



TOWNSVILLE REVIEW 2024

INFORMATION RATING



Key species: Pikey Bream, Barred Javelin, Barramundi

Fish timeframe: 2015-2024

Fisher timeframe: 2020-2024

The only rivers in the Townsville area are the Ross, Bohle and Black with several smaller creeks running into Cleveland Bay. The Ross River is highly regulated with the Ross Dam and 3 weirs between the dam and the tidal limit. The Bohle and Black are small rivers with limited water above the tidal limit. This provides a limited range of estuarine fishing options with the Bohle River heavily fished by locals.

Data from this area over the past decade has come substantially from the Bohle River and tagging effort has been aimed at the more prolific species such as Bream and Javelin. While Barramundi are targeted the effort on this species is not as focused as in other areas of the coast accounting for just 2% of the fish tagged.

The loss of several keen taggers in 2020 due to ill health has resulted in a significant decline in tagging in the area for the last 3 years resulting in a drop in the information rating for the area. Local estuary fishers and the current group of taggers are more inclined to fish nearby areas such as Bowling Green Bay and the Hinchinbrook Channel. Beyond the estuaries there is a significant offshore fishing effort.

Main target species are Bream and Javelin which accounted for 54% of the tagging effort. With the drop in tagging effort there has been a decline in recaptures. While the recapture rates for Bream and Javelin were high many recaptures were made by taggers recapturing their own fish adding to the rate.

Given the limited fishing estuary fishing opportunities it is not surprising that 96% of recaptures were made by locals. Given the sizes and the limited number of legal fish tagged this area is likely to be a predominantly harvest fishery.

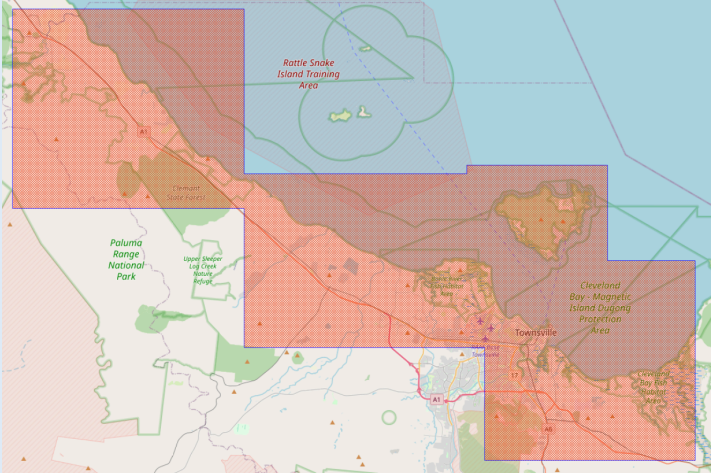

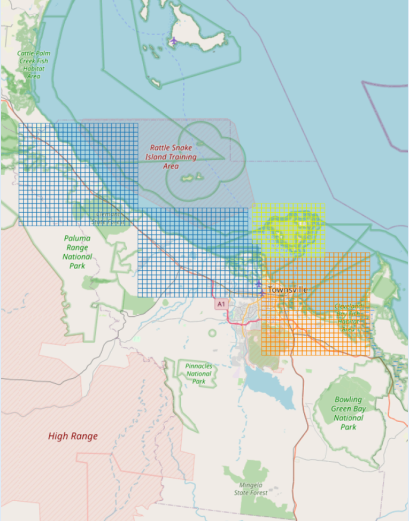
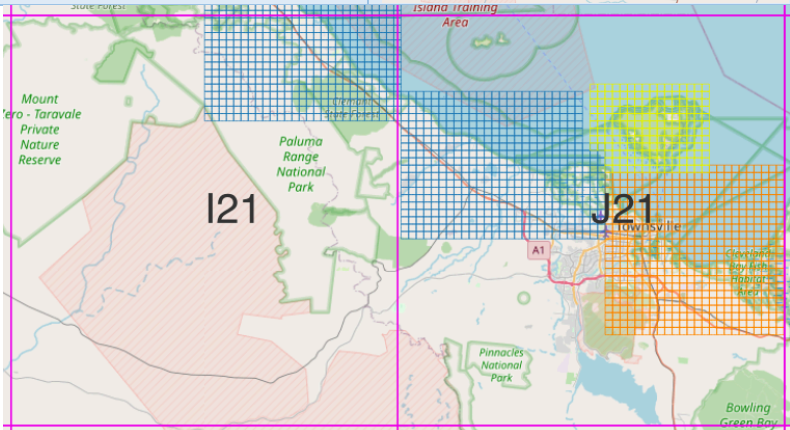


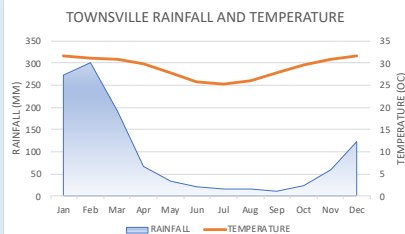
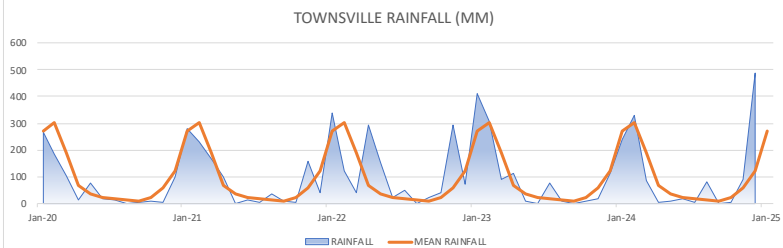
Product of Infofish Australia



