

REPORT BY BRUCE HEARN

Apex Marine Farm Limited

Fast-Track Substantive Application 2026

INTRODUCTION

LOCATION

Site Proposed Farm Description

1. In 1973 the famed oceanographer and explorer Jacques Cousteau said “We must turn to the sea with new understanding and new technology. We need to farm it as we farm the land”. This was the year I entered aquaculture. I believe in this statement and also that it should be done with good conservation values and sharing the sea with other legitimate users.
2. I also believe that we should not waste valuable resources. Where an area of the sea has low recreation value and can be described as a working environment and it has an alternative, sustainable and economic use then this should be allowed. I believe Onapua Bay to be one of those areas.
3. Marlborough has the potential to become the world leader for flat oyster cultivation and once again become the standard for bivalve culture as we did with mussels.
4. We have several areas of competitive advantage that are not shared by the rest of the world other than Chile. I will expand on these areas later in this report. But in brief they are:
 - (a) A unique species with a peculiar biology shared only with Chile.
 - (b) A unique method of cultivation recently developed based on that peculiar biology and that I believe is likely to only be available in New Zealand and perhaps Chile.
 - (c) By world standards an extra-ordinarily consistent and high meat/shell ratio.
 - (d) An especially fast-growing species given the appropriate water and space.
 - (e) A counter season opportunity with the populous Northern Hemisphere where in some countries, notably North America, they prefer a smaller oyster. There are also niche counter season opportunities in China.
5. To understand the potential of this proposal there are key aspects that need to be considered and understood. As best I can, I will describe types of oysters, the traditional

methods of culture, the reproductive biology of our oysters, the historical background, the way we have farmed for a number of years and changes to cultivation methods, oyster diseases and challenges, and market opportunities.

Location

6. The location is in Onapua Bay, Tory Channel. It is proposed that the site will become a new marine farm zone applicable only to oyster, mussel and seaweed cultivation.

The Proposal

7. It is proposed to develop three sites in Onapua Bay. The northern site will have an area of 7.50 ha, the central site 5.43 ha and the eastern site 2.80 ha and to farm and harvest flat oysters (*Ostrea chilensis*) using conventional longline methods and to disturb the seabed with anchoring devices.
8. The algae *Undaria pinnatifida*, an invasive seaweed that is present in the area, may be cultivated and harvested to counter the emerging threat of Ocean Acidification (OA). Other algae, as detailed in this report, may also be grown and harvested. Trials with Greenwave Aotearoa growing *Macrocystis pyrifera* and *Ecklonia radiata* are showing success.
9. Consent is also sought for anchoring systems to be installed which will momentarily disturb the seabed during that process. Harvesting of marine farm produce will occur and discharge of marine water and biodegradable organic matter will occur at harvest.
10. Term of consent sought is for 35 years to 2061.

OYSTER FARMING 101

11. Worldwide there are two types of oysters:
 - (a) Rock Oysters; and
 - (b) Flat oysters.
12. The bulk of farmed production (97%) comes from the Pacific cupped oyster *Crassostrea gigas*, which is a rock oyster. Another contributor is the native American Eastern rock oyster *Crassostrea virginica* and to a lesser extent the Sydney rock oyster, *Saccostrea glomerata*, which is enzootic to New Zealand and Australia.
13. Flat oysters constitute less than 0.2% of the total global production of all farmed oyster species and is almost entirely the European Flat Oyster *Ostrea edulis*. Global production for these oysters is shown in the graph below (Figure 1).



Figure 1: Global Production of *Ostrea edulis*

14. There are a number of ways oysters are cultivated:
- (a) Wild caught on a variety of sticks which are placed on racks and on grown (see Figures 2 and 3). This method does not control the density of oysters and therefore results in a varying percentage of oysters that are not the “correct” shape for half shell and only suitable for meat production. Some rudimentary thinning is carried out. Rock oyster meat is low value. It does have advantages in that it has low labour inputs.



Figure 2: Farming using the Rack and Stick Method



Figure 3: Rack and Stick Method of Oyster Farming

- (b) Single seed production. Using increasingly hatchery spat and some selectively bred and some sterile triploid, but also wild caught. There are a variety of ways single seed production occurs both in the intertidal situation (oysters are out of the water at times) and sub tidally (oysters are under the water at all times).

All require the oysters to be graded regularly and in the case of subtidal culture fouling may be removed. Some of the farmers will tumble the shells when they are grading and changing trays which will increase the cupping in rock oysters by chipping the front edge of the shell, i.e. depth of the oyster.

Large trays or Japanese lantern nets are used, as shown below in Figures 4 and 5.



Figure 4: Large Trays used in Single Seed Production



Figure 5: Japanese Lantern Nets

Small tubes clipped on a wire (Bayco) and large bags or trestles in intertidal areas (see Figure 6).

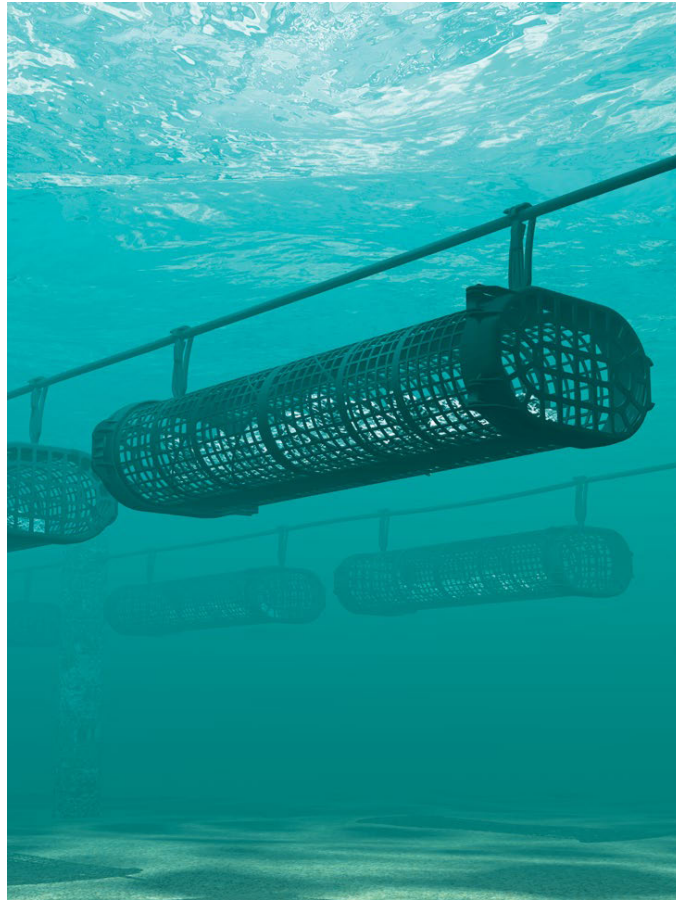


Figure 6: Bayco System

- (c) Bags with individual floatation and held on the surface. **Attachment 1** to this report shows an article from NZ Aquaculture magazine June 2015 edition. It shows bags with individual floatation in Croisilles Harbour, but also covers aspects of this application albeit with a different species (Pacific oysters). It covers the decimation of their industry by the OshV-1 virus (Herpes virus), the recovery and the way in which using separate sites enables production to continue.
- (d) A relatively recent innovation has developed from this floatation bag method and is being implemented worldwide. An axle is added to the middle of a bag on a single backbone configuration resulting in control of fouling, improved grading and harvesting by an efficient partly mechanised operation system of flipping the bags very quickly to desiccate the fouling.¹

¹ Refer www.flipfarm.co.nz for videos.

- (e) Bottom cultured. This method typically uses trays or bags to cultivate oysters to a size where they will survive in the wild and they are then spread on the sea floor for gathering by hand in the intertidal zone or dredged or “tonged” in sub-tidal areas. There are a number of variations on this theme. This method is not used in NZ as there are legislative restrictions on this type of farming.
- (f) Less commonly in France and Spain some flat oysters are glued to ropes using cement based products. It is a slow process and the cement cures overnight and the oysters are hung in the same manner as mussel culture ropes. In New Zealand our company drills a hole in each oyster and puts them on a pin in a culture method similar to “ear hung” scallops principally carried out in Japan. Our Company was able to patent this technique as it was novel drilling and pinning through the mantle or soft tissue.

THE START OF THE PROCESS

- 15. All around the world oysters are grown in hatcheries generally using male and female oysters which have been conditioned (fattened) and then often induced chemically to spawn. The fertilised larvae are settled onto typically tiny fragments of oyster shell and placed in upwellers or downwellers to on grow. Typically they are fed algae produced by the hatchery. At 3-5mm they will be sold to farmers who will put them in trays or particularly in North America in a floating upweller system (FLUPSY) where they will be on grown to a larger size. Some farmers will take eyed larvae (ready to settle larvae) in plastic bags from a hatchery and will settle them in ponds on a suitable cultch (catching material), using a Para pool or similar. Rock oysters are broadcast spawners. They spawn very high fecundity (numbers of eggs), up to 40 million eggs per female. Sperm and eggs mix externally for fertilisation and in the ocean are at the whim of winds, tides and currents for 20 to 30 days before they are ready to settle on any clean, hard substrate that takes their fancy. This is the common method by which all bi valves (mussels, scallops, etc) spawn, except flat oysters!
- 16. Flat oysters brood their young in the mantle of the oyster but these are split into two categories.
- 17. *Ostrea edulis* (UK and Europe principally), *Ostrea angasi* (Australia) and others brood their eggs in the mantle for a period and 10 to 12 days but before they are ready to settle they are released to the wild where they are also subject to the whim of winds, tides and currents. Typically their larvae number 200,000 to 450,000, but older individuals can number up to 900,000.

18. *Ostrea chilensis* (New Zealand and Chile) brood full term. Typically when they release their larvae there are 50,000 per female adult, at a large size of 400 to 500 microns and they settle within a metre of the adult if there is a suitable surface for them to settle on. It is easy to see that nature provides according to need. This aspect is important because it leads to techniques which will not be replicated elsewhere other than perhaps Chile.

HISTORICAL BACKGROUND

19. The flat oyster, *Ostrea edulis*, a native of Europe, has been part of the human diet for many centuries. The Romans built ponds to stock and sort oysters. In the 17th century, oyster spat were collected on rocks, separated from each other and deployed into ponds in salt marshes on the Atlantic coast of France. A decline in activity in salt marshes facilitated oyster culture development by expanding grow-out acreage availability. During the 18th and 19th centuries, fishing effort led to over-exploitation, failing recruitment, and destruction of European natural beds, which were also affected by extremely cold winters. Shortage in seed supply prompted the managers to develop cultural practices aimed to sustain a repletion and reseedling programme. Eventually, the 'leasing ground' system and the development of artificial spat collectors and their systematic use facilitated the development of the sector. Mostly in intertidal areas, wooden spat collectors were initially used followed by oyster shell strings and slates. Then, in 1865, the liming tile technique (roof tiles coated with a mixture of lime and fine sand), and wooden boxes to grow juveniles were developed in south-western France. Coated tiles became the main method of spat collection in France and the Netherlands: spat were removed by hand after 6-10 months, then reared in trays or re-laid in subtidal plots. On the Mediterranean coast, off-bottom culture was initiated in 1900, using oysters cemented onto steel poles. Growout facilities were developed in shallow waters (3-4 m), then oyster culture increased substantially by transferring spat from traditional spatfall areas (Brittany). Spat were cemented individually onto poles, which were hung from frameworks developed over mussel leasing grounds. This form of culture was replaced by cupped oyster (*Crassostrea angulata*) production in 1950.
20. The most obvious cultural changes during the 20th century occurred in two areas: spat collection techniques and the occurrence of disease problems in oyster populations. Spat collection techniques changed when seeding cockle (1904), then mussel (1939) shells in subtidal waters became the common practice in the Netherlands. This technique was more and more cost effective requiring far less labour. Since the 1980s, the use of tubular nets filled with mussel shell and deployed off-bottom has also proven more cost effective in

southern Brittany, France. More recently, hatcheries have begun to produce cultchless flat oyster spat.

FLAT OYSTER FARMING IN MARLBOROUGH

21. Flat oyster farming has been tried in the top of the Marlborough Sounds before.
22. A well-researched feature published on 7 July 1990 in the Press on oysters in the Top of the South, included as **Attachment 2** to this report, refers to artificial beds established between 1895 and 1898 as well as including a good deal of historical information.

“Several People took up the opportunity to form artificial oyster beds between 1895 and 1898, they were: Henry Baxter and William Davenport – Arrowsmith, Tory Channel; Alexander Maule – Black Point, Pelorus Sound; Peter Ewing – Hitaua Bay Tory Channel; Percy Neame – Mahau, Pelorus Sound; E O’Hara Canavan – Motueka. Most of these people never got started, but the ones that did weren’t successful.

Experimentation in farming continued between 1904 and 1920, including attempts to seed oysters in Cook Strait. In 1918, for example, 80 sacks of Foveaux Strait oysters were seeded in Cook Strait, at Clifford Bay near Blenheim. In 1922, an attempt was made to plant rock oysters in the Marlborough Sounds. Despite initial signs of promise, all these attempts ultimately failed.

Legal provision was made to close natural beds, to allow them to recover. The first beds to be closed were, in 1872 at Stewart Island. Our beds were also closed. Oyster Bay, in Tory Channel, was closed for two years in 1882 while, in 1895, parts of Queen Charlotte Sound and Endeavour Inlet were closed for four years. The Waimea Inlet was closed, initially for two years, in 1886 and later, in 1911, for four years, including Nelson Haven. Parts of Pelorus Sound were closed in 1898.”

23. I understand the first fishery to be closed was the Bluff Fishery. Once again this is related to the biology of the oyster because once you remove the adults there is no recruitment. Compare this with mussels and scallops where recruitment is over a wide area because the larvae are taken there by the tides.
24. I hold resource consents for four marine farms in Oyster Bay, a few bays to the east of Onapua, that include flat oysters as a species. Te Atiawa o te Waka-a-Maui Limited own two farms in Oyster Bay with flat oysters as a species, too.
25. During the time our Company has been trying to grow flat oysters there have been three other companies that have tried, or continue to try, that I am aware of.

26. Jeff Marr and Brian Skeggs, Aquaking Ltd located in Okiwi Bay, tried for several years in Croisilles Harbour and were initially very successful although I am not aware of any oysters reaching the market. They got hit by disease and mortalities and gave up.
27. Michael Davison, Shellfish Culture NZ Ltd, also tried with a hatchery in the Grove Arm and then at the Salt works where we also attempted to obtain spat. He on-grew some spat but ultimately was unsuccessful.
28. Kono LP have been trying for some years in Port Underwood and had been successful to market after some years of losing most of their 2+ year stock in the Jan/Feb/March/April period. Like our Company they have learnt and were learning how to manage the enzootic *Bonamia* disease problem.

Apex Marine Farm's Marlborough Operations

29. Our Company has been trying to grow oysters since 1985. For the first of these years we were trying to fit the work in around mussel farming and this was unsuccessful although we saw much promise. The lack of attention over the warmer months when mussel work was high and fouling also high led to a lack of attention and slow growth as the tubes we were using fouled up and were not able to be cleaned in a timely manner.
30. We started to make real progress when we put on a separate crew in 2006 and had eight years servicing the domestic market, principally high end restaurants, and an online shop with a small amount of export sales (www.tiopoint.co.nz).
31. Our systems have been labour intensive but new techniques have now been developed which will significantly lower labour inputs, and survival.
32. As stated earlier *Ostrea chilensis* broods its larvae full term and it is this feature that enables us to catch as much spat (baby oysters) as we need when the adult oysters are approximately 2 years old and brooding eggs (see Figure 7).



