

FRDC 2014-224 Rebuilding abalone populations to limit impacts of the spread of urchins, abalone viral ganglioneuritis and theft.

VIC Component, October 2019.

The need to develop and implement controls to mitigate urchin biomass increases and barrens habitat expansion were regularly voiced by industry divers since 2001. FRDC Project No. 1999/128 October 2003 “Research to develop and manage the sea urchin fisheries of NSW and eastern Victoria” - D.G. Worthington and C. Blount; demonstrated the benefits of reducing urchin densities for both the urchin and abalone fisheries. The Victorian Department of Primary Industries (DPI), had also recognised the problem, several of their Fishery Independent Survey Sites (FIS) were being impacted by urchin expansion (see Figure 1 below). In 2011 the Eastern Zone Abalone Industry Association (EZAIA) and DPI conducted a pilot project “Removal of sea urchins (*Centrostephanus rodgersii*) to recover abalone (*Haliotis rubra*) habitat”. The success of the EZAIA/DPI pilot project (see figure 2 below) inspired the pursuit of resources to expand the methods to other reef locations.

In 2014 Fisheries Victoria released “A Review of Rebuilding Options for the Victorian Abalone Fishery” that recommended the priority of investment in habitat rehabilitation through removal of urchins, and the translocation of abalone to recover productive populations, from impacts such as AVG and Theft.

The FRDC 2014-224 project provided resources to assist the roll out of urchin biomass reduction and abalone translocation, on a large scale to several reef locations. The EZAIA continued to provide co-investment and significant in-kind contributions for the duration of the project.

The Objectives of FRDC 2014-224 in VIC included;

1. Through consultation with the urchin industry, identify and prioritise sites (at least 8) and recovery actions.
2. Implement recovery of shallow reef habitats and productive abalone populations through urchin biomass reduction and abalone translocation where appropriate.
3. Plan ongoing future actions and responses to continue the long-term recovery of habitat and productive abalone populations

A key to the success of this project has been the close collaboration between EZAIA, the Victorian Sea Urchin Divers Association (VSUDA) and Victorian Fisheries Authority (VFA). Through formal processes; reef priority sites, actions for recovery and work schedules are documented, agreed and supported by appropriate permits. (see Report 1: EZ Reef Priority List - attached).

Urchin biomass reduction was achieved by direct culling by diver. Tools and techniques were refined from the previous EZAIA/DPI project experience (see Report 6: The CullPro 2000 - attached). The culling tool was also manufactured and supplied to NSW.

The urchin biomass reduction program was rolled out incrementally with more sites added each year. Once urchins had been significantly reduced and habitat recovery was under way, resources could be redirected to new locations.

Scientific sampling methods were developed, and fixed survey sites established at several of the site locations. Sampling before & after urchin removal from barrens and nearby healthy habitat included a combination transect counts of abalone and urchins, timed-swim collection of abalone, size-structure of abalone and urchins and underwater video (see Figure 3 below). Divers were required to complete a “Diver Record” on each occasion that included depth range, dive time and a 5-minute culling rate.

The urchin biomass reduction program via the effort of 1,341 dive hours, has removed more than 2 million urchins from across 9 reefs in Eastern Zone Victoria (see figure 4 below and Report 2: Urchin biomass reduction project - attached).

After extensive consultation a decision was made to translocate abalone from the Airport region to Island Point in order to kick start the recovery of abalone populations. A scientific sampling method was developed and implemented specifically for this project (see Report 3: Abalone Translocation project - attached). Methods for collecting, handling, translocating and placing abalone were developed in consultation with researchers and divers. The project had recreated abalone habitat by removing urchins, but no abalone were re-establishing. We successfully translocated 3,000 brood stock abalone that have survived well and have presumably been breeding for several years. While the area is already being commercially fished again, only as we see the juveniles spawned by these translocated brood stock, will we know a local abalone population has been restored to natural productivity by the work of the project. We look forward to that day and helping to recover more habitat and productive abalone populations with EZAIA support. (see Figure 5 below and Report 7: Abalone Translocation Protocol - attached)

The EZAIA in consultation with VSUDA and VFA is committed to ongoing future actions and responses to continue the long-term protection and recovery of habitat for the benefit of both the abalone and urchin fisheries.

The EZAIA renews its commitment to the project each year through the provision of industry funds for the agreed work schedule. A work schedule that strikes a balance between urchin culling and subsidised urchin harvesting as well as ongoing support for monitoring activities.

The results have been used to secure additional investment in complimentary programs. An extension of FRDC Project 2017-049 “Monitoring abalone juvenile abundance following removal of *Centrostephanus* and translocation of abalone” has been implemented at Island Point and Petrel Point to assist in monitoring the effect on abalone populations. (see Figure 6 below and Report 4 FRDC Project 2017-049 - attached) . The Victorian Government; Department of Environment Water Land & Planning (DEWLP) has provided significant investment through the “Biodiversity Response Planning- Marine Targeted Actions – BRPM002 -Restoring marine habitat and biodiversity in eastern Victoria” project (see Report 5 DEWLP project - attached).

