

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.



Acknowledgement of Country

I would like begin by acknowledging the Jagera and Turrbal Peoples, Traditional Custodians of the land on which we meet today, and pay my respects to their Elders past, present and emerging. I extend that respect to Aboriginal and Torres Strait Islander Peoples here today.

I would also like to acknowledge that the information provided today is not indicative of all First Nations Peoples beliefs and knowledges and further and continued communication with First Nations Peoples is highly encouraged and needed to build upon our knowledge and future projects. For more in-depth knowledge of local practices and local ecosystems reach out to local First Nations Peoples.

*Australian
CROSS-
curriculum
content
priorities*

**SS Biological
Sciences**

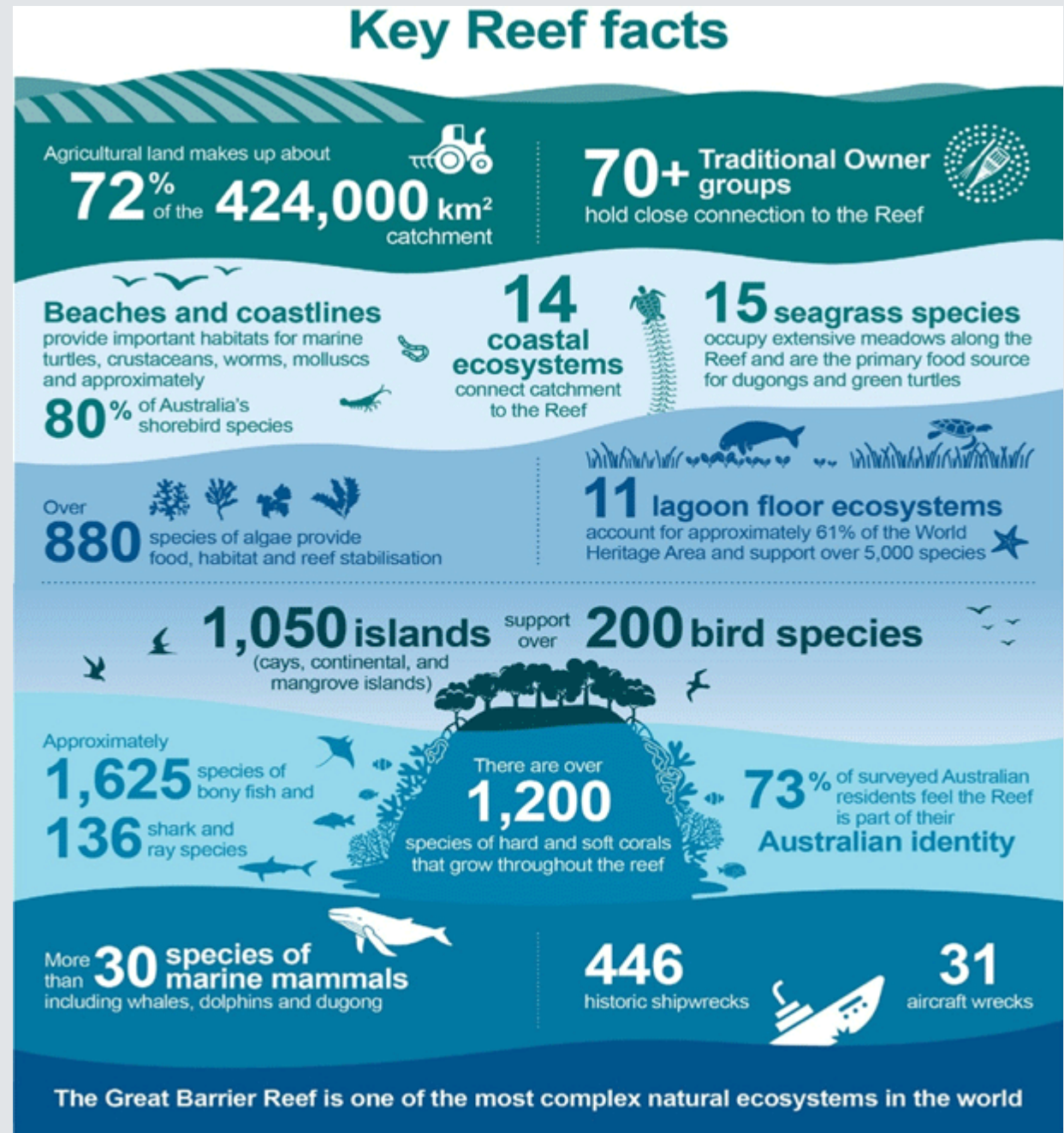
**Use models,
including food
webs, to
represent
matter and
energy flow in
ecosystems
and predict
the impact of
changing
abiotic and
biotic factors
on
populations
(AC9S7U02)**

