Into the Outdoors

Educational Partners: Future Angler Foundation, Trout Unlimited, USDA Forest Service

FLYFISHING ON YOUR NATIONAL FORESTS

6th-8th Grade Discussion Guide

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SCIENCE CATEGORIES
Aquatic Biology, History, Physics

TIMEFRAME
Video introduction & discussion- 45 minutes

Two, 45-minute sessions

MATERIALS
Access to computers and internet: Flyfishing- in Aquatic Science Flyfishing Classroom Video

Pre-lesson questions to fill in while watching video

User Group Worksheet

TOPICS
Fisheries and Aquatic Ecology

OBJECTIVES

Content- Students will be able to evaluate the recreational opportunities and potential benefits of flyfishing. They will also be able to analyze possible flyfishing locations and species on nearby National Forests.

Learner- Students will research, compile and debate the personal "Challenges versus Benefits" of flyfishing compared to other more common methods. Students will use geographic online tools to determine where they can flyfish for certain species in a National Forest near them while learning about aquatic ecology on the Forest.

Process- Students will work in small and large groups to research and process new information and use evidence to come to conclusions.

SUMMARY

In this peer-driven lesson, students will learn how to research and evaluate where to find flyfishing opportunities on nearby National Forests. They will also develop a "Challenges versus Benefits" presentation for classroom debate on the challenges and potential rewards of using the technique of "flyfishing".

OVERVIEW

The concept of "fly-fishing" is to use fly-looking lures made from feathers tied to a hook. They're tied to resemble certain insects, minnows, or water creatures that inhabit the natural ecosystem where and when anglers are fishing. The where and when are important as aquatic food sources in different ecosystems can change significantly throughout the seasons.

The technique of "flyfishing" is one of the oldest documented methods of catching a fish that can be traced back to Roman history about 2000 years ago. Japan, Scotland and various European countries also adopted flyfishing over the ages, and how-to flyfishing books appeared back in the 1600s, including The Compleat Angler written by Izaak Walton in 1653. (Yes, that's how Waldon spelled "compleat").

Besides putting fish in the frypans of commoners, flyfishing even became popular among royalty, including King George IV. Things really took off for flyfishing here in America when Charles F. Orvis, designed and began selling a novel flyfishing reel and fly designs in 1874. Despite being around for ages, and some of challenges of fishing with this historic technique, flyfishing remains a popular pursuit with many new and seasoned anglers.

The physical back-and-forth action of casting a flyrod with your arms makes flyfishing a relatively intense way to fish compared to watching a bobber with a worm on a hook. Add the very real challenges of fly fishing with trees and brush snagging your long whipping line and placing the lightweight fly in front of a fish and it begs the question... are the challenges worth the potential benefits? That's what students will explore in this lesson, combined with research on flyfishing oppurtunities on nearby National Forests.

SESSION 1:

Before watching the video or reading the background information, ask students how many have gone fishing and what techniques they used. Also ask if any students have tried flyfishing. Lead a short discussion on what students learned about themselves, personal relationships and nature when flyfishing with friends or family.

Print and distribute the Pre-Lesson Questions (Question Page contained in this PDF). Instruct students to fill in the questions while watching the video. Go over the questions with the students before viewing the video so they know what to look and listen for.

After viewing the video, review and prompt a class discussion on the answers.

Next, divide the class into these two (2) National Forest Flyfisher Groups;

1. Forest Fly-Fishers
2. National Forest Angling Assessors

Explain that in Session 2, students will conduct research then prepare presentations relative to instructions in their specific group worksheets.

SESSION 2: CLASSROOM DISCUSSION

Print and distribute the three National Forest Angler Group Worksheets to the two groups. (those individual worksheets are contained in this PDF). Each worksheet has specific and slightly different instructions for each student group as they prepare their presentations. Become familiar with the instructions in the two worksheets and answer any student questions about the activity for the;

1. Forest Fly-Fishers
2. National Forest Angling Assessors

Next, have the student groups begin their online research and developing their presentations for Session 3. All instructions are included in their Group Worksheets. Inform each group that two members of their group will be presenting their findings to the class during Session 3, followed by a class discussion about their results.

SESSION 3:

Have the two groups present their findings and conclusions. Lead group discussion on how certain recreational pursuits such as flyfishing, can provide deeper insight into understanding ecosystems while offering personal rewards.

Conclude the discussion with a sampling of students who might actually want to try flyfishing or try angling using any method in a National Forest. Students interested in angling on a forest as a student group with mentors, or with families, can also try the **Extension Activity** below.

Assessment: Students will be informally assessed based on their participation in the class discussion. Teachers could collect the discussion notes students took during the video to check for completion. Students can be formally assessed using their Pre-Lesson Questions. Students can be assessed on meeting the formal learning objectives on how thoroughly students completed their Worksheets.

