bottom. Be sure to check the line after every snag and fish. It only takes a couple of seconds, and it can stop you from losing the fish of a lifetime!

Did you know?

Knots can tighten too much and make themselves weak. Moistening the knot before you cinch it helps. Do this quickly by briefly putting the knot in your mouth before tightening.

Resources

You now know all about line and reels, but how do you actually get the line on the reel? Check out **takemefishing.org/blog/june-2017/how-to-spool-line-on-your-fishing-reel** and **news.orvis.com/fly-fishing/How-to-Set-Up-a-Fly-Reel** to learn how!

This website explains how fly line is made: **flyline.net/about-us/how-a-fly-line-is-made/index.html**.

For "Fishing Line 101," visit **sportfishingmag.com/fishing-line-101#page-6**.

Get the full story about monofilament fishing lines at **sufix.fishing/monofilament-fishing-lines**.

BAIT

Now we get to the tricky part: How do you make the fish bite? You already learned about some behavioral and environmental factors that might make a fish bite. Take what you learned from that activity and use it to choose your bait. What bait can you use to take advantage of the current conditions at your favorite fishing spot?

What to Do

Estimated time: 60 minutes

Fill in the table below as you answer the following questions.

If you could choose only three lures or baits to use for the rest of your life, which would you pick and why?

Now branch out. Grab a tackle magazine or head to the local bait shop and check out the lure and bait options. Pick three more that you would like to try. Why did you pick these three and why do you think they will work?

Bait Type	Why You Like It

Learning Outcomes

Project skill: Evaluating fishing bait **Life skill:** Managing resources **Educational standard:** SHAPE S4.M7.8. Independently uses a physical activity and fitness equipment appropriately and identifies specific safety concerns associated with the activity. **Success indicator:** Identifies fishing bait needs

More Challenges

Catching a fish on a lure that you handcrafted is a rewarding experience. Do online research or ask an expert at your local tackle shop to get you started. Many retailers and tackle shops sell the individual parts for making jigs, flies, spinnerbaits, casting harnesses, and more. Show your project helper your first creation!

Background

The wide variety of fishing equipment for sale is incredible, but nothing compares to the options you have when it comes to bait. Seemingly endless choices range from live or manufactured, cheap to expensive, and tiny to large. Also, you can find bait in every color imaginable. Don't let all the possibilities intimidate you. Pick a few to start with and learn how to use them, then widen your search and learn more. You are likely to find that no matter how full your tackle box becomes, a few baits will be your go-to options that work for you just about anywhere.

Live Bait

Always a great option, live bait provides authentic scents and movement that artificial lures cannot match. You can simply add them to a hook, use them on more elaborate rigs, or even combine them with some artificial lures. Common options include worms (red wigglers, nightcrawlers, etc.), insect larvae (waxworms, mealworms, etc.), minnows, crayfish, and leeches.

Jigs

Jigs are essentially weighted hooks normally fished on or near the bottom, though they can be used under bobbers. Often the "head" of the jig is a lead ball painted to be part of the lure. Jigs may come with a skirt or body already on the hook, or may be plain so you can add your own body, skirt, live bait, or other option. Jigs come in many different weights and shapes.

Crankbaits

Crankbaits get their name because you can cast them out and crank them in, since the action is usually provided by a lip designed to make the lure wobble. Hooks are attached to the lure. They can run shallow or deep, sink or float, and come in all different shapes and sizes. They most often resemble baitfish, but can look like frogs, crayfish, or other prey.

Blade Baits

Blade baits are similar to jigs because they are often a chunk of metal, but they are shaped into a blade and have hooks attached the same way as on a crankbait. The blade shape sends out vibrations as you bring it through the water, and it is often jigged near the bottom or around schools of baitfish that it is meant to imitate.

Soft Plastics

As the name implies, these baits are made of flexible plastic to give a lifelike appearance, feel, and movement. They can be used similarly to live bait by just putting them on a hook. They are also used as the body of jigs or with techniques like drop-shot or Carolina rigs. They are commonly shaped like worms, fish, frogs, crayfish, or salamanders, and often scented to attract fish.

