

Submission for the “Inquiry into Fin Fish Farming”.

Dated 17th October 2019

My wife and I have owned a holiday home on a waterfront block at Sister’s Bay, south of Dover since the mid 90’s. During this time, I have seen the stands of *Macrocystis pyrifera* in Sister’s Bay decline to only around 10% of their original size. This bay is very sheltered from most strong wind directions.

A reef area in front of our waterfront land is heavily fished by commercial rock lobster fishing boats, especially during times of inclement weather. Their frequent mode of operation is to set rock lobster pots in a line along the length of this reef by motoring through the kelp and regularly cutting the tips of the fronds with their fishing boat propellers. Plus, damaging kelp fronds lower down in the water with their mechanical pot hauling gear.

From <https://link.springer.com/article/10.1007%2FBF00040212>, I understand that in the Gulf of California it has been found that in the commercial harvesting of *Macrocystis pyrifera* more than twice a year, reduces spore production from the lower down the frond. Cutting it more often has resulted in loss of kelp bed regeneration from the spore reproductive regions near the frond’s holdfast. Also, the State of California has declared that kelp be harvested no lower than 1.2 metres below the surface for similar reasons.

There is more information about giant kelp spore producing zones called sporophylls near the holdfast at <https://courses.pbsci.ucsc.edu/eeb/bioe161/wp-content/uploads/2012/12/Reed-Daniel.-Factors-affecting-the-production-of-sporophylls-in-the-giant-kelp-macrocystis-pyrifera.pdf>

For brevity I have pasted this extract from the above link.

“The results of this study strongly suggest that fecundity in *Macrocystis* is largely determined by total vegetative biomass since the experimental removal of vegetative fronds had a significant negative effect on the production of sporophylls. Although the correlation between sporophyll biomass and sorus area was highly significant in this study (Fig. 1), the ways in which this relationship varies with season or location remains unknown. Storms are a major cause of biomass loss and mortality in this kelp (Cowen et al., 1982; Dayton & Tegner, 1984; Ebeling et al., 1985), which in California generally occur in the winter. Although *Macrocystis* is known to be fertile year-round (Neushul, 1963; Anderson & North, 1966), the recruitment of juvenile plants is quite often seasonal and highest in the spring following winter storms (Reed & Foster, 1984; Ebeling et al., 1985). The removal of fronds or entire canopies by storms may enhance kelp recruitment and growth by increasing the availability of limiting resources (e.g., light and space) (reviewed in Dayton 1985, and Schiel & Foster, 1986). However, due to the negative effect that frond reduction has on sporophyll production, the timing of storms could be critical in determining zoospore availability for the spring-recruitment period.”

An IMAS’s kelp specialist scientist informed me that IMAS is investigating amongst others, a possible warming ocean resistant kelp bed off the tip of NW Partridge Island in D’Entrecasteaux Channel. I advised that scientist that I thought that area is within the Channel’s rock lobster pot exclusion zone. As such it wouldn’t get continually damaged by rock lobster fishing boat propellers, or mechanical pot hauling gear.

If my assertions about the continual in-line slashing of kelp beds by commercial rock lobster fishers looking for a location on their sounder to drop their pots, are proven to be adding to the decline of our kelp beds on the eastern seaboard, then I suggest that the rock lobster pot setting and pulling method in kelp bed regions be done from small dinghies at slow speed. I’m aware that even a small boat on the plane will cut giant kelp, but at slow speed the kelp will entangle the outboard motor’s propeller, so controlled steerage at low speed around surface fronds is necessary.

I've been advised that the decline in our kelp forests is due to warming ocean currents down our eastern seaboard and they carry less nutrients for the giant kelp. I am aware that the life of *Macrocystis pyrifera* frond is shorter in warm water than cold. In the cold waters around the Falkland Islands, kelp fronds live for approximately one year. Warming currents will therefore reduce the time-line opportunity for reproductive spore generation, which is compounded by continual mechanical damage to the upper frond regions from boat propellers.

