

Classroom Guide

LONGSPINED SEA URCHIN



BACKGROUND

The longspined sea urchin (*Centrostephanus rodgersii*) has been steadily encroaching into Tasmanian waters since at least the late 1970s. This species moves on warming currents, and the increasing temperature of our oceans has allowed this urchin to establish in ever-increasing numbers. This 'range-shifting' behaviour is putting our rocky reef habitats at risk, as the urchins graze their way across the ocean floor, creating expansive barrens and destroying important habitat. This negatively impacts kelp beds and reef-dependent species such as abalone, rock lobster and fish, which have important commercial, recreational, and cultural value.

A full summary of the issue can be found at:
nrmsouth.org.au/project/long-spined-sea-urchins-in-tasmania

EMERGING TECHNOLOGIES AND RESPONSES

Commercial harvesting of the longspined sea urchin is currently the most effective management strategy, with priority areas that have high catch rates being targeted. Alongside this, stakeholders are working to increase national and international consumption of the urchin, as sea urchin roe is considered a delicacy, particularly in Asian markets such as Japan. Pilot programs for 'take-all harvests' are being explored, which involves a complete removal of all size classes of the urchin to prevent large-scale urchin barren formation. As take-all harvests are not currently economically feasible for commercial harvesters, this is supported by State Government subsidies. Stakeholders are working to increase recreational fishing for longspined sea urchins, with potential collaboration between dive clubs and volunteers to target areas that are not being harvested by commercial fishers.

Significant effort is being put towards ongoing reef monitoring, modelling and marine spatial planning to better understand urchin populations and movements. There have also been management actions targeted at enhancing natural predation by Southern Rock Lobsters (*Jasus edwardsii*). This has involved zoning, reducing bag limits, increasing size limits and mandatory reporting of catches. Translocation programs have previously been trialled, moving 30,000 lobsters per year from 2018 to 2022 with the hopes that increasing lobster biomass will reduce the risk of urchin barrens. Although lobsters are natural predators of the longspined sea urchin, their impact on controlling the population is widely misunderstood. Recent research highlighted that southern rock lobsters have a strong preference for native urchins, abalone and snails, compared to longspined sea urchins. This indicates that their effectiveness in reducing grazing pressure and preventing the formation of barrens may be less than previously thought.

Embracing the circular economy, research is being undertaken to investigate ways in which longspined sea urchin waste can be utilised. As the roe only accounts for ~9% of the animal's weight, once the roe has been harvested, a significant amount of waste remains. Work is being undertaken to identify more productive and profitable uses of the waste, including composts, soil conditioners and mulches.

ACTIVITIES

- 1. Urchin unchecked – Impact breakdown:**
Split into groups to discuss the impacts if longspined sea urchins were left unchecked, including environmental impacts; economic impacts and sociocultural impacts. If you need more groups, think about impacts on threatened species and ecological communities, and food harvesting and diet. The public is aware of the impacts of the longspined sea urchin and knows what to do should they encounter one.
- 2. Urchin or out?**
List potential management strategies to control longspined sea urchins in Tasmania. Outline the advantages and disadvantages of each option. This could also be run as a debate.
- 3. Biodiversity Beneath the Waves:**
Discuss the importance of biodiversity in our oceans, specifically, on Tasmania's rocky reefs.
- 4. Deep Dive - Expert Insights on Urchin Issues:**
Invite a marine biologist or local expert to speak about the issue in detail. Visit our website for more information.
- 5. Urchin Awareness – Campaign Creation:**
Split into groups and plan a campaign (e.g. posters, videos, social media) that will educate the community of the issues associated with the longspined sea urchin. Discuss ways in which you could distribute the campaign.
- 6. Stakeholder Showdown – Role-playing Perspectives:**
Get students to 'role-play' as different stakeholders (fishers, local business owners, sea urchin harvesters, conservationists) and discuss different management options and how they impact each stakeholder.
- 7. Ocean to Plate – Culinary Solutions:**
Use urchin roe in a recipe in a Food and Fibre class. Some ideas can be found at gottalovetassieseafood.com.au

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