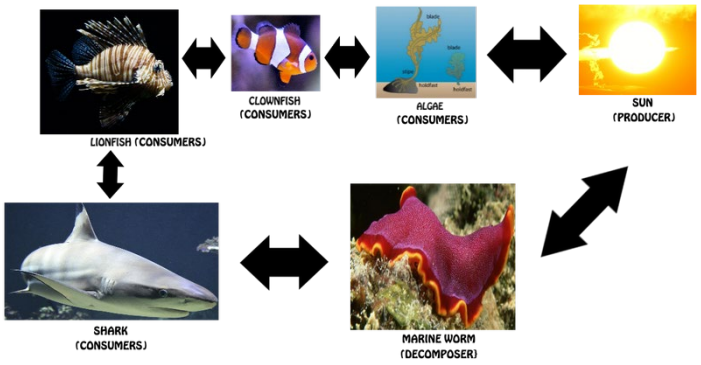
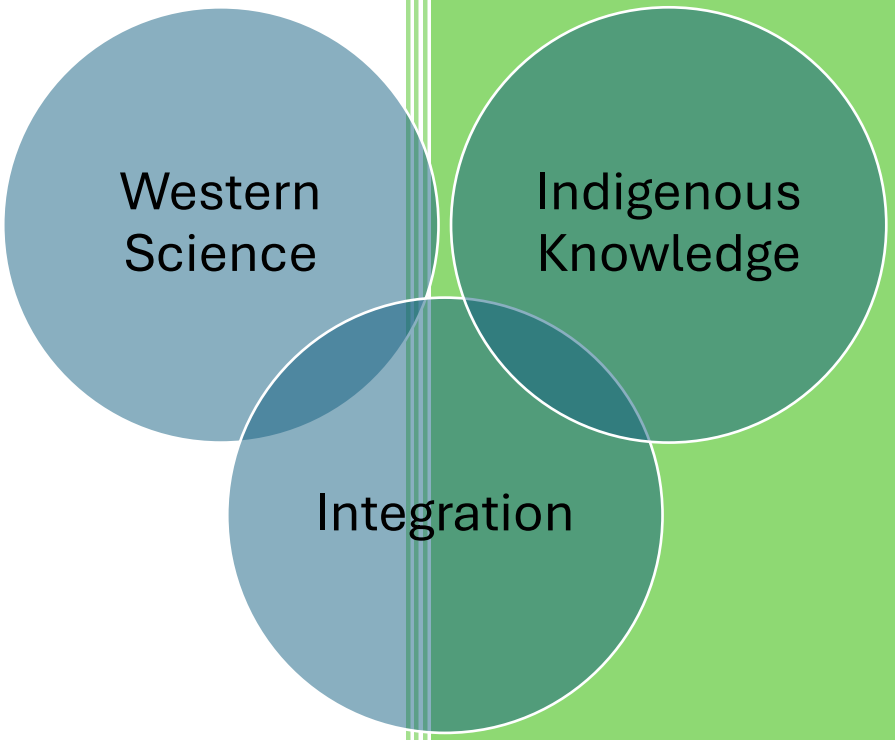


Responses to Invasive Species and their Impact: An integration of Science and Indigenous Perspectives



This project contains the following materials:

Lesson Plan for Teachers: Year 7 Science Food Webs - Indigenous Perspective

Activities for Students: Year 7 Science Food Webs - Indigenous Perspective

PowerPoint: Responses to Invasive Species and Their Impact

Developed by:

Vanessa Heggie with CoralWatch through Student Staff Partnerships at The University of Queensland

13/11/2024

Lesson Plan for Teachers: Year 7 Science Food Webs - Indigenous Perspective

Australian cross-curriculum content priorities:

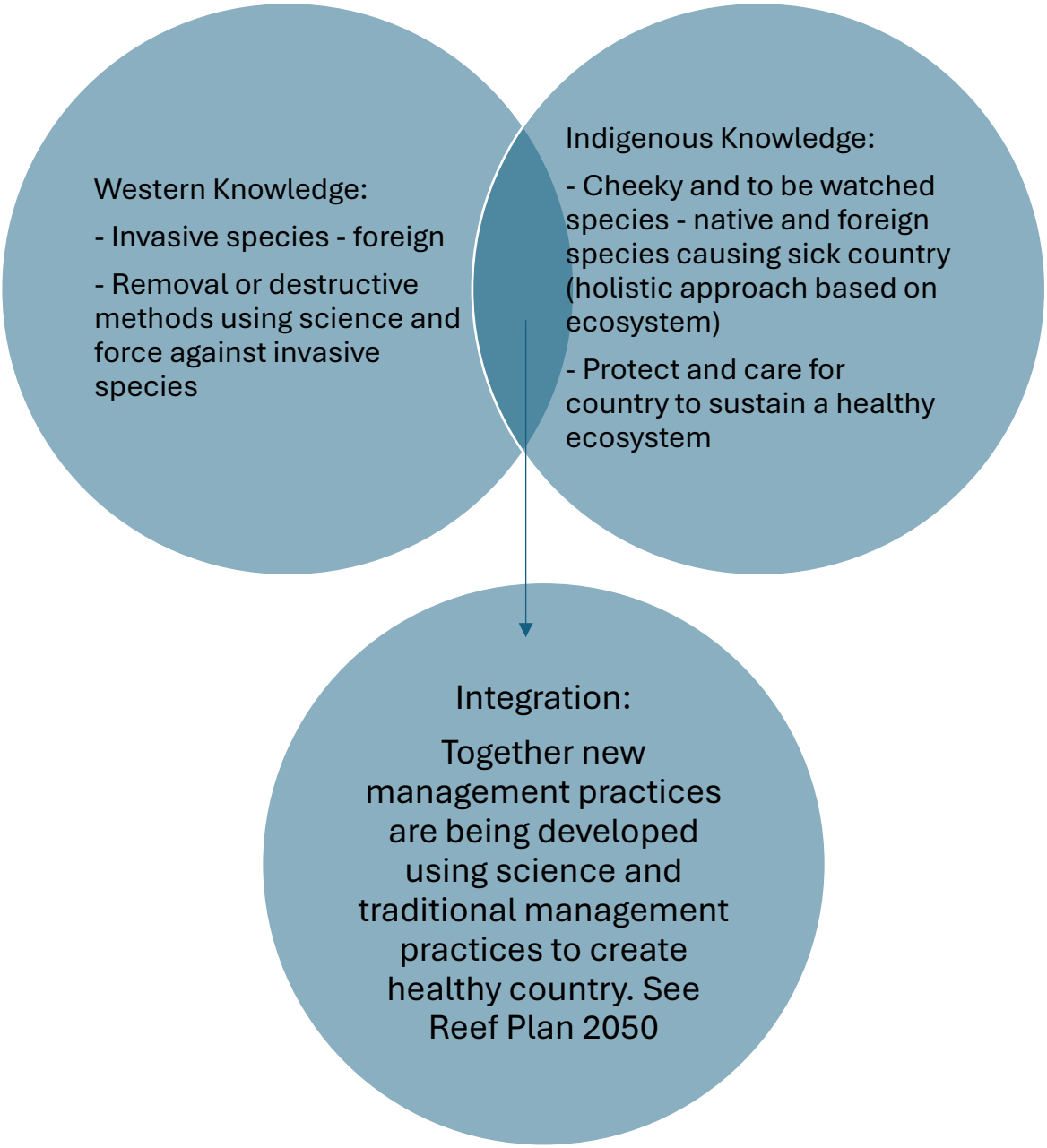
SS Biological Sciences	Use models, including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and biotic factors on populations (AC9S7U02)	Investigation First Nations Australians' **responses to invasive species** and their **effect on food webs** that many **communities are a part** of, and **depend on**, for **produce** and **medicine**

Learning objectives	Be able to identify the effects of interactions between organisms shown by: • Food chains • Food webs Be able to understand disruptive interactions of invasive species and their effect on biotic and abiotic factors on populations by: • Recognising western interpretation and responses to invasive species • Investigating Aboriginal and Torres Strait Islander People's interpretation and responses to invasive species • Be able to identify the effect invasive species have on communities, produce and medicine Understanding indigenous management of land and species both invasive and native.
Background info	Australia is home to 600000-700000 uniquely Australian species. In fact, in Australia about 84% of Australian flora, 83% of mammals and 45% of birds and about half of the world's marsupials are native only to Australia, with more discoveries occurring every day (DCCEEW, 2024; Murphy & van Leeuwen, 2021). Therefore, balanced interactions between these biotic and abiotic factors are critical for ecosystem stability. Biotic and abiotic factors are components that make up an ecosystem. When one factor becomes unbalanced for example via invasive species the whole ecosystem may be affected (McKim et al., n.d.). This highlights the importance of understanding conservation and protection of native species from invasive species. When colonisation occurred, new species were introduced to the Australian ecosystem, some species in particular have become a major problem and effect a wide variety of flora and fauna such as the cane toad and gamba grass (ACARA, n.d.a). The world's continuous migration and global trade also has effects on the flora and fauna today. This is why it is important to look to traditional owners of the land and sea to understand the local ecosystem, how humans are part of this ecosystem and incorporate their knowledge with modern science. With an understanding of local food chain, food webs and traditional uses and management, it will become easier to properly identify and cultivate Australian ecosystems. The integration of modern science and traditional knowledge is important for sustainability, especially since

	Australia holds 6-10% of the world's formally recognised post-1500s extinctions (Woinarski et al., 2019).
Basic Concepts	Several definitions are necessary when discussing ecosystems and factors that affect them. These definitions are as below (McKim et al., n.d.): Biotic factors: Living things within the ecosystem. E.g. animals, plants and bacteria. Abiotic factors: Non-living things within the ecosystem. E.g. soil, chemicals, water, pressure, temperature and climate. Food Chain/Web: "A food chain outlines who eats whom. A food web is the encompassment of all the food chains in an ecosystem. Each organism in an ecosystem occupies a specific trophic level or position in the food chain or web. Producers, who make their own food using photosynthesis or chemosynthesis, make up the bottom of the trophic pyramid. Primary consumers, mostly herbivores, exist at the next level, and secondary and tertiary consumers, omnivores and carnivores, follow. At the top of the system are the apex predators: animals who have no predators other than humans." (National Geographic, n.d., para 1). Language holds a role in the way people think about and manage invasive species and ecosystems. As such definitions from Western science and First Nations knowledge perspectives are given for what invasive species are and the language around managing them and the surrounding ecosystems. In Western Science, invasive species are known as "an organism that is not indigenous, or native, to a particular area. Invasive species can cause great economic and environmental harm to the new area" (National Geographic, 2024a, para 1). For further explanation, native species can also be considered invasive species if it moves out of its natural environment and causes damage to other ecosystems (Murphy & van Leeuwen, 2021; DEH, 2004). Terms for invasive species and their impact are: "weeds", "feral", "invasive", "alien", "invader", "damage", "harm" and "threat." (Bach & Larson, 2017). There is a focus on foreign species rather than ecosystems, this implies foreign species having a negative impact. The *Environment Protection and Biodiversity Conservation Act 1999* also recognises threatened native species again looking at species over whole ecosystems (DCCEEW, 2024). Terms for managing invasive species, "war on weeds", "search and destroy", "attack", "smashing", "kill", "battle," "controlling weeds" and "fight." (Bach & Larson, 2017). This has a connotation that the only way to save an ecosystem is by eliminating foreign plants and animals. Other words used are 'conserve' and 'protect' threatened species (DCCEEW, 2024).