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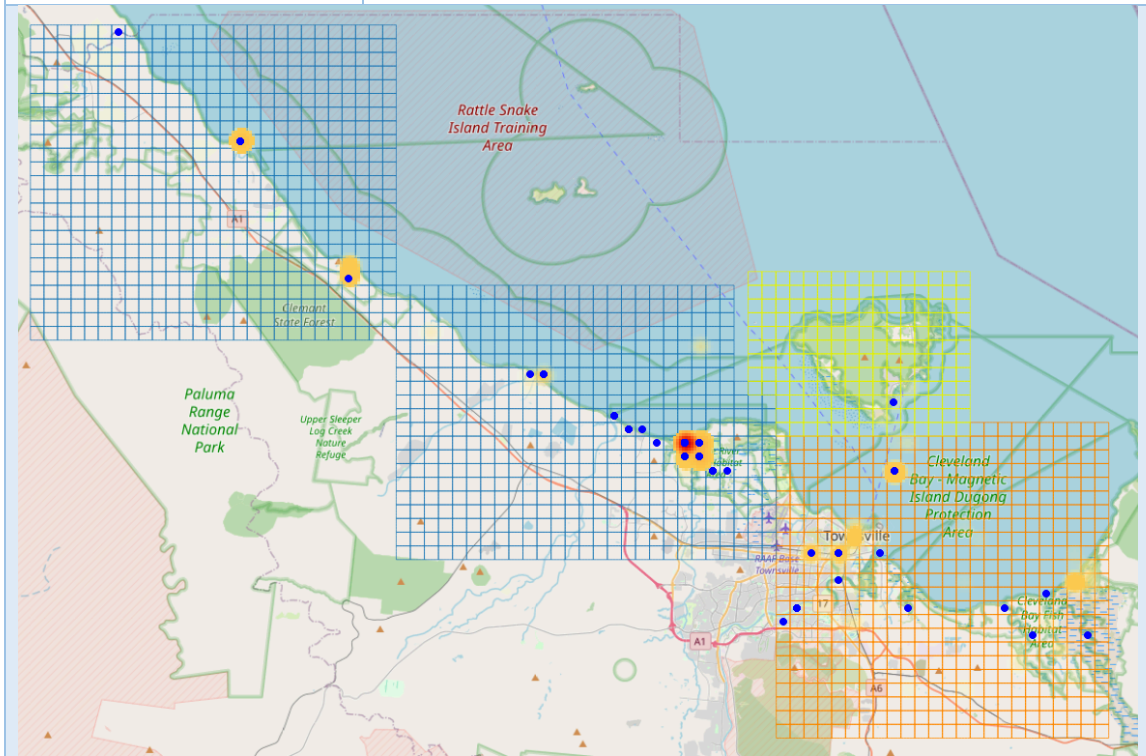


TOWNSVILLE		LOCATION
<p>Townsville 19.25°S 146.82°E</p> 		
WATERWAYS	ACTUAL	GRAPH or MAP
<p>Grid maps Cleveland Bay CBT Bohle River HBT Magnetic Island MIT</p>	<p>Cocoa Creek Crocodile Creek Alligator Creek Cleveland Bay creeks Ross River Ross Creek Bohle River Black River Bluewater Creek Sleeper Log Creek Leichhardt Creek Rollingstone Creek Crystal Creek</p>	
<p>Commercial QFISH Grids I21 J21</p>		

ENVIRONMENTAL		ACTUAL		GRAPH or MAP	
Townsville Mean monthly rainfall (mm)		Rainfall	Month	mm	
		High	Feb	302	
			Jan	272	
		Temp	Month	oC	
			Nov-Mar	31	
Townsville monthly rainfall and mean monthly rainfall (mm) 2020-2024					

FISHERS	ACTUAL	GRAPH or MAP																																	
DATA RELIABILITY																																			
Sample size (days fished) Tag days (blue arrow) Recaptures (orange arrow) Confidence % Error % 2020-2024	<table><tr><td>Reliability level</td><td colspan="2">LOW</td><td colspan="2">MODERATE</td><td colspan="2">MODERATE</td><td colspan="2">HIGH</td></tr><tr><td>Samples</td><td>10</td><td>41</td><td>68</td><td>271</td><td>384</td><td>664</td><td></td></tr><tr><td>Confidence</td><td>80%</td><td>80%</td><td>90%</td><td>90%</td><td>95%</td><td>99%</td><td></td></tr><tr><td>Error</td><td>20%</td><td>10%</td><td>10%</td><td>5%</td><td>5%</td><td>5%</td><td></td></tr></table>	Reliability level	LOW		MODERATE		MODERATE		HIGH		Samples	10	41	68	271	384	664		Confidence	80%	80%	90%	90%	95%	99%		Error	20%	10%	10%	5%	5%	5%		
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TYPE OF FISHERY																																			
Seasonality Days fished Taggers Recapture fishers 2020-2024	<div>Months most effort</div> <div>Taggers Mar</div> <div>Recapture fishers Jan</div>																																		
Harvest or experiential fishery Release rate of recaptured legal Bream 2020-2024	<div>Bream legal fish kept rate</div> <div>Legal fish 18</div> <div>Kept 13 (72%)</div> <div>Released 5 (28%)</div>																																		
Local or visitor fishery Where recapture fishers live 2020-2024	<div>Recapture fishers 202</div> <div>Local 194 (96%)</div> <div>Visitor 8 (4%)</div>																																		
ACTIVITY																																			
Monthly activity Days fished Taggers (173) Recapture fishers (143) 2020-2024	<div>Month Days</div> <div>Taggers Mar 21 (12%)</div> <div>Jan 19 (10%)</div> <div>Oct 19 (10%)</div> <div>Recaps Jan 29 (20%)</div> <div>May 19 (13%)</div>																																		
Weekday activity Days fished Taggers (173) Recapture fishers (143) 2020-2024	<div>Taggers</div> <div>Weekend (37%)</div> <div>Weekdays (63%)</div> <div>Recaps</div> <div>Weekend (41%)</div> <div>Weekdays (59%)</div>																																		

