

The Oyster Gardener

Geography (Secondary, 7-10)



About this film



The Oyster Gardener

Can a functionally extinct reef system be brought back to life? Jolie, a year 12 student and aspiring marine biologist, joins forces with her community to bring back the lost oyster reefs of the Noosa River.

The Oyster Gardener is a short film that follows Jolie on a journey of discovery to see if restoring biodiversity and reversing the impacts of climate change in her local river system is possible. This year, she's part of a specifically-designed curriculum program that has been engaging young people in this ambitious local restoration project through real-world learning and citizen science.

As the journey unfolds, we learn that parallel to the story of the oyster reef, Jolie is going through a life transition of her own. She is finishing high-school and preparing to leave home for the first time. Grappling with so many uncertainties, yet seeking moments of joy, awe and curiosity wherever she can, we watch as Jolie navigates the unknown, while finding her voice and her purpose.



About this unit

Essential question:

How can water environments be managed sustainably to preserve their economic, cultural, spiritual, and aesthetic value?

Key vocabulary:

waterways

restoration

oysters

spawning

ecosystem

conservation

deterioration

nature-based solutions

oyster gardening

Learning intention:

Students will learn about the importance of water environments and ways to maintain them in sustainable ways.

Curriculum information:

The activities in this unit address the following outcomes from the Geography 7-10 curriculum as outlined in the Australian Curriculum v9, and the United Nations' Sustainable Development Goals.

Years 7-8 activities:	AC9HG7K01, AC9HG7K02, AC9HG7K03
Years 9-10 activities:	AC9HG9K02, AC9HG9K04, AC9HG10K01, AC9HG10K04

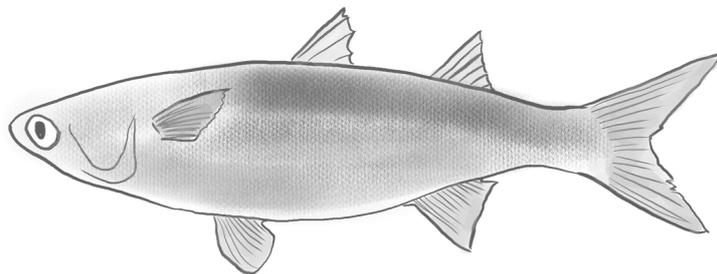
Sustainable Development Goals:	
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Before watching

Activate prior knowledge

In this activity, students will activate prior knowledge about human influences on environments, before exploring challenges to sustainable management of places.

- Students should brainstorm how humans impact natural water environments. Students should consider both positive and negative impacts. Students may draw upon general ideas or specific examples on a global, national, regional, or local scale.
- Students then use Google Earth to locate the Noosa River. Students should describe the relative location of the river and its flow direction, main tributaries and lakes, and any human-constructed features surrounding it, for example, housing estates, roads, or parks.
- As a class, discuss how the river might be used by local people for economic, cultural, spiritual, or recreational purposes.
- Predict what challenges these uses may create in sustainably managing the river ecosystem and broader river region.



After watching

Here are some activities to take your students' learning from the film further.

Years 7-8 activities:	
Curriculum alignment:	AC9HG7K01, AC9HG7K02, AC9HG7K03

Activity 1: The real value of water

Rivers provide a range of values to both people and places. They act to physically connect places, may have spiritual and cultural significance, or provide seasonal recreational outlets for tourists and locals. Major cities and urban developments are often located along rivers and major waterways for historical trade purposes, agricultural uses, and aesthetic value. Different people value rivers in different ways and their mixed use often means there is conflict in how to sustainably manage them. In the film, Jolie displays her environmental and emotional connection to the Noosa River and this leads her to engage in an ecosystem restoration project.

In this task, students will explore the varied values associated with river systems and conduct primary research to identify peer connections to local waterways.

- Students should create a photo essay (of at least 5 photos or images) to illustrate the varied values rivers provide to people and places. Each photo should be accompanied by a 2-3 sentence explanation of that value.
- Students should then write a reflection identifying the personal value they place on local river systems. These values may be connected to memories, travel, environmental importance, or cultural significance.
- Students should then research one local waterway of value and explore what is currently being done to ensure the sustainable future of this resource. Students will write a short 2-3 paragraph reflection on their findings and suggest what more could be done to preserve this river of value.

