



# Recreational fisheries in the Hauraki Gulf

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Sea Change – Tai Timu Tai Pari  
Working Group meeting 26 August 2014





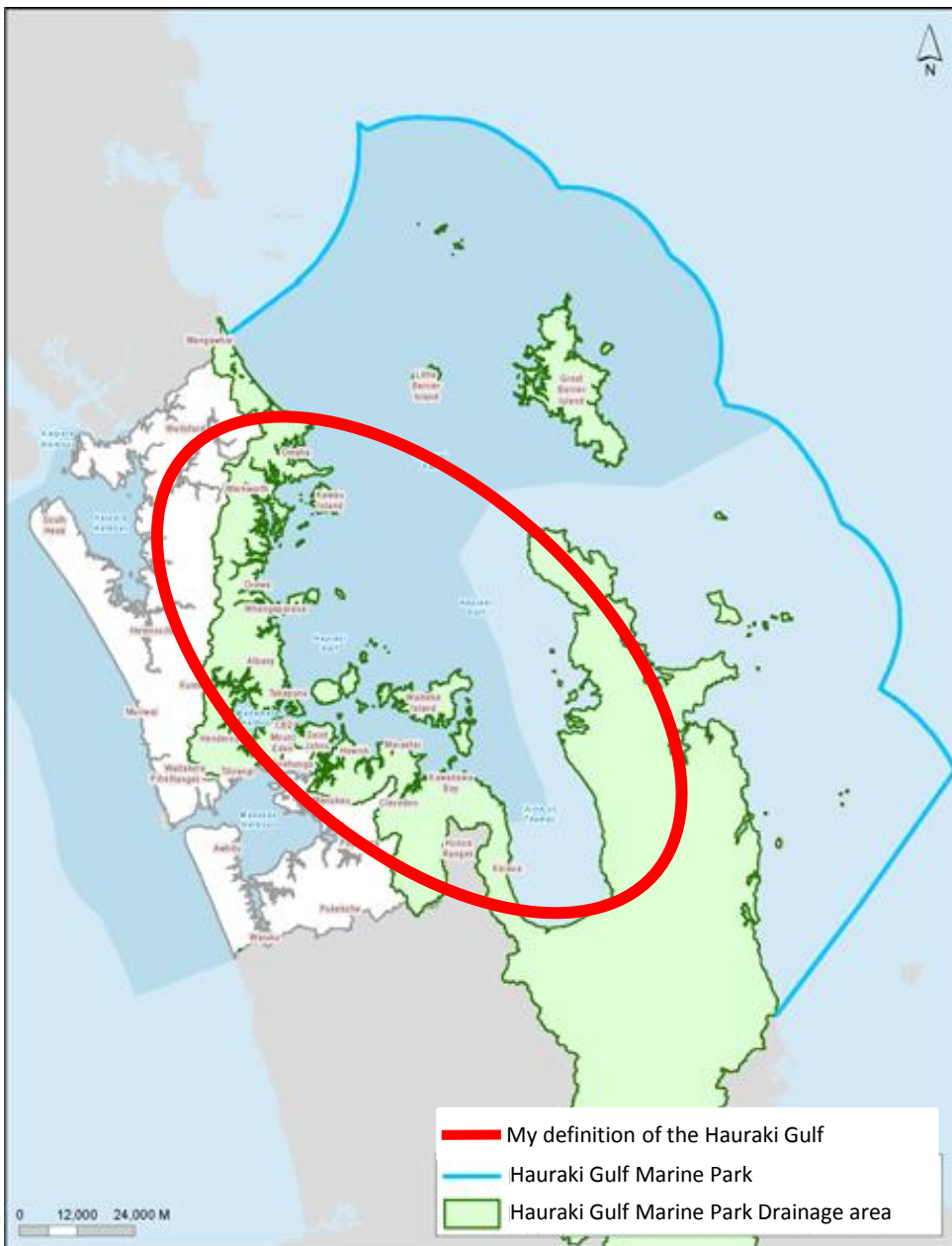




# Numbers of active fishers in 2011–12

New Zealand	595,500
Marine Park	218,300 (37%)
Inner Hauraki Gulf	178,100 (30%)

Participation estimates  
provided by





# What we know about the recreational fishery in the Hauraki Gulf and how

- Fisher interviews – catch and effort
- Aerial surveys – quantifying effort
- Combining the two to estimate harvests
- Alternative harvest estimates
- A recreational catch history for the Gulf
- Key points for marine spatial planning



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# Many forms of recreational fishing

	Rod & line	Diving	Hand gathering	Net	Long-line	Other	
Trailer boat	56.1%	6.1%	0.2%	0.2%	0.8%	1.1%	64.5%
Launch	10.8%	0.3%	0.0%	0.0%	0.2%	0.0%	11.4%
Trailer yacht	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
Yacht	2.0%	0.1%	0.0%	0.0%	0.0%	0.0%	2.1%
Kayak	4.8%	0.0%	0.0%	0.1%	0.1%	0.0%	5.0%
Off land	11.8%	1.0%	1.3%	1.2%	0.2%	0.1%	15.6%
Other	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
	86.7%	7.5%	1.5%	1.5%	1.4%	1.4%	

% of trips in the Gulf provided by





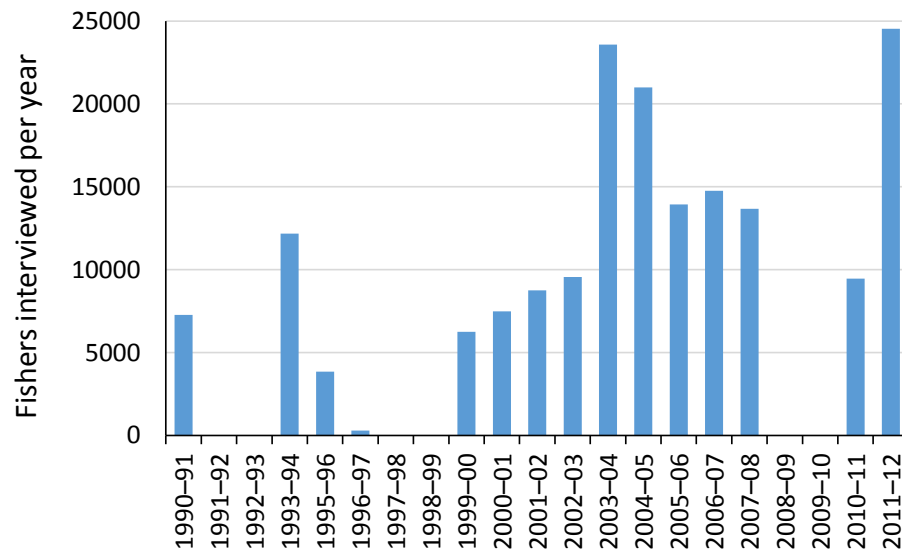
# Fisher interviews



- Areas fished?
- Hours spent fishing?
- Methods used?
- Number of each species caught?
- Fish measured



