



## VICTORIAN MULLOWAY TAGGING

### Project summary

The Victorian Mullet Tagging program, funded by the Victorian Fisheries Authority through Recreational Fishing License Fees, has now been running for three and half years. The program has received incredible support from a large number of anglers and is providing new knowledge on the elusive Mullet. It is therefore timely to provide anglers with a summary of the overall findings from the program to date, along with some recent tag and recapture news.

Thank you to anglers who completed the online angler survey – it was great to receive your feedback and thoughts about the program.

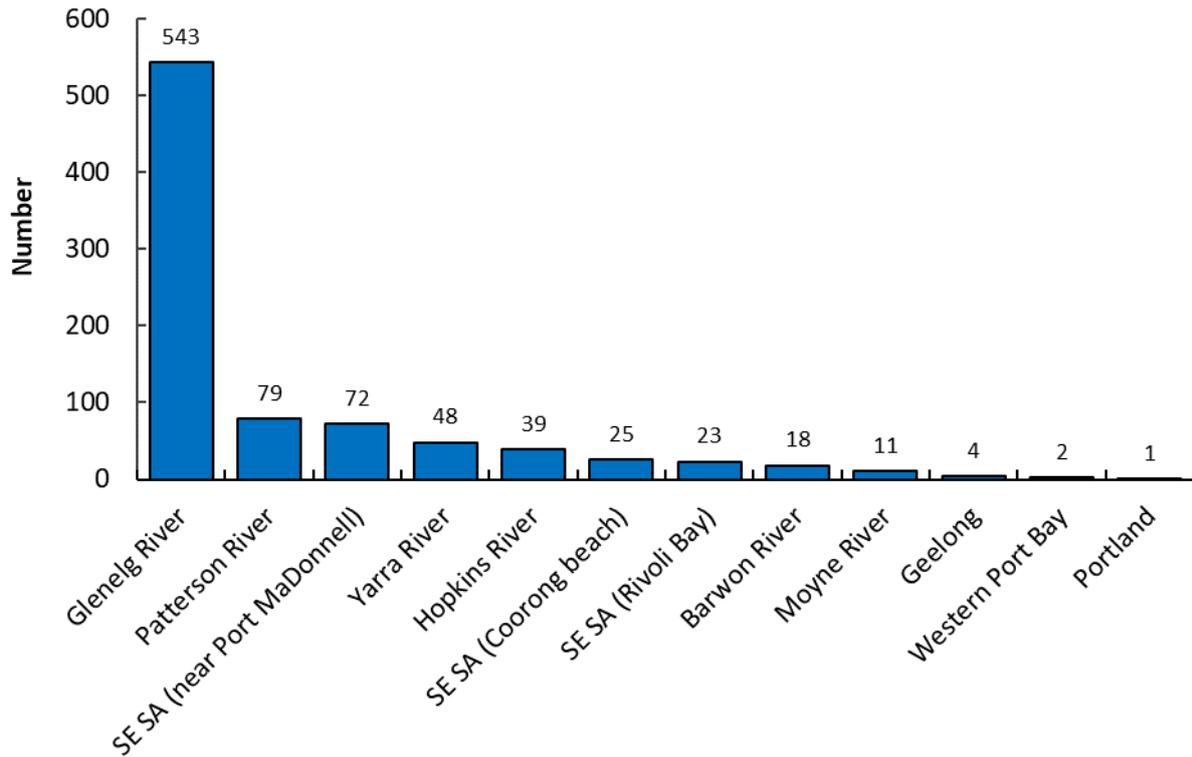
### Angler involvement

Only a Mullet angler truly appreciates the time and dedication it takes to target Mullet. Without the passion and commitment of Mullet anglers, this tagging program would not be possible – so thank you for each and every angler that has been involved in this program.

Since the tagging commenced in late 2017, we have seen over 80 anglers take up the challenge of being a Mullet tagger. Of these, almost 60 fishers have managed to tag at least one Mullet over the years, which is a mighty effort. The program has engaged with over 70 additional anglers who have been lucky enough to catch one of these tagged Mullet. While there have been a few disappointments upon realising they were not to receive a cash prize (as part of VFA's golden tag competition), these anglers have enjoyed learning about Mullet movements and growth rates. Interestingly, over one third of the Mullet recaptured have been recorded by taggers themselves!

### Tagged Mullet

Since the program began, a total of 868 Mullet have been tagged – a huge effort! The majority have been tagged from the Glenelg River (63%), with considerable numbers also tagged in the Patterson River, coastal waters near Port MacDonnell in South East SA and the Yarra River.



**Figure 1. Overall numbers of Mulloway tagged across the various regions.**

## Top taggers



Angler name	Number tagged
Tim Murrell	159
Mark Hadden	78
Michael Gordon	50
Barry Starling	41
Aron Coleman	41
Shane Murphy	38
Andrew Primmer	34
Reece Cliff	32
Stanley Aardenburg	31
Bodhi Pannenburg	31
Shane Murrell	27
Shane Lowery	26
Mark and Luke Gercovich	24
Steve Kovacevic	23

