

**Infofish Citizen
Science and
Suntag Report
2015-16**



Infofish Citizen Science and Suntag Report 2015-16

Bill Sawynok and Stefan Sawynok
Infofish Australia
PO Box 9793 Frenchville Qld 4701

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Information in this publication is provided as general advice only. For application to specific circumstances, professional advice should be sought.

Infofish Australia have taken all steps to ensure the information contained in this publication is accurate at the time of publication. Readers should ensure that they make the appropriate enquiries to determine whether new information is available on a particular subject matter.

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Cover designed by Creative Avenue: We live in a fishing world of extreme challenges

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Acronyms Used in the Report

- AIMS: Australian Institute of Marine Science
- ANSA: Australian National Sportfishing Association
- ANSAQ: Australian National Sportfishing Association Qld Inc
- CSIRO: Commonwealth Scientific and Industrial Research Organisation
- DNRM: Department of Natural Resources and Mines
- FFSAQ: Freshwater Fishing and Stocking Association of Queensland
- FQ: Fisheries Queensland
- GAWB: Gladstone Area Water Board
- GBRMP: Great Barrier Reef Marine Park
- GBRMPA: Great Barrier Reef Marine Park Authority
- JCU: James Cook University
- MARFA: Mackay Area Recreational Fishing Alliance
- QDAF: Queensland Department of Agriculture and Fisheries
- RBB: Rocky Barra Bounty
- RRC: Rockhampton Regional Council
- RUF: Recreational Use Fee
- SA: Suntag Australia Inc
- SEQwater: South East Queensland Water
- Suntag: Citizen Science and Research Program
- TAA: Tagging Achievement Award
- TEA: Tagging Excellence Award

Acknowledgements

The running of a citizen science program to collect data on our fish species, and involvement in many research projects, is a major undertaking. The program would not be possible without the support of a wide range of organisations and individuals that have contributed either funding, in kind support and voluntary effort. The voluntary effort of all taggers and other volunteers is also acknowledged.

Suntag Gold Contributors (over \$20,000)

Infofish Australia

Department of Agriculture and Fisheries



Queensland Government

Suntag Silver Contributors (\$5,000-\$20,000)

None

Suntag Bronze Contributors (up to \$5,000)

Gladstone Sportfishing Club
XXXX Gold

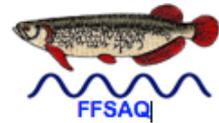


Suntag Australia Inc

Suntag Australia Inc was established in 2016 with the following bodies on the inaugural management committee. The committee is responsible for providing strategic guidance and oversee management of Suntag.

Infofish Australia
 Capricorn Tag and Release Sportfishing Club
 Gladstone Sportfishing Club
 Freshwater Fishing and Stocking Association Queensland
 Brisbane Valley Anglers Fish Stocking Association

Queensland Fishing Monthly
 ABT Tournaments
 Stones Corner Marine
 Brisbane River Fishing
 World Wildlife Fund
 Fisheries Queensland (observer)



Suntag Funding

The following organisations or fishing groups contributed funding for their projects, particularly for the purchase of tags.

Fitzroy River Fish Stocking Group
 Cairns Area Fish Stocking Group
 Emerald Fish Stocking Group
 Mackenzie River Fish Stocking Association
 Holloways Beach Environment Education Centre

Rocky Barra Bounty
 Boyne Tannum Hookup
 Captag

The following individuals contributed funding for the purchase of tags for their own use or made a donation to Suntag.

Billy Stringer
 Michael Dohnt
 David Lindsay
 Duncan Faichney
 Steve Salmond

Tony Vesel
 Tim Trollworthy
 Keith Harveyson



Projects partnering with Suntag

The following projects are undertaken in conjunction with Infofish and Suntag.

Crystal Bowl
 McArthur Monitoring (King Ash Bay Fishing Club)
 Lake Awoonga (Gladstone Area Water Board tagging)

Gladstone Healthy Harbour Partnership
 Fitzroy Partnership for River Health
 Catchment Solutions (Mackay)
 Westag (Tagging Western Australia)

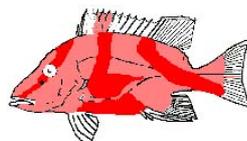


Supporters Contributors and Collaborators

The following organisations have provided support for Infofish or Suntag or activities undertaken by Infofish or Suntag.

International Game Fishing Association
 Tha App Team
 Periscope Data
 Insight Genesis
 BLA (Boating Lifestyle Adventure)
 Department of Defence
 James Cook University
 Fitzroy Basin Association
 Platypus Fishing Lines
 BarraDave Sportfishing Services
 Glenlyon Dam Tourist Park (D&B Dare)

Hallprint Pty Ltd
 Freshwater Fish Stocking Association of Queensland
 Sunfish Queensland
 Andrew Phipps (Phippsy) - Radio Zinc
 Graham Cumming]
 Yarralla Deep Sea Fishing Club



Businesses participating in Suntag

The following businesses participated in Suntag this year.

Queensland Fishing Monthly
 Stones Corner Marine
 Cast e-mag
 Lively Lures
 Tackleland (Sandgate)

Shads Lures
 Infish-Lures
 Andy's Fishing
 Brisbane River Fishing
 CQ Fishing Adventures



Clubs participating in Suntag

The following clubs have taken part in Suntag this year.

Moretag
 Kingaroy Sportfishing Club
 Bundaberg Sportfishing Club
 Gladstone Sportfishing Club
 Captag
 Southern Brisbane Sportfishing Club
 Townsville Sportfishing Club
 Burdekin Recreational Sportfishing Club
 Townsville Saltwater Sportsman's Club
 Cairns Sportfishing Club
 Mossman Sportfishing Club
 Ipswich United Sportfishing Club
 Weipa Sportfishing Club

Hinchinbrook Sportfishing Club
 Lavarack Sportfishing Club
 Redcliffe Peninsula Game and Sportfishing Club

Fish Stocking Groups participating in Suntag

The following fish stocking groups have taken part in Suntag this year.

Gladstone Area Water Board	Emerald Fish Stocking Group
Mount Isa Fish Stocking Group	Mackenzie River Fish Stocking Association
Gulf Barramundi Stocking Association	Baralaba Recreation and Fish Stocking Group
Richmond Fish Stocking Group	Borumba Fishing Club
Cairns Area Fish Stocking Association	Bundaberg Sportfishing Club Fish Stocking Assoc
Burdekin Fish Restocking Association	Logan-Albert Fish Management Association
Tablelands Fish Stocking Society	Cungulla Recreational Fishing and Social Club
Twin Cities Fishing Stocking Society	
Faust Dam Fish Stocking Association	
Mackay Area Fish Stocking Association	
Fitzroy River Fish Stocking Group	
Callide Valley Native Fish Stocking Association	

Fishing Competitions supported by Suntag

Suntag works with and supports the following fishing competitions by managing data on fish tagged during these events.

Rocky Barra Bounty
 Million Dollar Fish
 Boyne Tannum Hookup
 Bundaberg VMR fishing Competition
 Noosa River to Reef Family Fishing Classic
 Lake Moondarra Fishing Classic
 Mulloway Marathon
 Tag-a-Tog



The Suntag Australia Team

This year saw the establishment of Suntag Australia Inc to provide strategic guidance and oversee management of Suntag. Infofish Australia continues to manage Suntag, a wide range of citizen science projects and the development of innovative technologies for the benefit of the fishing industry.



Todd van den Heuvel is the inaugural President of Suntag Australia. He is also President of Capricorn Tag and Release Sportfishing Club (Captag) which is the largest tagging club in Suntag Australia. Todd is based in Rockhampton and enjoys Barramundi fishing in the Fitzroy River.



Bill Sawynok is the Secretary of Suntag Australia and is the Rockhampton Manager of Infofish Australia. He has managed tagging since its introduction in 1986. He has played a number of roles in fisheries including manager of Recfishing Research 2005-2012, a past director of the Fisheries Research and Development Corporation and past board member of the Reef Cooperative Research Centre.



Shirley Sawynok is the Treasurer of Suntag Australia and the Finance Manager for Infofish Australia. Shirley also manages Suntaggers that allows individual members to take part in Suntag. She also manages tag purchases and distribution, the Infofish shop and is the event manager for the Rocky Barra Bounty.



Steve Morgan is the publisher of the Fishing Monthly magazines and the owner of the ABT fishing tournaments circuit. Steve is also a qualified marine scientist so knows the value of good data. Somehow Steve finds the time to fit in about 150 days (or nights) fishing each year so has a very strong contact with the fishery.



Glen Baker is the proprietor of Stones Corner Marine in Brisbane. Glen has been a member of Suntag since the mid 1990's and is active in tagging in Moreton Bay and SEQ. Glen is extremely passionate about Suntag and has been involved in "recruiting" many new members over recent years.



Charlie Ladd is the Treasurer of Freshwater Fishing and Stocking Association Queensland (FFSAQ) and currently holds management roles in Sunfish Queensland and Brisbane Valley Anglers Fishstocking Association (BVAFA). He has been a member of BVAFA since 1996 and FFSAQ for 13 years. Charlie represents the tagging interests of fish stocking groups.



David Hill is the President of the Gladstone Sportfishing Club which has focused on tagging for many years. David is currently working in PNG and commutes from Gladstone to PNG. While David is away Bob Pirie is acting as his proxy. Bob is the long standing Tagging Officer for the Gladstone club.



Liam Fitzpatrick lives in Brisbane and is the representative of Suntaggers in south Queensland. He is also a member of FFSAQ and has been involved in a number of processes dealing with the development of leadership skills.



Jim Higgs is the Great Barrier Reef Fisheries Policy Manager for WWF Australia. He has extensive experience with the collection and analysis of recreational, commercial and indigenous fishing information. He completed a Master of Science at James Cook University based on the analysis on historical fishing club competition records in 1993.



Matthew Hubbard manages Brisbane River Fishing which is a fishing tour operation. He is representing fishing tour and charter operators in their tagging efforts. Matt's focus is on the Brisbane River with King Threadfin and Mulloway being prime targets.



Steve Salmond is in the Army and lives in Townsville and is the representative of Suntaggers in north Queensland. Steve has had a long association with tagging dating back to the 1990s. His career with the Army resulted in a move to the Northern Territory where he continued his tagging. However, after several years Steve was on the move again with fishing taking a back seat. In 2015 Steve returned to Townsville and recommenced tagging and now haunts the Bohle River.



Stefan Sawynok is the Brisbane manager of Infofish Australia. Stefan is responsible for technology and communications. He joined Infofish Australia in 2012 however provided the technology support for Suntag for many years through his One Pixel business. While not on the management committee he provides IT support for Suntag Australia.

Time for a change in Suntag

Suntag has been providing a service to the fishing industry for almost 30 years since 1986-87. With over 1,200,000 fish records and over 765,000 tagged fish in the database it is now the largest fisheries database in Qld outside government and research institutions and the largest volunteer fisheries citizen science database in the world. Over its lifetime it is estimated that there has been \$15-20m invested or provided in kind by government, other funders, researchers, taggers and stocking groups.

It cost around \$180-190,000 to deliver Suntag this year. The Suntag grant from Fisheries Queensland was \$40,000. For the past few years Infofish Australia has injected \$100-130,000 into Suntag in both cash and voluntary effort to deliver and continually improve the service. Unfortunately, that could not continue, as it would lead to the ultimate demise of Suntag.

Also with the continued expansion of those tagging it was considered necessary to provide a greater level of recognition of those groups. This led to the establishment of Suntag Australia Inc with representation of all tagging groups with the exception of ANSAQ (declined) to provide strategic guidance and oversee the management of Suntag.

Suntag Australia Inc has the following groups:

- ✦ Infofish Australia
- ✦ Suntaggers
- ✦ Capricorn Tag and Release Sportfishing Club (Captag)
- ✦ Gladstone Sportfishing Club
- ✦ Freshwater Fishing and Stocking Association Qld
- ✦ Stocking Groups (eg Brisbane Valley Anglers Fish Stocking Association)
- ✦ Fishing businesses (eg tackle, boating, fishing tour operators)
- ✦ Fishing Competitions (eg ABT Tournaments, Rocky Barra Bounty)
- ✦ World Wildlife Fund (conservation)
- ✦ Fisheries Qld (observer)

To help overcome the disparity in funding we proposed a \$75 fee for taggers to register with Suntag to provide a contribution to the cost of delivering the program. ANSAQ declined the offer of a discounted fee of \$45 for 2016-17 and decided to establish its own tagging program.