Location activity
Taggers (red-orange heat map)
Recapture fishers (blue dots)
2020-2024

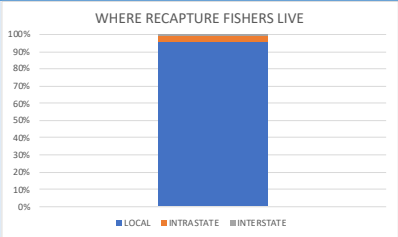


EFFORT			
Monthly rainfall Days fished Taggers Recapture fishers 2020-2024			
Mean monthly rainfall Taggers Days fished 2020-2024	Most Least	Month Mar Nov	Days 21 8
Cumulative recaptures 2020-2024	Year 2020 2021 2022 2023 2024	Recaps 161 22 8 4 6	
TRAVEL			
Cumulative distance (km) home to recapture location 2020-2024	Year 2020 2021 2022 2023 2024	Km 3613 1721 698 47 2672	
Distance (km) home to recapture location Bars show distance range Dots show outliers 2020-2024	Local (194) Intrastate (7) Interstate (1)	Range (km) 1-52 158-1090 2460	
Average distance (km) from home to recapture location 2020-2024	Local Intrastate Interstate	Av distance (km) 9 648 2460	

DEMOGRAPHICS

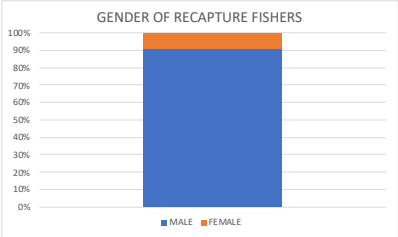
Where recapture fishers live
2020-2024

Local	194 (96%)
Intrastate	7 (3%)
Interstate	1 (1%)