**Reece Cliff (pictured left) with a Mulloway he recently tagged in the Patterson River.**

## Largest Mulloway tagged

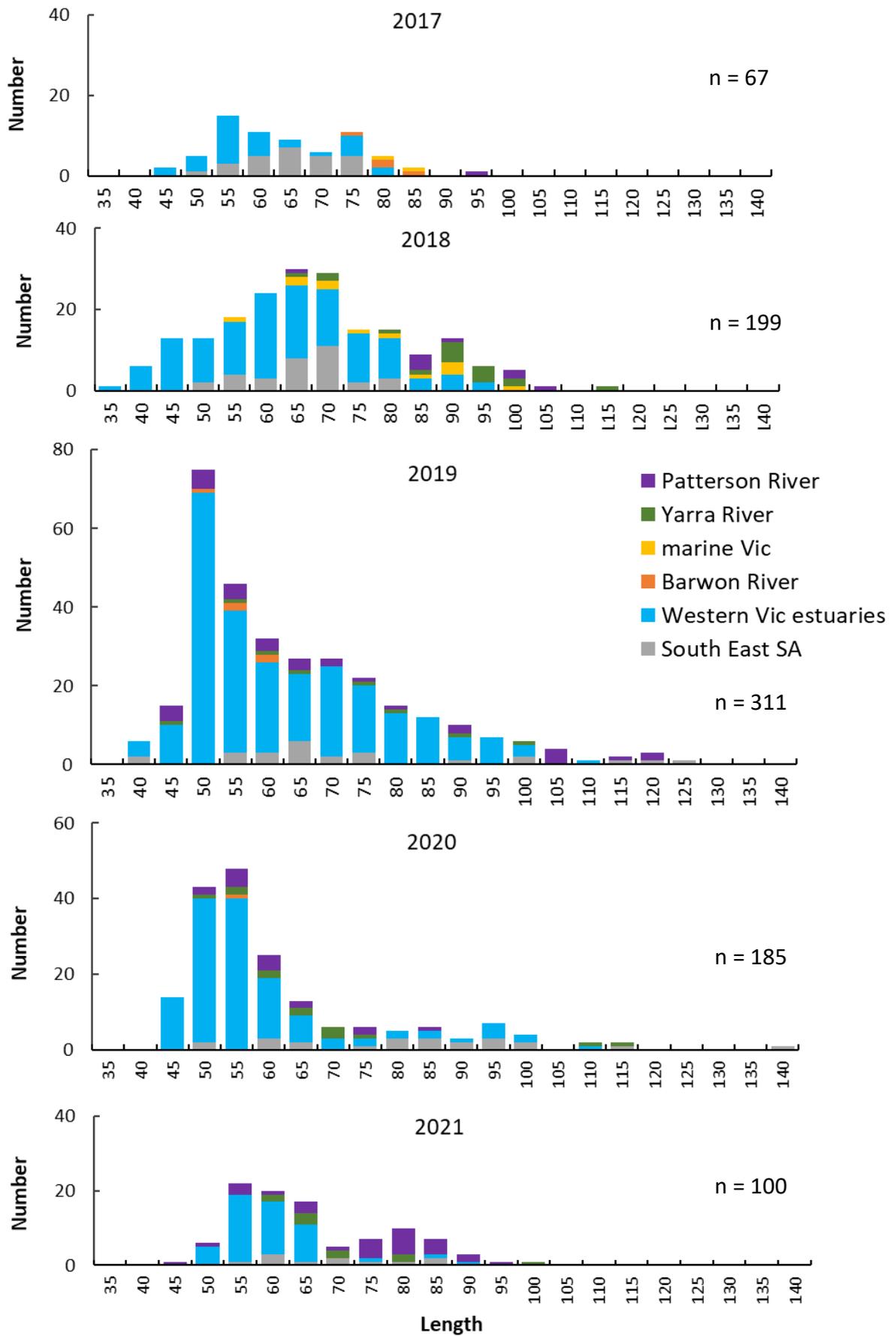
Location	Angler	Total Length (cm)
South East SA	Stanley Aardenburg	140
Vic Marine waters	Dom Gillot (Western Port Bay)	129
Patterson River	Jovica Simic	124
Yarra River	George Gabriel	118
Glenelg River	Tim Murrell / Barry Starling	110
Barwon River	Jaryd McDowall	101
Moyne River	Tony McIlroy	97
Hopkins River	Shane Murphy	97



***This 140 cm Mulloway tagged by Stanley Aardenburg from Coorong beach is the largest Mulloway to be tagged so far.***

Tagged Mulloway range in length from 38.5 to 140 cm, with most being between 50 to 70 cm reflecting the high abundance of juveniles in our major river systems (Figure 2). On average, fish tagged from western Victoria estuaries (i.e. Glenelg, Hopkins, Moyne rivers) tend to be smaller in size, compared with those tagged from metropolitan areas (i.e. Yarra and Patterson rivers) and marine waters. This year in particular, we have seen a higher proportion of larger (>75 cm) mulloway tagged from the Patterson River.

In terms of overall numbers tagged, 2019 has been the stand out year with 311 fish tagged. A large number of Mulloway were juveniles caught from the Glenelg River that had recently recruited into the system.



**Figure 2. Length frequency of tagged Mulloway in each year.**

## Recently tagged

Since the start of 2021, anglers right across the Victoria and South Australia have been busy targeting Mulloway with an additional 100 Mulloway being tagged. Exactly half of these have been tagged in the Glenelg River - a collective effort by Andrew Primmer, Mark Hadden, Barry Starling, Tony Jones and Mark and Luke Gercovich. Over in the Hopkins River, Mulloway fishing has been fairly quiet for the past 12 months. Shane Murphy has had some recent success however, tagging six Mulloway in the system this year. Great work Shane!



***Luke and Mark Gercovich took a break from chasing Kingfish and head to Nelson recently in search of Mulloway. They managed to tag two fish, one of which was this 75 cm Mulloway.***