Suntag has steadily grown with over 60% of the tagging effort this year coming from non-ANSAQ taggers. This has grown to around 90% as taggers previously with ANSAQ moved to tag directly under Suntag Australia.

Infofish Australia will continue to invest heavily in technology that is needed to deliver a world class service. This was exemplified this year with the introduction of a phone app to improve and expand data collection and real time monitoring through Crystal Bowl.

Bill Sawynok
Infofish Australia
Suntag Australia

Highlights in 2015-16

This year saw a significant change in the delivery of Suntag with the creation of Suntag Australia Inc. This meant a restructuring of the services delivered by Infofish and Suntag and this was compounded by the decision by ANSAQ to not join in the change and to go with its own tagging program.

As well Infofish introduced new technology that allowed real time monitoring to be established through the Crystal Bowl. This was done through a dashboard approach that reflects data in the database in real time for a wide range of locations and species.

At the end of the year Infofish was ready to release the Trackmyfish phone app to improve data collection and expand the range of data being collected and a competition version that will collect data during competitions. This has the potential to significantly increase data collection.

In combination these provide the most significant changes in the history of Suntag and 2016-17 will be a year of bedding down those changes. These will profoundly change the way in which community groups will be able to undertake monitoring in the future. While we have some idea of the effect of some of those changes it is certain there will be others that are unexpected.

The Infofish-Suntag database is one of largest recreational fishers' databases in the world that is based on data collected mostly by volunteers and constitutes a combined investment of \$15-20 million over the past 30 years.

The database contains details of the following (figures in brackets added in 2015-16):

- ✦ 1,200,000 fish records (44,000)
- ✦ 765,000 tagged fish (27,300)
- ✦ 60,000 recaptures (1,500)
- ✦ 46,500 fishing trips with catch and effort (3,500)
- ✦ 318,000 other fish from catch records (30,200)
- ✦ 925 recruitment surveys (155)
- ✦ 58,300 fish from recruitment surveys (11,000)
- ✦ 3,700 photographs of tagged and recaptured fish (700)

A total of 9,750 taggers have now participated in Suntag having tagged fish since 1986-87. In 2015-16 there were 570 fishers that tagged at least one fish. A total of over 17,400 fishers have participated in Suntag though reporting the recapture of a tagged fish.

Just 111 Frequent Taggers account for 309,500 (40%) of the total number of fish tagged while the remaining 9,600 taggers account for 317,000 (41%). Fish stocking groups have tagged 101,300 (13%) and researchers 40,000 (5%). Mick Dohnt remains the top tagger with over 25,000 or a staggering 3.3% of all fish tagged.

In the last decade the Internet has changed everything about information delivery. The era of paper printed reports is largely over with various electronic versions taking over. Information is also required to be presented in smaller chunks if it is to gain attention. Also delivery of visual information has taking over from words. Facebook, Twitter, YouTube, Instagram generally require a very short attention span and there is an ever growing

competition for people's time. That is the environment in which information delivery has to compete.

As well as improving data collection Infofish has also focused on the conversion of data collected into information products. Infofish has developed a multi-tier approach to information delivery:

- ✦ Crystal Bowl website to provide a forecasting and real time monitoring service
- ✦ Google Earth is used to visualise data
- ✦ Facebook pages are used to provide interesting snippets of information relevant to the page in near real time
- ✦ Suntag mini-reports that look in detail at a species, location, timeframe or issue
- ✦ Suntag and Suntaggers websites

Suntag shared its information with the fishing and broader community through:

- ✦ Crystal Bowl real time monitoring using 73 "dashboards" tracking key species and different locations
- ✦ Visualisation of data using 400 Google Earth maps that can be regenerated at any time
- ✦ Suntag Facebook page with 3,600 likes and a reach of almost 300,000 from 42 posts with an average reach of 7,000
- ✦ Suntag website providing access to 28 reports with 28,600 downloads of reports
- ✦ Suntaggers website providing a range of information services to taggers

The key opinion makers are no longer the baby boomers so there is a need to engage with the later generations as the next round of leaders. However, those generations access and use information in different ways to the baby boomers and they exercise leadership in different ways. Infofish has recognised this and is actively working with those younger fishers with a view of developing their leadership skills and providing information to them in a way that they will use. Leaders will generally come from the higher-level skilled fishers and so the focus is on those fishers. Infofish has run a series of informal evenings in Brisbane with young fishers to assist with the development of leadership skills.

Given the phenomenal contribution of fishers providing data to Infofish and Suntag there is an ever growing need to recognise their voluntary contributions. Traditionally that has focused on providing rewards to taggers but that will be expanded to other fishers as the pool of volunteers expands.

Tag and recapture certificates have long been used to provide feedback to fishers. Certificates are provided to both the person that recaptured the fish and the taggers. There are multiple templates for certificates that can be project or location specific.

This year saw the introduction of the Suntag Hall of Fame that recognised the contributions of key taggers over a long time. Michael Dohnt became the initial inductee into the Hall of Fame having tagged the most fish as an individual. There were a further 12 initial inductees into the Hall of Fame.

Infofish Australia's Mission and Strategies

This has been a year of significant change for Infofish and Suntag with greater recognition of our broader community base and refining our mission, key strategies and the tools we use to implement our strategies.

Infofish Australia's Mission "Social change in fisheries through citizen science"

Strategy 1: Focus on data that are relevant to the needs of decision making by fishers

Strategy 2: Provide a world-class future oriented information service that influences fisher's decision making

Strategy 3: Develop the capacity of the community to engage in fisheries citizen science

Strategy 4: Use leading edge technology to empower the community with knowledge

Data to meet decision making needs

Strategy 1: Focus on data that are relevant to the needs of decision making by fishers

Strategy tools (collecting data)

Crystal Bowl

Suntag

Net Free Zone monitoring

Recruitment monitoring

Stocked Fish monitoring

Competition monitoring

Fish Health monitoring

Pest species monitoring

Crystal Bowl

What is likely to happen in the future will have an influence on decision making by fishers. To assist with this the Crystal Bowl is aimed at providing forecasts on fish stocks in relation to:

- ✦ Fish sizes
- ✦ Catch rates
- ✦ Trends in fish stocks
- ✦ Recruitment

Data collection is focused on collecting data on those elements that will allow forecasts to be made. As well as making forecasts it is necessary to monitor within the fisheries to determine how well the forecasts compare with reality. That is now provided direct through the website at www.crystal-bowl.com.au.

Forecasts are limited to locations where there is sufficient data. The first forecasts were made for Barramundi in the Fitzroy River and then extended to Gladstone as part of the Gladfish project. Broadsound has now been added but the forecasts there are at a lower level of accuracy due to data limitations. Forecasts have also been extended to Threadfin in the Fitzroy River.

A model was developed to estimate the number of tagged fish in an estuary at the end of a year to provide trends in fish stocks. This was a modification of the model that was developed to estimate the number of fish in an impoundment. The model uses tagging data and a scenario approach based on worst-, middle- and best-case scenarios of tag reduction rates each year. *Figure 1* shows the estimated number of tagged Barramundi in the Fitzroy River each year based on the 3 scenarios.

Figure 2 shows the correlation between the estimated numbers of tags each year and the commercial catch of Barramundi in the Fitzroy River to 2015. Tag data was advanced by 2 years as most fish tagged were below legal size and took 2 years to become legal and available to the commercial catch. This suggests that good tag data can be used in areas where commercial catch data are no longer available such as in Net Free Zones.

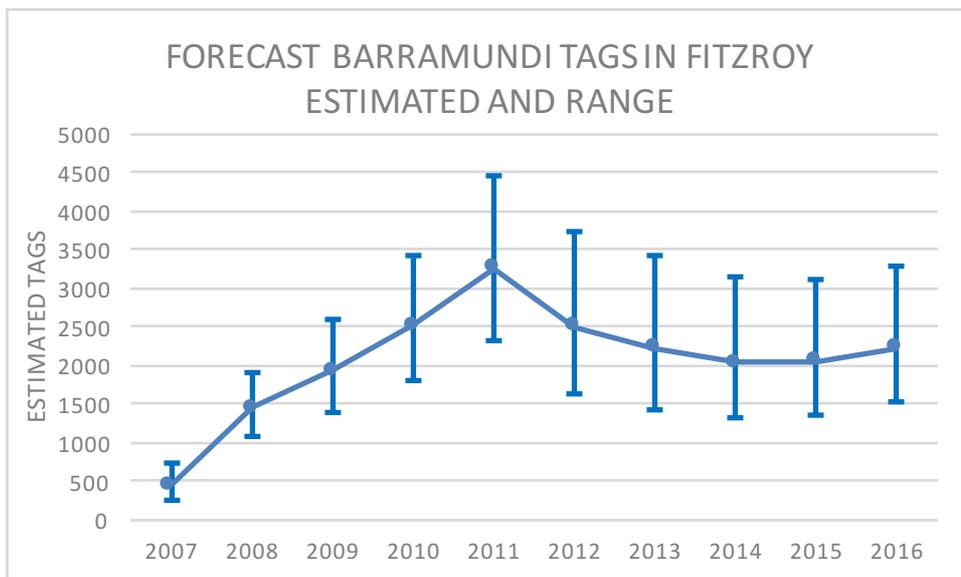


Figure 1: Estimated Barramundi tags in the Fitzroy River using 3 scenarios

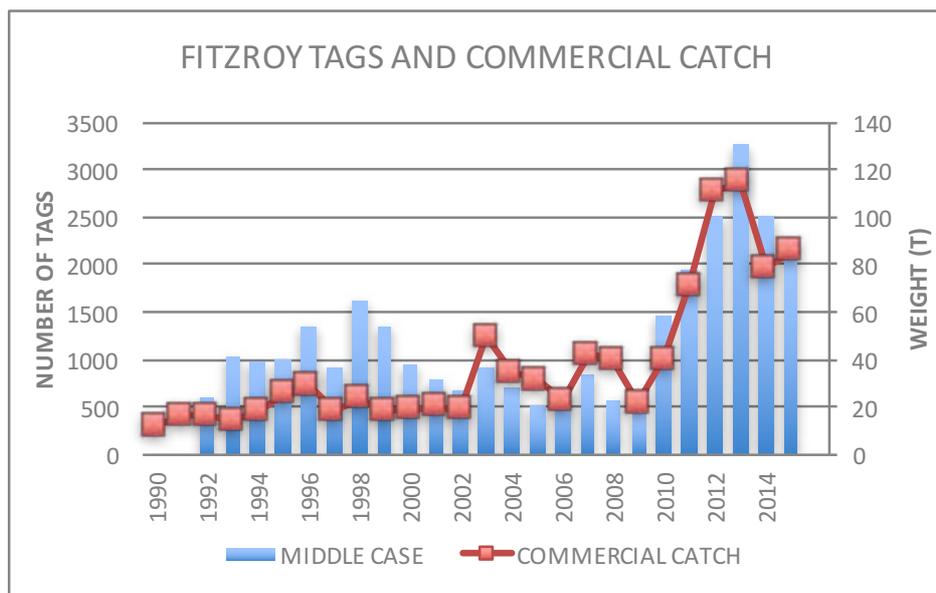


Figure 2: Barramundi tags in Fitzroy River compared with the commercial catch

This year also saw the introduction of real time monitoring to Crystal Bowl. This uses data in the database to present a range of views of the data relevant to the end user (see Information products).

Suntag

Suntag is the oldest component of Infofish data collection being established in 1986. There are now over 1.2 million fish records in the database including data on 0.76 million tagged fish. The Infofish database now represents the largest long-term investment in recreational fisheries data collection in Queensland outside of the Queensland Government. Details are contained in the section Suntag in 2015-16.