Special Considerations:

1. During the video, the instructor may want to pause the video occasionally to allow students time to fill in their Pre-Lesson Questions.

2. Sessions 2 & 3 of this activity are richest when completed in groups with answers shared with and discussed as a whole class. The National Forest Angler Worksheets are not typical worksheets as they encourage students to research and construct knowledge as they answer questions.

Extension Activity- Students working as groups with mentors, or with families, actually go flyfishing, or fishing using any method on a National Forest. During their angling adventure, they can take photos of various aspects that might highlight key points from their Worksheets. Students can later present to the class their actual experiences compared to what they determined from their research and presentations.

Research Resources:

- https://intotheoutdoors.org/segments/into-family-fishing-in-your-national-forests/
- https://www.fs.usda.gov/fishing/
- https://www.fs.usda.gov/fishing/regionalmap/index.html
- https://www.takemefishing.org
- https://kidsfishing.us

The following National Common Core Standards can be met teaching;

FLYFISHING YOUR NATIONAL FORESTS

COMMON CORE STANDARDS:

CCSS.ELA-LITERACY.L.8.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
CCSS.ELA-LITERACY.L.8.4	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
CCSS.ELA-LITERACY.RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
CCSS.ELA-LITERACY.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain- specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
CCSS.ELA-LITERACY.SL.8.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others; ideas and expressing their own clearly.
CCSS.ELA-LITERACY.SL.8.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
CCSS.ELA-LITERACY.SL.8.5	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
CCSS.ELA-LITERACY.SL.8.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
CCSS.ELA-LITERACY.W.8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
CCSS.ELA-LITERACY.W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.W.8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.W.8.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
CCSS.ELA-LITERACY.WHST.6-8.1	Write arguments focused on discipline-specific content.
CCSS.ELA-LITERACY.WHST.6-8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.L.9-10.4	Determine or clarify the meaning of unknown and multiple- meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.
CCSS.ELA-LITERACY.RI.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.RST.9-10.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
CCSS.ELA-LITERACY.RST.9-10.2	Determine the central ideas or conclusions of a text; trace the text explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
CCSS.ELA-LITERACY.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
CCSS.ELA-LITERACY.SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.9-10.2	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
CCSS.ELA-LITERACY.SL.9-10.3	Evaluate a speakers point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
CCSS.ELA-LITERACY.SL.9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
CCSS.ELA-LITERACY.SL.9-10.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
CCSS.ELA-LITERACY.W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
CCSS.ELA-LITERACY.W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.WHST.9-10.1	Write arguments focused on discipline-specific content.
CCSS.ELA-LITERACY.WHST.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.WHST.9-10.9	Draw evidence from informational texts to support analysis, reflection, and research.

NEXT GENERATION SCIENCE STANDARDS

MS-LS2-2.	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]
MS-LS2-3.	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.]
MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]
HS-LS2-3.	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. [Clarification Statement: Emphasis is on conceptual understanding of the role of aerobic and anaerobic respiration in different environments.]
HS-LS2-5.	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. [Clarification Statement: Examples of models could include simulations and mathematical models.] [Assessment Boundary: Assessment does not include the specific chemical steps of photosynthesis and respiration.]

PRE-LESSON STUDENT QUESTIONS

FLYFISHING ON YOUR NATIONAL FORESTS

Student Name: **Class:** **Date:**

Before watching the video on Flyfishing YOUR National Forests, or exploring the website, review these questions and look for answers while watching the video.

1. **What are some of the unique challenges in flyfising?**

2. **What are some of the possible "intangible personal rewards" of flyfishing?**

3. **What are some tangible "physical, psychological, or health rewards" that someone might get from flyfishing?**

4. **What might someone learn about ecosystems from their fly selection?**

5. **What's other modern, yet historic outdoor pursuits, are similar to flyfishing?**

6. **In the video, anglers released all their fish. What are the reasons or motivations to spend all that time and effort just to let them go?**

FOREST FLYFISHERS WORKSHEET

You belong to the Forest Flyfishers. As your name implies, you're just getting into the challenges and rewards of flyfishing... hopefully somewhere that offers wilderness and adventure, like on a National Forest near you.

From what you've seen in the video or in class discussion, or maybe from a flyfisher in your group, you sense that flyfishing can be more challenging that other typical methods of fishing. But like any challenge in life, the rewards of accomplishment often match the efforts put into overcoming the challenge.

So, your challenge in this lesson is to research and list the apparent challenges in getting into flyfishing. Consider how the mechanics, physics and flyfishing gear (rod, reel, fly line, leader, flies) might "interact" with the environment along streams, rivers and lakes. Also consider things such as the learning curve, coordination skills, matching the artificial flies to what's naturally in the ecosystem, and other intangibles that may create a challenge. On the flip side, most challenges come with rewards for accomplishment. That's why you will also research, consider and list the corresponding rewards that might align with each challenge.