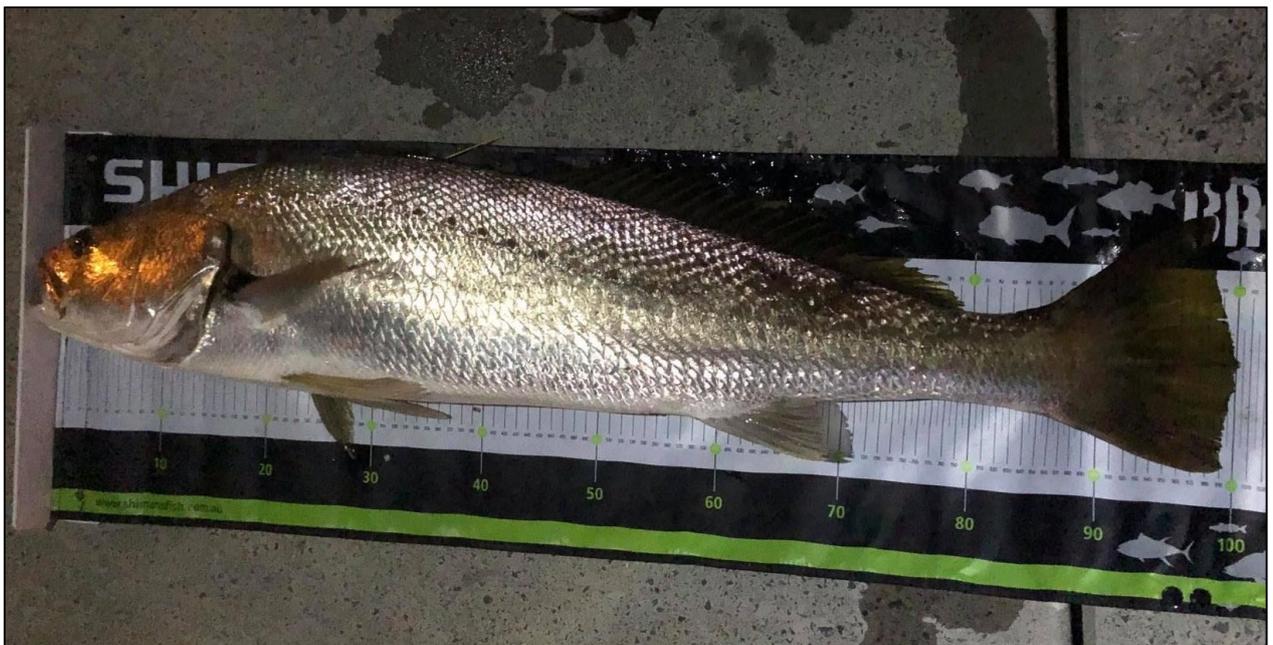
While I hear the fishing has been tough this year in the Patterson River, locals there have still managed to tag 23 Mulloway which is a fantastic effort (thanks to Jovica Simic, Reece Cliff, Brad Spiden and Shane Swain). In the Yarra River, Steve Kovacevic, George Gabriel, Shaun Willis (and Ben Thomas) have collectively tagged an additional ten Mulloway from this system since the start of the year.

In South East SA, an additional 10 Mulloway have been tagged from Rivoli Bay (between Southend and Beachport), while one Mulloway was tagged off Coorong beach (tea-tree crossing). Big thanks to Stanley Aardenburg for tagging all these fish. It's great to include tagging data from South East SA, as

the Coorong constitutes the western boundary of the Victorian/South East SA Mulloway subpopulation.



***Brad Spiden recently tagged this 92.5 cm Mulloway from the Patterson River, one of the largest tagged from this system in 2021.***

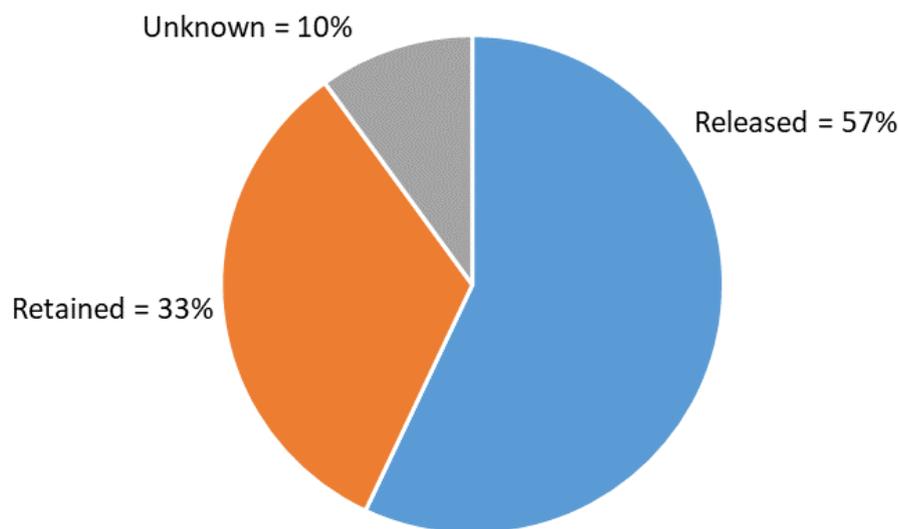


***Shaun Willis and Ben Thomas tagged this 100 cm Mulloway from the Yarra River in March this year.***

## Summary of recaptures

Since the program began in late 2017, we have recorded 172 Mulloway recaptured. This includes 150 Mulloway that have been recaptured once, 21 Mulloway that been recaptured for a second time, and a single Mulloway that has been recaptured four times! The fact that 21 Mulloway have been recaptured twice, and 15 of these have been within the Glenelg, probably suggests there has been a high degree of fishing effort in this system at certain times of year.