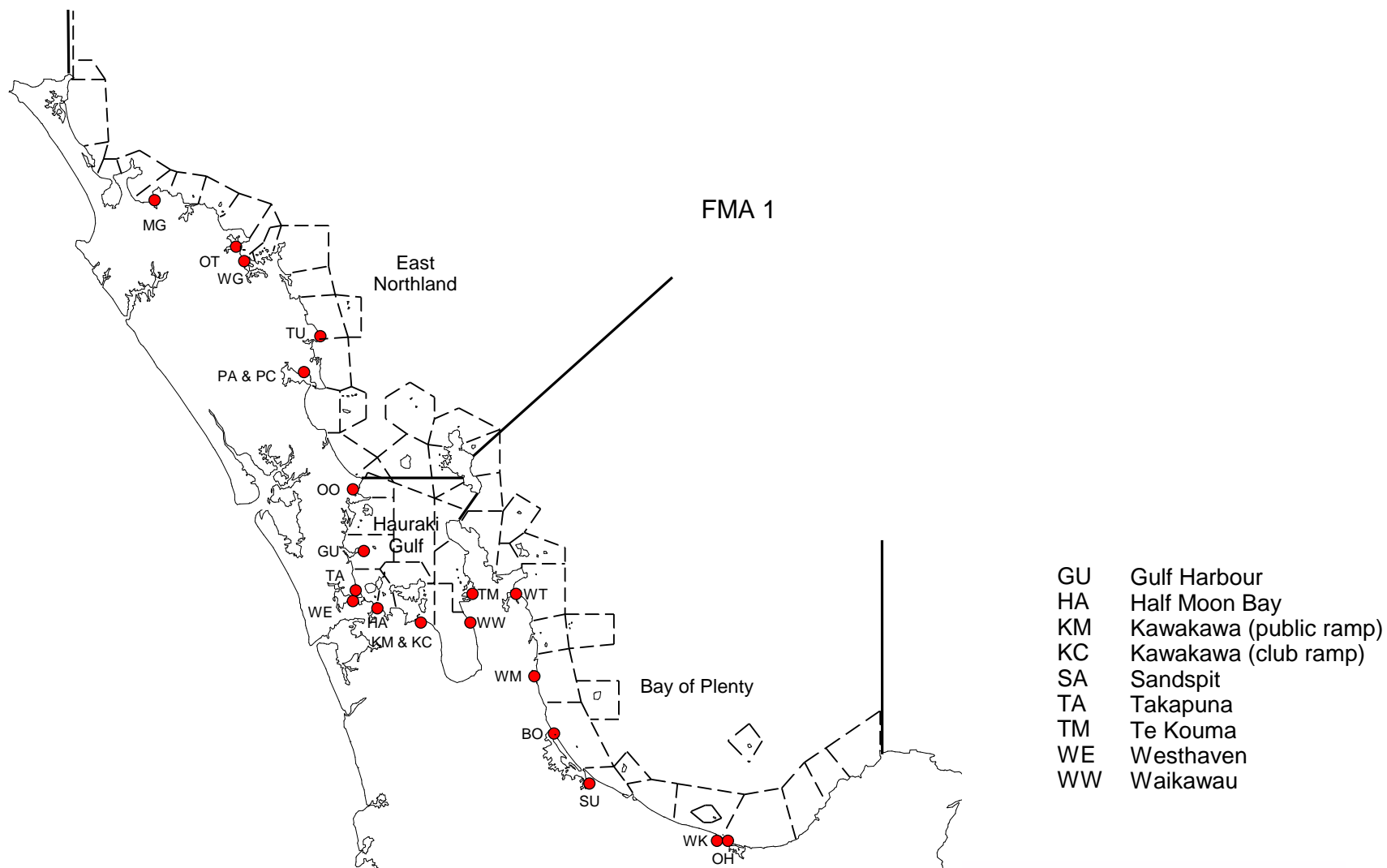
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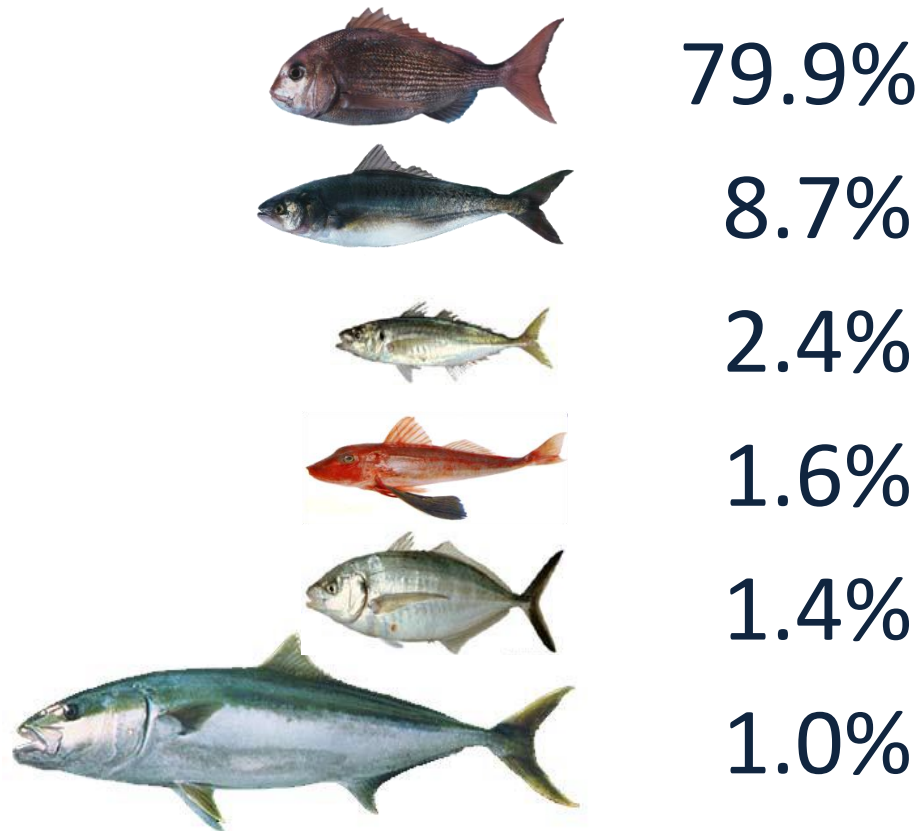


# Fisher interviews in the Gulf





# Landed catch composition in 2011–12



- At least 25 other finfish species harvested
- Substantial numbers of shellfish such as scallops, kina, mussels and cockles are also taken