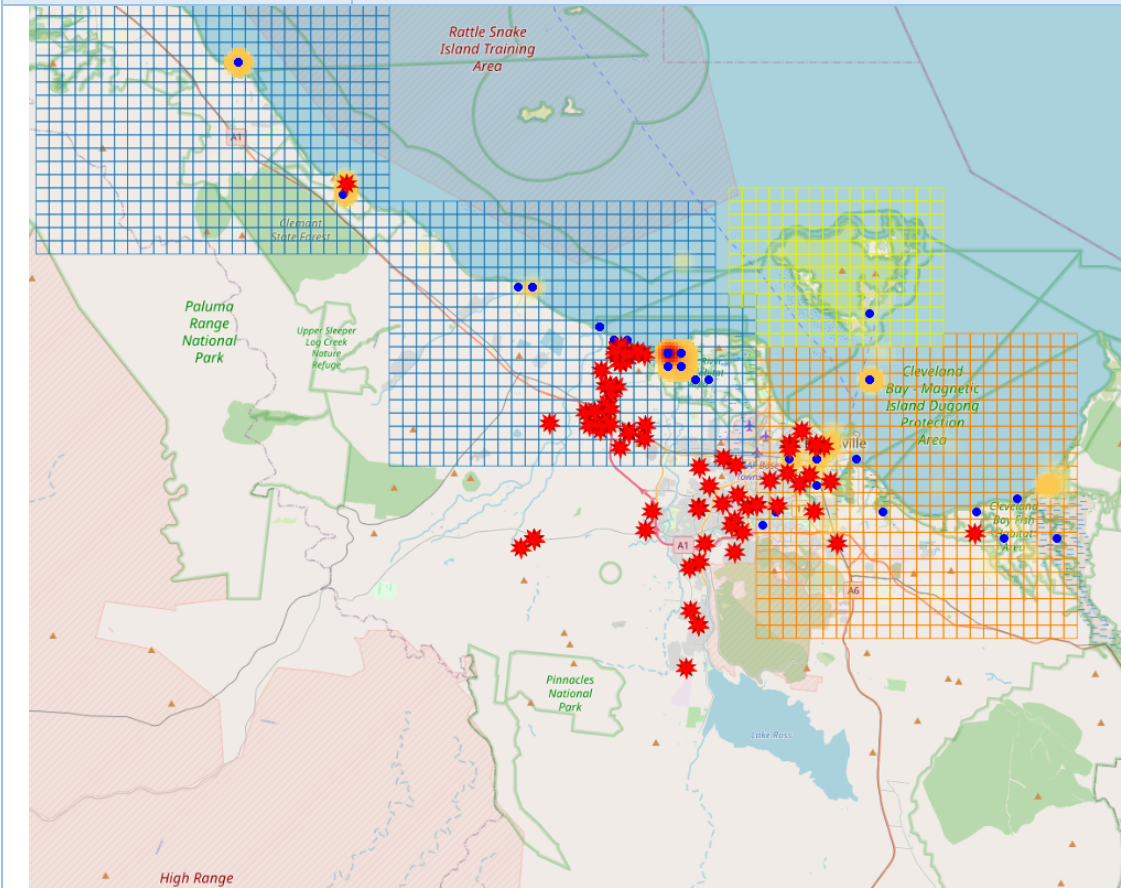


Gender of recapture fishers (ex-taggers)
2020-2024

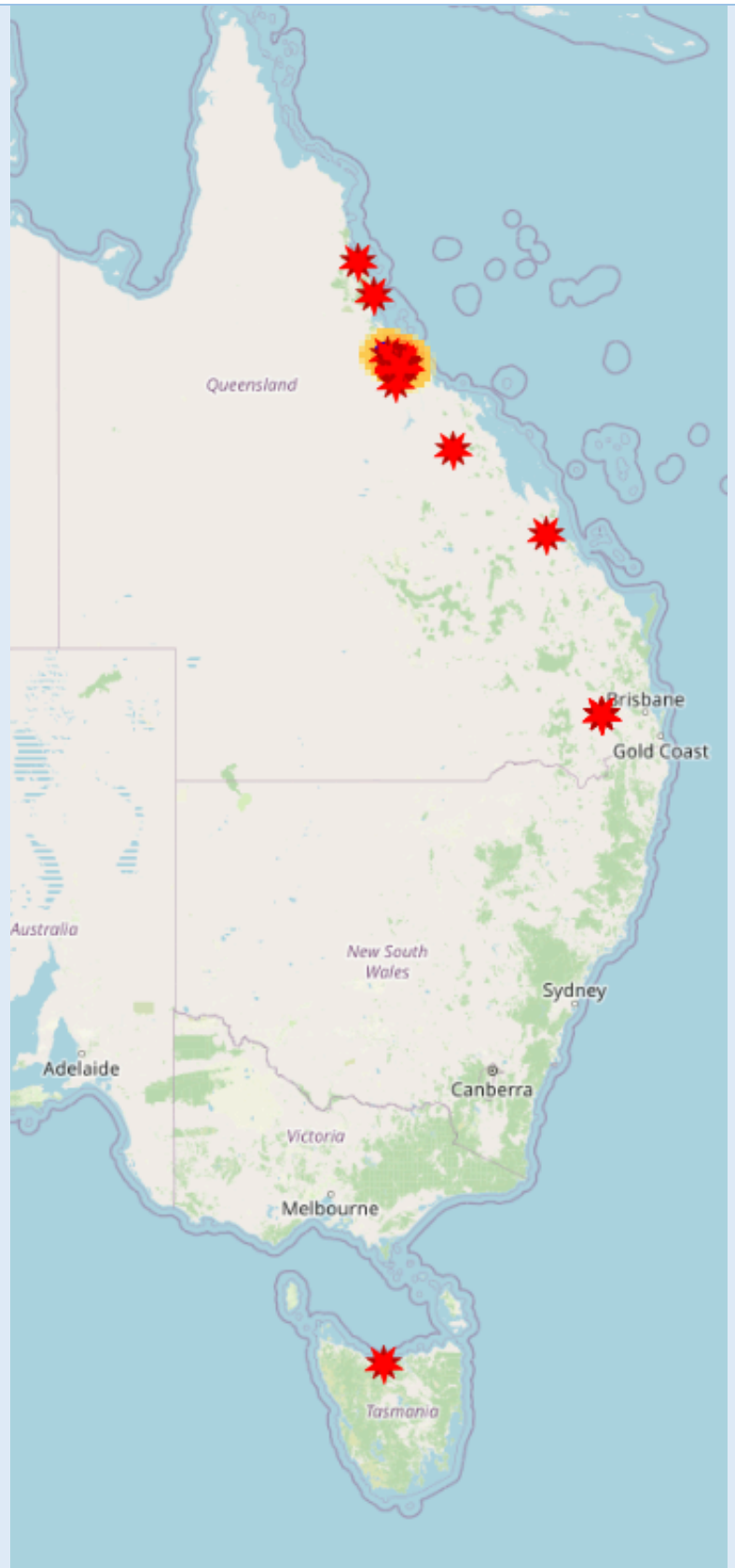
Fishers	95
Female	9 (9%)
Male	86 (91%)




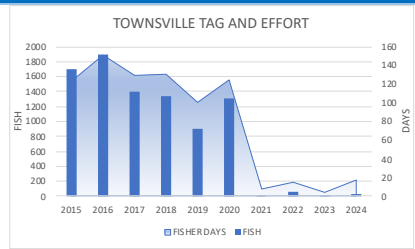
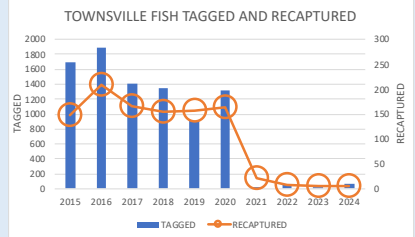
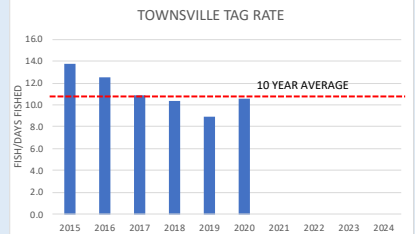
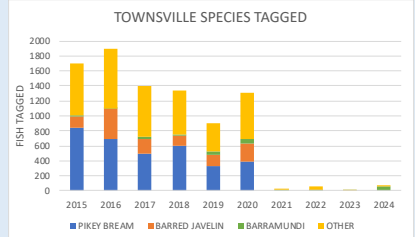
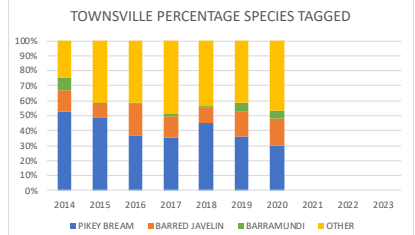