Spinnerbaits and Buzzbaits

Traditional spinnerbaits look like a wire bent at an 45 degree angle with a spinning blade at the top and a weighted head attached to a hook at the bottom, usually equipped with a skirt. The blades can be different shapes, and there can be more than one. They can be fished throughout the water column and resemble baitfish. Buzzbaits look similar, but the blade is much larger and flatter, as they are designed to agitate the surface of the water. Other variations include in-line versions of buzz- and spinnerbaits without the angle in the wire. In-line spinnerbaits are usually known as spinners.

Flies/Poppers

Flies are so-named because they are made to resemble small insects that fish feed on. They are often tiny and have very little weight. A fly rod is usually used to fish with a fly, but you can also use them behind a bobber. They can sink or float. Poppers are lures made to sit on the surface and make a popping noise as you jerk them back in. They can be tiny and used on a fly rod, or much larger and used on other fishing gear to attract aggressive fish. They may resemble insects, frogs, or injured fish.

Each of these categories has thousands of options to choose from, and this is by no means a complete list of bait categories. Have fun exploring the wonderful world of bait!

Did you know?

Experienced anglers, and especially fly fishers, try to “match the hatch.” If you are fishing and see insects emerging from the water, it is a safe bet that fish are eating them. Catch one and use a lure that looks similar. Don’t limit yourself to insects though. If you see a school of minnows or shad, or catch a fish that regurgitates a prey item, use a lure or bait that resembles those items. It may be the secret to having a great day on the water!

TALKING IT OVER

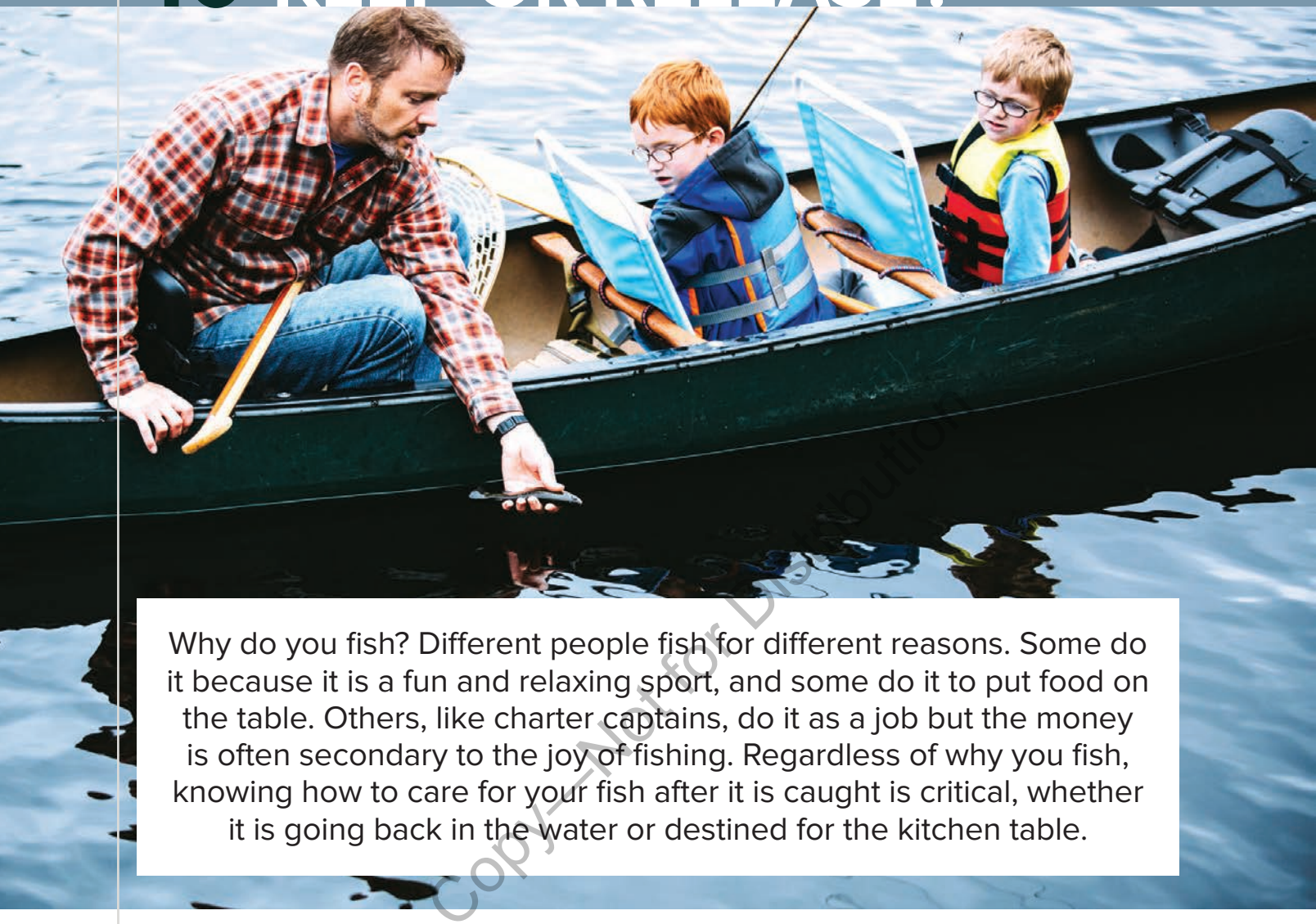
SHARE What knot was your favorite to tie? Was it different from when you were a beginner? Explain.

