

# Snapshot of Aquaculture in the Hauraki Gulf – Tikapa Moana:

## Presentation to the Aquaculture Roundtable

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*Growing and Protecting New Zealand*



# What the presentation will cover

1. Brief overview of NZ's aquaculture industry and importance of the Hauraki Gulf
2. Mussels
3. Pacific oysters
4. Requirements for marine farming
5. Potential other species
6. Economic benefits



# Aquaculture in New Zealand

- NZ \$400 million sales

Greenshell mussels

101,311 t

\$250 million

King Salmon

14,037 t

\$125 million

Pacific Oysters

1,804 t

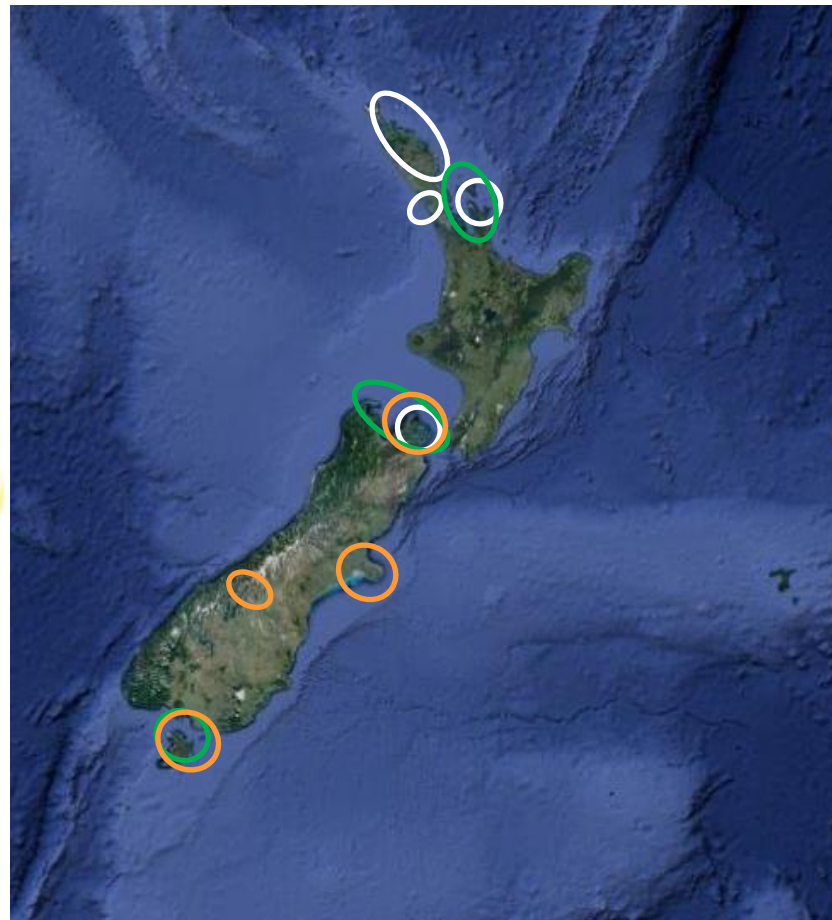
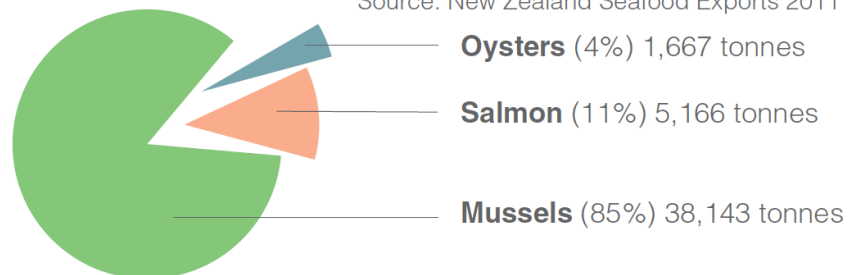
\$25 million



