

THE OVERFISHING & OCEAN ECOSYSTEM COLLAPSE MYSTERY

Gamify your students' learning with this interactive and engaging Mystery Activity.

NO PREP

Overfishing & Ocean Ecosystem Collapse Mystery

Part 1 – Mission Briefing & Case Overview

Name: _____ Date: _____

Case File #1187 – The Overfishing Mystery

Oceans are home to millions of species and provide food for billions of people. Healthy ocean ecosystems depend on balanced food webs where predators, prey, and producers all play important roles.

However, scientists are seeing alarming changes in oceans around the world. Fish populations are declining, coral reefs are struggling, and food webs are breaking down. Some fishing areas are nearly empty.

In many regions:

- Fish populations are shrinking
- Coral reefs are damaged
- Bycatch is increasing
- Coastal communities are struggling

No single cause has been identified. What is clear is that ocean ecosystems are under serious strain.

You are a science detective assigned to investigate this environmental mystery.

Your Mission

- Identify what overfishing is and why it happens
- Explain how overfishing affects ocean ecosystems
- Describe the impacts on animals, humans, and food webs
- Develop strategies to protect ocean life

Depend on what you discover.

What is overfishing?

Provided by your teacher. Then answer:

How is a healthy ocean ecosystem different from one affected by overfishing?

What do you think makes overfishing difficult to control and reverse?

Teach With Fergy



**DETECTIVE FILE ON HOW HUMANS
IMPACT THE ENVIRONMENT**

SCROLL
to take a look inside!



★ A complete student case file with guided worksheets for every step of the investigation.

★ 10 detailed evidence cards based on real overfishing research and real-world examples that include images, graphs, and text.

★ A full teacher answer key with sample responses and support for grading.

What You Get

NO-PREP. JUST PRINT TO GO!

Full investigation breakdown



Interpretation & Recording Data

10 Evidence Cards to Determine Culprit

HOW THIS ACTIVITY HELPS YOU

- Saves prep time with a fully structured, print-and-go investigations.
- Drives high engagement while still meeting academic goals as students are interested in what they're doing.
- Builds deep understanding with **real-world relevance** as they analyze real evidence, make connections, and using CER to explain human impact.

10-PART INVESTIGATION

Students:

1. Step into the role of a Science Detective.
2. Examine real scientific evidence from around the world.
3. Track the hidden pathways of Overfishing & Ocean Ecosystem Collapse.
4. Interrogate suspects (commercial fishing, illegal fishing, etc.) and identify the main culprits.
5. Build a scientific case using Claim-Evidence-Reasoning.
6. Propose real solutions that matter.

★★★★★ The added images and graphs enhanced the activity. My students were engaged and motivated during the case study, and it was an effective introduction to the topics. - Mystery Resource Buyer