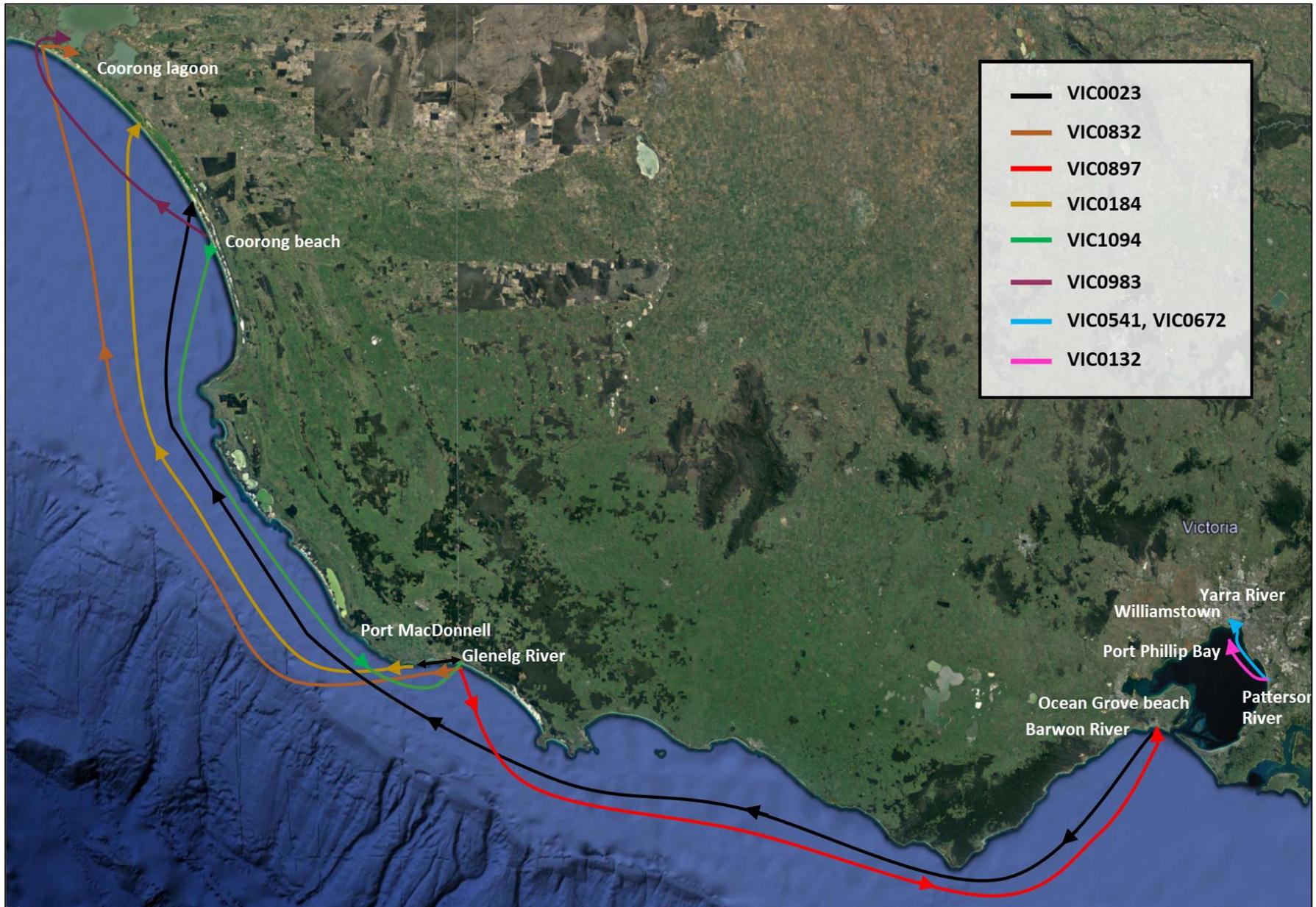
Of the 150 recaptured Mulloway once, 57% have been released (noting that some of these were undersize), 33% were retained and the remaining 10% are unknown (i.e. anglers did not disclose). The main reasons for retaining tagged Mulloway include: not seeing the tag, gill or gut hooked, keeping for a feed, retaining for fishing competition, or because it was their first Mulloway. Pleasingly, a lot of anglers that did not see the tag until it was too late (i.e. caught the fish during the night and couldn't see the tag), noted they would have released the fish if they had of known about the program. This certainly highlights the importance of sharing the program with the broader angling community.



**Figure 3. Percentage of tagged Mulloway released and retained.**

## Movement and stock connectivity

As we know where they were tagged and recaptured, the recaptured Mulloway provide valuable information on the extent and direction of movement of the species (Figure 4). The recapture data indicates there is movement and connectivity from as far east as the heads of Port Phillip Bay, to as far west as the Coorong Lagoon. This supports previous genetic research which confirm Mulloway from one genetic subpopulation from the Coorong to Western Port Bay. Interestingly, we haven't (as yet) observed Mulloway migrating into or out of the heads of Port Phillip Bay. We will no doubt continue to learn more about Mulloway movements inside Port Phillip Bay and nearby coastal waters as more fish are tagged and detected. This includes collecting more recapture data on Mulloway moving seasonally between the Patterson, the Yarra and Maribyrnong rivers (as anecdotally occurs).



**Figure 4. Extent and direction of movement of individual Mulloway based on recapture data.**

## Record distances travelled

The table below summarises the record distances travelled by a tagged Mulloway. By far the longest distance swimmer has been a Mulloway tagged in the Barwon River which travelled to the Coorong in SA, covering 700 km. The next largest distance was a Mulloway tagged in the Glenelg River which travelled 420 km west and into the Coorong lagoon, where it was recaptured 10 km inside the mouth. Next longest, was a Mulloway tagged in the Glenelg that was washed up along the beach in Ocean Grove. Other notable distances include three Mulloway tagged in the Patterson River which made their way across to Williamston (40 km), Newport (37 km) and Faulkner Beacon (26 km). We have also seen large distances travelled by tagged Mulloway inside the Glenelg River, with one fish moving 26 km upstream from the mouth to Sapling Creek.

**Table 1. Record distances travelled by tagged Mulloway.**

Tag #	Distance (km)	Details
VIC0023	700	Barwon River estuary → Coorong beach (Tea-Tree Crossing)
VIC0832	420	Glenelg River → Coorong lagoon (10 km inside mouth)
VIC0897	400	Glenelg River → Ocean Grove beach
VIC0184	300	near Port MacDonnell, SE SA → Coorong beach (40 km nth of Tea-Tree)
VIC1094	280	Coorong beach (32 Mile Crossing), SE SA → Glenelg River
VIC0983	144	Coorong beach (28 Mile Crossing), SE SA → Coorong lagoon (river mouth)
VIC1091	130	Coorong beach (32 Mile Crossing), SE SA → Coorong lagoon (river mouth)
VIC1832	120	Coorong beach (42 Mile Crossing), SE SA → Coorong lagoon
VIC0541	40	Patterson River → Williamstown
VIC0672	37	Patterson River → Yarra River entrance (Newport)
VIC0463	33	near Port MacDonnell, SE SA → Glenelg River (Sandy waterhole)
VIC0132	26	Patterson River → Port Phillip Bay (near Faulkner beacon)
VIC0222	26	Glenelg River mouth → Glenelg River (Sapling Creek)

## Movement patterns

Movements of recaptured Mulloway have been categorised into five different patterns – see Table 2. Of the 151 recaptured Mulloway, 80% were caught within the same system. This is largely attributed to the fact that over 85% of tagged fish have been caught from estuaries and a large majority of these have been sub adults (<80 cm). We know from other research that Mulloway utilise estuaries as nurseries, and therefore movements outside of these systems are more likely to be seen once the fish reaches maturity (around 80 cm). In fact, of the 10 fish that were tagged in estuaries and either recaptured in another estuary or in coastal marine waters, only two fish were considered to still be sub-adults when they were recaptured (i.e. 60 cm and 66 cm), while the remaining individuals were considered either mature or approaching maturity.