I was informed at a recent IMAS public forum/lecture at UTAS's Dechaineux theatre in Hunter St on 12/09/2019, that there is a drastic decline of very large rock lobster on the eastern seaboard. Unlike smaller rock lobster, larger ones predate on the kelp eating long spined sea urchin *Centrostephanus Rodgersii*. Increased populations of these sea urchins are consuming the vegetation and turning many reef areas into barrens, especially on our upper and middle east coast zones. Although commercial diving for this sea urchin has commenced, I'm informed that many deep reefs are out of the operational depth range for these divers.

I've also been advised by IMAS that in eastern Tasmanian waters, the Coriolis effect upwelling of minerals to supply nutrients from the deep to nourish developing kelp zygotes, only occurs in the late summer/early autumn. Although kelp spore generation is continuous throughout most of the year, it does have seasonal peaks, including during this early autumn upwelling period. By that time, most of the region's kelp beds would have been damaged many times by rock lobster fishing boat propellers, therefore kelp spore production would be reduced.

I would expect that high commodity prices are increasing the efforts of commercial fishers to reach quota for themselves, or for returns to investors in licenses for these high value marine species. Reduced biomass levels of rock lobster will I expect, increase the frequency of activity of commercial rock lobster fishers, therefore damaging more kelp.

Earlier this year I asked the DPI/PWE Minister if Sister's Bay could become a designated marine reserve. I received a reply that the Government considered that there were enough marine reserves around Tasmania.

With this rejection in mind and the impending start of a new rock lobster season, on the 31st August 2019 I asked Minister Barnett via email with a similar preamble concerning Partridge Island in the above.....["Two days ago I suddenly realised that this part of Partridge Island is just within the boundary of the Channel's rock lobster potting exclusion zone, so it wouldn't be frequented by commercial fishers. I am therefore asking for the Government and the copy recipients to consider an urgent and temporary extension of the Channel's rock lobster pot exclusion zone from Bruny Islands Labillardiere Peninsula to Southport's "Stack of Bricks" headland. This will give IMAS the opportunity to further study possible recovery of kelp in the sheltered bays in Lady Bay and Sister's Bay, as well two extremes of exposed weather direction cliff faced environments on Bruny Island and near Southport.](#) I haven't yet had a reply to this suggestion.

It appears that the adverse effects to our kelp beds, due to declining nutrient levels in our warming eastern seaboard waters, can be off-set locally by the increased nitrates from fish farm pen waste. Tassal are successfully growing kelp in the nutrient rich fish waste waters next to their pens. Please read <https://www.frdc.com.au/Media-Publications/FISH/FISH-Vol-27-1/Farmed-kelp-to-balance-nutrients>

From my recent experiences this year I rather expect that in the future, the State Government prompted by increased business and employment opportunities, would prefer to endorse more fin fish farming leases than marine reserves. Therefore, I present the following compromise suggestions.

- All existing scale fish farm leases to be planted with kelp, which could be harvested if required to an extent as already determined by the Californians, so that spore production is not reduced, except to clear an area for fish pen relocation within the lease. These lease areas to be **accompanied by surrounding 3-5 km diameter marine reserves**, subject to the area's land topography for the reserve's boundary demarcation definitions.
- Future new scale fish farm leases to be similarly planted out with kelp species, but these aren't to be harvested, except to clear an area for fish pen relocation within the lease. These new lease areas also to be **accompanied by surrounding 3-5 km diameter marine reserves**, subject to the area's land topography for the reserve's boundary demarcation definitions.

If stocks of wild species that can consume some fish farm pen waste are not reduced by fishing within the marine area, this should then assist to counter the adverse effect of under-pen waste decomposition. Seals attracted by these fish farms may predate on these scavenging wild species, but seals unlike fishers can't be as easily restricted from doing so.

These marine reserves may become future nursery areas for seaweed spore production for dispersal into outer regions, because these kelps beds within the reserve would not be subjected to the damage from rock lobster fishing. Increased populations of large rock lobster will eventually assist predation on *Centrostephanus*. Similarly, the weed clad marine reserves may become future nurseries for the outer reserve dispersal of molluscs, crustaceans, cephalopods and scale-fish.

