



Teaching resources  
Lesson plan

# THANK YOU, FISHERS!

The role of sustainable fishing in  
protecting the Ocean

# AUSTRALIAN CURRICULUM OBJECTIVES

## YEARS 3 & 4 - STAGE 2

### English

- [AC9E3LE05 / AC9E3LE06](#)  
Plan, create, edit and publish imaginative, informative and persuasive written and multimodal texts, using visual features, appropriate form and layout, with ideas grouped in simple paragraphs, mostly correct tense, topic-specific vocabulary and correct spelling of most high-frequency and phonetically regular word

### HASS - Geography

- [AC9HS3K04](#)  
The ways First Nations Australians in different parts of Australia are interconnected with Country/Place
- [AC9HS4K05](#)  
The importance of environments, including natural vegetation and water sources, to people and animals in Australia and on another continent
- [AC9HS4K06](#)  
Sustainable use and management of renewable and non-renewable resources, including the custodial responsibility First Nations Australians have for Country/Place
- [AC9HS4S07](#)  
Present descriptions and explanations, using ideas from sources and relevant subject-specific terms

### Science

- [AC9S4U01](#) - *Kahoot Quiz on Atlantic Cod*  
Explain the roles and interactions of consumers, producers and decomposers within a habitat and how food chains represent feeding relationships
- [AC9S3I06](#)  
Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate

### Visual Arts

- [AC9AVA4E02](#) - *Case Study 2*  
Explore how First Nations Australians use visual arts to communicate their connection to and responsibility for Country/Place
- [AC9AVA4D01](#)  
Experiment with a range of ways to use visual conventions, visual arts processes and materials

### Design & Technologies

- [AC9TDE4K01](#)  
Examine design and technologies occupations and factors including sustainability that impact on the design of products, services and environments to meet community needs
- [AC9TDE4K03](#)  
Describe the ways of producing food and fibre



## YEARS 5 & 6 - STAGE 3

### English

- [AC9E5LY06 / AC9E6LY06](#)  
Plan, create, edit and publish written and multimodal texts whose purposes may be imaginative, informative and persuasive, developing ideas using visual features, text structure appropriate to the topic and purpose, text connectives, expanded noun groups, specialist and technical vocabulary, and punctuation including dialogue punctuation

### HASS - Geography

- [AC9HS5K05](#)  
The management of Australian environments, including managing severe weather events such as bushfires, floods, droughts or cyclones, and their consequences
- [AC9HS6K05](#)  
Australia's interconnections with other countries and how these change people and places
- [AC9HS6K08](#)  
Influences on consumer choices and strategies that can be used to help make informed personal consumer and financial choices

### HASS - Economics & Business

- [AC9HS5K08](#)  
Types of resources, including natural, human and capital, and how they satisfy needs and wants
- [AC9HS5S06](#)  
Propose actions or responses to issues or challenges and use criteria to assess the possible effects
- [AC9HS6S06](#)  
Propose actions or responses to issues or challenges and use criteria to assess the possible effects
- [AC9HS5S07 / AC9HS6S07](#)  
Present descriptions and explanations, drawing ideas, findings and viewpoints from sources, and using relevant terms and conventions

### Science

- [AC9S5H02 / AC9S6H02](#) - *Case Study 3*  
Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions
- [AC9S5I06 / AC9S6I06](#)  
Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate

### Visual Arts

- [AC9AVA6E02](#) - *Case Study 2*  
Explore ways that First Nations Australians use visual arts to continue and revitalise cultures
- [AC9AVA6C01](#)  
Use visual conventions, visual arts processes and materials to plan and create artworks that communicate ideas, perspectives and/or meaning

### Design & Technologies

- [AC9TDE6K01](#) - *Case Studies 1 & 3*  
Explain how people in design and technologies occupations consider competing factors including sustainability in the design of products, services and environments
- [AC9TDE6K03](#)  
Explain how and why food and fibre are produced in managed environments



# AUSTRALIAN CURRICULUM OBJECTIVES

## YEARS 7&8 (STAGE 4)

### English

- [AC9E7LY06 / AC9E8LY06](#)  
Plan, create, edit and publish written and multimodal texts, selecting subject matter, and using text structures, language features, literary devices and visual features as appropriate to convey information, ideas and opinions in ways that may be imaginative, reflective, informative, persuasive and/or analytical

### Geography

- [AC9HG7K07](#)  
The cultural connectedness of people to places and how this influences their identity, sense of belonging and perceptions of a place, in particular the cultural connectedness of First Nations Australians to Country/ Place
- [AC9HG7S05](#) - *Case Studies 1 & 3*  
Identify a strategy for action in relation to environmental, economic, social or other factors, and explain potential impacts

### Business & Economics

- [AC9HE7K01](#) - *Kahoot Quiz on Atlantic Cod*  
Why opportunity cost exists as decisions are made to allocate limited resources to meet unlimited needs and wants

