

## Marine Life Network

### Submission to the Senate Inquiry on Climate-related marine invasive species

#### Aim

We have been asked to comment on the spread of climate-related marine invasive species, particularly long spined sea urchins (*Centrostephanus rodgersii*) along the Great Southern Reef.

#### Summary

While urchin barrens are a large problem, they are regrettably not a unique problem.

Invasive species are a symptom of a fundamental global shift in the condition of our environment. It will force us to deal with the greatest challenges we have faced as a species so far, and with advancing time these challenges will grow in size and complexity.

While the changes needed are great it is not a hopeless cause. We are gifted with unique abilities including the intelligence, teamwork and foresight to see and prepare for a coming threat. We are the only species who can shape the planet on a global scale. To do this, every person must do what they can do, maybe that is by on-ground action, or by supporting others, or by removing obstacles.

Governments have a very important role, especially in encouraging, coordinating and resourcing these actions. The people lodging the current submissions to the Senate are in turn supporting government, by providing evidence, advancing ideas, participating in solutions, and providing support for a collective approach.

Repairing this problem needs a multi-faceted strategy. We would suggest the correct approach is not to look for one single 'silver bullet' solution, but to address the broader condition of the ocean with a number of measures.

Combined with other strategies, resilience measures like marine parks should not be ignored as one potentially quick and affordable way to improve the health of our oceans and ward off threats like urchins.

We would also ask you to consider any other science-validated approaches that would help deal with the problem including removal, habitat restoration, habitat resilience and species diversity protection initiatives.

#### Who we are

Marine Life Network, is a Tasmanian-based not-for-profit community association with goals simply to "educate and advocate for the marine environment".

We want to have a new kind of conversation with Tasmanians about better protecting the marine environment.

The most active current focus is advocacy for marine parks. "Tasmanians for Marine Parks" is a community campaign asking for a high quality (comprehensive, adequate, representative)

network of marine parks along the Tasmanian coast. For decades this has been a stalled and incomplete process in Tasmania.

We are also involved in broader activities, discussions and projects involving:

- Educating the public
- Protecting special marine plants and animals and special ocean places.
- Supporting marine science.
- Helping fix damaged areas.
- Encouraging an appreciation of the values of marine places including for non-extractives uses like education, recreation, science and tourism. This also provides for job creation opportunities.
- Providing refuges (places of resilience) against changes in the marine environment

The driving motivation for this work has been a steady growth in the damage being caused to our special and unique ocean areas. This has been affecting all the benefits we get from the ocean, including our fisheries.

Although we have many members who are marine scientists or who are trained in marine sciences, we do not intend to make a scientific submission, that is best left to the professional research organisations. We can tell you what we have seen, as ordinary people who interact with the ocean and take a custodial interest in its welfare.

#### The Size of the problem

*“The single largest threat to the integrity of the shallow rocky reef systems of Tasmania is the long spined sea urchin (*Centrostephanus rodgersii*)”* Professor Craig Johnson, University of Tasmania

When Tasmanian ocean users first heard about urchin barrens, we thought that everyone was talking about a few bare patches appearing here and there. The first place that large urchin barrens appeared on the Tasmanian coast was at St Helens.

One of our members is the author of a recreational diving guide that was published in 1996. Then the underwater reefs of St Helens were a multi-coloured wilderness, like most of the Tasmanian East Coast, and largely untouched. The area was also the site for an active and high volume cray and abalone fishery. After ten years interstate the author returned to St Helens. The change was astounding. In each area visited in a depth range from 15 metres to 40 metres the seabed has been completely destroyed.

It is easier to appreciate the scale of the damage if we describe these large barren areas as an underwater desert. We aren't talking about the loss of the best bits of colourful sponge, we are talking bare rock. Almost all the animals living on the coastal reef are gone. In a State where 50% of the inshore coastline is rocky reef, the damage has covered a vast area around St Helens. No meaningful recreational or commercial fishing activity is possible in this enormous barren region.