Net Free Zones monitoring

The Queensland Government declared 3 Net Free Zones (NFZ) in Nov 2015 where commercial net fishing was removed. The zones were:

- ✦ Cairns (Trinity Bay)
- ✦ Mackay (St Helens Bay to Cape Hillsborough)
- ✦ Rockhampton (Fitzroy River, Keppel Bay and Cori0o Bay)

Fisheries Queensland is undertaking monitoring of catch and effort in each of the zones to determine changes compared to adjacent locations. Infofish is also undertaking monitoring in the Mackay and Rockhampton NFZs. In the Mackay NFZ Infofish is supporting the Mackay Recreational Fishing Alliance (MRFA) in monitoring catch and effort. MRFA undertook boat ramp surveys before and after the introduction of the NFZ. Infofish produced a report on the results of those surveys. *Figure 3* shows the percentage change in the numbers of legal fish between the 2 surveys. There were increases of over 20% for 8 of 12 key species caught. Details of the surveys are contained in the report “St Helens Bay to Cape Hillsborough Net Free Zone Pre and Post Declaration Surveys Oct 2015-Apr 2016.”

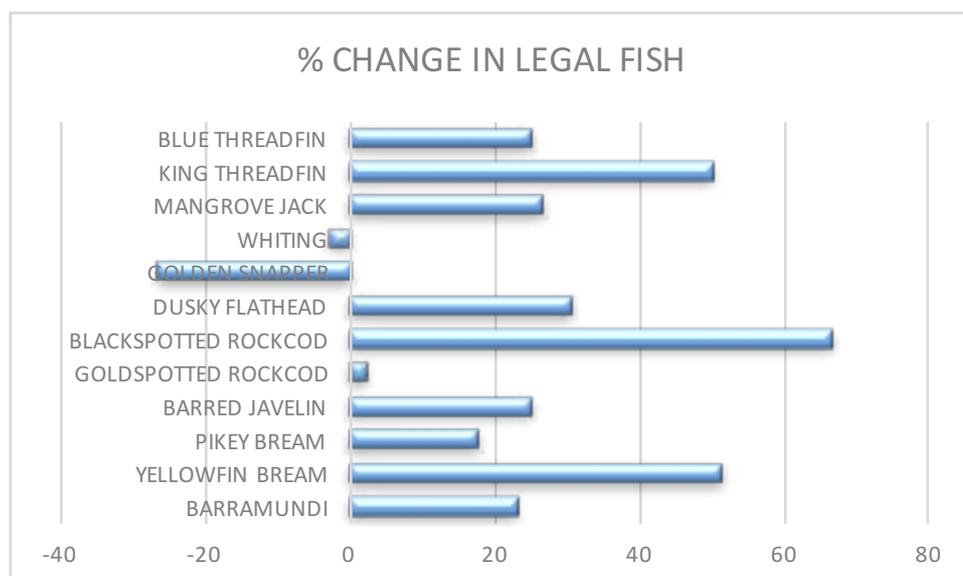


Figure 3: Change in percentage of legal fish in the Mackay NFZ based on before and after boat ramp surveys

For the Rockhampton NFZ the Rockhampton Regional Council (RRC) is developing a “Rockhampton Region Recreational Fishing Strategy” as part of the implementation of the NFZ. As part of the strategy the RRC has included the Crystal Bowl for monitoring the NFZ. This includes forecasts for Barramundi, King and Blue Threadfin in the Fitzroy River and real time monitoring of those forecasts.

Figure 4 shows part of the dashboard being used to monitori Barramundi in the Fitzroy River as part of the NFZ. Tagging is an integral part of the data required for monitoring given the loss of commercial catch data as we have demonstrated the correlation between the 2 datasets. Captera is leading the collection of data in the NFZ.

Real Time Monitoring - Catch

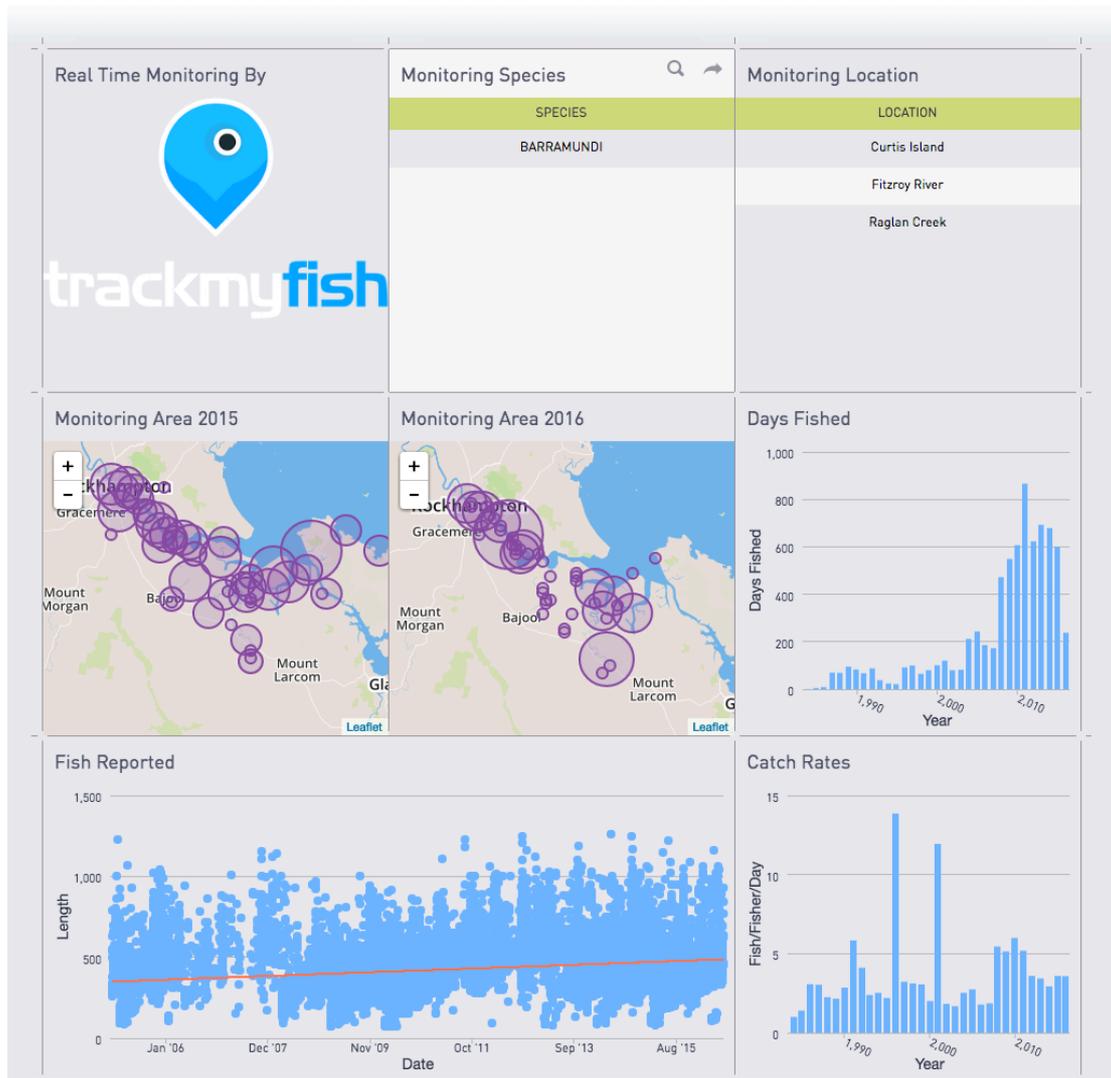


Figure 4: Part of the real time tracking of Barramundi in the Fitzroy River as part of the NFZ

Recruitment monitoring

Any future-oriented service for fisheries must have an understanding of recruitment, as future stocks are critically dependent on recruitment. Infofish has recognised this and over the years has steadily expanded its recruitment monitoring.

Monitoring of Barramundi recruitment started in Central Queensland in 1999 and the drivers of Barramundi recruitment are now well understood and the level of Barramundi recruitment can be accurately forecast based on river flows and rainfall. Barramundi recruitment is monitored in the Fitzroy River, Gladstone, Broadsound and Fitzroy/Keppel NFZ. Recruitment in all these areas was forecast to be poor based on climate projections and that is what has been observed mid-season.

This year the river flow and rainfall data was converted to a climate index to allow recruitment to be plotted against the climate index. The index ranges from a low of 5 (poor for recruitment) to 30 (good for recruitment). *Figure 5* shows the live tracking of recruitment of Barramundi in the Fitzroy River for this year and the past 4 years. As forecast by the climate projections the recruitment of Barramundi was poor at mid-season 2016.

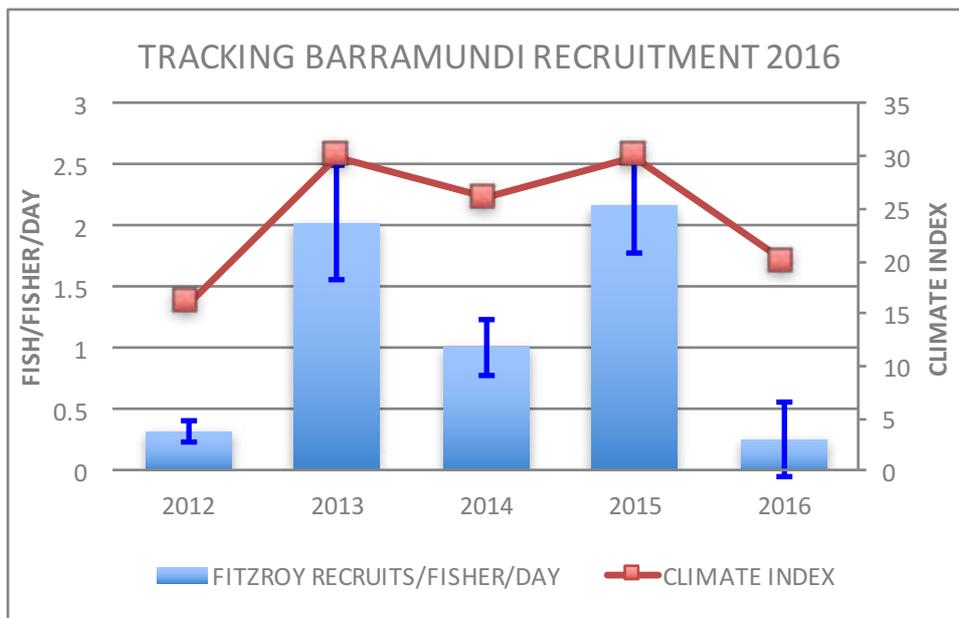


Figure 5: Crystal Bowl live tracking of Barramundi recruitment in the Fitzroy River

Barramundi recruitment is monitored through a combination of recruitment surveys using a standardised castnet method and tagging later in the recruitment period when the fish are large enough to be caught on line. Data are assessed based on the number of recruits/fisher/day so that the strength of recruits can be compared with predictions and from year to year.

Barramundi grow rapidly over the season from Jan-Oct when they can reach 400mm in a good year. This year the assessment of Barramundi recruits over the season was improved by tracking recruits based on their size using 2 month intervals as shown in *figure 6*.

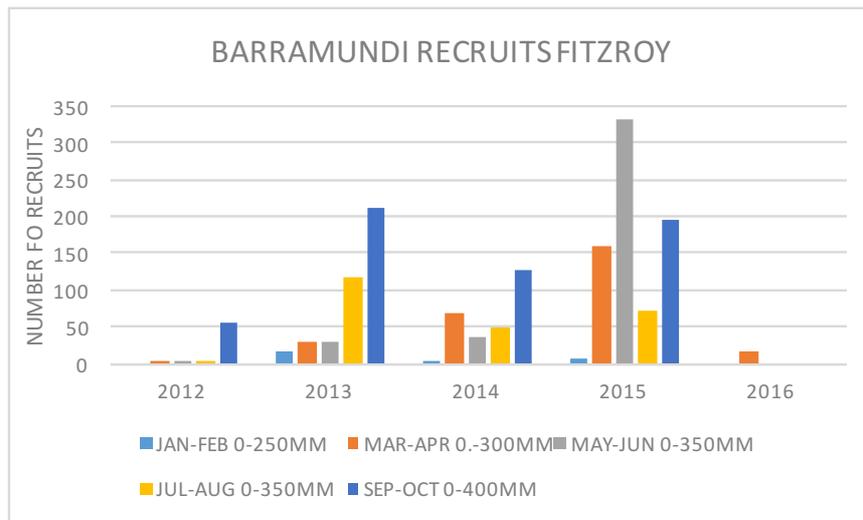


Figure 6: Crystal Bowl live tracking of Barramundi recruitment in the Fitzroy River 2012-16



Figure 7: Pikey Bream recruit with Banana Prawn recorded during Gladstone recruitment surveys

As part of the development of the Gladstone Healthy Harbour report card the Gladstone Healthy Harbour Partnership decided to use Bream recruitment as the fish indicator for the report card following trial surveys in 2015.