### Science

- [AC9S7H01 / AC9S8H01](#) - *Kahoot Quiz on Atlantic Cod*  
Explain how new evidence or different perspectives can lead to changes in scientific knowledge
- [AC9S7H03 / AC9S8H03](#) - *Kahoot Quiz on Atlantic Cod*  
Examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations
- [AC9S7I08 / AC9S8I08](#)  
Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate

### Visual Arts

- [AC9AVA8C02](#)  
Select and manipulate visual conventions, visual arts processes and/or materials to create artworks that represent ideas, perspectives and/or meaning

### Design & Technologies

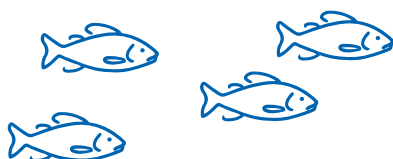
- [AC9TDE8K02](#) - *Case Studies 1 & 3*  
Analyse the impact of innovation and the development of technologies on designed solutions for global preferred futures
- [AC9TDE8K04](#)  
Analyse how food and fibre are produced in managed environments and how these can become sustainable



In this lesson plan, we will focus on real fisheries in Australia that are working to safeguard future generations of both people and fish. Activities in this lesson plan are suitable for learners aged 7+ across English, Geography, Science, Visual Arts, and Design & Technology.

## KEY TERMS

- Overfishing
- Sustainable Fishing
- Fisheries
- Bycatch
- Innovation
- Tuna
- Kuti / Pipi
- Western Rock Lobster



## KEY QUESTIONS

- What does overfishing mean?
- What impact does overfishing have?
- What is the relationship between fishing and marine ecosystems (whole ocean environment)
- How do fishers prevent bycatch (accidental entanglement with birds and marine mammals)
- What other ways might fishers ensure that they are practicing sustainable fishing?
- Is tuna fishing sustainable?
- Is kuti (pipi) fishing sustainable?
- Is rock lobster fishing sustainable?

## YOU WILL NEED

- Access to the lesson Powerpoint presentation
- Access to YouTube (videos linked)
- Printed or digital copies of Fishery Factsheets and Quizzes for one case study (pages 9-16)

## CLASS ACTIVITIES

- Learners watch two short videos to understand the importance of fishing for food and livelihoods, and the concept of 'overfishing'
- Learners discuss the concept of sustainable fishing
- Choose from one of three case studies to learn about an MSC-certified sustainable fishery in Australia
- Learners watch videos, read factsheets, and complete a quiz about their case study species



# IT ALL STARTS HERE...

## OVERFISHING AROUND THE WORLD (15 mins)

### Slide 1

Begin by asking learners “Who in the class enjoys eating fish and seafood?”  
Discuss as a class, what kinds of fish students like to eat most.

### Slide 2

Next, show learners the film clip [The most traded food in the world](#) (0:57).

### Slide 3

Around the world...

- 3.3 billion people rely on seafood for at least 20% of their animal protein intake.
- There are 39 million fishers, catching wild fish and seafood from the ocean.
- 492 million peoples’ livelihoods (jobs) are supported by small-scale fisheries.

Ask learners, ‘what could happen when so many people rely on fish and fishing to eat and for their jobs?’

### Slides 4 and 5

Introduce learners to the concept of ‘overfishing’. Show learners the film clip [Overfishing](#) (2:55) from the short film My Dad the Fisherman. Then examine the graph of Marine Fisheries Sustainability on Slide 5.

### Slide 6

Discuss as a class:

- What does overfishing mean?
- What impact does overfishing have on people’s lives and livelihoods?
- What is the relationship between fishing and marine ecosystems (whole ocean environment)

*If time allows, play the Kahoot Quiz in extension activities ‘Cod: Collapse, conservation, culture’*

## SUSTAINABLE FISHERIES IN AUSTRALIA (5-10 mins)

Introduce learners to the concept of ‘sustainable fishing’.

### Slide 7

Sustainable fishing means leaving enough fish in the ocean so that they can replenish their populations. Sustainable fishing also means protecting habitats and threatened species. By safeguarding the oceans, people who depend on fishing can maintain their livelihoods.

### Slide 8

Show students the map of MSC-certified sustainable fisheries in Australia.

Explain:

In Australia, just over half of our wild fisheries (51%) have demonstrated their commitment to fishing sustainably by joining the Marine Stewardship Council (MSC) program. This means that fisheries undergo an independent assessment of their fishing practices against the MSC standard, and then make improvements to their sustainability practices. This is like doing a very difficult school exam and using the corrections you are given to improve.

### Slide 9

Fisheries are assessed under three main areas: Sustainable fish stocks (populations), Minimising environmental impacts, and Effective fishery management.



Choose one of the following case studies from sustainable fisheries in Australia to explore with your class

### CASE STUDY 1: TUNA AUSTRALIA (20-30mins +)

Show students a short video [Teeming with Life: Eastern Tuna and Billfish Fishery](#) (1:33) about the Tuna Australia MSC-certified fishery. Next, introduce students to Tuna by asking them to read the Tuna Factsheet on page 9 and answer the questions (p10). Quiz answers are listed on page 17.