**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.

Australian Context



Source: Australian Government. (2021). Key Reef Facts. [Infographic].
<https://www.dcceew.gov.au/parks-heritage/great-barrier-reef/publications/about-great-barrier-reef>



Source: WWF-Australia. (2022, May 10). *Nguri - Indigenous rangers tell ancient stories of the Great Barrier Reef* | WWF-Australia [Video]. Youtube.
https://www.youtube.com/watch?v=D2b_e5NOylw

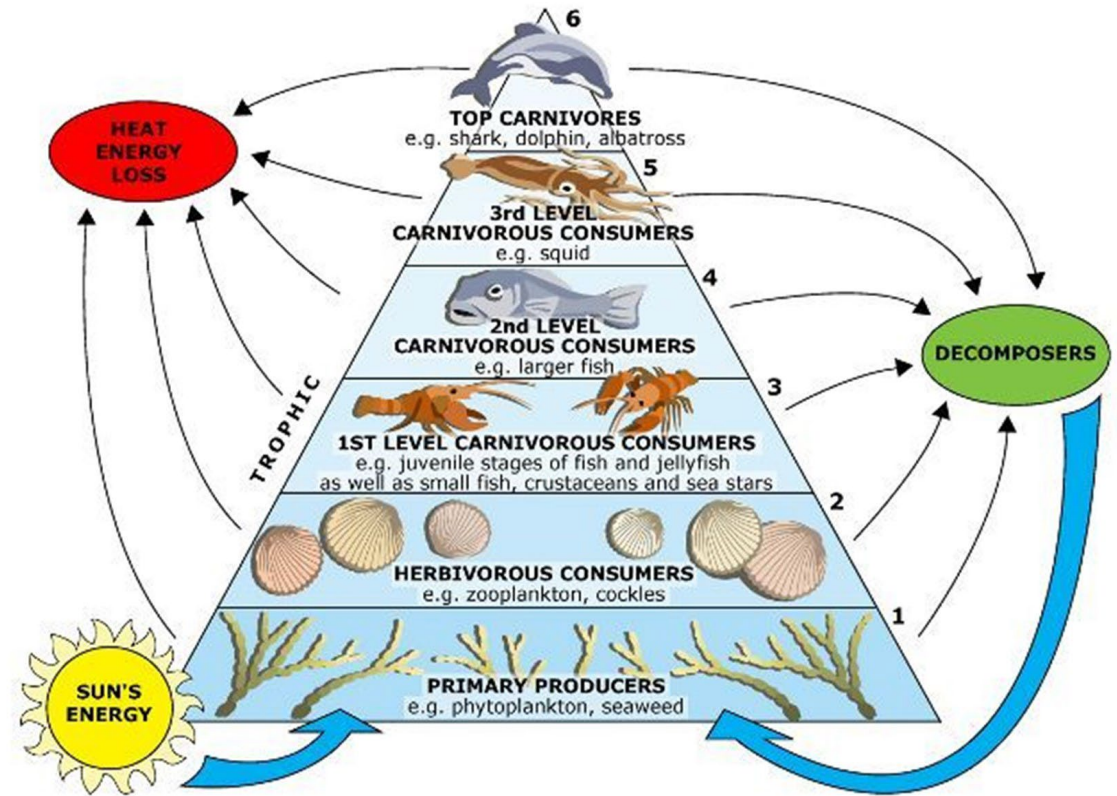
Concepts

Biotic factors: Living things within the ecosystem

Abiotic factors: Non-living things within the ecosystem

Food Chain: a chain of consumers

Food Web: multiple food chains connected in one ecosystem



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Source: Ebrahim, R. (2021). [Trophic Levels].
<https://ocean.org/blog/trophic-levels-part-1/>



Activity

Go and answer questions 1 and 2 about biotic and abiotic factors and food chains.

Object/Animal/Plant	Biotic/Abiotic	First Nations Peoples' Purposes/Uses	Significance to the Marine Ecosystem
Rocks			
Fish			
Coral			
Temperature			
Clams/Shellfish			





Western Science Language concerning Invasive Species

Invasive Species:

“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, n.d.b, para 1).


Perspective of Invasive Species:

- “weeds”, “feral”, “invasive”, “alien”, “invader”, “damage”, “harm” and “threat.” (Bach & Larson, 2017)

Management method:

- “search and destroy”, “attack”, “smashing”, “kill”, “battle,” “controlling weeds” and “fight.” (Bach & Larson, 2017).