REFLECT After learning about the various casting types and techniques, which will be the most useful to you this year? Why?

GENERALIZE What specific qualities did you look for when selecting bait this year?

APPLY How will you fish differently in the future as a result of this experience?

10 Project Area: Care and Cleaning of the Catch
KEEP OR RELEASE?



Why do you fish? Different people fish for different reasons. Some do it because it is a fun and relaxing sport, and some do it to put food on the table. Others, like charter captains, do it as a job but the money is often secondary to the joy of fishing. Regardless of why you fish, knowing how to care for your fish after it is caught is critical, whether it is going back in the water or destined for the kitchen table.

What to Do

Estimated time: 60 minutes

As an angler, you have some big responsibilities. It is important for the resource that you always act in a responsible manner, from keeping our waters clean to releasing fish unharmed. Another major responsibility is to purchase your fishing license as required, and to know and abide by the rules. Grab a copy of the current fishing regulations book from your local bait shop or find them online at your state's Department of Natural Resources website. In Ohio, that website is **wildlife.ohiodnr.gov/fishingregulations**.

Find your state's natural resources website on this link:
wikipedia.org/wiki/Category:Natural_resources_agencies_in_the_United_States

Learning Outcomes

Project skill: Finding answers to fishing regulations questions **Life skill:** Thinking critically **Educational standard:** NA **Success indicator:** Answers questions about fishing regulations

In addition to how to get a license, fishing regulations cover any limits on the weights and numbers of fish, special local regulations, and other issues.

The rules differ depending on where you fish, so use the current regulations for your area to answer the questions below. If you are not sure of your answer, ask a bait shop employee or knowledgeable angler to help you find it.

1. Who needs a fishing license?

_____

2. What is your favorite fish to catch? Are there regulations you need to know when fishing for it?

_____

_____

3. Identify a fish (different from your favorite) that has a limit on how many you can keep. Record the fish and the limit here.

_____

_____

4. Identify a fish (different from the ones above) with a size limit. Record the fish and the limit here.

_____

_____

5. List any free fishing days offered by your state.

_____

_____

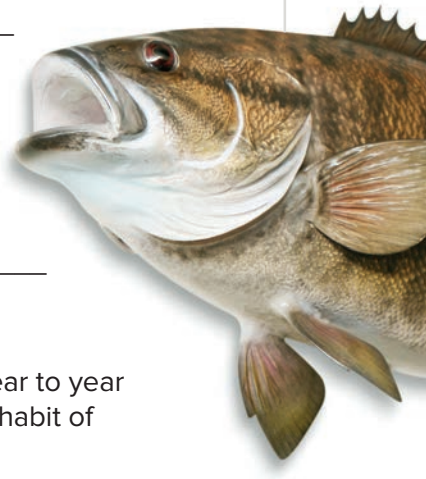
_____

6. Find a fishing location that has different regulations from other spots. Name the location and summarize the regulations.