Figure 7: Brooding Oyster

In spring in one technique we surround these oysters with packing strapping surrounded with netlon tube in a variety of containers. The packing strapping has been water blasted clean and placed in the netlon tube. Once spat is caught in these tubes they are hung out on a separate line. Growth is relatively slow because the netlon blocks with marine fouling and not all the oysters get good access to water. After several months (up to six) the oysters are agitated off the strapping and placed in bins in a floating upweller system (FLUPSY) (see Figures 8 and 9). Using two underwater electric pumps and a petrol motor driving an inverter, 3,500 litres/min/pump we accelerate water through the oysters. i.e. 7,000 litres per minute over 16 bins of oysters. Once the oysters have reached 10mm in size they are graded and placed in trays. Our FLUPSY had a capacity of 2 million baby oysters.



Figure 8: Oysters Pre-FLUPSY



Figure 9: The FLUPSY (Floating Upweller System)

33. These oysters are placed at 35 oysters per tray, 25 trays per 5 metre drop with fine, medium or large size mesh on the outside depending on the size of oyster. The trays foul constantly

with silt and marine fouling so have to be washed every 4-6 weeks. When enough of the oysters on the trays are approximately 20mm the oysters are stripped from the cages and regraded where the larger ones were taken to our yard and each one drilled and pinned onto a rope (Figures 10 and 11). The rest of the oysters too small to pin are returned to new trays. The pinned oysters are returned and hung out the next day where they will on grow to harvest.

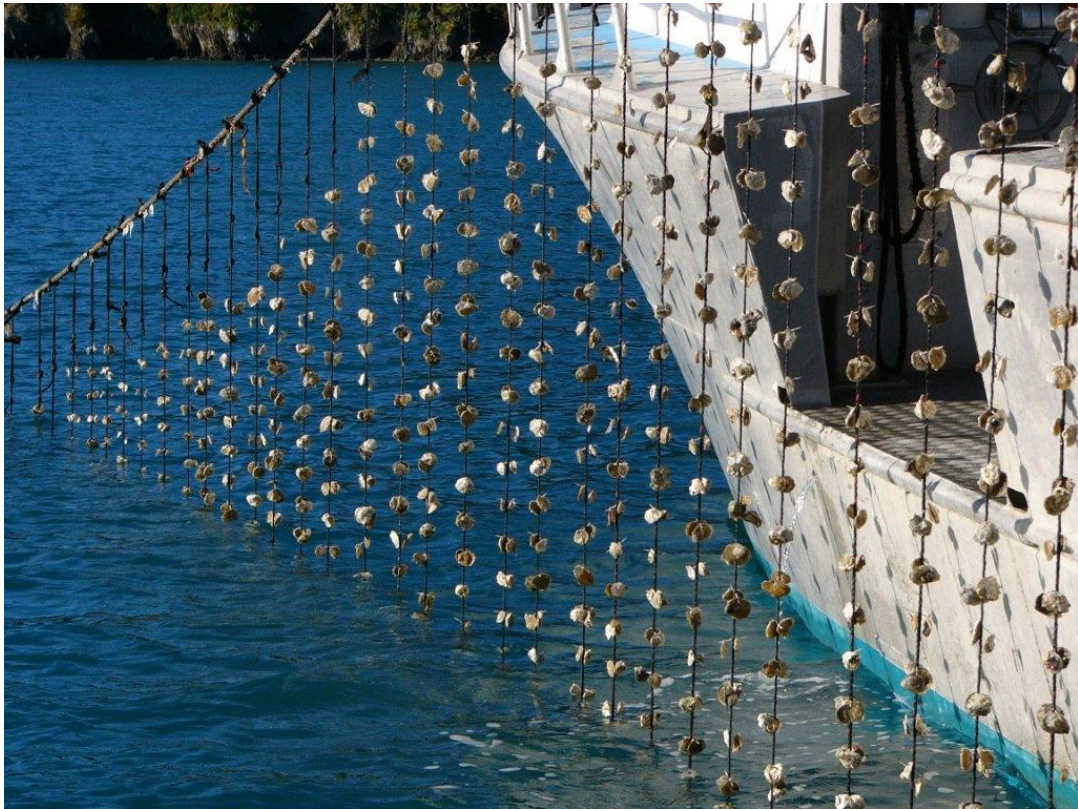


Figure 10: Pinned Oysters on Droppers



Figure 11: Pinned Oysters

34. If marine fouling gets too bad the oysters can be taken out of the water and treated for that fouling. Harvesting consists of stripping the oysters off the ropes and putting through a machine consisting of counter rotating brushes and then through a rudimentary grader.
35. In a **separate technique** which is a prelude to a new technique and used for a number of years we prepare tubes of packing strapping which we place either alongside or in the middle of a line where adult oysters are growing. The spat released from the adults settle on the packing strapping and the same procedure as above is carried out.
36. These techniques, while successful, are very labour intensive and have had our Company in a “holding pattern” while we look for techniques that will enable us to grow in a more economic fashion. Previous staff have said to me “You have the best oyster in the world, now you have to figure out how to grow it profitably”. WE NOW HAVE THESE TECHNIQUES.

OTHER OYSTER FARMING OPERATIONS IN NEW ZEALAND

37. There are several other companies or individuals in recent years starting to farm flat oysters.
38. In Bluff Harbour a company has started to again farm oysters in trays after getting new investors when the original company went into liquidation. This company has to relay (shift to another location) oysters if they ever get to market as the water in Bluff Harbour is

bacteriologically contaminated. Another option for this company would be depuration with clean water.

39. In Big Glory Bay on Stewart Island there were three oyster farmers who have been struggling with spat availability. They all have moved to hatchery spat and are making good progress. Their advantages are low levels of marine bio fouling and the ability to grow a large oyster with low mortalities. Their disadvantages are the cost of hatchery spat, slower and inconsistent growth and an inability to economically take advantage of emerging technologies. Surprisingly, their oysters taste quite bland compared to the wild Bluff stock and oysters grown in the Marlborough Sounds. For some unknown reason the natural set in Foveaux Strait has been very low since 2006 for both the wild fishery and the farmers and this has forced the farmers to hatcheries. It has also, I believe, had a major impact on the wild Bluff fishery where the combination of disease losses and a lack of recruitment resulted in a reduction from the quota of 15 million down to 10 million oysters in 2015. Prospects for 2016 are looking bleak, although latest reports suggest 10 million will be achieved.
40. Since 2016 prospects have worsened with seasons finishing early, reduced quota not caught, and issues with poor quality oysters. In addition, *Bonamia ostreae* is now at the entrance to Big Glory Bay. Technical advice on “the likelihood, speed and impact of *Bonamia ostreae* spread from Big Glory Bay to Foveaux Strait” is available as Biosecurity NZ Technical Paper No 2024/05.² The prediction is that Paterson Inlet would show infection in 2025 reaching the opening to Foveaux Strait by 2026. The paper goes on: “Once *B. ostreae* spreads into Foveaux Strait, it is predicted to spread at a speed of 2.5–5 km per year. At such rate, *B. ostreae* is expected to spread through the whole oyster population within the core commercial fishery area and reach the South Island’s Bluff peninsula within 7–14 years.”³
41. There are of course a number of rock oyster farmers in New Zealand (Pacific oysters *Crassostrea gigas*) and some in Marlborough, particularly in Croisilles Harbour, where a quantity was grown to transfer to Aotearoa Fisheries Ltd’s (recently renamed Moana) subsidiary Pacific Marine Farm Ltd, the largest oyster farmer in New Zealand. This was to try to avoid the herpes virus which typically occurs in the summer months and which decimated pacific oysters in the north several years ago. Croisilles Harbour is colder than the northern intertidal sites. This separation of the growing cycle where the oysters are finished off in a different area is another example of using separate sites to best advantage

² Available online: <https://www.mpi.govt.nz/dmsdocument/69225-The-Likelihood-of-Bonamia-ostreae-spread-from-Big-Glory-Bay-to-Foveaux-Strait> (Biosecurity NZ, 2024)

³ Biosecurity NZ, 2024, at page 2.

for disease control. Two other farmers that I am aware of grow for half shell and meat in Marlborough, but the overwhelming quantities are now grown by Marlborough Oysters via the flip farm method.

CONTINUED CHALLENGES FOR OYSTER FARMING

42. There are 11 known diseases or parasites of New Zealand flat oysters, other than *Bonamia* of which 2 (coccidiosis and larval fluke infections) cause sterility and/or death:

(a) ***Bonamia***

A serious pathogen (*Bonamia ostreae* and *Bonamia exitiosa*) is a parasite of the blood cells of oysters and enzootic in almost all flat oyster populations in the world. The parasite is similar (*ostreae* and *exitiosa*). Some countries have both, others just one of the *Bonamias*. It appeared in Brittany, France in 1979 and rapidly spread to all French oyster growing areas. Production went from 20,000 tonnes in 1970 to less than 2,000 after 1981. In 2001 about 1650 tonnes of flat oysters were marketed in France. Although the disease is enzootic (constantly present in an animal population, but usually only affecting a small number of animals at any one time) in France since 1980, the production of flat oysters still exists suggesting a stable host- parasite system.

Most of the science suggests that *Bonamia* affects oysters greater than two years old. Arzul et al (2006), and Montes et al (2003) observed that *Ostrea edulis* could be successfully cultivated in areas of Galicia, Spain contaminated with *Bonamia ostreae* if they were promptly marketed after 15-18 months of culture, although this was with imported sub-market-sized oysters. This conflicts with “*Bonamia induced mortalities* in one year old European flat oysters *Ostrea edulis*: Experimental infection by cohabitation challenge,” Delphine Lallias et al (2008).

Robert et al (1991) and Culloty and Mulchy (1996) stated that two years was the critical age for disease development in *Ostrea edulis* in the Bay of Arcachon, France and on the south coast of Ireland. Also Culloty and Mulcahy (1996); Grizel (1985); Engelsma et al (2010) found that individuals older than 2 years appear more susceptible to the disease. Nevertheless, both 0+ and 1+ year old *Ostrea edulis* are susceptible to infection and can develop a high prevalence and intensity of infection over a six month period with associated mortalities (Lynch et al 2005a). It was also noted that the prevalence and intensity of infection increase during the warmer months. I will leave the last word on international scene to Rowan Jacobsen who

wrote “A Geography of Oysters” considered to be **the guide** to oysters in North America.

“As if all those drawbacks weren’t enough to discourage growers from cultivating Flats, the oysters are currently being expunged from the planet by a protozoan known as *Bonamia*, which has the lovely habit of killing Flats just as they reach market size. Brett Bishop, a grower in Washington State, told me that one year he wound up paving his driveway with the shells of the most expensive oyster on the planet. He no longer grows Flats. Few do: In both Europe and the United States, Flats account for less than 1 percent of oyster production”.

In New Zealand *Bonamia* was apparent in Foveaux Strait oyster tissues fixed in 1964 (Hine and Jones, 1994) but the cause of mass mortalities in the early 1930’s was unknown and similar mortalities in the early 1960’s was attributed to *Bucephalus* (a trematode or fluke infection) common in flat oysters but that conclusion is questionable. The Foveaux Strait oyster population experiences large mortalities every 20-30 years and these are likely to be *Bonamia*.

Bonamia epizootics (disease event in animal population analogous to an epidemic in humans) were confirmed in 1986-1992 and 2000-2009 with closures 1985-1993 and 2000-2005.

In Wellington Harbour the now defunct NIWA hatchery at Mahanga Bay carried out extensive trials with flat oysters importing them from Foveaux Strait to that facility having ascertained that the local stock already had *Bonamia* present. The scientist in charge of the project Bob Hickman (now retired in Wellington) has informed me that most of his oysters died several months after spawning at age 2 years + 3 or 4 months. In Port Underwood, both Kono LP and ourselves have experienced mass mortalities with oysters that are older than 2 years and four months. This is consistent year on year and has occurred over a long period. It happens after spawning which leaves the oysters vulnerable to the parasite.

Detailed explanations of the interaction can be found in “The Ecology of *Bonamia* and decline of bivalve molluscs” P.M. Hine (1996).

In Oyster Bay in Tory Channel for over 10 years we have experienced varying degrees of mortalities in oysters older than two years and four months as we endeavoured to supply the local market for twelve months of the year. They had been manageable. Increasing mortalities came to a head in the hot summer of 2014/15 when we encountered severe mortalities over two year classes, which forced us off the domestic market. We would propose that the hot summer caused stress but the

reasons for this are poorly understood. Our stock had become too old and we had become complacent that we would not experience the Port Underwood situation. However, what we did not know was that in a serious biosecurity breach somehow the Northern Hemisphere *Bonamia* (*B.ostreae*) had found its way into the “Top of the South”. We were dealing with a new disease in a naïve population (see paragraphs 41 – 43 for more detail). Oyster Bay has been fallowed and this is seen as a way to move forward. Our management needs to change with faster growth and a shorter harvesting season (May-Dec) with all year 2+ stock off the farm by December. How this faster growth will occur is discussed under emerging technologies, paragraphs 74 – 78, and we now have export markets which want smaller sized oysters than our domestic market demands in both China and North America. Over the years NIWA (now Earth Sciences) (in its former guise of MAF Fisheries Research) and Cawthron Institute have carried out many tests on our oysters as have Cawthron on Kono’s oysters.

(B) **Coccidiosis:** Also called APX (apicomplexan X)

The Coccidian parasite has three forms and has been found at moderate levels in our oysters in Tory Channel. The scientists have suggested that the infections were not likely to cause mortalities and our own observations support this as the parasite renders oysters sterile and we have a high degree of brooding oysters.

Field studies suggest that 5% of commercial sized Foveaux Strait oysters die from this disease each year but it is worth noting that the commercial sized oysters there are likely to be 5-8 years old.

(C) **Larval Fluke Infections**

We also have levels of *Bucephalus*, a larval fluke infection but mortalities have not been attributed to this infection.

However, the highest prevalence observed (42%) over several years of study was in oysters held in lantern nets in Port Underwood (ours and probably from Foveaux Strait) which may indicate that *Bucephalus* can be a problem when oysters are cultured in moderately enclosed bodies of water (like trays) containing many individuals of several fish species. *Bucephalus* requires an intermediate host of a fish species, typically bottom dwelling species like monkfish (Stargazers) but possibly other fish.

(D) **Other Parasites and Diseases**

- (I) Rickettsial infections (Picton);
- (II) A microsporidian parasite (Port Underwood and Picton);
- (III) An Ancistrocoma – like ciliate (Port Underwood);
- (IV) Dense cells with enlarged nuclei in the DD epithelium;
- (V) Dysgerminomas and seminomas;
- (VI) Nematodes in the gut;
- (VII) Copepods in the gut (Picton).

These parasites and diseases have also been found in other locations in New Zealand.