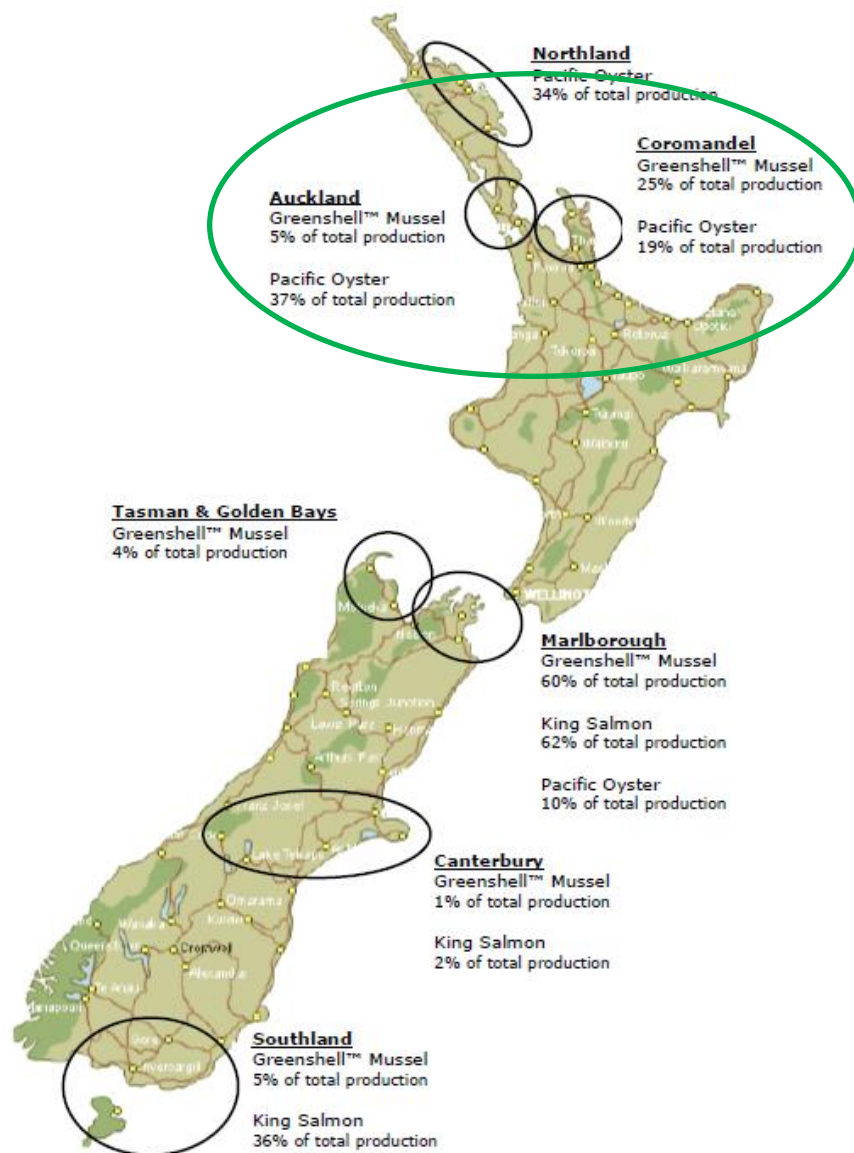
Source: AQNZ, 2012

## Proportion of aquaculture exports for 2011 by Volume

Source: New Zealand Seafood Exports 2011

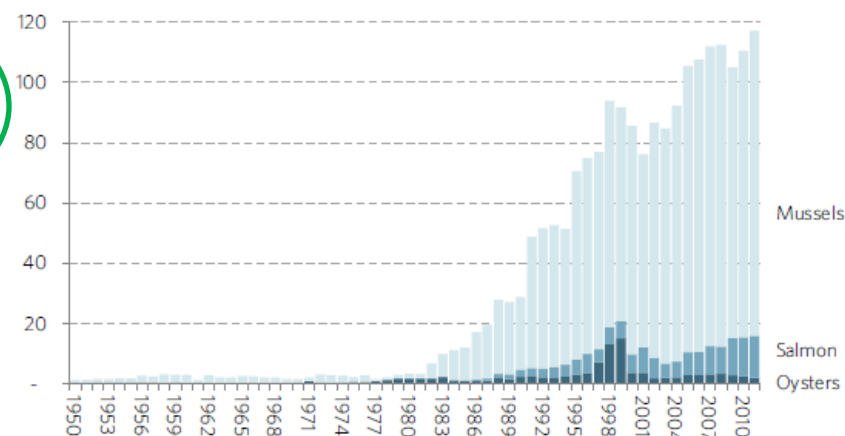


## Major Aquaculture Areas in New Zealand



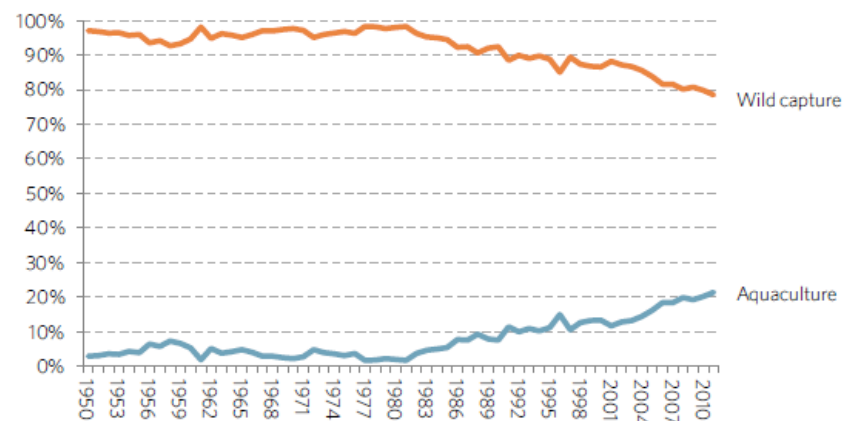