Where fishers recapturing fish live (red stars)
Local
2020-2024



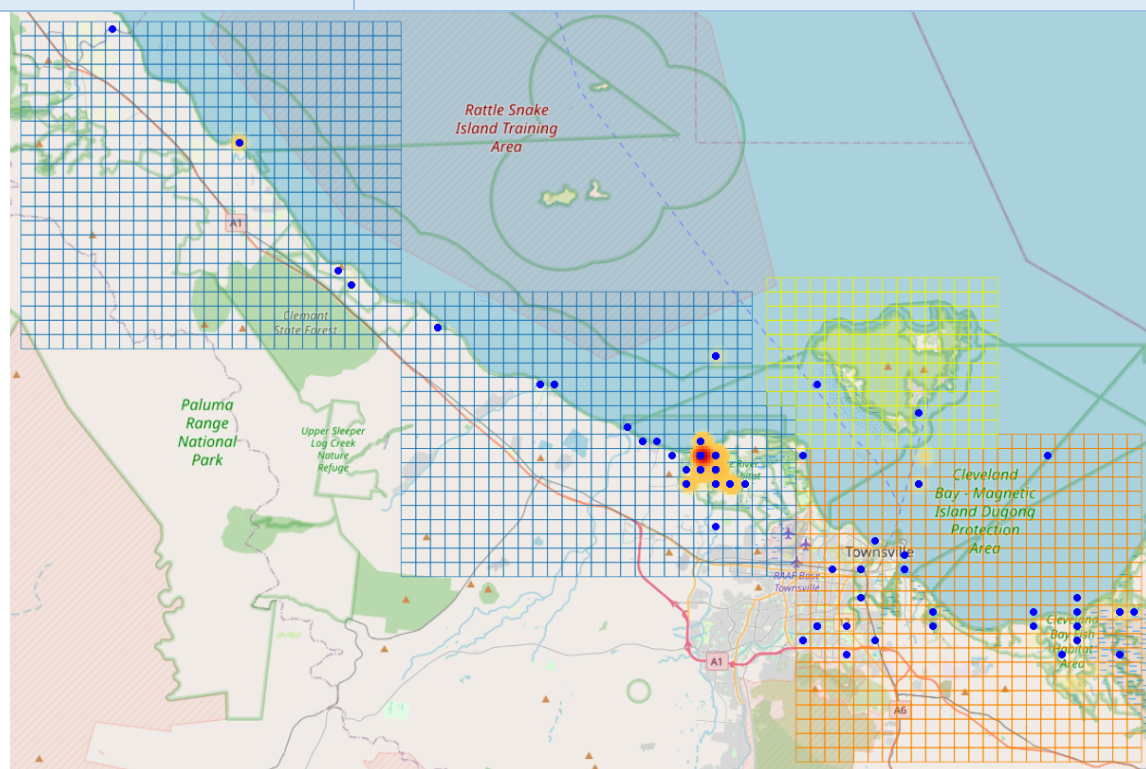
Where fishers recapturing
fish live (red stars)
Intrastate
Interstate
2020-2024



FISH	ACTUAL	GRAPH or MAP																					
PIKEY BREAM	BARRED JAVELIN	BARRAMUNDI																					
																							
EFFORT																							
Tag and effort taggers Fish tagged (8641) Days fished (803) 2015-2024	<table><tr><td>High</td><td>Low</td><td>Now</td></tr><tr><td>Tagged fish</td><td></td><td></td></tr><tr><td>2016</td><td>2023</td><td>2024</td></tr><tr><td>1889</td><td>5</td><td>22</td></tr><tr><td>Days fished</td><td></td><td></td></tr><tr><td>2014</td><td>2023</td><td>2024</td></tr><tr><td>151</td><td>4</td><td>17</td></tr></table>	High	Low	Now	Tagged fish			2016	2023	2024	1889	5	22	Days fished			2014	2023	2024	151	4	17	
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Fish tagged Recaptures 2015-2024	<table><tr><td>Tagged</td><td>Recaptured</td></tr><tr><td>8693</td><td>1037</td></tr><tr><td>Recapture rate</td><td></td></tr><tr><td>11.9%</td><td></td></tr></table>	Tagged	Recaptured	8693	1037	Recapture rate		11.9%															
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TAG RATE																							
Tag rate All fish tagged Fish/days fished 2015-2024	<table><tr><td>High</td><td>Low</td><td>Now</td></tr><tr><td>Tag rate</td><td></td><td></td></tr><tr><td>2015</td><td>2019</td><td>2024</td></tr><tr><td>13.9</td><td>9.1</td><td>NA</td></tr><tr><td>10 year average</td><td></td><td>10.8</td></tr></table>	High	Low	Now	Tag rate			2015	2019	2024	13.9	9.1	NA	10 year average		10.8							
High	Low	Now																					
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SPECIES																							
Species composition Numbers tagged 2015-2024	<table><tr><td>Pikey Bream</td><td>3360</td></tr><tr><td>Barred Javelin</td><td>1284</td></tr><tr><td>Barramundi</td><td>244</td></tr></table>	Pikey Bream	3360	Barred Javelin	1284	Barramundi	244																
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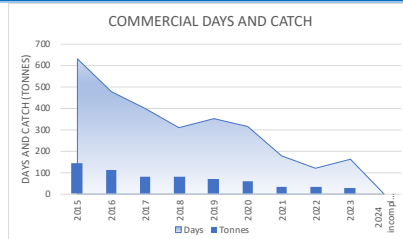
LOCATIONS