After completing the factsheet, return to the [0:50 timecode](#) of the video where a fisher is hoisting strips of coloured fabric onto a fishing line. Ask students if anyone has an idea of why the fisher might be doing this?

**Answer:** Coloured flags are used to scare away sea birds that otherwise might get tangled in the fishing line. When birds, marine mammals, and other fish species are accidentally caught by a fishing boat it is called *bycatch*. Sustainable fisheries use innovative methods, just like these bird lines, to prevent bycatch from occurring.

#### Advanced

To offer students a deeper understanding of the methods being used by Tuna fishers in Australia to prevent bycatch or fishing in marine protected areas, show them a short video [GPS Technology helps boat skippers manage tuna longline drift, research shows](#) (3:35), about technologies used on-board an Australian tuna vessel.

Discuss as a class, 'What other ways might fishers ensure that they are practicing sustainable fishing?'

Finally, if time allows, you could also show students a 30-minute student Q&A [Follow the Fish](#), with Phil Ravanello (Tuna Australia) and Grant Logue (Harley & John's Seafood). This session was filmed for National Science Week 2021 and explores the biology of tuna, how tuna are caught, and what their journey looks like from the boat to the plate.

### CASE STUDY 2: KUTI CO. & GOOLWA PIPI CO. (25-30mins)

Show students a video [Back on Country - the Kuti Co story](#) (6:29) about kuti (pipi) fishers in South Australia's Coorong region. Kuti Co is a Ngarrindjeri-owned enterprise working in partnership with Goolwa PipiCo, the largest quota holder within the MSC-certified Lakes and Coorong pipi fishery, to harvest kuti.

Next, introduce students to Kutu (pipi) by asking them to read the Kutu Factsheet on page 11 and answer the questions (p12). Quiz answers are listed on page 17.

After completing the factsheet, return to the [3:00 timecode](#) of the video and play to 3:50. Ask students 'How do Anthony and his family practice care for Sea Country?'

#### Answers may include:

- Anthony and his family put back any small fish that they catch, allowing them to grow bigger and reproduce.
- They only take as many cockles as they need for dinner (300g for a family of 5), not taking too much so that there are some left for other people, birds and animals to eat.
- They visit the Coorong as a family and teach young children how to fish, sharing stories about the land and waters so that they can visit, see changes, and look after Country in the future.
- They create art to record and share stories and knowledges about Place.

For more activities related to this fishery, explore our Saltwater Schools lesson plans [Fishing with Your Feet](#).



### CASE STUDY 3: WESTERN AUSTRALIA ROCK LOBSTER (30-40mins +)

Show students the video [A day in the life of a Brolos fisherman](#) (11:54) about the MSC-certified Geraldton Fisherman's Cooperative that fish for Western Australia Rock Lobster.

Next, introduce students to the Rock Lobster by asking them to read the Rock Lobster Factsheet on pages 13-14 and answer the questions. There is a beginner or advanced version of the quiz (pages 15 and 16). Answers are listed on pages 17-18.

After completing the factsheet, return to the [7:38 timecode](#) of the video and play to 8:10. Ask students 'What risks might lobster fishers consider when they encounter marine wildlife?'

**Answer:** There is a risk that marine wildlife (such as whales) might get tangled in the fishing ropes attached to lobster pots. When birds, marine mammals, and other fish species are accidentally caught by a fishing boat it is called *bycatch*. To prevent entanglements from occurring, Western Australia Rock Lobster fishers have developed a [Code of Practice](#) for whale migration season including limits on the size (length) of fishing ropes along the water's surface, and a condition that pots attached to long ropes must be pulled at least once every 7 days.

#### Advanced

To offer students a deeper understanding of the methods being used by Rock Lobster fishers in Western Australia to prevent bycatch, ask them to read the shorthand story [Riding the Crest of the Wave](#). This story explains how Sea Lion Excluder Devices (SLEDs) have been developed to prevent sea lions from getting their heads and necks caught in lobster pots. SLEDs are used whenever lobster pots are placed in proximity to a sea lion colony.

Discuss as a class, 'What other ways might fishers ensure that they are practicing sustainable fishing?'

Finally, if time allows, you could also show students a 30-minute student Q&A [Chemistry in the Kitchen](#), with chef and author Analiese Gregory and research scientist Simon de Lestang (Western Australian Department of Primary Industries and Regional Development). This session was filmed for National Science Week 2021 and explores the biology of lobsters, how lobsters are caught in Western Australia, and how the whole lobster can be used in cooking.





# TUNA FACTSHEET

## What is tuna? (*Thunnini*)

Tuna is a meaty fish which belongs to a subgroup of the mackerel family. Tuna can be eaten fresh or canned. Tuna loin is commonly eaten raw or seared and lightly seasoned, while canned tuna is precooked for a long time and often prepared heavily dressed.

### Classification:

Ray-finned fishes  
There are 15 different species of tuna around the world.

**Size:** Tuna is an extremely large fish. In Australia, tuna are commonly found at 1.8m in length and weigh 100kg. The biggest tuna catch to date was in Aulds Cove off Nova Scotia (Canada) in 1979. It was an Atlantic bluefin, at the record length of 3.7m and weight of 679kg. That's almost as heavy as a truck!