***Bonamia Ostreae* in Marlborough**

- 43. Early in 2015 *Bonamia ostreae* was discovered in hatchery spat at the Cawthron Aquaculture Marine Park. It was subsequently also discovered in Port Underwood and Oyster Bay, Tory Channel and recently (June 2016) in outer Queen Charlotte Sound and outer Pelorus Sound, including Motuara Island and Ships Cove.
- 44. It is very closely related to *Bonamia exitiosa*. It has not been found elsewhere in New Zealand in spite of extensive testing which is continuing. As a result it has been declared an unwanted organism, the World Organisation for Animal Health (also known by its historical acronym OIE) has been notified, all our trading partners have been notified as required by our Overseas Market Access Requirements (OMARS) and two countries have blocked access of our oysters: New Caledonia and parts of Canada.
- 45. Our Company had a permit issued under Section 53 of the Biosecurity Act 1993 to transfer oysters suspected of harbouring *Bonamia Ostrea* to and from our farms in Tory Channel and Port Underwood and to sell oysters to retail markets, and there is now a Contained Zone in the top of the South and a Protected Zone in Southland/Otago regions, the Chatham Islands and out to 12 nautical miles from their coasts.

BIOSECURITY

- 46. The principles under which Apex will carry out flat oyster farming to manage the risk of the *Bonamia Ostrea* are as follows:
 - (a) Infection with *Bonamia* does not necessarily equate with mortality;
 - (b) Separation of flat oyster year classes between Oyster Bay and Onapua Bay;

- (c) Farming flat oysters in suspended culture to avoid contact with any bottom dwelling wild oysters;
 - (d) Maintaining a low stocking density of flat oysters;
 - (e) Minimising handling and stress of flat oysters;
 - (f) Maximum flat oyster production cycle of 28 months to avoid the higher risk period once flat oysters have matured;
 - (g) Regular removing of fouling and replacing all oyster farming gear at the end of every 28-month cycle;
 - (h) Fallowing or resting of sites or structures where practicable;
 - (i) Use of structured surveillance and rapid removal or standstill responses if flat oyster disease concern arises.
47. Detailed explanations are outlined in clause 7 of our draft Biosecurity Management Plan.
48. Our proposed farming practice is designed to minimise biosecurity issues. One key issue at Onapua Bay is the low flow nature of the sites evidenced by the Marlborough District Council real time model of tidal flows in Tory Channel.⁴
49. Opinions from Dr Mike Hine and Dr Ben Diggles in 2001 on separation distances, recommended 100-800m for low flow sites in the presence of propagules, meaning that because of the brief life of those propagules they will stay on or near the farm site sinking to the benthos due to them being negatively buoyant (Mialhe et al 1988).
50. There are low-negligible oyster stocks in Onapua Bay as a result of degradation of the benthos over many years.
51. The closest significant and/or commercial beds (currently not finished) are in Cloudy Bay. That is a considerable distance from Onapua Bay and Tory Channel. This stock has been extensively sampled since 2017 without finding any *Bonamia ostreae*.
52. Low density techniques will be employed (as outlined in “reduced family density of New Zealand flat oyster *Ostrea chilensis* associated with decreased infection by *Bonamia ostreae* and other parasites”, Zoe Hilton et al 2025).

⁴ www.marlborough.govt.nz/environment/harbours/tory-channel-current-and-tide-model

53. Care needs to be taken to minimise stress and sub-surface techniques will be employed which will help to achieve this. Infection does not necessarily equate with mortality which can be brought on by stress.
54. Obtaining enough water space to fallow is, in a practical sense, not possible.
55. The alternative is outlined in our draft Biosecurity Management Plan (BMP) clause 7.2. At the completion of every 28 month cycle or prior following harvesting, Apex will clean all warps, thoroughly clean all backbones, sub-surface droppers and bridles, and rotate floats to allow desiccation of any fouling and wild oysters present to achieve the same result as fallowing.
56. In a publication by the Ministry of Primary Industries entitled “Literature Review of Ecological Effects of Aquaculture – Biosecurity” produced by NIWA and reviewed by Cawthron Institute an extract was as follows:

“Planning and Zoning

In terms of aquaculture planning and broader management considerations, site selection is clearly important for reasons outlined in s 7.1.2. Additionally, the OIE’s online aquatic animal health code (www.oie.int/en/international-standard-setting/aquatic-code/access-online/) suggests establishing zones and using compartmentalisation (through geographical separation) to manage biosecurity and epidemiological risks (OIE 2011). There are benefits in maintaining subpopulations of culture organisms with known distinct aquatic animal health status. Factors contributing to effective management of compartmentalisation include physical and spatial factors that affect the status of bio security in a compartment, infrastructural factors (e.g. water supply, vessels and facilities for the introduction of equipment), a biosecurity plan (which involves screening for disease when stocks are moved between compartments) and a traceability system. Further elaboration and recommendations can be found in the OIE code.”

57. Since the publication referred to above, MPI commissioned research on biosecurity entitled “Managing Biosecurity Risk for Business Benefit” by Coast and Catchment Ltd, Environmental Consultants. Published on 14 October 2014, it has a number of recommendations including the following relating to finfish:

Single-year class management and fallowing for finfish

Aquaculture Bay Management Area [“ABMA”] agreements combined with single-year class production and a short fallow period (1-3 months) after each production cycle have proven to be very effective in reducing mortality rates in farmed salmon overseas (Wheatley *et al.*, 1995; Chang & Page, 2010; Scott, 2010) and reducing the use of antibiotics and antiparasitic

chemicals in aquaculture (Midtlyng *et al.*, 2011). We recommend that single-year class production should be carried out at all finfish sites, with short fallow period between production cycles to limit disease transmission. All farmers within the same ABMA should stock the same year-class, and stock, vessels and equipment should not be transferred among different ABMAs to limit disease transmission. We have a Heads of Agreement with Te Ātiawa o Te Waka-a-Māui who have sites 8409 and 8410 in Oyster Bay to enable this to happen should they wish to grow oysters.

It should be noted that additional farming space will be required in order to implement single-year class management and fallowing without a decrease in annual production. In order to encourage the uptake of these biosecurity methods in New Zealand, we suggest that regulatory authorities make additional farming space available to finfish farmers, with the proviso that the additional farming space will be used to implement single-year class management and fallowing practices.

58. MPI have continued work on biosecurity and on 29 July 2016 produced a significant report entitled “Options to Strengthen On-farm Biosecurity Management for Commercial and Non-Commercial Aquaculture” (www.mpi.govt.nz/document-vault/13287). Paragraph 5.4 at pages 69 – 75 covers “area-Based Management”; paragraph 5.11 at pages 155 – 163 covers “Fallowing”; and paragraph 5.34 at pages 345 – 349 covers “Year Class Separation”.
59. This report continues the theme outlined above.
60. It has been shown that flat oysters can have low levels of *Bonamia* and live with that for over 2 years without mortality:

“It has also been shown that success of infection is **dose dependant**. A single *Bonamia* can establish infection, but this is rare, and the higher the initial dose the greater the likelihood that infection will occur. However, even an initial dose of 10,000 *Bonamia* results in only 40% infection (Hervio 1992). Therefore, because the parasite passively transmits down current, and particle numbers per unit volume of water would be rapidly diluted, successful transmission is most likely to occur when large numbers of heavily infected oysters are close and upstream, and least likely to occur when infected oysters are at low densities, distant and not directly upstream.

There is no evidence of a resistant stage that may lie in mud for years, to exist when conditions become favourable, although some findings seem to suggest this. (P.M. Hine, July 1992).”

61. Typically other researchers hold a different view. Van Banning (1990) demonstrated that, when an oyster bed was cleared and left fallow for several years the naïve oysters, reintroduced into the area, quickly developed infection, supporting the idea that a reservoir of infection had persisted, perhaps in an intermediate host or vector, or in a spore form.

Other researchers have suggested beds left for six years follow the same pattern. But Van Banning in 1988 suggests the parasite depends on flat oysters for its survival and spread, and other aquatic organisms are probably not involved as carriers or transmitters.

62. With *Bonamia* it seems that fallowing is not the entire answer but that separation of year class one and two is essential.
63. We are not going to solve the *Bonamia* issue.
64. The French Government through Ifremer have spent millions of Euros attempting that. We just have to learn how to manage it, and I believe that substantial separation of year classes is a way to go, together with changed management techniques where the oysters are handled less often. Because the Bluff fishery produces an iconic product, much research has also been carried out in New Zealand, but other countries also have devoted research efforts to the *Bonamia* problem (Spain, Ireland, Canada and Chile). No one has satisfactorily resolved the issue, but as the disease progresses a level of natural resistance is built up (Van Banning) (B.P. Wood and D I Fraser in “*Bonamiasis*” (Elston R.A. *et al.*, 1987), and Naciri-Graven *et al* (1998) and Culloty S. C. *et al* (2004) in studies have shown selectively bred stock demonstrate enhanced resistance.
65. Discussions are underway with the Cawthron Institute to use some of their bi-valve funding to produce families of disease resistant stock. Also our natural spat catching methods are from stock which have already survived for two years, i.e. we are breeding off to some degree survivors.
66. In France spat production is in Brest and Quiberon with the main growing areas being Quiberon and Cancale. All the Brest spat production and one third of Quiberon spat are moved to Cancale at 10 months. No one can explain why Quiberon continues to have several year classes in close proximity and still produce oysters.

OTHER THREATS

Paralytic Shellfish Poisoning in Adjacent Opuia Bay

67. Beginning in early March 2011, a bloom of the saxitoxin (STX) producing dinoflagellate *Alexandrium catenella* developed in Tory Channel and spread throughout the greater part of the Queen Charlotte Sound.
68. Analysis of cyst distribution and isotope dating of strata in sediment from Opuia Bay suggests that *A. catenella* has been depositing cysts at this location for at least three decades (MacKenzie unpublished data).

69. In 2010/2011 the levels of total STX measured in shellfish were amongst the highest ever recorded in New Zealand, although the dinoflagellate is dominated by the low toxicity C1, and C2 types.
70. It was during this period that some smaller oysters we had growing in Oyster Bay, Tory Channel were affected by the bloom and some mortalities occurred. The bloom has become an annual feature in adjacent Opua Bay:
- 2011/2012 No closures;
 - 2012/2013 Closures, but magnitude and duration was less than 2010/2011;
 - 2013/2014 Closures, but the levels never exceeded the international regulatory limit; and
 - 2014/2015 No closures.
71. The toxicity was monitored by the Marlborough Shellfish Quality Programme.
72. To avoid the *Bonamia* parasite it is unlikely that harvesting will need to occur during the period the bloom is most active, which is in late January/February/March.
73. There exists a commercial risk that juvenile oysters may be adversely affected by this seasonal bloom but this can be managed by delaying transfer of oysters to Onapua Bay until the worst effects of the bloom are gone.

Ocean Acidification (OA)

74. OA is an emerging threat to shellfish production. It is the increase in seawater acidity caused by increased carbon dioxide in the atmosphere. It has the potential to fundamentally change the ocean, its habitats, food webs and marine life. The world's oceans are already 30% more acidic than they were at the dawn of the Industrial Revolution.
75. In 2007 and 2008 Whiskey Creek Hatchery in Netarts Bay, Oregon experienced losses that reduced production dramatically. Whiskey Creek is one of the main producers of oyster spat in the Pacific Northwest of the United States, farming oysters commercially for over 150 years and providing 3,000 family wage jobs in the oyster farms it provides spat to. OA results in seawater corrosive enough to dissolve fragile young larval shells and affects every hatchery from California to British Colombia.
76. While the Pacific Northwest has particular environmental conditions that contribute to OA, New Zealand is not immune from its effects.

77. A localised solution may be growing seaweed with oyster crops. Trials are underway in Puget Sound.
78. Like plants on land, kelp and other seaweeds take up carbon dioxide and can, therefore, mitigate the effects of OA. There is no better place that I know of in the Marlborough Sounds to grow seaweed than Tory Channel. If we were using *Undaria pinnatifida* which is very easy to grow, but is an annual, we would need to harvest it before it decays and releases all the carbon it photosynthesized in life. Many seaweeds only provide a short term sequestration (capturing CO₂). The proposal to cultivate and harvest *Undaria* at Onapua Bay is discussed below.

Marine Fouling

79. All soft fouling can be treated if necessary, but the main fouling organism is the blue mussel. Unlike greenshell mussels, blues settle in the top part of the water column and can be largely avoided by lowering the long line backbone two, three or four metres below the surface. This works well especially in the “quiet” water more suited to oyster production. Typically, Tory Channel has a low incidence of blue mussels.
80. Episodic heavy settlements can and do occur principally during storm conditions and where the intention is to grow oysters on ropes for over two years without major intervention, this may cause problems. Our intention would be to revert to our current method of pinning, or use trays, as it is likely that the oysters could get to sufficient size for pinning or set out on trays before being smothered by blues, as the time of oyster settlement coincides historically with low blue settlement in Port Underwood and Tory Channel.
81. This would add a cost compared to leaving them on the ropes full term, but it would still cut out a lot of the work we currently do. Machinery is available now in Japan which is claimed to drill and pin 3,600 scallops per hour. Our present automated machine operates at best 1,300 oysters per hour and our staff can hand drill and pin 500 oysters per hour. As our machine is an adapted scallop machine we would expect to make similar modifications for the scallop machine to work for oysters. A scallop pinning machine can be seen operating 3,600 scallops/hour at “Amazing Japan Scallops Farming and Harvesting”, a video on YouTube⁵.
82. It is our intention to continue with pinning using either oysters stripped directly off ropes or using ‘thinnings’ from rope caught oysters. (Specifications of the Japanese machine are

⁵ <https://www.youtube.com/watch?v=7DhMCh8t8HM>

included at **Attachment 3**). Alternatively, these oysters can be placed on trays for on-growing.

Fish Predation

83. Our present system protects the growing oysters from fish predation with plastic netlon, but of course also stunts growth. It will be necessary from time to time to catch the main culprit (spotties) to minimise this risk, as oysters grown directly on ropes have no such protection. We have taken steps to register our Company as a commercial fishing entity, as the recreation limit of 50 spotties per day is insufficient to cope with the volume of spotties we will catch at certain times of the year.

THE FUTURE OF OYSTER FARMING/EMERGING TECHNOLOGIES

84. As stated earlier our present farming techniques result in slow growth for the first year in a species where long term avoidance of an enzootic disease requires fast growth through all stages.
85. A new development as significant as long line culture and automatic seeders were to mussel farming in this region has been developed here. The only difference is that the technology for mussels has been copied worldwide whereas this technology for greatest efficiency relies on the biology of the oyster which can only be replicated in Chile. I have seen Chilean oysters and understand they take four years to grow to a small size.
86. It involves spraying a cement mixture onto ropes. Cement based products dipped onto a substrate have long been used for catching oysters and are one of the common techniques.
87. Worldwide the baby oysters (spat) settle on the cement and are removed for on growing as single seed oysters. The difference in our case is that we add glue to the mixture as we do not want the oysters to fall off. The small spat which previously had to go through several time-consuming systems previously described where their growth is restricted by netlon tubing are now free to grow without any restriction at all. The differences in growth rate is amazing. Not only is the labour input substantially reduced but in many cases the oysters can be taken right through to harvest. There will be a proportion that will only be suitable for meat because the shell shape will not be suitable for half shell but in contrast to rock oysters, flat oyster meat has a high value in New Zealand and Australia, \$45.00 to \$50.00 per dozen at retail.

