

OYSTERS – CULTIVATING THE ROMANCE OF SUSTAINABILITY AND PRODUCTIVE PARTNERSHIPS WITHIN COASTAL COMMUNITIES

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Abstract

Collaborating with the oyster industry in estuary management is now a well-recognised and strategic approach for local and regional governments to gain important estuary health and water quality outcomes. Oyster farmers have an intimate understanding of the estuarine environment and depend on its health and productivity for their livelihood. They cannot 'shut the gate' on sediment and pollution inputs to their 'water-based paddocks', so can provide an effective focus for bringing catchment communities together to manage coastal systems.

In NSW, this unique engagement model originated on the South Coast with the advent of the first estuary-wide Environmental Management Systems (EMS) and the first region to foster collaboration so all major oyster-producing areas could formally operate under EMS. South East Local Land Services (LLS) (formally Southern Rivers Catchment Management Authority - CMA) coordinated much of this foundational work, however recent shifts in organisational priorities and investment has meant that the coordination and partnership work is now lead by industry itself.

Sapphire Coast Wilderness Oysters (SCWO) is the regional organisation which captures the collective vision of its 6 growing groups and now drives its own EMS implementation. It is the only umbrella organisation of its kind and its members' passionate, proactive and collaborative approach sets it apart from other oyster growing regions in Australia in terms of environmental and social responsibility. This industry-lead model has proven to be smart and effective in delivering sustainability and production outcomes for the region.

This paper follows on from the story presented in '*Oysters - an 'aphrodisiac' for engaging industry and coastal communities in sustainable estuary management*' at the 2014 NSW Coastal Conference. Remaining in theme, it describes the on-ground and capacity building achievements of SCWO, as well as how the organisation has cultivated the romance with its coastal community. It explores some of the questions, insights and challenges of 'blended families' as industry's relationship with its stakeholders, particularly government, has matured.

A Brief History of the Relationship ...

A Blossoming Romance

Oysters are the ‘Canaries of our Coastal Catchments’ – being filter feeders, they are highly sensitive bioindicators of estuary health and are vulnerable to a diverse range of pressures, both existing and emerging. Poor water quality due to losses in riparian and wetland vegetation, diffuse pollution, climate change impacts, emerging diseases and continued pressure from coastal development all impact on oyster production, the cost of production and supply. Unlike their land-based counterparts, oyster farmers cannot ‘shut the gate’ on their leases to prevent sediment, nutrients, pollution and marine pests from entering their cultivation areas (‘water-based paddocks’). As the end-users of the water that flows through their catchments, oyster farmers are completely reliant on the practices of land managers upstream and water users. Oysters farmers need to establish strong and ongoing working partnerships with their communities to protect and improve estuary condition for healthy oysters and a profitable industry.

Fifteen years ago, these relationships did not exist. Oyster farmers on the NSW South Coast were frustrated with their lack of influence over processes and practices threatening their industry and the water quality that underpins their livelihoods. When issues, such as sewage spills, stock encroaching on riparian areas and sediment from poorly maintained roads, caused the temporary closure of oyster harvesting, their response was generally reactionary. The piecemeal engagement individual farmers had with agencies received little traction in finding solutions. Furthermore, they didn’t have a loud and collective voice when expressing their concerns to government and the community (Gietzelt *et al* 2014).

A significant shift occurred when Southern Rivers CMA recognised the pivotal role of the oyster industry as the ‘coastal catchment canary’. This regional NRM body created the ‘*Oyster Partnerships Program*’ to facilitate a collaborative approach to improve catchment management and oyster industry sustainability (Davies *et al* 2007, Keating and Davies 2010, Keating *et al* 2010, Geitzelt *et al* 2014).

Environmental Management Systems (EMS) was at the heart. Not only a voluntary and strategic tool that highlighted ways farmers could improve their own operations at the individual business and estuary scale, the estuary-wide EMS that now characterises the South Coast Industry had another important function. They provided a mechanism for growers to actively engage with other industries, stakeholders, government agencies, landholders and the broader coastal community. From this platform they could drive progress on issues impacting oyster production and estuary health. The Clyde River Oyster Farmers’ EMS was a first for the NSW Oyster Industry and inspired all other major South Coast grower groups to follow suit. By 2012, the whole region was operating more sustainably under a formal EMS.