_____

_____

_____



No matter where you live in the United States, regulations can change from year to year depending on changes in fish populations and management goals. Get in the habit of reviewing your state's regulations annually for any updates.

Now explore the rules at your frequent fishing spots. Look up the sites you identified in Activity 5. What are the regulations for these bodies of water? Always know before you go.
Now that you know the rules, go catch a keeper! It will be useful for the next activity.

More Challenges

Photograph your fish! A great fish picture can be a trophy itself. A few tips: keep the sun at the photographer's back, make sure to include some background scenery, and hold the fish firmly. (It will probably not cooperate.) The most important thing, especially if you are releasing the fish, is to do it quickly and not harm the fish. Keep it in the water until the photographer is ready, always keep your hands wet, and hold the fish horizontally as it would be swimming in the water, supporting it from underneath. Never hold a fish by its gills, and avoid holding large fish vertically without support. They are used to being supported by water and gravity can cause strain on their internal organs, causing injury even though they look fine when released. Cherish those fish, and cherish the memories.

Did you know?

Most fish have an air bladder that they use to control their depth. When you pull a fish up from deep water too quickly, this air expands and causes it to bloat, making it unable to dive. Some species are more susceptible than others, so the depth for this to occur varies. In some places, fish descending devices are used to safely take the fish back down to depth where they can be safely released, and not end up as floating food for the birds!

Background

An important part of fishing is knowing what to do once you have caught the fish. Not all fish are created equal, and different fish need to be handled differently to make sure both you and the fish are safe. When handling fish, always be careful to avoid fin spines and sharp teeth if present. If you plan to release a fish, do not handle it very much. Keep it in the water as much as possible, keep your hands wet, and gently remove the hook. If hooked too deeply, keep the fish if legal or cut the hook off at your knot, leaving it in the fish.

When you are keeping a fish, chill it as soon as possible to avoid spoiling. Some anglers fish with a cooler of ice close by so fish can be immediately chilled. If that is not possible, take a stringer, bucket, or use a live well to keep fish alive until you leave the water, then get them on ice as soon as possible.

Remember: Never move water or live organisms from one body of water to another!

Should you keep your fish or release it? Many anglers practice catch and release, and never intend to keep a fish. As long as you are careful and can release the fish unharmed, this can be a fun and rewarding way to fish. Other anglers find it equally rewarding to keep and consume their catch. Fish can be part of a healthy diet, and knowing where it comes from is useful. As long as you follow the regulations, you should feel good about keeping your fish. Always be a good fishing steward, and never take or meaningfully kill a fish that you do not intend to eat.

One important factor when deciding whether to eat your fish is local **consumption advisories**. Fish can accumulate contaminants like mercury and **PCBs** that are harmful if you ingest too much. The U.S. Environmental Protection Agency (EPA) can lead you to your state's consumption advisories at this site: **fishadvisoryonline.epa.gov/General.aspx**. Stay safe and enjoy your fish!

Fishing regulations are a result of fisheries management, which involves biologists who study fish populations, habitat, and more. They are able to determine how many fish of a species can be caught and kept from an area without depleting the population.

Whether you choose to catch and release or catch and keep, always respect other anglers' choices. As long as we are obeying the regulations, we will have healthy fish populations for years to come!

Resources

An interesting part of fish management is that transmitters are used in fish to record information when they swim through network receivers. Pretty cool! Learn more by visiting the Great Lakes Acoustic Telemetry Observation System (GLATOS) website at **glatos.glos.us**.

11 Project Area: Care and Cleaning of the Catch
CLEANING YOUR FISH

Once you decide to keep a fish, it needs to be properly prepared before it can be cooked and enjoyed. Cleaning a fish is not a difficult process, but it does take some practice before you become consistently good at it. The best way to learn is by doing, so catch a good eater and head to the cleaning table!

Learning Outcomes

Project skill: Caring for and safely storing your catch **Life skill:** Being responsible **Educational standard:** SHAPE S4.M7.6. Uses physical activity and fitness equipment appropriately and safely, with the teacher's [project helper's] guidance. **Success indicator:** Properly fillets a fish

What to Do

Estimated time: 45 minutes

Supplies: fish, smooth cutting board or table, sharp fillet knife, rinse water

The most common way to clean a fish is by filleting it. Follow the steps below and you should end up with a boneless chunk of meat ready to cook. Don't get discouraged if your first few tries aren't perfect. You will get better the more you practice. Take a picture of your fillets and attach them to this page.