**Diet:** Tuna are carnivores at the top of the food chain, so it is vital to look after the whole ocean ecosystem. For a tuna to gain 1 kilo requires roughly 10 kgs of mid-size fish, 100 kilos of small fish, or 1000 kilos of small plant-eaters (such as zooplankton).

**Eaten by:** Sharks, marine mammals (e.g. orcas, dolphins), and large fish.

**Habitat:** Tuna are found in a wide range of habitats. They live in saltwater (marine) habitats and prefer warmer waters on both the east and west coasts of Australia.

**Reproduction:** Tropical skipjack can reproduce from about 2 years old and an adult female can spawn as many as 2million eggs daily, and any time of year. Once fertilised, the tiny eggs hatch within a day, floating on the ocean currents as zooplankton. Tuna in cooler waters have a longer lifecycle, for example, albacore tuna in the Indian Ocean, is usually 5-6 years old before reproducing, spawning every 2.2 days from November to January with females releasing as many as 2.6 million eggs.

## Is tuna fishing sustainable?

There is no such thing as a sustainable species of fish. Only sustainable populations of fish. Tuna fisheries can be associated with significant bycatch problems, catching and entangling seabirds, sharks and marine mammals. Different fisheries have vastly different impacts depending on how the fishing gears are used and where the tuna is fished.

Common gear types used by MSC certified tuna fisheries include pole and line, purse seine nets and longlines.

Tuna Australia members operating in the [Eastern Tuna and Billfish Fishery](#) now hold MSC certification for albacore, yellowfin and bigeye species of tuna.

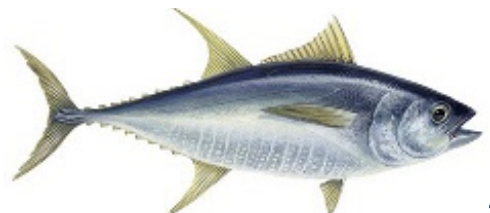
## Types of Tuna



**Skipjack:** A related species to tuna grow to a max weight of 35 kg and is commonly purchased as canned tuna.



**Albacore:** With large pectoral fins, this grows up to 60 kg and is found fresh, in cans and preserved in jars.



**Yellowfin:** With large pectoral fins, this grows up to 60 kg and is found fresh, in cans and preserved in jars.



**Bluefin:** These giant fish grow to be up to 700 kg! Despite this, they're the fastest species of tuna and can swim as fast as a car (70km per hour). Bluefin tuna is most commonly found in sashimi and sushi.



**Bigeye:** These tuna have big eyes and grow to be up to 210 kg. They swim at depths of 500 m and so have a protective layer of fat that makes them the 'white beef' of sashimi.



# TUNA QUIZ

## How well did you read?

(1) What do tuna eat \_\_\_\_\_

- a. Sharks
- b. Large fish
- c. Mid-size and small fish
- d. Seaweed

(2) True or False: Tuna can be eaten raw

\_\_\_\_\_

(3) Where do tuna live?

- a. Saltwater habitats
- b. Warm waters
- c. East and West coasts of Australia
- d. All of the above

(4) Which are the fastest species of tuna?

- a. Skipjack
- b. Bigeye
- c. Yellowfin
- d. Bluefin

(5) Which is the largest species of tuna?

- a. Bigeye
- b. Bluefin
- c. Albacore
- d. Skipjack

(6) What gear types are used to fish tuna?

- a. Pole and line
- b. Purse seine nets
- c. Longlines
- d. All of the above

(7) What is a common problem associated with tuna fishing?

\_\_\_\_\_  
\_\_\_\_\_



# FISHER PROFILE: GRACIELLA LAVELLE



## **What is your name?**

Graciella Lavelle

## **Which fishery do you work for?**

The Eastern Tuna and Billfish Fishery & Southern Bluefin Tuna

## **What are the names of your fishing boats?**

South Seas and Markarna

## **Where do you fish?**

The Eastern coastline of New South Wales, from Tasmania to the Queensland borders

## **Which species do you catch?**

Yellowfin tuna and Southern Bluefin tuna

## **Why is sustainable fishing important to you?**

Sustainable fishing is important to our family business as it secures our future and the future generations to follow, keeping our industry alive. It is important to preserve the natural ecosystem and the environment so we have a beautiful, natural world and ocean for our children and their children.

# FISHER PROFILE: HEIDI WALKER



## What is your name?

Heidi Walker

## Which fishery do you work for?

The Eastern Tuna and Billfish Fishery

## What are the names of your fishing boats?

Sharp Shooter, Assassin, Santa Lucia, Predator & Comanche

## Where do you fish?

We are based in Mooloolaba and we fish the east coast of Queensland and Northern New South Wales.

## Which species do you catch?

Bigeye tuna, Yellowfin tuna, Albacore tuna, Swordfish, Striped Marlin, Mahi Mahi

## Why is sustainable fishing important to you?

We pride ourselves on our sustainable fishery and fishing practices. It is important to us as we are looking after our fish stocks for generations to come. We are also promoting and encouraging people to make sustainable choices when purchasing fish. Therefore protecting other fisheries and supporting the Australian fishing community.