# Changes in average catch over time

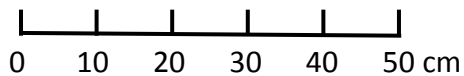
1991



= 1.3 kg



= 0.15 kg



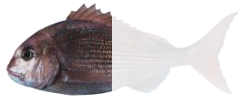
January to April only



# Changes in average catch over time

1991

1996



= 1.3 kg



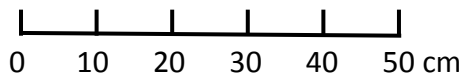
= 0.15 kg



= 1.8 kg



= 0.29 kg



January to April only

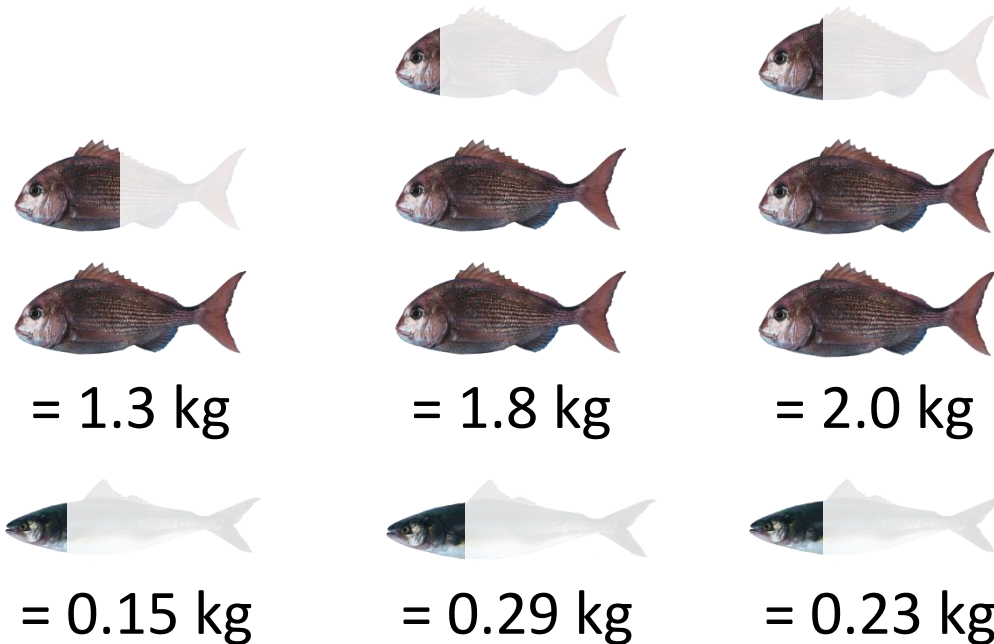


# Changes in average catch over time

1991

1996

2001



0 10 20 30 40 50 cm

January to April only



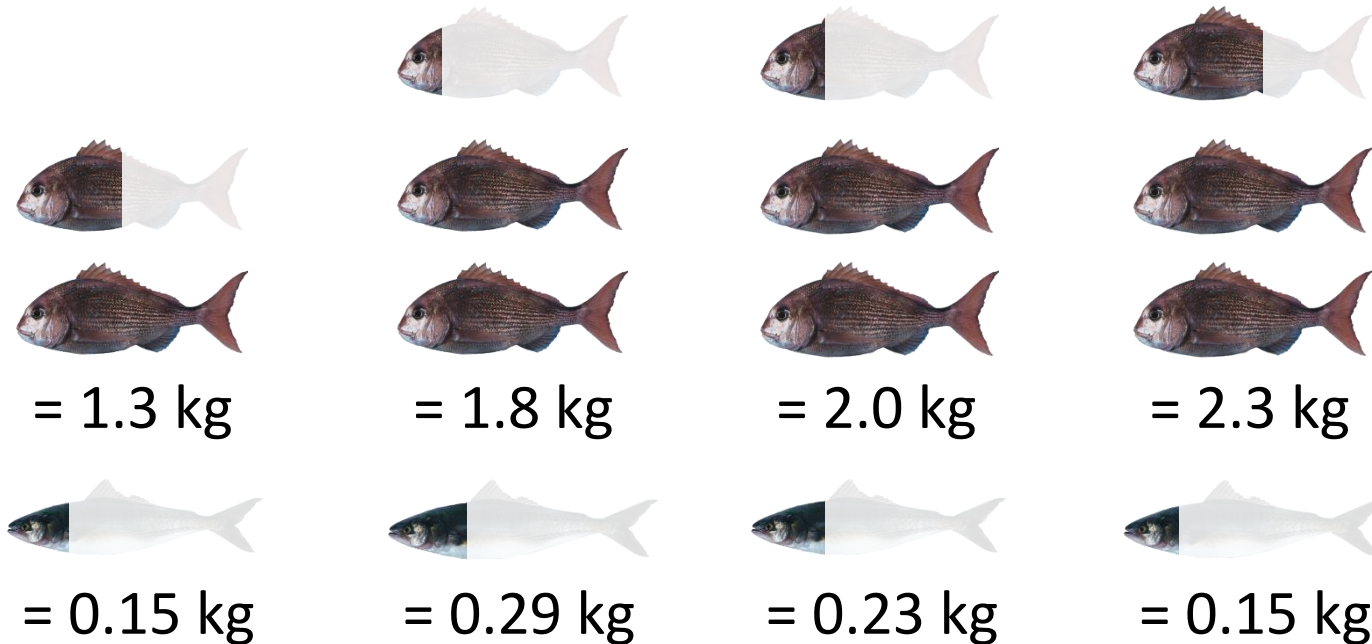
# Changes in average catch over time

1991

1996

2001

2006



0 10 20 30 40 50 cm

January to April only



# Changes in average catch over time

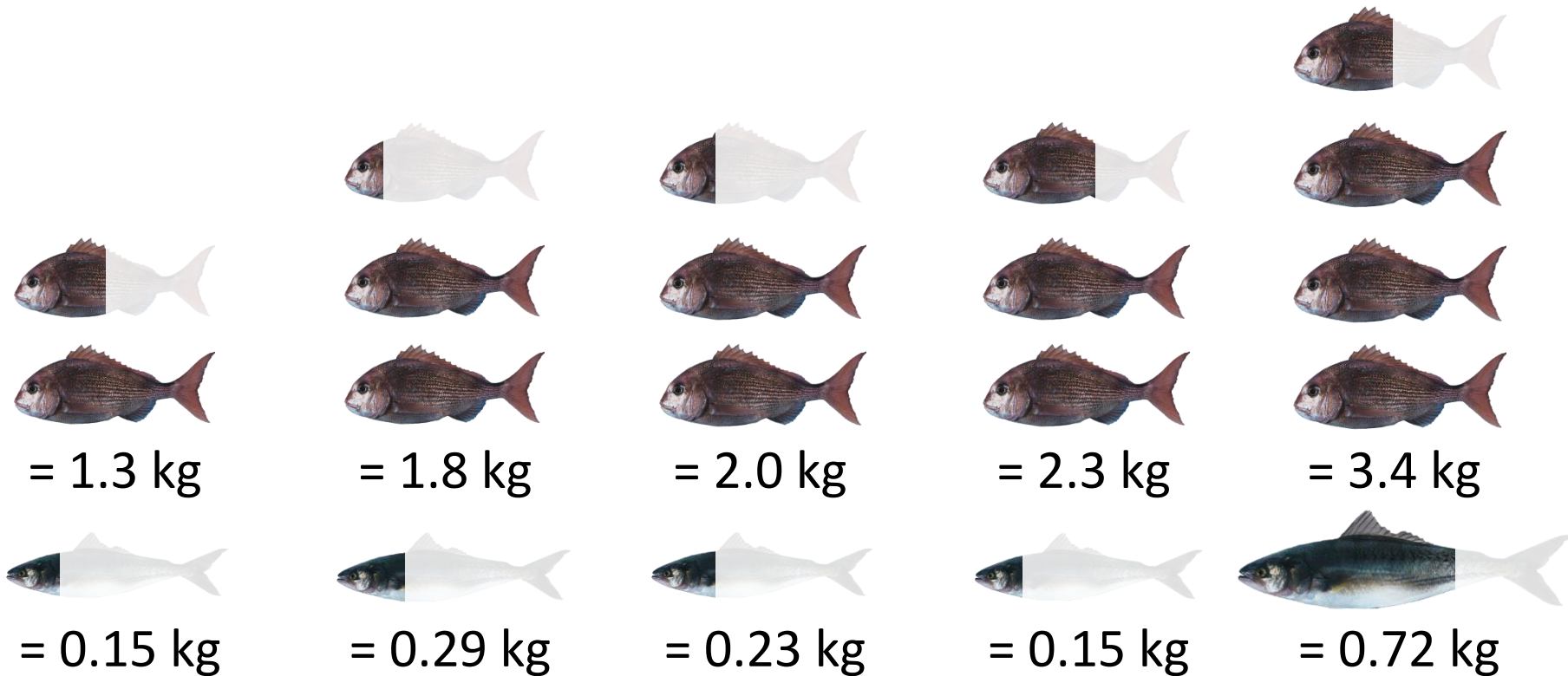
1991

1996

2001

2006

2011



0 10 20 30 40 50 cm

January to April only



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# How most of us see the fishery