Simultaneous to this, also in 2012, farmers within the 6 Sapphire Coast estuaries (Bermagui, Wapengo, Nelson, Merimbula, Pambula and Wonboyn) banded together to form Sapphire Coast Wilderness Oysters (SCWO). SCWO’s vision of providing a unified voice for oyster farmers across the region, took this collaborative approach one step further. Not only uniting farmers ‘within an individual estuary’ through EMS, SCWO created cohesion and enhanced communication ‘across multiple estuaries’ to coordinate industry advocacy for key issues and to ensure priorities were addressed at the regional scale.

The Sapphire Coast is still the only region within Australia with an umbrella organisation like SCWO. This grass-roots organisation has fostered a shared vision of healthy estuaries amongst key stakeholders and farmers in 6 estuaries, and is now driving its own EMS implementation across the region.

The collaborative achievements for industry sustainability and catchment management received state-wide recognition in 2014 when the *'Oyster Partnerships Program'*, and SCWO as a key partner, won both a *Green Globe Award (Public Sector Sustainability)* and *NSW Coastal Management Award for Innovation*.

A Changing Relationship

The last 4 years have seen dramatic shifts in the state-wide arena of natural resource management, with flow-on effects for how local catchment, and therefore estuary management is now coordinated and serviced. As described in Gordon (2017) the overarching ecosystem-based view of managing these systems which characterised the ethos of Catchment Management Authorities did not transition across to Local Land Services.

Interestingly, it has recently emerged just how important it is to support a sustainable oyster industry from a socio-economic perspective. Barclay et al (2016) revealed that across NSW, this sector has an output of \$226M, and supports the equivalent of 1,758 full time jobs. With a current annual production of over 106 million oysters, NSW's oyster industry has been the most valuable form of aquaculture in the state for over 100 years and is steadily increasing in value. It represents the economic heart of many coastal communities such as those on the Sapphire Coast, a region which produces $\frac{1}{4}$ of the state's annual oysters, is worth \$16M p.a. and accommodates 138 lease permit holders, the greatest number in NSW (DPI Fisheries, 2017). Further to the state-wide economic significance of the Sapphire Coast oyster industry per se, it is regionally important in terms of employment (especially entry-level jobs and for Aboriginal communities), and interactions with other industries which underpin the region's economy, such as tourism.

On the NSW South Coast, changes in the frequency, scale and capacity of South East LLS to support the oyster industry led SCWO to step-up to fill this gap. Whilst South East LLS had, and continued to fund a part-time EMS Coordinator managed by SCWO, the organisation and its coordinator were now to take carriage of fostering existing relationships and building new partnerships for holistic estuary management. The oysters that were once viewed as the 'aphrodisiacs' for engaging coastal communities, were now expected to cultivate the romance of sustainability and productive partnerships largely on their own.

And they have...

Cultivating the Romance of Coastal Sustainability...

As 'Sea-changers' and 'Tree-changers' continue to flock to the Sapphire Coast to take up residence and holiday visitation numbers soar in this growing tourism region, the overarching issue of effectively managing water quality for sustainable food production and estuary health is paramount. If anything, the importance of undertaking this as a collaborative effort is escalating.

Over the last 3 years, SCWO have perpetuated and built on the *'Oyster Partnerships Program'* by delivering numerous initiatives for estuary protection, industry stewardship and coastal community engagement through its EMS Implementation Program. In addition

to well-established activities such as on-ground catchment rehabilitation works and fostering best-management practice for local oyster farmers, SCWO have extended the reach of their EMS through complementary projects as detailed below.

Continued Catchment Works – ‘Sharing the Load’

Healthy oysters are produced in healthy catchments with good water quality. SCWO has coordinated on-ground works with private landholders in Wapengo and Pambula catchments at priority sites identified by oyster farmers through their annual EMS audit process. Revegetation, stock-exclusion fencing and the installation of coir logs for riverbank protection has enhanced riparian condition and rehabilitated key wetlands in these catchments.