All tagged fish (red-orange heat map)
Recaptured (blue dots)
2015-2024



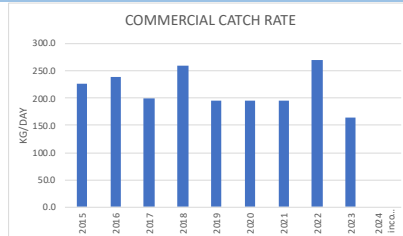
COMMERCIAL EFFORT




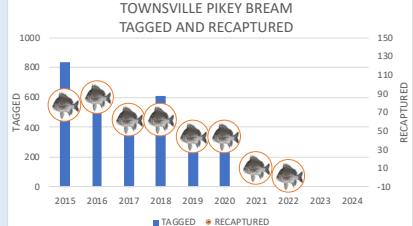
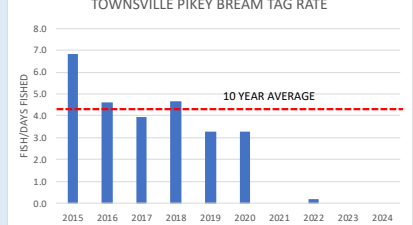
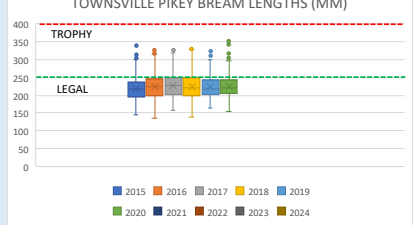
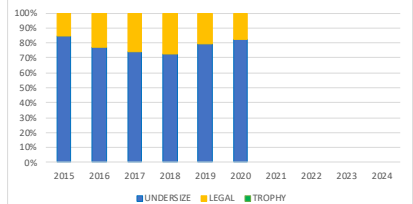
Commercial effort and catch	Year	Days	Catch
Net fishery (all)	2020	318	62.11
Days	2021	178	34.63
Catch (tonnes)	2022	122	32.84
2020-2024	2023	161	26.53
	2024	NA	NA



COMMERCIAL CATCH RATE

Commercial catch rate	Year	Kg/day
Kg/day	2020	195.3
	2021	194.6
	2022	269.2
	2023	164.8
	2024	NA



PIKEY BREAM	ACTUAL		GRAPH or MAP																																				
																																							
DATA RELIABILITY																																							
Sample size (av fish/year)	<table><tr><td>Reliability level</td><td colspan="2">LOW</td><td colspan="2">MODERATE</td><td colspan="2">MODERATE</td><td colspan="2">HIGH</td></tr><tr><td>Samples</td><td>10</td><td>41</td><td>68</td><td>271</td><td>384</td><td>664</td><td></td><td></td></tr><tr><td>Confidence</td><td colspan="2">80%</td><td>80%</td><td>90%</td><td>90%</td><td>95%</td><td>99%</td><td></td></tr><tr><td>Error</td><td colspan="2">20%</td><td>10%</td><td>10%</td><td>5%</td><td>5%</td><td>5%</td><td></td></tr></table>			Reliability level	LOW		MODERATE		MODERATE		HIGH		Samples	10	41	68	271	384	664			Confidence	80%		80%	90%	90%	95%	99%		Error	20%		10%	10%	5%	5%	5%	
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Confidence %																																							
Error %																																							
2020-2024																																							
TAGGED																																							
Tagged	Tagged	Recaptured																																					
Recaptures	3360	386																																					
2015-2024	Recapture rate	11.5%																																					
	Tagged 2024	0																																					
TAG RATE																																							
Tag rate	High	Low	Now																																				
Fish/day	Tag rate																																						
2015-2024	2015	2020	2024																																				
	6.8	3.3	NA																																				
	10 year average		4.3																																				
																																							
LENGTHS																																							
Average length (mm)	High	Low	Now																																				
Bars show length range	Average length																																						
Dots show outliers	2017	2015	2024																																				
2015-2024	228	217	NA																																				
	Largest																																						
	2020	2019	2024																																				
	353	324	NA																																				
																																							
Fish lengths percentage	High	Low	Now																																				
Undersize <250mm	Legal-trophy																																						
Legal 250-400mm	2018	2015	2023																																				
Trophy 400+mm	27%	15%	NA																																				
2015-2024	Trophy																																						
	No trophy fish in any year																																						
																																							