How most of us see  
the fishery

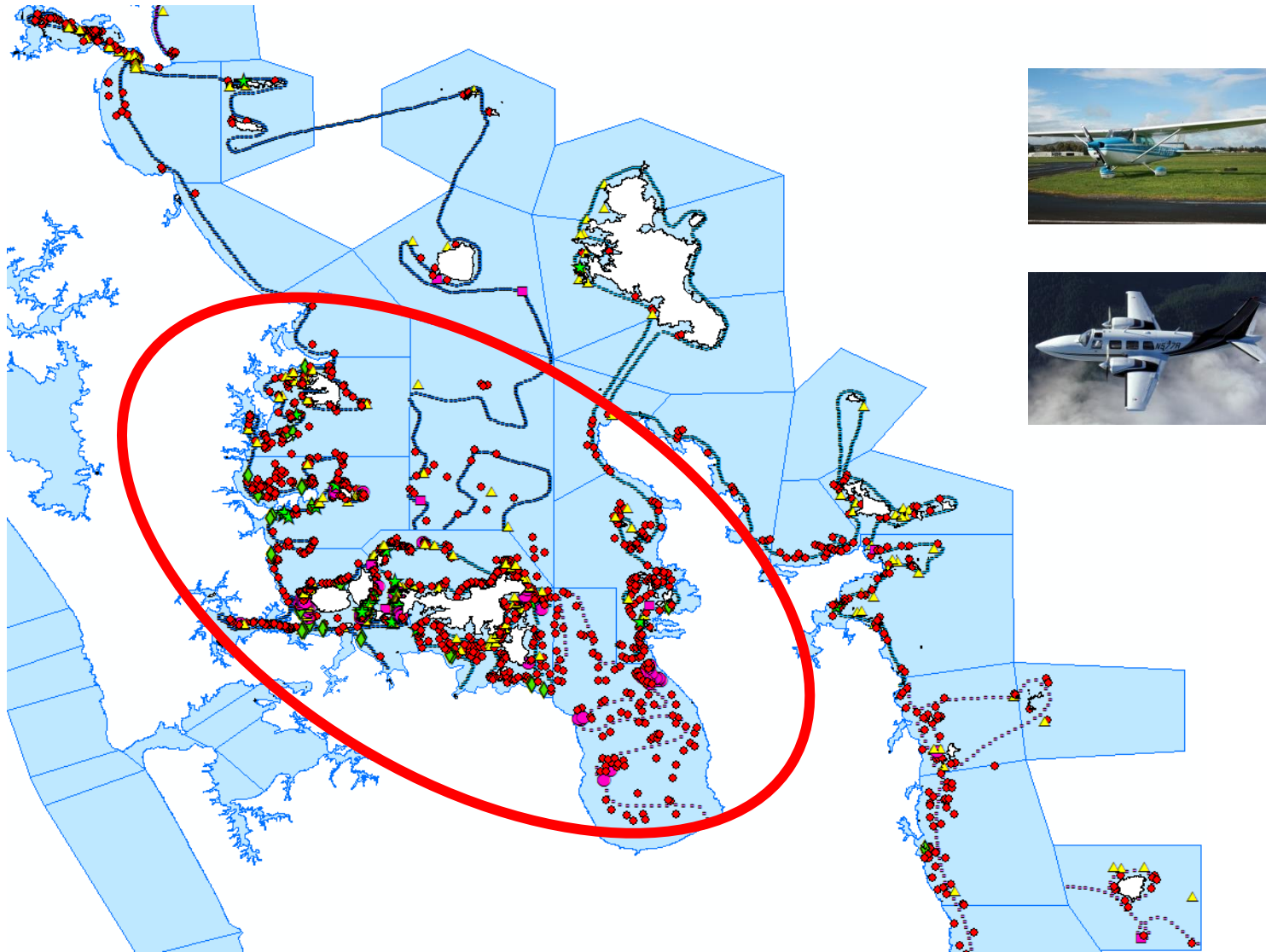


How the fishery  
appears from the air





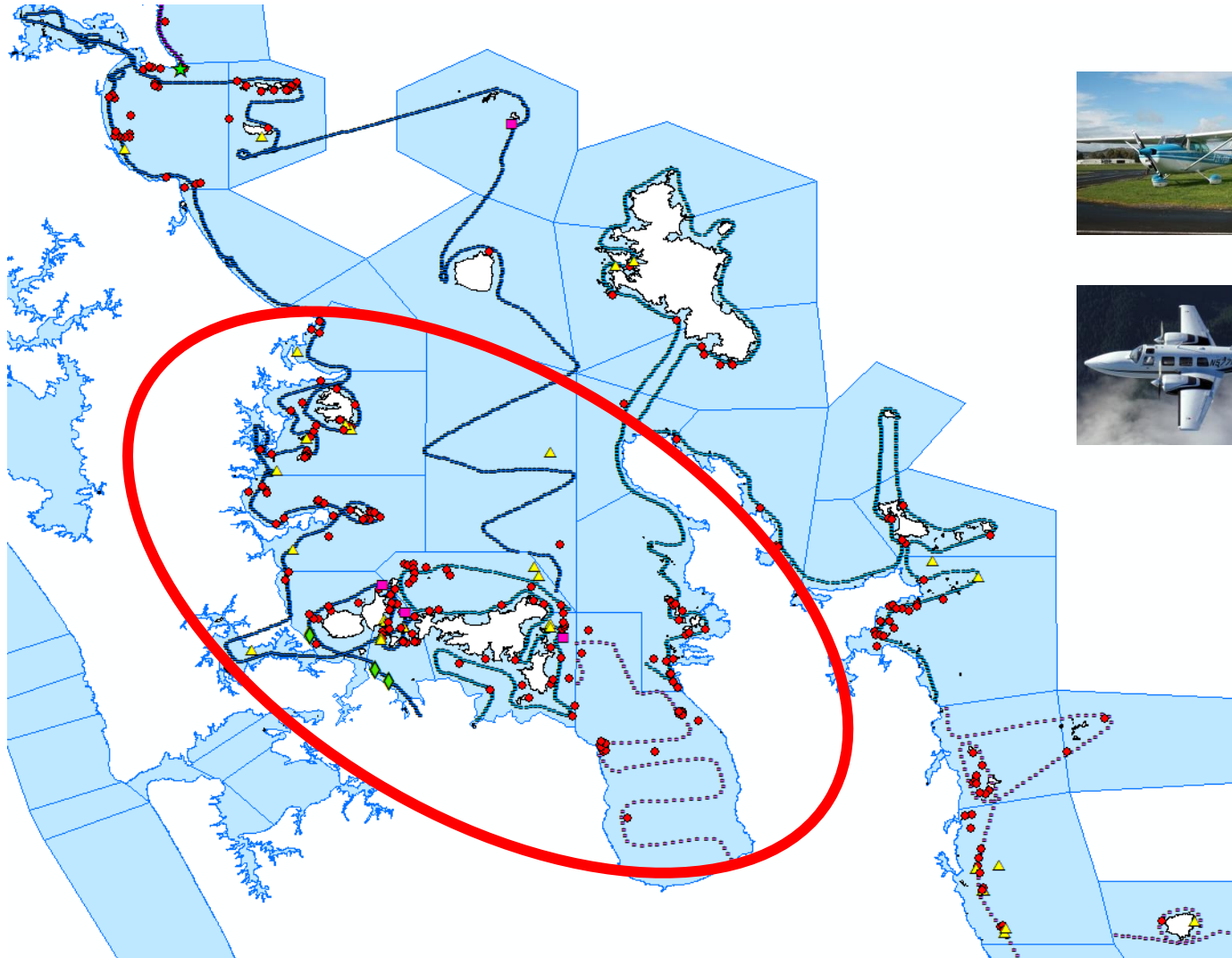
# 1859 boats in the Gulf on Saturday 15 April 2012



● Trailer boats ~ 84%    ▲ Launches ~ 11%    ★ Yachts ~ 2%,  
■ Charter boats ~ 1%    ◆ Kayaks and jet skis ~ 2%



# 183 boats in the Gulf on Friday 14 September 2012

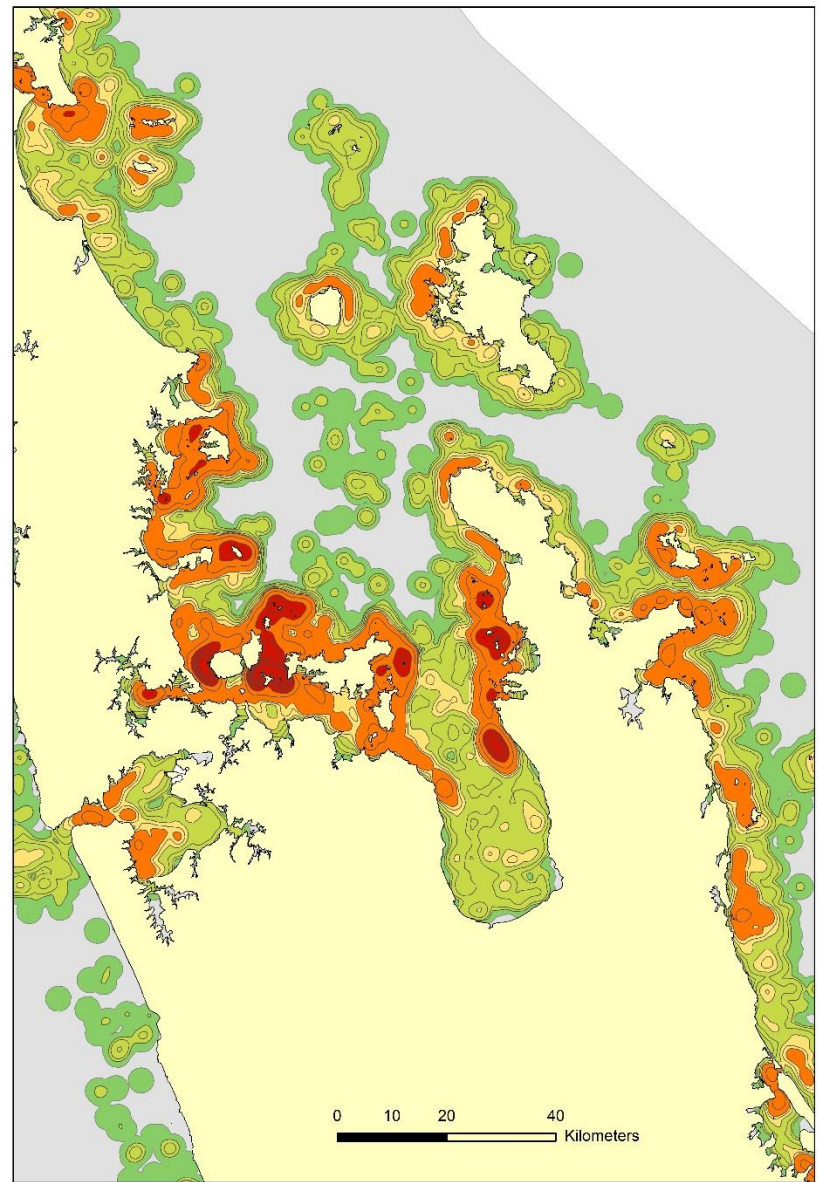
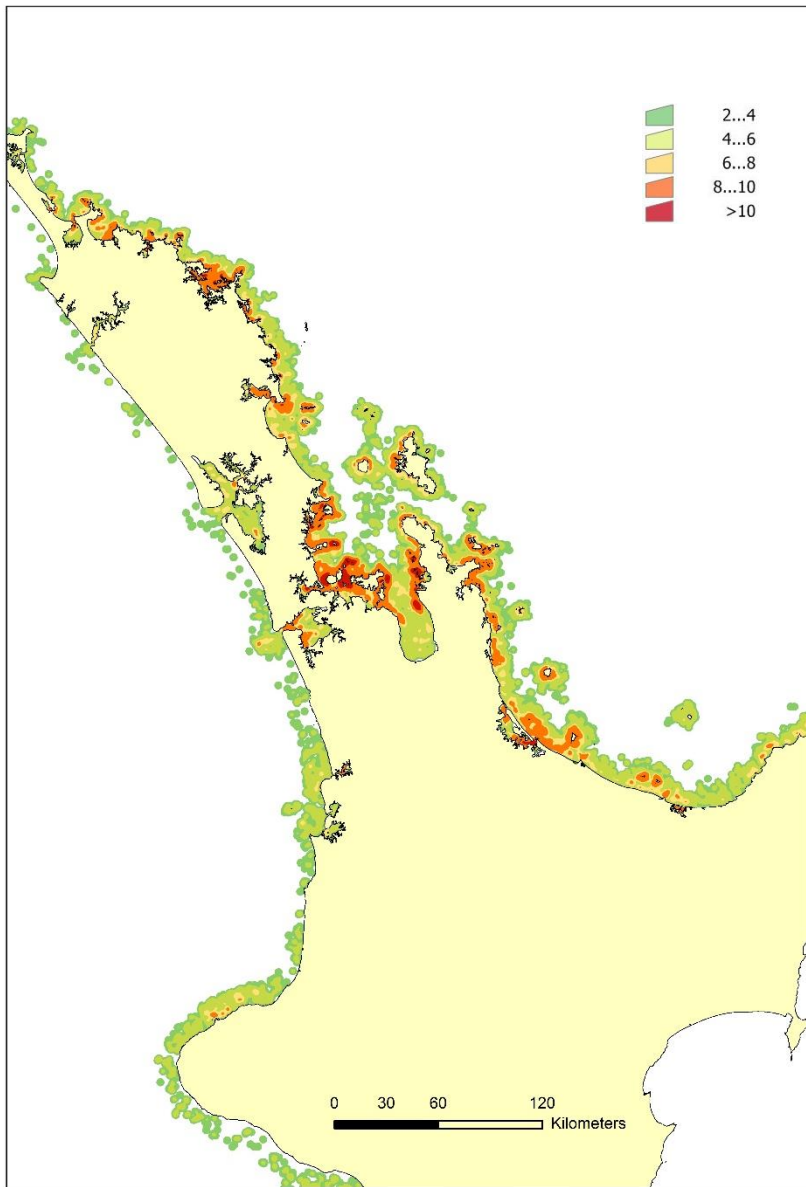


