

## Aquaculture Adaptation in Action: next steps in building the climate change resilience of the Sapphire Coast oyster industry

### Summary

Oyster farmers on the New South Wales Far South Coast have got the edge on climate change. After undertaking a CoastAdapt test case, Sapphire Coast Wilderness Oysters (SCWO) is now armed with an increased capacity to adapt and has taken the next steps in building industry resilience. SCWO farmers have used [CoastAdapt](#) to integrate and promote action both within industry and among stakeholders who influence the farming environment. Actions undertaken since the original test case include broadening the reach of that test case by communicating learnings at the state-wide scale; incorporating adaptation actions into SCWO's Strategic Plan; and seeking synergies with other organisations' coastal and estuary planning processes.

Oysters grow at the edge of the land and sea. Referred to as 'Canaries in the Catchment' they are excellent bio-indicators of estuarine health (see Figures 1 and 2). Within the aquaculture industry they are also considered the species most at risk of climate change effects. As 'Climate Change Canaries', oysters are vulnerable to changes in rainfall, temperature, salinity, acidity, sea-level rise and disease outbreaks. In order to maintain a flourishing oyster industry, it is imperative to equip farmers with the knowledge and tools to adapt to these changes, a fact that was recognised by Sapphire Coast Wilderness Oysters (SCWO), the regional organisation for the industry on the NSW Far South Coast, when it undertook a CoastAdapt [test case](#) project in March 2017.

### Keywords

Oyster industry, aquaculture, knowledge sharing, strategic planning, stakeholders



Figure 1: Sapphire Coast oysters on show. © Sue McIntyre.



Figure 2: Sapphire Coast oysters on show. © Jillian Keating.

SCWO's test case represented an important first step in building the climate change resilience of the oyster industry. A facilitated workshop expanded the knowledge base and capacity of farmers to understand broader climate change issues and locally relevant impacts on their industry, such as sea-level rise and changes in oceanic temperature and acidity. A 'pathways' approach to adaptation was then used to guide farmers in exploring practical steps that can be undertaken immediately, and in the future, to combat these impacts.

## Steps undertaken

Since completing the test case, SCWO's climate change story has largely focused on the opportunities farmers have harnessed to raise awareness, and to integrate and promote action both within their industry and among stakeholders who influence how they farm their oysters and the environment in which their oysters grow (see Figures 3 to 5).



Figure 3: Oyster farmers of the Sapphire Coast. © Jillian Keating.



Figure 4: Local farmers working together. © Jillian Keating.



Figure 5: SCWO farmers working together to showcase their product at Merimbula EAT Festival. © Jillian Keating.



## Sharing the knowledge

Recognising the strength in shared insights, over the past year SCWO has broadened the reach of the test case by communicating its findings to others in the industry across NSW. Farmers who were directly involved in the test case co-presented sessions with SCWO's Environmental Management Systems (EMS) Coordinator during a series of 'Travelling Industry Workshops' hosted by SCWO in May and June 2017 (see Figures 6 and 7). The 'Climate change - potential impacts on your industry' session was delivered to all 10 oyster producing estuaries between Sydney and the NSW/ Victoria border. During these short sessions the key findings from the test case were presented, along with predicted sea-level rise and/or flood hazard mapping for each estuary. The latter provided a visual tool that enabled farmers to view the possible future of their own estuaries and leases in the face of more frequent inundation and higher mean water levels. Feedback revealed that 70% of participating farmers thought their knowledge on climate change had improved 'a lot' compared to 'a little' or 'not at all' after these workshop sessions, demonstrating the usefulness of starting the climate change conversation with the broader oyster community by delivering locally relevant information.

SCWO's message reached farmers in the other half of the state through articles on the NSW Oysters Website and Newsletter, Department of Primary Industries Fisheries Aquaculture Newsletter, and later in the year through discussions at the biennial 'NSW Oyster Conference – Bringing Us Together' held in August 2017.



*Figure 6: SCWO farmers discussing potential climate change impacts on their industry. © Bega Valley Shire Council.*



*Figure 7: Travelling workshops proved an effective way to broaden the reach of SCWO's test-case project to more than half of NSW's oyster industry. © Jillian Keating.*

## SCWO farmers strategically planning for their future

SCWO recently strengthened its strategic foundations by developing a Strategic Plan. SCWO's 'Farming for Our Future' Planning Session in November 2017 clearly identified three priority areas for action, one of which was continuing to undertake and promote environmental stewardship work and to advocate on key issues that influence the industry. Climate change was highlighted as a critical, emerging issue and discussion focused on how SCWO might advocate for action, as well as continue to advance some of the adaptation strategies identified during the test case (e.g. work with researchers to develop oysters resilient to ocean acidification by facilitating on-farm trials in Far South Coast estuaries).