88. New markets which want a smaller oyster are also being developed and this will be covered later.

OYSTER TRANSPORT AND PROCESSING

89. Since 2008, until we were closed by Notice of Direction under the Biosecurity Act, we had been supplying the local market mostly on a year round basis and with a small amount of export. Oysters were harvested Mondays and Thursdays for deliveries Tuesday and Friday for local market (NZ). Oysters are packed in polystyrene containers flat side up covered with bubble wrap and then gel ice and the package strapped up. We deliver them to Courier Post in the early evening and they arrive at their destinations early the next morning. For export the oysters are delivered in polystyrene containers to a licenced factory (Enzac Aquaculture or Kono LP) where, in a recent innovation, rubber bands were placed around each oyster to ensure the oyster liquor remains in the shell, thereby giving a greater shelf life. They are then couriered to Auckland where they are consolidated and sent to destinations such as California, Toronto, Tahiti and Hong Kong. The Hong Kong, Toronto and Tahiti deliveries were consolidated with Pacific Oysters from the North Island going to the same destination.
90. Flat oysters are typically all sold live in shell so no processing takes place.

FARMING ALGAE/SEAWEED IN ONAPUA BAY

91. There are currently three people selling *Undaria* (Wakame) based products from the Marlborough Sounds.
92. Sanford sell approximately 24 tonnes per annum at a good price as an ingredient for a pet food manufacturer and have done so for some time.
93. Tory Channel Natural Kelp (Mick Norton) has been producing a chopped, fermented and filtered kelp tea for a number of years. Seresin Estate, Huia Vineyards, Lake Chalice Wines and Loveblock Farms all use the product which is a natural balanced liquid plant food, Foliar Spray, rock bath and soil conditioner. www.naturalkelp.co.nz records testimonials as to the effectiveness of the product.
94. Alex Pressman www.waikaitu.com has been purchasing *Undaria* from marine farmers since 2013. He processes it at a production facility in Tasman after first blanching, cooling and salting the seaweed in the traditional Japanese method as soon as it comes out of the water. It is sold as a soil nutrition product and as a human nutrition product as either fresh salted NZ Wakame (Japanese name for *Undaria*) or as a New Zealand seaweed nutritional

supplement. It is available on Amazon.com and claimed to be the number one selling Wakame product on this site after seven months. It is also in the top 19% of all grocery products sold on Amazon.

95. The National Retailer is PGG Wrightson and Fruitfed Supplies, with 98 stores throughout New Zealand and is also sold through a number of regional distributors.
96. Seaweed is an emerging industry. Mr Pressman claims the world market is as large as NZ\$9 billion. An article from “Aquaculture NZ Magazine February 2016” is included as **Attachment 4** to this report. Page 6 details the “Growing Opportunity”.
97. Our company is in contact with an Australian processor (Marinova), who has a requirement for 10 – 20 tonnes of dried *Undaria sporophylls* (the reproductive tissue above the holdfast) at an assumed price of \$20k per tonne for production of Fucoidan for nutraceutical use. Tests are being arranged to assess the suitability of our product, including tests for heavy metals.
98. Mainly grown in China, Korea and Japan it is also cultivated in Brittany, France, Tasmania and South America.
99. The cultivation method would be to hang out ropes which naturally collect *Undaria* spores virtually anywhere in the Marlborough Sounds. Tory Channel is particularly good as it has a good water exchange, cool temperatures and high nutrients. It would probably be harvested twice yearly. Any excess would likely be converted to fertiliser.
100. One other immediately promising seaweed is *Asparagopsis armata* which occurs naturally in Tory Channel and can be a slight nuisance species on small mussel spat (see Figure 12). It grows up to 25 cm high, is a cold water species and has barbed branchlets which lends it to artificial cultivation as it can be propagated vegetatively. *Asparagopsis taxiformis* (which has been used in trials) is its warmer water equivalent up to 15 cm high, similar habitat to *Asparagopsis armata* but without barbed branchlets.



Figure 12: *Asparagopsis armata*

101. In ground breaking research at James Cook University in Townsville, working with CSIRO scientists believe it is likely that feeding a small amount of dry *asparagopsis taxiformis* can reduce the methane a cow produces by up to 99% and sheep by 50% – 70%. The science is contained in “Effects of Marine and Freshwater Macroalgae on In Vitro Total Gas and Methane Production” 2014 and Kinley *et al.*, 2016. As New Zealand’s carbon emissions are 48% created by animals, there is an aquaculture opportunity, although the amount of seaweed required is daunting.
102. Professor de Nys from James Cook University states that *Asparagopsis armata* is definitely a suitable species possibly more so than *asparagopsis taxiformis*. He also says the active ingredient (bromoform) is present “quite possibly in high levels”. We have collected some seaweed for assessment and are talking to their business development team at their request as there is strong interest in supply. There are recent claims that bromoform is only part of the picture and that other bioactive compounds of the seaweed are also implicated in methane reduction.
103. The application includes a number of seaweed species, although the original intention was just to include a bulk species that might counter the effects of ocean acidification, i.e. *Undaria pinnatifida*. It should be noted that all species will sequester carbon. With the cultivation of any bi-valve, seaweeds naturally occur as a bi-product. In this area the commercial uses of seaweed would be:
- “Fertilisers products – there are a number of businesses that use seaweeds to develop seaweed-based soil conditioners and fertilisers;
 - Medicinal and pharmaceutical products- seaweeds are increasingly being used to produce high-value medicinal and pharmaceutical products. Recent studies suggest anti-viral, anti-AIDS and anti-cancer drugs could be manufactured from particular seaweeds;
 - Agar manufacture – there is a small but well-established industry to supply alginates, agar, and carrageenans – these are complex large molecules, that are unable to be synthesised. And are only found in particular seaweeds. Agar has very specific applications in a wide range of manufacturing processes;
 - Food products – there is a small but growing industry supplying niche fresh and processed products for human consumption;
 - Feed for farmed paua – paua farmers use seaweeds to feed their paua stocks.”

104. The species applied for are as follows:

- *Undaria pinnatifida*;
- *Gigartina* spp.;
- *Pterocladia* sp.;
- *Grateloupia* spp.;
- *Aeodes nitidissima*;
- *Callophyllis* spp.;
- *Gelidium* sp.;
- *Ulva* spp.;
- *Macrocystis pyrifera*;
- *Porphyra* spp.;
- *Asparagopsis armata*;
- *Ecklonia radiata*; and
- *Gracilaria* spp.

CONSIDERATION OF ALTERNATIVE SITES

105. It is very clear that Tory Channel provides ideal sites both for water temperatures and salinity for flat oyster cultivation. In looking for suitable area for oyster cultivation we restricted ourselves to these areas.

106. Apart from Croisilles Harbour where flat oysters also grow, there are few, if any, areas in the rest of the Marlborough Sounds where flat oysters grow naturally, although I have seen some intertidal specimens in the inner Queen Charlotte Sound. This is likely to be a combination of water temperatures or salinity fluctuation not suiting the oyster.

107. In the early days of mussel farming the Yealands family attempted to grow flat oysters in Mills Bay in the Kenepuru Sound, but this was unsuccessful. The late Dr Mike Bull also did spawning work on flats in the Kenepuru Sound as part of his PhD thesis.

108. For our company, largely based as we are in Tory Channel, the logistics also have an influence. Onapua Bay will enable us to efficiently use existing vessels, staff and equipment. In addition, the proximity of the farms to Waikawa and Picton facilitates servicing of local and export fresh market sales.

109. Tory Channel has only a few marine farms and the recreational use of the adjoining bays is very minimal. Onapua Bay area had been identified as a marine farming area previously with a small farm at Missionary Bay.⁶ It previously had a population of oysters and has sufficient space to allow marine farming without impinging on other uses of the area. Surrounded by forestry on most of the adjoining land with a log load out site at the head of Opua Bay and with very few residences, it has the appearance of a working bay. From work Cawthron scientists had done in Opua Bay I was aware that the bay was very productive. All other bays in Tory Channel are dominated by residential development. Our reasons for selecting the site in Onapua Bay are also shown in the Tory Chanel Site Selection Map at Appendix R of the 2017 Plan Change documents.⁷
110. In addition, Onapua Bay is in a zone which currently has the best rainfall criteria in the Marlborough Sounds Quality Programme. It takes 59.9mm of rainfall in any 24 hour period for the area to close and that closure is limited to two days from when the Port Underwood rain gauge goes back to 59.9mm. This is a significant advantage when servicing fresh export markets where restaurants see benefit in receiving top quality product consistently delivered.

ECONOMIC EFFECTS

Expected Benefits from Onapua

111. The additional water space will give critical mass without affecting our present mussel production and, more importantly, enable separation of year classes. The proposed two year oyster farming cycle is shown in **Attachment 5** to this report. Much of the farm practice is outlined in our draft BMP. We intend all culture to be on ropes at densities of less than outlined in Dr Zoe Hilton's (et al) 2025 paper: "Reduced farming density of New Zealand flat oysters *ostreae chilensis* associated with decreased infection by *Bonamia Ostrea (sic)* and other parasites".⁸ Where practicable, we will alternate oyster lines with mussel culture lines. We have substantial markets for smaller mussels (80-85mm and spat 45-50mm) so can align mussel harvesting to fit with oyster harvesting. While these measures will not guarantee *Bonamia* free status it will substantially reduce the chances of an epizootic event. I do not

⁶ Shown on Marlborough Sounds Marine Farms Sheet 10 Map, and Proposed Marlborough Sounds Maritime Planning Scheme, Planning Map 22.

⁷ <https://www.marlborough.govt.nz/client-api/marlborough/property-files?url=https%3A%2F%2Fmdc-datascape.au-s1.cloudhub.io%2Fapi%2Fdatascape%2Fengagement%2Fv1%2Fproperty-files%2Ffile%2F1715156&name=Appendix%20R%20-%20Site%20Selection%20Map.pdf>

⁸ Available online: <https://www.sciencedirect.com/science/article/pii/S0044848625005691>

believe we will ever get rid of *Bonamia*. It is a matter of keeping it at a low level so that inoculation pressure does not build up i.e. success of infection is dose dependant.

Benefits from Oyster Farming and Processing

112. I believe flat oyster farming in Marlborough has a huge future. We are destined to become a major exporter of this valuable product as the opportunity exists for commodity priced greenshell mussels to be replaced with the much less intensively farmed flat oyster and so make better use of water space. In Oyster Bay, Tory Channel where we have had most of our oyster production in the past, it takes 6.5 lines of oysters to equal the biomass of one mussel line. With deeper water in other sites this ratio will change, but the physical characteristics of the farming will mean the biomass will always be much less than with mussels.
113. The opportunity also exists to compete with Bluff oysters on the domestic market and look at export to Australia. As explained earlier our “new season” will be 1 August to 31 December and maybe until January/February. The Bluff oyster season is 1 March to 31 August and is often finished before that date. There exists a substantial opportunity to put oysters whose shells are unsuitable for half shell into the meat market, although there would be times that production would have to halt because of brooding oysters. There is no reason why a competing oyster could not also be on the market during the Bluff season. The Foveaux Strait Fishery has been under stress for at least three years. In addition, poor recruitment to the fishery since 2006 has had a substantial effect. For reasons not understood by me there has been low recruitment also in the flat oyster farming sector in the South, which forced all operators in Bluff Harbour and Big Glory Bay or Stewart Island into hatchery production.
114. There is little opportunity for Bluff oysters on the export market. High levels of cadmium are a health concern for many countries.
115. Currently flat oysters are not processed for half-shell as far as I am aware anywhere in the world, although if production got high enough it is a possibility.

Exports and Global Demand

116. New Zealand does not have a sophisticated flat oyster market.
117. Larger sized wild dredged oysters in pottles from Foveaux Strait has been the norm.
118. Encouraged by chefs like Al Brown, we started the live trade in New Zealand and the result has been a proliferation of oysters bars selling live oysters freshly shucked. In the top

restaurants we service, our oysters sold typically for \$5.50 to \$6.00 per piece. For that price in New Zealand the restaurant customers look for the larger sized oyster which we have problems producing as explained earlier. Our largest buyer has been chef Al Brown at Depot in Auckland where the only flat oyster he uses is our Tio Point oyster. In his book “Depot” he extolls the virtues of our product. An extract is included at Attachment 6. Our product also featured in Simon Farrell-Green’s book “Food Heroes.” An extract is included at Attachment 7 to this report.

119. We had heard that in the United States smaller oysters were the norm. I was already selling a smaller oyster into Toronto, Canada, so in collaboration with Kono LP’s Andy Elliot and myself in August 2014 we flew to California. We were assisted there by an Ora King marketer. We covered 35 top restaurants and oyster bars from Los Angeles, San Francisco, Napper Valley and Las Vegas. We told a story about a special oyster from New Zealand that had lots of flavour.
120. For the Americans our oysters were a taste revelation as their oysters are very bland. We thought we were taking small 45 - 60 gram oysters to the market but two restaurants asked did we have smaller sizes. One leading oyster bar in Los Angeles referred to our Tio Points as the unique 6th oyster as to date they considered only five, described as follows:
 - Eastern (*Crassostrea virginica*) - large, firm, briny.
 - Pacific (*Crassostrea gigas*) - large, soft, sweet with cucumber notes.
 - Kumamoto (*Crassostrea sikamea*) - small, creamy, with hints of melon.
 - European Flat (*Ostrea edulis*) - medium, metallic, with a trace of caviar and hazelnut.
 - Olympia (*Ostrea conchaphila*) - Tiny, coppery and smoky.
121. The European Flat (a cousin to ours) is rare on menus and is an imported species with only three producers and the Olympia is their only native *Ostrea* species. It is tiny, takes a good four years to grow to the size of our old 50 cent piece and is rarely seen on the market. Because of its significance as a native, restoration projects abound. The Americans take their oysters quite seriously. To quote Rowan Jacobsen again:

“Other Species

In addition to the five species that can be grown legally in North America, you may encounter four others – at least as rumors.

Chilean Oyster (*Ostrea chilensis*)

Chile is one of the only countries – along with Australia, New Zealand, Mexico and Canada – that has a trade agreement with the United States so that its live oysters can be imported. A few years back, an oyster known as the Chiloe was a big hit at oyster bars. As you can tell from its genus, *Ostrea*, it is a relative of the European Flat, and it tasted like it. Though small, it was as briny and powerful as they come, as well as plump and firm-textured. Being from the southern hemisphere it was an ideal oyster to eat during our summers, when other oysters might be offline for reasons of spawning or disease. Alas, the Chiloe hasn't been seen on these shores in several years"

122. So our oyster is not unique. I have seen the Chilean oyster on the Island of Chiloe. It has the potential to compete with our oyster but takes four years to grown to a still very small size. Something we can do in our water and with our techniques in eighteen months.
123. Below is a menu from Connie and Teds an iconic Los Angeles oyster bar (Figure 13). Features are the number of oysters available at US\$3 per piece, the New Zealand rock oysters on the menu (Coromandel and Kiwi Cup) and our unique flat oyster at US\$7 per piece. I personally do not think the US\$7 is sustainable for any volume and that the retail price will settle at around US\$4.50 per piece. For counter season supply this is a huge opportunity.