## TOTAL AQUACULTURE PRODUCTION BY KEY SPECIES

Tonnes; 000; 1950-2011



## SHARE OF TOTAL SEAFOOD PRODUCTION VOLUME BY TYPE

% of tonnes; 1950-2011



Source: iFAB 2013 Seafood Review



# Aquaculture – World perspective

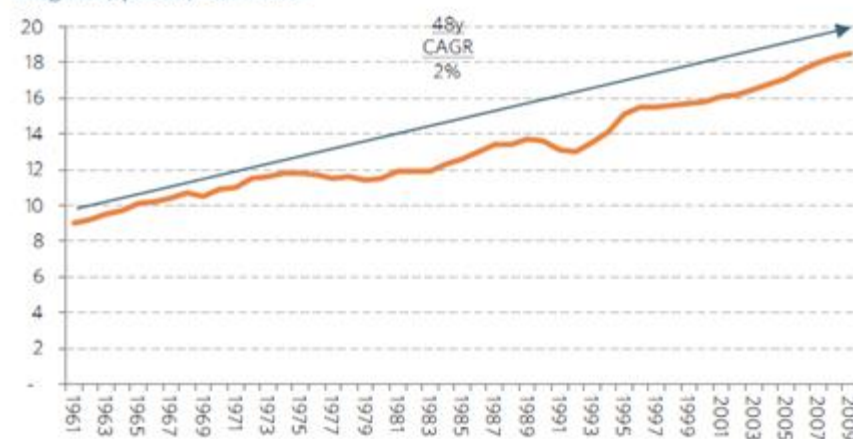
51 YEAR GLOBAL SEAFOOD PRODUCTION BY METHOD