In 2016 the area of recruitment surveys was extended to include sites from the Narrows in the north to Rodds Harbour in the south. Recruitment surveys were undertaken using the standardised castnet method as used for previous surveys. The focus was on Yellowfin and Pikey Bream as shown in *figure 6*.

There were a total of 325 Yellowfin Bream and 179 Pikey Bream recorded in 103 surveys at 26 sites. Over the whole survey period from Dec-Mar the overall catch rate for Yellowfin Bream was 0.16 fish/cast which was double that for Pikey Bream at 0.08 fish/cast as shown in *figure 8*. Apart from Dec the catch rates for the 2 species were similar. Details are contained in the report “Developing a fish recruitment indicator for the Gladstone Healthy Harbour Report Card using data derived from castnet sampling”.

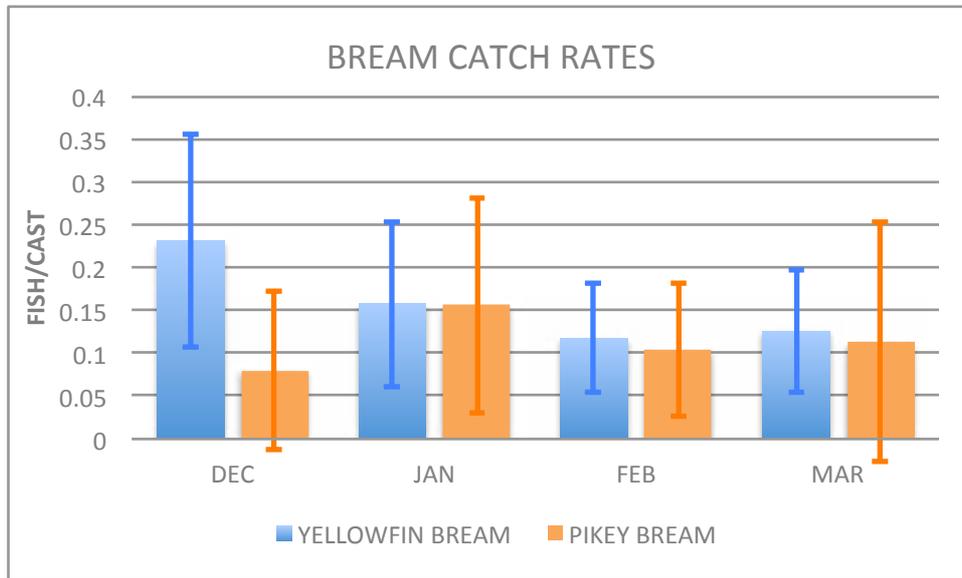


Figure 8: Catch rates of Bream recruits over the recruitment season

Stocked fish monitoring

Tagging of stocked fish commenced shortly after the introduction of the Recreational Fishing Enhancement Program in the 1980s. Since then tagging has been used to monitor stocked fish, either through continued tagging of fish large enough to tag or through tagging larger fish before release, primarily Barramundi.

Tagging allows stocking groups to monitor their stocking efforts in a cost effective way and provides data on growth, movement, survival, escapement and mixing with wild populations. This year the use of the data was extended to estimating how many fish were in an impoundment based on stocking and tagging records.

This year a model was developed to estimate the number of stocked fish in an impoundment that could be used to provide an estimate of numbers to be stocked to maintain catch rates or project the future effect of different stocking proposals. The model uses stocking and tagging data and a scenario approach based on worst-, middle- and best-case scenarios.

The scenarios use different rates of survival of fingerlings, annual reductions in numbers in each stocking using recapture rates and the effect of escapement from overtopping of the impoundment. This then allowed an estimate to be made of the number of fish needed to be stocked in the coming year to maintain current catch rates.

Figure 9 shows the estimated number of Bass in Lake Samsonvale based on the 3 scenarios. A report was produced “Lake Samsonvale Stocking and Monitoring 1990-2015.” The report is available from the Crystal Bowl website www.crystal-bowl.com.au.

Figure 10 shows the Bass recorded in Lake Samsonvale and the dam levels over time. These data were included in the development of the model.

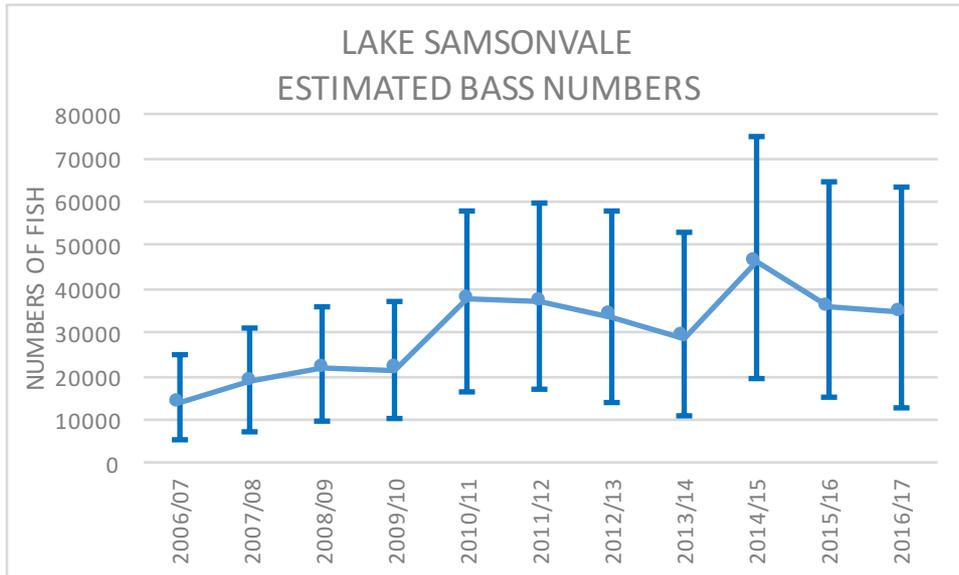


Figure 9: Estimated numbers of Bass in Lake Samsonvale based on 3 scenarios

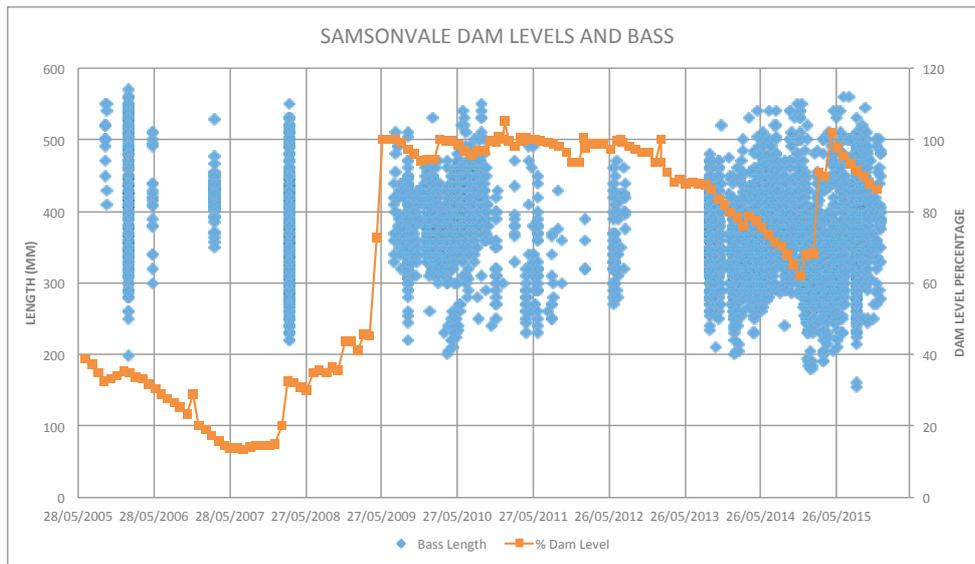


Figure 10: Australian Bass recorded in Lake Samsonvale and dam levels over time

This year there was some debate about which impoundment produced the fastest growing Barramundi, Tinaroo or Awoonga. Both impoundments had good data from batch tagged Barramundi in the size range 150-300mm. Tag and recapture data was used to show that there was little difference in the growth rates in the 2 impoundments. Figure 11 shows the growth of Barramundi in the 2 impoundments.

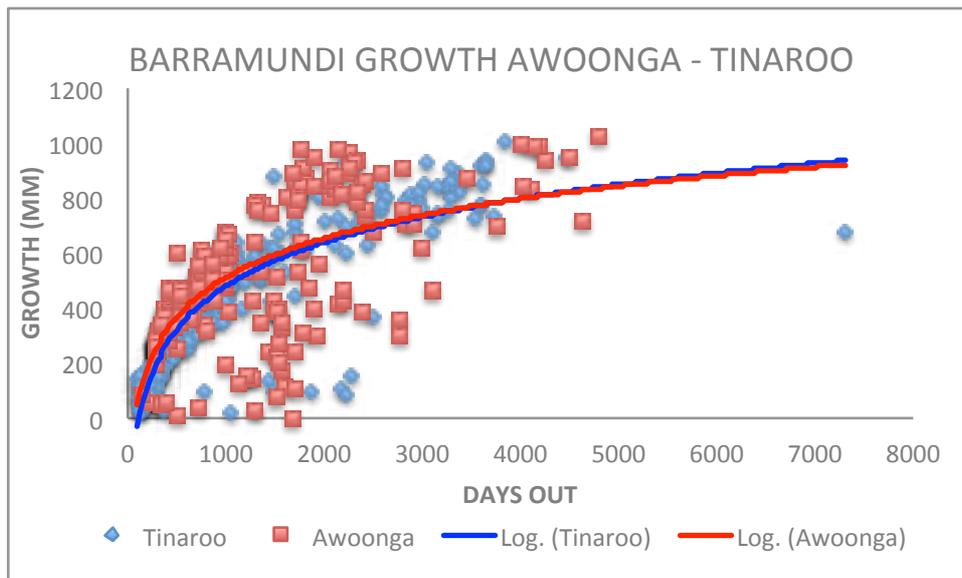


Figure 11: Growth of Barramundi stocked in Lake Awoonga and Tinaroo

Competition monitoring

Data collected during fishing competitions can provide a snapshot of the state of the fishery based on the competitions targets or objectives. Long-term data from competitions can provide useful data on trends.

There is a growing trend in fishing competitions to include the tagging of fish. Some events offer prizes for the recapture of a tagged fish while others use tagging to monitor their local fisheries. The following fishing competitions have a tagging component supported by Suntag:

- ✦ Rocky Barra Bounty at Rockhampton (1999-2015)
- ✦ Boyne Tannum Hookup at Gladstone (2000-2016)
- ✦ Bundaberg VMR Family Fishing Classic (2007-2015)

Catch and effort data from the first 2 competitions have also been collected as part of the CapReef, Gladfish and Crystal Bowl programs.

The Rocky Barra Bounty targets Barramundi in the Fitzroy River and has been held in Sep-Oct each year for the past 15 years. The Rocky Barra Bounty is a tag and release only event with fish tagged and released where caught with a photograph providing evidence of the catch.

Catch rates in the Bounty are now used, along with data for local taggers, to assess trends in catch rates in the Fitzroy River. *Figure 12* shows the catch rates for the past 10 years from 2006-2015. In 2006 towards the end of a long dry period it took 43.1 hours to catch a Barramundi while in 2011 it was 1.6 hours. In that year the event went for 1,200 minutes and there were 1,210 Barramundi caught (1 fish/minute). In 2015 it took 9.1 hours of effort to catch a Barramundi. Further details of the event are available from www.rockybarrabounty.com and a report titled "Rocky Barra Bounty meets Crystal Bowl" is available from www.crystal-bowl.com.au.