	In comparison to Western science, First Nations people consider animals and plant life that harm 'healthy country' and the natural and cultural environment as "cheeky" instead of invasive and to be 'watched' as part of their role to "care for country" (Bach & Larson, 2017; Bach et al., 2019; Invasive Species Council, 2024). This often means they identify 'cheeky' species through imbalances to the ecosystems and detailed knowledge of "cyclic biological events and the seasonal movement of faunal species. This knowledge allows for the sustainable harvesting of plants and animals, ensuring the continuous availability of food and other resources, while simultaneously minimising negative impacts" (ACARA, n.d.b). First Nations Australians have a deep respect for nature and identify themselves through specific land and totems, this governs how they use and protect the land (Brittanica Kids, 2024; First People, 2023). Using neutral terms for weeds and positive terms focusing on "health, care and creation" for weed management. Other terms for weeds, such as: Introduced – describes any plant that has arrived since British Colonisation (neutral). This term prompts discussion as to the plant and its relationship to humans. "Belong on"/to particular sites/types of country – points toward belonging developing over time. (Bach, & Larson, 2017). Cheeky – to describe the behaviour of an environmental weed both native and introduced, this behaviour can be quick spreading or annoying. Often these plants needed to be 'watched' (Bach, & Larson, 2017). "The concept of healthy country describes the proper functioning of these interactions according to Aboriginal Law. Through this framework the effect of a weed was judged in terms of whether it positively, negatively or neutrally affected the health of country." (Bach, & Larson, 2017). If negative impact: country is "sick" – "restricting human access to country; affecting fresh-water sites, cultural sites or traditional burning practices; and inhibiting the transfer of language and culture to children" (Bach, & Larson, 2017). Choked – inability to travel through sick land due to weed overgrowth (Bach, & Larson, 2017). Positive impact – "protect/cover" -protects country from erosion and barrenness (Bach, & Larson, 2017). Terms for weed management such as: "Looking after country" and "caring for country" – indicate Intimate stewardship and connection to country (Bach, & Larson, 2017).

	Weed work/management – a focus on improving country's health "protect', keep, bring up/back healthy country. Suggests weeds can "make it better", "make it healthy", "help it", and "heal" it when cared for properly (Bach, & Larson, 2017).



Lesson Plan for Teachers: Year 7 Science Food Webs - Indigenous Perspective

Example of the different perspectives and methods of identifying issues and solutions for invasive/cheeky species

Western Science			Indigenous Knowledge			
Problem	Species	Solution	Problem	Cause of imbalance	Why?	Solution
Coral reef is being eaten by Crown of Thorns Starfish (Boström-Einarsson, 2015; Boström-Einarsson & Rivera-Posada, 2015).	Crown of Thorns Starfish (Boström-Einarsson, 2015; Boström-Einarsson & Rivera-Posada, 2015).	Control/kill Crown of Thorns Starfish using science and injecting them with bile salt and vinegar (Boström-Einarsson, 2015; Boström-Einarsson & Rivera-Posada, 2015).	An imbalance to the reef ecosystem and extensive loss of coral (Great Barrier Reef Foundation, 2024; Reid, 2021).	Crown of Thorns Starfish thriving and encroaching on the Coral Reef (Reid, 2021).	One reason is that an ideal environment for the Crown of Thorns Starfish was created through erosion and runoff from the Normandy River. Another reason is that predators such as tritons and other fish have reduced, and human settlement and natural disasters making coral more vulnerable. (Reid, 2021; Ganter, 1987; Ruben, 2022)	Improve native grass regrowth to stabilise the soil to reduce runoff therefore encouraging the Crown of Thorns Starfish to go back to their own ecosystem (Reid, 2021).
Drupella snails damaging heat stressed and vulnerable coral	Drupella snails	Removing drupella snails	Imbalance in ecosystems			Set up decision tree to determine if the ecosystem can heal naturally or needs site stewardship recommendations (Singleton, n.d.)

*If interested in local practices and the local ecosystem feel free to reach out to local First Nations Peoples.

Activities: Example Answers

1.Research online and write down whether the objects are biotic, abiotic and its purpose for the ecosystem and traditional uses.