X 3



X 1



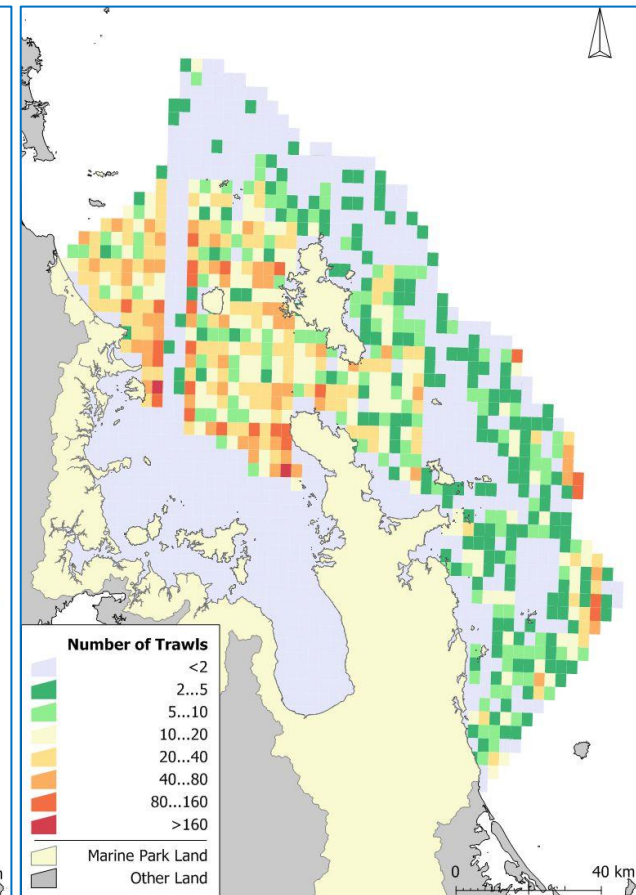
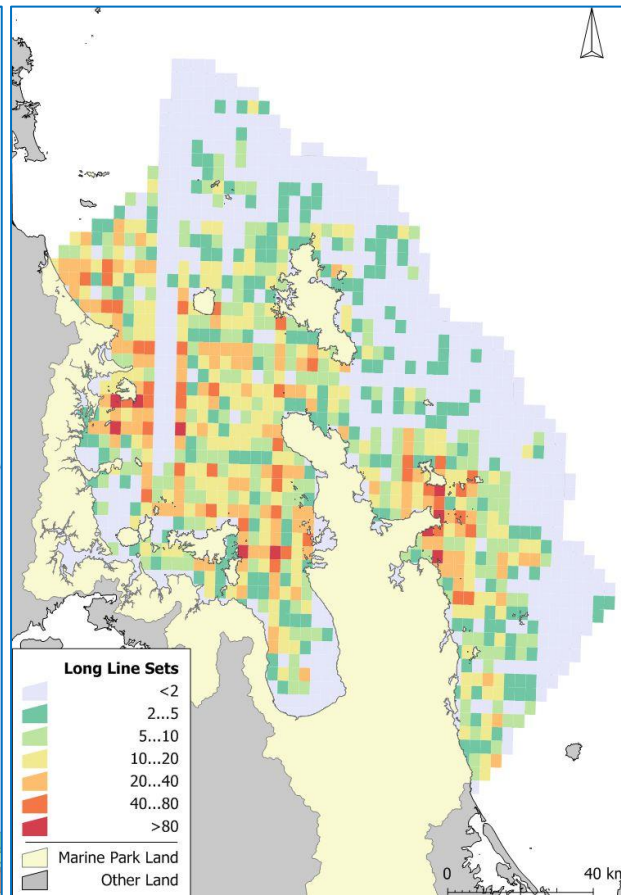
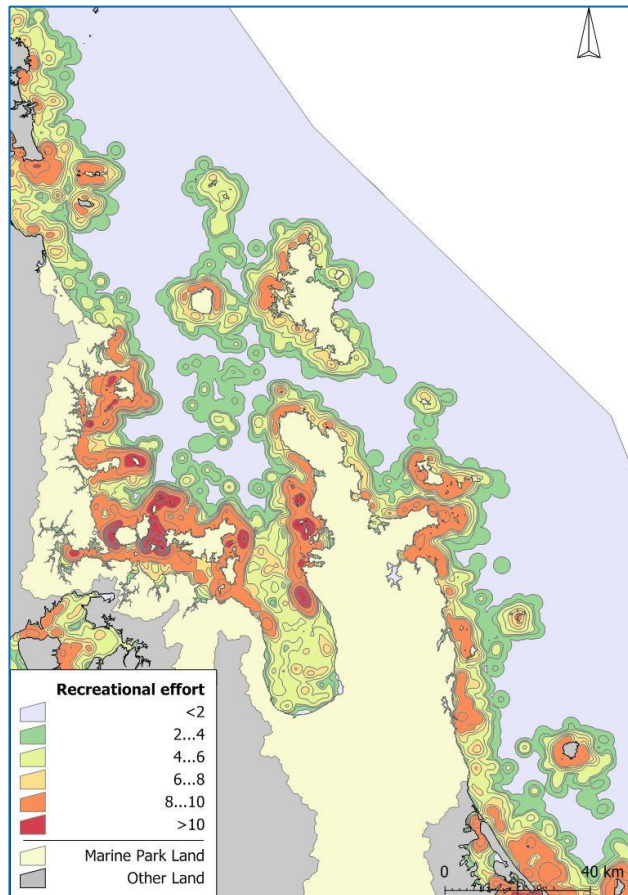




## Recreational boat effort

## Commercial long line effort

## Commercial trawl effort



Taken from - Tikapa Moana – Hauraki Gulf State of the Environment Report 2011, Hauraki Gulf Forum

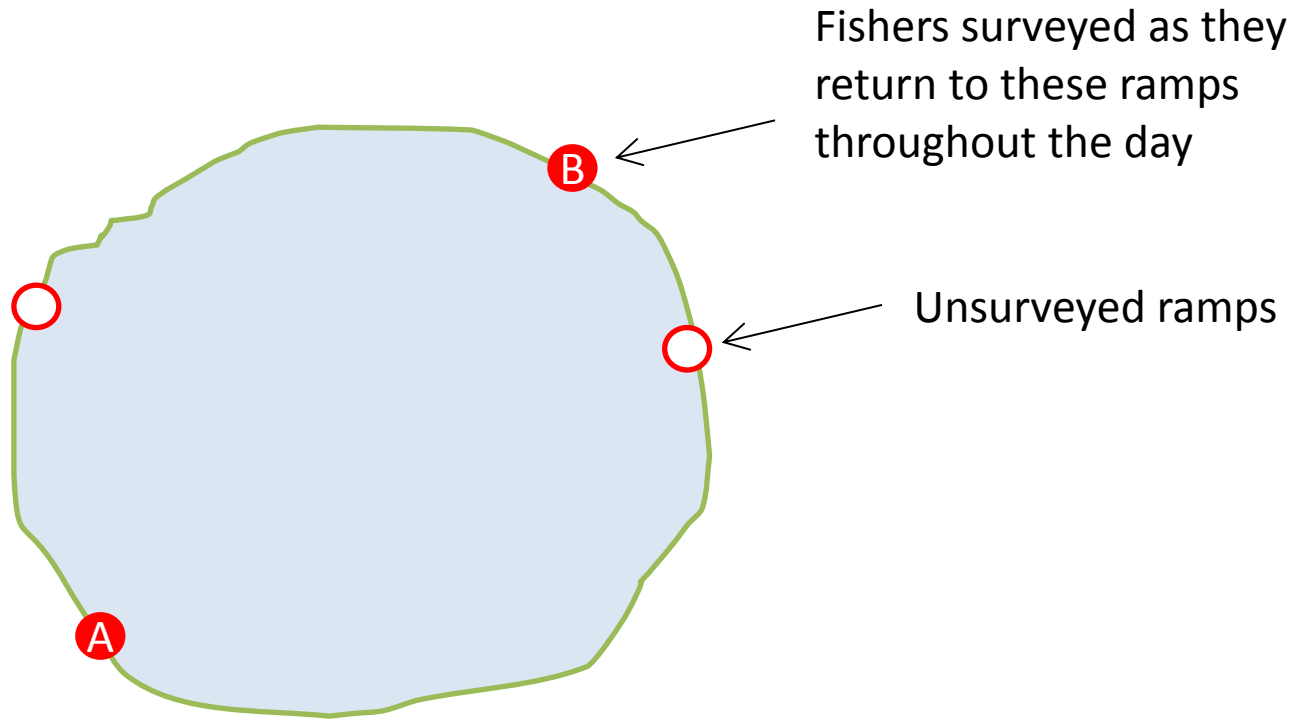


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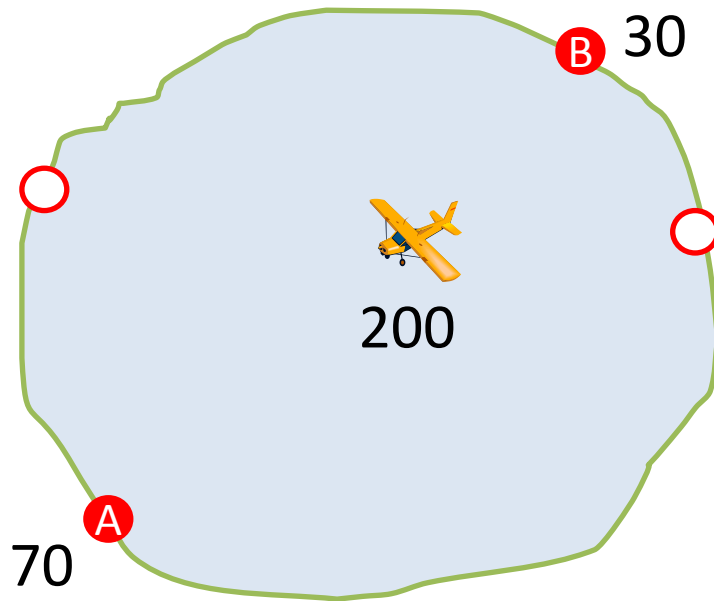