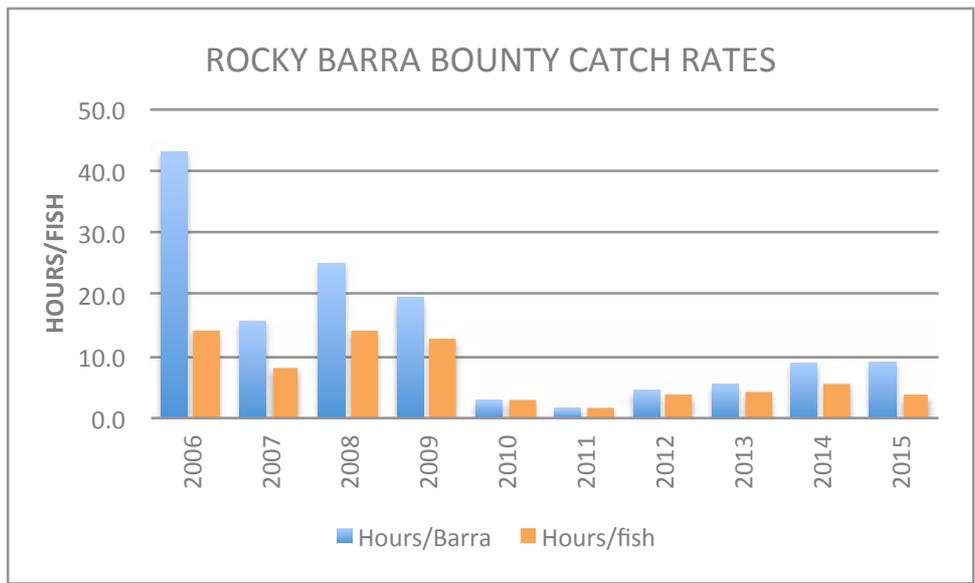


Figure 12: Hours to catch a Barramundi or fish in the Rocky Barra Bounty 2006-2015

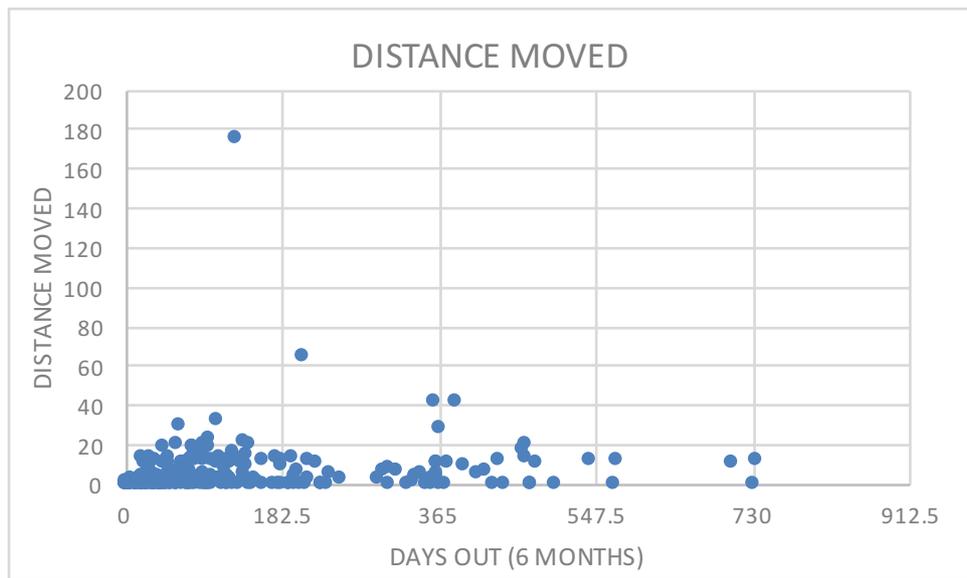


Figure 13: Movement of tagged fish released at the Boyne Tannum HookUp

The Boyne Tannum HookUp in Gladstone is one of the largest fishing competitions in Australia with around 3,000 participants. From 2000 the Gladstone Sportfishing Club has managed a live weigh-in section of the event where fish are brought in alive, tagged, held in display tanks and then released.

All fish have been released at the competition headquarters at Bray Park near the mouth of the Boyne River. Of the fish recaptured 77.2% were recaptured within 6 months and 95.1% were recaptured within 20km of where released. *Figure 13* shows the distance fish moved compared to the time at liberty. Details of tag and catch and effort data collected during the HookUp are in the report “Boyne Tannum Hook Up 2000-2016” available at www.boynetannumhookup.com.au.

This year saw the introduction of the Mulloway Marathon. This was the first time that an event was held in 2 states being Queensland and Western Australia. While this was in the form of a competition, which WA won, it was to collect important data on the species. See the section on Westag in 2015-16.

Fish Health monitoring

Following the fish health issues in the Gladstone area in 2011 and 2012 monitoring of fish health has been added to Infofish monitoring. Fish deaths in the Gladstone area continued from 2011-2015 but the numbers reported diminished each year with virtually no deaths reported this year. As well as fish deaths other health issues such as lesions and deformities were monitored, particularly during recruitment surveys. The incidence of health issues was very low this year. Photos of fish with health issues are stored in the database.

As part of the Crystal Bowl future-oriented approach forecasting fish deaths has been added to those areas being monitored. This year it was predicted that a fish kill could occur in 12 Mile Creek in Central Queensland to May 2016 if rainfall was low. The creek is an important Barramundi nursery area and had a reasonable population of juvenile Barramundi this year. It would have been good for this prediction to be wrong but unfortunately in Feb 2016 there were Barramundi and Eels reported dead. Fortunately, the numbers were relatively low in around 20 Barramundi. Shortly after that there was a rainfall event that flushed the creek and conditions improved.

Pest Fish monitoring

Tilapias were first confirmed in the Rockhampton area in 2012 and since then have become wide-spread in the lower Fitzroy River. The Fitzroy Basin Association is taking the lead in dealing with Tilapia and Infofish is providing information in support of their work.

The value of social media in getting information on pest species was clearly demonstrated during this year. A report of Tilapia in Gladstone turned out that the fish were actually Oscars (in the same family as Tilapia) that are also considered to be a pest species (*figure 14*). Within a few days the Facebook post had a reach of over 22,000 and from the feedback a reasonable picture of Oscars in the Gladstone area emerged indicating they were in a number of locations and had been there for a number of years.



Figure 14: Oscar reported from the Duck Ponds in Gladstone in Feb 2016

Information to influence fisher's decision making

Strategy 2: Provide a world-class future oriented information service that influences fisher's decision making

Strategy tools (providing relevant information)

Information products to influence decision making

Information feedback to fishers providing data

Information products to influence decision making

In the last decade the Internet has changed everything about information delivery. The era of paper printed reports is largely over with various electronic versions taking over. Information is also required to be presented in smaller chunks if it is to gain attention. Also delivery of visual information has taking over from words. Facebook, Twitter, YouTube, Instagram generally require a very short attention span and there is an ever growing competition for people's time. That is the environment in which information delivery has to compete.

Figure 15 shows the conversion of data collected into information products. Infofish has developed a multi-tier approach to information delivery:

- ✦ Crystal Bowl website to provide a forecasting and real time monitoring service
- ✦ Google Earth is used to visualise data
- ✦ Suntag mini-reports that look in detail at a species, location, timeframe or issue
- ✦ Suntag and Suntaggers website where reports can be downloaded
- ✦ Facebook pages are used to provide interesting snippets of information relevant to the page in near real time

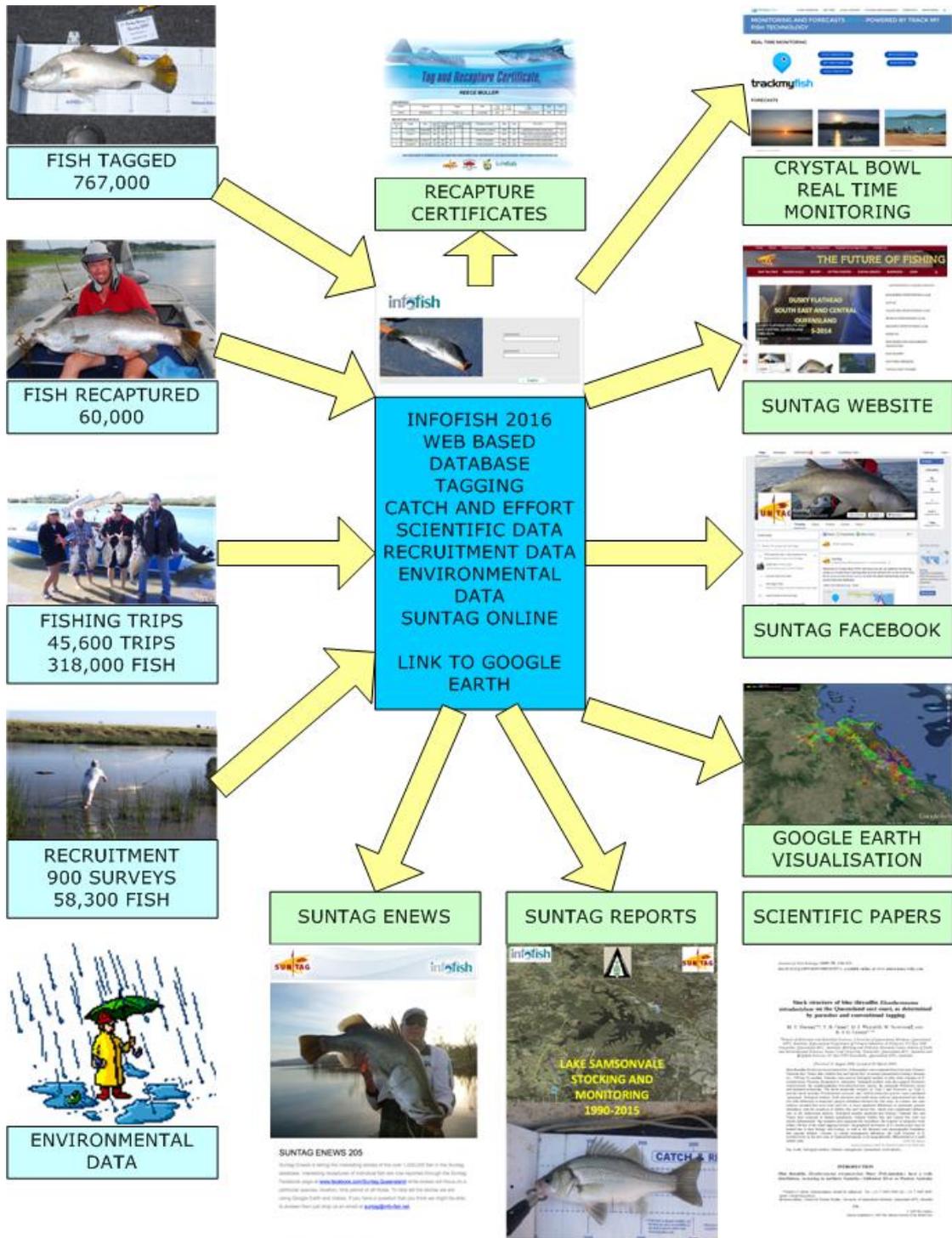


Figure 15: Infofish turning data collected into information products

Crystal Bowl real time monitoring

This year Infofish has focused on turning the data held in the Infofish database into information products that are aimed at influencing decision making. Following a review of user needs it was identified that information in real time was the most likely way of influencing decision making. The Crystal Bowl website www.crystal-bowl.com.au was revamped to provide “dashboards” showing data from the database in real time. Initially there are 73 locations where there is real time monitoring.

Crystal Bowl forecasts on fish sizes, catch rates, stock trends and recruitment for a number of species and locations were also added to the website allowing the real time tracking of those forecasts. Forecasts are limited to locations and species where there is sufficient data. This includes Barramundi in the Fitzroy River, Gladstone and Broadsound and Threadfin in the Fitzroy River.

Figure 16 shows the homepage for the new Crystal Bowl website which provides a forecasting service on key species.