Around 12% of recaptures were Mulloway tagged in coastal waters of Victoria or South Australia that were later detected inside an estuary. Majority of these were Mulloway tagged off Port MacDonnell in SA (e.g. Green Point, Browns Bay) during late spring to early autumn that later moved into the Glenelg River. These Mulloway migrated into the Glenelg as both juveniles (presumably utilising the area as a nursery) and adults (possibly seeking food following spawning in coastal marine waters). Other Mulloway tagged off the Coorong beach migrated into the Coorong lagoon, while one individual tagged at 96 cm was recaptured in the Glenelg River at 100 cm. This provides evidence of both juveniles and adults migrating from the Coorong into western Victoria. Local movement and connectivity between the Barwon coast (beaches around Ocean Grove) and the Barwon River was also documented.

**Table 2. Summary of Mulloway recaptures, grouped into the different movement patterns.**

Movement type	Specific movement	Recaptures	
		Sub-total	TOTAL
1. Within estuary	Glenelg River	90	120
	Hopkins River	5	
	Moyne River	2	
	Patterson River	18	
	Yarra River	5	
2. Between estuaries	Patterson River → Yarra River (mouth)	1	3
	Yarra River → Maribyrnong River	1	
	Glenelg River → Coorong lagoon	1	
3. Estuary to marine waters	Glenelg River → near Port MacDonnell, SA	3	8
	Glenelg River → Ocean Grove beach	1	
	Moyne River → Port Fairy beach	1	
	Barwon River → Coorong beach, SA	1	
	Patterson River → Port Phillip Bay	2	
4. Coastal waters to estuary	near Port MacDonnell, SA → Glenelg River	11	18
	Coorong beach, SA → Glenelg River	1	
	Coorong beach, SA → Coorong lagoon, SA	4	
	Barwon Coast → Barwon River	2	
5. Coastal waters	near Port MacDonnell, SA → near Port MacDonnell, SA	1	2
	near Port MacDonnell, SA → Coorong beach, SA	1	

## Repeat recaptures

Of the 150 recaptured Mulloway, 21 of these have been recaptured for a second time. This includes 12 Mulloway tagged and recaptured twice inside the Glenelg River, five individuals tagged and recaptured twice inside the Patterson River and a single individual detected three times in the Hopkins River. The total time at liberty (i.e. the time between being tagged to recaptured for the

second time) for these fish ranged from as little as 48 days to as many as 755 days! While we know these fish utilised these river systems over as many as two years, we can't be certain that they remained within the system in between recaptures. However, given some of these Mulloway were caught multiple times at the same or similar locations, we know they at least display some degree of site fidelity and return to specific sites. These multiple detections also allow us to record the growth of individuals over multiple years. This varied from a tagged Mulloway in the Hopkins growing from 45 cm to 70 cm in 381 days (25 cm growth), to a fish from the Glenelg growing from 50 cm to 79 cm in 651 days (29 cm growth).

The remaining three repeat recaptures were fish that travelled between SA and Victoria, with one Mulloway completing a 'round trip', presumably relating to breeding. The fish was tagged in the Glenelg River in December 2017 at 60 cm, then recaptured over a year later at Browns Bay at 79 cm, before being caught again in the Glenelg in June 2019 when it was 80 cm.

## Recent recapture highlights

### ***Glenelg River and South East SA***

The Glenelg has also seen a few recent recaptures, with one fish showing a growth of 35 cm (54 to 89 cm) during its 909 days (2.5 years) at liberty. A 62 cm Mulloway was also recaptured in the Glenelg in May, which was originally tagged by Mark Hadden in February this year. In the past two months, the fish travelled 26 km upstream from the estuary mouth to Sapling Creek, and grew 2 cm in length. Tim Murrell tagged a 57.5 cm Mulloway in September last year, which was recaptured at 68 cm by Greg Bertram in mid-March. The fish grew 10.5 cm in just under six months, making it one of the fastest growth rates we've seen (0.06 cm per day).

Further to the west, an 83 cm tagged Mulloway was reported during May in the Coorong closer to the Murray mouth by Noah Kert. It was originally tagged by Stanley Aardenburg just 61 days prior at 42 mile crossing (Coorong beach) – that's over 120 km away! The fish grew 3 cm during this time which is surprisingly high considering the distance it travelled.

### ***Patterson River***

A Mulloway tagged from the Patterson River in April 2019 by Shaun Mulcahy, was recaptured a year later in March 2020. Earlier last month, the same fish was caught by Julian Straub (right) for the third time, making it an annual event. The Mulloway grew from 65 to 75 cm in the first year (10 cm), and from 75 to 82 cm in the second year (7 cm). Julian released the fish so let's wait and



see if its recaptured again – possibly next April or May!

Reece Cliff tagged a Mulloway in February this year from the Patterson River, which was caught last month in the lakes region by Casey George (see pic below). In just 72 days, the fish grew from 77 to 83 cm. The data (along with angler knowledge) indicates these autumn months are peak times for Mulloway fishing in the Patterson. Of the 60 fish tagged in the Patterson River, 39 have occurred during March, April and May. These peak autumn catches appear to be coinciding with higher abundances of bait fish in the system.



***Reece Cliff with a 77 cm Mulloway he tagged in the Patterson River in February this year. The same fish which was recaptured by Casey George a few weeks ago, now 83 cm.***

During the month of March this year, we saw three repeat recaptures recorded. One fish was a 72 cm Mulloway tagged in the Patterson River by Shaun Mulcahy in March 2019, which was recaptured one month later (at the same length) by Reece Cliff. Fast forward almost two years - Reece reports another recapture, only to realise it was this same fish he had already encountered! Reece released the fish again which was now 95 cm – see picture. Both recaptures were in the Patterson River, indicating the species has a strong affinity with the system. Reece comment was ‘This is why I enjoy being part of the Mulloway tagging program.’ It’s fantastic to see anglers finding the program rewarding.



*Reece Cliff recaptured this tagged Mulloway for the second time in the Patterson River.*

### **Yarra River**

A 66 cm Mulloway was only at liberty for 66 days, after being tagged in the Yarra River by Steve Kovacevic in early March and recaptured in May at the same length by Nic Tribonias, around 4 km downstream.