# Combining aerial and interview data to estimate the harvest on a survey day





# Combining aerial and interview data to estimate the harvest on a survey day



12:00 AM

$$\frac{+}{=} = \frac{1}{2}$$



# Surveying the FMA 1 fishery in 2011–12





# Surveying the FMA 1 fishery in 2011–12

On 45 randomly selected days

	Weekends & holidays	Midweek days
Summer	20 / 78 days	11 / 135 days
Winter	7 / 45 days	7 / 108 days





# Other types of harvesting in 2011–12

## Snapper example

	+ Other boat methods	+ Shore based methods
East Northland	2.1 %	14.7 %
Hauraki Gulf	0.7 %	3.6 %
Bay of Plenty	5.7 %	18.6 %



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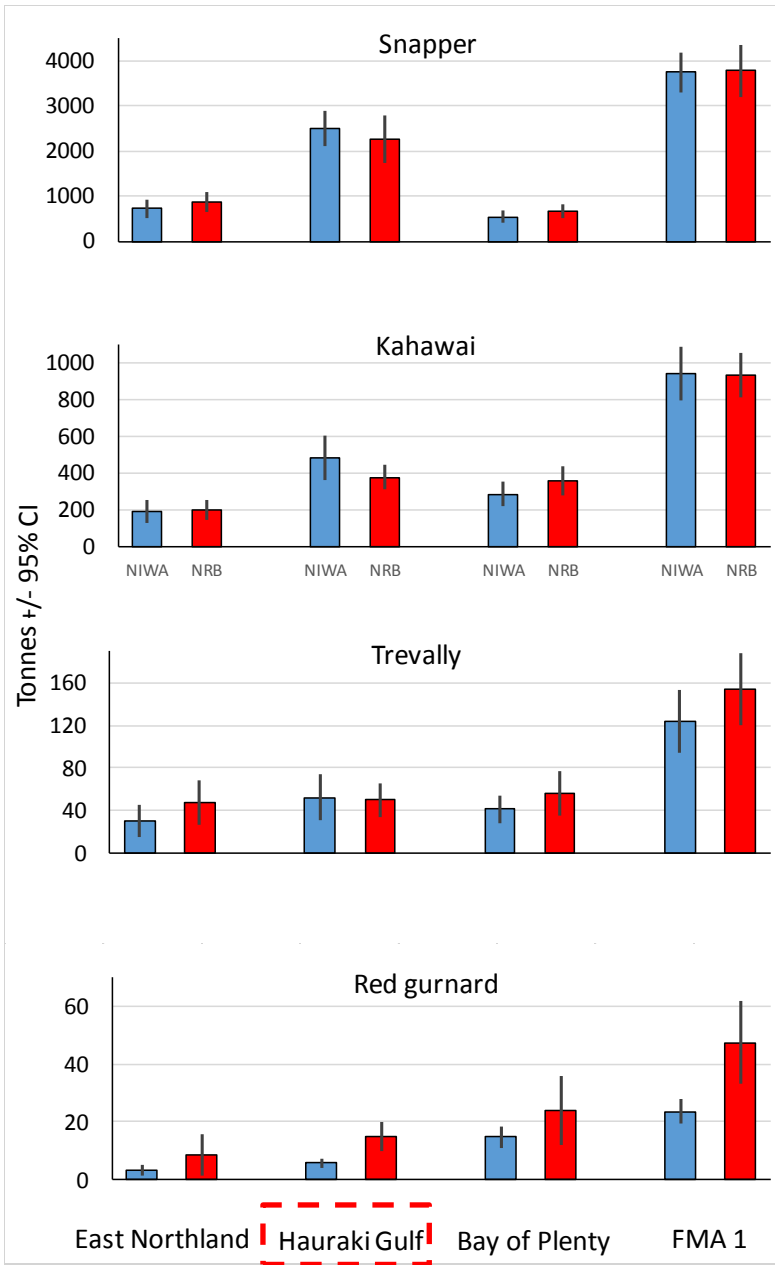


# NRB panel survey – alternative estimates

- 30,000 NZ households interviewed face-to-face
- 7,000 fisher panellists recruited from interviews
- Panellists regularly interviewed via text and phone over the following 12 months
- Structured computer prompted interviews
- National census data used to scale up panellist catch and effort data







# Harvest estimates for 2011–12

Hauraki Gulf

	NIWA	NRB
Snapper	2490 t	2254 t
Kahawai	483 t	377 t
Trevally	52 t	50 t
Red gurnard	5 t	15 t