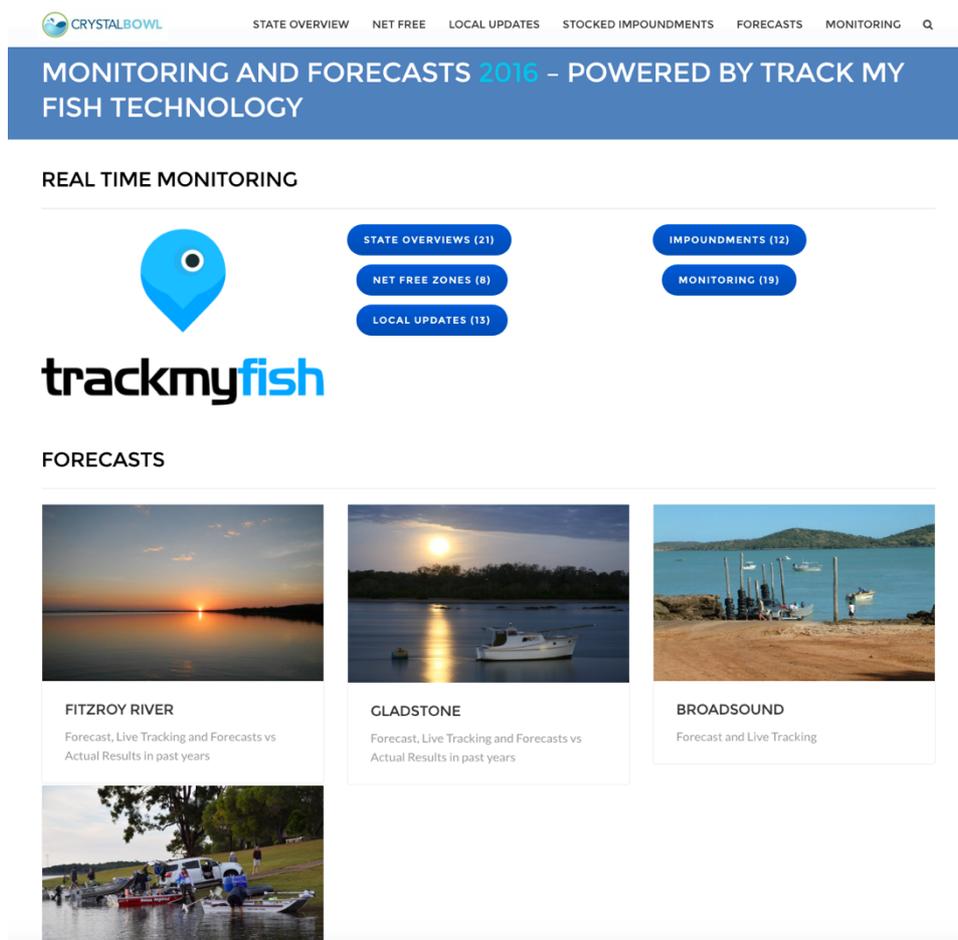


Figure 16: New Crystal Bowl website monitoring and providing forecasts on fish stocks

Real Time Monitoring - State

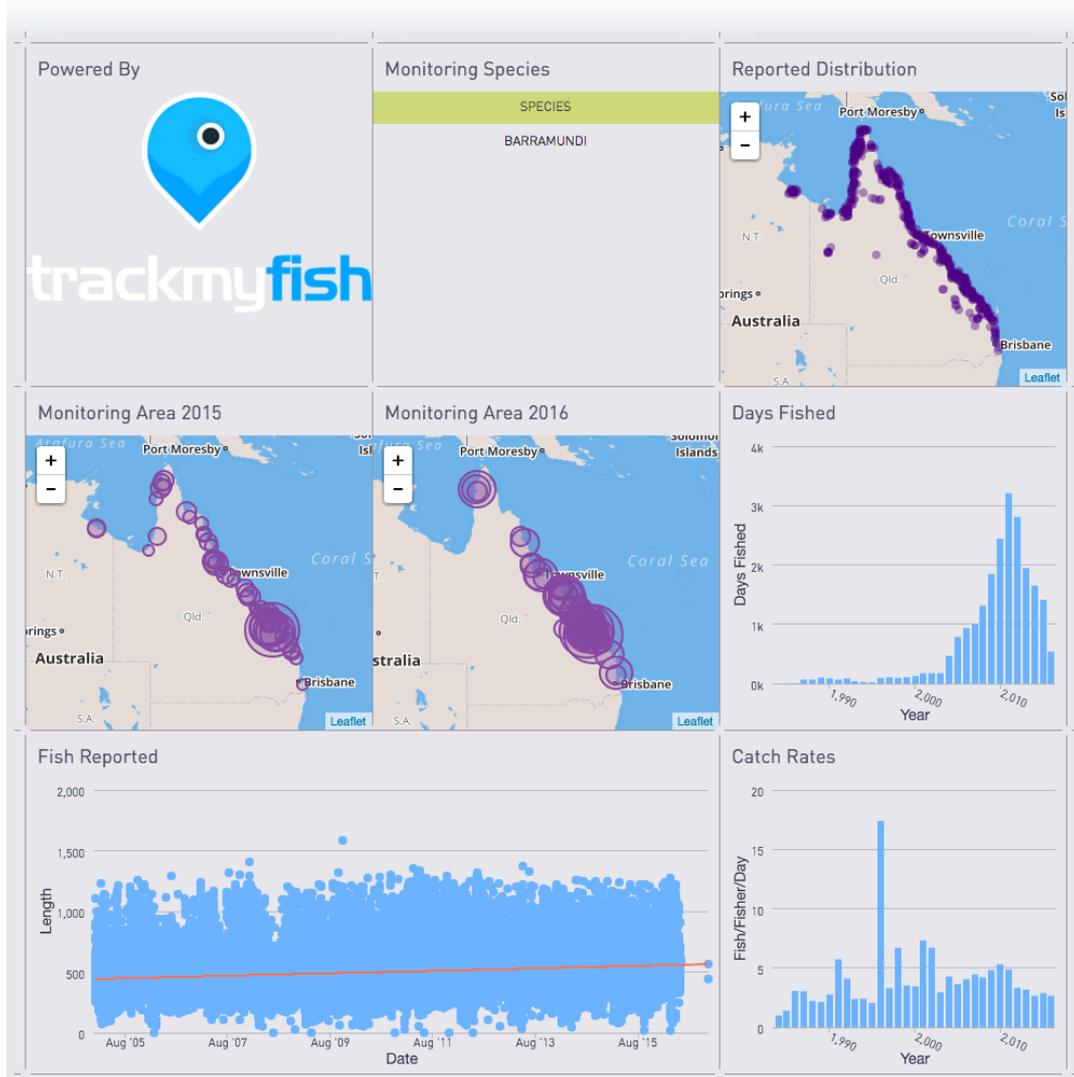


Figure 17: Crystal Bowl dashboard showing real time monitoring of Barramundi at state level

A series of dashboards were set up to provide data on a range of key species in different locations throughout the state as shown in *figure 17*. Dashboards are very flexible and can be set up for a region, river system, fishing group, club or an individual and use a wide range of visual presentations that are determined by the end user.

Key changes to the Crystal Bowl website were:

- ✦ Real time monitoring of a number of fisheries and locations
- ✦ Forecasts for future years/seasons available online
- ✦ The range of forecasts and locations was expanded
- ✦ The first forecast was made for an impoundment (Lake Samsonvale)
- ✦ Live tracking of actual versus forecast introduced

Visualising Infofish and Suntag data through Google Earth

To make sense of the huge volume of data in the Infofish database it was decided to use Google Earth as the primary tool for visualising the data. This was because of the widespread use of Google Earth by fishers. There are now around 400 Google Earth views that provide a view of the data. These maps can be regenerated at any time to reflect current data in the database.

Google Earth maps can now be generated to display the following:

- ✦ Tag and recapture location of recaptured fish
- ✦ Tag locations showing extent of tagging using Suntag grid maps
- ✦ Extent of fishing effort in an area
- ✦ Time sequencing of tag locations showing changes over time
- ✦ Flyovers following fish from tag to recapture site
- ✦ Photographs, video, graphs and environmental data can be added to the maps
- ✦ Combined fishing effort and tagging
- ✦ Recruitment survey details

Figure 18 shows fish movements into and out of the Great Sandy Marine Park. This was provided to the review of the Marine Park currently underway. This and other Google Earth maps can be viewed interactively from the Infofish database.

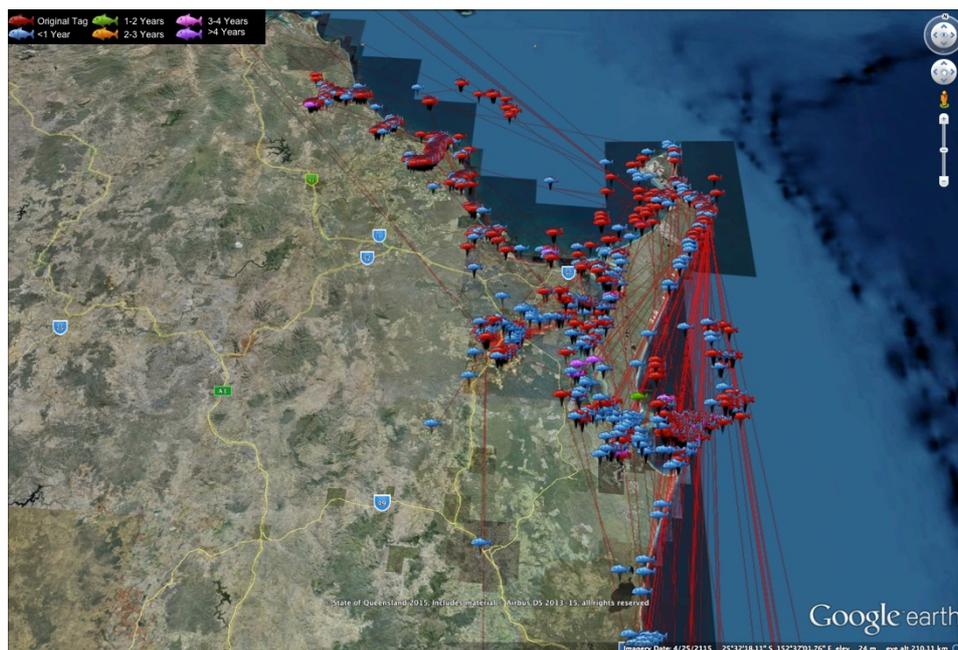


Figure 18: Google Earth map showing fish movement for the review of the Great Sandy Marine Park

Infofish Facebook Pages

Facebook has become the prime medium for distributing real time information from Suntag and other Infofish projects. Each project has its own Facebook page to compliment the website. Infofish Facebook pages are:

- Crystal Bowl www.facebook.com/infofish.crystal.bowl
- King Ash Bay www.facebook.com/king-ash-bay
- Rocky Barra Bounty www.facebook.com/RockyBarraBounty
- Mulloway Marathon www.facebook.com/mullowaymarathon

Infofish also manages the Suntag Facebook page:

- Suntag www.facebook.com/Suntag.Queensland

For the year there were 42 posts on the Suntag Facebook page with 3,600 likes (2,600 In 2014-15). Total reach for 2015-16 was 298,000 with an average reach of 7,000 and a maximum reach of 31,500 for a single post. *Figure 19* shows the post with the highest reach for the year. *Figure 20* shows in growing increase in reach of Suntag Facebook posts over the year.