A complementary Marketing Plan for SCWO was completed in March 2018. It became evident that the environmental roots of the organisation form a solid platform for a marketing brand. It also showed that work in this area needs to continue and that changes would be necessary in order to maintain the organisation's 'green credentials.'

SCWO is planning to undertake a major review of all of its estuary-wide Environmental Management Systems (EMS) in the next year. An EMS is a simple yet powerful strategic tool whereby farmers identify internal and external environmental risks to their businesses and estuaries, then formulate an action plan to address these. EMS actions include adopting best management practices for farming operations (e.g. installing environmentally-friendly cultivation infrastructure) and working in partnership with catchment stakeholders to enhance estuarine health and water quality (e.g. strategic management of estuary entrances and on-ground streambank rehabilitation works). Currently the Sapphire Coast Environmental Management Systems refer broadly to climate change impacts and keep abreast of current research, however the test-case project has provided more detail on locally-relevant adaptation strategies which can now be readily incorporated during the review process.

## Seeking stakeholder synergies and opportunities

Over the past year SCWO has been invited as a key stakeholder to directly contribute to three Coastal and Estuary Management Programs that Bega Valley Shire Council (BVSC) is undertaking as part of the NSW Coastal Reforms. The *Merimbula Lake and Back Lake Coastal Management Program*, the shire-wide *Coastal Hazards Management Program* and the *Wonboyn Entrance Management Plan Options Assessment* have all opened timely opportunities to align the industry's climate change priorities and adaptation strategies with those of BVSC and other coastal stakeholders. For example, during the test case workshop, farmers identified a suite of shoreline assets whose inundation would cause both direct and indirect impacts to their industry and which therefore needed to be incorporated into BVSC's climate change adaptation planning. SCWO has worked closely with BVSC on a draft *Coastal Hazards Threat Identification and Evaluation Report*, which not only highlights oyster growing infrastructure and sheds as priority assets under threat from inundation, but also supports the management of key oyster transport routes (e.g. Merimbula airport and key roads) and point pollution sources (Merimbula sewer pumping stations). The next step is for SCWO to collaborate with BVSC and others to build complementary actions and responses for managing these assets through modifications and possible relocations.

At the state government level, SCWO's increased capacity and industry-specific knowledge has also placed it at the forefront of conversations with the Department of Lands on future leasing, licencing and tenure arrangements for land-based depots, sites and precincts. Reinforced by its strong partnership with BVSC, SCWO can also help drive engagement between Council and the state government agencies that set conditions around infrastructure and development in particular land zones.

## A bumpy road: challenges in adaptation

The breadth and complex nature of climate change impacts on the oyster industry can be difficult to comprehend. Keeping abreast as new information becomes available, and knowing where to strategically direct energy and resources, are significant challenges for SCWO. In some cases, not enough local information is available on predicted changes, or the adaptation planning timeframes of other organisations are misaligned with SCWO's current needs. Both of these can present difficulties when trying to negotiate outcomes with other industry stakeholders.

Finally, adaptation is a long road and there is still a lot of climate change adaptation ahead both for SCWO in its own organisational planning and action, and within the broader oyster industry.

## The next steps

Despite the challenges, SCWO has a solid basis for building climate change resilience into its industry. Its strength lies in the cohesion amongst farmers and its emphasis on fostering partnerships with a wide range of stakeholders who share SCWO's vision of healthy estuaries. The test case, and what has unfolded since its completion a year ago, has highlighted the importance of working closely with local and state-wide planning authorities, peak advocacy bodies (e.g. NSW Farmers) and research institutions; supporting action and applying pressure where needed. It has also demonstrated the value of building up a knowledge base and shown how a simple increase in awareness amongst stakeholders can drive significant action at both the local and state levels.

SCWO is one step closer to cultivating a sustainable future by unifying its industry on the critical issue of climate change.

## References

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## Further information

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**This case study was prepared by Jillian Keating, Environmental Management Systems Coordinator for Sapphire Coast Wilderness Oysters Environmental Management Systems. Please cite as:** Keating, J., 2018: Aquaculture Adaptation in Action: next steps in building the climate change resilience of the Sapphire Coast Oyster Industry. Case study for CoastAdapt, National Climate Change Adaptation Research Facility, Gold Coast.



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