

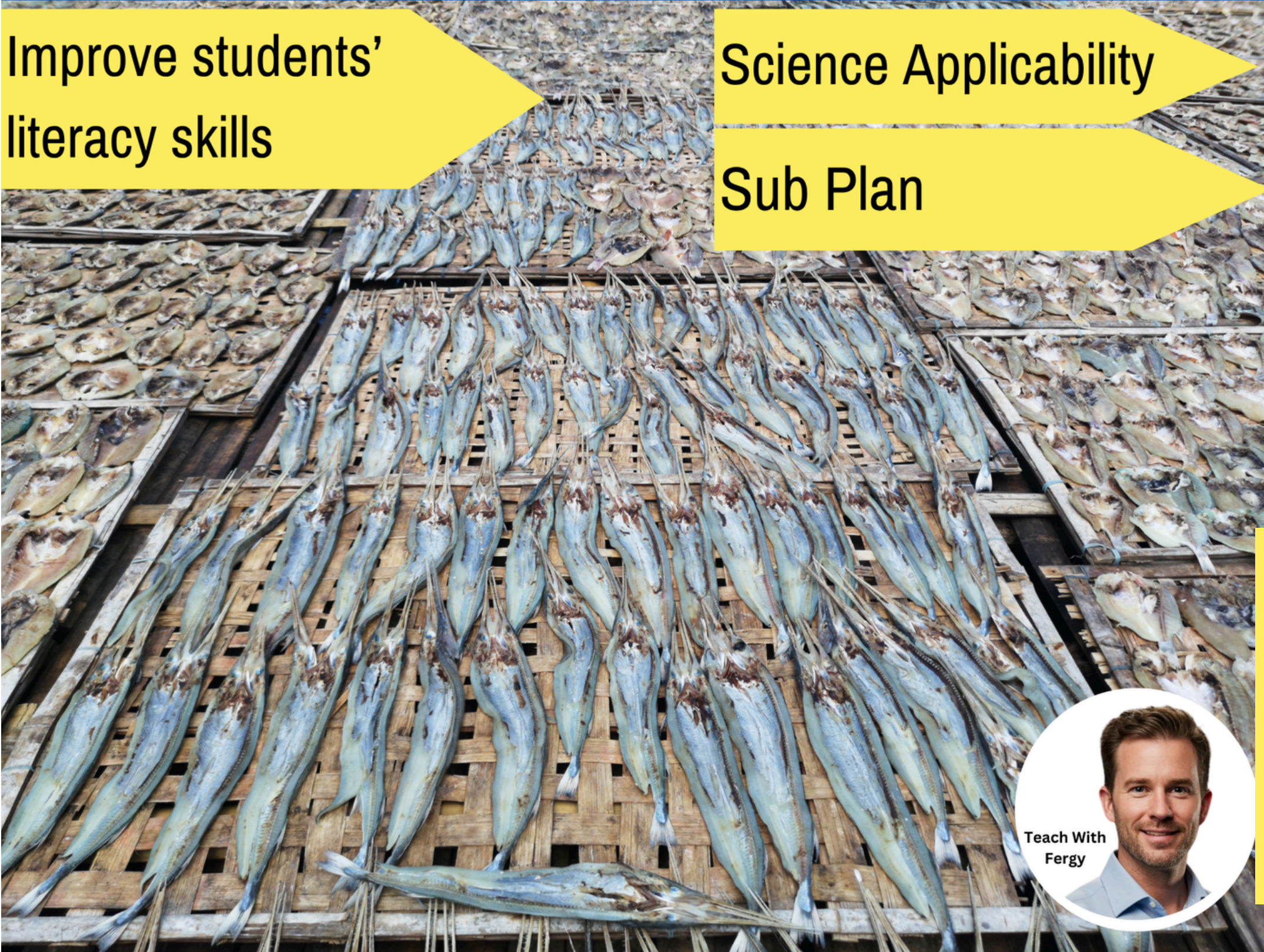
OVERFISHING AND MARINE ECOSYSTEMS

GRADE 8 AND UP READING

Improve students' literacy skills

Science Applicability

Sub Plan



Reading Comment

“

Extremely satisfied - Great resource to work on student reading comprehension and it tied into the topic I was teaching. My students have been struggling with reading and I've been incorporating more reading into my lessons. Thank you for the resource.