I would like to suggest that a marine park be applied as soon as possible around the Okehampton Bay fish farm lease area and kelp beds be planted near the pens to assist remediation of the locality. This action would I expect also help curtail the objections from members of the public about this fish farm.

It is my experience that recreational fishing for sand and tiger flathead had already declined in this and surrounding regions, before Okehampton Bay fish farm was constructed. Please refer to the 2015 newspaper report concerning flathead prices at <https://www.themercury.com.au/news/easter-rush-pushes-flathead-fillet-prices-to-6995kg/news-story/ea6a997b064d79c5a0e315b7d204451f>

Sand flathead have recently been declared as "depleting", especially on the South East coast. Some more information is provided here... <https://www.imas.utas.edu.au/news/news-items/assessing-the-status-of-tasmanian-scalefish-stocks>

From my recent recreational fishing experiences in the south east, there are still plenty of sand flathead, but they are below recreational legal take size. I suspect higher commodity prices have increased activity from commercial fishing. Danish seine "cod end" mesh sizes are possibly filtering out larger flathead and it is these larger fish that are "depleting".

On the 10/8/2019 I sent this pasted email to Karen Alexander of UTAS.

“Dear Karen,

As an introduction, I have over 50 years of experience in Tasmanian recreational sea fishing and rod and line sea fishing (angling), as I prefer to discern between these two techniques.

After having read your June 2019 issue of “Determinants of socially-supported wild-catch fisheries and aquaculture in Australia”, I am seeking your opinion about the societal aspects concerning the following suggestions.

DRAFT

I would like to suggest that the Tasmanian Government consider initiating a complete ban on static net recreational fishing in Tasmania. To appease recreational static net fishers, plus sea anglers in general, I propose that serviceable recreational fisher nets be purchased by the Government and the current 59 scale fish C non-transferable commercial licensees be prevented from fishing with static nets. If agreeable to C license holders, these licenses be bought out by Government. If scale fish B licenses are traded in the future, they lose the static net entitlement, however Government pays them some compensation for this sale disadvantage.

As an alternative option to the scale-fish C license buy-back, these and all other commercial fishers could be given the opportunity to engage rod and line fishing contractors on their boats. Fish caught this way can be quickly killed, bled and put on ice. This treatment improves the taste of many species of scale fish.

These contractors share the value of their commercial catch with the license holder. If preferred by the rod and line contractor, they are allowed to do some of their own marketing, after first compensating the commercial license holder. Hopefully, consumers may soon be able to purchase either fresh or cooked fish in many local coastal centres, instead of having the bulk of the catch delivered to major outlets in cities.

*As with the UK experience, each rod and line commercial fisher contractor be provided with tags, which are then attached to their catch. These tags then stay with the fish until purchased by consumers. From an Internet registration link, each tag could give a consumer the fisher's profile and the knowledge that their fish was caught by a humane and sustainable method.

Commercial license holders, who give up their static net entitlement for this rod and line catch process, should be given a substantial reduction in their annual licence fee. I also suggest that this commercial scale-fish B license fishing method change be considered reversible, if rod and line contractor fishing is later not deemed viable by the license holder.

Commercial rod and line operations should be given limited quota access to the tuna and other premium deep-sea scale fish. (The advent of electric reels simplifies rod and line fishing in deep water). However, to get access to these fisheries, commercial fishers also lose their long and drop line entitlements. Again this change can be reversed if rod and line commercial fishing is deemed unviable by the commercial license holder.

The engaging of rod and line contractors on fishing boats will increase employment opportunities in many regional coastal towns. As fish quality improves with rod and line commercial fishing, so should the market price.