- This has a connotation that the only way to save ‘conserve’ and ‘protect’ an ecosystem and threatened species is by eliminating foreign plants and animals (DCCEEW, 2024).





First Nations Peoples' Language concerning Invasive Species

Cheeky/To be Watched Species:

animals and plant life that harm 'healthy country' and the natural and cultural environment creating imbalances to ecosystems (Bach & Larson, 2017; Bach et al., 2019; Invasive Species Council, 2024).

Perspective of Cheeky Species:

-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).


Healthy Country:

- Describes that there is proper functioning of interactions according to Aboriginal Law (Bach & Larson, 2017).

Sick Country:

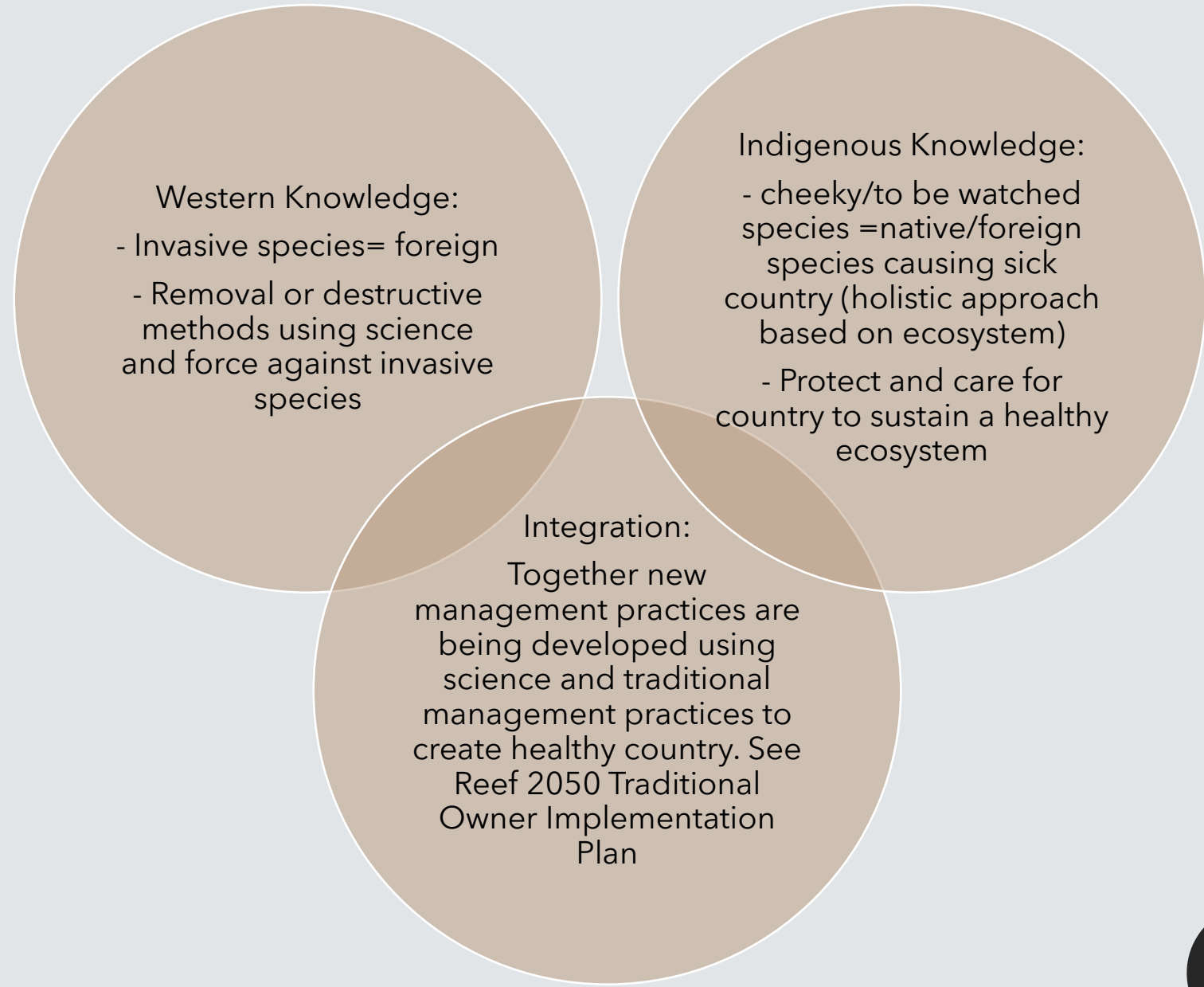
- Describes "restricting human access to country; affecting fresh-water sites, cultural sites or traditional burning practices; and inhibiting the transfer of language and culture to children" (Bach & Larson, 2017).

