



Bringing a Desert Back to Life

By Bob Pearce

"Don't it always seem to go that you don't know what you've got till it's gone" (Joni Mitchell – "Big Yellow Taxi," 1970) – a fairly apt description of what has happened to our cherished Port Phillip Bay.* It would not, of course, be necessary to be re-building the Bay's lost shellfish reefs if they had not been destroyed in the first place. Whilst there is now a general awareness of our project, it is probably fair to say less is known about what we once had but has been lost, due to past over exploitation. This document will provide some background information about the problems we have inherited, how the project commenced and new shellfish reefs that have been restored.

When you mention the word 'oyster' most people will immediately think about the oysters that you can purchase at the local supermarket or fresh fish outlet. In Melbourne, these are mostly Pacific Oysters, which are a species introduced into Australia and are endemic to Japan. It is a sad fact that the majority of people are not aware of the fact that we have a native oyster species that grows right here in our own Port Phillip Bay. Our native oysters have been known as 'Mud Oysters' or 'Flat Oysters' but have the scientific name of *Ostrea Angasi*.



Native Flat Oyster (*Ostrea Angasi*)



Pacific Oyster (*Crassostrea gigas*)

Pacific Oysters were first introduced into south-eastern and western Australian waters for aquaculture in the 1940s and, as is often the case with introduced species, they have proven to be fairly hardy with the ability to out compete some native shellfish. Reports indicate that by the 1980s they had found their way into NSW waters, where they can be found in the intertidal habitats of some coastal waterways. This document has not been written to demonise Pacific Oysters, but more to promote the profile of our own native species and the many benefits that result through re-establishing them in Port Phillip Bay, where they once existed in great numbers. In so doing, a multitude of benefits are achieved.

*The correct term is just Port Phillip, but most people know it as Port Phillip Bay.

Just as there was once a dense population of oyster reefs spread throughout the bay, so too there were huge beds of mussels and these mussel beds have also been depleted by over exploitation.

In the case of Port Phillip Bay's native oysters, the over exploitation seems to have originated in the 19th century due to an oyster dredge fishery in the bay, where oyster shells were harvested for both consumption and also lime production. The lime was created through burning oyster shells in a kiln, after which they were used in building works in the booming new colony. At the time, there probably seemed that there was virtual endless supply of oysters, but by the early twentieth century, flat oyster fisheries in Victoria (and probably other states as well) were largely fished out.

The heavy fishing pressure by oyster dredgers during this unfortunate era led to the first Fisheries Bill to protect oyster populations. But it was a case of too little, too late.

Also, in the 1960's, a dredge fishery for scallops commenced and after a number of years of excessive exploitation, the scallop beds became seriously depleted. In northern Port Phillip Bay, dredging activities then turned to shallow water shellfish reefs which were still fairly intact until the early 1980's. The boats involved could be seen laden with large sacks of mussels and oysters, but few seemed to care at the time, even though this destructive fishing method would ultimately decimate marine habitat in northern Port Phillip Bay in a way that it has never been able to recover.

Eventually, dredge fishing was banned and there has been some good, natural recovery of scallop beds, but the damage to the shellfish reefs was so severe, they have not been able to re-establish themselves naturally.

Prior to this era, mussels were extremely prolific and easy to access from the local jetties in Northern Port Phillip Bay. During storms, millions of mussels and oysters would be washed off the (then prolific) reefs, so a feed of fresh oysters was easily collected from the shallow water when sea conditions moderated.

Albert Park Yachting and Angling Club (APYAC) was established in 1909, so there is a lot of knowledge within the Club of what once existed in northern Port Phillip Bay, but has been lost. APYAC has a strong history of supporting the local community, so when the matter was discussed about the lost shellfish reefs at one of our Club's meeting nights, it was hardly surprising that a decision was taken to approach Fisheries Victoria (now the Victorian Fisheries Authority) to see if there was some way that we could work together to do something about the problem.

By this time, the technology to create shellfish spat in a purpose-built hatchery was available, so shellfish reef restoration had become feasible, but not yet tried anywhere in Australia.

Thanks to the personal support for the project from Fisheries Victoria Senior Manager, Anthony Forster, and the support of senior Fisheries Scientist, Paul Hamer, the project was able to get off to a positive start. As indicated above, this was the first project of its type in Australia and we have led the way for other states to follow.

Around this time, The Nature Conservancy (TNC) became aware of the project and offered to assist in terms of technical know-how, the services of highly skilled staff and a substantial financial contribution to the project. This resulted in a foundation relationship being formed between APYAC, Fisheries Victoria (now the Victorian Fisheries Authority) and TNC.

In placing native oysters and mussels on to limestone rocks on the project sites, it is just like building a block of apartments for a myriad of marine creatures to live in and, thereby, achieving a massive increase in marine bio diversity.