”

SCROLL
to take a look inside!

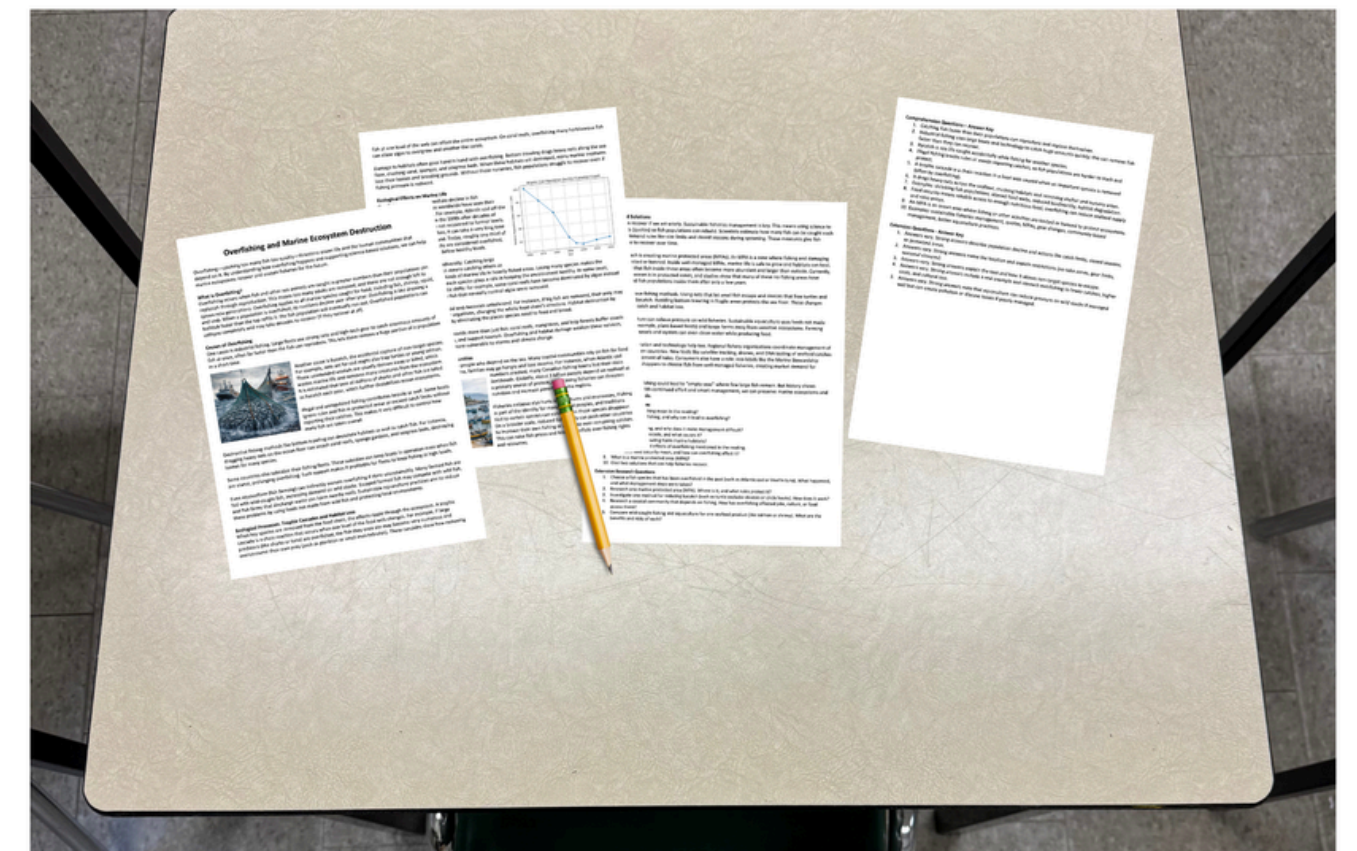


THE PROBLEMS YOU FACE

- Limited time to teach **scientific literacy** and strengthen students' reading and analysis skills.
- Need meaningful **extension activities** to engage fast-moving learners.
- Difficulty creating effective last-minute **sub plans** that still support student learning.

CLASSROOM READY

- Questions and Answer Key
- **No Prep, Ready-to-Use:** Print or assign digitally with Google Docs, Microsoft Word, and PDF formats for flexible classroom use
- **Includes Varied Question Types:** Knowledge, thinking, connecting, application, and open-ended questions.



What Will Your Students Learn?

READING COMPREHENSION ARTICLE & QUESTION BUNDLE

Article with
Comprehension
Questions

Grade 8 and Up

Print & Digital

- What Is Overfishing?
- Causes of Overfishing (Industrial Fishing, Bycatch, Illegal Fishing)
- Destructive Fishing Methods (Bottom Trawling)
- Aquaculture and Its Impacts
- Trophic Cascades and Food Web Disruption
- Habitat Loss in Marine Ecosystems
- Declining Fish Populations and Biodiversity
- Case Study: Atlantic Cod Collapse
- Ecosystem Services of Oceans
- Food Security and Human Dependence on Fisheries
- Economic and Cultural Impacts on Communities
- Marine Protected Areas (MPAs)
- Sustainable Fishing Practices
- Reducing Bycatch and Improving Fishing Technology
- Global Cooperation and Conservation Solutions

Your Reading

Overfishing and Marine Ecosystem Destruction

Overfishing—catching too many fish too quickly—threatens ocean life and the human communities that depend on it. By understanding how overfishing happens and supporting science-based solutions, we can help marine ecosystems recover and sustain fisheries for the future.

What is Overfishing?