Always remember to be careful when using a knife, and always point the sharp edge away from yourself to avoid getting cut. Especially watch out for your fingers when filleting fish!

Insert knife behind gill cover

To start (and to avoid injury), make sure the fish is dead. Make the first cut behind the gill cover. Be careful to cut only until the knife touches the backbone. Do not cut through it.

Knife into fish along the rib cage

Turn the fish end-for-end and run the knife along the backbone and dorsal fin. Cut deep enough to bounce the knife along the top of the rib cage.

Knife through the fish and cut toward tail

When the knife blade no longer contacts the rib cage, push the knife through the width of the fish. The blade will exit on the bottom of the fish near the vent. Continue cutting along the bone until the fillet is cut off at the tail.

Cut meat from the rib cage

Option 1: Hold the fillet away from the rib cage and carefully cut the meat away from the ribs by running the knife along the ribs. Cut through to the belly and remove the fillet.

Option 2: Cut through the rib cage and remove the ribs along with the fillet. An additional step is then required to cut the ribs away from the meat.

Remove skin

Remove the skin from the fillet by inserting the knife at the tail and cutting the meat from the skin. Hold the fillet in position by pressing down on the skin, with your fingers. Repeat the same steps on the other side of the fish.

CATFISH

If you catch a catfish, the same basic filleting instructions apply. You do need to be more cautious in the way you handle the fish.

Insert knife behind gill cover

To start (and to avoid injury), make sure the fish is dead. Keep your hand clear of the fin spines. Make the first cut behind the gill cover. Be careful to cut only until the knife touches the backbone. Do not cut through it.

Knife into fish along the rib cage

Run the knife along the backbone and dorsal fin. Cut deep enough to bounce the knife along the top of the rib cage. Cut around the "belly fat" of the fish. It is more jelly-like in appearance and does not taste good.

Remove skin

Remove the skin from the fillet by inserting the knife at the tail and cutting the meat from the skin. Hold the fillet in position by pressing down on the skin, with your fingers. Repeat the same steps on the other side of the fish.

Don't forget to attach a picture of your fillets!

Source

Ohio Department of Natural Resources, Department of Wildlife's *Sport Fish of Ohio Identification*, April 2012

More Challenges

Filleting is the most common way to clean a fish, but there are many other options. Research some other ways you can clean a fish, and try them. Talk with your project helper about which method you prefer and why.

Background

There is no single correct way to clean a fish. How you do it depends on the species, size of the fish, how you plan to present the meal, and personal preference.

In some circumstances, the most important thing to do is to remove the entrails and gills as soon as possible. These parts are some of the first to spoil. However, when filleting a fish, you do not need to worry about removing the entrails because once the fillets are off you can dispose of all the remains.

Maybe that is why filleting a fish is the most common way to clean one. Filleting a fish simply means cutting the meat off the carcass.

Filleting works on almost any species of fish, although some fish are easier to fillet than others. Walleye or bigger yellow perch are great fish to learn on because their body structure makes them perfect to fillet. Smaller fish like bluegill can be trickier for beginners because there is less margin for error, but once you know the body structure of a species it will become easier.

With most fish in Ohio, once you have the fillet off the body and remove the skin you should have a boneless piece of meat. Run your fingers over the fillet and make sure you did not accidentally leave any bones. If you feel one, just pull it out with your fingers or pliers, or cut it out with your knife. Once it is rinsed and patted dry, it is ready to eat!

If you are not going to eat the fillet within a couple days be sure to freeze it. It is best to remove all air from the package to avoid freezer burn. You can do this with a vacuum sealer, but you can also just put fillets in a freezer bag, top with water, and squeeze until all the air is out. Label the bag with contents and date, and freeze. When you are ready, just thaw it out and treat it as if it were fresh. Enjoy!

Did you know?

