Preserving ocean life: How sustainable fishing supports biodiversity

UNIT OF LEARNING

BIG IDEA

Sustainable fishing helps protect ocean biodiversity and supports healthy ecosystems and communities now and into the future.

Learning Experiences

1. Thinking and feeling ocean (LO1) (LO6)

- Brainstorm: What do we know about the ocean?
- Watch short documentaries (e.g. Blue Planet or local marine conservation clips).
- Read the MSC Te Kawa o Tangaroa article"Importance of Ocean" and complete the worksheet
- Explore key terms through games and posters.

2. Finding Out (LO2) (LO3) (LO6)

- Brainstorm overfishing and its effects.
- Read the MSC Te Kawa o Tangaroa article "Ocean life: facing an uncertain future" and complete the worksheet.
- Inquiry groups: Each group explores a different threat to biodiversity (e.g. pollution, habitat damage, climate change, overfishing).
- Explore SDG14 and what governments are doing.
- Map activity: Marine protected areas in Aotearoa and beyond.

3. Making Connections (LO3) (LO4) (LO5) (LO6)

- Read the MSC Te Kawa o Tangaroa article "How sustainable fishing supports ocean biodiversity" and complete the worksheet.
- Use MSC Te Kawa o Tangaroa cards to compare sustainable vs. unsustainable fishing. Sort according to whether they support ocean biodiversity or not.
- Use the MSC Te Kawa o Tangaroa case studies to explore some of the innovations applied by global fishers to better protect ocean biodiversity
- Interview or Zoom call with a marine scientist or local iwi representative.
- Design a poster or infographic on sustainable seafood choices.
- Explore the concept of kaitiakitanga and local approaches to marine stewardship.

4. Taking Action (All LOs)

- Create an action plan for whānau or kura (e.g. sustainable seafood pledge, beach cleanup).
- Write a persuasive letter or presentation to raise awareness in school or for the wider community.
- Reflect: "What does the ocean need from us?"

LEARNING OBJECTIVES:
By the end of this unit, students will be able to:

- LO1 Describe how overfishing threatens ocean biodiversity.
- LO2 Explain what is bycatch
- LO3 Identify one or more examples of how overfishing and bycatch affect ocean biodiversity
- LO4 Describe examples of how sustainable fishing supports ocean biodiversity
- LO5 Identify an example of how one or more fishery from around the world has made improvement(s) to protect ocean biodiversity
- LO6 Use scientific and fishery related vocabulary

CONCEPTUAL UNDERSTANDINGS:

1. Overfishing can impact ocean biodiversity (LO1)
2. Bycatch occurs when sea creatures not targeted by fishers are caught (LO2)
3. Sustainable fishing supports ocean biodiversity (LO2)
5. Bycatch affects ocean biodiversity as threatened and endangered species are sometimes caught (LO3)
6. Sustainable fishing supports biodiversity as it means fisheries are not overfished and bycatch is minimised (LO4)
7. One way fisheries from around the world are innovating to protect ocean biodiversity is creating escape hatches in nets for turtles to escape out of (Lo5)
8. Bycatch is an example of a specialised word used in fishery management and science (LO6)

POSSIBLE WONDERINGS:

- How would I feel if I caught a marine creature (like a turtle or seabird or shark) by mistake?
- How many creatures live in the ocean?
- Do we know all of the creatiures that live in the sea?
- What other clever ways can we come up with to look after ocean biodiversity?

ASSESSMENT OPPORTUNITIES

- Concept map or mind map showing understanding of biodiversity and sustainability
- Student-led presentations on issues and solutions
- Poster/infographic about protecting marine life
- Short written explanation: "Why sustainable fishing matters?"
- Group action plan with reflection and peer feedback

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Key Concepts and Vocabulary

Biodiversity
Ecosystem
Overfishing
Sustainable fishing
Bycatch
Marine protected areas
Kaitiakitanga
Moana
Food chain/web
Conservation

CURRICULUM CONNECTIONS

CROSS-CURRICULAR THEMES (All Levels)
- Kaitiakitanga / Guardianship
- Tangata whenua and the ocean
- Global citizenship and sustainability (SDG14)
- Science communication and action projects