Fish stock

	NIWA	NRB
SNA 1	3754 t	3792 t
KAH 1	942 t	933 t
TRE 1	124 t	154 t
GUR 1	24 t	48 t

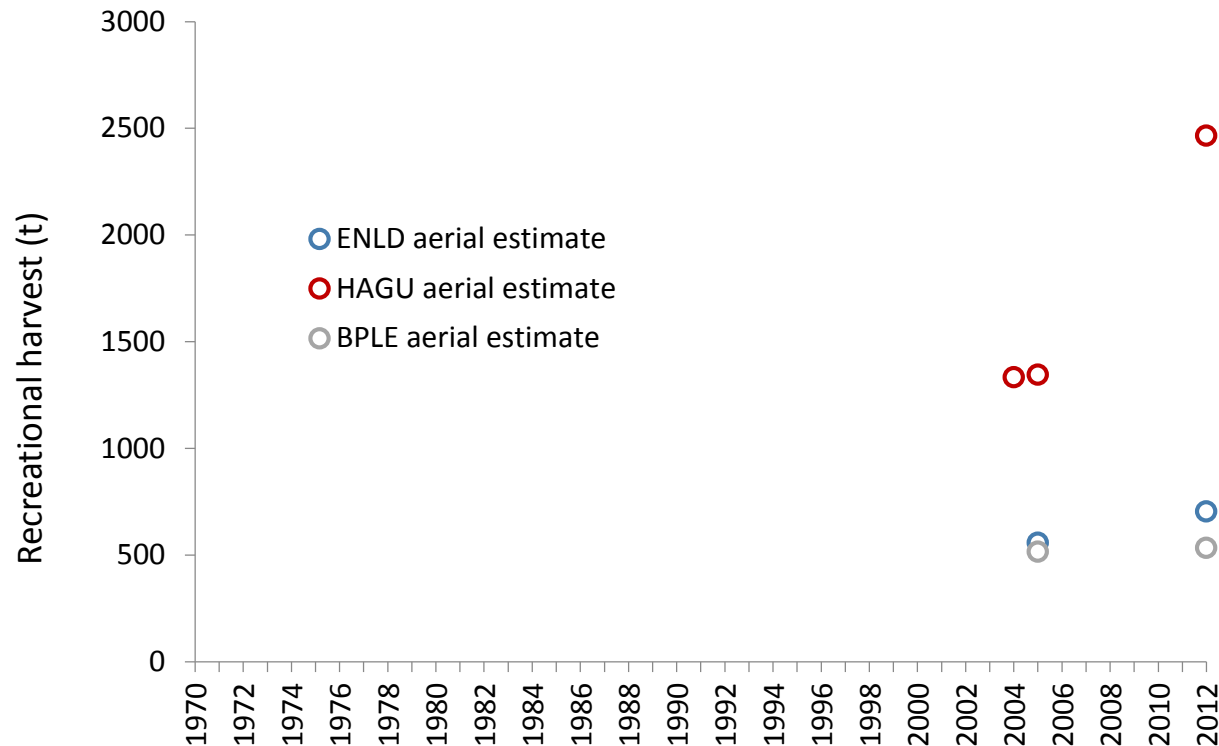


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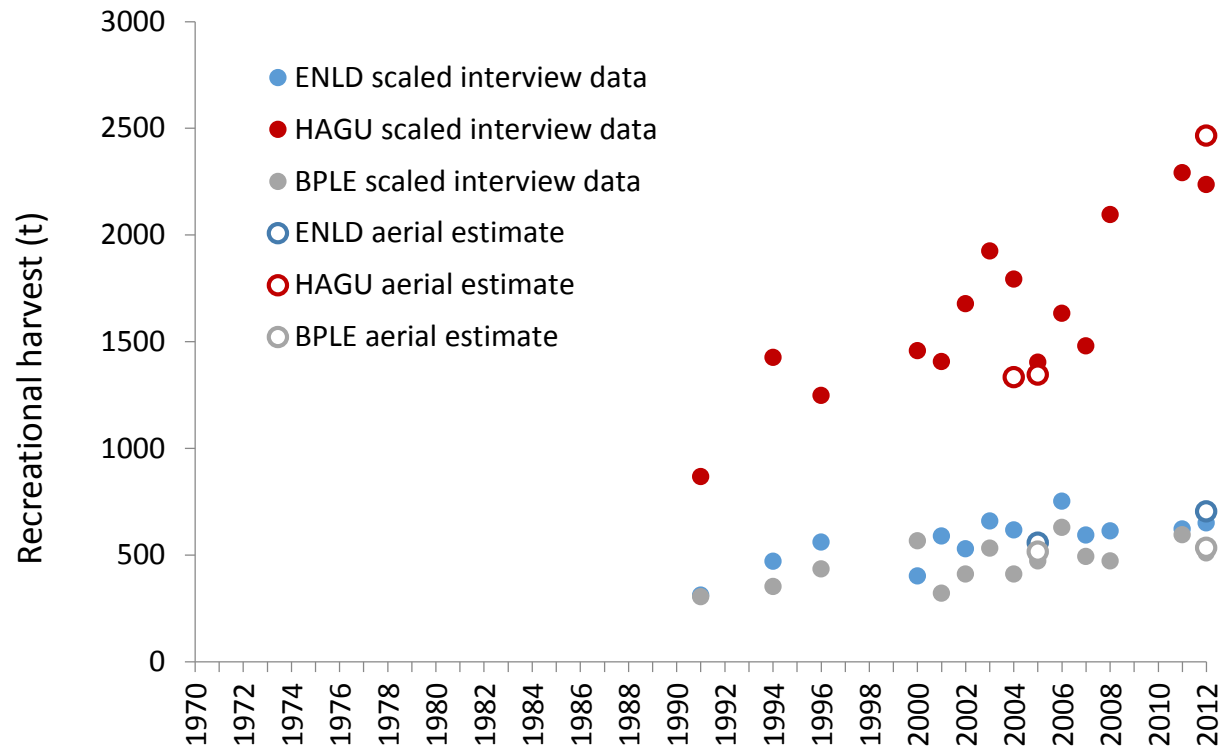


# A recreational catch history for snapper



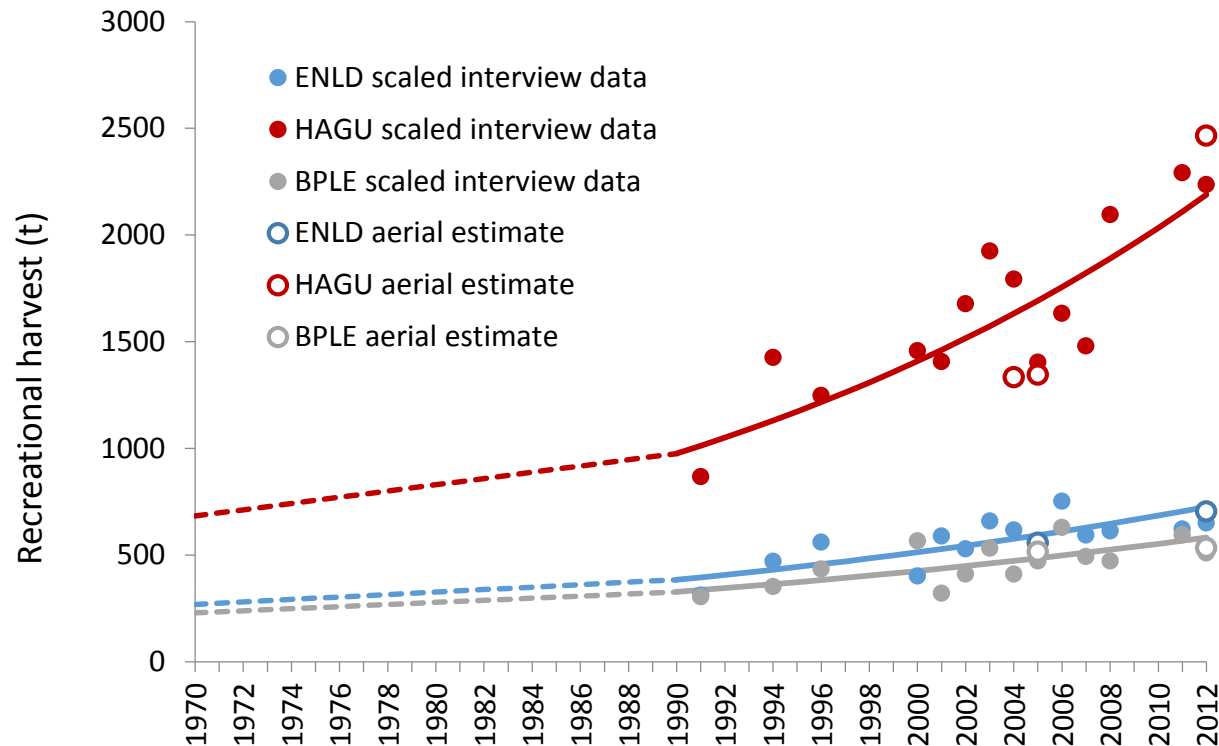


# A recreational catch history for snapper





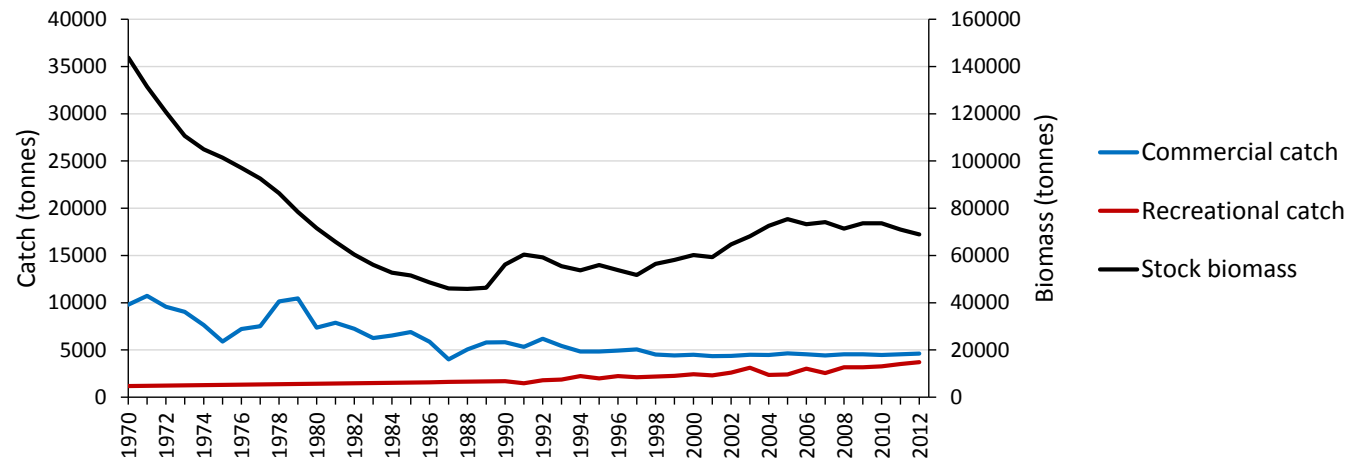
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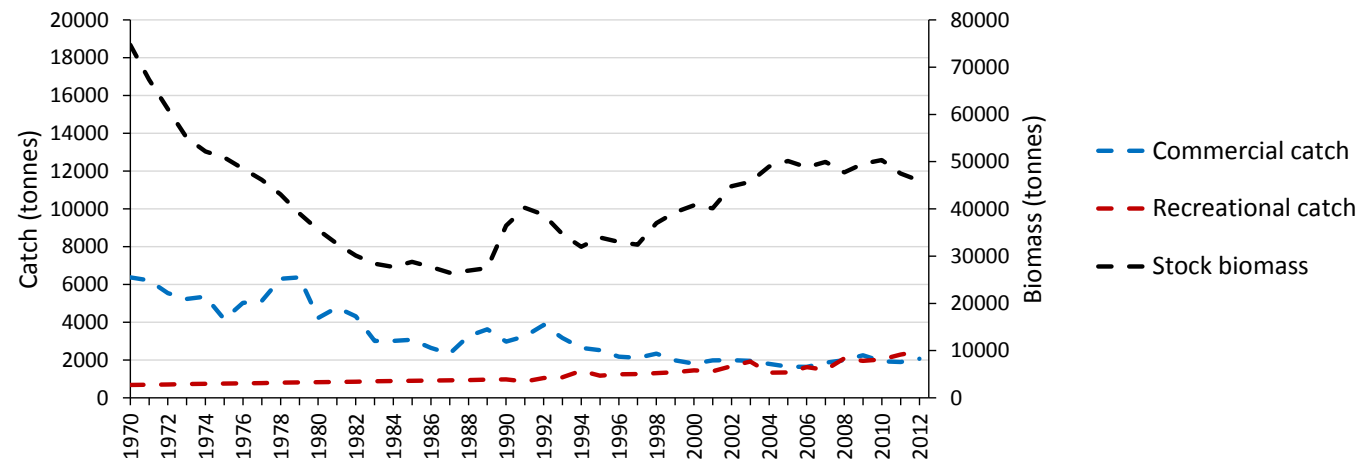