# KUTI FACTSHEET



## What is kuti? (*Plebidonax deltoides*)

Kuti, also known as the Goolwa pipi or cockle, is a small clam-like bivalve (shellfish) that has provided communities with sustenance for thousands of years.

Kuti have been a source of food for Ngarrindjeri people in South Australia for tens of thousands of years. Kuti are delicious steamed on the BBQ, smothered in butter and garlic, or tossed through spaghetti with chilli and lemon.

**Classification:** *Cardiida* - a class of bivalve

**Size:** Kuti mature at around one year of age and live from four to five years, reaching a maximum size of 8 centimetres.

**Diet:** Phytoplankton (tiny microscopic plants)

**Eaten by:** Shore birds, humans

**Habitat:** Kuti live on beaches with a lot of waves and movement, which concentrates the phytoplankton they feed on and increases oxygen in the water. Juveniles are found in the intertidal zone (between sand and water) and the adults live deeper in the subtidal zone (always underwater). They burrow in the sand to an average depth of 10 centimetres.

**Reproduction:** Kuti are broadcast spawners, which means that the clams release sperm or eggs into the water, which may meet up and become fertilised eggs. Spawning takes place over a long period of time, peaking in the spring. The fertilised eggs become larvae, and drift in the coastal currents for four to eight weeks, often travelling large distances.

## Traditional harvesting

Kuti have always been an important source of protein for Ngarrindjeri people. Kuti were cooked in mud ovens, or on the hot coals of a fire and eaten on the beach. Ancient shell middens from these feasts can be found all around the Coorong and Goolwa beaches, showing that people have been fishing and eating kuti at those sites for thousands of years.

After British colonisation of South Australia, Ngarrindjeri people were taken off their lands and were unable to access their fishing grounds. Famous Ngarrindjeri author and inventor David Unaipon (who is featured on the Australian \$50 note) repeatedly asked for Aboriginal people to be granted a fishing license in 1913, but this was not granted.



## Is kuti fishing sustainable?

Kuti have been sustainably harvested from the Coorong, South Australia, by the Ngarrindjeri people for many hundreds of generations.

After the colonisation of South Australia, kuti were fished heavily, primarily for use as a bait fish. Since the 1990s, the popularity of kuti as a delicacy for eating at home and in restaurants has increased dramatically.

By 2008, kuti catches had begun to decrease and in 2009 the fishing industry collapsed. More than 95% of the catch were undersized juveniles. The Government reduced commercial fishing quotas from 600 to 300 tonnes per year, and fines were given to recreational fishers who exceeded bag limits.

Over time, kuti stocks (populations) have recovered and strict quotas are now in place for commercial fishers.

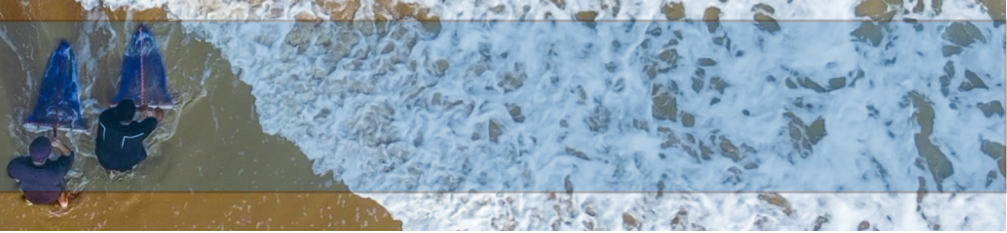
In 2020, a partnership was formed between the Indigenous enterprise Kuti Co. and MSC-certified fishery Goolwa Pipi Co. Kuti are collected sustainably by these fishers using hand rakes and a traditional technique known as the 'pipi shuffle'. This is a low-impact method of fishing, which allows fishers to keep watch over the health and populations of the kuti over time.

Read the story: [How this South Australian fishery looks to centuries-old Indigenous practices to fight overfishing](#)

## Markets

Each year, approximately 450 tonnes of kuti are processed and sold, primarily to local restaurants in South Australia, as well as expanding to overseas markets.





## How well did you read?

(1) What are some other names for Kuti?

- a. Goolwa Pipi
- b. Cockle
- c. Clam
- d. All of the above

(2) How long does it take for a Kuti to reach maturity (become an adult)?

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(3) Kuti reproduce through

- a. Photosynthesis
- b. Internal fertilisation
- c. Broadcast spawning
- d. Asexual reproduction

(4) Kuti have always been an important source of \_\_\_\_\_ for Ngarrindjeri people

- a. Protein
- b. Carbohydrates
- c. Salt
- d. Fat

(5) How are kuti cooked?

- a. Steamed on the BBQ, with butter and garlic
- b. Cooked with spaghetti, chilli and lemon
- c. In the hot coals of a fire
- d. All of the above

(6) In 2020, a sustainable fishing partnership formed between which two groups?