Another 66 cm Mulloway tagged by Steve Kovacevic in the Yarra River over a year ago was recently recaptured by Nic Tribonias (pictured right)—making it his second recapture in under a month! This time the fish was at liberty for 395 days, grew from 66 cm to 82.5 cm and made its way into the lower part of the Maribyrnong where it was recaptured.



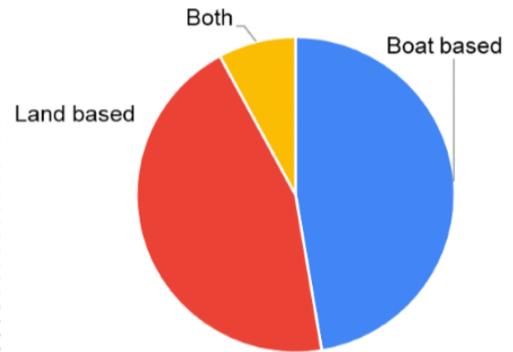
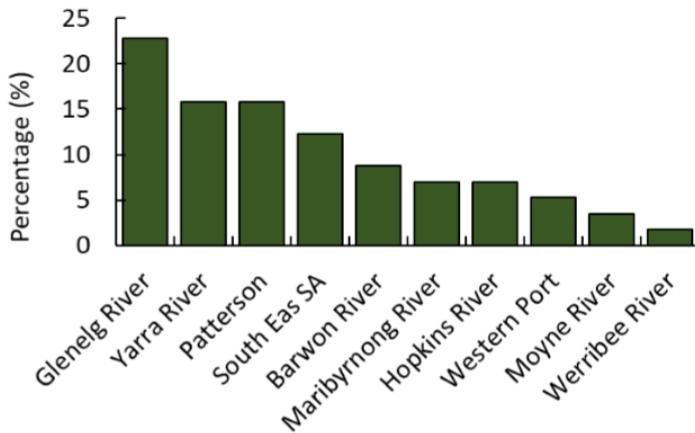
This is the first time we have recorded a tagged Mulloway in the Maribyrnong River but no doubt won't be the last!

Thanks to all those anglers that have been contributing to the project over the past few months.

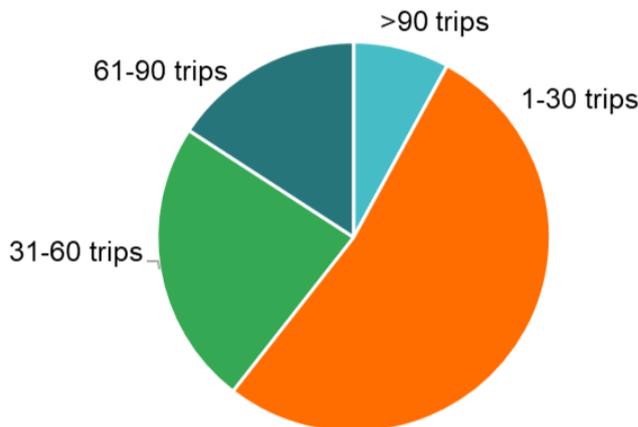
# Survey Results

38 anglers responded to the survey. Here is what we found

The Glenelg River was the most targeted area.



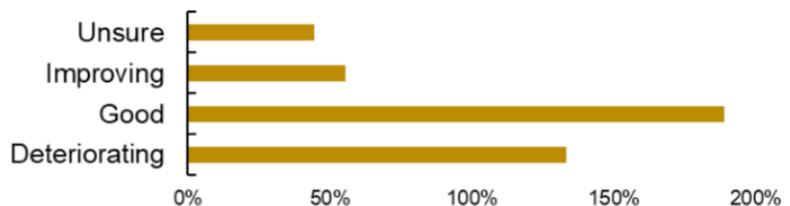
Almost an equal number of anglers were land-based and boat based.



53% of anglers normally take 1-30 trips each year targeting Mulloway, while 24% take 31-60 trips.

45% of anglers said the overall status of Mulloway in the river/area they fish was 'good.'

32% said it was deteriorating, with one-third referring to the Yarra River.



## 92%

Said they had learnt something new through the program.

### What anglers enjoy most

- Receiving recapture data, learning about Mulloway & contributing to science
- Contributing to catch and release fishing, giving back to the waterway.

*'Catching the fish, seeing re-captures. Contribution to conservation.'*

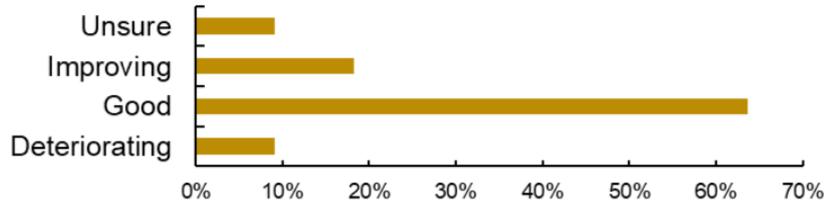
*'...knowing there is so many caught and released that wouldn't have been swimming still otherwise.'*

*"The satisfaction of contributing to the research of my favorite species."*

*'...watching these fish swim away, knowing someone else will get the chance to experience the same feeling I get when catching one.'*

# Glenelg River snapshot

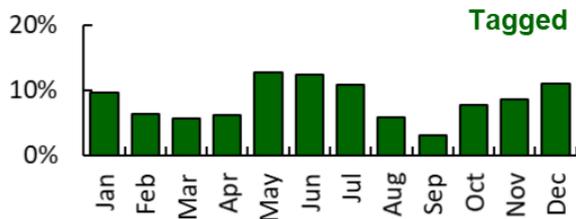
63% of anglers thought the status of Mulloway in the Glenelg was 'good', while 18% thought it was 'improving'.