★ CONNIE AND TED'S ★

TODAY'S CATCH

King Salmon, California \$24	True Cod, Massachusetts \$26
Bluefish, New York \$19	Porgy, New York \$22
Halibut, Alaska \$29	White Sea Bass, California \$26
Monkfish, Massachusetts \$27	

▲ Chilled Buchot Mussels ▲
Blue Hill, Maine \$14

Live Santa Barbara Sea Urchin \$18

TODAY'S OYSTERS \$3

Beau Soleil, N.B.	Kusshi, B.C.
Naked Cowboy, NY	East Beach Blonde, RI
Black Duck Salt, VA	Mermaid Cove, P.E.I.
Barnstable, MA	Sweet Petite, MA
Kiwi Cup, N.Z.	Blue Hill, ME
Luna, CA	Mattaki, B.C.
Wellfleet, MA	Coromandel, N.Z.
Shigoku, WA	Minter Sweet, WA

🦪 Tio Point "The 6th Oyster," New Zealand \$7 🦪
a unique species of flat oysters

🦪 Chef's Choice Oyster Platter 🦪
\$17-half dozen or \$34-one dozen

Pair with a Connie & Ted's Oyster Stout by Craftsman Brewery of Pasadena \$7 Pint

Figure 13: Connie and Ted's Menu, LA

124. Connie and Teds sold 20 dozen Tio Points in the few days before we arrived.
125. Our oysters were also sold in 2015 into New York where they were used in the promotion of New Zealand's bid to obtain a seat on the United Nations Security Council. I believe the market will expand as product becomes available and it was our intention to be back in this market from August 2017. I also include as Attachment 8 a flyer from an upmarket Robb Report (November 2014 issue) and corresponding email.
126. We should not forget the traditional oyster markets of Hong Kong and Singapore as well as burgeoning demand from China and Taiwan. Australia does not allow the import of live

product so meat would be the only option. We just need to be careful not to over-promise a large oyster that is difficult for us to deliver.

127. On oyster sizes, I am reminded of the day when Chef Simon Gault came to visit our farm. I took him to a line of oysters which were not considered large enough for the New Zealand market. I picked some off the rope and as I was cleaning them he said “have you got any bigger ones?” I said yes but continued what I was doing. On opening them I said is this large enough and showed him the meat inside. He grinned and said yes indeed it is. Our product has a very high meat: shell ratio and the USA market is accepting 40 gram oysters.
128. Pacific oyster farmers have also recently been decimated by the OsHV-1 virus, more commonly known as the herpes virus. In facing a similar issue to us they have destocked their farms and the meat quality of their oysters has improved and they are also producing a much smaller oyster, so the New Zealand market effect of this change on our oyster is, as yet, unknown.

SOCIAL AND COMMUNITY EFFECTS

129. Significant resources have recently been expended in an attempt to better understand the contribution that aquaculture typically makes to the communities in which it is based.
130. The Ministry for Primary Industries has released two reports on the subject: “The Social Value of a Job” 2014 and “The Social and Community Effects of Aquaculture”; a case study of Southland aquaculture.
131. These reports explore a range of flow-on social effects that may occur as a direct result of paid jobs.
132. In the Southland study, a highly positive and significant social picture emerged which drew conclusions that Southland communities were significantly socially richer due to the presence of aquaculture.
133. Other activities our company participates in include supply of oysters for community events such as Dinner for Kaipupu Point Sounds Wildlife Sanctuary, dinner prizes for St Marks Adult Alcohol and Drug Treatment Centre, Queen Charlotte Yacht Club special events and sponsor for ‘Give a Little’ donations for local youth.
134. We have offered to have an involvement with Queen Charlotte College Aquaculture Programme but they chose intertidal Pacific Oyster Culture where access to the farms was better for students and the method of farming was more aligned to the course they were studying.

135. Our business supports a wide range of local supply chain businesses in various sections, including transport, courier companies, air transport, engineering, marine and domestic electrical, marine and other mechanical services, boat yards, vessel berthage, slipways, local fuel companies (NPD), yard leases (MDC), boat chandlery, rope, local cotton stocking and local float manufacturers.

EMPLOYMENT

136. Direct employment at Apex Marine Farm is currently 5.5 fulltime equivalents. Additional casual staff is also utilised.
137. Other benefits include:
- (a) Wages and salaries that are typically above average in Marlborough;
 - (b) Good job stability with year round employment and casual staff opportunities during busy seasons;
 - (c) Ongoing on-the-job training, particularly Health and Safety;
 - (d) Opportunities to upskill, including financing deckhands who show aptitude into completing skippers qualifications; and
 - (e) Promotional opportunities that arise even in a small company like ours where in the past two years a deckhand was promoted to skipper after we put him through a skipper course and a relief skipper also promoted to skipper.
138. The success of the oyster venture will result in a large number of jobs on the water, in the yard and in processing factories as live export shipments are graded and packed. Product unsuitable for live export because of shell shape are shucked for the oyster pottle market.

Bruce Hearn

August 2026

Attachment 1: “It’s in the Bag” (Aquaculture New Zealand Magazine, June 2015)

New Zealand's largest oyster producer is transforming the way they farm Pacific oysters.

It's in the bag

They're perfectly plump with lavish plate appeal and available live all-year round. For New Zealand's largest producer, these are the future for Pacific oysters.

Pacific Marine Farms (PMF), a subsidiary of Aotearoa Fisheries Limited (AFL) which has over 45% of the industry's total consented oyster space, is revolutionising the look of New Zealand oysters as they evolve their farming systems away from wild stock on sticks to nurturing selectively bred spat in a mesh bag grow-out system.

"The primary driver behind the transition is to consistently produce beautiful looking, perfectly conditioned oysters that we can sell into the higher end channels," said AFL General Manager Aquaculture Don Collier.

"To sell live oysters into premium international markets you need a combination of very good meat quality and the visual appeal of a uniform shape, colour and appearance.

You're selling the whole package and the first judgement that's made

is how it looks in its whole shell form."

Of the \$15 million export earnings generated by New Zealand Pacific oysters in 2014, just \$4 million came through live trade, suggesting there is plenty of headroom in that category.

"New Zealand has always sold live oysters, so this is not a new thing. But what we've got is an oyster that is selectively bred, so it has very desirable attributes and is farmed in a way that enhances that," Don said.

"These are the best looking oysters that we've farmed."

"Over the last 15 months, we've been targeting discerning live oyster channels around China, Asia and the Pacific and we've got oysters going weekly into high end restaurants in Beijing, Shanghai and Guangzhou.

"We're developing a very good reputation and our oysters are rated very highly compared to the traditional market leaders, the French oysters."

The new-look oysters are the results of a long-term research programme that PMF began to reduce their reliance on wild-caught spat.

"Along with a number of other oyster farmers, we have been working with Cawthron for over a decade on a breeding programme to spawn and deliver a regular supply of good quality oyster spat, with desirable characteristics, in a single seed form. The efforts and expertise of the Cawthron team and board have been instrumental, and in particular former

Cawthron marine scientist Achim Janke, who was a pioneer of Pacific oyster research," Don said.

"We wanted, and needed, to move away from putting out wooden sticks, hoping to get enough settlement from the natural wild oyster spawn to make it an economic catch.

"The other disadvantage is that the wild oyster spat will usually settle in clumps, which constrains growing space and can leave you with some narrow, odd shapes, and an inconsistent size range."

Beginning with hatchery produced single seed oysters also avoids the need for a major de-clumping exercise at time of harvest.

"Because you put them in a bag as individuals, they are all free to move and get an equal chance to grow and retain their natural shape," said Don.

"By spawning them in a hatchery, we can apply a breeding strategy and select them for their characteristics around growth speed, shape, colour and meat conditioning etc.

"These are concepts and methods that are quite common in other countries, but not prevalent in New Zealand because we have historically had an abundant wild spawn and spat settlement."

However all that changed in 2010 when the OsHV-1 virus struck and wiped out over half of the country's oyster supply.

"PMF already had the skeleton of a commercial system when the big driver occurred. The OsHV-1 virus blew the wild catch to smithereens," Don said.

"We had to accelerate the transformation and scale up facilities at Cawthron's Aquaculture Park, from research scale to commercial scale."

But selectively bred, single seed oysters didn't provide an immediate silver bullet.

That's when Don and PMF teamed up with Aaron Pannell who until this point was best known around the industry as a mussel farmer.

"When I was research and development manager for Marlborough Mussels I experimented with oysters and developed a real passion for farming them," Aaron said.



Don Collier

"The thing I like about oysters is that they give you feedback. The way you treat them affects the way they look and you can manipulate that.

"With mussels, it's more set and forget, and on the whole the farming system has been well proven and the gains available are small. Whereas with oysters, it's a whole new frontier. It's almost like going back 30 years in the mussel industry and going back to the pioneering stage.

"This is what excites me. Problem solving is what gets me out of bed."

So at the same time as the OsHV-1 was forcing some farmers to exit the industry, Aaron seized it as an opportunity to enter the industry.

"After the virus hit and it became obvious that the risk was greatest for young oysters in warmer waters, the conversation shifted to 'how do we grow them somewhere else?'," said Aaron.

"I said 'I'm already doing it on a small scale' and so we looked at how to upscale."

Aaron and his wife Debbie went on to establish the Marlborough Oyster Company which over the past three years has expanded to employ 8 people to service 40,000 mesh bags farmed across 30 hectares in Croisilles Harbour.

"We've gradually built it up and grow on seven farms in total where

we're predominantly using a floating bag system" said Aaron.

"Each bag clips onto the existing mussel back bone and floats on the surface. Basically we're farming the top 4 inches of water.

"While Croisilles is a poor mussel farming area, it is an ideal place to farm oysters in the Sounds. It's sheltered, has less bio-fouling and there are sufficient nutrients for the oysters to thrive."

The oysters come out of the Cawthron hatchery at 1mm in size, move into the PMF nursery until they reach 10mm in size then Aaron takes them until they reach 50mm.

They spend 6-18 months on his farm during which time they are handled up to 8 times before they are transported into PMF's Northland and Coromandel farms for their final grow out to maturity.

"You really have to work with them all the time. We're out here every day. Looking at them, grading them and constantly adapting."

"It's a very different way of farming and you really have to nurture the animals."

As well as the extra labour, the system also requires significant capital investment for refitting PMF's North Island finishing farms.

PMF has already converted approximately half of their farms and will look to transition the remainder over the coming year.

"The disadvantage is it requires more labour throughout the oyster's lifecycle and transport and is much more complex," Don said.

"The positives are avoiding the bottleneck of 'declumping' and most importantly you have a better looking product with improved plate appeal which lifts the in-market value of the product."

"It gives us vertical control over a four stage process, from hatchery, to nursery, to initial grow period and then grow out in the warmer waters up North and it opens up new market opportunities for us."

"This has been a major change for our company, enabled by our long relationship with Cawthron and with Aaron at Marlborough Oysters. It has required significant investment from us, with an associated high transformation risk... but we have no regrets... so far" says Don. ■



Aaron Pannell with the juvenile oysters he nurtures in Croisilles Harbour

Attachment 2: “Nelson and Marlborough Oyster History” (Press Release, July 1990)

Nelson and Marlborough Oyster History

By Ken Wright

Traditionally, nothing conjures up more delight to the palate than the succulent taste of the oyster, and of course one musn't forget their assumed aphrodisiac properties, as an after dinner benefit. Oysters have also been immortalised in literature, 'The world is my oyster', a famous quote by William Shakespeare. But one piece of New Zealand's oyster story has been forgotten. Oysters were first harvested and traded in the Nelson and Marlborough area, with great relish, as early as the 1850's.

Most people identify with Foveaux Strait or Stewart Island oysters. Only since the 1960's, with the rediscovery of Tasman Bay oysters, have local oysters returned to prominence in our minds.

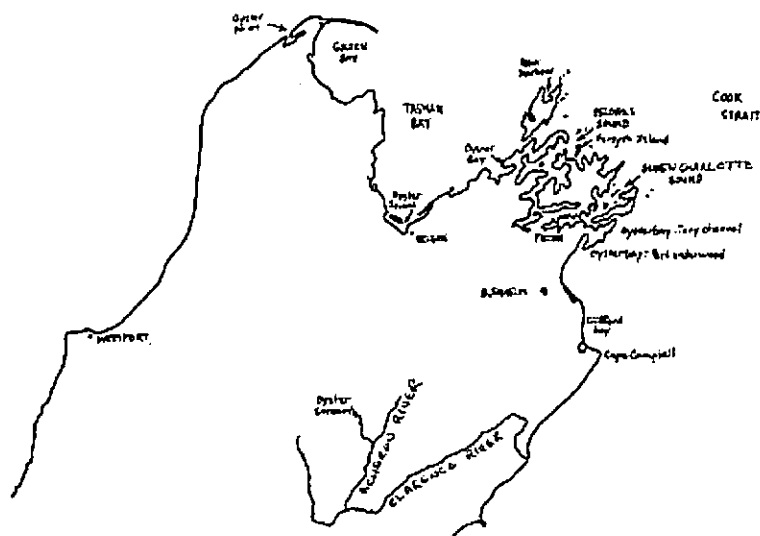
Somewhere along the course of history, the existence, from early times, of oysters in the top of the South Island was forgotten. In fact, oysters played such an important part in the early market place that special shops, known as 'oyster saloons', were of prominence in Nelson from 1858 until 1907.

So, to retrace our local oysters, let us go back to the very start.

Oysters occur, fossilized, in the limestone rocks of Tata Island, off the Abel Tasman coast. Today, there are three species of oysters in New Zealand: two native oysters, known as the 'dredge oyster' and the 'rock oyster', plus the recently introduced 'Pacific Oyster', which arrived here in the 1970's and subsequently spread widely over New Zealand.

The rock oyster occurs naturally on both coasts in the top half of the North Island. Confusion does exist, in that rock oysters only attach themselves to rocks, or mangrove tree roots, while dredge oysters, which normally live on the surface of mud, will also attach themselves to rocks. So, in some cases, reference has been made to rock oysters in the South Island, but these are, in fact, dredge oysters.

In a few sites, the earliest inhabitants of Tasman Bay and the Marlborough Sounds have left behind, amongst their midden (food refuse tips), discarded oyster shells⁽¹⁾. The evidence, deposited well before European arrival, indicates that the Maori collected oysters in selected sites and ate them locally.



Oyster placenames in Nelson and Marlborough.

Oyster placenames in Nelson and Marlborough.



Andrew Andersen's Nelson Oyster Saloon, now 75 Bridge Street. 1902. Tyree Collection.
Nelson Provincial Museum.

Andrew Andersen's Nelson Oyster Saloon, now 75 Bridge Street. 1902. Tyree Collection.
Nelson Provincial Museum.

The Maori name for oyster is Tio, and at the head of Tory Channel is a bay known as Te Tio. In 1838, Captain Chetwode sailed into this bay and, upon discovering the oysters, re-named it Oyster Bay, as it is known today⁽²⁾.

In the New Zealand official place name register, there are twelve place names featuring oyster, with six of them in the top of the South Island. There are three oyster bays: one in Tory Channel, one in Port Underwood and the other in Croisilles Harbour. There is an Oyster Island in the Waimea Inlet, an Oyster Point in Wanganui Inlet and an Oyster Stream in the headwaters of the Acheron River. Now tell me that there wasn't an early preoccupation with oysters in our area!

European settlers were familiar with oysters, as they were harvested off the coast of Great Britain, France and in the Mediterranean. One such settler, John Waring Saxton, a gentleman who was most certainly used to the finer tastes of life, was both an astute recorder of the day, as the Saxton Diaries testify, and a fanatical gourmand, who seldom missed the chance to comment on food. In his 1849 Diary, he mentions collecting oysters from Oyster Island and, upon his return to a friend's home, a magnificent oyster supper being prepared that evening⁽³⁾. Incidentally Oyster Island, which is still known by that name, was once called Grossi's Island. From 1878 until their home was burnt out in 1885, Biaggio Grossi, an Austrian fisherman and oyster dealer, lived on this island with his large family.