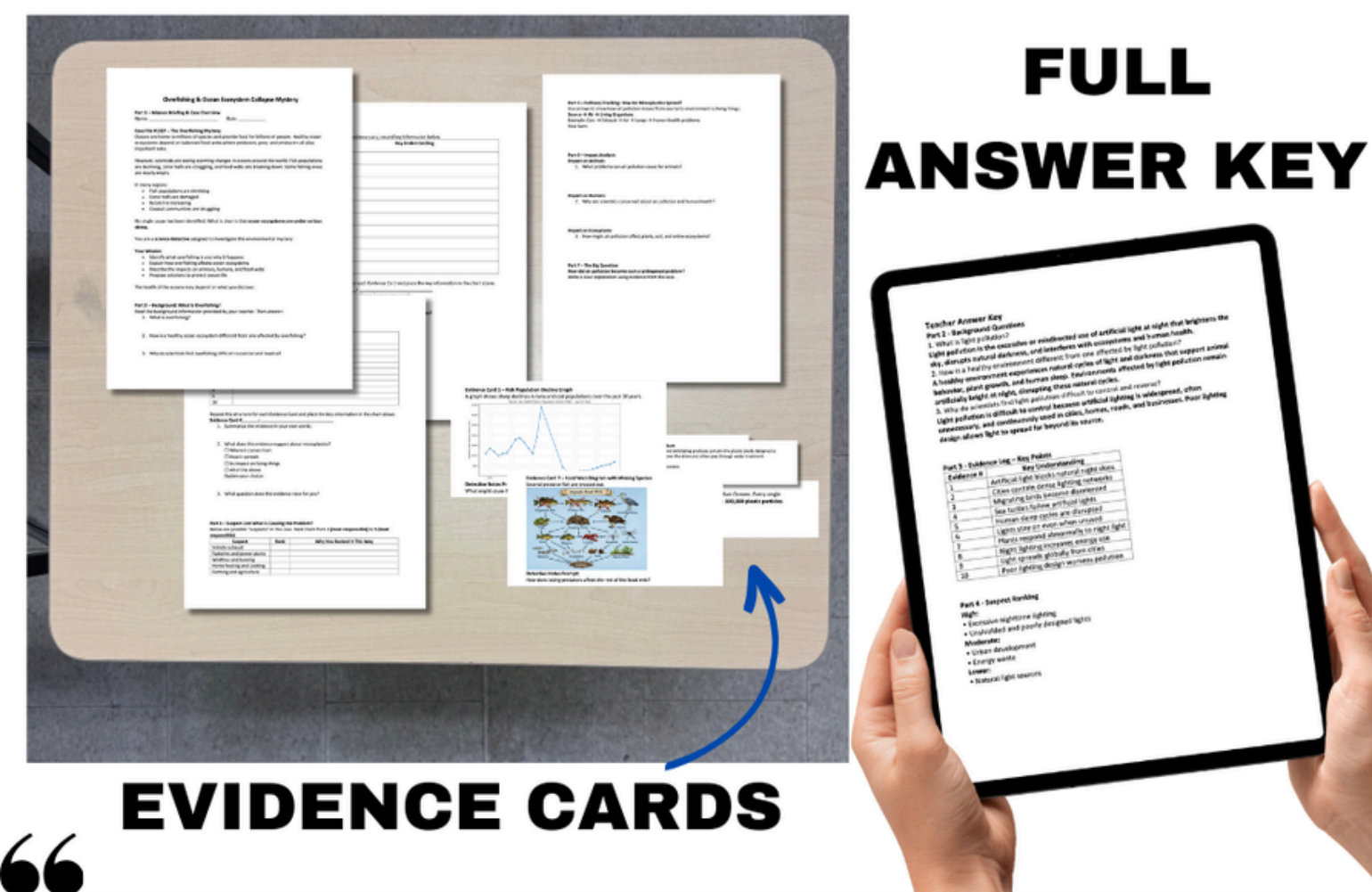
HOW THIS MYSTERY WILL HELP YOU



- Prep-FREE and fully editable Mystery Investigation - just print/upload and assign with no materials.
- **Evidence Cards** can be printed with and without images or projected on board.
- Engages every learner through hands-on, high-interest mystery investigations that boost motivation and participation.
- **Builds essential skills** such as graph interpretation, problem-solving, teamwork, creativity, and communication.

What Will Your Students Learn?

FULLY EDITABLE AND READY-TO-GO INVESTIGATION



“

★★★★★ This product will make a great addition of Environmental Mystery Mondays for my Environmental Issues Curriculum, with no teacher prep needed. - Mystery Resource Buyer

”

- ✓ What overfishing is, why it happens, and how it reduces fish populations
- ✓ How overfishing disrupts ocean food webs and can lead to ecosystem collapse
- ✓ Why overfishing harms marine animals, coral reefs, humans, and coastal communities
- ✓ How to analyze data and evidence to identify patterns and draw conclusions
- ✓ How to use Claim-Evidence-Reasoning (CER) to support scientific arguments
- ✓ How to trace cause-and-effect relationships in complex environmental systems