Overfishing occurs when fish and other sea animals are caught in greater numbers than their populations can replenish through reproduction. This means too many adults are removed, and there are not enough left to spawn new generations. Overfishing applies to all marine species caught for food, including fish, shrimp, squid, and crab. When a population is overfished, its numbers decline year after year. Overfishing is like draining a bathtub faster than the tap refills it: the fish population will eventually run out. Overfished populations can collapse completely and may take decades to recover (if they recover at all).

Causes of Overfishing

One cause is industrial fishing. Large fleets use strong nets and high-tech gear to catch enormous amounts of fish at once, often far faster than the fish can reproduce. This lets them remove a huge portion of a population in a short time.



Another cause is bycatch, the accidental capture of non-target species. For example, nets set for cod might also trap turtles or young salmon. Those unintended animals are usually thrown away or killed, which wastes marine life and removes many creatures from the ecosystem. It is estimated that tens of millions of sharks and other fish are killed as bycatch each year, which further destabilizes ocean ecosystems.

Illegal and unregulated fishing contributes heavily as well. Some boats ignore rules and fish in protected areas or exceed catch limits without reporting their catches. This makes it very difficult to control how many fish are taken overall.

Destructive fishing methods like bottom trawling can devastate habitats as well as catch fish. For instance, dragging heavy nets on the ocean floor can smash coral reefs, sponge gardens, and seagrass beds, destroying homes for many species.

Some countries also subsidize their fishing fleets. These subsidies can keep boats in operation even when fish are scarce, prolonging overfishing. Such support makes it profitable for fleets to keep fishing at high levels.