My reasons for reducing static net fishing are: -

- Unattended nets give fish, marine mammals and birds a slow death.
- Fish that are not quickly taken, humanely killed, bled and put on ice, are not as appetising as those despatched and processed quickly.
- Nets can be lost allowing “ghost nets” continue to drown fish and other marine animals for a long time
- Nets contribute to the interaction of seals with humans as seals seek out nets for an easy catch feed. Over enthusiastic seals can possibly result in small boat swamping, especially when fishers are pulling their nets.
- Setting and pulling of static nets can contribute to drowning deaths of fishers.
- The propellers of boats setting nets inshore can sever *Macrocystis pyrifera*. If this near surface damage is repeated too often and within a short period of time, it will affect spore production from kelp’s lower reproductive sporophylls. *M.pyrifera* is currently under stress from warming ocean currents and other factors. Unfortunately, the rock lobster season opens, when what I consider is the optimum spore generation period. The late Spring/early summer bloom of kelp spawn from the lower sporophylls, can be compromised by continual propeller damage to kelp’s upper region in the water column. Mechanical pot haulers also damage to the kelp. I’ve recently asked IMAS to consider this and possibly recommend that the rock lobster season be opened 6-8 weeks later, after what I consider to be the optimum kelp zygote establishment period. I’m currently awaiting a reply.
- Nets do not obey the recreational fishery rules for taking fish species, size to some extent, nor bag limits.
- Nets kill undesired species and this alters the biodiversity of the region.
- Most net caught scale fish species can be caught with rod and line.
- Lost nets, buoys or ropes can fragment and add to marine plastic microfibres in our oceans.
- Recreational net fishing, unlike rod and line angling is not an engaging pastime, nor is it sporting.
- Tasmanian recreational inshore scale-fish **angling** fisheries are on the decline, especially on our Eastern coastline.

Static netting is considered cruel and often unnecessary by increasing numbers of the general public. Perhaps this adverse public opinion could be nipped in the bud before it escalates. I refer to an escalation mentioned in your section summation.... “The anti-fish farm movement in Tasmania has now become mature and financed as a result of Okehampton Bay.”

I look forward to your comments.”

On the 14/08/2019 Karen advised me that she had forwarded it to DPIPW Fisheries recreational and commercial managers, plus an IMAS chief scientist, as she understood that they were investigating having more commercially caught Tasmanian scale fish available for public sale in Tasmanian cities and regional areas.

On the 16/10/2019 I received the following report for consideration by TASRAC, as issued in June by the Abalone Resource Assessment Group.

Abundance of abalone has declined dramatically on shallow rocky reef communities below 10m on Tasmania's east coast over the past two decades. Increasingly, reef communities deeper than 15m in this region are affected by destructive grazing of the long-spined sea urchin. A range of activities are proposed to restore algal communities by removal of urchins, and exploitation of abalone has been reduced by around 95% in this area since 2001. The substantially reduced levels of commercial fishing mean there is less data on abalone abundance, and relatively few dive events to enable fishers to provide information across the coastline compared to previous years. A system of monitoring recovery of abalone abundance and recovery of kelp communities is required to assess whether remedial management actions in place are effective.

It is my opinion that we need more marine reserves to compensate for warming currents and the removal of high commodity priced important marine species, be it from recreational or commercial fishing. These species are important to maintain an ecological balance in our inshore and offshore coastal waters.

Growing kelp within a fin fish lease area, then surrounding that lease with a marine reserve should to remediate some of the adverse effects of fish farming to the local marine environment. The reserve will stop commercial and recreational fishing in the region. Hopefully, then we won't have high commodity valued marine species being described as "depleting" or worse!

Giant kelp beds provide a habitat for the juveniles of many species including rock lobster. If more marine reserves aren't enabled, be it surrounding fin fish farm pen leases or not, then an alternative suggestion would be a complete ban on rock lobster fishing down the East coast of Tasmania, until such a time that the kelp beds recover. If kelp beds do recover, then I consider that commercial fishing methods of setting and pulling rock lobster pots in kelp beds be reviewed.

Given the societal benefits of fin fish farming production, perhaps farming other species such as tiger and sand flathead either under, or adjacent to salmonid pens, could eventually replace inshore wild fish catch quotas of Danish seine commercial fishers. This would reduce dead bycatch in these nets and leave these and more of the commercial net fisher's larger flathead biomass, for recreational and hopefully in the *future commercial rod and line fishers.

Yours sincerely,

Brian Hinson