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SCIENCE

Living World – Ecology & Evolution

Levels 1–4:
- Ecology: Students will:
  - Recognise that living things are suited to their particular habitat (L1–2)
  - Explain how living things are suited to their environment and how they respond to environmental changes (L3–4)

Levels 5–8:
- Ecology:
  - Investigate the interdependence of living things in an ecosystem (L5)
  - Explore ecological concepts such as food webs, habitats, and human impact on biodiversity (L6–8)
- Evolution:
  - Understand that biodiversity is the result of ongoing evolutionary processes (L7)
  - Explore the role of natural selection, extinction, and human impact on species (L7–8)

Nature of Science – Participating and Contributing

All levels:
- Explore issues affecting people's lives and make decisions about possible actions (L1–8)
- Develop understanding about science as a human activity and how it interacts with culture and values

SOCIAL SCIENCES

Place and Environment | Economic World | Identity and Culture

Levels 1–4:
- Understand how people interact with natural environments (L2–4)
- Understand how people make choices about resources and sustainability (L3–4)

Levels 5–8:
- Understand how people manage economic resources sustainably (L5)
- Understand how decisions are made about the use of resources and their consequences (L6–8)
- Explore globalisation, interconnectedness, and environmental stewardship (L6–8)

HEALTH AND PHYSICAL EDUCATION

Healthy Communities and Environments
- Describe how people and the environment affect each other (L1–2)
- Plan and take action to make a positive difference in their communities (L3–4)
- Investigate societal influences on environmental sustainability (L5–8)
- Evaluate actions to improve the wellbeing of people and the environment (L6–8)

TE MARAUTANGA O AOTEAROA – MĀORI-MEDIUM CURRICULUM

Pūtaiao (Science)

Te Ao Tūroa – Koiora me te Taiao / Te Whaihanga a te Tangata
- L1–4: Recognise characteristics of marine life and how the ocean sustains life
- L5–8: Examine how human activity (e.g. overfishing) affects moana ecosystems
- Understand interdependence (tāngata me te taiao) and consequences of pollution

Tikanga ā-Iwi (Social Sciences)
- Explore concepts of kaitiakitanga, manaakitanga, whanaungatanga
- Investigate how iwi and hapū have traditionally protected and managed moana
- L5–8: Analyse historical and modern perspectives on sustainable resource use

Te Reo Māori
- Use language to describe environmental issues
- Develop vocabulary and writing skills related to ocean life, sustainability, and kaitiakitanga
- Engage in oral presentations or debates on marine conservation

Hauora (Wellbeing)
- Recognise the importance of a healthy environment for people and ecosystems
- Examine the effects of environmental degradation on community wellbeing

TECHNOLOGY

Nature of Technology

Levels 1–8:
- Understand how technology reflects and changes society and the environment (L1–8)
- Explore the role of innovation in sustainable practices (L5–8)

Technological Practice

Levels 3–8:
- Planning for practice: Students develop plans to address an issue (e.g. sustainable fishing solutions)
- Outcome development and evaluation: Evaluate the impact of technological outcomes on people and environments

ENGLISH

Listening, Reading, and Viewing
- Level 1–4: Identify main ideas and make meaning from texts about the ocean
- Level 5–8: Analyse ideas and perspectives (e.g. sustainable fishing; climate change)
- Possible text types: news articles, speeches, diagrams, fact files, interviews

Speaking, Writing, and Presenting
- Level 1–4: Share ideas and information (e.g. posters, simple reports, oral storytelling)
- Level 5–8: Construct meaning, use language for different purposes (e.g. persuasive writing about protecting biodiversity or informative reports about ecosystems)

Curriculum Focus:
- Writing reports or explanations on marine biodiversity
- Oral presentations on ocean guardianship or sustainable seafood
- Critical thinking and text analysis around real-world environmental issues

MĀTAURANGA MĀORI / LOCAL CURRICULUM LINKAGES

All Levels (especially Levels 1–6):
- Kaitiakitanga (guardianship): Integrating Māori values and perspectives in caring for the environment, especially moana (the ocean)
- Tikanga and Te Reo Māori: Include concepts like manaakitanga, whanaungatanga, and mauri in ocean-related learning