- a. Recreational fishers and Goolwa Pipi Co.
- b. Kuti Co. and recreational fishers
- c. Bait fishers and British colonists
- d. Kuti Co. and Goolwa Pipi Co.

(7) Why is it important for pipis to live in the surf with lots of moving water

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# FISHER PROFILE: DARREN HOARD



## **What is your name?**

Darren Hoard

## **Which fishery do you work for?**

Goolwa Pipis

## **Where do you fish?**

Coorong, South Australia

## **Which species do you catch?**

Goolwa Pipis (donax deltoides)

## **Why is sustainable fishing important to you?**

As a fisherman, I understand the significance of sustainable fishing practices for the environment and our livelihoods. When the seas get rough, our harvest crews must get out into the ocean, facing the immense power of the waves crashing around us. During these challenging moments, I am reminded of the importance of protecting our ocean's delicate ecosystems. Sustainable fishing ensures the long-term health and abundance of fish populations, allowing them to thrive and sustain our fishing industry for generations.



# FISHER PROFILE: STEVIE SUMNER



## **What is your name?**

Stevie Sumner

## **Which fishery do you work for?**

Goolwa Pipis

## **Where do you fish?**

Coorong, South Australia

## **Which species do you catch?**

Goolwa Pipis (*donax deltoides*)

## **Why is sustainable fishing important to you?**

As a Ngarrindjeri man, sustainable fishing embodies my deep connection to the land and sea that has sustained my people for thousands of years. By practising sustainable fishing, we can preserve our country's resources and pass down traditions and knowledge to future generations.





# FISHER PROFILE: CLINTON WALKER



## **What is your name?**

Clinton Walker

## **Which fishery do you work for?**

Goolwa Pipis

## **Where do you fish?**

Coorong, South Australia

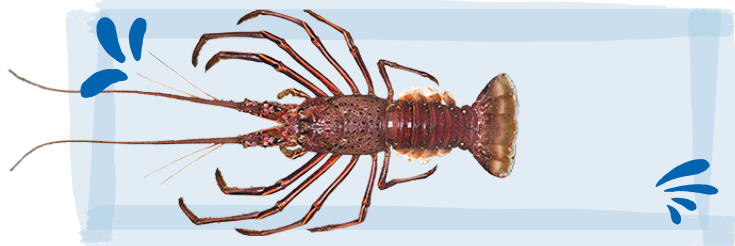
## **Which species do you catch?**

Goolwa Pipis (donax deltoides)

## **Why is sustainable fishing important to you?**

Sustainable fishing holds profound significance for me, as it reinforces the values instilled in me since childhood. Being back harvesting on Ngarrindjeri country takes me back to being a kid when our Elders taught us only to take what we need from the land and to honour and respect our country. Sustainable fishing aligns perfectly with these teachings.

# WESTERN AUSTRALIA ROCK LOBSTER FACTSHEET



The Western Rock Lobster industry is an iconic fishery that is based along Western Australia's coast between Shark Bay and Cape Leeuwin. It was the world's first fishery to be certified as sustainable by the Marine Stewardship Council (MSC) in 2000. Western Australia rock lobster is the most valuable single-species fishery in Australia. Exported to China and sold domestically in Australia.

## Western Rock Lobster (*Panulirus Cygnus*)

**Classification:** Decapod family

**Size:** 70-90mm at maturity (up to 200mm at maximum), weighing up to 5kg

**Diet:** Coralline algae, detritus (dead and dying marine matter), molluscs and crustaceans

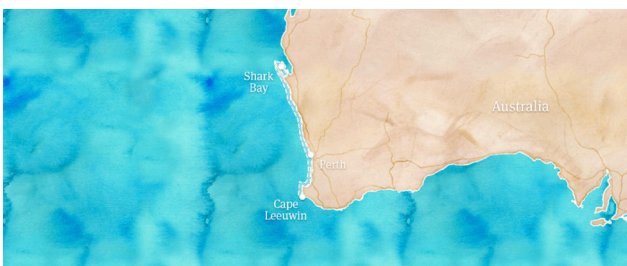
**Eaten by:** Large fish species and octopus. Lobsters can regrow legs and antennae lost as a result of skirmishes with predators.

**Habitat:** Juveniles live in shallow inshore reefs (up to 40m depth) and adults live in deep water habitats including coral reefs (up to 80m depth).

**Markings:** A Western Rock Lobster is identifiable by white dots along each side of the tail and orange strips along the legs.

## Where do Rock Lobsters live?

Western Rock Lobsters are a temperate species, found on the continental shelf off the Southern coast of Western Australia.