### Why has it Happened?

The culprit is the long-spined sea urchin, *Centrostephanus Rogersii*, a native of NSW. Every Summer we would see some of these urchins in Tasmania, but the cold Winters finished them off. Now the water temperatures (measured off Maria Island) have increased by 2 degrees in the last few decades. It is now warm enough for species like *Centrostephanus* to survive all year round, and breed.

The urchin barrens start as small 'Swiss cheese' incipient barrens, but the urchins breed until they reach enough density to completely swamp the reef ecosystem. They eat off all the other life to create a 'paddock' where they can graze on the algae that likes the bare rock. Once the barren is created it is very hard to change it back to healthy reef. Early attempts to smash a few urchins here and there in an uncoordinated way, failed to appreciate the scale of the problem.

Just like when farmers clear a forest, it only takes a few sheep to keep eating off the sprouting trees for it to remain a paddock for centuries. This is also the case with urchins and they are hard to eradicate once established.

### How Bad Will it Get?

The longspined sea urchin was first reported on the east coast of Tasmania in 1978 but now extends down most of the Tasmanian east coast. An Institute of Marine Science (IMAS) survey conducted in 2002 gave an estimate of numbers at 6.7 million urchins, but that has grown to over 20 million urchins. In Tasmania, densities in depths less than 40m have increased dramatically over time. Conditions are right for them to expand their range all down the Tasmania East Coast. Especially vulnerable are areas currently influenced by the warm Eastern Australian Current, that is anywhere from Flinders Island to Tasman Island. Divers are reporting seeing urchin barrens forming all along the East Coast, especially where the southward travelling warm water washes near the coast, north facing reef slopes being attacked first. Isolated urchins have been found as far away as Port Davey, and also in Bass Strait. As the water warms this 'black urchin' will likely continue to spread as the range of areas offering optimal breeding conditions continues to grow as the water warms.

These areas are very important for Tasmania's recreational cray and abalone fisheries. They are also important for commercial fisheries. These fisheries have been under increased pressure from multiple causes with long-term catches declining significantly in the last few decades. A recent IMAS report showed that rock lobster stocks on the East Coast reached historically low levels during 2011-12. This was attributed to a "*combination of several years of below average recruitment and heavy fishing pressure*". Efforts to restore this by limiting catches, have been slow, only partly successful and they have been economically painful for some. Urchin barrens can make permanent this long-term decline by removing productive habitat on a very large scale. You cannot have a fishery without a healthy habitat to support it.

### *Can We Fix It?*

*"...there is unlikely to be a single management 'panacea', but that a multifaceted approach to the problem is likely to be most successful."* Professor Craig Johnson, University of Tasmania

The ultimate fix is to limit our global over-production of greenhouses gases.

Halting global warming isn't something that is likely to happen soon, and even if we could it would take time for the natural balance to reassert itself, so we have to think of new ways to address the problem, and perhaps even 'save the furniture' in some areas.

A number of important research initiatives have been undertaken by IMAS. These include harvesting the pockets of suitable 'black urchins' for food. Divers and dive businesses have been trying to save their beloved local site by urchin clearing. They will better explain these initiatives in their own submissions. The problem is big and needs a better researched and co-ordinated approach.

### What about the environment?

Extractive economic use is not the only thing that Australians value about their marine estate. Surveys show that they overwhelmingly want it to be protected in a healthy natural condition, just for its own sake.

Marine Life Network is also worried about these threats to our coastline. Apart from losing fisheries and livelihoods, there is a high risk that we will also lose biodiversity 'hotspots', places where unique Tasmanian plants and animals live. Once lost, no rehabilitation program can restore an extinct species. This is a permanent loss of Australia's heritage.

This loss also affects meaningful Aboriginal cultural connection to sea country.

Especially if resources are tight, we need to focus on spots where action will do the most good, to protect the unique things we cannot afford to lose. Unfortunately, we are often still discovering where those places are, as the ocean is still huge and mysterious in many ways. It is said that we have mapped more of the surface of Mars than our own ocean. Where we know a unique place exists, this is often barely recognised by the general community, or we close our ears to efforts to raise its profile in case it affects a current extractive use. Marine park declarations have the advantage of alerting people to the uniqueness of an area so that it can be a focus of public interest, research and protective efforts.

