

## The Truth About Sharks

### Capstone: Shark Stewardship

Grade: 6-8	Implementation Practice: Evaluating and Communicating Data; Making Argument from Evidence		
Subject Area: Life and Earth Science		Estimated Duration: Two 45-minute periods with one intervening 30-minute homework	
Learning Objectives - Students will be able to: <ul style="list-style-type: none"> <li>- evaluate evidence for the importance of sharks to ecosystem functioning</li> <li>- evaluate evidence for shark decline</li> <li>- make an argument based on evidence for shark conservation</li> </ul>			

#### Standards Supported

<b>NGSS</b>	Performance Expectations <b>MS-LS2-4.</b> Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. <b>MS-ESS3-3.</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.		
	Disciplinary Core Idea(s)	Science and Engineering Practices	Crosscutting Concept(s)
	<ul style="list-style-type: none"> <li>● LS2.C: Ecosystem Dynamics, Functioning, and Resilience</li> <li>● ESS3.C: Human Impacts on Earth Systems</li> </ul>	<ul style="list-style-type: none"> <li>● Analyzing and Interpreting Data</li> <li>● Engaging in Argument from Evidence</li> </ul>	<ul style="list-style-type: none"> <li>● Stability and Change</li> <li>● Cause and Effect</li> </ul>

#### Activity Summary

Students reflect upon their attitudes toward sharks and where those attitudes came from. Students consider how their attitude has changed as a result of this course and use their new knowledge to help someone else better understand sharks, their importance to ecosystems, and the threats driving them toward extinction.

Students create an engaging way to share their reflections and research with a friend or family member with the goal of helping them to better understand sharks. Students may choose how to share your thoughts and research.

#### Advance Preparation

- Review the Student Guide
- Review Content Background Information.
- Gather necessary materials (listed below)

#### Materials Needed

- Student guide; one per student. Consider delivering this resource digitally so that students may modify their work space as necessary.
- Instructor Rubric; one per student
- Internet Research Process document (included)

## Instructor Notes

### Capstone Summary Day Suggestions

Give students five minutes to plan what they are going to share about their capstone experience.

Specifically, students should be prepared to share the following:

- A summary of their attitude toward sharks, what influenced it, how it has changed
- At least one way sharks are important to ecosystems
- At least one cause of shark declines with specific evidence
- A summary of what they chose to create as a communication tool for their family/friend conversation
- A summary of how their family/friend conversation went with at least two specific reasons. Did their conversation shift the person's understanding of sharks?

Students should plan out their thoughts using bullet pointed phrases. As students are sharing, be prepared to prompt them with questions that extend their thinking. In addition, set norms around what it means to be a good audience member: giving attention, staying muted, affirmative nonverbal communication. It is helpful to explain that it's common to be nervous when sharing in front of a group.

### Content Background Information

The International Union for the Conservation of Nature (IUCN) is the world's leading organization for the monitoring of global biodiversity. In response to data hinting at worldwide declines in the numbers of sharks and rays, IUCN formed the Shark Specialist Group with the purpose of undertaking the first globally coordinated survey of shark and ray populations called the Global Shark Trends Project (GSTP). The results of the project were published in January 2021. One of the main findings is that oceanic shark and ray populations have declined 71% since 1970, mainly as a result of overfishing. See a summary article about the results of the GSTP [here](#).

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### Capstone: Shark Stewardship Rubric

Name:

Glows: Student meets or exceeds performance standard	Performance Standard	Grows: Improvement needed in order to meet performance standard
	Student can explain attitude towards sharks, both past and present, as well as what has influenced their attitude.	
	Student can explain with authority how sharks benefit ecosystems.  Student can use examples to clarify explanations.	
	Student research process meets the requirements set in the Internet Research Process document.	
	Student can explain with authority at least two reasons why sharks are threatened.  Each reason is appropriately supported. Student explanations are in their own words.	
	Student created an engaging and effective way to share thoughts, knowledge, and research with a family member or friend.  Student included images to help illustrate points.  Student effectively shared experiences with this learning activity with classmates.	

Comments:

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## The Truth About Sharks

### Capstone: Shark Stewardship

#### Student Guide

### Guiding Expectations

#### Introduction

The International Union for the Conservation of Nature (IUCN) is the world's leading organization for the monitoring of global biodiversity. In response to data hinting at worldwide declines in the numbers of sharks and rays, IUCN formed the Shark Specialist Group with the purpose of undertaking the first globally coordinated survey of shark and ray populations called the Global Shark Trends Project (GSTP). The results of the project were published in January 2021. One of the main findings is that oceanic shark and ray populations have declined 71% since 1970, mainly as a result of overfishing. See a summary article about the results of the GSTP [here](#).

In the eyes of many people, a result that shows declining shark populations would be met with relief. Sharks are often viewed as villains and are arguably one of the planet's most misunderstood organisms. Most of us likely know someone who is afraid of sharks and perhaps even views them as mindless predators who purposefully hunt humans. Maybe you even misunderstood sharks prior to your participation in this course.