Objects	Biotic/ Abiotic	First Nations People' Purposes/Uses	Significance to the Marine Ecosystem
Rocks	Abiotic	Rocks have been used as part of hunting tools, and as cooking tools like grinding and pounding stones (Reef Authority, 2023; The Heritage Registrar, 2024; The Heritage Registrar, 2021). Rock habitats are also identified as places to find and trap certain animals (AIATSIS, 2022).	Rocks in the form of rock platforms and rock pools provide habitats and shelter to various animals (The Heritage Registrar, 2024; AIATSIS, 2022).
Fish	Biotic	Fish is a food source for many First Nations Peoples. In-depth knowledge of fish is past down generations including their migration times, best hunting times, their habitats, breeding grounds, age and gender. This knowledge helped them identify where, when and which fish they could eat (Reef Authority, 2023; AIATSIS, 2022). A lot of the knowledge about fishing locations and methods were passed down like mimicking birds, scaring fish, and using tools like spears and nets etc. (Coastal and Marine studies in Australia, n.d.) In addition, certain fish have spiritual value as Totems like sharks (Reef Authority, 2023) Knowledge of fish uses, tastiness and dangers were also passed down (Coastal and Marine studies in Australia, n.d.)	Fish indicate a thriving ecosystem and provide food for a variety of large fish, animals and humans (Reef Authority, 2023).
Coral	Biotic	Coral is important to First Nations Peoples due to cultural and spiritual ties to country. Coral also is home to totems and locations identified for fish. (Reef Authority, 2023). In some places, pieces of coral were used as files, to shape shellfish hooks among others (Coastal and Marine studies in Australia, n.d.). In the Northern Territory, coral's protective slime is collected at low tide and used to cure colds, headaches and flus (Coastal and Marine studies in Australia, n.d.).	Healthy coral provides shelter, food, and breeding grounds for around 25% of sea creatures some permanent and others migratory (NOAA, 2019; Great Barrier Reef Foundation, 2024). They also provide space for filter feeders like sponges that help filter oceans of toxins and increasing oxygen levels (NOAA, 2024). Coral also has an important job to protect shorelines and in-shore habitats e.g. seagrass meadows and mangroves from erosion via storms and

			waves (NOAA, 2024; NOAA, 2019; Great Barrier Reef Foundation, 2024b). Coral skeletons can become home to beneficial bacteria, copepods and mysis. Along with homes for new coral polyps (Green Star Polyp or Xenia) (National Geographic, 2024b).
Temperature	Biotic	Changes in temperature can therefore impact hunting locations/times and variety of food and resources available to First Nations Peoples. Changes in season are often marked by signs in nature and cyclic and migratory patterns when these patterns change due to changes in temperature this can affect First Nations Peoples. Changes in tides and weather tell them when and where to fish. (AIATSIS, 2022; CSIRO, n.d.; Bennies LibGuides, 2024; Trebilco et al., 2021; Taylor et al., 2019).	Temperature has a major impact on ocean currents and circulation (Martay et al., 2023). Temperature can also impact migration, breeding times and other patterns (Department of Environment, Science and Innovation, 2023). Another can change habitats and encourage and discourage certain plant and animal species' growth (IUCN, 2017; Dao et al., 2021; Martay et al., 2023). Can cause coral bleaching and encourage species to overgrow like algal blooms (IUCN, 2017; Dao et al., 2021; Martay et al., 2023).
Clams and other shellfish	Abiotic	Shellfish have been used as tools, objects of culture and trade, and food source for First Nations Peoples (Reef Authority, 2023). It is known that shellfish have can be eaten raw and cooked (Gibbs et al., 2024). The mangrove worm or shipworm (type of shellfish) has been used as food and medicine for colds and stomach aches (Coastal and Marine studies in Australia, n.d). Shells were used in hunting tools such as shellfish hooks for fishing and oval shell pieces for spear-throwers (Shamsi et al, 2020; Coastal and Marine studies in Australia, n.d; Murgha, 2012; Karam, 2004). Shells were also used as cooking tools such as scrapers, cups, knives, spoons and cooking containers (Coastal and Marine studies in Australia, n.d; Murgha, 2012; Karam, 2004).	Clams and shellfish are a food source for other animals such as fish, shorebirds, and starfish (Ramel, 2010). Clams are also important for marine ecosystems as they help filter seawater (Ramel, 2010).