Even aquaculture (fish farming) can indirectly worsen overfishing if done unsustainably. Many farmed fish are fed with wild-caught fish, increasing demand on wild stocks. Escaped farmed fish may compete with wild fish, and fish farms that discharge waste can harm nearby reefs. Sustainable aquaculture practices aim to reduce these problems by using feeds not made from wild fish and protecting local environments.

Ecological Processes: Trophic Cascades and Habitat Loss

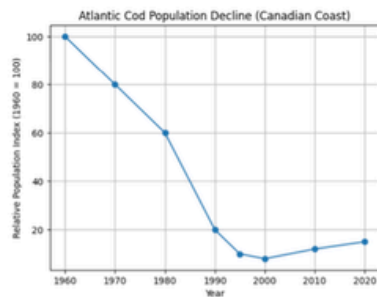
When key species are removed from the food chain, the effects ripple through the ecosystem. A trophic cascade is a chain reaction that occurs when one level of the food web changes. For example, if large predators (like sharks or tuna) are overfished, the fish they once ate may become very numerous and overconsume their own prey (such as plankton or small invertebrates). These cascades show how removing

fish at one level of the web can affect the entire ecosystem. On coral reefs, overfishing many herbivorous fish can allow algae to overgrow and smother the corals.

Damage to habitats often goes hand in hand with overfishing. Bottom trawling drags heavy nets along the sea floor, crushing coral, sponges, and seagrass beds. When these habitats are destroyed, many marine creatures lose their homes and breeding grounds. Without these nurseries, fish populations struggle to recover even if fishing pressure is reduced.

Ecological Effects on Marine Life

Overfishing causes an immediate decline in fish populations. Many fisheries worldwide have seen their catches drop dramatically. For example, Atlantic cod off the Canadian coast collapsed in the 1990s after decades of heavy fishing and still have not recovered to former levels. When too many fish are taken, it can take a very long time for the population to rebound. Today, roughly one-third of the world's marine fish stocks are considered overfished, meaning their numbers are below healthy levels.



Overfishing also reduces biodiversity. Catching large amounts of one species often means catching others as bycatch. This leads to fewer kinds of marine life in heavily fished areas. Losing many species makes the ecosystem weaker, because each species plays a role in keeping the environment healthy. In some cases, overfishing has led to dramatic shifts: for example, some coral reefs have become dominated by algae instead of vibrant corals because the fish that normally control algae were removed.

With fewer predators, the food web becomes unbalanced. For instance, if big fish are removed, their prey may multiply and over-eat smaller organisms, changing the whole food chain's structure. Habitat destruction by gear like trawls worsens this by eliminating the places species need to feed and breed.

Healthy marine ecosystems provide more than just fish: coral reefs, mangroves, and kelp forests buffer coasts from storms, recycle nutrients, and support tourism. Overfishing and habitat damage weaken these services, making coastal communities more vulnerable to storms and climate change.

Impacts on People and Communities

Overfishing directly affects the people who depend on the sea. Many coastal communities rely on fish for food and income. When stocks decline, families may go hungry and lose income. For instance, when Atlantic cod numbers crashed, many Canadian fishing towns lost their main livelihoods. Globally, about 3 billion people depend on seafood as a primary source of protein, so declining fisheries can threaten nutrition and increase poverty in some regions.



Fisheries collapse also hurts local cultures and economies. Fishing is part of the identity for many coastal peoples, and traditions tied to certain species can vanish when those species disappear. On a broader scale, reduced fish supply can push other countries to increase their own fishing or compete over remaining catches. This can raise fish prices and lead to conflicts over fishing rights and resources.

Recovery and Solutions

The ocean can recover if we act wisely. Sustainable fisheries management is key. This means using science to set catch limits (quotas) so fish populations can rebuild. Scientists estimate how many fish can be caught each year and recommend rules like size limits and closed seasons during spawning. These measures give fish stocks a chance to recover over time.