Tonnes; million; 1960-2011

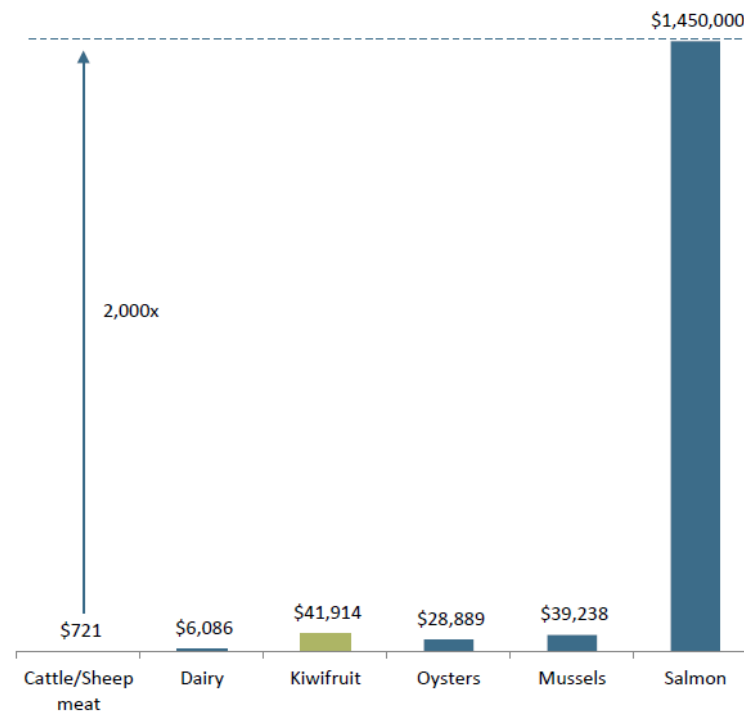


48 YEAR GLOBAL FISH/SEAFOOD CONSUMPTION PER CAPITA

Kilograms/person; 1961-2009

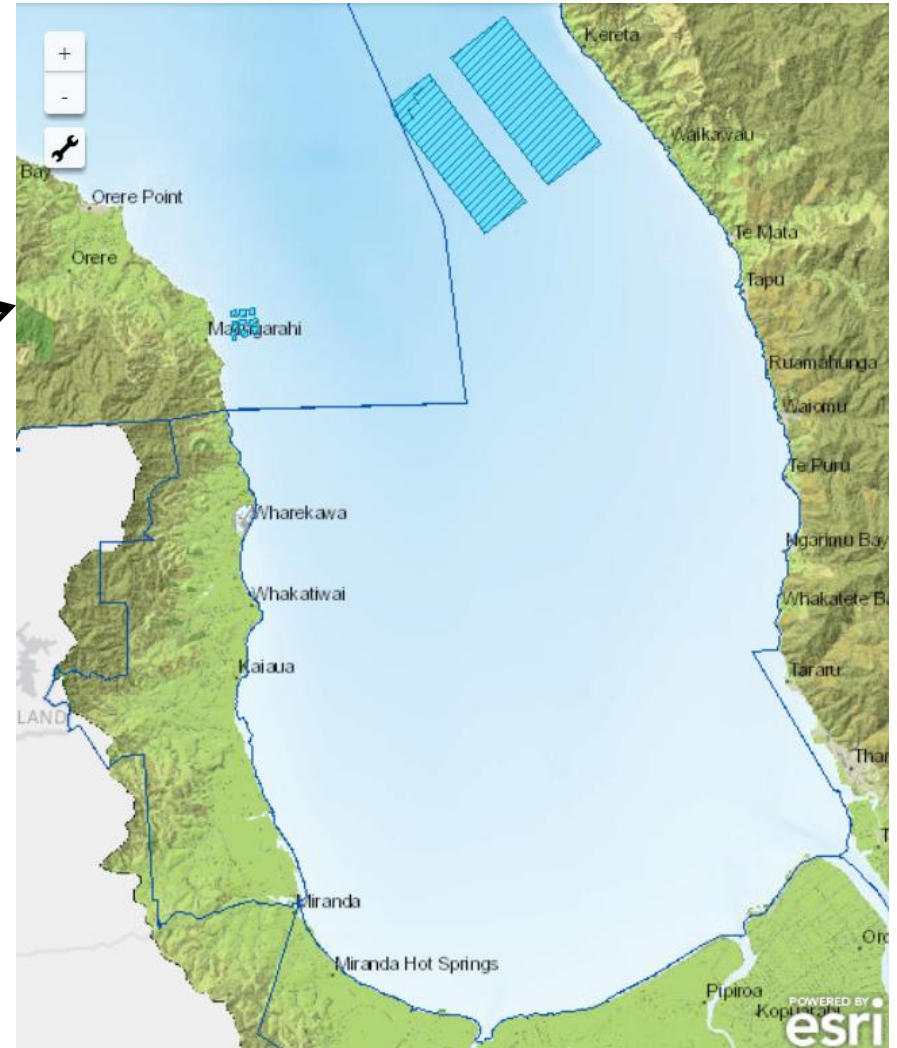


*Salmon returns dramatically more per hectare than other forms of agri/aqua-culture; for example, salmon returns 2,000 times as much per hectare as beef and sheep meat.*



Source: Food and Beverage Information project 2012

# Mussel farming - Greenshell™ Mussels



	<b>Auckland</b> Tonnes, GWT	<b>Waikato</b> Tonnes, GWT	<b>Hauraki Gulf</b> Tonnes, GWT
2008	2484	20749	23233
2009	2449	17445	19894
2010	2581	23511	26092