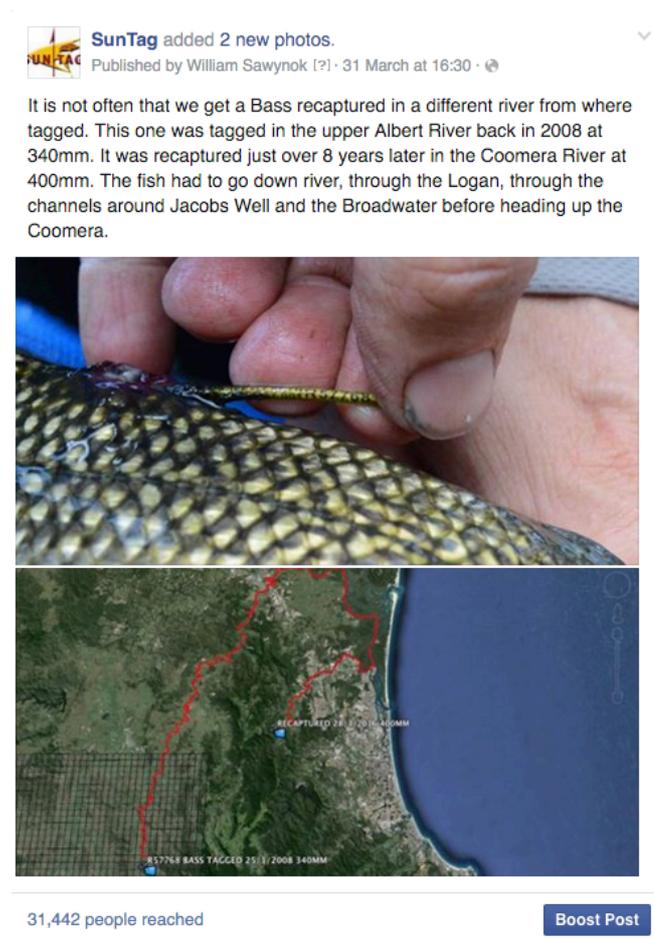


Figure 19: Suntag Queensland Facebook highest reaching post in 2015-16

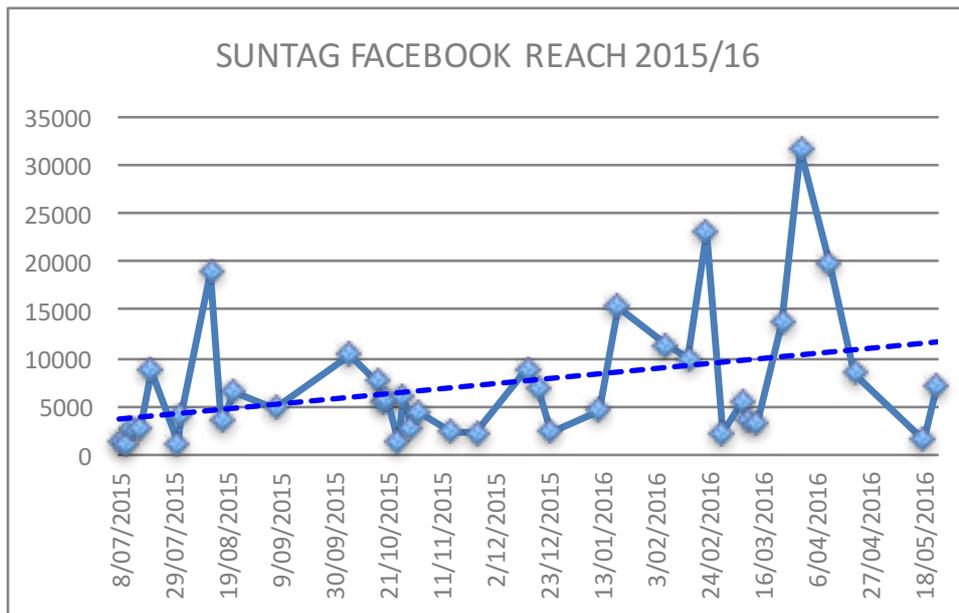


Figure 20: Timeline of Suntag Facebook posts in 2015-16

Information to Suntaggers

Suntaggers allows individuals to tag fish and provide other data to Suntag and all taggers have access to their own data (read only) through a secure login. In 2015-16 there were 160 individual Suntaggers and 570 members in total. An important aspect of Suntaggers has been the development of a range of ways of sharing information with taggers as they have largely provided the data accumulated in the database.

Suntag Online allows taggers to load their fishing trip and tagging data and to monitor their own data and provide feedback on any anomalies. It also tracks recaptures of taggers and progress towards awards.

As well as Suntag Online taggers have access to a range of resources and support services through the Suntaggers website www.suntaggers.com.au. Infofish manages the website and *figure 21* shows the homepage on the Suntaggers site.

The website provides the following:

- ✦ Allows fishers to join Suntaggers through online registration
- ✦ Access to taggers own records (read only) through Suntag Online
- ✦ Resources for taggers (maps, projects, awards, manual)
- ✦ Infofish and Suntag reports
- ✦ Taggers can load trip and tag data for inclusion in database (after validation)
- ✦ Taggers can monitor progress towards tagging awards and print certificates
- ✦ Improved reporting and feedback on recaptures
- ✦ Links to Facebook pages
- ✦ Upgraded Suntaggers Shop for buying tagging equipment

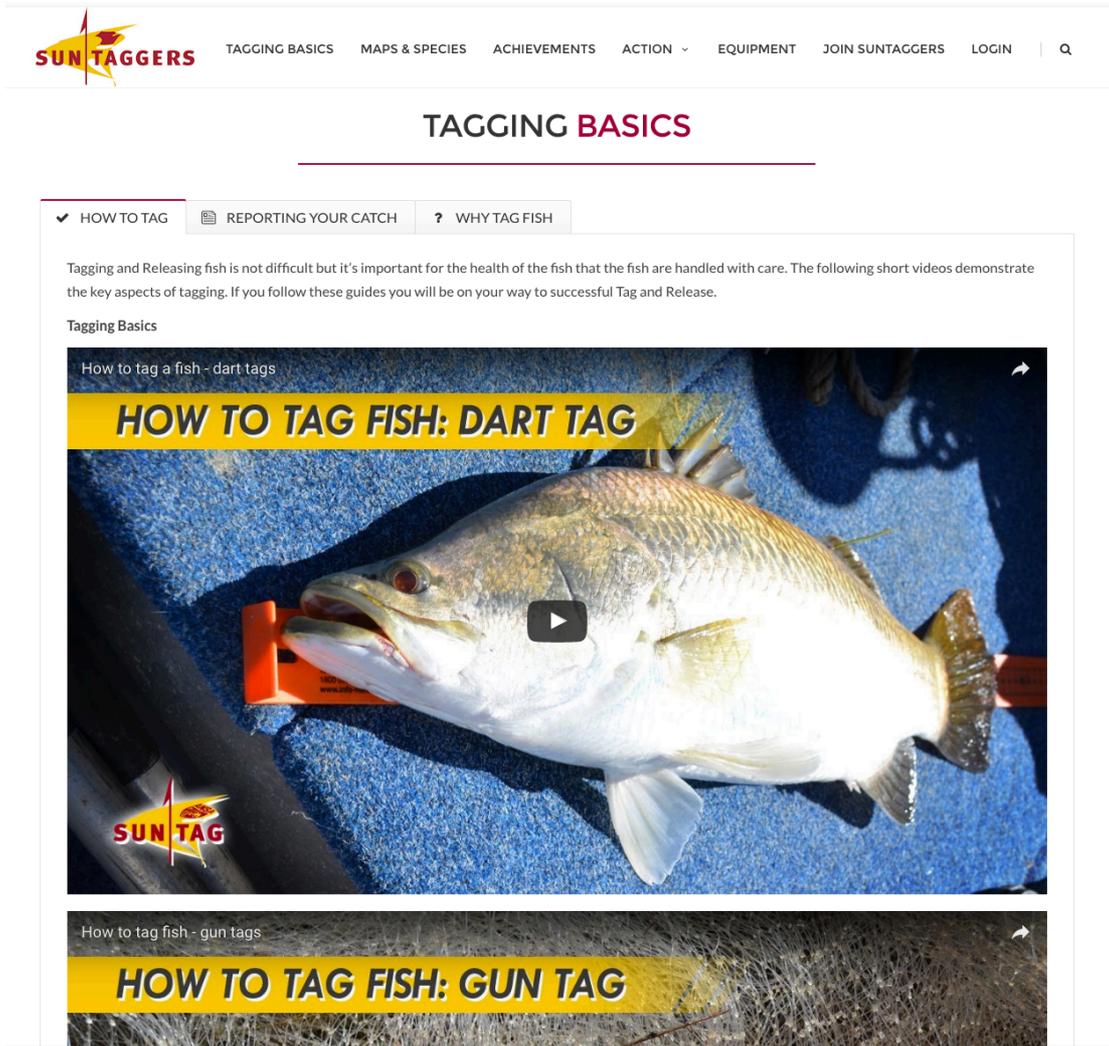


Figure 21: Suntaggers website homepage

Reports from Suntag website

Infofish manages the Suntag website www.suntag.org.au. Figure 22 shows the homepage of the Suntag website.

Where the Suntaggers website provides resources to taggers the Suntag website provides information to a broader audience. The Suntag website provides access to 28 recent Suntag reports with 28,600 downloads of these reports so they are proving to be very popular. The website also provides pages for clubs, businesses, stocking groups and others to track their own tagging.

These reports provide a snapshot of Infofish-Suntag data for a particular species, location, timescale, issue or all of those. The reports are short and designed to provide information to fishers in a simple and easily understood format (figure 23). This year there has been less focus on Suntag reports as there were 21 reports produced from 2013-15.

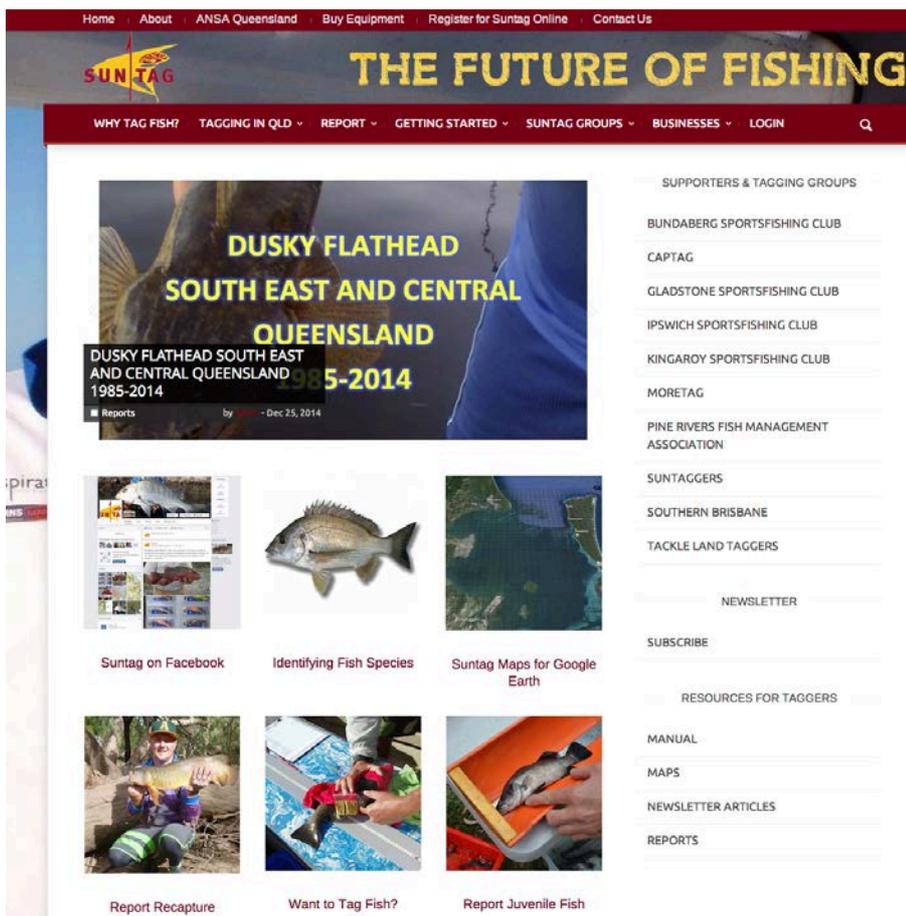


Figure 22: Suntag website homepage



Figure 23: Suntag Report on Lake Samsonvale Stocking and Monitoring 1990-2015

Community engagement

Strategy 3: Develop the capacity of the community to engage in fisheries citizen science

Strategy tools

Community groups and client bodies

Suntaggers

Captag

Gladstone Sportfishing Club

Brisbane Valley Anglers

Fish Stocking Groups

Government agencies

Natural Resource Management agencies

Environmental groups

Education bodies

Researchers

Major competitions

Westag

Community engagement

Engaging our community

Leadership development

Feedback to contributors

Rewarding volunteer contributions

Training and accreditation

Equipping our volunteers

Engaging our community

Infofish engages with a wide range of community groups and client bodies and supports activities being undertaken by those groups.

Up to this year the delivery of Suntag was primarily through ANSAQ although over the past few years there has been a steady expansion of other groups taking part in Suntag. This year other groups contributed almost 70% of the tagging effort and that has grown to around 90% as taggers previously with ANSAQ moved to tag directly under Suntag Australia.