Since the commencement of the project, a variety of fish and various other forms of marine life have quickly been attracted to these areas and this is expected to continue to increase significantly, including our beloved snapper. Additionally, we can expect to see improved water quality in the Bay as shellfish numbers increase through natural recruitment.

Shellfish are filter feeders and are, therefore, the Bay's natural cleaners. A single oyster can filter hundreds of litres per day. Just imagine what millions of them are now doing.

The outplanted mussels and oysters on all of the sites in Port Phillip Bay are thriving and recruiting naturally. As the success of shellfish reef restoration continues to be achieved, it is logical to expect that it will be expanded to additional locations in Port Phillip Bay.

It has been well and truly proven that key deliverables, such as increased marine biodiversity, cleaner water and more fish, which will ensure a brighter future for our beloved Port Phillip Bay. APYAC is proud to have been the initiator of Shellfish Reef Restoration in bay. Also, our club and its members have worked actively to contribute towards ensuring the success of the project for more than ten years.

As one of the oldest recognised fishing clubs in Victoria (114 years), APYAC plays a leadership role within Victoria's recreational fishing community and, as such, has developed a strong relationship with the Victorian Fisheries Authority. The club has a strong community support ethos and has done a great deal of community service work throughout our history, including being the initiators of shellfish reef restoration in Port Phillip Bay, leading the way for similar projects Australia wide. The club has been financially supporting shellfish reef restoration efforts in Port Phillip for over a decade and we have raised over \$600,000 to financially support shellfish reef restoration projects (further details are set out overleaf).

Our club's more recent initiatives have been to successfully apply for grants of \$50,000 and \$200,000 to create new shellfish reef areas which will be relatively close to shore and are being provided with kayak fishers in mind. The grant of \$50,000 is to create the (aptly named) Kayakers' Reef. There is good access to the water to launch kayaks in the area and GPS coordinates will be made publicly available. Kayakers and small boat users should be able to successfully fish for snapper, flathead, king george whiting and calamari on these locations. The \$200,00 grant which was approved fairly recently is to provide an adjunct to Kayakers' Reef, thereby tripling the reef area being provided.

Commencement of work on both projects will commence in the near future. Marine and Coastal Act consent has been granted for both projects. Both projects aim to increase the ecological and community value of this part of Hobsons Bay, thereby providing localised benefits to fish populations. The project will also increase our club's environmental stewardship and deliver local economic benefits. Once colonised with shellfish and many other marine species, the restored reefs will become healthy habitats and complex structures with thriving biodiversity. The club has also invested in an underwater drone to be used by "citizen scientist" members to undertake ongoing monitoring of the proposed Kayakers' Reef which will be created later this year.

This fund raising effort by APYAC is probably unprecedented in Victoria and illustrates how much angling clubs can achieve if their members can generate the motivation to do so.

There are plenty of projects that can be initiated in both fresh and salt water that clubs can initiate to improve both the environment and fishing. You can't have healthy fisheries without also having a clean, healthy environment.

The Nature Conservancy has raised several million dollars from State and Federal governments, which has enabled substantial scale ups of the project over the past ten years. They have also managed the project with strong support from the Victorian Fisheries Authority. To carry out this work, hundreds of tonnes of limestone rock have been transported to the various sites and millions of oysters have been outplanted as well. Several tonnes of live mussels have been successfully deployed as well.

APYAC has every intention to continue our involvement with the project and has the objective of near full restoration of shellfish reefs in Port Phillip Bay. The club has maps of the areas of where most of the reefs are located in northern Port Phillip Bay and has prioritised areas where further restoration should occur. The project has won two Premier's Sustainability Awards thanks to the efforts of The Nature Conservancy to promote what has been achieved over the past ten years.

APYAC's efforts to initiate the project, raise funds and continue to work positively with project partners has not gone unnoticed and the club has a high level of credibility as a result of what has been achieved so far. The club is committed to continue working to ensure that the momentum continues for years to come, to ensure a return to something like what we once had. Dredging in Port Phillip Bay for shellfish was well and truly banned several years ago. The over exploitation has ceased. The task in hand has been, and will continue to be, to work with mother nature to return our bay to its former glory. Our club is committed to pursuing this achievement.

This work must continue, not just for us, but we owe it to future generations to finish what we started, which is to achieve about 80% restoration of what we once had, in order to greatly enhance marine biodiversity and improve water quality. And, of course, to ensure there will be great fishing well into the future.

Funds raised by APYAC over the past ten years are as follows:

\$10,000 RFL Grant for Workshop.

\$120,000 Ministerial Fund.

\$147,000 RFL Grant.

\$50,000 Ministerial Fund.

\$25,000 Port of Melbourne.

\$200,000 Minister's Habitat Grant.

\$80,000 APYAC donation.

Total = \$632,000



Fish are quickly attracted to newly restored reefs.