SCWO has also undertaken marine debris clean-ups and continued to work in partnership with Eden and Bega Local Aboriginal Lands Councils’ (LALC) Koori Work Crews to control wild Pacific Oyster infestations in Pambula and Merimbula Lakes, the latter of which was detected as a problem site only in the past 2 years. By keeping this pest species under control, the delicate balance for a healthy, functioning estuarine ecosystem is maintained.

New Catchment Initiatives – Socialising with Friends

Shared Solutions to Shoreline Erosion

This year, SCWO looked further afield for innovative solutions to combat erosion on the Yowaka River near where it joins Pambula Estuary, and fostered a new partnership as a bonus benefit. Sixteen members of Shoalhaven Riverwatch travelled to Pambula for a 2-day working bee to demonstrate the construction of a sand sausage along an erosion hotspot identified by local oyster farmers and landholders. This community group has developed the innovative solution to riverbank erosion, using a continuous sandbag nicknamed the ‘*Shoalhaven Sand Sausage*’. It is the first time the group had taken the technique out of the Shoalhaven to assist rehabilitation efforts in other coastal catchments. The sand sausage can be applied to any situation where the base of the riverbank is being eroded by wave action and provides a sturdy base to plant trees and shrubs into for longer term bank protection. It is also an incredibly cheap method if you have the volunteer-power to fuel it. In a combined effort, SCWO farmers, Shoalhaven Riverwatch volunteers and South East LLS staff accomplished two 50-metre sand sausages in roughly half a day’s work, shovelling an impressive 30.8 tonnes of sand to fill the \$200 worth of geofabric required for the sausage and planting 300 trees, shrubs and reeds.

Recycling Oyster Shell

One recent development in the realm of industry best practice is investigating innovative ways to recycle or reuse waste oyster shell. A partnership project implemented in 2016 by South East LLS and Wapengo farmers trialed a sausage of oyster shells encased in biodegradable jute matting as a new bank protection technique. Similar ideas for reusing stockpiled shells to help restore NSW’s lost oyster reefs are currently being explored.

Another pilot project SCWO is supporting will mix stockpiled oyster shell with fish waste and pine bark to create compost for revegetation projects in the Bega Valley Shire.

Continued Community Engagement, Awareness and Promotion - 'Families That Play Together, Stay Together'

SCWO continues to cultivate coastal community engagement through the shared vision of healthy estuaries.

The 'Grow Your Own Oysters' Program, run in conjunction with the Sapphire Coast Marine Discovery Centre, has allowed SCWO to continue providing on-water experiential learning for school students to understand the pivotal role their oyster industry plays in estuary health and for the local economy.

Similarly, SCWO has hosted estuary tours in all major oyster-producing estuaries of the Sapphire Coast over the past 4 years, targeting different landholders and stakeholders depending on the key issues of each estuary. These guided tours of lease areas and catchment 'hotspots' have not only enabled participants to learn more about oyster farming, but also provided the opportunity to enlist their support to solve problems affecting oyster production and to become advocates for the estuary's environmental health.

Events, gourmet food and environmental festivals and agricultural shows are also still proving excellent methods for broader community outreach, with SCWO using catchment models, information boards, oyster gear and live oyster feeding demonstrations to add to festival goers' educational experience.

New Community Engagement, Awareness and Promotion Initiatives – 'Spicing It Up'

In the past 3 years, SCWO have devised new ways of engaging the community, promoting their role as estuary stewards and the EMS credentials of their regional industry.

The 'Oyster Discovery Tour', developed in partnership with OceanWatch Australia is now being used by SCWO at festivals and events. This virtual 'Tour' invites festival goers to follow a series of educational stations around a festival to answer questions about local estuaries, oysters and the farmers that cultivate them.

New educational boards have also just been completed and a complementary set of best-management practice brochures are in development. One brochure will educate private landholders on how to best maintain their unsealed roads and tracks through surface and drainage upgrades to reduce sedimentation in oyster-producing estuaries. The other, 'Wise Waterway Use on Our Wilderness Coast' funded through Bega Valley Shire Council (BVSC), will see SCWO partner with local businesses and agencies to combine messages for protecting aquatic habitats and water quality tailored to residents and visiting waterway users. It will also act as a local test case for the *NSW Oyster Industry's 2016 Statewide Communication Strategy* which aims to improve oyster industry engagement with the recreational boating and fishing sectors.