Management Method:

- "health, care and creation" (Bach & Larson, 2017).
 - "looking after country" and "caring for country" – indicate Intimate relationship to country (Bach & Larson, 2017).
 - a focus on improving country's health through the words: "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).
- 



Integration of two knowledges /perspective s





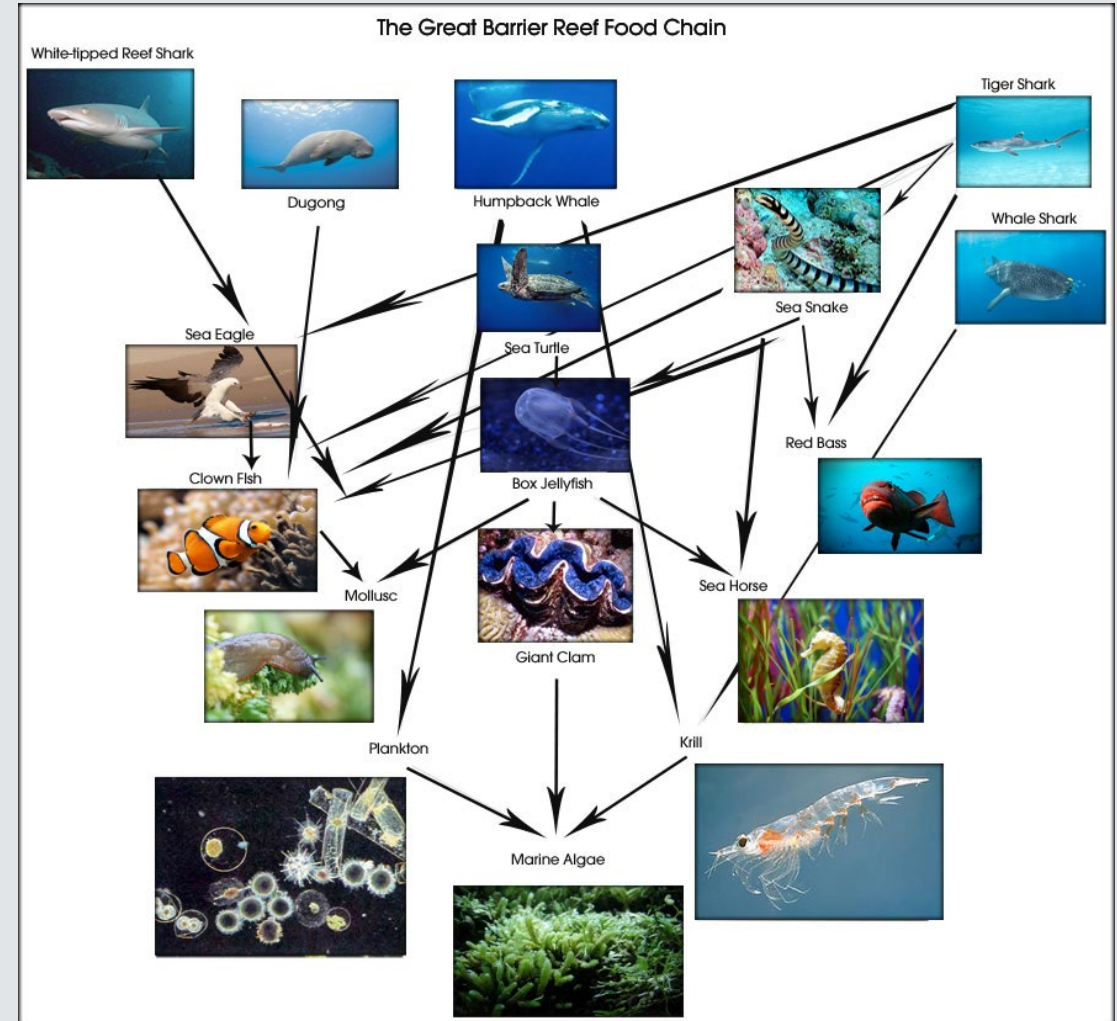
Examples of the different perspectives and methods of identifying issues and solutions for invasive/cheeky species

Western Science			Indigenous Knowledge			
Problem	Invasive Species	Solution	Problem	Cause of Imbalance	Why?	Solution
Coral reef is being eaten by Crown of Thorns Starfish	Crown of Thorns Starfish	Control/kill Crown of Thorns Starfish	An imbalance to the coral reef ecosystem and extensive loss of coral	Crown of Thorns Starfish thriving and encroaching onto the coral reef	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.	Improve native grass regrowth to stabilise the soil and reduce runoff. Therefore, encouraging the Crown of Thorns Starfish to go back to their own ecosystem



Activity

Go and answer to question 3.