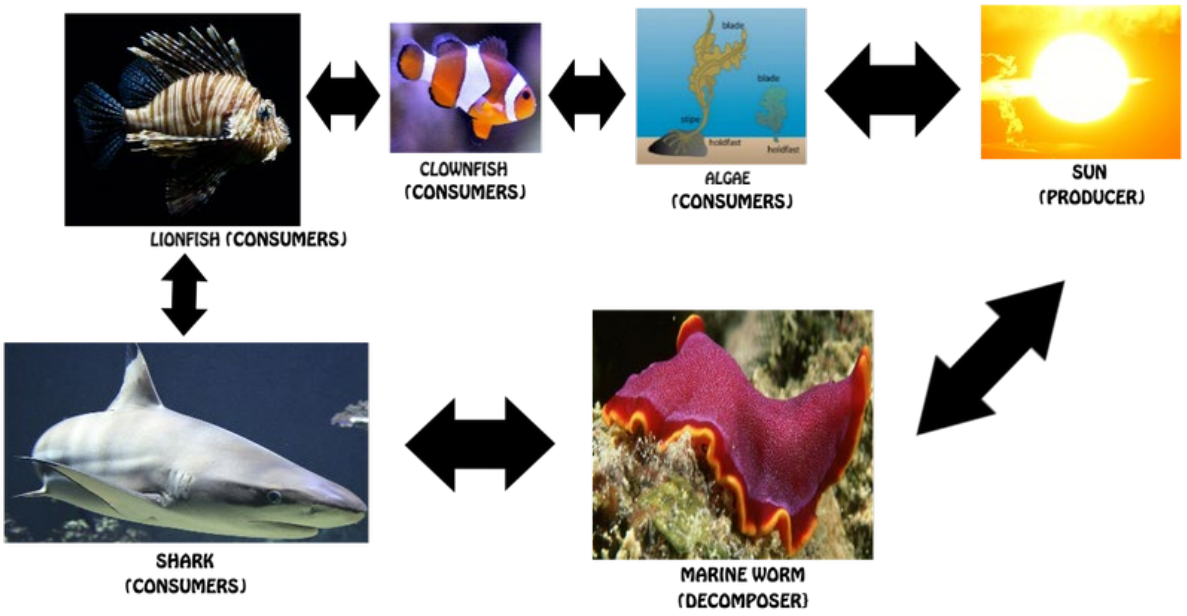
		Giant clams were used to collect rainwater and make hoes, axe heads and chisels. Whereas Baler shells were often used for cooking pots, containers and a tool for removing water from canoes (Coastal and Marine studies in Australia, n.d). Shells were also used as or to make decorations, jewellery and objects of symbolic importance (Coastal and Marine studies in Australia, n.d). This included pendants, belts, necklaces, armbands and nose decorations (Coastal and Marine studies in Australia, n.d).	

Great Barrier Reef Food Chain

2a) Draw a food chain showing the following animals: lionfish, clownfish, shark, and algae

Name the ecosystem, insert arrows, draw and label the organism, and label the type of consumer.

Answer:



Source: Manhas (n.d.) *Marine Food Chain – Marine Food Chain Diagram*. CleanPNG. https://www.cleanpng.com/png-food-chains-and-webs-food-web-clownfish-great-barr-5371850/

b) Place the sun into the food chain

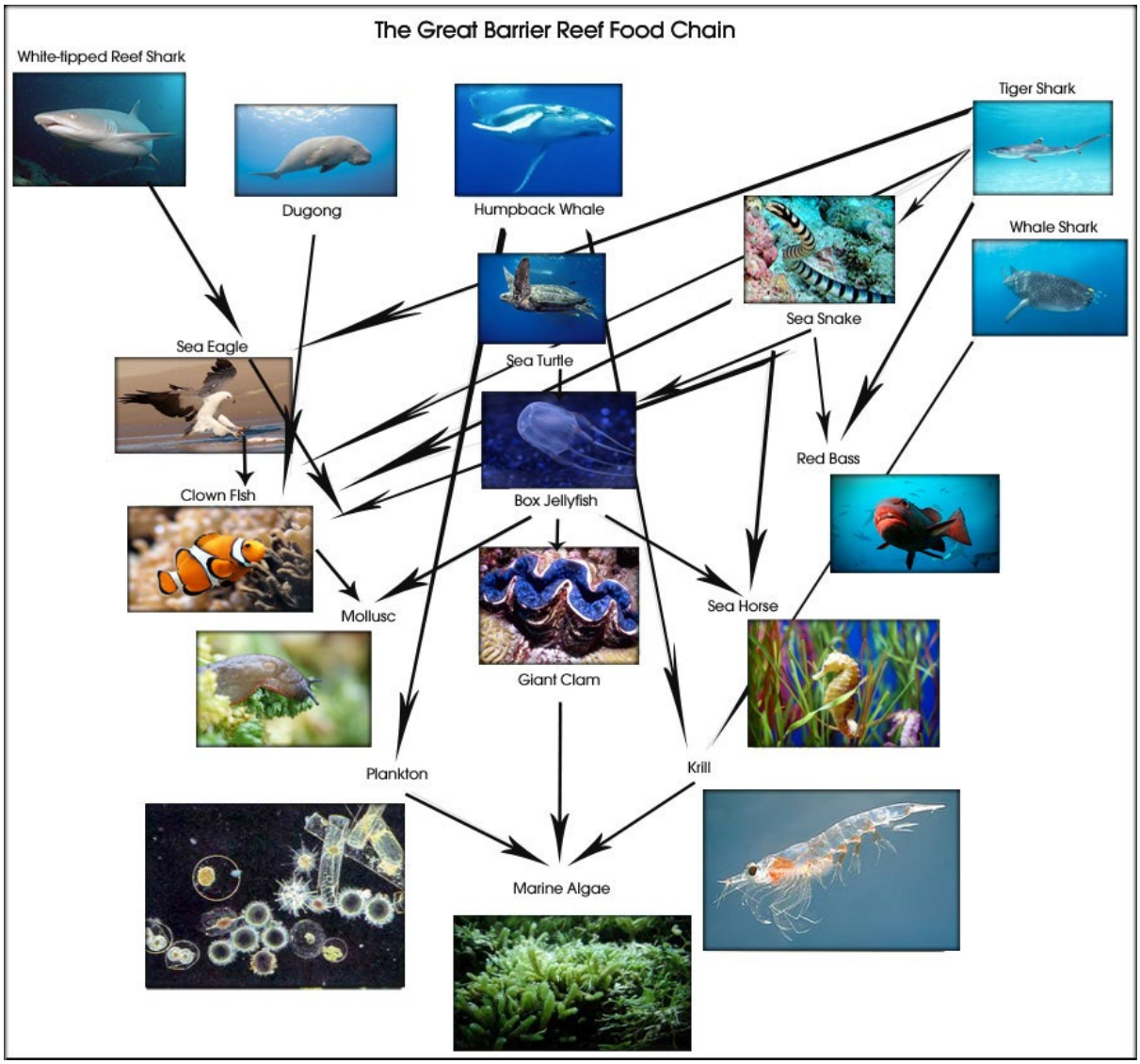
c) Place decomposers (marine worm) into the food chain

