SEA LIFE

This resource aligns with NSW Stage 4 outcomes in Science & Technology (Living World and Working Scientifically) and Geography, with a focus on sustainability and human impact on environments

Cauliflower Soft Coral

TEACHER SLIDE

Curriculum Links (Stage 4 – NSW):
SC4-14LW, SC4-15LW, SC4-16LW, SC4-5WS, SC4-6WS, SC4-7WS
GE4-1, GE4-2, GE4-3

Cross-curriculum priority: Sustainability

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SEA LIFE

This resource aligns with NSW Stage 2 outcomes in Science & Technology (Living World and Working Scientifically) and Geography, with a focus on sustainability and human impact on environments

Cauliflower Soft Coral

Cauliflower Soft Coral (Dendronephthya australis) is a soft coral in the octocoral family

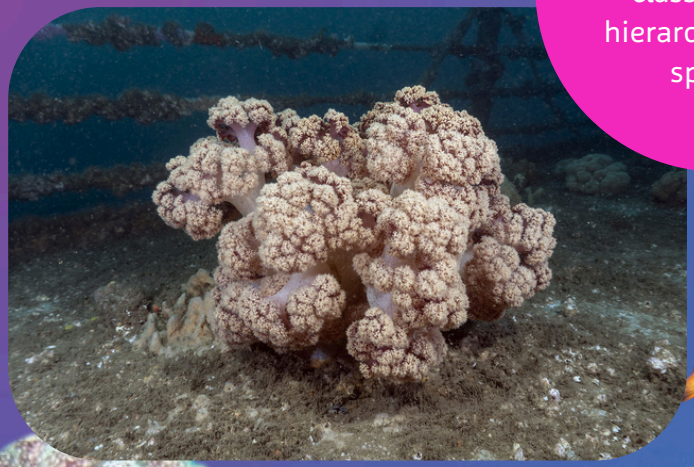
What is cauliflower soft coral?

Dendronephthya australis is an endangered soft coral species belonging to the phylum Cnidaria.

It is an octocoral that forms branching colonies and does not produce a hard calcium carbonate skeleton.

It is endemic to eastern Australia and occurs primarily in estuarine environments such as Sydney Harbour and Port Stephens.

Activity:
In pairs, construct a classification hierarchy for this species



The Conservation Project

The cauliflower coral project uses a combination of:

- Ex-situ propagation (aquarium cultivation)
- In-situ restoration (reintroduction into natural habitats)

Over 200 coral cuttings have been transplanted into the wild.

This approach allows scientists to control conditions and increase survival rates.

Activity:
In two paragraphs, evaluate the effectiveness of aquarium-based conservation.

Why is this coral important?

This species is a key habitat-forming organism that supports biodiversity.

It provides structural habitat in soft-sediment environments and supports species such as:

- endangered White's seahorse
- juvenile fish populations

Loss of this coral reduces ecosystem complexity and resilience.

Activity:

Explain how habitat-forming species influence ecosystem stability.

What is threatening the coral?

The primary threat to this species is sedimentation caused by human activity and extreme weather events.

Flooding and coastal development have significantly altered sediment movement.

In some regions, coral populations have declined by approximately 99% over a five-year period, demonstrating rapid environmental change.

Activity:
Analyse the relative impact of natural vs human-induced environmental changes.

Reproductive Biology and Intervention

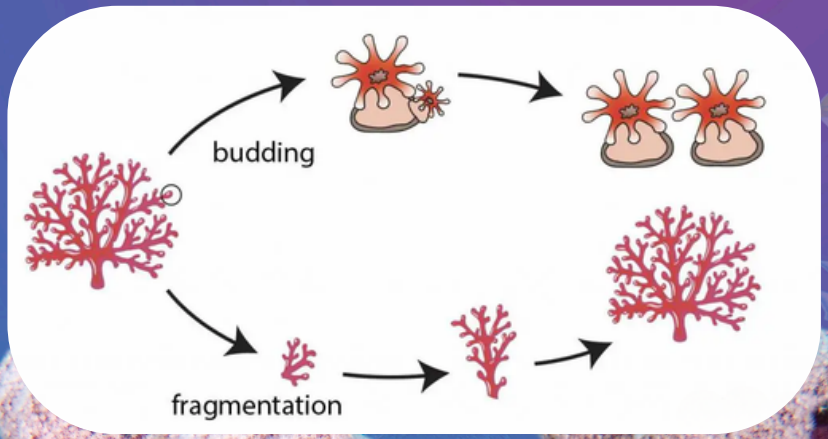
Reproduction occurs through:

- Asexual fragmentation (clonal propagation)
- Sexual spawning (environmentally triggered)

Fragmentation is widely used in restoration programs due to its efficiency.

Advanced methods such as larval rearing are being developed to improve genetic diversity and long-term resilience.

Activity:
Evaluate which reproductive strategy is more effective for long-term conservation and why.



What does this coral need to survive?

This coral is non-photosynthetic and relies entirely on heterotrophic feeding by capturing plankton from water currents.

It requires:

- high water flow
- low sediment levels
- stable temperature conditions

Its specialised ecological niche makes it highly sensitive to environmental change.

Activity:
Explain how niche specialisation increases vulnerability.

Project Outcomes and Data

Monitoring of reintroduced coral shows strong initial success:

- 82% survival rate
- Majority of coral classified as healthy
- Smaller proportion shows signs of stress

These results indicate that restoration methods are effective but require long-term monitoring.

To watch this release view video here
https://www.visitsealife.com/sydney/conservation/local-conservation-projects/cauliflower-coral-conservation-project/

Conservation actions

- Coral populations have dropped by up to 99% in some areas
- Some seahorse populations have dropped by around 90%
- Scientists have returned 200 coral fragments to the ocean
- About 82% survived after being reintroduced

Long-term conservation depends on:

- habitat protection
- improved water management
- continued research
- policy and community engagement
-

Without continued intervention, this species remains at risk of extinction.

Activity:
Design a conservation strategy including:
scientific methods
government action
community involvement