The Project in Pictures. Pics Supplied by The Nature Conservancy.



Image from 2017 of freshly constructed reef on the left with seeded cultch (oyster spat on shells). Image on right is how the shellfish reef looks several years later with thriving oysters, colourful sponges, red seaweeds and nudibranch.



Diving to assess progress of the reef. They are hard to spot, but there are hundreds of Juvenile snapper in the background.



This was once healthy reef until destroyed by dredging.



A solitary rock in the same area that was missed by the dredgers many years ago was found to have wild oysters growing on it – a strong indication of the potential for success of the project.



Mussel seeding at Margaret's Reef, off St Kilda.



Delivering limestone rock to Margaret's Reef.



The restored reef areas provide great spots for marine creatures to live in and thrive.



Native starfish quickly move in on the new reef and feast on the live mussels that were outplaced.



Marine bio diversity increases dramatically and naturally once the new reef is laid and shellfish added. A crab sits happily on an old scallop shell, but where did it come from? How did it manage to find its new home?



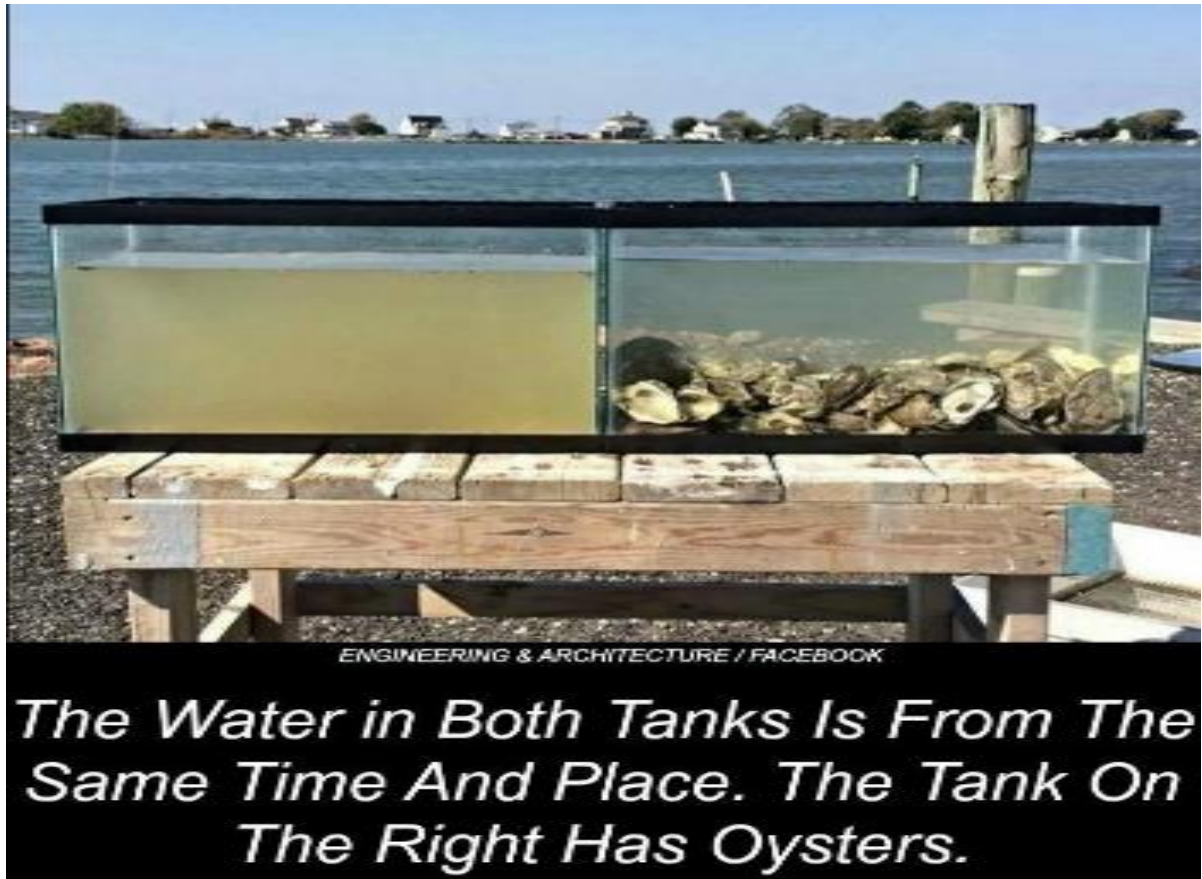
Another happy crab thriving amongst outplaced native mussels.



Another restored reef area after about twelve months.



Presentation of Premier's Award for Sustainability. The project has won two such awards.



TNC Video, Margarets Reef, July, 2019

<https://tnc.box.com/s/xkvniiklhwn24wh308vunu8d4hhtyrr>



Our beloved snapper.