Some states and other areas have rules about how to transport fish. Depending on your location, you may be required to leave the skin on fillets while transporting fish home. Make sure to read the regulations!

Resources

The illustrated *Sport Fish of Ohio Identification* book by the Division of Wildlife is a great guide for anglers of any age: **wildlife.ohiodnr.gov/portals/wildlife/pdfs/publications/id%20guides/pub334.pdf**

Watch a helpful video of how to clean fish by visiting **takemefishing.org/how-to-fish/how-to-catch-fish/how-to-fillet-a-fish**.

TALKING IT OVER

SHARE What did you notice about catch and release or keep trends where you fished this year?

_____

_____

_____

REFLECT Did you catch and release your fish or did you keep them this year? How do you feel about your decision?

_____

_____

_____

GENERALIZE Now that you have cleaned some fish, what advice would you give someone cleaning fish for the first time?

_____

_____

_____

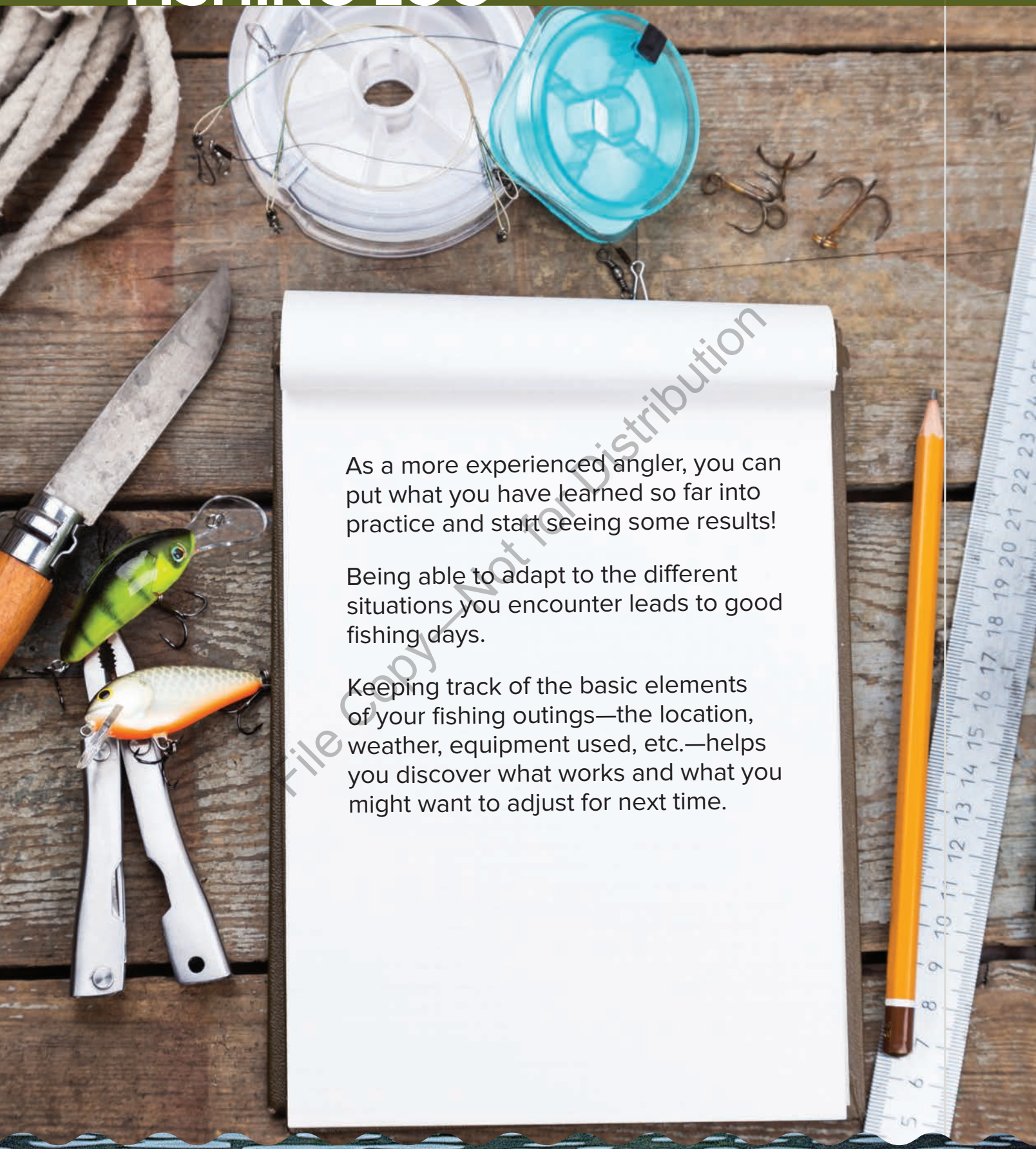
APPLY Are you likely to be affected by fishing limits—number, size, or consumption advisories—this year? Explain.