d) Explain what would happen if sharks were removed from this food chain?

A: If sharks were removed from this food chain, then lionfish could overpopulate and eat too many clownfish, this could cause low numbers of clownfish resulting in algae overgrowth. Overgrowth of algae could also be detrimental to the surrounding ecosystem.

e) Explain what would happen if algae were removed from this food chain?

A: If algae were removed from this food chain, the food source for clownfish would disappear resulting in reduced numbers of clownfish. Lionfish could either eat all the existing clownfish or begin to starve resulting in lower numbers. Each consumer up the chain would eventually be reduced or they would migrate to another location to find food.



Source: Great Barrier Reef. (n.d.). [Great Barrier Reef Food Web]. https://greatbarrierreef.com.au/information/great-barrier-reef-food-web/

3a) Looking at the above food web, draw two food chains (containing four animals).

Marine algae > giant clam > box jellyfish > sea turtle

giant clam > jellyfish > sea snake > tiger shark

mollusc > clown fish > sea eagle > tiger shark

b) What would happen to the food web if people ate all the clams/shellfish?

Jellyfish numbers would be reduced leading to reduced numbers of sea snakes and turtles. Over time, sea snakes may also start overeating other animals such as red bass, sea horses and clownfish. This can affect other consumers such as the tiger shark, as tiger sharks also eat sea snakes, red bass and clownfish. When consumers go missing or are reduced, it effects the whole ecosystem. Not only their predators but also their prey. With reduced consumers of marine algae, it can overgrow allowing krill and plankton to possibly overgrow as well.

d) What strategies do First Nations Australians use to maintain clam/shellfish numbers in the ecosystem?

To sustainably maintain clam/shellfish numbers in the ecosystem there are certain locations people can and cannot gather shellfish, and they can only gather certain sizes. First Nations People have historically done aquaculture. They would find the best locations to encourage shellfish growth and ensure better human accessibility to the shellfish within bays (The University of Sydney, 2021). They would also only take as much as needed (subsistence fishing) and allow the shellfish/clams to repopulate (AIATSIS, 2022). Seasons, and the colour and smell of the sea also indicates to First Nations Peoples the best time to go and collect shellfish (AIATSIS, 2022).

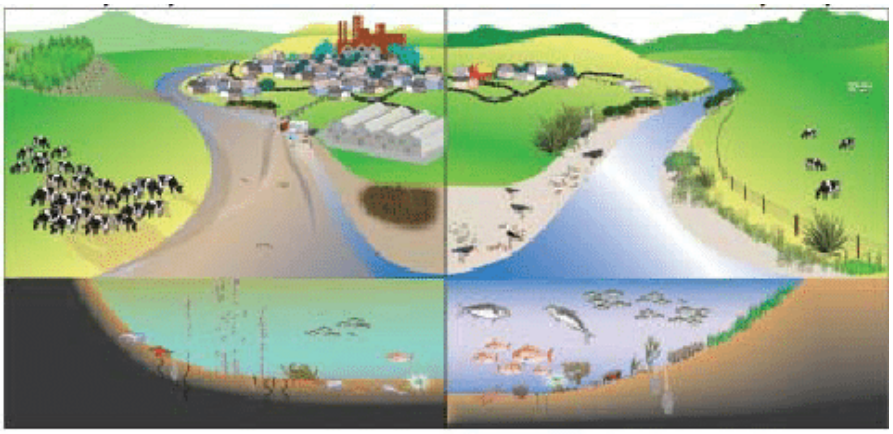
e) What would happen if the natural habitat (coral reefs) of clownfish is destroyed by the crown of thorns starfish?

If coral reefs are destroyed, then clownfish would be unable to access their main food source algae and would have less protection from natural predators. As a result, their numbers will reduce due to hunger and higher deaths from being unprotected. Clownfish will most likely move to another location so they are not vulnerable to other animals and can find their main food source. This would disrupt the natural ecosystem.

f) What traditional management strategies could be employed to reduce the impacts of the invasive species?

To maintain healthy ecosystems traditional management strategies could be used, such as subsistence fishing, and fishing based on weather, migratory and breeding seasons. By subsistence fishing and eating based on different seasons, this encourages regrowth of certain species while also keeping downs other species numbers that are known to greatly increase during that time of year. Watching cheeky species and managing the ecosystem holistically is also important. By looking at the whole environment we can maintain, create and find areas that are more suited for certain species vs others to naturally reduce numbers of invasive species and encourage them to move back to their natural ecosystem. This also helps us identify any changes to the environment and why changes may have occurred.