Upgrade to the Environmental Science Detective Mystery Bundle

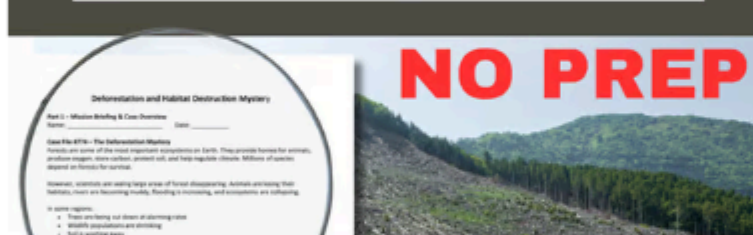
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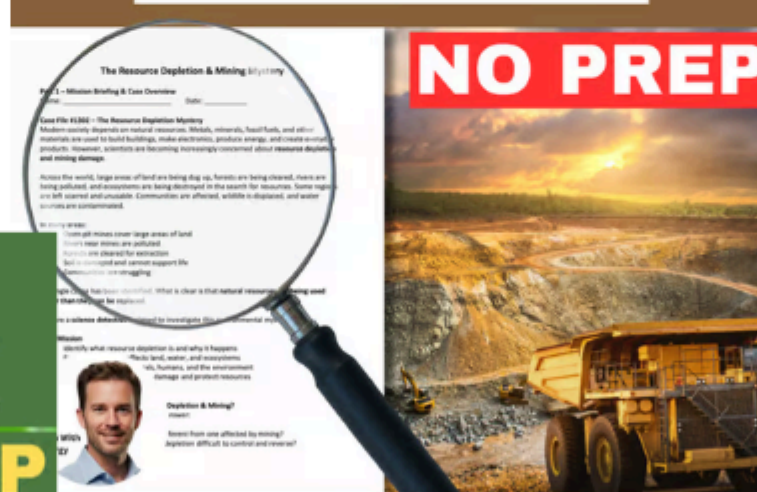
MICROPLASTICS MYSTERY DETECTIVE FILE ON PLASTIC POLLUTION & HUMAN IMPACT



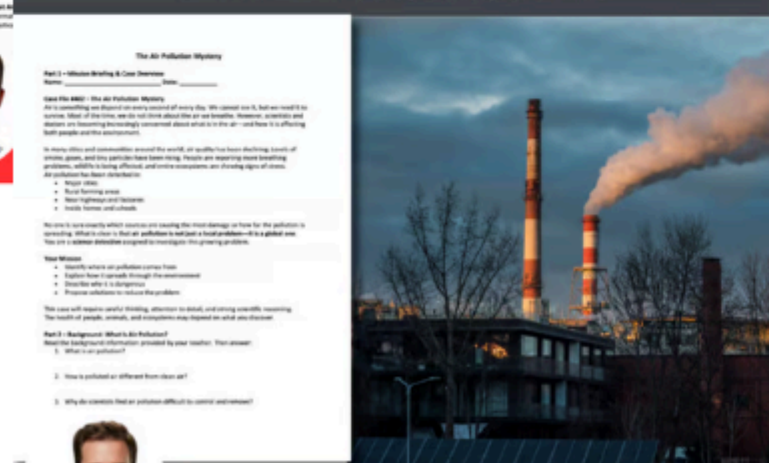
DEFORESTATION & HABITAT DESTRUCTION MYSTERY



THE RESOURCE DEPLETION & MINING MYSTERY



THE AIR POLLUTION MYSTERY DETECTIVE FILE ON AIR POLLUTION & THE ENVIRONMENT



THE INVASIVE SPECIES MYSTERY



DETECTIVE FILE ON HOW HUMANS IMPACT THE ENVIRONMENT

NO PREP

The Urban Sprawl Mystery

Part 1 - Mission Briefing & Case Overview
Name: _____ Date: _____

Case File #3419 - The Urban Sprawl Mystery
Cities are growing faster than ever. New roads, neighborhoods, shopping centers, and highways are spreading into farmland, forests, and natural areas. This rapid expansion is known as **urban sprawl**.