The Nelson Examiner newspaper of 1845 lists oysters, on the Nelson retail market price list, at nine pence per hundred. The same paper, in 1859, announced that J Mead of Bridge Street, opposite the Trafalgar Hotel, had a large quantity of fine quality oysters for sale⁽⁴⁾. This was the start of the Nelson Oyster Saloons.

Oyster saloons, today's mystery, were dining rooms which offered oysters for sale in every possible form: in the shell, raw, tinned, bottled, cooked in every conceivable way from soup, stewed, escalloped to fried etc. These saloons also sold fish of every type and, occasionally rabbits, hares and poultry.

Many of the saloons retained the same locations for fifty years and were occupied by successive oyster dealers. One such location in Nelson is at 75 Bridge Street, near the north-eastern corner of the Bridge Street-Trafalgar Street intersection. The former 'Cafe 75', in Bridge Street, was once an oyster saloon and is probably the only remains of such a shop.

It was popular to frequent oyster saloons in the evening, and newspaper advertising invited customers to try delicious oyster suppers.

Fresh oysters every day was the normal promotion line for oyster saloons. This was achieved by using storage beds inside the Nelson harbour. They would load these up and collect quantities, as required, for each day. In 1902, there was a big scare in Nelson when typhoid broke out. All the saloons made it known that they had moved their beds to outside the boulder bank, to retain fresh clean oysters.⁽⁵⁾

These saloons weren't confined to Nelson. They also occurred in Blenheim, Picton, Westport, Greymouth and Hokitika.

Gradually, the oyster saloon title was superseded by a succession of trend-setting titles. They went like this: oyster and supper rooms, supper rooms, dining rooms, cafe and, finally, the fish supply – cum – fish and chip shop that we all know.

So where did they get their oysters? New Zealand oyster history invariably quotes the industry starting at Stewart Island in approximately 1860, while our own oyster dealers were up and trading at least the year before.

In 1859, a Wellington newspaper described an excursion to Queen Charlotte Sound and quotes, "the oysters which furnish our citizens with many a supper are dredged in the sound"⁽⁶⁾.

FRESH AND SWEET OYSTERS.

J U S T A R R I V E D,
PER AIREDALE,
DIRECT FROM QUEEN CHARLOTTE SOUND,
TORY CHANNEL, OYSTER BAY,
THIRTY BUSHELS OF 'SPLENDID OYSTERS
AS FRESH AS DAINIES.

Lovers of oysters can have a splendid treat at
F R A N K ' R A P H A E L ' S
FISH AND OYSTER SALOON,
BRIDGE-STREET,
(OPPOSITE THE TRAFALGAR HOTEL BILLIARD ROOM.)
Nelson, 16th July, 1863. 964

When Nelson settlers first examined the Marlborough Sounds, during exploratory trips, they mentioned oysters⁽⁷⁾ and, in one instance, being given oysters at the Te Awaiti whaling station in 1845⁽⁸⁾. So they had local oyster beds in the Marlborough Sounds and Waimea Inlet.

Local traders also imported oysters. In 1858, fifteen boxes of oysters were imported, via a sixteen day journey from Sydney⁽⁹⁾. Oysters continued to be imported to Nelson from Sydney and Melbourne until 1867, when Australia was forced to ban exports, due to dwindling supplies. From 1858 until 1909, rock oysters were imported from the Manukau harbour. These were named 'Auckland Rocks' and were considered sweeter than the local, coppery tasting, oysters⁽¹⁰⁾.

The earliest evidence found of Stewart Island oysters being imported was 1877⁽¹¹⁾, however, as our local supplies dwindled in the 1910 to 1915 period, Foveaux Strait oysters became our only supply until the 1960's.

Early local oyster beds were located at Port Underwood⁽¹²⁾, Queen Charlotte Sound, Endeavour Inlet, Pelorus Sound⁽¹³⁾, Forsyth Island⁽¹⁴⁾, New Harbour (Port Hardy, D'Urville Island)⁽¹⁵⁾, Croisilles Harbour⁽¹⁶⁾, Port Nelson⁽¹⁷⁾, Waimea Inlet⁽¹⁸⁾, Abel Tasman Coast⁽¹⁹⁾ and Golden Bay⁽²⁰⁾.

As well as supplying local markets, oysters were exported to the West Coast⁽²¹⁾, especially during the gold rush years, Taranaki⁽²²⁾ and Wellington.

In the early years, oysters were harvested and sold without any control.

However, as had been experienced in England and Australia, oyster fisheries were being destroyed by over fishing. It was therefore not surprising that, in 1865, the Right Honourable Mr Sewell moved that parliament set up a select committee, to consider the protection of the fisheries of New Zealand, especially oyster and herring fisheries⁽²³⁾.

In October 1866, the government passed the first ever law to protect the fisheries of New Zealand, called The Oyster Fisheries Act 1866.

The all too familiar saga of today's fishing industry including licences, seasons etc. to prevent depletion of the resource, was started over one hundred and twenty four years ago, with the introduction of this Act

The Act made provisions for a licence fee of two shillings and sixpence, a season from April to October and the ability to form artificial oyster beds. Only dredge oysters were covered by the Act.

A regular succession of acts followed, with a gradual attempt to close loopholes that were discovered, and rock oysters were soon included in new legislation⁽²⁴⁾.

In 1869⁽²⁵⁾, provision was made for individuals to obtain exclusive rights to natural beds and, in 1873, William Williams and E. Davidson separately advertised their intentions to seek exclusive rights to beds off Puponga, Golden Bay⁽²⁶⁾. This legislation was further changed to close the bed for six months, to prevent it being stripped, while exclusive rights were sought⁽²⁷⁾. Such closures were sought in 1894, for beds three miles off Cape Campbell (Cloudy Bay)⁽²⁸⁾, and 1903, for Anakoa Bay (Outer Sounds)⁽²⁹⁾

The new laws were occasionally broken in the rush to meet the market on season opening day. In 1871, a local fisherman, James Stringer, collected oysters from the Waimea River six days before opening day. He was approached, near the Custom House wharf, by Police Sergeant Nash, who discovered Stringer's sack of oysters. They returned to Stringer's boat where more sacks were observed. Stringer knocked Sergeant Nash into the tide and rowed off towards the beach, with his boatful of oysters. A constable was summoned to follow Stringer's progress from land and he observed him dumping the sacks. These were recovered at low tide as evidence, and tasty evidence at that James Stringer was fined five pounds and warned that, if he broke the law again, he would lose his licence for three years⁽³⁰⁾.

Several people took up the opportunity to form artificial oyster beds between 1895 and 1898⁽³¹⁾. They were: Henry Baxter and William Davenport – Arrowsmith Bay, Tory Channel; Alexander Maule – Black Point, Pelorus Sound; Peter Ewing – Hitaua Bay, Tory Channel; Percy Neame-Mahau, Pelorus Sound; E O'Hara Canavan – Motueka. Most of these people never got started, but the ones that did weren't successful. Experimentation in farming continued between 1904 and 1920, including attempts to seed oysters in Cook Strait. In 1918, for example, 80 sacks of Foveaux Strait oysters were seeded in Cook Strait, at Clifford Bay near Blenheim⁽³²⁾. In 1922, an attempt was made to plant rock oysters in the Marlborough Sounds⁽³³⁾. Despite initial signs of promise, all these attempts ultimately failed.

Legal provision was made to close natural beds, to allow them to recover. The first beds to be closed were, in 1872, at Stewart Island. Our beds were also closed. Oyster Bay, in Tory Channel, was closed for two years in 1882 while, in 1895, parts of Queen Charlotte Sound and Endeavour Inlet were closed for four years. The Waimea Inlet was closed, initially for two years, in 1886 and later, in 1911, for four years, including Nelson Haven. Parts of Pelorus Sound were closed in 1898.

Even with attempts to create artificial beds and spell other beds, the decline in oysters continued. Other catastrophies may also have contributed to this decline. Periodically our sea is plagued with a phytoplankton bloom, referred to as 'slime', (first recorded in Tasman Bay in the 1860's) which suffocates fish and shellfish. The great slime of 1901 was

observed, by a fisherman named Westrup, to have seriously destroyed oyster beds in Golden Bay⁽³⁴⁾.

Over the years of gradual depletion, some of the beds disappeared completely, while some still exist today, with small quantities of oysters.

In 1900, the Marine Department initiated an experimental trawling, throughout New Zealand, with the steam trawler Doto, to assess the potential of our inshore fisheries. In Tasman Bay, they encountered the most plentiful supply of fish in the entire voyage, and noted considerable numbers of oysters⁽³⁵⁾. Perhaps these newly discovered oyster beds were also over exploited, and didn't recover until their rediscovery in the 1960's. The Tasman Bay beds continue to support a dredge oyster industry that is second only to Foveaux Strait.

Over the years, the oyster season has periodically changed by a month or two but, as with all seasonal foods, we fondly await the opening day. In fact, seasonal food provides some expectation in an otherwise mundane diet.

Pacific oysters, which were first discovered in Pelorus Sound in 1977, have spread widely throughout Nelson and Marlborough. In 1981, local MAF scientists predicted that it was possible to start farming these oysters in our region⁽³⁶⁾.

Last year the first applications, followed by more this year, have been lodged to set up Pacific oyster farms at Uruti Bay (Port Underwood), Ohinetaha Bay and Okiwi Bay. Better results are expected with the use of the new vigorous Pacific Oyster, rather than our own native oysters.

With our mussel farms and scallop enhancement already proven, the Pacific Oyster farms may really promote the top of the south as a seafood gourmet's paradise. Who knows, once again there might just be a niche for seafood saloons.

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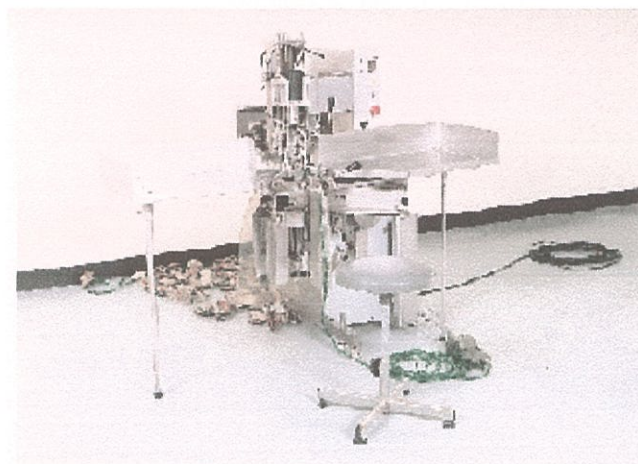
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Attachment 3: Japanese Pinning Machine Specifications

Automatic ear-hanging machine Eagle Robo



The automatic ear-hanging machine of the scallop uses the Robo Pin. It automatically inserts the pin into the rope as well as pinning the scallop into the rope.

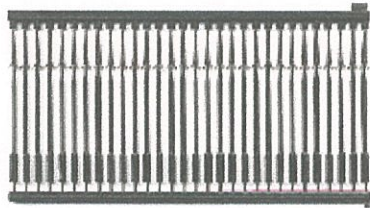
Characteristic

- (1) Change of the 1 sheet hole make and the 2 sheets hole make are easy with the exchange of the plate of the scallop.
- (2) You are able to set up the ear-hanging interval of the scallop freely.
- (3) You are able to set up the position of the hole into the scallop shell freely.
- (4) You are able to use spliced rope.
- (5) It is able to move freely with the caster.
- (6) Because the system part is in the upper part of the machine, maintenance is easy.
- (7) The pin does not remain into the rope after the harvest of the scallops.
- (8) In comparison with the hand insertion Eagle Robo is 5 times faster.(Comparison of all the process)

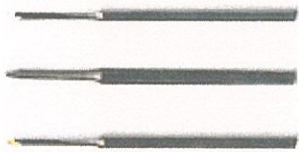
Specification	
Ear-hanging juvenile size	One sheet the hole make 6~11cm Two sheets the hole make 5~8cm
Ear-hanging method	Place 1 scallop either side of the rope
Ear-hanging speed	Installation of 2 scallops in 2 seconds.
Stopping instrument	Robo Pin
Bit for the hole make	Special ultra hard alloy bit Long type(Reamer・Spiral)

Plate of the scallop	Either standard equipment of the 1 sheet the hole make or the 2 sheets the hole make
The power supply	AC100V. 400W
Measurements	580mm × 1028mm × 1345mm
Weight	270kg

Robo Pin

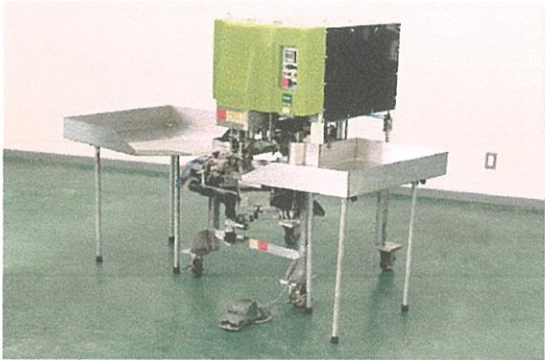


Robo Kiri(Reamer)



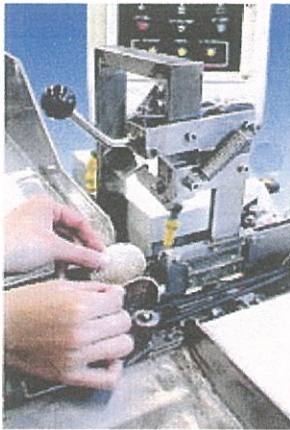
New sale Eagle Robo II

The power supply part has been moved to the main body,which is located in the center upper part of machine. This makes maintenance easy and operation a lot quieter.



Please see the ear-hanging machine of the other companies for comparisons.

【1】Product of Towa Electric Manufactory Co.,Ltd.



■ □ ■ Characteristic ■ □ ■

Comfortable with easy operation

The work becomes very easy because all you do is turn the ear of **scallop** facing down and load it on to the belt.

Care is unnecessary even for the first uses as a change of speed is attached.

Free setting with one button

The installation distance of the **scallop** can be set freely with the notch of 1 mm.

You are able to set up the installation step number freely according to the length of rope.

Possible changes correspondence from spring to autumn scallops

You are able to adjust the position of the hole into the **scallop** easily, depending on the size of the **scallop**.

Therefore, you are able to adjust easily from the spring **scallop** (about 5 cm) to the autumn **scallop** (about 11 cm).

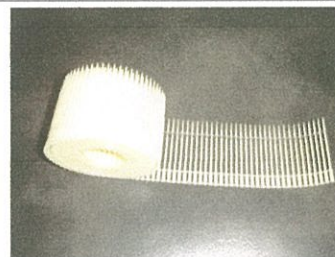
Loop Pin

The pin is wound in a roll state.

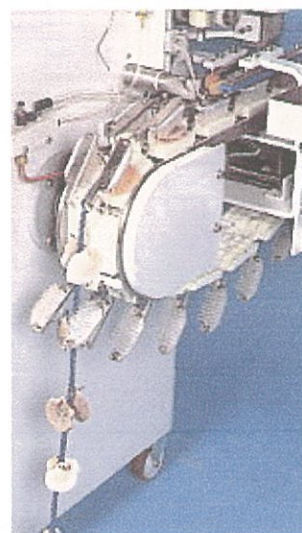
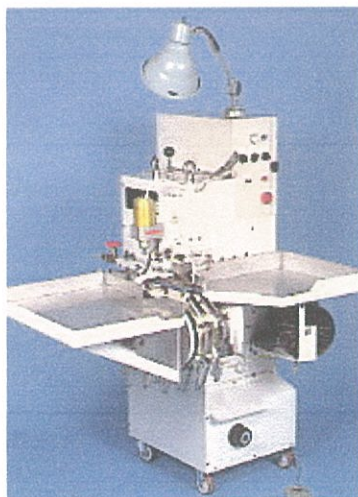
It is a ministry resources product and gentle to the environment.