2011	4066	18751	22817
2012	4216	19508	23724
mean	<b>3159</b>	<b>19993</b>	<b>23152</b>
ha	89	849	938
productivity	<b>38.3 t/ha</b>	<b>23.95 t/ha</b>	

Source: AQNZ data

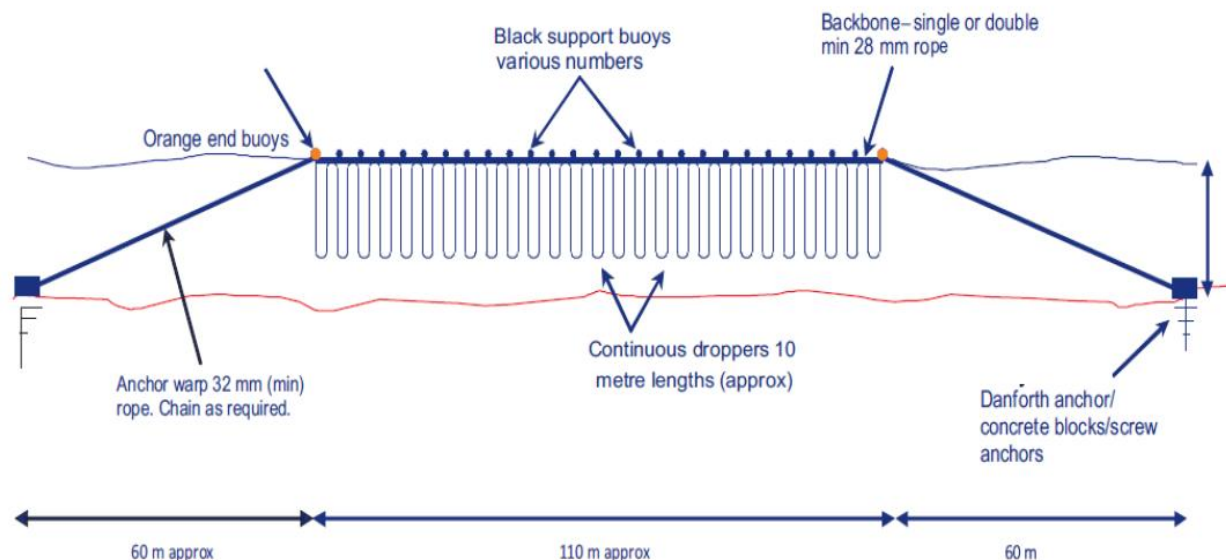
# Mussel farming - Greenshell™ Mussels





# Mussel farming - Greenshell™ Mussels

Cross-section of a surface longline marine farm



Farms are stocked with wild mussel spat collected from beaches on drift seaweed (Kaitaia) **and/or** collected from dedicated spat catching farms.

Spat is seeded onto nursery lines and held in place with a biodegradable mussock or socking. Seeded at about 1000-5000 spat per metre.