Across the world, scientists are seeing major environmental changes linked to city growth. Natural habitats are disappearing, water systems are changing, wildlife is being pushed out, and pollution is increasing. Some areas are becoming hotter, flood risks are rising, and ecosystems are breaking apart.

In many regions:

- Forests are cleared for housing and roads
- Wildlife habitats are fragmented
- Runoff pollutes rivers and streams
- Heat islands form in cities
- Farmland is disappearing

No single cause has been identified. What is clear is that human settlement patterns are reshaping the planet.

You are a science detective assigned to investigate this environmental mystery.

Your Mission:

- Identify what urban sprawl is and why it happens
- Explain how land use change affects ecosystems, water, and climate
- Analyze the impact of urban sprawl on animals, humans, and the environment
- Propose solutions for sustainable city growth

Sprawl & Land Use Change?
Provided then answer:
Terrest from one affected by urban sprawl?
grawf difficult to control and reverse?

Teach With
Fergy

DETECTIVE FILES ON HOW HUMANS IMPACT THE ENVIRONMENT

Plus Many More!
Click Here

Part 1 & 2

Overfishing & Ocean Ecosystem Collapse Mystery

Part 1 – Mission Briefing & Case Overview

Name: _____ Date: _____

Case File #1187 – The Overfishing Mystery

Oceans are home to millions of species and provide food for billions of people. Healthy ocean ecosystems depend on balanced food webs where predators, prey, and producers all play important roles.

However, scientists are seeing alarming changes in oceans around the world. Fish populations are declining, coral reefs are struggling, and food webs are breaking down. Some fishing areas are nearly empty.

In many regions:

- Fish populations are shrinking
- Coral reefs are damaged
- Bycatch is increasing
- Coastal communities are struggling

No single cause has been identified. What is clear is that **ocean ecosystems are under serious stress.**

You are a **science detective** assigned to investigate this environmental mystery.

Your Mission

- Identify what overfishing is and why it happens
- Explain how overfishing affects ocean ecosystems
- Describe the impacts on animals, humans, and food webs
- Propose solutions to protect ocean life

The health of the oceans may depend on what you discover.

Part 2 – Background: What Is Overfishing?

Read the background information provided by your teacher. Then answer:

1. What is overfishing?
2. How is a healthy ocean ecosystem different from one affected by overfishing?
3. Why do scientists find overfishing difficult to control and reverse?

Part 1 – Mission Briefing & Case Overview

Students are introduced to overfishing and ocean ecosystem collapse and take on the role of science detectives. They learn their mission and begin the investigation with a real-world hook.

Part 2 – Background: What is Overfishing and Ocean Ecosystem Collapse?

Students read a short background passage and answer guiding questions to build foundational understanding before analyzing evidence.

Part 3 & 4

Part 3 – Evidence Log

Students begin examining the evidence cards and record key information, observations, and insights in their evidence log.

Part 3 – Evidence Log: As you examine each evidence card, record key information below.

Evidence #	Key Understanding
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Repeat this structure for each Evidence Card and place the key information in the chart above.

Evidence Card # _____: _____

- Summarize the evidence in your own words.
- What does this evidence suggest about overfishing?
 - ☐ What causes it
 - ☐ Pathway
 - ☐ Its impact on living thingsExplain your choice:
- What question does this evidence raise for you?

Part 4 – Suspect List: What Is Causing Overfishing?

Rank the suspects from **1 (most responsible)** to **5 (least responsible)**.

Suspect	Rank	Why You Ranked It This Way
Commercial fishing fleets		
High seafood demand		
Illegal fishing		
Bycatch (accidental catch)		
Weak fishing regulations		

Evidence Card 8 – Coastal Community Photo

A fishing village has closed businesses.



Detective Notes Prompt:

How might overfishing affect people's livelihoods?