At important marine areas like Governor Island at Bicheno, and Cathedral Cave at Eaglehawk Neck, urchins are confined to a few sheltered sites and isolated gutters, for now. If they build up in numbers they may well swamp those unique underwater habitats completely. They are important areas for nature and tourism. They can be protected from this threat with practically achievable action.

Unique areas should be protected in high protection areas like Marine parks, not because a feral urchin respects a line on a map, but because it will focus our research and removal efforts to the areas of greatest need. A strong ecosystem protected from a range of threats that place pressure on it, has been shown to resist outside pressures better. Scientist call this 'resilience'. We can do this cheaply and quickly with well-designed marine protected areas and marine parks.

We need to do a range of things to protect the ocean and ocean fisheries from climate change, but we need to devote some of our effort to giving small special areas more resilience.

### The opportunity

There is no shortage of commitment towards the protection of the natural marine environment in Australia. Surveys asking for generalised statements of support will get consistent 80% approval rates across people from all backgrounds. This has not always translated to action on-ground. As a people, we have struggled with a 'culture wars' lack of consensus, a tendency to indifference and avoidance, shallow appreciation of the issues, information overload, crisis fatigue and excessive scepticism. However, the last election marked a watershed in our fortunes. More than just deciding who governs them, Australians made a statement that they just want things done, especially in relation to the more serious and deadlocked environmental challenges. This sentiment crossed traditional lines with even conservative eco-minded people finding their voice. This creates a unique opportunity for everyone.

We have many outstanding tasks. Many mainly sit with government like:

- managing our knowledge gaps including increasing science funding;
- rebuilding institutions that produce advice and data (including restoring their independence and political neutrality);
- strengthening diplomacy as we need simultaneous international action too, we can't fix the local problems on the Tasmanian East Coast without it;
- we need more coordinated marine estate planning, recovery and action plans;
- rethinking our policy statements and values, including ending an almost single-minded focus on the needs of extractive users of the marine estate (actually the minority of Australians).

We would also advocate that we add another matter to the list of things to do, protecting unique places. This requires similar activities to those stated above.

This option has many advantages, including also allowing for active indigenous involvement and there are several model joint management marine parks, and indigenous ranger programs already working across Australia.

While declaring marine protected areas is a quick, cheap and already proven operational process in a purely legal sense, there are issues with the way discussion about marine protected areas strategy in Tasmania is not being meaningfully advanced. Immediate action to complete the Tasmanian Marine Protected Areas Strategy process will require:

- Renewed commitment from all stakeholders;
- Removing obstacles – an end to the Tasmanian Government's marine park 'moratorium';
- Not 'taking sides' - A shift in values with public and active government support for a dialogue between user groups in a way that doesn't shut out any group, and that encourages the airing of competing values;
- Government needs to proactively facilitate the participation of reluctant stakeholders who feel they are benefitting from the current status quo and have no need to participate;
- Funding for finescale GIS mapping of potential areas and surveys to assess the natural values of candidate areas and provide baseline research data;
- A tourism plan for the marine estate, so that non-extractive economic opportunities are better recognised and promoted;

- A commitment to creating independent institutions that also don't 'take sides' and will leave values-laden debates to the public. They also need to be encouraged to have an independent voice about their data. They also need the funding security to do both core ecosystem biological research, as well as commercial return focussed/industry specific work;
- Ideally updates to planning and legislative systems, e.g. a new marine parks act instead of the current rather dated system in Tasmania.

The submissions before you will set out several workable options for more immediate action, we commend the groups involved for their effort, and the Senate for taking the time to evaluate them.

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*Urchins present at Australia's last angasi oyster reef, the area has low levels of public appreciation as a special area. It could be immediately protected without any restriction on fishing or most other users (Photo Simon Brooks).*





*Indicative before and after montage (Photos James Parkinson)*



*The only large invertebrate life in the bigger barrens are urchins and some resistant patches of yellow anemones. Many of the reefs at St Helens (and now other reefs on the East Coast) below the agitated surf zone, have been almost completely destroyed. Photo per SMH*