*'Numbers seem to be the same but numbers fluctuate depending time of year.'*

*'The mulloway fishing in the Glenelg river over the last 10 years has been the best I've seen it in 35 years of fishing there.'*

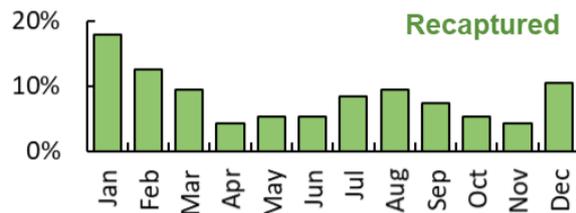
*'Seem to catch way more in last few years than years ago.'*



**36%** of Mulloway were tagged in winter

**30%** of Mulloway were tagged in summer

**41%** of Mulloway were recaptured in summer



## Fast Facts

**543 fish tagged by 28 different anglers!**

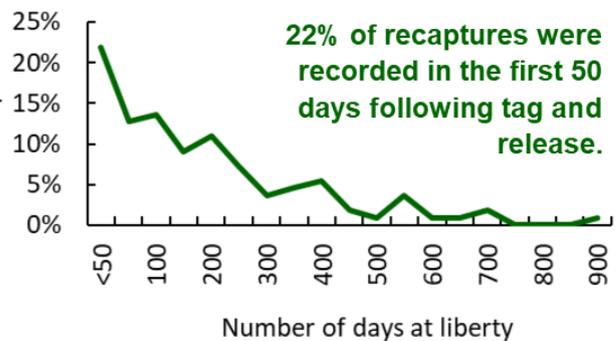
**Longest swim:** 420 km (to Coorong Lagoon)

**Average growth rate:** 0.033 cm per day.

**Longest time at liberty:** 909 days (2.5 years), growing 35 cm in this time.

**Shortest time at liberty:** 4 days

**Average time at liberty:** 211 days



# 17%

of Mulloway tagged in the Glenelg River have been recaptured at least once.

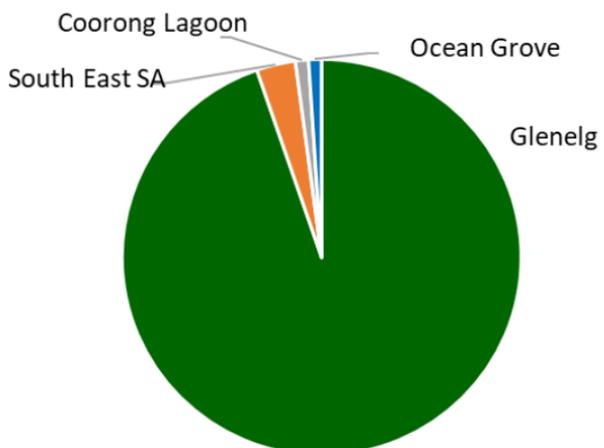
**This includes...**

**90 fish** recaptured in the Glenelg (13 of which were recaptured a second time)

**3 fish** recaptured in South East SA

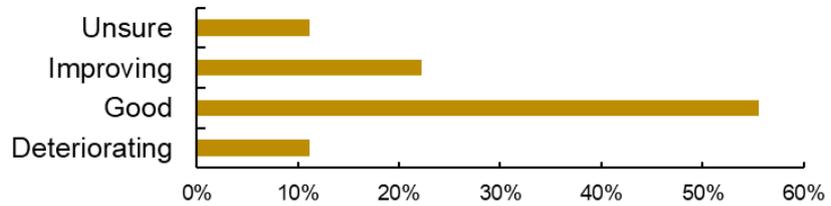
**1** recaptured inside the Coorong

**1** recaptured along Ocean Grove



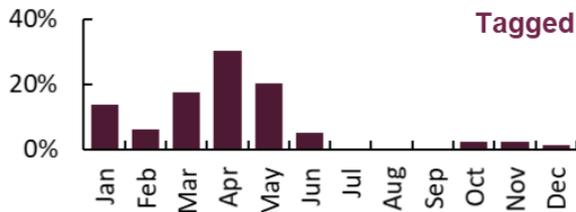
# Patterson River snapshot

56% of anglers thought the status of Mulloway in the Patterson was 'good', while 22% thought it was 'improving'.



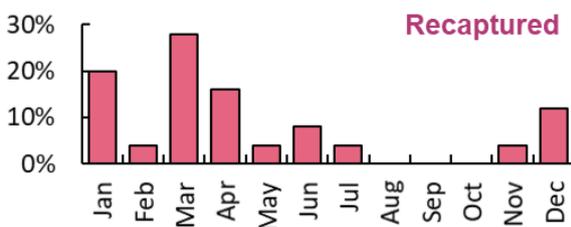
*'Plenty of fish not a lot of people target them compared to other species that are easier to catch.'*

*'Seems to be a number of smaller fish in the system...We do get a run of larger fish come through at certain times of the year.'*



**68%** of Mulloway were tagged in autumn

**48%** of Mulloway were recaptured in autumn



## Fast Facts

**79 fish tagged by 8 different anglers!**

**Longest swim:** 40 km (to Williamstown)

**Average growth rate:** 0.085 cm per day.

**Longest time at liberty:** 733 days (2 years), growing 25.5 cm in this time.

**Shortest time at liberty:** 3 days

**Average time at liberty:** 225 days

**30%** of recaptures were recorded in the first 50 days following tag and release.

# 26%

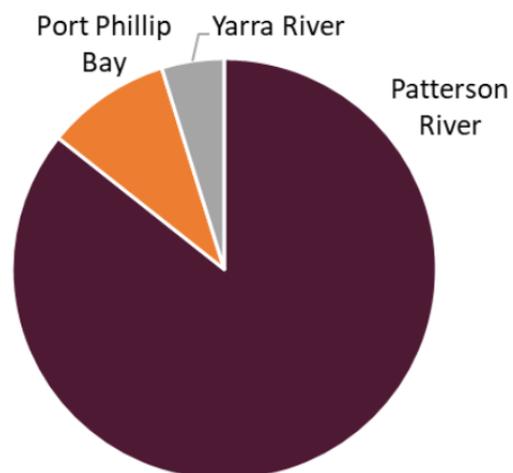
of Mulloway tagged in the Patterson River have been recaptured at least once.