After 3-6 months, the nursery lines are lifted and the young spat are reseeded on a final production rope at about 150-200 spat per metre.

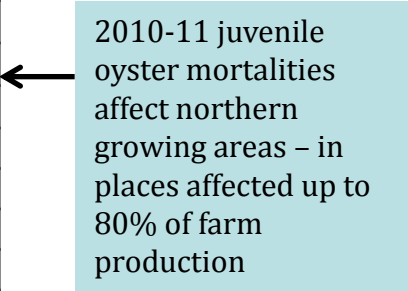
Mussels ongrown and take between 15-18 months to reach harvest size of 90-100 mm depending on water conditions and location

SpatNZ project

PGS project – looking developing hatchery-reared spat with desirable traits



# Pacific oyster farming



Source: AQNZ data

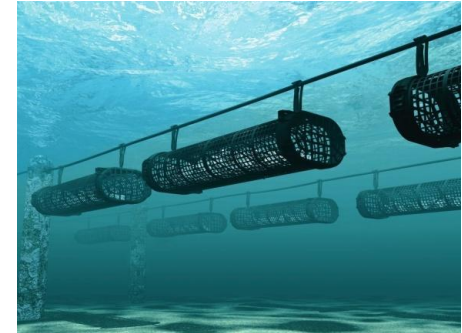
# Pacific oyster farming



Sticks



Trays



Baskets

Farms are stocked with wild spat **and/or** spat grown in a hatchery



Wild spat collected on sticks from specific areas. Spat covered sticks are transferred to the farm and spaced out on intertidal racks



Oyster will only attach itself once, so those sourced from a hatchery have to be grown in trays or baskets



Oysters are ready for harvest after 12-18 months (80-100 mm) depending on water conditions and location

New oyster selective breeding programme (SFF) to combat virus – breed virus resistant oysters and ongrowing techniques

# Requirements for marine farming

## Mussel Farming

### Environmental:

- Water depth >10m sub tidal.
- Temp – 12-24°C, optimum 16-19°C.
- Clean water (low or no bacteria count).
- Good water flow/flushing.
- Reasonable shelter – wave action (1-2m).
- Good phytoplankton content (food).

### Infrastructure:

- Vessel/barge – ongoing maintenance/harvest.
- Acceptable distance to wharves, loading/unloading capabilities, holding of gear, storage of gear facilities, processors, etc.
- Appropriate water certification to harvest.



## Pacific Oyster Farming

### Environmental:

- Water depth intertidal.
- Temp – 10-28°C, optimum 15-18°C.
- Clean water (low or no bacteria count).
- Tidal flushing.
- Sheltered areas – no or little wave action.
- Good phytoplankton content (food).

### Infrastructure:

- Vessel/barge – ongoing maintenance/harvest.
- Acceptable distance to wharves, loading/unloading capabilities, holding of gear, etc.
- Appropriate water certification to harvest.



## Finfish Farming

### Environmental:

- Water depth >20m sub tidal.
- Temp – kingfish 14-24°C, optimum 20°C; hapuku 9-20°C, optimum 16°C.
- Clean water.
- Good water flow/flushing.
- Moderately sheltered to exposed areas – wave action (< 3-4 m).