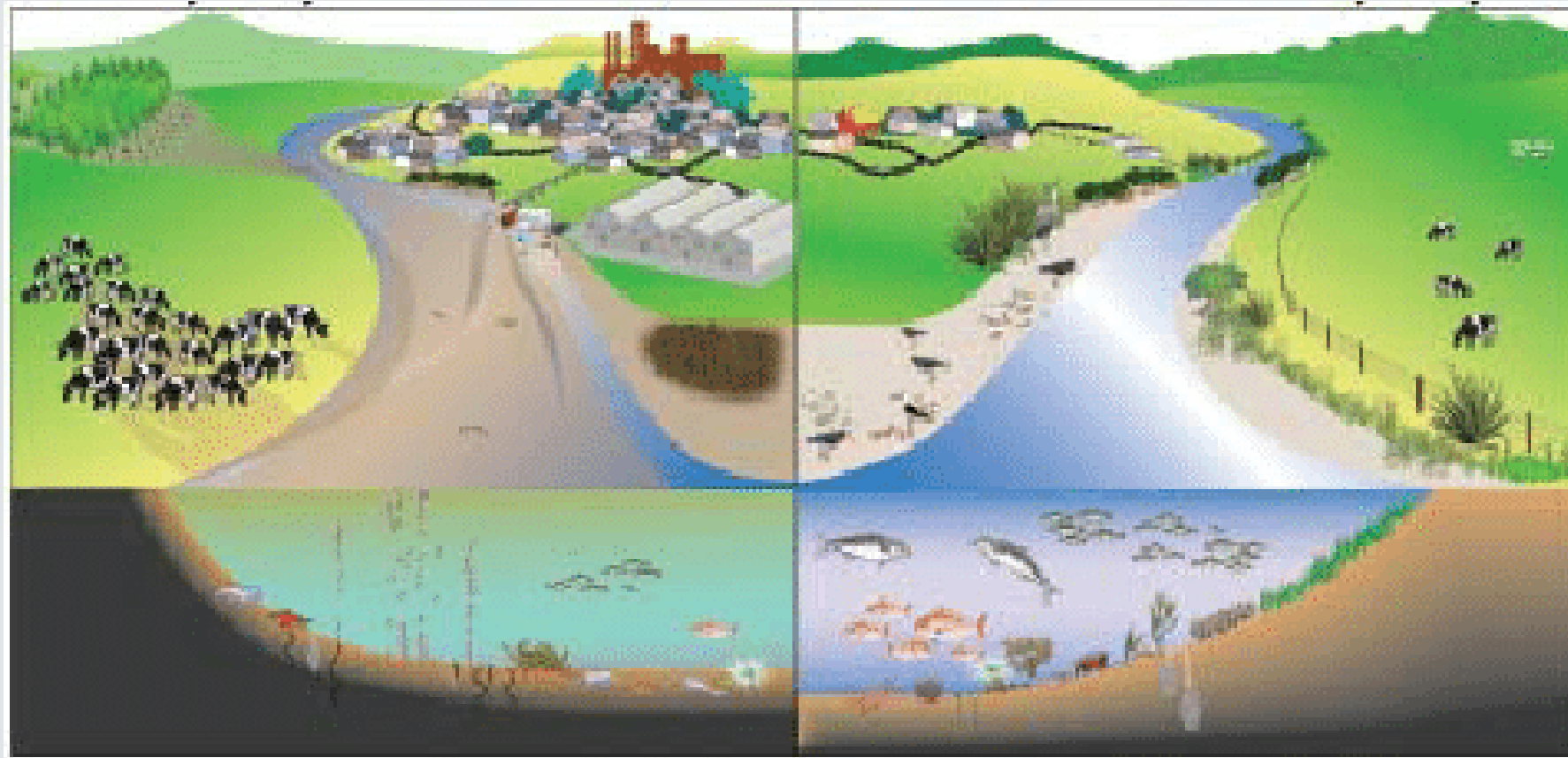


Source: Great Barrier Reef. (n.d.). [Great Barrier Reef Food Web].

<https://greatbarrierreef.com.au/information/great-barrier-reef-food-web/>

Activity 4

Your family likes to eat fish, so they went to their usual fishing spot however they noticed all the fish were missing.



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

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