Evidence Card 7 – Food Web Diagram with Missing Species

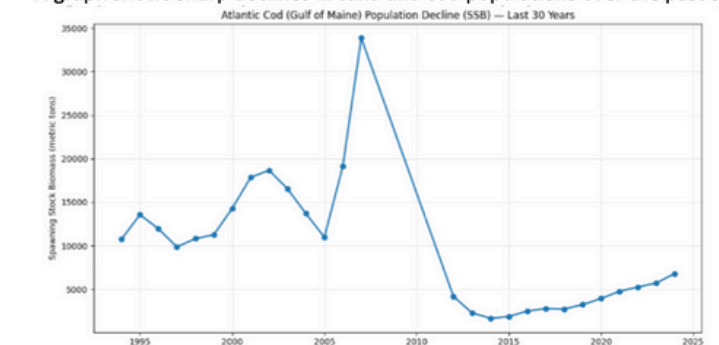
Several predator fish are crossed out.



Detective Notes Prompt
How does losing predat

Evidence Card 1 – Fish Population Decline Graph

A graph shows sharp declines in tuna and cod populations over the past 30 years.



Detective Notes Prompt:

What might cause fish populations to drop so quickly?

Part 4 – Evidence Analysis

Students summarize each piece of evidence, identify what it reveals about overfishing and ocean ecosystem collapse, and generate questions, building critical thinking and reasoning skills.

EVIDENCE CARDS

➤ All Evidence Cards come in two versions - *With images and graphs and Without* and can be printed or projected as needed.

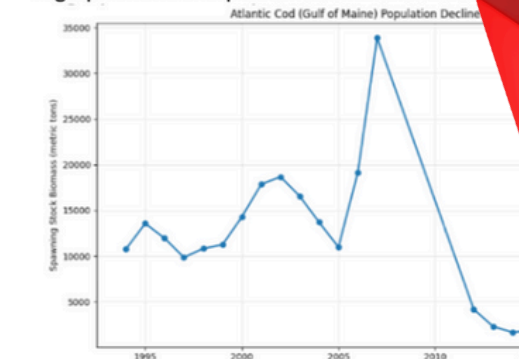
➤ Students analyze each Evidence Card and record the following in their **Evidence Log**

1. Summarize the evidence in their own words.
2. Determine what this evidence suggests
 - ☐ What causes it
 - ☐ Pathway
 - ☐ Its impact on living things
3. Explain what question(s) this evidence raises for them?

Evidence Cards

Evidence Card 1 – Fish Population Decline Graph

A graph shows sharp declines in tuna and cod populations over the last 30 years.



Detective Notes Prompt:

What might cause fish populations to drop so quickly?

Evidence Card 2 – Empty Fishing Nets Photo

A photo shows fishing boats returning with nearly empty nets.



Detective Notes Prompt:

What does this suggest about fish availability?

Images
&
Graphs

Evidence Card 6 – Seafood Demand Chart

Seafood consumption has increased worldwide.

Detective Notes Prompt:

How could demand affect fishing practices?

Evidence Card 7 – Food Web Diagram with Missing Species

Several predator fish are crossed out.

Detective Notes Prompt:

How does losing predators affect the rest of the food web?

Evidence Card 8 – Coastal Community Photo

A fishing village has closed businesses.

Detective Notes Prompt:

How might overfishing affect people's livelihoods?

Evidence Card 9 – Illegal Fishing Report

A report states that illegal fishing is occurring in protected areas.

Detective Notes Prompt:

Why is illegal fishing a problem?

Evidence Card 10 – Endangered Fish List

A list shows several fish species now classified as endangered. This means their populations are so low they may not recover.

Detective Notes Prompt:

What does this mean for the future of the ocean?

No
Images

Part 5-7

Part 5 – Pathway Tracking: How Does Overfishing Affect the Ocean?

Use arrows to show how overfishing leads to ecosystem collapse.