Support:

Provided students with a list of how rivers can be valued by people and places. E.g. cultural significance, spiritual significance, economic significance, or recreational significance. Students could reflect on their own personal connection to rivers through verbal conversations about their experiences interacting with local waterways through school, sports, holidays, or churches.



Extension:

In the film, Jolie expressed her connection to the Noosa River through memories of family trips and recreational activities. Research a famous river in a country other than Australia, for example, the Ganges River in India.

- Using the SHEEPT factors (social, historical, economic, environmental, and technological), outline the way the river is used and valued by communities.
- Note how the river is impacted (positively and negatively) by human activity.
- Research national or local scale management strategy for reducing negative human impacts on the river. For example, reducing water pollution or conservation of local species.
- Compare the uses, value, and management of this river with the Noosa River. Is there anything that can be learnt or applied to the management of the Noosa River? Or, could the strategies being undertaken in Noosa be applied to the international example? What limitations may conservationists face when planning or carrying out management strategies in this place (HINT: consider the SHEEPT factors).

Activity 2: Forming opinions

The value placed on a river system can have a strong impact on the way in which that waterway is managed. In this task, one side of the classroom should be labeled as “strongly agree” and the other should be labeled as “strongly disagree”. Students will read a series of statements and should place themselves along the continuum between both sides of the room based on their own opinions.

Statements to be presented to students:

- *All rivers have some value.*
- *Rivers can have cultural and spiritual meaning to people.*
- *The history of the river and its uses should be considered when planning management strategies.*
- *The management of the Noosa River shown in the video is environmentally sustainable.*
- *The management of the Noosa River shown in the video is economically sustainable.*
- *More schools should be providing students with local, action-based subject choices.*

Students should respond to the following prompt or use the prompt as a basis to form a two-team debate.

- *“Sustainable river management is more important now than ever before.”*



Support:

Students may be provided with the list of statements listed prior to the class to consider their opinions prior to participating in the activity. Students may be supported in the reflection by being provided with some thinking questions such as:

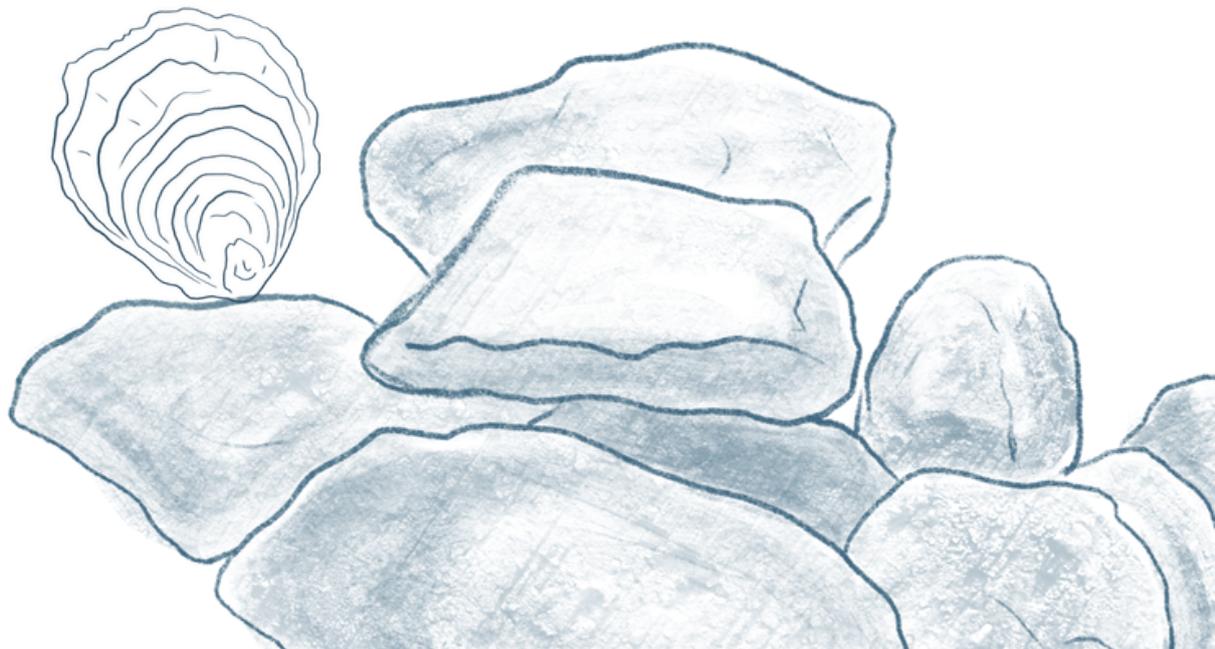
- How did we use rivers in the past?
- How do we use rivers now?
- Why do we value rivers?