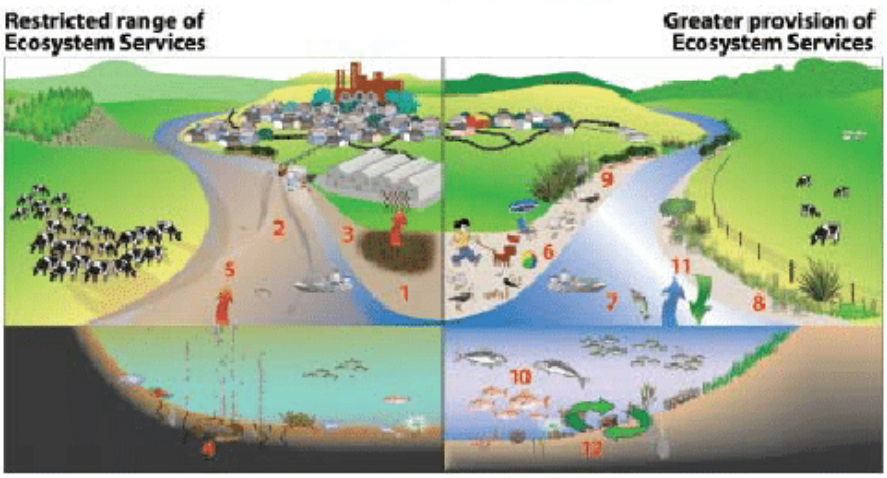
4. Your family likes to eat fish, so they went to their usual fishing spot however they noticed all the fish were missing. Looking at the images below label the healthy and sick country and circle what is different. Describe how these factors effect ecosystems and explain why there is no fish and how you can encourage fish to come back by looking at the healthy country.



Source: Thrush, S. F., Townsend, M., Hewitt, J. E., & Davies, K. K. (2014). The many uses and values of estuarine ecosystems. In J. Dymond (Ed.), *Ecosystem Services in New Zealand – Condition and Trends* (pp. 226-237). Manaaki Whenua Press. https://www.researchgate.net/publication/281526181_The_many_uses_and_values_of_estuarine_ecosystems#pf7

Answer:

Sick Country Healthy Country



Source: Thrush, S. F., Townsend, M., Hewitt, J. E., & Davies, K. K. (2014). The many uses and values of estuarine ecosystems. In J. Dymond (Ed.), *Ecosystem Services in New Zealand – Condition and Trends* (pp. 226-237). Manaaki Whenua Press. https://www.researchgate.net/publication/281526181_The_many_uses_and_values_of_estuarine_ecosystems#pf7

Healthy country has greater provision for ecosystem services compared to sick country. When a country is healthy it can often heal itself when it is impacted by humans, flora and fauna. However, when a country is sick it is unable to heal itself and often becomes more sick. Sick country in this image has (1) increased muddy sediments and cloudiness within the water, (2) waste flows into the water bringing disease and toxic substances, and (3) “periodic incidents such as rotting nuisance seaweed blooms” (Thrush et al., 2014). (4) Restricted nutrient recycling occurs because of the absence of benthic species to filter and add oxygen to the

riverbed. (5) With limited filtering and nutrient recycling greenhouse gases may be released. In contrast, healthy country's systems (6) encourage recreational activities because they are cleaner are cleaner. They also offer (7) better and more food resources, has better (8) sediment retention, and (9) provides coastal protection (Thrush et al., 2014). Within healthy country, (10) food webs are healthy, large and diverse with many links, and large predators. There is also (11) a balance between gas which supports the water ecosystem and there is also (12) nutrient exchange due to the presence of benthic species (Thrush et al, 2014). The fish appear to have left because the water became polluted by sediment runoff and pollution from the town upstream. To encourage fish to return to the area, adding measures such as trees and grass upstream could reduce sediment runoff. Creating healthy country is important for animals and plants.

Other useful links

Videos

CSIRO: Chapter 6. Indigenous Perspectives on Biodiversity
https://www.csiro.au/en/research/natural-environment/biodiversity/biodiversity-book/chapter-6

Indigenous rangers on the Reef | Great Barrier Reef Marine Park Authority

https://www.youtube.com/watch?v=iUmauTqlzFg

Aboriginal Australian Totems: Indigenous Caring for Country

https://www.youtube.com/watch?v=BvPa5FVg8_Y

Aboriginal water values and management in northern Australia

https://www.youtube.com/watch?v=XMKYybtUJ-o

MOUA: Sea Country

https://www.moua.com.au/visit/sea-country

Reef To

https://reefto.au/

Bennies LibGuides

https://libguides.msben.nsw.edu.au/aboriginalknowledge/seasons

Nguri - Indigenous rangers tell ancient stories of the Great Barrier Reef | WWF-Australia

https://www.youtube.com/watch?v=D2b_e5NOylw

Great Barrier Reef Foundation: Traditional Owner-Led Conservation

https://www.barrierreef.org/what-we-do/projects/traditional-owner-led-conservation

Work Samples and Activities

Year 7 Science Portfolio

Lesson Plan for Teachers: Year 7 Science Food Webs - Indigenous Perspective

https://docs.acara.edu.au/curriculum/worksamples/Year_7_Science_Portfolio_Above.pdf

A Spirited Epistemology

https://elbowlakecentre.ca/quills/a-spirited-epistemology/#:~:text=Through%20discussion%20with%20the%20teacher,%2C%20therefore%2C%20biotic%20and%20alive