_____

_____

_____

FISHING LOG



As a more experienced angler, you can put what you have learned so far into practice and start seeing some results!

Being able to adapt to the different situations you encounter leads to good fishing days.

Keeping track of the basic elements of your fishing outings—the location, weather, equipment used, etc.—helps you discover what works and what you might want to adjust for next time.

FISHING LOG						
Date and Time	Location (lake, specific spot, etc.)	Habitat (rocky, weedy, clear, deep, shallow, etc.)	Weather (temperature of water and air, sunny, cloudy, windy, etc.)	Equipment (rod, reel, line type, and weight, etc.)	Bait	Species and Size Caught

FISHING LOG						
Date and Time	Location (lake, specific spot, etc.)	Habitat (rocky, weedy, clear, deep, shallow, etc.)	Weather (temperature of water and air, sunny, cloudy, windy, etc.)	Equipment (rod, reel, line type, and weight, etc.)	Bait	Species and Size Caught

GLOSSARY

amphibian. A cold-blooded vertebrate animal with an aquatic gill-breathing larval stage typically followed by a lung-breathing adult stage. Examples: frogs, toads, newts, and salamanders.

aquatic invasive species (AIS). A non-native plant or animal that can harm surrounding natural resources or human interests.

backlash. Fishing line becoming knotted or tangled on the spool.

baitcasting. A reel with a revolving spool and trigger handle that sits on top of a casting rod.

barometric pressure. Atmospheric pressure (the weight of air on the Earth's surface), usually measured in millibars.

consumption advisory. A suggestion from a knowledgeable agency to limit or avoid eating certain species of fish or shellfish due to chemical contamination.

crustacean. An arthropod of the large, mainly aquatic group Crustacea, such as crayfish or shrimp.

drag. A pair of friction plates inside a fishing reel. If a fish pulls hard enough, the friction is overcome and the reel rotates backwards, letting line out and preventing the line from breaking.

ectothermic. Cold blooded, meaning body temperature is controlled by the environment.

food chain. A hierarchical arrangement of organisms according to the order of predation.

food web. A system of interdependent and interlocking food chains.

fly fishing. The sport of fishing using a rod and an artificial fly as bait.

herbivore. An animal that eats only plants, such as a mayfly nymph and a mosquito larva.

leader. Length of line attaching the main line to the lure, usually a different line type or size and used only in certain presentations.

macroinvertebrate. An animal without a backbone large enough to see with the naked eye.

macrophyte. A plant, especially an aquatic plant, large enough to be seen by the naked eye.

marine debris. Any human-made litter in any waterway such as in a river, lake, sea, or ocean.

microfishing. A popular sport using ultralight gear, tiny hooks, and bait. The goal is to catch a variety of small fish less well-known to the average angler.

PCBs. Polychlorinated biphenyls, a group of odorless chemicals banned from production in 1977. Remnants of PCBs can be part of food webs.

photosynthesis. The process in which plants use water, light, and carbon dioxide to create sugars for food and give off oxygen.

phytoplankton. Plankton consisting of microscopic plant-like organisms.

plankton. Small, aquatic organisms unable to swim against a current, including algae, crustaceans, protozoans, and even tiny life stages of larger animals like larval fish (called ichthyoplankton).

predator. An animal that hunts, kills, and eats other animals, such as a fish eating a dragonfly.

presentation. In fishing, a method of presenting live bait or artificial lures to fish.

producer. An organism able to make its own food, such as plants and algae.