In this learning activity, you will be asked to be part of a movement toward shark stewardship. *Stewardship* means the job or action of taking care of something. You will reflect upon your attitude toward sharks and where that attitude came from. You will be encouraged to consider how your attitude has changed as a result of this course and use your new knowledge to help someone else better understand sharks, their importance to ecosystems, and the threats driving them toward extinction.

The final product of this activity will be to create an engaging way for you to share your reflection and research with a friend or family member with the goal of helping them to better understand sharks. You may choose how you would like to share your thoughts and research. Some possible ideas are:

- Create a presentation using Google slides, PowerPoint, Prezi (or some other presentation tool) to showcase your thoughts, knowledge, and research.
- Make a video using QuickTime or iMovie (or some other video making tool) to showcase your thoughts, knowledge, and research.
- Any other effective communication method that you can think of! Please discuss other ideas with your instructor.

You will also be asked to share a summary of your experience with your classmates.

**Part 1 - Your Attitude Toward Sharks**

In the space below, explain your attitude about sharks prior to your participation in this course and reflect upon where your attitude came from. How is your attitude toward sharks different now? What do you think caused your attitude to change?

A strong answer will be around five to seven sentences.

**Your Attitude Toward Sharks**

**Part 2 - Summarize Your Knowledge: Importance of Sharks to Ecosystems**

Use what you learned from this course, specifically Sec 6. *Sharks and the Ecosystem*, to explain why sharks are important for ecosystem health in the space below.

A strong answer will be around five to seven sentences.

**Importance of Sharks to Ecosystems**



**Part 3 - Additional Research: Threats to Sharks**

Use the Internet Research Process document (below) to research why shark populations are in such serious decline. Thorough research will explain at least two reasons for shark decline. Each reason should have two to three supporting details. Write your research in your own words. Do not copy paste from a source. Be sure to cite your sources.

Compile your research in the space below.

**Threats to Sharks**

A large empty rectangular box with a blue border, intended for students to write their research on threats to sharks.



## Internet Research Process

How good are your Internet research skills?

We've all searched for things on the Internet. Searching is easy. Doing research is challenging.

In order to do quality research you need to know:

- What search terms to use.
- Which search results apply to your question.
- Which results are providing reliable information.
- How to use the applicable and reliable information you've found.

Internet Research Process (Adapted from *kathleenamorris.com*)

**Clarify - Search - Refine - Evaluate - Use - Cite**

### Clarify

- Determine a research topic and specific questions you want to research

### Search

- Use "search terms" to begin your research. Search terms are the words or phrases you type into the search engine.
- For your search terms, use specific keywords based on the specific question you defined

### Refine

- Examine our search results to see which, in any, provide information to help answer the question you defined
- Refine your search terms as necessary; be as specific as you can be
- Use search tools:
  - Add a "+" to include a keyword
  - Include a "-" to exclude a keyword

### Evaluate

- Make sure your source is credible by asking the following:
  - Who is the author? Is this person a credentialed/practicing scientist?
  - Is this information timely?
  - What is the extension?
  - Is the author's intent to inform or persuade?

### Use

- Decide which information helps to answer your question and **write it in your own words**.

### Cite

- Write the name of the website and the url as follows: *Name of website*, url.
- Ex. *University of Miami Shark Research*,  
<https://sharkresearch.rsmas.miami.edu/research/projects/ecosystems-impacts-of-overfishing/>

**Part 4 - Share Your Knowledge**

Create an engaging way to share your thoughts, knowledge, and research **with a friend or family member**. Your conversation should be three to five minutes long and should be informative and include images to help communicate the information you would like to share. Pictures must be cited as well. As part of your conversation, please ask your family member or friend to reflect upon their attitude toward sharks and its origins as well as how their attitude changed as a result of your conversation.

Outline the main points you wish to share in the space below.

**Main points to share**



**Part 5 - Share Your Experience**

Be prepared to share with your classmates what you learned about sharks and attitudes toward them. You should be prepared to share how you decided to showcase your knowledge and how your family member or friend was impacted by what you shared.

**Part 6 - Reflect**

Complete the Self Reflection on the following page.





## Shark Ecology Capstone Self-Reflection

Glows: Things I can do well	Standard	Grows: Things that I need to improve
	- I can explain my attitude towards sharks, both past and present, as well as what has influenced my attitude.	
	- I can explain with authority how sharks benefit ecosystems.  - I can use examples to clarify my explanation.	
	- My research process meets the requirements set in the Internet Research Process.	
	- I can explain with authority at least two reasons why sharks are threatened.  - Each of my reasons is appropriately supported. My explanations are in my own words.	
	- I created an engaging and effective way to share my thoughts, knowledge, and research with a family member or friend.  - I included images to help illustrate my points.	
	- I effectively shared my experiences with this learning activity with my classmates.	

My favorite part of this learning experience was...

The most important thing I learned is...

Something I'd like to know more about is...