Example:

Too many fish caught → Predator decline → Prey overpopulation → Reef damage

Your turn:

Part 6 – Impact Analysis

Impact on Marine Animals

How does overfishing affect fish, turtles, dolphins, and sharks?

Impact on Coral Reefs & Habitats

How might overfishing affect coral reefs and ocean habitats?

Impact on Humans

How can overfishing affect people and communities?

Part 7 – The Big Question

How did overfishing and ocean ecosystem collapse become such widespread problems?

Use evidence from the case.

Part 5 – Suspect List

Students rank possible sources of overfishing and ocean ecosystem collapse, defend their choices, and determine which human activities are most responsible for the problem.

Part 6 – Pathway Tracking

Students trace how overfishing and ocean ecosystem collapse leads to other environmental problems.

Part 7 – Impact Analysis

Students analyze how overfishing and ocean ecosystem collapse affects animals, humans, and ecosystems, using evidence from the case to support their answers.

Part 8-10

Part 8 – Claim-Evidence-Reasoning (CER)

Claim

What is the main cause of overfishing in this case?

Evidence

List two pieces of evidence from the case.

1.

2.

Reasoning

Explain how your evidence supports your claim.

Part 9 – Solutions & Action Plan

Personal Actions (Things individuals can do)

1.

2.

Community / School Actions

1.

2.

Government or Industry Actions

1.

2.

Part 10 – Reflection

1. One thing that surprised me in this case was:

2. One change I would make after learning this information is:

Part 8 – The Big Question

Students synthesize all their learning to explain the main cause of overfishing and ocean ecosystem collapse in this case.

Part 9 – Claim-Evidence-Reasoning (CER)

Students write a structured scientific argument, making a claim, supporting it with evidence, and explaining their reasoning.

Part 10 – Reflection and Solutions

Students propose realistic actions at the personal, school, and government levels, moving from awareness to problem-solving.

Full Teacher Answer Key

Teacher Answer Key

Background Questions

- What is overfishing?
Overfishing is when fish are caught faster than they can reproduce.
- How is a healthy ocean ecosystem different from one affected by overfishing?
Healthy ecosystems are balanced; overfished ecosystems lose stability.
- Why do scientists find overfishing difficult to control and reverse?
Because of high demand, illegal fishing, and weak regulations.

Evidence Log – Key Points

Evidence #	Key Understanding
1	Fish populations such as tuna and cod have dropped quickly, showing that too many fish are being removed.
2	Fishing boats returning with empty nets suggest that fish are becoming harder find.
3	Bycatch shows that many non-target animals are being killed, harming ecosystems.
4	Coral reefs suffer when fish that control algae are removed, leading to reef damage.
5	Large fishing fleets in one area show intense fishing pressure on ecosystems.
6	Increased seafood demand leads to more fishing and higher risk of overfishing.
7	Losing predator species disrupts food webs and causes imbalance.
8	Coastal communities struggle when fish populations decline and jobs are lost.
9	Illegal fishing continues because it is difficult to monitor and enforce laws.
10	Endangered fish lists show that some species are close to disappearing.

Suspect Ranking (Expected Reasoning)

- High responsibility:
- Commercial fishing fleets
 - High seafood demand
- Moderate:
- Illegal fishing
 - Weak regulations
- Lower:
- Bycatch (often unintentional but harmful)

Pathway Tracking – Sample Answers

Overfishing → Predator loss → Prey overpopulation → Reef damage
High demand → Increased fishing → Species decline
Illegal fishing → Population collapse → Ecosystem imbalance

Impact Analysis

Marine Animals:

Population decline, extinction risk, bycatch deaths

Coral Reefs & Habitats:

Algae overgrowth, habitat collapse

Humans:

Job loss, food shortages, economic damage

Big Question – Sample Response

Overfishing and ocean ecosystem collapse became widespread because human demand for seafood and commercial fishing pressure remove fish faster than they can recover. Evidence from the case shows **declining fish populations (Evidence Card 1)**, **large fishing fleets (Evidence Card 5)**, and **illegal fishing (Evidence Card 9)** are all contributing. **Bycatch (Evidence Card 3)** also kills many non-target species. Because these activities happen in many places around the world, ocean ecosystems are being damaged on a large scale.

