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# How restaurant leftovers are playing a role in audacious bid to bring life back to Port Phillip Bay

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It is hard, from our modern perch, to really understand the raw abundance of undisturbed nature. But shall we give it a try? Imagine: Port Phillip Bay, carpeted in shellfish reef, supporting a food chain of anchovies and seahorses and blue gropers and pods of bottlenose dolphins, dancing in the breakers.

More than two centuries of overfishing and overpolluting have left most of that abundance damaged or dead. To bring the ships that enable global commerce in, deep channels were cut across the seafloor. Millions of square metres of sand and silt are taken to “dump sites” and … dumped.

Oyster spat that grew on scallop shells. JASON SOUTH

“Not just shellfish reefs, everything,” says Andy Bossie. “It’s like a big mudpan now, the bay. About 95 per cent of the mussel and oyster beds are gone.”

We sail out into the bay to start repairing the damage. Andy and Scott Breschkin are divers and scientists – and today, they are testing a world-first experiment to repair our bay and others like it. Our vessel is a 35-year-old retired abalone boat. We have four white bottles of air, two yellow hoses, and a captain named Will Morgan. As we sail out from Black Rock Jetty, he pulls up his buff so all we can see is his sunglasses, which reflect endless grey-blue.

The plan: head to the most damaged, denuded part of the bay, and try to make life grow anew. The spot is easy to pick – a dump site. Nature Conservancy Australia, the charity for whom Andy and Scott work, plan to build a new shellfish reef on top of it.

Andy Bossie with a bag full of seeded shells. JASON SOUTH

Andy grew up on the water. Surfing, sailing, fishing. He got his scuba licence at 13. Scott is more reserved. He wears his dreadlocks tied back and a thick spiral in his ear.

The pair sows reefs like farmers sow fields. The silty bottom is first fertilised with yellow nuggets of limestone. Limestone forms from layers and layers of shellfish compacted over millions of years; it streams calcium carbonate into the water column, calling the oyster larvae.

The “seeds” come in heavy bags made of what at first looks like hessian rope but is revealed to be coir, a biodegradable coconut textile. They split as Andy hauls them, scattering dozens of shell fragments across the deck.

Scott picks one up to show us: the grooves and pits of the shells are dotted with grey oyster spat. Most of the shells, from scallops and mussels and rock oysters, are donated from the city’s fanciest dining establishments.

Shells in heavy bags of coir, a biodegradable coconut textile. JASON SOUTH

Underwater, the pair splits open the bags, sprinkling the shells and larvae across the reef. In total, they hope to cover about 1000 square metres of the bay.

The project faces two key risks. They are working with piles of dumped rock and silt on a denuded seafloor. Will they be strong enough to support the growing colony? And will anything actually want to grow here?

Oysters are amazingly sensitive organisms. Their eye is primitive, but they inhabit a world filled with sound. Yes, they can hear. Using tiny hairs – statocysts – they "listen" for the sounds of a healthy reef: the fish, the corals, the crackle and pop of waves breaking over the reef.

In experiments using underwater speakers, scientists have shown baby oysters won't settle if they can't "hear" life – leaving these spots dead and barren.

Scott Breschkin holds a coir bag containing thousands of shells. JASON SOUTH

Will kills the engines and Andy and Scott start to peel on their wetsuits. Morgan takes a few pulls to start a roaring red Yamaha air compressor. Andy and Scott slide the bags of shells off the side of the deck, jump in, suck a few breaths of air to test the respirators, and with the flick of a flipper are gone beneath the waves.

In the sudden calm, we have a moment to orient ourselves. We're about 17 kilometres due south of Melbourne CBD. All around us, silent at anchor, are red-hulled cargo ships with bellies full of cars or grain. They can wait here for days until a berth opens up, says Will. One breaks away and heads north, black smoke curling into the clouds.
The divers reappear as suddenly as they left. Two men in black, dripping and shivering on the deck, sucking in the oxygen. Andy is exhausted but delighted. "Two metres max visibility," he says. "And very green. Because of all the single-cell algae growth."

They laid the foundation for this reef last week. Already, life is moving in. "Snapper already calling it home. I nearly landed on an octopus." Andy laughs, joyous. "Build it and they will come!"


Divers working off a 35-year-old retired abalone boat. JASON SOUTH

Oysters shed their sperm and eggs into the water column; the eggs are buoyant and float as sperm swim toward them. After fertilisation, the new oysters begin life as microscopic plankton-feeders; eventually, they will grow a shell and cement themselves to a reef. Through this process of shed-and-drift, “a small remnant population can seed an entire bay,” says Andy.

But get them to settle, and you lay the foundation for thriving life. An individual oyster filters about one bathtub of water a day, consuming the nutrients that would otherwise feed huge oxygen-thieving algal blooms.
Sunlight can shine deeper through clean water, boosting the growth of seagrass. Life can return.

Scott speaks about cycles, webs, and balance. They hope, in some small way, to put their fingers on that scale.



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