reptile. A vertebrate animal distinguished by dry scaly skin and that typically lays soft-shelled eggs on land. Examples: snakes, lizards, turtles, and tortoises.

seine. A type of fishing net.

spincasting. A setup for beginner anglers that uses a casting rod with the reel mounted to the top of the handle.

spinning. A fishing reel mounted on a spinning rod, having stationary spool on the side of which is a revolving metal arm that catches the line and winds it onto the spool.

structure. In fishing, any feature or change in the physical habitat, such as a fallen tree on the shore of a river, a pier on a pond, or weeds growing at the edge of a lake.

top predator. A predator with few or no other predators. A shark is an example of a top predator.

trolling. A method of fishing where one or more fishing lines, baited with lures or baitfish, are dragged through the water.

zooplankton. Plankton consisting of small animals and the immature stages of larger animals.

SUMMARY OF LEARNING OUTCOMES

Activity	Project Skill	Life Skill	Educational Standard*	Success Indicator
PROJECT AREA: SAFETY WHILE FISHING				
1. Some Reminders	Recognizing safe behavior while fishing	Being responsible	SHAPE S4.E5.4. Exhibits etiquette and adherence to rules in a variety of physical activities.	Agrees to fishing safety pledge
PROJECT AREA: FISH BASICS				
2. Aquatic Ecology	Recognizing fish environments and ecosystems	Navigating your environment	SHAPE S4.M1.6. Exhibits personal responsibility by using appropriate etiquette, demonstrating respect for facilities, and exhibiting safe behavior.	Designs a food web based on the fish ecosystem explored
3. Fish 101	Researching and identifying similarities and differences among types of fish	Processing information	NA	Creates an informational list of three species of fish
4. Bite, Fishy, Bite	Identifying what makes fish bite	Managing resources	SHAPE S4.M7.8. Independently uses physical activity and fitness equipment appropriately and identifies specific safety concerns associated with the activity.	Compiles a list of what makes fish bite
5. Structure and Habitat	Identifying fish habitats and needs	Navigating your environment	SHAPE S4.M1.6. Exhibits personal responsibility by using appropriate etiquette, demonstrating respect for facilities, and exhibiting safe behavior.	Identifies differences among various fishing locations
6. Getting to the Fish	Identifying and fishing from new fishing areas	Solving problems	SHAPE S5.E2.3. Discusses the challenge that comes from learning a new physical activity.	Fishes from a new platform or structure
PROJECT AREA: FISHING METHODS AND EQUIPMENT				
7. Casting	Trying various casting and reeling setups	Mastering technology	SHAPE S1.M24.7. Demonstrates correct techniques for a variety of skills in one self-selected individual performance activity.	Practices correct casting technique
8. Knots and Lines	Tying basic fishing knots	Mastering technology	SHAPE S1.M22.6. Demonstrates correct techniques for a variety of skills in one self-selected outdoor activity.	Tie knots without looking at directions
9. Bait	Evaluating fishing bait	Managing resources	SHAPE S4.M7.8. Independently uses a physical activity and fitness equipment appropriately and identifies specific safety concerns associated with the activity.	Identifies fishing bait needs
PROJECT AREA: CARE AND CLEANING OF THE CATCH				
10. Keep or Release?	Finding answers to fishing regulations questions	Thinking critically	NA	Answers questions about fishing regulations
11. Cleaning Your Fish	Caring for and safely storing your catch	Being responsible	SHAPE S4.M7.6. Uses physical activity and fitness equipment appropriately and safely, with the teacher's [project helper's guidance.	Properly fillets a fish

* The educational standards cited here are from SHAPE America, Society of Health and Physical Educators. They are available in their entirety at **shapeamerica.org/standards/pe/upload/Grade-Level-Outcomes-for-K-12-Physical-Education.pdf**.

I pledge
My head to clearer thinking,
My heart to greater loyalty,
My hands to larger service, and
My health to better living,
For my club, my community, my country, and my world.

ohio4h.org

Additional copies of this book and other Ohio State University Extension, 4-H Youth Development publications are available through local OSU Extension offices and online at **extensionpubs.osu.edu**. Ohio residents get the best price when they order and pick up their purchases through local Extension offices.

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