CER Example

Claim:

Commercial fishing fleets are the main cause.

Evidence:

Evidence Cards 1 and 5

Reasoning:

Large fleets catch huge numbers of fish, reducing populations quickly.

Solutions

Personal:

Choose sustainable seafood, reduce waste

Community:

Education, local conservation

Government:

Fishing limits, protected areas, enforcement

Background Reading: What Is Overfishing?

Oceans cover most of Earth’s surface and are home to millions of different species. They provide food for billions of people and help regulate Earth’s climate. For a long time, people believed the oceans could never be emptied. However, scientists are increasingly concerned about **overfishing**—the removal of fish and other sea animals faster than they can reproduce.

Overfishing happens when too many fish are caught in a short amount of time. Modern fishing boats use advanced technology, large nets, and long lines that can catch huge numbers of fish at once. Commercial fishing, high seafood demand, and global trade all increase pressure on ocean life. When fish are removed faster than populations can recover, their numbers begin to decline.

Healthy ocean ecosystems depend on balanced food webs. When large numbers of fish are removed, the balance of the ecosystem can be disrupted.

How Is a Healthy Ocean Ecosystem Different from One Affected by Overfishing?

A **healthy ocean ecosystem** has many different species of fish, plants, and animals. Predators and prey are balanced, coral reefs are protected by grazing fish, and food webs remain stable. Fish populations can reproduce and replace the individuals that are eaten or caught.

An ocean ecosystem affected by **overfishing** has fewer fish and less variety of species. When too many predators are removed, prey species can grow out of control. When grazing fish are removed, algae can cover coral reefs and damage habitats. This can lead to coral reef decline, loss of shelter for marine animals, and further species loss.

Another key difference is stability. Healthy oceans can recover from storms and changes, while overfished ecosystems are weaker and more likely to collapse.

Why Is Overfishing So Hard to Control and Reverse?

Overfishing is so hard to control because it is driven by **high demand for seafood around the world**. Many people depend on fish for food and income. Even when limits are set, illegal fishing can still occur.

When fish populations decline, it can take many years for them to recover. Some species reproduce slowly, and if too many are removed, populations may never fully return. Damaged ecosystems also make it harder for young fish to survive.

Overfishing is also happening across many oceans at the same time. Large fishing fleets travel long distances, and not all areas are closely monitored. Because the problem is widespread and ongoing, scientists and governments face major challenges in trying to reduce overfishing and protect ocean ecosystems.

Background Reading

As a special bonus, I want to send you a few resources that you can use in your classroom tomorrow. Completely free and geared towards what you teach!



Just  **and then choose what you teach!**

thanks
**for your interest
in this resource!**



 devon@teachwithfergy.com

Upgrade to the Environmental Science Detective Mystery Bundle

Get all my Environmental Science Mystery Activities plus all additional ones I create in the future.

ENVIRONMENTAL SCIENCE DETECTIVE MYSTERY BUNDLE

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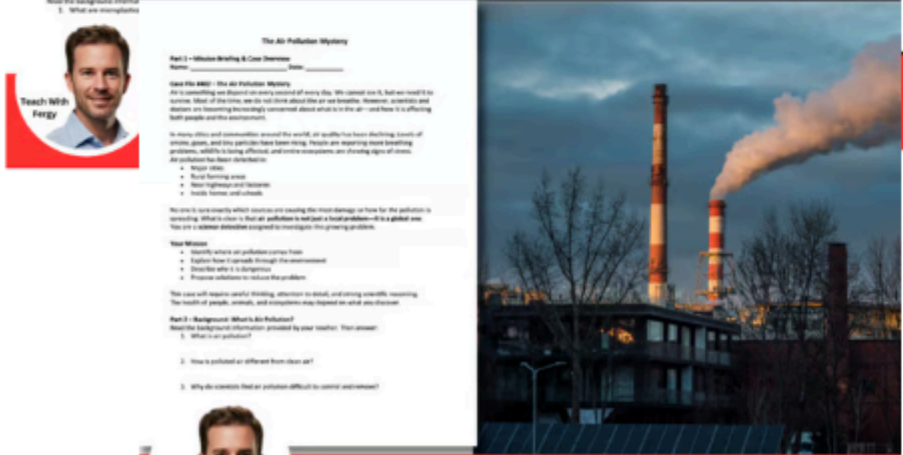
DEFORESTATION & HABITAT DESTRUCTION MYSTERY