The roll of pins can be installed in one installation for one day use.

The size variation is abundant.



【2】Product of Mitsubishi Materials Corporation



■ Characteristic

- The work that installs the monofilament line into the rope and the work that makes the hole in the scallop are unnecessary.
- The installation speed can be set up freely.
- Even the use of spliced rope is possible.
- The work that takes the monofilament line from the rope after the harvest of the scallops is unnecessary.
- Whenever you stop the **machine** continuation operation is possible.
- Scallop** growth is good because the **scallop's** don't entangle due to only one scallop being pinned either side of the rope.

[HOME](#) / [Company outline](#) / [Merchandise list](#)

Attachment 4: “Growing Opportunity” (Aquaculture New Zealand Magazine, February 2016)

GROWING OPPORTUNITY

Alex Pressman knows a business opportunity when he sees it – and when he looks at a mussel line he's eyeing a piece of a \$9 billion market that New Zealand is yet to tap.

The former computer programmer, who built a \$10 million per year software company from the ground up, has been working with Undaria harvested from local mussel lines for the past three years and believes the seaweed is a big opportunity for local farmers and processors.

"This is definitely a revenue stream just waiting for the industry," he said.

After selling his software business in 2001, Mr Pressman moved to New Zealand and retired until he came across Undaria in 2012.

"I came out of retirement solely for a challenge," he said.

"I'd been looking for a problem, a waste stream that could be converted into a new industry and I settled on Undaria because it seemed like a major pest to the aquaculture sector.

"So I thought why don't we go and attack this seaweed and see if there's something we can make from it that's good.

"And it turns out there's a few good things – like food, fertilizers and nutraceuticals."

And importantly, there is strong demand for these products too.

"Japan is the main market for it where, currently, there's about 200,000 tonnes of it being used – of that, only 30 per cent is grown in Japanese waters because they can't produce enough to meet the demand. The rest is imported from Korea and China but our market research shows that they would much prefer a New Zealand product," Mr Pressman said.

"Because our Undaria comes from very, very clean waters, we can make a wakame that differentiates us from all competitors.

"Collectively we have ignored this opportunity for a very long time and that is because it's difficult and logistically complex, but the time is right to start looking at it from joint opportunities perspectives and attacking it from various angles.



Alex Pressman

"I think the food angle is the lowest hanging fruit. The flavour of it is excellent and we've had interest from Japan, we're developing good in-roads, and are working to meet the required price point."

But in order to crack the market, Mr Pressman believes it will take a co-ordinated effort.

"Over the last three years, we've developed a knowledge of the commercial aspects: how to harvest

it, how to process it and how to sell it," he said.

"But food is very complicated and needs to be done right so we're looking to work with companies that already have excellent processing capabilities and knowledge of how to preserve and present food.

"It will require some startup costs – but in return you get a bite at a \$9 billion market."

But it's not just the processors who stand to gain from a New Zealand Undaria industry.

"We approach farmers and pay them to let us take it off their lines prior to harvest," he said.

"It's like someone coming along and paying you to weed out your dandelions.

"We can get as much as three tonnes off a line, but that's variable and currently we harvest by hand and can only do about three-to-four tonnes per day right now. But there is technology out there that could get us to three-to-four tonnes per hour.

"And because the product grows so rapidly in New Zealand waters, you could do two harvests of the weed for every one harvest of the mussels and you could potentially double the revenue the farmer is getting without adding any extra costs to the farmer."

Recent advancements in harvesting technology have also made the industry more viable.

"To create a food grade product, the Undaria needs to be processed very quickly so we perfected a technique for on-board processing," Mr Pressman said.

"But we've now learned some new techniques that will enable us to take it on-shore for processing which will dramatically reduce costs."

Through his company Waikaitu, Mr Pressman currently employs four people and produces a range that includes an agricultural bio-stimulant, a health extract and a wakame product that sells for \$50/kg and is rated among Amazon's top food products.

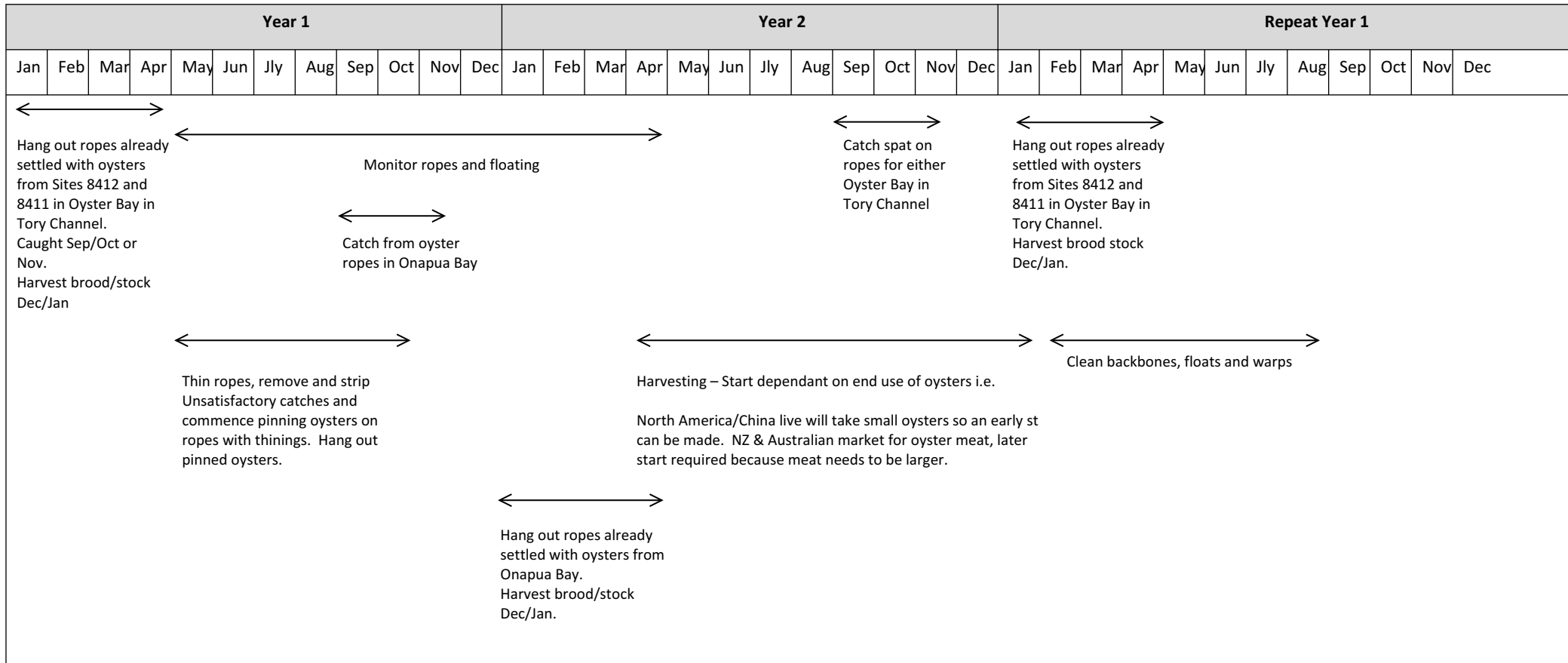
But he is still just getting started.

"It's still early days, but we've shown that the opportunity is there." ■

Attachment 5: Outline of Potential Three Year Oyster Farming Cycle

Attachment 5

Outline of Potential Two-Year Oyster Farming Cycle



Attachment 6: Excerpt from *Depot*



RAW BAR

I CAN BE A BIT OF A GLUTTON WHEN IT COMES
TO CONSUMING FRESHLY SHUCKED RAW BIVALVES.
ICE-COLD OYSTERS AND CLAMS, OPENED ALIVE AND
EATEN IMMEDIATELY, OFFER UP ONE OF LIFE'S
MOST DELICIOUS TASTES.

I have sat at countless raw bars all over the world working my way around their fresh ocean offerings, watching in awe and listening intently to the shuckers explaining where each variety comes from and what they taste of. The nuances are often subtle. However, it's the burst of ocean from each one that is kind of like a road map to a particular coast.

When we opened Depot I was adamant that I wanted a raw bar, where the customers could see many varieties of living bivalves sitting on ice, with a dedicated opener shucking the shellfish to order as the dockets came in. This is paramount because there are two things that are not negotiable in my world when it comes to eating raw fresh oysters and clams. One is that they have to be alive when they are shucked and the other is that they have to be super-cold and always served on a generous pile of ice.

As far as I'm aware we were the first restaurant or eatery in the country that included a dedicated raw bar. They are now popping up all over the show, which I'm

thrilled about. Even five years ago, this probably would not have been feasible.

Along with so many other types of food production and harvesting, aquaculture in New Zealand has, against all odds, flourished. This industry has always had my utmost respect and admiration, whether farming fish and shellfish or using sustainable methods to collect, gather and harvest from the wild.

**I KNOW A BUNCH OF
PEOPLE IN THE INDUSTRY
WHO HAVE TOILED AND
GRAFTED AWAY FOR YEARS
ON END, TRYING TO WORK
OUT AND UNDERSTAND
HOW TO BREED, GROW,
FARM AND ULTIMATELY
MAKE A BUSINESS OUT OF
ALL THOSE NOTORIOUSLY
DIFFICULT OCEAN
ORGANISMS.**

Trials, tribulations and setbacks are a significant part of their lives, and only the committed or partially insane farmers succeed.

A great friend of mine – Bruce

Hearn, of Tio Point oyster fame – is a good example of this kind of hard-working person. After years of working in the green-lipped mussel industry, he had been attempting to grow dredge oysters from the Bluff variety in Tory Channel in the Marlborough Sounds. I first met Bruce over a decade ago for five minutes in the Blenheim airport car park, where, in relative secrecy, he shucked half a dozen or so ice-cold samples for immediate consumption. From the moment I slipped down my first Tio Point oyster he had my complete attention. We often talk about this meeting when we are together now, but the last thing I said to him as I ran to catch the plane was, 'Bruce, one day I'm going to open an oyster bar just for you!'

Since we opened in 2011 we have sold approximately 3000 dozen Tio Point oysters a year. I have since visited Bruce on his farm in the beautiful Marlborough Sounds and had the opportunity to sit in his humble old yellow boat, tied up to a buoy on an oyster line, and eat countless

oysters washed down with great-tasting chilled local sauvignon blanc. A food memory etched in my mind forever.

Getting in behind the raw bar and shucking for an hour or two is one of my favourite jobs at Depot. It can be bloody hectic at times, as the orders can come in waves throughout the night. Besides the odd aching wrist, I never tire of opening oysters and clams. There's something about the uniqueness of each mollusc that fascinates me. As you lever the hinge there is often a pop as the shells separate, but the moment of glory is in the reveal. The glisten and shimmer of a clam or oyster in the prime of its growing cycle is one of nature's most magnificent sights. It's the dramatic contrast of the thick, rough and sharp exterior of shell that has, for years, been protecting the precious and exquisite soft morsel within.

I never seem to exhaust my love of eating raw. Hand on heart I could easily eat a couple of dozen oysters, or clams for that matter, for breakfast. One thing I have noticed is that people are very parochial about their oysters and where they hail from. I love them all. It's not so much whether they are flat or Pacific oysters, tuatua, or diamond-shell or little-neck clams. The big thing is to consume them when they are at the top of their annual cycle, when they eat at their best. Fortunately, as it happens, this is at different times of the year for different varieties, which means exquisite eating for you all year round.

The raw bar at Depot has been an unprecedented success. It is a window on our coast and draws people from great distances just to have the opportunity to eat three or four different varieties of oysters and clams at any one time,

accompanied by a lemon wedge, chardonnay vinegar and shallots, and a grind of fresh black pepper.

Once people who love freshly shucked shellfish have the raw bar in their sights, a sale is imminent and it's usually followed by another. The gourmands of the freshly shucked world, including me, sometimes even forgo dessert and finish again with a plate of raw.

At the complete opposite end of the scale is the devout loather, who categorically detests even the thought of consuming a slippery raw mollusc. These customers easily identify themselves when the question is asked, 'Would you guys like to start with a round of freshly shucked oysters and clams while you peruse the menu?' The answer is not with words but a contorted face that looks something like a bent sandshoe. And here's the thing,



the ratio is about one in four.

My next question is, 'Are you allergic to shellfish or perhaps you don't indulge on religious grounds?' Which are both valid reasons not to partake, I might add. However, inevitably the answer is, 'I have had them before but I just don't like them!'

I see this as an opportunity as much as a challenge. Most often, the deal with these customers is that they have eaten a dead oyster that was more than likely shucked and packed in a plastic tub five days prior to being served at room temperature on a piece of brown bread. 'Yip, I'm with you. If that was the experience I understand why you don't like raw oysters,' I say.

Selling people dead oysters in plastic tubs is doing irreparable damage to the reputation of these

little gems that will take years to turn around. There is just no comparison at all: one is often a stinky sour mouthful of gloop, and the other is one of the most extraordinarily complex tastes and textures to ever pass your lips. For the loathers and disbelievers, I will whip down to the raw bar, select a small perfectly shaped clam or oyster, shuck it, place a little chardonnay vinegar and shallots on its fat little belly and run it back at no charge for the person to try. I swear I have about a ninety-eight per cent hit rate of turning haters into lovers!

THERE IS A WONDERFUL
CONVIVIALITY THAT COMES
WITH EATING FRESHLY
SHUCKED OYSTERS AND
CLAMS. IN A WAY IT'S A
LITTLE PRIMAL - PICKING

UP AN OYSTER AND
SLURPING IT INTO YOUR
MOUTH, THEN CHOMPING
DOWN ON THE GUT TO
RELEASE THAT HINT OF
EARTHY SWEETNESS. THE
WONDERFULLY UNIQUE
FLAVOUR AND TEXTURE
COMBINE WITH THE SALTY
NATURE OF THE MOLLUSC'S
LIQUOR, CREATING A
MOUTHFUL OF BLISS!

So the next time you sit up at a raw bar, remember, as you roll your eyes into the back of your head each time you slip another one down, there is a lot of toil, sweat and tears behind this culinary treasure you're devouring.

God bless the mollusc and bivalve farmers and harvesters all over the world!