## The Fishery

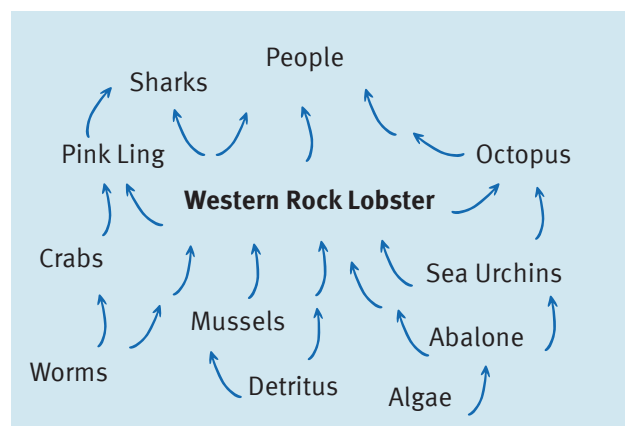
The Western Australia Rock Lobster Fishery is made up of around 250 commercial fishing boats, which operate under a quota management system. This means that commercial fishers have an allocated number of lobsters that they are allowed to catch during the lobster fishing season, which runs all year round.

## Family & lifecycle

The Western Rock Lobster typically live for 15 to 20 years. They mate in Winter and Spring, after which females carry eggs on the fine hairs beneath the tail. The eggs hatch in 4 to 8 weeks, releasing tiny larvae which drift offshore and grow in a series of moults. A lucky few will be carried close enough to the onshore reefs to settle. Many however will not make it, or will be eaten by predators along the way. The juvenile lives for 3 to 4 years on inshore reefs, after which they will moult their shells and turn a creamy white or pink colour, a colour which they will keep for a few months as they migrate into deeper waters. Lobsters trek in large groups in the night, until they resettle and return to their normal red colour.

See this [WA Rock Lobster Lifecycle poster](#) from *Marine Waters* for more detail.

## Western Rock Lobster food chain





## Is lobster fishing sustainable?

The Western Australia Rock Lobster is caught using **baited pots**. These are fitted with special Sea Lion Excluder Devices (SLEDs) which block access to juvenile sea lions while still allowing lobsters to be caught.



Hauling in a rock lobster pot

There are strict controls in place such as a minimum size requirement for lobsters caught and a **ban on catching breeding females**.

Scientific data on the Western Australian lobsters has been recorded since the 1960s, and migrating lobsters are tracked through tagging programs. This enables scientists to predict catches accurately and measure the growth, migration and mortality of lobsters. This **scientific data** helps fishers to ensure that they maintain a sustainable population of lobsters, for today and for the future.

The Western Australia Rock Lobster Fishery was the **first in the world** to achieve MSC certification, demonstrating its exceptional sustainability.

You can also read [how science data is used](#) to monitor, assess and manage the WA Rock Lobster fishery.

## Markets

The Western Rock Lobster industry contributes \$420 million and 1,850 jobs (direct and indirect) to the state of Western Australia. This crustacean is highly prized, and can sell for over \$100 per kilogram. It is popularly eaten grilled with garlic butter, barbecued with lemon or steamed.

Rock lobster fishing is also a popular recreational activity in Western Australia. Fishers require a license and must follow strict size requirements and catch limits of 8 rock lobsters per licensed

### The MSC Fisheries Standard

The MSC Fisheries Standard is designed to assess if a fishery is well-managed and sustainable. To meet this standard, fisheries must demonstrate that they meet three principles:

#### 1. Sustainable fish stocks

The fishing activity must be at a level which ensures that it can continue indefinitely.

#### 2. Minimising environmental impact

Fishing operations should allow for the maintenance and diversity of the ecosystem.

#### 3. Effective management

The fishery must comply with relevant national and international laws and have a management system that is responsive to changing circumstances.

Today, over 15% of the global fishing catch worldwide is MSC certified

Credits - Lobster Management profile by Department of Primary Industries and Resources



# WA ROCK LOBSTER QUIZ (BEGINNER)

## How well did you read?

- (1) Appearance: The Western Rock Lobster is identifiable by \_\_\_\_\_
- A black stripe on it's head
  - Blue-coloured eyes
  - White dots along each side of the tail and orange strips along the legs
  - A yellow belly
- (2) Habitat and Distribution: Rock Lobsters live in \_\_\_\_\_
- Mangroves
  - Inshore and coral reefs
  - Estuaries
  - Seagrass meadows
- (3) Life cycle: When a juvenile lobster moults their shell they turn a \_\_\_\_\_ or \_\_\_\_\_ colour
- (4) Life cycle: Lobsters travel in groups during the
- Day
  - Night
- (5) Food web: \_\_\_\_\_ of Rock Lobsters include sharks and octopuses.
- Parents
  - Prey
  - Predators
  - Producers
- (6) Fishing method: Rock Lobsters are caught by \_\_\_\_\_.
- Purse Seining
  - Long lining
  - Baited pots
  - Bottom Trawling
- (7) Fishery Management: Scientific data is used by lobster fisheries to \_\_\_\_\_
- Track lobster migrations
  - Predict and measure lobster catches
  - Maintain a sustainable lobster population
  - All of the above
- (8) How many jobs does the Western Rock Lobster industry create in Western Australia?
- 420 jobs
  - 1,020 jobs
  - 185 jobs
  - 1,850 jobs





# WA ROCK LOBSTER QUIZ (ADVANCED)

## How well did you read?

- (1) What is the Scientific name for the WA Rock Lobster?
- (2) What family of marine creatures does the WA Rock Lobster belong to?
- (3) How fast to WA Rock Lobsters grow, and how long do they live for?
- (4) Where in Australia is the WA Rock Lobster found?
- (5) How does the WA Rock Lobster reproduce?
- (6) What does the WA Rock Lobster eat?
- (7) What fishing method is used to catch the WA Rock Lobster?
- (8) How do fishers and scientists manage the sustainability of WA Rock Lobster populations?
- (9) Why is the WA Rock Lobster a special fishery for the Marine Stewardship Council (MSC)?
- (10) Where is the WA Rock Lobster mainly sold?