On March 8th, 2018 at the High Commission in England, during the Britain-Australian Society Awards; Sir David Attenborough, having seen photos, acknowledged the great work of the Mallacoota abalone divers for environmental work (see Figure 7 below).

Figure 1: DPI FIS site at Petrel Point; time series depicting the increase in urchin biomass and subsequent change in habitat from healthy Kelp canopy to urchin barren.

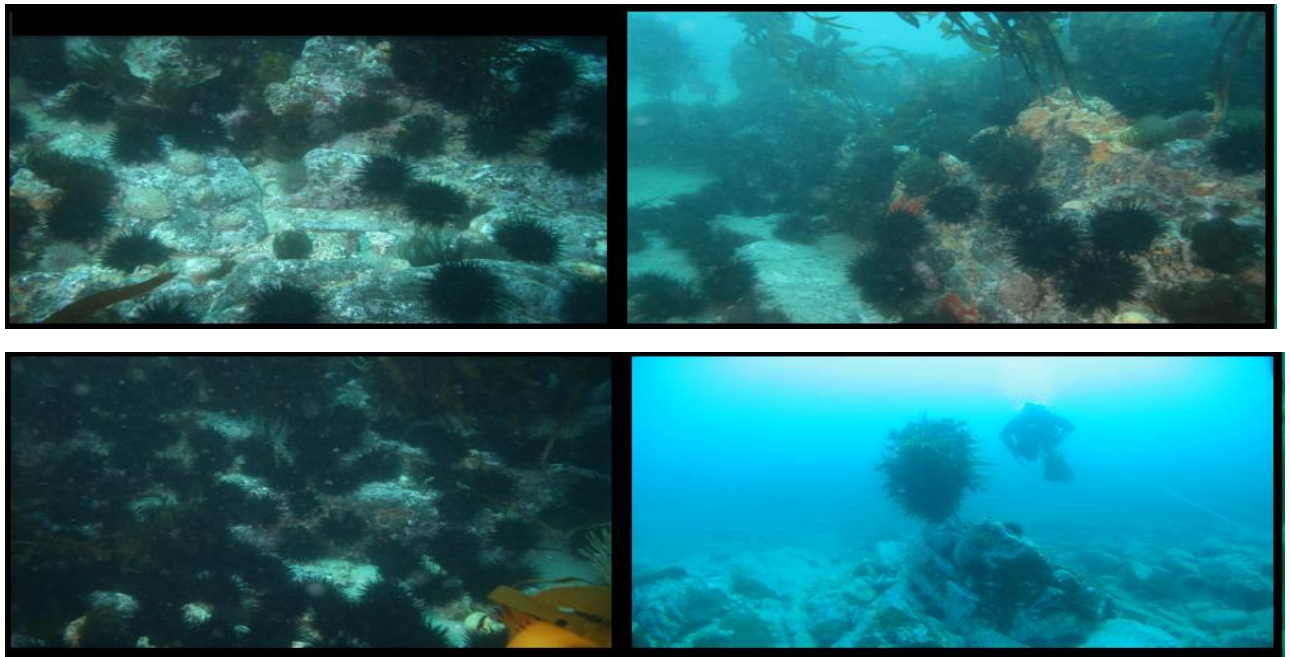


Figure2: EZAIA / DPI pilot project at Island Point; time series of fixed photographic quadrant survey site no 7. The photos depict habitat recovery following urchin removal by industry divers.