'One Way to the Community's Heart is Through its Stomach'

A recent hallmark of SCWO's community engagement has been the advent of the *'Long Punt Seafood Breakfast Experience'*. SCWO hosted this event as part of the 2018 Merimbula EAT Festival. Early morning diners partook a delicious seafood breakfast aboard oyster punts at sunrise connecting local gourmet produce with the pristine environment in which they are grown. This Australia first oyster promotional experience was hugely successful and will be a feature at future festivals attended by SCWO.

Building Knowledge, Capacity and Strategy for the Future

'Family Planning'

The future of the oyster industry relies not only on a healthy environment, but also on the ability to demonstrate that farmers are utilising the environment in a responsible, sustainable manner. Developing EMS is important, but the next step of implementing and updating priority EMS actions is critical.

With funding assistance, SCWO have continued to host the EMS Coordinator for the region who has 'enabled smooth implementation...of EMSs and assisted growers to make full use of their EMS's in building the partnerships necessary to ensure the long-term sustainability of the...industry' (DPI 2014). By acting as a conduit for information on environmental and best-management practices, as well as coordinating annual EMS reviews, the Coordinator has supported industry to track their sustainability improvements over time.

SCWO have also continued to build the capacity of their industry to adapt and enhance their businesses, and to improve farmers' knowledge of the links between oysters and the natural environment. In 2017 SCWO facilitated a travelling workshop series for the whole South Coast Industry (Shoalhaven to NSW/ Victorian border) similar to those previously organised through South East LLS. Presentations from experts and conversations were held across a broad range of topics including oyster breeding, biosecurity, climate change, farm management tools, grading, marketing, industry representation, compliance and food safety.

As an organisation, SCWO have recently recommitted to their vision of *'Sapphire Coast Oyster Farmers united to cultivate a sustainable future'* and planned for how they will strategically farm into the future and work in partnership with other regional stakeholders. As expected, EMS Coordination remains pivotal to this Strategic Plan.

With the assistance of the *'Farming Together'* Program, SCWO developed a marketing strategy in 2018 which aims to capture the competitive advantage of their 'green' credentials. As part of this, SCWO are planning to promote their renowned Sapphire Coast oysters into Melbourne and other regions, to educate consumers about the sustainable production of the unique Sydney Rock Oyster and increase market share beyond NSW. As with EMS implementation, the successful implementation of a marketing plan will require SCWO securing additional resources.

'Leaving Something for Future Generations'

Climate change adaptation is another area SCWO has focused on recently. Within the aquaculture industry, it has been shown that oysters are the most at risk of climate change effects. Living on the land/sea edge, they are subject to a raft of changes in temperature, salinity, acidity, sea level and disease outbreaks which are all predicted to increase in frequency and intensity as the climate continues to change. Recognising this, SCWO have taken the first steps to building the resilience of their local industry by equipping their farmers with the knowledge and tools to adapt to these changes. Leading the way nationally in the fishing and aquaculture sector, in 2017 SCWO won a project through the National Climate Change and Adaptation Research Facility (NCCARF) to act as a Test Case for the tools and resources available on 'CoastAdapt', a national depository for climate change information.

As part of the 'Adapting Aquaculture – 'Getting the Edge' for an Industry on the Land/Sea Edge' Test Case, local farmers attended workshop sessions to learn more about the potential impacts of climate change on their businesses, estuaries and industry; and to start developing local and practical solutions for adapting to these. This project also helped SCWO to broaden the scope of their estuary-wide EMSs and working relationship with other organisations such as BVSC and state government agencies.

A follow-up case study was conducted a year later. The 'Aquaculture Adaptation in Action: next steps in building the climate change resilience of the Sapphire Coast Oyster Industry' project explored how SCWO has integrated and promoted action both within industry and among stakeholders who influence the farming environment. Actions included: broadening the reach of knowledge by communicating learnings at a state-wide scale; including adaptation actions into SCWO's Strategic Plan; and seeking synergies with other organisations' coastal and estuary planning processes.