From your research, list below both the potential Challenges of flyfishing (tangible and intangible) and the potential Rewards (tangible and intangible) of flyfishing. Consider and respect the fact that the "personal rewards" (intangible) may be different for different members within your group.

CHALLENGE	REWARD

INVESTMENT VERSUS REWARDS OF... ANGLING ON YOUR NATIONAL FORESTS NEW FOREST ANGLERS WORKSHEET

You belong to the New Forest Anglers. As your name implies, you're new to fishing in National Forests. Matter of fact, you haven't done it all!

Even though you're new, make no mistake, you're full of enthusiasm to try fishing on a National Forest near you as it represents a real "adventure" in a wild place with all kinds of exciting fishing opportunities.

Despite your zeal to embark on a family fishing adventure on a National Forest, not everyone in your family shares your enthusiasm. Parents have all kinds of work, home, and family responsibilities and the thought of investing time and money to go fishing may be far down on their "wantado" list.

So, your challenge is to research and reveal all the real personal rewards that you and your entire family will benefit from by making a comparatively small investment in family fishing. In short, you're like an angling salesperson that has to develop a ROI (return on investment) pitch to present to your parents so they will take you and the family fishing. And here's how...

First, research and locate a National Forest near you that has fishing opportunities. Research and list either lakes, streams or rivers that may exist there and what fish species inhabit those bodies of water. Select two fish species and bodies of water that might offer your family the most rewards for their investment in family fishing.

Next, research and list below both the potential Investments (tangible and intangible) and the Rewards (tangible and intangible) of fishing for two species and bodies of water on the forest... for each family member! Consider the fact that the "personal rewards" (intangible) may be very different for different members of your family.

Family Member	Investments	Rewards

Your Challenges-Rewards Presentation – Compare and contrast your individual Worksheet answers within your group. Create a new "Group Worksheet" that lists similar challenges and rewards. Discuss within your group what it might take to overcome the challenges listed. Different people within your group may offer different solutions to overcoming challenges.

Next, repeat the same process with the "rewards" on your individual Worksheets (compare and contrast). List similar Rewards on your separate "Group Worksheet". Discuss within your group why overcoming certain challenges might result in a personal reward. As noted, respect the fact that different people within your group may present different rewards to overcoming challenges.

In Session 3, two members of your group will use the information on your "Group Worksheet to make a presentation before the class, followed by a discussion. During class discussion, ask questions of other participating students about their views and the Challenges and Rewards. And for gosh sakes... have fun!

NATIONAL FOREST ANGLING ASSESSORS WORKSHEET

You belong to the National Forest Angling Assessors. So really, you're part research and analytical geek, yet also love understanding complex aquatic ecosystems. Your new job is to research online, specific "flyfishing opportunities" on two National Forests... one close to your town, and another in a "dream fishing forest" somewhere at another National Forest anywhere in the country.

With the complexities of everyday life, many people find it too much of a challenge or can't make the time to discover then try new outdoor pursuits, such as flyfishing. Not to worry. You will be their flyfishing assessors in finding likely streams and lakes in National Forests for flyfishing newbies to try their hand at catching fish by flyfishing. So, your job is to perform online research and list at least three bodies of water in each Forest that offer the best combination of:

1. **Reasonable access** (road or trail) to your target bodies of water.
2. **Shoreline or riverbank access** suitable for flyfishing (waders allowed in your locations).
3. **Target fish species** that offer the best chance for success (any combination of stream, river, lake, reservoir or pond).
4. **Bonus Information** - nearby camping, Forest Service Offices, flyfishing shops, guide services (though that's mostly your job here).

First, research and locate a National Forest near you that might offer flyfishing opportunities. Research their websites and similar sites, and list some lakes, streams or rivers that may exist there that offer the "best combination" from the list above. Identify at least two fish species and in the three bodies of water that might offer families the most reward for their investment in trying flyfishing. Besides "Bonus" information above, consider listing what "fly types" (such as streamer, mayfly, grasshopper, cricket) they might try in the various environments to catch the various species of fish.

Next, from your research, list below the "nearby" flyfishing Forest, Water Body, Target Fish Species and Fly Types.

Nearby Forest	Water Body	Target Species	Fly Type

Also, from your research, list below the "Dream" flyfishing National Forest, Water Body, Target Fish Species and Fly Types.

Dream Forest	Water Body	Target Species	Fly Type

Finally, compare and contrast the findings within your group. List similar findings on your separate "Group Worksheet". Select two people to make a "National Forest Angling Assessors presentation" on your findings to the entire class. In Session 3, the two members of your group will use the information on your "Group Worksheet" to make a presentation before the class, followed by a discussion. During class discussion, ask questions of other participating students about their views. And for gosh sakes... have fun!