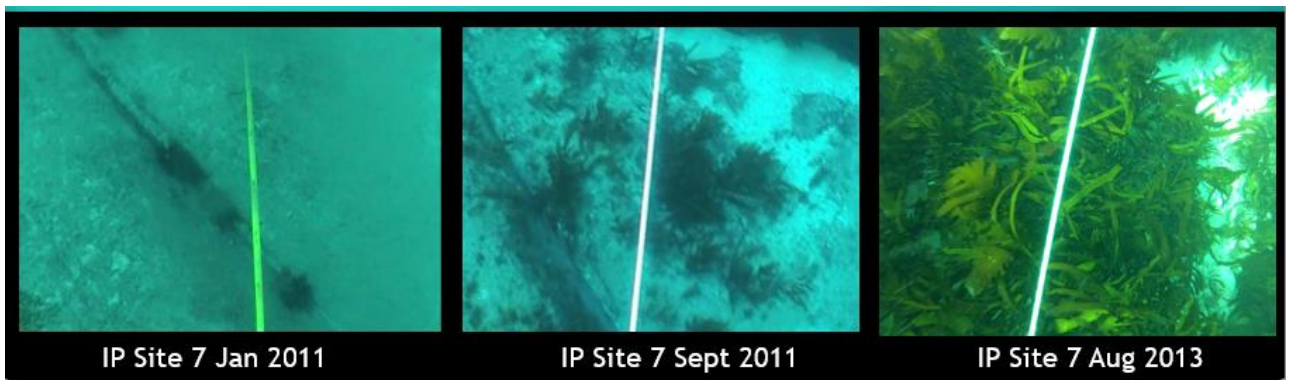


Figure 3: A fixed survey site at Petrel Point; the photographs show the urchin barren prior to urchin removal in 2013, followed by recovered health habitat several years post urchin removal. The analysis charts below the photos depict the changes in abundance of urchins, abalone and weed cover over time.

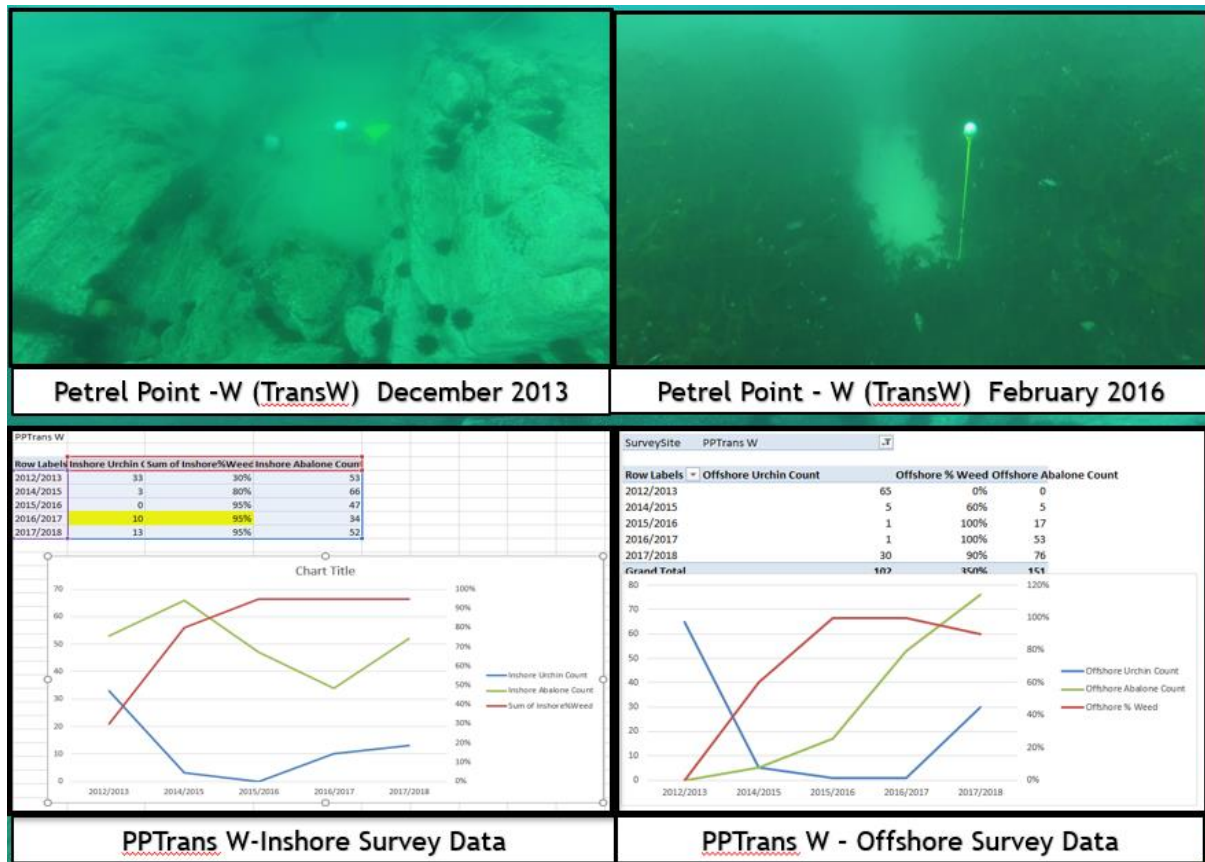


Figure 4: Location of urchin biomass reduction effort and representation of numbers culled.