The Challenges of 'Blended Families'...

Love on the Edge

Edge effects are a reoccurring theme for the oyster industry. The industry operates on the fringes and overlapping boundaries of coastal communities and estuary management - a complex system to navigate.

Oysters live on the edge. Grown in estuaries and embayments, they exist at the interface of land and sea and are vulnerable to a diverse range of environmental influences and impacts which are both terrestrial and oceanic in origin.

In terms of stakeholders, the South Coast industry needs, and has, engaged with a wide range of partners, including other industries (e.g. dairy farmers, graziers), Local Aboriginal Lands Councils, Non-Government Organisations (e.g. Oceanwatch Australia, Sapphire Coast Marine Discovery Centre), local (council), state (e.g. Department of Primary Industries (Fisheries NSW, NSW Food Authority), Roads and Maritime Authority, Crown Lands) and federal government agencies, industry regulators, regional training organisations, schools, universities and other research bodies, community groups and private landholders.

The regulatory environment is similarly complex, varied and characterised by 'edges'. The

oyster industry operates at the interphase of a multitude of overlapping regulatory bodies, legislation, permitting requirements, land and asset managers and often competing community values and industries.

Shifts in government priorities and investment have also pushed the edge of how a sustainable oyster industry is valued and supported. At the NSW level, the need for and mechanisms to support a sustainable oyster industry have been highlighted through various documents, strategies and plans, including Healthy Rivers Commission's Independent Review of the Relationship Between Healthy Oysters and Healthy Rivers (HRC 2002), Oyster Industry Sustainable Aquaculture Strategy (OISAS) (DPI, 2014) , NSW Oyster Industry Strategic Plan, South East LLS Strategic Plan, Marine Estate Management Strategy and the Social and Economic Evaluation of NSW Coastal Aquaculture (Barclay *et al* 2016). The latter has revealed that the importance of the oyster industry to regional communities such as the Sapphire Coast extends far beyond their farm-gate take through their employment provision and interactions with other industries which underpin the region's economy, such as tourism. As a guide to the flow-on effects, the Sapphire Coast tourism industry recorded 482,000 visitors to the region in 2013 with a net worth of \$313M and 2.28M visitor nights (Sapphire Coast Regional Tourism 2013). At this stage, SCWO are still financially entwined with South East LLS through their '*Australian Landcare Programme*' funding support for the EMS Coordinator, so they are a blended family of sorts.

These 'Edges' are where the action is, and where it needs to be.

Requires Tender Loving Care, Continuous Effort and Flexibility

Oysters and the oyster industry are central to managing our estuarine systems. On the NSW South Coast, the void left by dissolving the '*Oyster Partnerships Program*' has been partly filled by establishing SCWO and the EMS Coordinator. In the past 3 years, SCWO has achieved remarkable results for industry extension and community collaboration. This has helped build respect and social licence with many stakeholders and the broader coastal community.

As such, this industry led model has proven to be smart and effective in delivering sustainable and production outcomes for the region. However, this model, with EMS at its heart, is not static or self-sustaining. Without coordination, partnerships and collaborations deteriorate and participation fatigue for overworked stakeholders becomes a real issue.

Conclusion... Love on the Rocks

As stated in Gordon (2017) collaborative partnerships are an invaluable avenue to ensure positive interactions within a governance regime. Without adequate collaboration, solutions to estuary management issues may not achieve the ecological impact necessary to ensure the ongoing social and economic wellbeing of coastal communities.

Beyond 2018, oyster industry EMS coordination remains unfunded and alternative models largely remain unexplored. Suggestions of an environmental levy for industry itself are periodically raised, but given the community-wide benefits of this work, perhaps it should be shaped by spreading the responsibility across the whole coastal community. A

sustainability levy on catchment landholders and/or a 'bed' (overnight visitor) tax' for regional tourists could in part drive this.

Otherwise, in the absence of the oyster industry driving collaborative work on the Sapphire Coast and cultivating the romance of sustainability and productive partnerships within their coastal community... where to next?

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