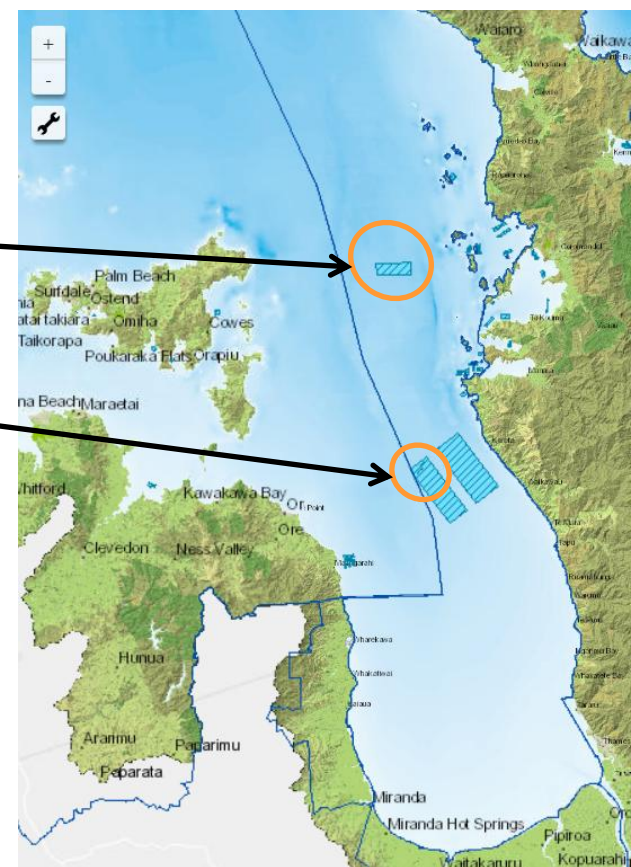
### Infrastructure:

- Vessel/barge – frequent maintenance/feed/harvest.
- Acceptable distance to wharves, loading/unloading capabilities, holding of gear, etc.



# Other species – farming opportunities

- Finfish – kingfish and hapuku
  - 300 ha Coromandel Marine Farm Zone
  - 90 ha Wilson Bay Area C
- Established in 2011 – Waikato Regional Coastal Plan





# Other species – farming opportunities



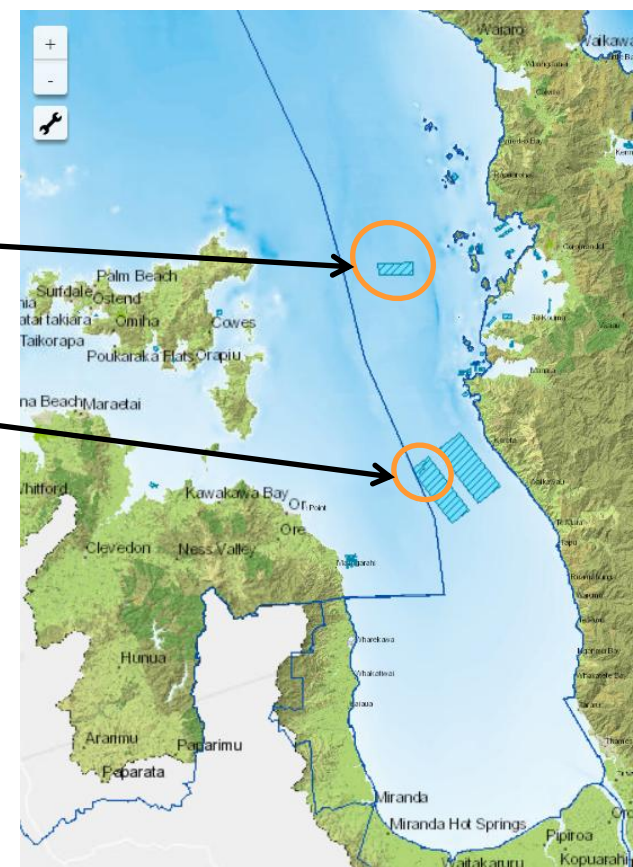
NZ King Salmon - Marlborough



Polar-cirkel cages

# Other species – farming opportunities

- Finfish – kingfish and hapuku
  - 300 ha Coromandel Marine Farm Zone
  - 90 ha Wilson Bay Area C
- Seaweeds
- Sponges
- Sea cucumbers
- Polyculture?
- Land-based aquaculture?



# Economic benefits

- Based on 2011 production, Hauraki Gulf aquaculture (export revenue) is worth around:
  - \$52m for mussels (if all exported)
  - \$7.3m for oysters (if all exported) Source: AQNZ
- Coromandel aquaculture contributes about \$31m to Waikato's annual GDP – both direct and indirect impacts. Employs about 423 FTEs.  
Source: Sapere 2011
- Aquaculture contributes about \$28m to Auckland's annual GDP – both direct and indirect impacts. Employs about 507 FTEs.  
Source: ARC, 2010