Extension:

Students may consider the following prompt and conduct research which they can present to the class or in small groups:

Noosa Heads is a very affluent area. How might the location of a river, the local socio-economic conditions, and local values impact the way a waterway is managed?



Years 9-10 activities:

Curriculum alignment: AC9HG9K02, AC9HG9K04, AC9HG10K01, AC9HG10K04

Activity 3: Human influences on environments

In this task, students will explore ways humans cause environmental changes and how these changes affect both the environment and the ongoing sustainable management of places.

- Students should list the positive and negative human-induced changes to the Noosa River over time discussed in the film using the table below.

Positive changes to the Noosa River system as a result of human activity	Negative changes to the Noosa River system as a result of human activity

- For one positive and one negative change to the river system, students should consider why that change occurred. Students should then discuss as a class if these changes could have been prevented with earlier management, regulation, or education.
- Students will create a flow diagram that highlights the process the Oyster Gardening group has undertaken to regenerate the local river ecosystem.
- Students should then consider which negative changes (as listed in the table above) will be counteracted or managed as a result of the oyster population rehabilitation.

Support:

Students may need to be provided with a transcript of the video to better



understand and break down the processes undertaken to rehabilitate the environment. Students may be provided with a flow diagram template with prompts to fill in to scaffold their thinking.

Extension:

The main focus of the video was on how community members have worked to regenerate the Noosa River ecosystem. What other issues may the Noosa River face in the future? As a result, what other management systems need to be put in place to ensure the long-term sustainability of this waterway? Students could consider pollution, population growth, climate change, or invasive species introduction.

Activity 4: Action through education

Jolie felt a strong sense of connection to her local environment and was inspired by her senior school subject selection choices to engage further in community action. In this activity, students will design a new subject for their school which aims to engage students in a similar local environmental regeneration project and educate them about sustainable management of resources.

- Students should research a local waterway near the school which is currently in need of regeneration as a result of human actions.
- Students should design a subject for their school that educates students about broader river management and value, as well as engages students in real action and sustainable management practices.
- Students should write a proposal to their principal including the following ideas:
 - The name of the subject
 - The year level it is suitable for
 - The importance of learning about the human-induced environmental changes in the local environment
 - The various values (considering SHEEPT factors) placed on the local waterway
 - The current issues faced by the waterway of focus
 - A list of at least 5 things that students would study in the classroom
 - A list of at least 3 ways students would engage in real-world change through joining existing action groups or developing awareness
 - At least one way this subject may lead to future tertiary pathways or career opportunities.



Support:

Instead of designing a subject from scratch, students may use the marine environmental science subject taken by Jolie and consider how they may adapt it to their own local school and environment. For example, it may need to become river or lake-based rather than marine or students may engage in plantings rather than oyster spawning and distribution.

Extension:

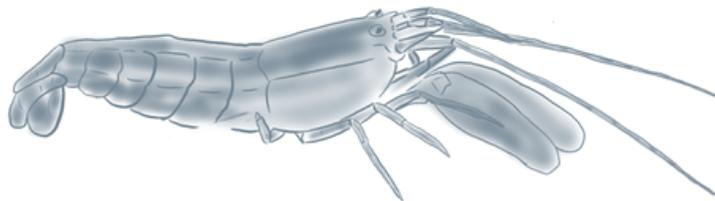


Students may design an assessment as part of their proposal as a way of measuring the success of student engagement in education and real-world action on the short or long-term regeneration or management of the local environment in focus. Students may consider surveys, before and after photos (as per the video), or student uptake numbers in their assessment design.

Conclusion

Ask students to respond to the essential question posed at the beginning of the lesson.

Ask if they still have any questions about the content presented in the film. Discuss and answer these questions as a class.



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