THE RESOURCE DEPLETION & MINING MYSTERY



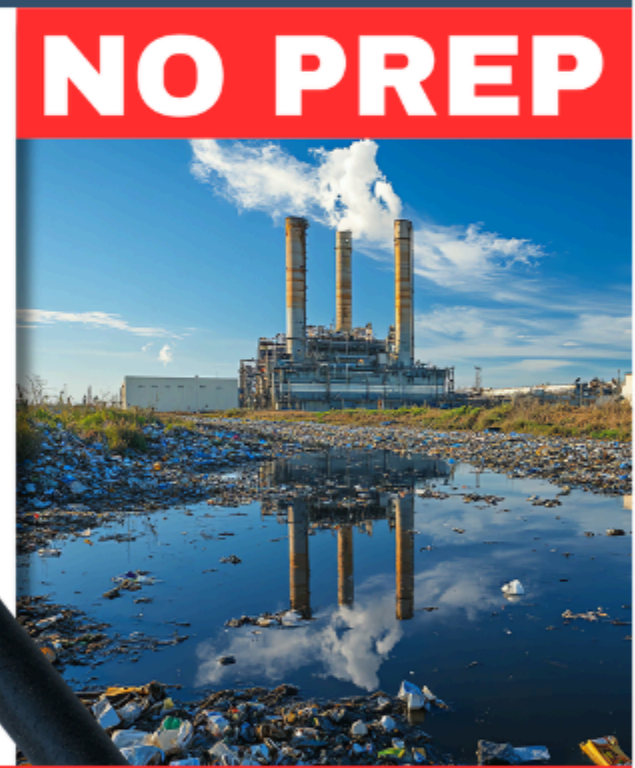
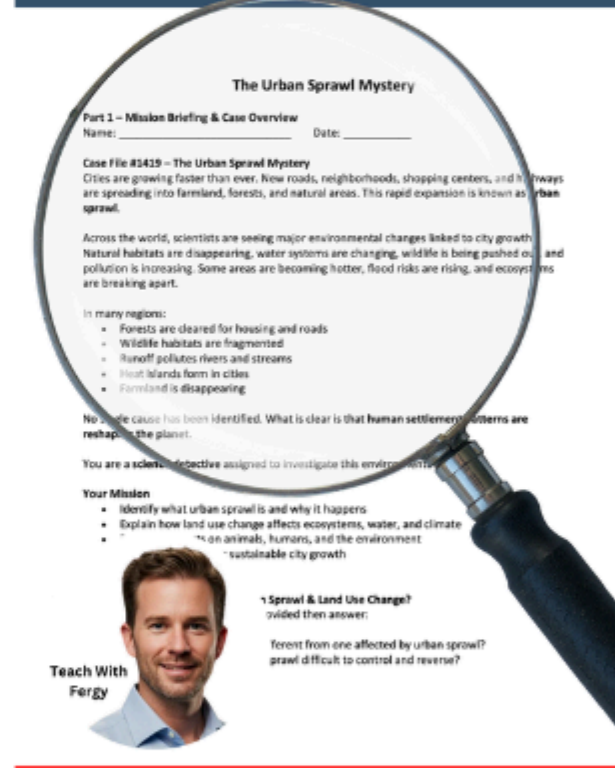
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