Makara



TIO POINT



TE MATUKU



ORONGO BAY



VENUS CLAM



TUATUA

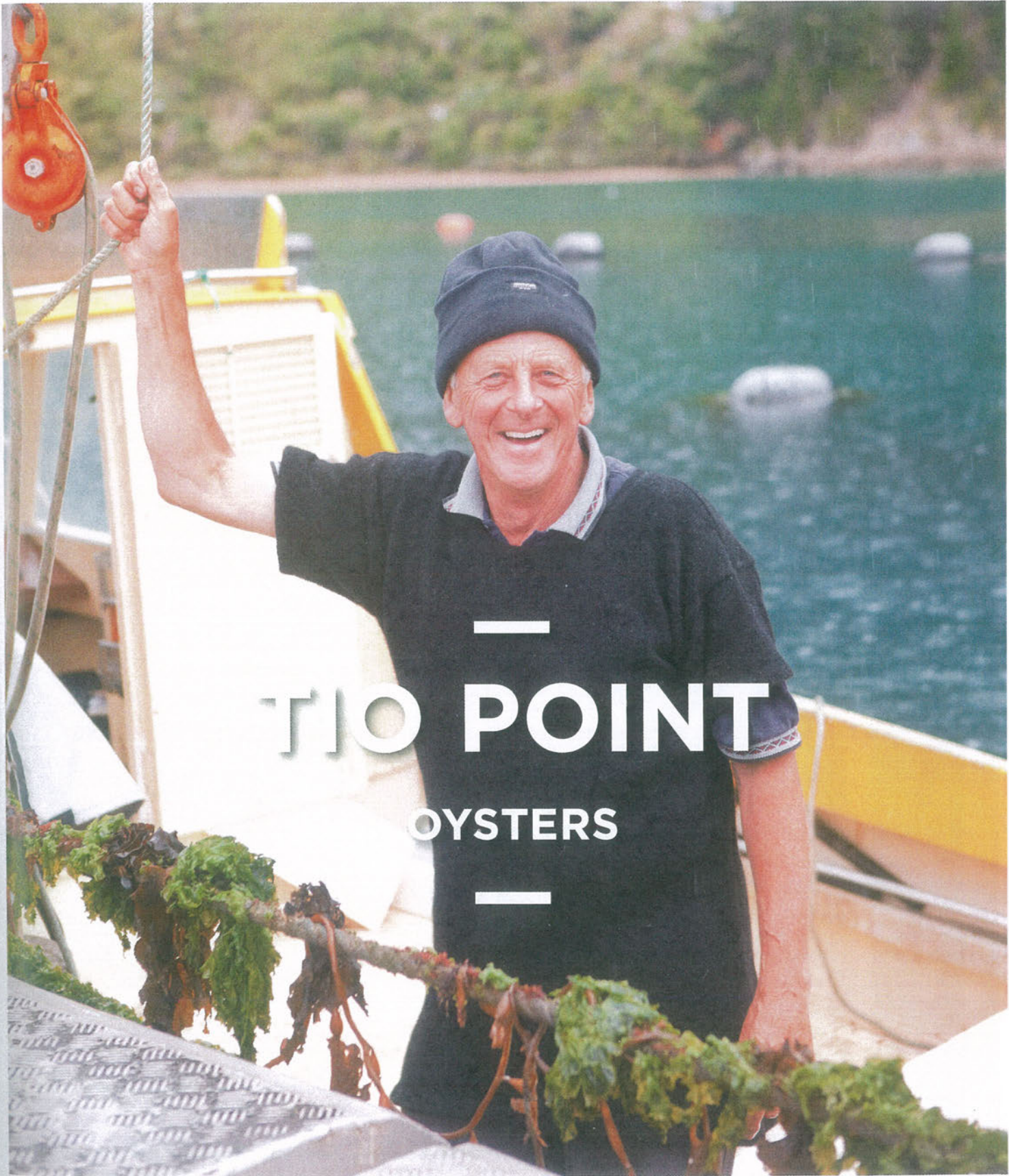


MAHURANGI



DIAMOND CLAM

Attachment 7: Excerpt from *Food Heroes*



—
TIO POINT
OYSTERS
—

Food Heroes 10

BRUCE FARMS OYSTERS. SPECIFICALLY, *TIOSTREA CHILENSIS*, THE NATIVE NEW ZEALAND FLAT OYSTER, WHICH OCCURS NATURALLY IN THE COLD, DEEP WATERS OF THE SOUTH ISLAND.

We set off from Waikawa Marina in the Marlborough Sounds where Bruce Hearn keeps his speedboat, the *Sea Perner*. It's bright yellow, built from plywood. He bought it new in 1980 and it's battered now, but reliable. It has a little bunk in the front and a burner in the back and it's small, fast and agile. It was late afternoon on a Friday and the weather was closing in; the water had that peculiar stillness it gets in rain.

Down Queen Charlotte Sound, through the Tory Channel, out past the houses and a car transporter coming the other way, to where Bruce farms oysters. Specifically, *Tiostrea chilensis*, the native New Zealand flat oyster, which occurs naturally in the cold, deep waters of the South Island but these days is largely confined to Foveaux Strait, where it grows wild on the sea floor. If you like oysters, you probably know it well, and you probably call it a Bluff oyster – the iconic wild-caught oyster, the one people obsess about until the opening each year of the season on March 1.

But the trouble with a Bluff oyster, if you really care about bivalves, is that they're sold dead. For a variety of

reasons, you can only buy Bluff oysters shucked, in plastic pottles. Once you've acquired a taste for freshly shucked oysters, this is an abomination: the flavour declines, the meat loses its ripeness. There are various theories about why this is: unions; quality control; they're a deep-water oyster so don't travel as well as a Pacific. Regardless, unless you've got a connection to someone on a boat, you're stuck with oysters that come in a plastic pottle.

This is a small tragedy. 'No self-respecting Frenchman,' Bruce is wont to say, 'would eat a dead oyster.' But he gets a bit heated when you talk about the fact you can't buy Bluff oysters in the shell. 'You can!' he'll cry. 'I can ship them anywhere in the country, for cheaper than you can buy them in the shop!' To which I can only say thank goodness, and direct you to his website to do so.

Bruce was one of the first mussel farmers in the Marlborough Sounds. He trained as an accountant, then spent 10 years at the Marlborough Electric Power Board. Then, aged 33 – and, I suspect, a bit bored – he got wind of the emergence of mussel farming in



the Sounds. He jumped, got the second commercial licence and by 1980 was doing it full-time. He's in his seventies now, but looks 10 years younger – he says it's because he eats a lot of mussels.

He's been messing around with oysters for 20 years, with mixed success. It's a difficult process. *Tiostrea chilensis* is native to Marlborough Sounds, but it grows on the sea floor. Centuries ago you could find them in Oyster Bay, where he has his farms, until the bays silted up and the oysters disappeared as humans began to radically alter the landscape. Working out how to farm them has been difficult. 'We've had disease and we've had all sorts of problems. It's waxed and waned, but we never had time to do it properly.' Until five or six years ago, when he decided to either give up or give it a decent go.

Without going into too much detail – Bruce wouldn't let me – it happens thus. *Tiostrea chilensis* is the only oyster that broods its young to full term, inside the oyster; other oysters release millions of spawn, hoping a few might take. They release tiny, perfectly formed oysters, which Bruce catches and then breeds up, first in a big upweller, a sort of pond inside the farm, then in baskets, before attaching them in their thousands to ropes where they fatten up for harvest. It's an astonishing process, finely detailed and full of hazard. No one else in the world farms them this way.

One thing Bruce knew: he had to own it. The mussel-farming industry is a classic case of an industry that produces a commodity, not a high-value product. They're all the same, they're all big and they're cheap. 'The

mussel industry has been ripped off,' he said. 'We've had distributors and agents and importers, and we still don't know where the product goes. They just play one off against the other. So we thought bugger this.'

It was a gorgeous ride out to the farms. It was still. The water was dark and green and deep, and the surrounding hills were covered in trees. At the farms Bruce slowed the engine and we drifted up against one of the lines, which are held up by huge black floats used in the mussel industry. He cut the engine and it was deadly quiet. He pulled up the line with a gantry driven by an electric winch and, as he did so, the little boat heeled over alarmingly. Bruce wasn't concerned.

At this point we could see the trays of juvenile oysters, stringing down the lines, 1000 of them on each, and as I

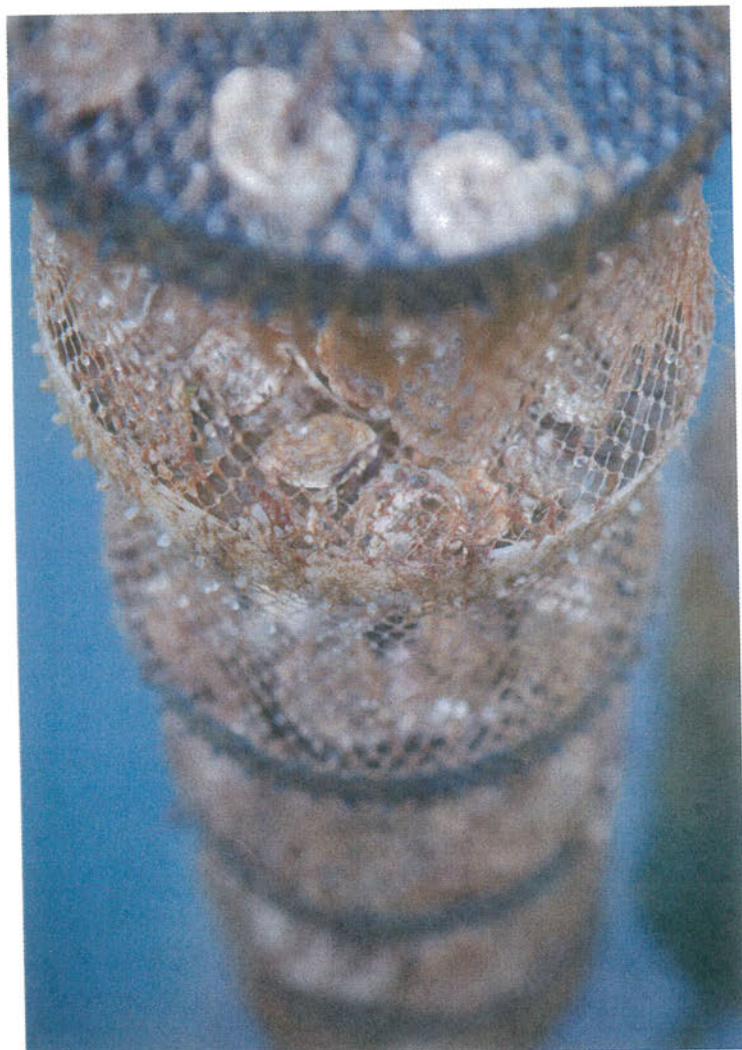






This page: The oysters are raised to size in trays, strung down on ropes in the deep waters of the Tory Channel - this is a particularly exciting sight for an oyster over.

Opposite, from left: The distinctive round, flat-topped *Tiostrea chilensis* - Bruce shows off juveniles, and some adults await shucking for us to enjoy.





counted how many lines there were, I realised I was standing in the middle of hundreds of thousands of oysters. Bruce put down the line, then we headed to another farm where he pulled up another line, this time covered with mature oysters, as well as loads of weed and – heaven of all heavens – the native little blue mussel.

Bruce shucked a few, right there on the boat. They're darker than a Pacific, almost beige in colour, and meaty. They were the briniest oysters I've ever eaten. Bruce packed up a polybin full of them – as well as a pile of little blue mussels – for me to take home, and I shucked some late that night with a butter knife in my motel room, and marvelled at my luck. Next day, I took them back to Auckland as my hand luggage. The check-in woman at the airport asked

me what was in the bin. 'Oysters,' I said. She didn't seem fazed.

Back in Auckland two weeks later, I got a craving and ordered up a couple of dozen. Bruce harvests twice a week. The oysters are packed into polybins in the channel, rushed to the courier in Blenheim, and sent all over the country, flat-side up so they don't dry out. They're with you by the next morning.

Whenever I order them, I remember the Tory Channel that day. As we headed back to the marina, the weather really started to close in. The wind was getting up, the rain started to come down – a storm was coming in, and it would rain torrentially that night and leave snow on the hills outside Nelson. It didn't bother Bruce. 'This is where I want to be,' he said. 'This is what I left the office for.'

**I SHUCKED
SOME LATE
THAT NIGHT
WITH A BUTTER
KNIFE, AND
MARVELLED
AT MY LUCK.**

Attachment 8: Robb Report (November 2014) and Email

Bruce Hearn

From: Antoinette Sloan [REDACTED]
Sent: 30 October 2014 10:35 a.m.
To: [REDACTED]
Subject: Robb Report Article
Attachments: img-141029125429-0001.pdf

Kia ora Bruce and Jill,

Happy to let you both know that your Tio Point Oysters made it into Robb Report (November Issue) – I will mail down hard copy of the magazine.

The Robb report is the ultimate, luxury-lifestyle magazine for affluent connoisseurs. It covers all things luxury – Superyachts, Real Estate, Gourmet Food, etc...

The Reporter is based in Malibu so throughout month of September was collecting info, sampling product, calling Restaurants (which we supply) to confirm usage etc...we actually sent her shipment same day it arrived from New Zealand because of the compelling story of moving product 2 days from Harvest in New Zealand.

Not a bad place to have your Tio's positioned just few months after being in the U.S market!!
Might be worth adding article to your website...??

Thanks,
Antoinette
[REDACTED]



"Purveyor of gourmet food
to discerning clients"

Antoinette Sloan
Sales Director

☎ 310 988 4345
☎ 310 912 0892
✉ antoinette@kai-gourmet.com
www.kai-gourmet.com



Boisterous Oyster

A NEW OYSTER HAS landed on American shores. The **Tio Point** (www.kaigourmet.com), a flat-shelled variety raised in the Marlborough Sounds of New Zealand, lacks the coppery flavor of its cousin, the Belon, but shares its boisterous intensity: The flavor is briny, fruity, and substantial—the perfect foil for a drop of mignonette. The distributor Kai Gourmet ships orders (\$40 per dozen) within 48 hours of harvest, each oyster secured shut with a rubber band and carefully hand packed flat side up. Tio Points are also popping up on menus at serious seafood houses, including Connie and Ted's in Los Angeles and Waterbar in San Francisco. —MICHAELNE BUSICO



Well Handled

CHRIS WILLIAMS, founder of the Williams Knife Company in South Carolina, may have grown up shucking Lowcountry oysters with a screwdriver, but his vocation has since become perfecting the tool for the job. Williams's handcrafted **Edisto** oyster knife (www.williamsknife.com) is a beautifully designed instrument, with contoured handles made from tigereye and other exotic materials, including a new iridescent handle crafted from crushed oyster shell suspended in blue, black, red, green, or brown resin (\$350, shown). The 3.5-inch blade has a pointed tip and wide beveled edge, allowing it to slip into the hinge and add leverage as the oyster is popped open. "There is a sense of adventure when you open oysters," Williams says. "You need good back-end strength for leverage so you can feel confident when you go after these things." (R)

—AMANDA MILLIN

PHOTO: JEFFREY M. HARRIS; OYSTERS: JEFFREY M. HARRIS; KNIFE: JEFFREY M. HARRIS



RAISING THE RAW BAR

AS THE OPENING chef at Ria in Chicago's Elysian Hotel, Jason McLeod was awarded two Michelin stars for his seafood-centric menu. Now McLeod has headed west to elevate the oyster bar at **Ironside Fish & Oyster** (www.ironsidefishand oyster.com) in San Diego. The stylish restaurant in a 1920s warehouse offers a daily selection of oysters, such as Minter Sweet Select, Kusshi, Kumamoto, and beginning early next year, varieties farmed on the East and West Coasts exclusively for the restaurant. Fish caught within 24 hours off the coast of Baja are prepared *en papillote* with fresh herbs, tomatoes, and high-quality olive oil. What garnered McLeod's two stars continues: an elegant simplicity that allows pristine ingredients to shine.

—LANEE LEE