Another approach is creating marine protected areas (MPAs). An MPA is a zone where fishing and damaging activities are limited or banned. Inside well-managed MPAs, marine life is safe to grow and habitats can heal. Research shows that fish inside these areas often become more abundant and larger than outside. Currently, about 7% of the ocean is in protected zones, and studies show that many of these no-fishing areas have doubled or tripled fish populations inside them after only a few years.

We can also improve fishing methods. Using nets that let small fish escape and devices that free turtles and dolphins reduces bycatch. Avoiding bottom trawling in fragile areas protects the sea floor. These changes reduce accidental catch and habitat loss.

Improving aquaculture can relieve pressure on wild fisheries. Sustainable aquaculture uses feeds not made from wild fish (for example, plant-based feeds) and keeps farms away from sensitive ecosystems. Farming filter-feeders like mussels and oysters can even clean water while producing food.

International cooperation and technology help too. Regional fishery organizations coordinate management of shared stocks between countries. New tools like satellite tracking, drones, and DNA testing of seafood catches are improving enforcement of rules. Consumers also have a role: eco-labels like the Marine Stewardship Council (MSC) guide shoppers to choose fish from well-managed fisheries, creating market demand for sustainable practices.

If we do not act, overfishing could lead to “empty seas” where few large fish remain. But history shows recovery is possible. With continued effort and smart management, we can preserve marine ecosystems and the benefits they provide.

Comprehension Questions

1. What does overfishing mean in the reading?
2. What is industrial fishing, and why can it lead to overfishing?
3. Define bycatch.
4. What is illegal fishing, and why does it make management difficult?
5. What is a trophic cascade, and what causes it?
6. How can bottom trawling harm marine habitats?
7. Name two ecological effects of overfishing mentioned in the reading.
8. What does food security mean, and how can overfishing affect it?
9. What is a marine protected area (MPA)?
10. Give two solutions that can help fisheries recover.

Extension Research Questions

1. Choose a fish species that has been overfished in the past (such as Atlantic cod or bluefin tuna). What happened, and what management steps were taken?
2. Research one marine protected area (MPA). Where is it, and what rules protect it?
3. Investigate one method for reducing bycatch (such as turtle excluder devices or circle hooks). How does it work?
4. Research a coastal community that depends on fishing. How has overfishing affected jobs, culture, or food access there?
5. Compare wild-caught fishing and aquaculture for one seafood product (like salmon or shrimp). What are the benefits and risks of each?

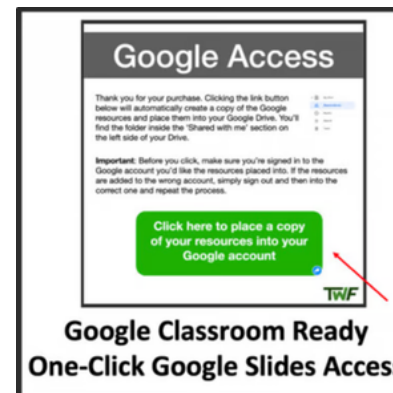
Comprehension Questions – Answer Key

1. Catching fish faster than their populations can reproduce and replace themselves.
2. Industrial fishing uses large boats and technology to catch huge amounts quickly; this can remove fish faster than they can recover.
3. Bycatch is sea life caught accidentally while fishing for another species.
4. Illegal fishing breaks rules or avoids reporting catches, so fish populations are harder to track and protect.
5. A trophic cascade is a chain reaction in a food web caused when an important species is removed (often by overfishing).
6. It drags heavy nets across the seafloor, crushing habitats and removing shelter and nursery areas.
7. Examples: shrinking fish populations, altered food webs, reduced biodiversity, habitat degradation.
8. Food security means reliable access to enough nutritious food; overfishing can reduce seafood supply and raise prices.
9. An MPA is an ocean area where fishing or other activities are limited or banned to protect ecosystems.
10. Examples: sustainable fisheries management, quotas, MPAs, gear changes, community-based management, better aquaculture practices.