Anticipative management for coral reef ecosystem services in the 21st century

https://www.researchgate.net/figure/Conceptual-food-web-of-a-coral-reef-ecosystem-identifying-16-key-functional-groups-and_fig4_265211448

Scootle: Science / Foundation / Science understanding / Biological sciences

https://www.scootle.edu.au/ec/search?accContentId=AC9SFU01&learningarea=%22Science%22&userlevel=%280%29

Science / Year 9 / Science Understanding / Biological sciences

https://www.scootle.edu.au/ec/search?accContentId=ACSSU176

Australia State of the Environment 2021

https://soe.dcceew.gov.au/#0

Caring for Country: Indigenous scientific observation and cultural practices

https://australianstogether.org.au/assets/Curriculum-Resources/F-SciHASS-Caring-for-Country-TG.pdf

Illustrations of Practice

https://australiancurriculum.edu.au/resources/aboriginal-and-torres-strait-islander-histories-and-cultures/illustrations-of-practice/

Country Handle with Care - Episode 5 Rangers

https://www.youtube.com/watch?v=2Hn4dtBpuAI

Aboriginal Knowledge - Landscapes - Lake Eyre Basin

https://www.youtube.com/watch?v=uKViESgzV90

Interactions in the environment

https://www.qcaa.qld.edu.au/downloads/p_10/kla_sci_sbm_ll_402.pdf

Exploring Australian Food Webs

https://www.museum.qld.gov.au/learning-resources/learnings/exploring-australian-food-webs

Lesson Packages

https://www.mdba.gov.au/publications-and-data/publications/lesson-packages-downloads

Wetlands and food webs worksheet

https://www.mdba.gov.au/sites/default/files/publications/wetlands-and-food-webs-worksheet.pdf

Species

https://www.mdba.gov.au/sites/default/files/publications/food-web-cards.pdf

Caring for River country

https://www.mdba.gov.au/sites/default/files/publications/cfrc-proj-sheet.pdf

Water Wisdom

https://www.sawater.com.au/__data/assets/pdf_file/0003/951573/The-Well_Water-Wisdom.pdf

Uses and management

Food from the sea - looking at the Aboriginal and Torres Strait Islander people

https://fishingboating.world/news/240776/Food-from-the-sea

Indigenous people and invasive species: Perceptions, challenges, management and uses

https://www.researchgate.net/publication/280319775_Indigenous_people_and_invasive_species_Perceptions_challenges_management_and_uses

HSIE Teachers – HSC Geography: Ecosystems at Risk

http://hscgeographyecosystems.hsieteachers.com/great-barrier-reef---management-strategies.html

Reef Traditional Owners

https://www2.gbrmpa.gov.au/learn/traditional-owners/reef-traditional-owners

Traditional Use of Marine Resources Agreements

https://www2.gbrmpa.gov.au/learn/traditional-owners/traditional-use-marine-resources-agreements

Traditional Use of the Marine Park

https://www2.gbrmpa.gov.au/learn/traditional-owners/traditional-use-marine-park

Aboriginal and Torres Strait Islander Heritage Strategy

https://www2.gbrmpa.gov.au/learn/traditional-owners/aboriginal-and-torres-strait-islander-heritage-strategy

Traditional Owner Reef Protection

https://www.dcceew.gov.au/parks-heritage/great-barrier-reef/publications/traditional-owner-reef-protection

Traditional Owners of the Great Barrier Reef: The Next Generation of Reef 2050 Actions

https://www.dcceew.gov.au/parks-heritage/great-barrier-reef/publications/reef-2050-traditional-owners-next-generation

Supporting Management of Indigenous Lands and Seas

https://www.csiro.au/en/research/indigenous-science/managing-country/co-management

Australian Curriculum

https://australiancurriculum.edu.au/TeacherBackgroundInfo?id=56676

Incorporating Aboriginal people's perceptions of introduced animals in resource management: Insights from the feral camel project

https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1442-8903.2011.00619.x

Tools, uses and medicine

Aboriginal Culture: Wooden Tools and Weapons

https://www.aboriginalculture.com.au/wooden-tools-and-weapons/

Aboriginal Culture: Stone Tools and Artefacts

https://www.aboriginalculture.com.au/stone-tools-and-artefacts/

Aboriginal Culture: Fishing Methods

https://www.aboriginalculture.com.au/fishing-methods/

Indigenous Fishing Past and Present

https://www.frdc.com.au/sites/default/files/products/2008-326.38%20-%20Indigenous%20Australian%20Fishing%20Past%20and%20Present.pdf

Aboriginal Plant Use and Technology

https://www.anbg.gov.au/gardens/education/programs/pdfs/aboriginal_plant_use_and_technology.pdf

Fact Sheet: Aboriginal Freshwater Middens

https://www.firstpeoplesrelations.vic.gov.au/fact-sheet-aboriginal-freshwater-middens

Fact Sheet: Aboriginal Coastal Shell Middens

https://www.firstpeoplesrelations.vic.gov.au/fact-sheet-aboriginal-coastal-shell-middens

Indigenous Australians and the Environment

https://kids.britannica.com/students/article/Indigenous-Australians-and-the-Environment/629318#:~:text=Because%20the%20environment%20is%20essential,protect%20the%20land%20and%20waters.

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