# Biomass and catch histories

## SNA 1



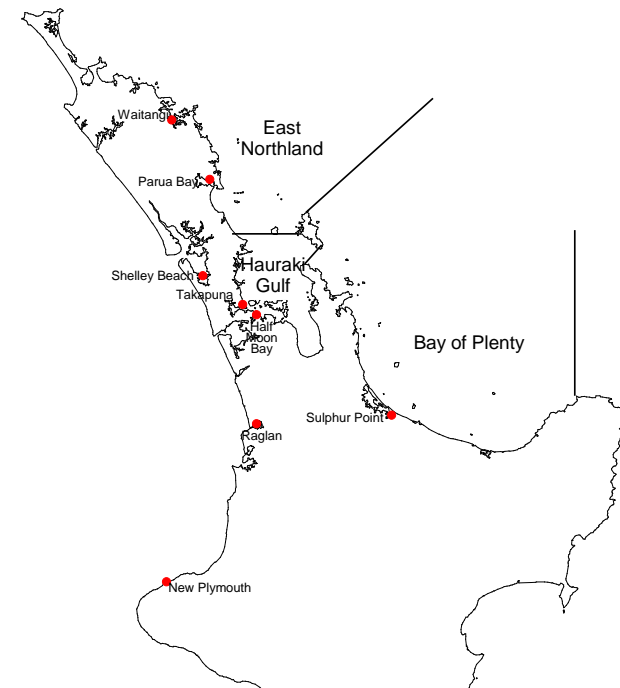
## Hauraki Gulf





# Web camera monitoring – a recent development

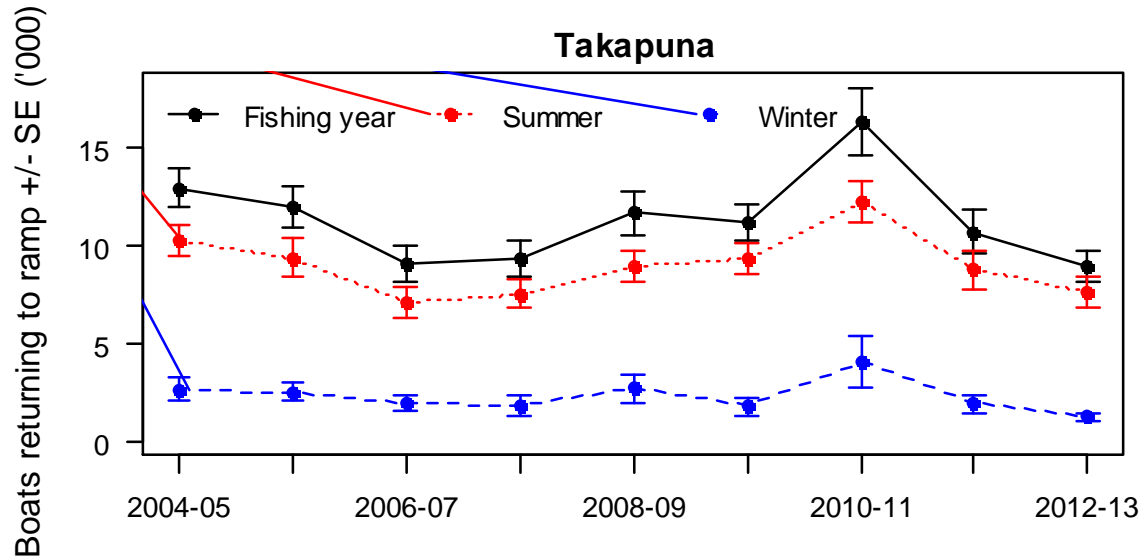
- Each camera continuously takes a time stamped image of the ramp every minute
- The number of boats returning to the ramp each day are counted
- Daily traffic counts used to derive relative indices of effort





# Web camera monitoring

Gives us an idea how boating effort has changed in a relative sense

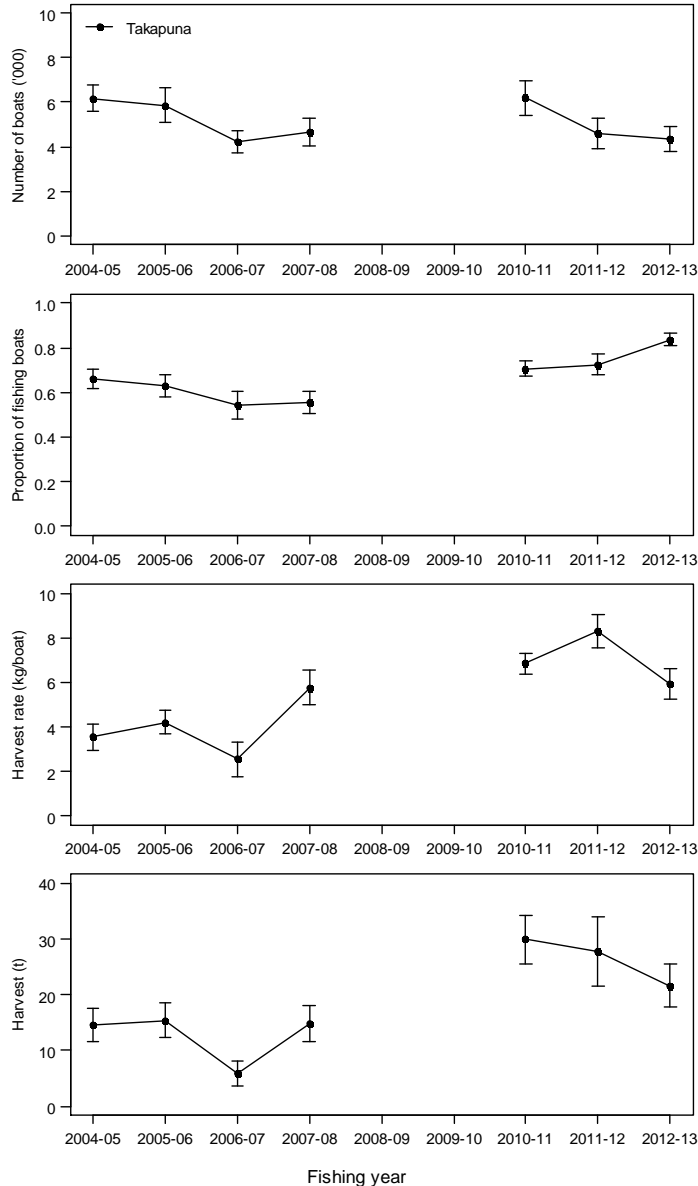


But what proportion of these boats were used for fishing and what was the average weight of snapper landed per fishing boat?



# Web camera monitoring + creel survey

Summer only



Boat traffic index  
(web camera)

X

Proportion of boats used for fishing  
(creel survey interviews)

X

Catch weight per boat index  
(creel survey interviews)

=

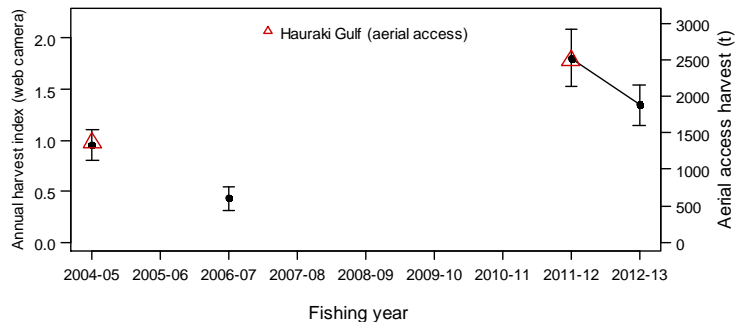
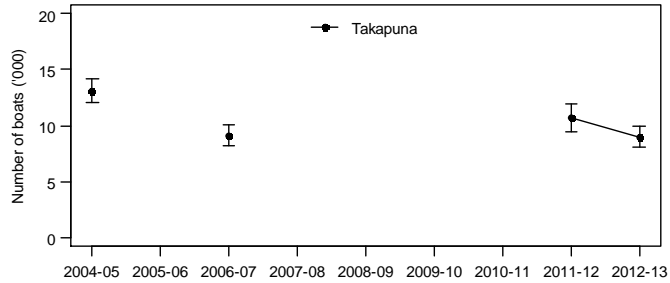
Recreational snapper harvest index  
(web camera and creel data combined)

Provisional results!  
work in progress



# Web camera monitoring + creel survey

Full year



Boat traffic index  
(web camera)

X

Proportion of boats used for fishing  
(creel survey interviews)

X

Catch weight per boat index  
(creel survey interviews)

=

Recreational snapper harvest index  
(web camera and creel data combined)

Provisional results!  
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# Some key points for marine spatial planning

- The Hauraki Gulf supports New Zealand's largest recreational fishery - by any measure
- Most fishing occurs around the coastal margins and islands but the distribution of effort is spreading
- The degree of spatial overlap between recreational and commercial fisheries is relatively modest – but fish do move
- Recreational fishing is compatible with some activities such as mussel farming





# Acknowledgements

NRB who provided estimates given in this talk with particular thanks to Andy Heinemann and Jeremy Wynne Jones.

NIWA staff including: Helena Armiger, Nicola Rush, Richard Bian, Charles Edwards, Ian Doonan, Catriona Paterson, Holly Ferguson, Crispin Middleton, Keren Spong, Dane Buckthought, Lou Reddish, Andy Miller, Nick Talbot, Christian Hyde, Sally Gray, Darren Parsons, Sanjay Wadhwa, David Fisher, Brian Sanders, Sandy Black and Joeey Vorster.

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Christian Aviation.

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And last but not least the thousands of fishers who have voluntarily participated in these surveys .





Thank you