

Nudibranchs, colours of life.

Lesson Map: [Click here to access the map](#)

Engage

Nudibranchs appearance and signals in their bodies

- ➔ Click on the lesson StoryMap link above to commence the lesson.
- ? What can you tell or infer from Nudibranchs colouration? [*Poison, danger, beauty, answers will vary*].

Explore

How can we use nudibranchs to track environmental changes?

- ➔ Read the sections: Introduction and Ecology – Indicators. Make notes if necessary.
- ? Which are key factors of nudibranchs that make them good environmental indicators? [*Sensitivity to environmental changes, short lifespan, and rapid reproduction rates*].
- ? Discuss how data of presence or absence of determined Nudibranch species could be useful for tracking environmental changes or pressures. [*Presence of new species or absence of commonly seen species in the past can indicate changes in environmental conditions such as: sea temperature, salinity, contamination levels, acidity, among others*].

Explain

Medicinal discoveries in sea slugs

- ➔ Read the sections: ‘Applications in medicine’ and ‘Notable species’ and make notes if necessary. Be sure to read all the links attached in each description for obtaining more information.
- ? Why do nudibranchs divide their bodies? [*Mainly to avoid parasitic infections expansions*].

Download student worksheet [here](#).

Time
25 minutes

Activity

Explore potential of Nudibranchs as indicators of marine ecosystems health.

Learning Outcome

Students will be able to:

- Explain what a nudibranch is.
- Understand the insights they can provide us about the ecology and environmental status of an ecosystem.
- Explore further potential uses that can be useful for humanity in terms of medicine, ecology, and social partnerships.

ACARA Curriculum Link

Year 7 Science – Biological sciences
[ACSSU112](#) | [ACSIS169](#) |

Year 7 Science - Nature and development of science
[ACSHE120](#)

Year 8 Science – Biological Sciences
[ACSSU150](#)

Year 8 Science – Nature and development of science
[ACSHE134](#) | [ACSHE135](#)

- ? Why is *Glauculus Atlanticus* even more poisonous than Portuguese man o'war?
[As their diet is based on Portuguese man o'war and they are immune to its venom and nematocysts, they can bioaccumulate and concentrate the poisonous effect in their bodies].
- ? What is kleptoplasty? Which organisms can do this? Why this is useful?
*[Kleptoplasty is to retain chloroplasts from the algae they consume and incorporate them into their own cells.
The Leaf Sheep - *Costasiella kuroshimae* can perform it.
This allows them to perform photosynthesis.]*
- ? How many countries have the presence of *Costasiella kuroshimae*? Which ones? *[4 countries: Philippines, Japan, Indonesia, and Papua New Guinea]*

Extend

How is vegetation related to abiotic factors like carbon dioxide?

- In the section 'Notable Projects' click on the hyperlink in the word **platform**. This will take you to the Australian Citizen Science Association webpage where you can see all data collections of nudibranchs. Be sure that the data tab is selected.
- ? In the left pane named Filters, scroll down until you find Species name filter. Which is the most recorded species on the survey?
*[*Austreaolis ornata*]*
- ? What is Citizen Science? Further discuss why this is useful and important
[involvement of non-professional individuals, often members of the public (citizens), in scientific research activities]

Next Steps:

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Learn more, or request a school account at

<http://esriaustralia.com.au/education>

Acknowledgements:

This lesson map uses data sourced from an Esri GeoInquiry.

Accompanying lesson material has been amended to align with the Australian National Curriculum.

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au