Extension Questions - Answer Key

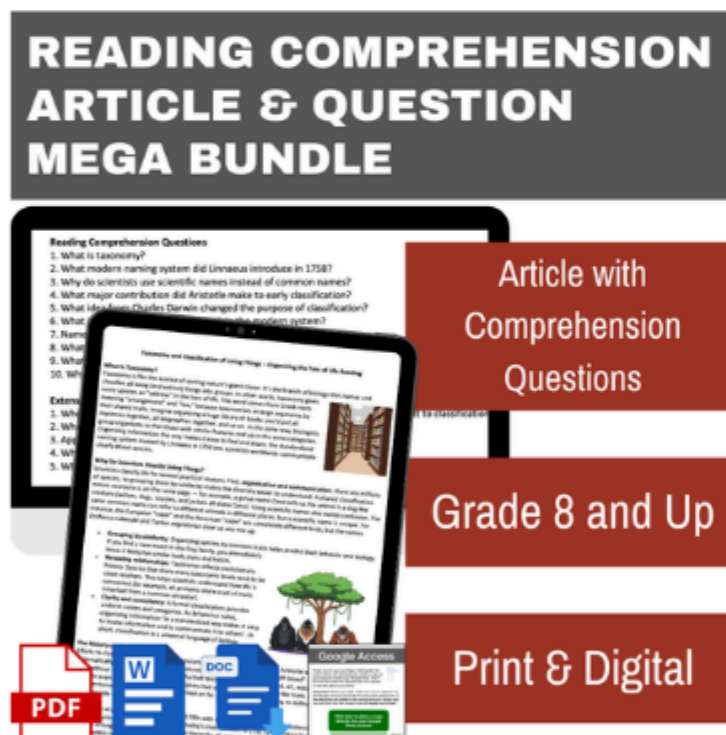
1. Answers vary. Strong answers describe population decline and actions like catch limits, closed seasons, or protected areas.
2. Answers vary. Strong answers name the location and explain restrictions (no-take zones, gear limits, seasonal closures).
3. Answers vary. Strong answers explain the tool and how it allows non-target species to escape.
4. Answers vary. Strong answers include a real example and connect overfishing to fewer catches, higher costs, and cultural loss.
5. Answers vary. Strong answers note that aquaculture can reduce pressure on wild stocks if managed well but can create pollution or disease issues if poorly managed.

Comprehension and Extension Questions with Answer Key



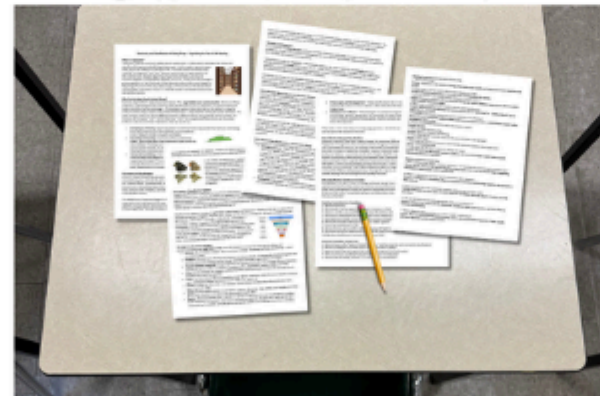
Upgrade to the Grade 8 and Up Reading Mega Bundle

Includes over 130 readings for students in grades 8 and up. The bundle covers all science topics and will save you over 75%.



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★★★★★ Extremely satisfied - It is a good supplemental activity either for review and at the same time introducing some concept. I also use this for sub plan. It is well presented, organized and interesting.

★★★★★ Extremely satisfied - This a great resource. I used this for a sub plan. It was fun and engaging for my students.

Grade 8 and Up Scientific Reading Comprehension Article Mega Bundle

ALL my current and future grade 8 and up readings, covering the following subject areas:

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Ecology and the Environment
Energy
Health
Natural Disasters
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