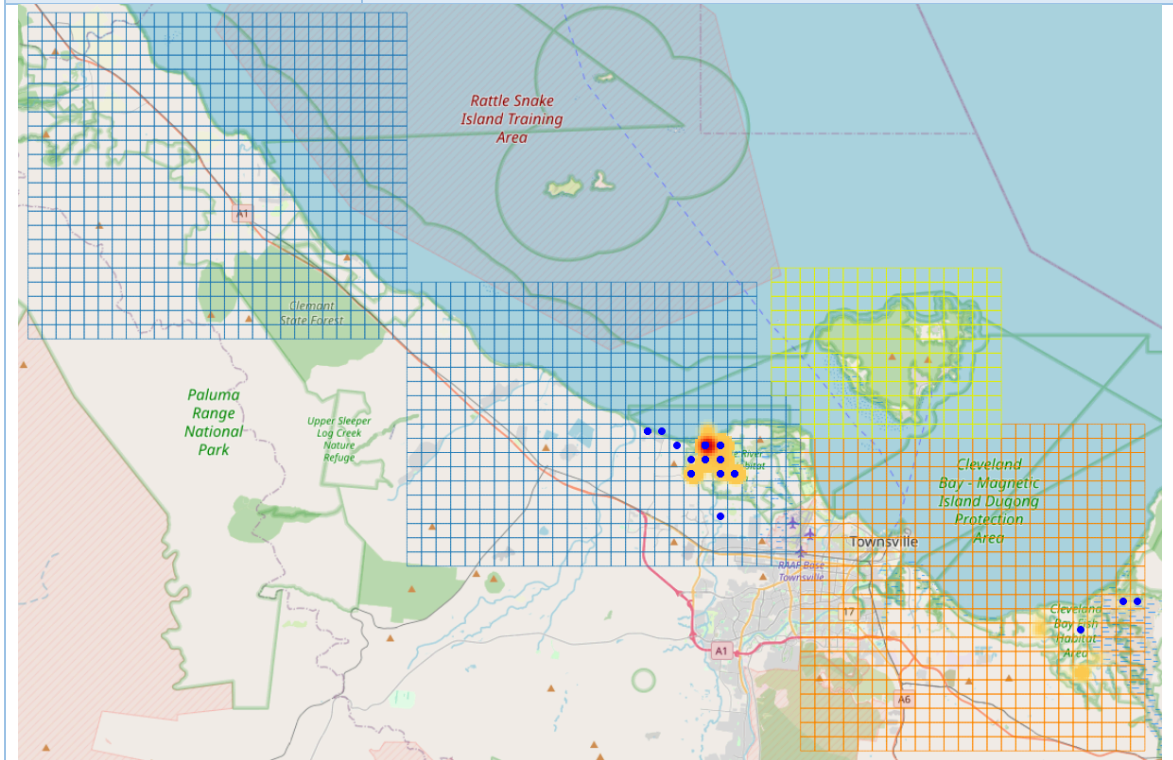
LOCATIONS


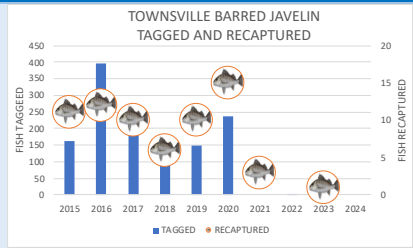
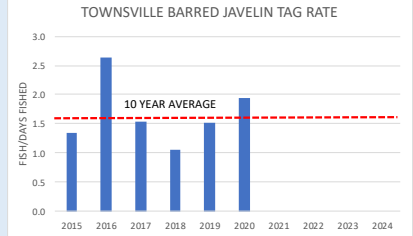
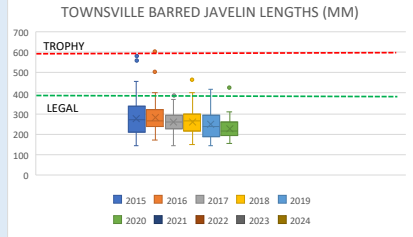
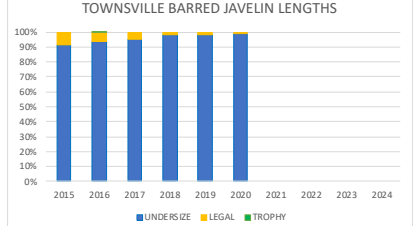
Pikey Bream

Tagged (red-orange heat map)

Local recaptures (blue dots)

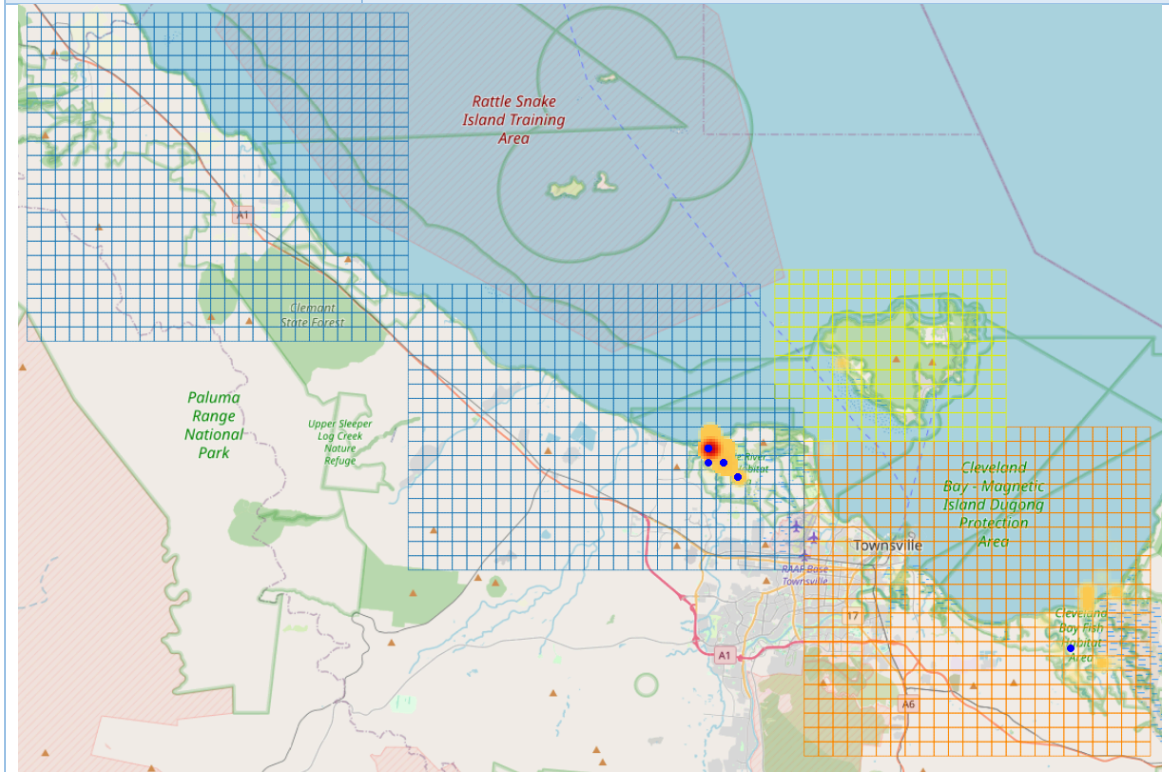
2015-2024




BARRED JAVELIN		ACTUAL		GRAPH or MAP																											
																															
DATA RELIABILITY																															
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2020-2024																															
TAGGED																															
Tagged		Tagged		Recaptured																											
Recaptures		1283		68																											
2015-2024		Recapture rate																													
		5.3%																													
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TAG RATE																															
Tag rate		High		Low																											
Fish/day				Now																											
2015-2024		2016		2018																											
		2.6		1.1																											
		10 year average		1.7																											
																															