# QUIZ ANSWERS

## Tuna Quiz - Answers

- (1) C
- (2) True
- (3) D
- (4) D
- (5) B
- (6) D
- (7) Bycatch - Catching and entangling seabirds, sharks and marine mammals.

## Kuti Quiz - Answers

- (1) D
- (2) about One year
- (3) C
- (4) A
- (5) D
- (6) D
- (7) Water movements concentrates the phytoplankton that kuti eat, and increases oxygen in the water.

## Lobster Quiz - Beginner Answers

- (1) C
- (2) B
- (3) White/Cream or Pink
- (4) Night
- (5) C
- (6) C
- (7) D
- (8) D

## Lobster Quiz - Advanced Answers

- (1) What is the Scientific name for the WA Rock Lobster? [Panulirus Cygnus](#)
- (2) What family of marine creatures does the WA Rock Lobster belong to? [Decapod](#)
- (3) How fast do WA Rock Lobsters grow, and how long do they live for? [Decapod juveniles for 3-4 years, and then they moult and become adults. They live for 15-20 years.](#)
- (4) Where in Australia is the WA Rock Lobster found? [The continental shelf off the Southern Coast of Western Australia](#)
- (5) How does the WA Rock Lobster reproduce? [They mate in Winter and Spring, after which females carry eggs on the fine hairs beneath the tail. The eggs hatch in 4 to 8 weeks, releasing tiny larvae which drift offshore and grow in a series of moults.](#)





(6) What does the WA Rock Lobster eat? [Mussels, Sea Urchins, Abalone, Worms, Detritus](#)

(7) What fishing method is used to catch the WA Rock Lobster? [Baited pots and traps](#)

(8) How do fishers and scientists manage the sustainability of WA Rock Lobster populations? [Minimum size requirements for lobsters caught, a ban on catching breeding females, using scientific data to track lobster growth, migration and mortality.](#)

(9) Why is the WA Rock Lobster a special fishery for the Marine Stewardship Council (MSC)? [It was the first fishery in the world to achieve the MSC certification for sustainable fishing.](#)

(10) What is the main commercial market for the WA Rock Lobster? [95% of the commercial WA Rock Lobster caught is sold to China](#)

## Extension Activities

### 1. Kahoot Quiz - ADVANCED

To find out more about the consequences of overfishing, play the Kahoot Quiz [Cod: collapse. conservation. culture](#) (Game Pin: 009684789) which tells the story of the cod fishery in Newfoundland (Canada), which collapsed in the 1980s after many years of overfishing.

Follow the Kahoot quiz with one or more of these discussion questions, which learners can discuss in a group or as a class.

- Why was Giovanni Caboto's visit to Newfoundland important for the Grand Banks?
- Why do you think the Grand Banks fishery collapsed?
- What were the consequences of the Grand Banks fishery collapsing?

### 2. Fishing with your feet

Expand your understanding of sustainable fishing and Care for Country with the Saltwater Schools lesson plans [Fishing with Your Feet](#).

### 3. Cooking with sustainable seafood

Explore our range of sustainable seafood recipes

- [Tuna recipes](#)
- [Kuti recipes](#)
- [Western Rock Lobster recipes](#)



# FISHER PROFILE: ROBBIE MERLINO



## What is your name?

Robbie Merlino

## Which fishery do you work for?

Western Rock Lobster

## What is the name of your fishing boat?

San Bartolomeo 3

## Where do you fish?

Fremantle, Western Australia

## Which species do you catch?

Western Rock Lobster

## Why is sustainable fishing important to you?

Sustainable fishing is incredibly important to me because crayfishing is not just a job, but a way of life that I hold dear to my heart. For the past 50 years, I have dedicated myself to this industry, and it has provided me with not only a comfortable living but also a sense of fulfillment and joy.





# FISHER PROFILE: JUSTIN PIRROTTINA



## **What is your name?**

Justin Pirrottina

## **Which fishery do you work for?**

Western rock lobster

## **What is the name of your fishing boat?**

Apparition

## **Where do you fish?**

Abrolhos Islands, Western Australia

## **Which species do you catch?**

Western rock lobster

## **Why is sustainable fishing important to you?**

Sustainable fishing is important to me as a western rock lobster fisher, as it directly impacts my ability to provide for my family both now and in the future. By responsibly managing fish stocks, we can ensure their abundance and availability for years to come. It is our duty to maintain a harmonious balance with nature, preserving the health of our marine ecosystems, and recognising that we have a social responsibility to carefully consider our extraction from the ocean.