### This includes...

**18** fish recaptured in the Patterson (5 of which were recaptured a second time)

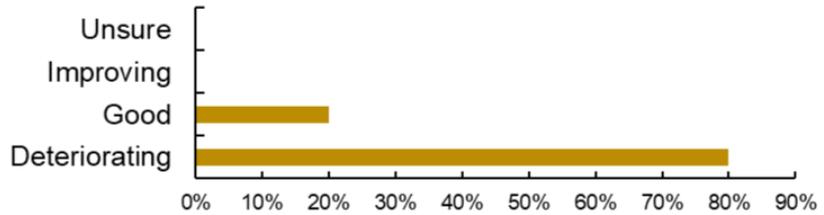
**2** fish recaptured in Port Phillip Bay

**1** recaptured in the Yarra River (Newport)



# Yarra River snapshot

80% of anglers thought the status of Mulloway in the Yarra River was 'deteriorating, while 20% thought is was 'good'.

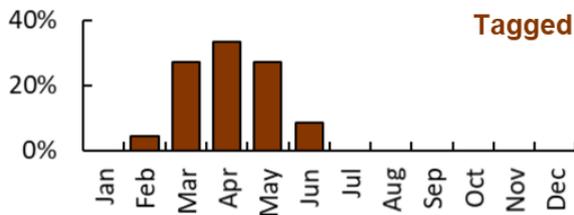


*'Not as many fish around as 5-10 years ago.'*

*'I think that they are getting overfished heavily in certain areas'*

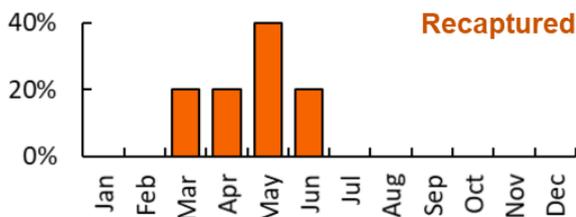
*'Areas in the river have been productive in the past have copped a lot of pressure. Lots have fish are being kept.'*

*'...I have found that the last 3 years it hasn't been as good...a lot more people are fishing around there now.'*



**88%** of Mulloway were tagged in autumn

**80%** of Mulloway were recaptured in autumn



## Fast Facts

**48 fish tagged by 6 different anglers!**

**Longest swim: 5 km**

**Average growth rate: 0.046 cm per day.**

**Longest time at liberty: 395 days**

**Shortest time at liberty: 10 days**

**Average time at liberty: 201 days**

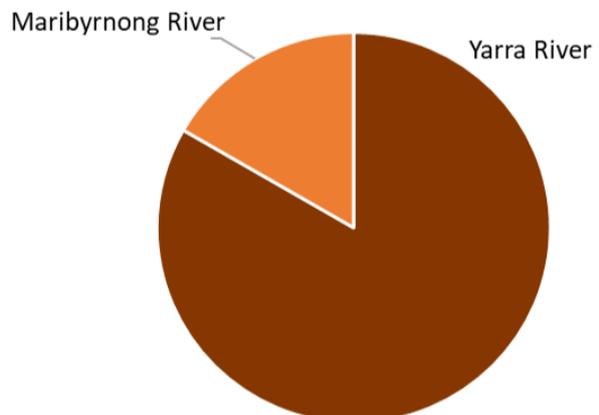
# 13%

of Mulloway tagged in the Yarra River have been recaptured.

### This includes...

**5 fish** recaptured in the Yarra River

**1 fish** recaptured in Maribyrnong River



# South East SA



**61%**

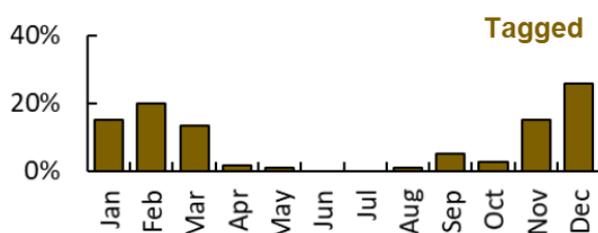
tagged near Port MacDonnell

**21%**

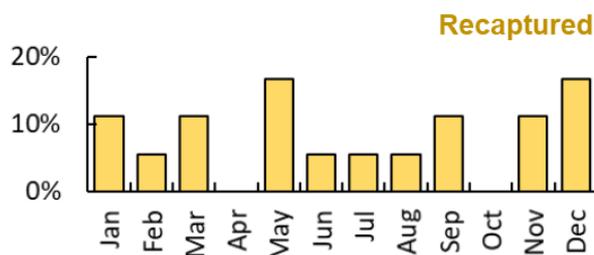
tagged along the Coorong

**18%**

tagged in Rivoli Bay



**90%** of Mulloway were tagged between November and March



## Fast Facts

**120 fish tagged by 11 different anglers!**

**Longest swim:** 300 km ( Port Mac to tea-tree crossing along the Coorong)

**Average growth rate:** 0.038 cm per day.

**Longest time at liberty:** 1150 days (over 3 years), fish grew 32 cm.

**Shortest time at liberty:** 18 days

**15%**

of Mulloway tagged in South East SA have been recaptured.

### This includes...

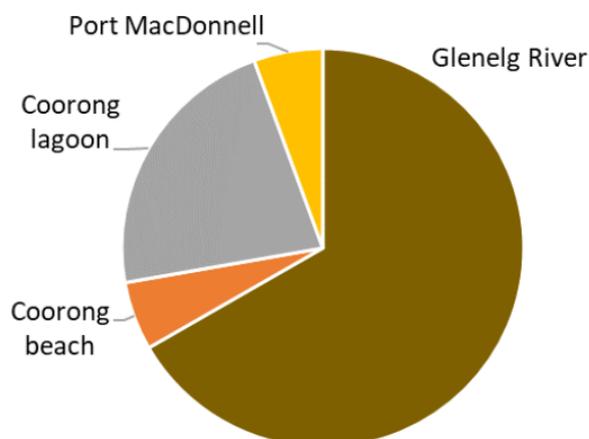
**12 fish** recaptured in the Glenelg River

(11 tagged near Port MacDonnell and 1 tagged along the Coorong.

**1 fish** recaptured along the Coorong beach

**4 fish** inside the Coorong (all tagged outside)

**1 fish** recaptured near Port MacDonnell



## Thank you!

Thank you to each and every angler who has contributed to this tagging program over the past 3+ years. I look forward to seeing more data collected in the future and sharing this with you all.

If you have any comments or questions, please get in touch – see below.



Lauren Brown

### Contacts

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