LENGTHS																															
Average length (mm)		High		Low																											
Bars show smallest to		Average length		Now																											
largest fish		2016		2020																											
Dots show outliers		278		237																											
2015-2024		Largest		NA																											
		2016		2020																											
		670		430																											
				NA																											
																															
Fish lengths percentage		High		Low																											
Undersize <400mm		Legal-trophy		Now																											
Legal 400-600mm		2015		2020																											
Trophy 600+mm		9%		2%																											
2015-2024		Trophy		NA																											
		2016																													
		1%		only 1 fish in any year																											
																															

LOCATIONS

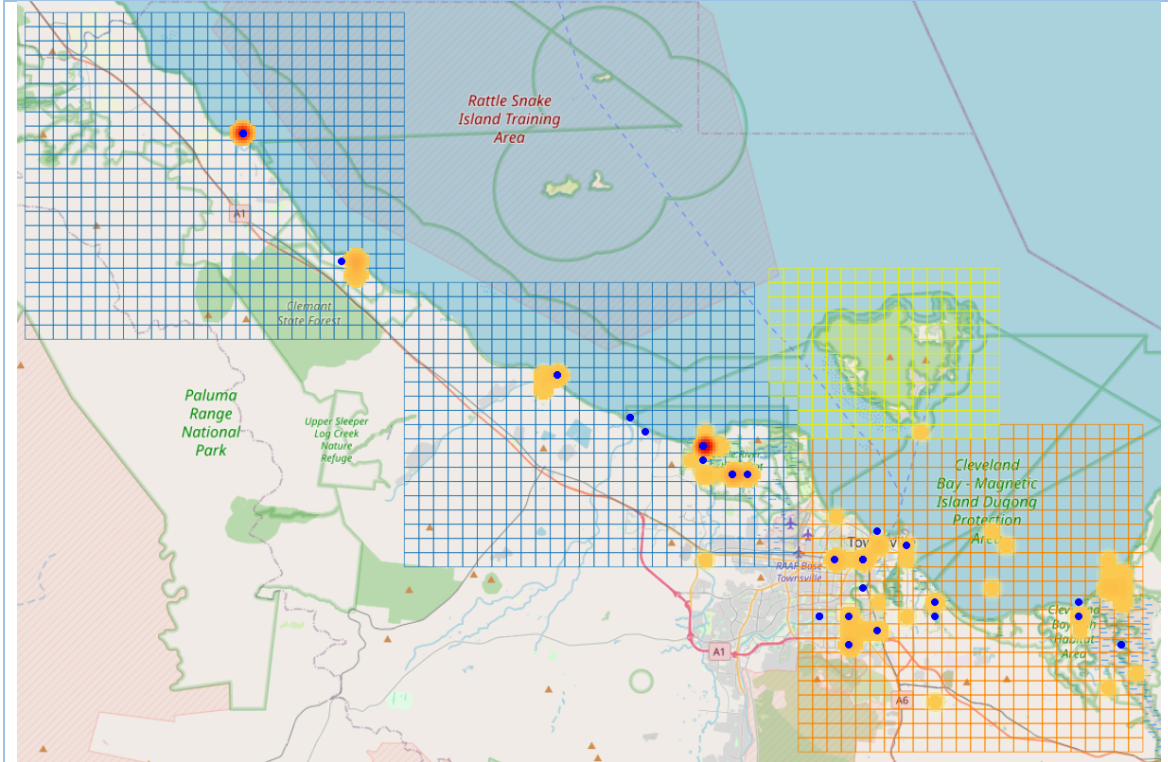
Barred Javelin
Tagged (red-orange heat
map)
Local recaptures (blue
dots)
2015-2024



BARRAMUNDI		ACTUAL		GRAPH or MAP	
					
DATA RELIABILITY					
Sample size (av fish/year)		Reliability level		LOW	
Tagged (blue arrow)		Samples		10	
Recaptures (orange arrow)		Confidence		80%	
Confidence %		Error		20%	
Error %				80%	
2020-2024				10%	
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LOCATIONS

Barramundi
Tagged (red-orange heat map)
Recaptured (blue dots)
2015-2024



Data sources

Data used in the Townsville Crystal Bowl are:

- Tag records and recapture records for the river at <http://crystalbowl.infofishaustralia.com.au/>.
- Rainfall and temperature records obtained for Townsville Aero station 032040 from <http://www.bom.gov.au/climate/data/>.

Basis for analysis

- Data reliability for fishers based on the sample size over the past 5 years for days fished by taggers and by fishers recapturing fish.
- Data reliability for fish based on average number of fish tagged and recaptured over the past 5 years.
- Catch rates calculated as number of fish tagged/fisher day for taggers with a minimum of 12 fisher days (at least 1 per month) to provide an acceptable catch rate.
- For Pikey Bream undersized fish are <250mm, legal fish are ≥250mm and <400mm and trophy fish are ≥400mm.
- For Barred Javelin undersized fish are <400mm, legal fish are ≥400mm and <600 and trophy fish are ≥600mm.
- For Barramundi undersized fish are <580mm, legal fish are ≥580 and <1000mm and trophy fish are ≥1000mm.
- Locations based on Infofish grid map CBT, HBT and MIT and other grid maps where fish were recaptured outside the area.
- Movement distance calculated as the shortest distance by water from the tag to the recapture location using Google Earth.
- Distance from fisher's address to recapture location is the straight-line distance between locations based on Google Earth coordinates with Local <60km, Intrastate ≥60km and Qld postcodes, Interstate postcodes other than Qld.