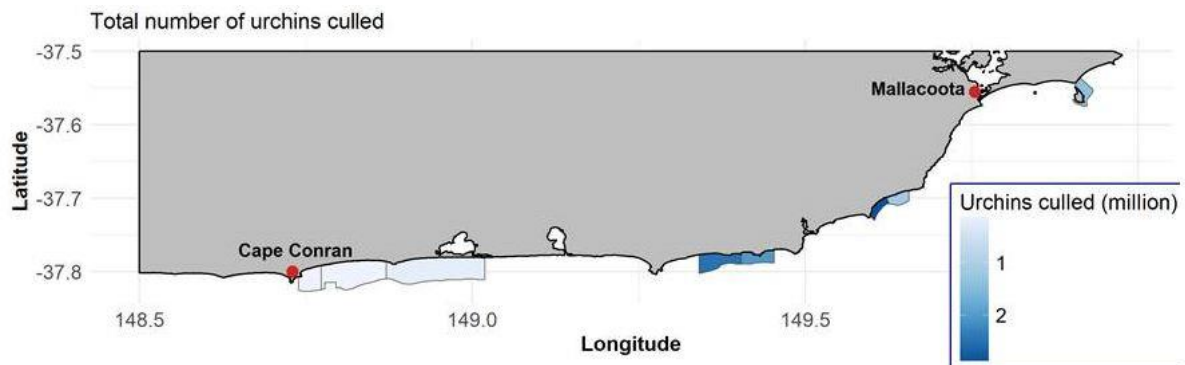


Figure 5: Abalone Translocation Project; Photo depicts Abalone in live crates at the destination site ready for out placing. The chart depicts the total change in abalone abundance at the site over time using two different survey methods.

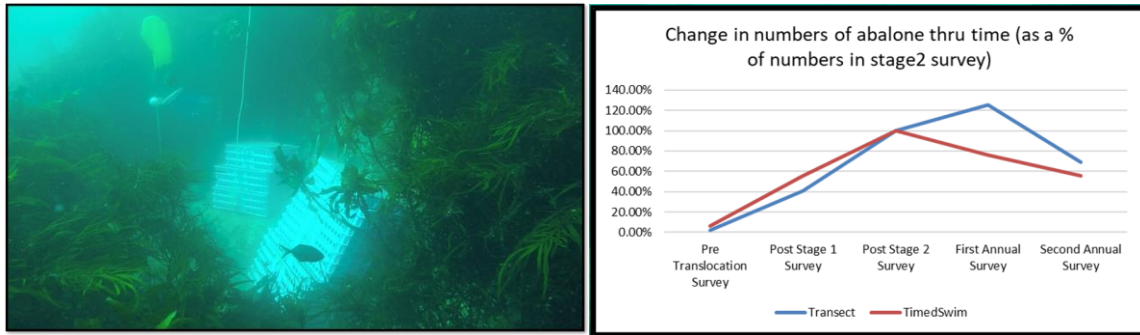


Figure 6: Abalone Recruitment Monitoring Project; Photo depicting established collector plate, chart showing length frequency of abalone counts from the first six monthly survey at four different site locations.

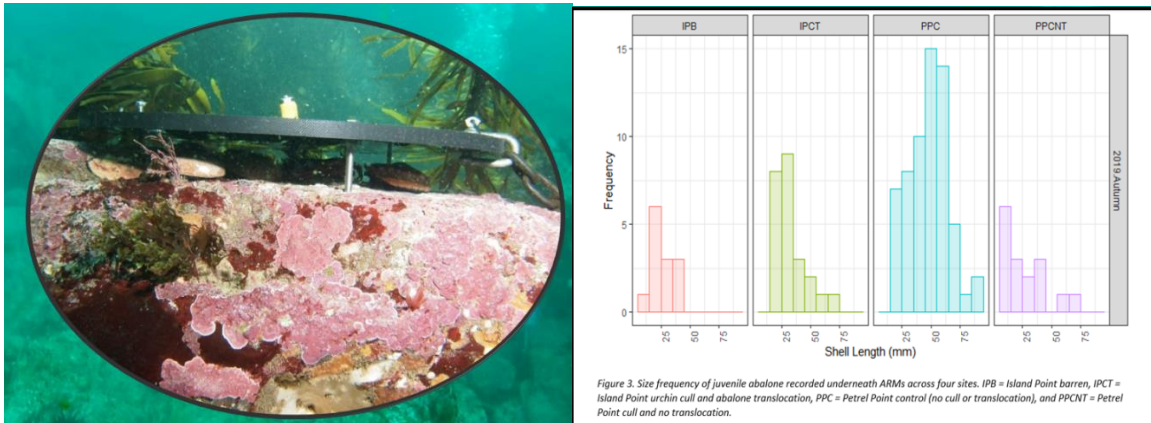


Figure 3. Size frequency of juvenile abalone recorded underneath ARMs across four sites. IPB = Island Point barren, IPCT = Island Point urchin cull and abalone translocation, PPC = Petrel Point control (no cull or translocation), and PPCNT = Petrel Point cull and no translocation.

Figure 7: Media coverage of public acknowledgement by Sir David Attenborough.