This led to the establishment of Suntag Australia Inc to provide strategic guidance and oversee management of Suntag into the future. The initial composition of the Management Committee was:

- ✦ Infofish Australia (Bill Sawynok as Secretary and Shirley Sawynok as Treasurer)
- ✦ Suntaggers (Liam Fitzpatrick and Steve Salmond)
- ✦ Captag (Todd van den Heuvel)
- ✦ Gladstone Sportfishing Club (David Hill)
- ✦ Freshwater Fish Stocking Association of Queensland (Charlie Ladd)
- ✦ Queensland Fishing Monthly (Steve Morgan)
- ✦ Stones Corner Marine (Glen Baker)
- ✦ World Wildlife Fund (Jim Higgs)
- ✦ Fisheries Queensland (observer)

ANSAQ declined a position on the Management Committee and decided to set up its own tagging program.

Infofish maintains a program of attending club or fishing groups meetings and providing presentations on information that is relevant to particular groups.

Leadership development

Having a world-class future oriented information service is not enough in itself to influence fisher's decision making. It requires the information to be presented in ways that that will lead to engagement and uptake. That requires the information to be credible, presented simply and provided to opinion makers relevant to the information that is provided.

The key opinion makers are no longer the baby boomers so there is a need to engage with the later generations as the next round of leaders. However, those generations access and use information in different ways to the baby boomers and they exercise leadership in different ways. Infofish has recognised this and is actively working with those younger fishers with a view of developing their leadership skills and providing information to them in a way that they will use. Leaders will generally come from the higher-level skilled fishers and so the focus is on those fishers. Infofish has run a series of informal evenings in Brisbane with young fishers to assist with the development of leadership skills.

Feedback to contributors

To ensure that fishers that are contributing data to Infofish and Suntag remain engaged it is important that there is continual feedback. That is done in a number of ways and with the expansion of data collection there will be an increase in the feedback to contributors.

For taggers the most important element is feedback on recaptures of fish that they have tagged. Recapture details are provided to both the person that recaptured the fish as well as the tagger. Recapture details are reported though:

- | | |
|-------------------------|----------------------|
| ✦ 1800 free call number | ✦ Commercial fishers |
| ✦ Infofish websites | ✦ Email |
| ✦ Facebook | ✦ Fax |
| ✦ Infofish etrip form | ✦ Mail |

Feedback is provided in a number of ways.

- ✦ Verbally when reported through the 1800 toll free number
- ✦ Certificate to both the fisher recapturing the fish and the tagger
- ✦ Details are provided direct from the database when reported through the website

Certificates are generated electronically and there are a number of templates that can be used as backgrounds for the certificates. Customised templates can be made for any project such as the Rocky Barra Bounty. This year a new template was added for the Boyne Tannum Hookup as shown in *figure 24*.

The methods of reporting recaptures have changed significantly. *Figure 25* shows how recaptures were reported over the last 15 years from 2000-2015. While reporting through the 1800 toll free number remains the most used method this has fallen from 57.7% in 2000-2005 to 46.2% in 2010-2015. However, this year the website has just taken over from the 1800 number with 37.4% of recaptures reported compared with 37.1% through the 1800 number.

Reporting through the website, etrip forms and email collectively has increased from 11.3% in 2000-2005 to 42.3% in 2010-2015. Reporting through trips sheets, fax and mail collectively has fallen from 14.8% in 2000-2005 to 5.8% in 2010-2015.

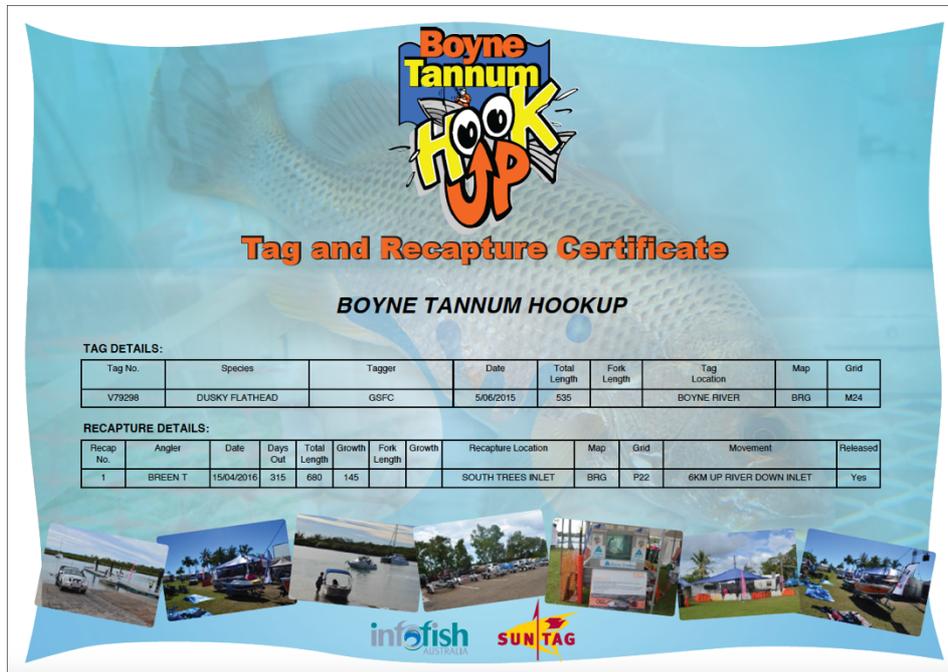


Figure 24: New Boyne Tannum Hookup tag and recapture certificate

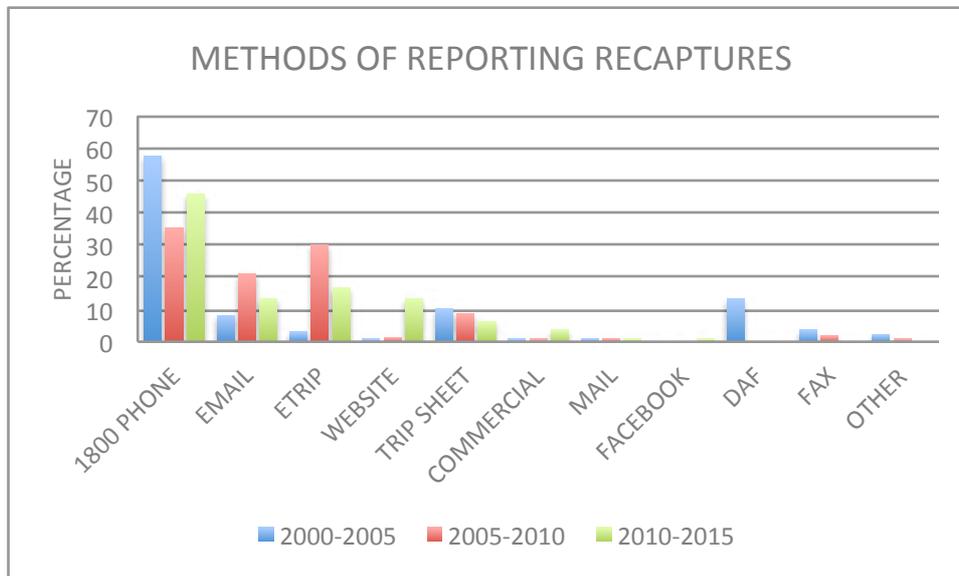


Figure 25: Methods of reporting recaptures from 1985-2015 using a 5 year time span

Rewarding Volunteer Contributions

At this stage, rewarding contributions by fishers is focused on taggers however as data collection expands it is likely that additional rewards for volunteer contributions will be developed.

This year saw the introduction of the Suntag Hall of Fame to recognise those taggers that have made significant contributions to tagging. Mick Dohnt (*figure 26*) remains the leading tagger with over 25,000 fish tagged.

The inaugural 13 inductees into the Hall of Fame were:

- ✦ Mick Dohnt (Brisbane Sportfishing Club, Moretag and Suntaggers)
- ✦ Lloyd Willmann (Southern Brisbane Sportfishing Club)
- ✦ Keith Harveyson (Townsville Sportfishing Club)
- ✦ Michael Powell (Captag)
- ✦ Daniel Powell (Captag and Suntaggers)
- ✦ Barry Oxford (Brisbane Valley Anglers Fish Stocking Association)
- ✦ Jeff Sorrell (Bribie Island Sportfishing Club, Moretag)
- ✦ Bob Dover (Kingaroy Sportfishing Club)
- ✦ Peter Stoneley (Gladstone Sportfishing Club)
- ✦ Geoff Chapman (Cairns Sportfishing Club)
- ✦ Glen Baker (Qld Sportfishers, Suntaggers)
- ✦ Alan Dolan (Lively Lures)
- ✦ Bill Sawynok (Captag)



Figure 26: Mick Dohnt enters the Suntag Hall of Fame

Suntag provides a number of awards to recognise the efforts of its top taggers. These awards are important in providing recognition for the contribution of individuals. The awards are:

- ✦ Tagging Excellence Award (tag a minimum number of fish for 2,000 points)
- ✦ Tagging Achievement Award (tag a minimum number of fish for 200 points)
- ✦ Frequent Tagger Award (tag a minimum of 1,000 fish)

Taggers that use Suntag Online can look up their progress towards awards. When a particular award is achieved the system sends an email to the tagger and Infofish Australia. Recipients can then log in and print their own certificates or request a certificate from Infofish Australia. They can also print certificates for old awards where the certificate was never received, lost, destroyed or damaged.

Certificates include a photo of the species for the particular award as shown in *figures 27 and 28* and are being updated as awards from Suntag Australia. For those taggers without access to Suntag Online an email is sent to Infofish Australia and the certificate can be emailed or printed and sent in the mail.

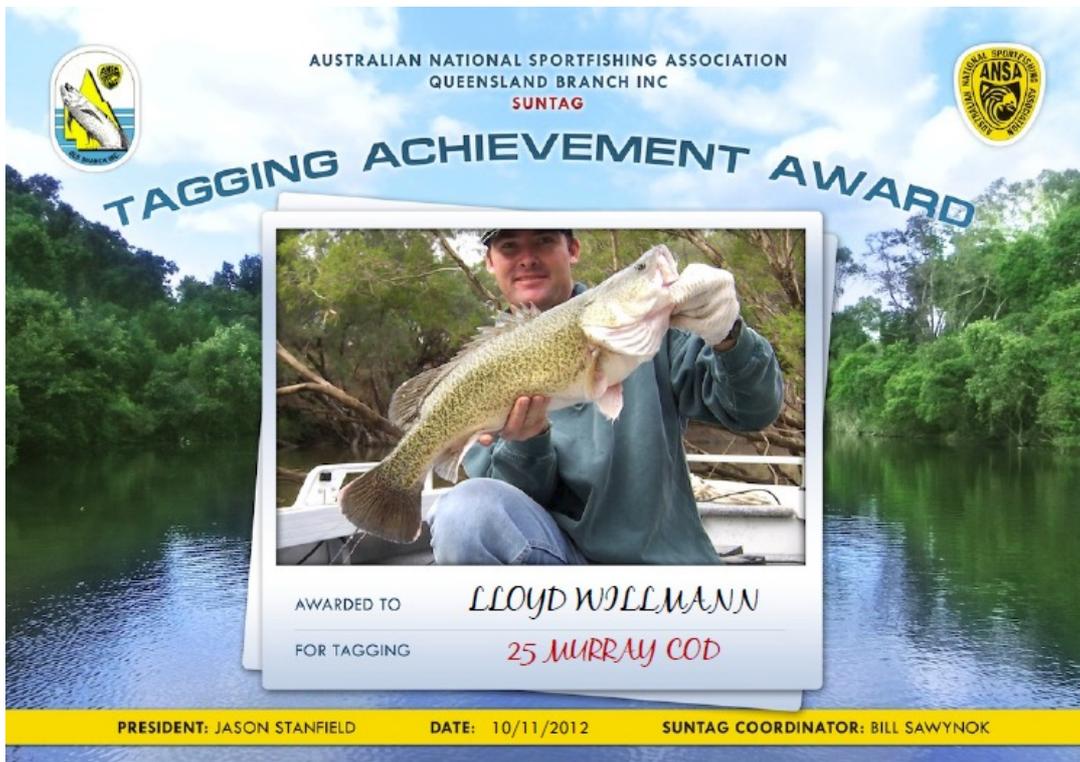


Figure 27: Tagging Achievement Award certificate introduced in 2013

In 2015/16 these are additional awards that have been achieved:

- ✦ 37 Tagging Achievement Award (42 achieved in 2014-15)
- ✦ 2 Frequent Tagger Award (3 achieved in 2014-15)
- ✦ 4 Tagging Excellence Award (3 achieved in 2014-15)

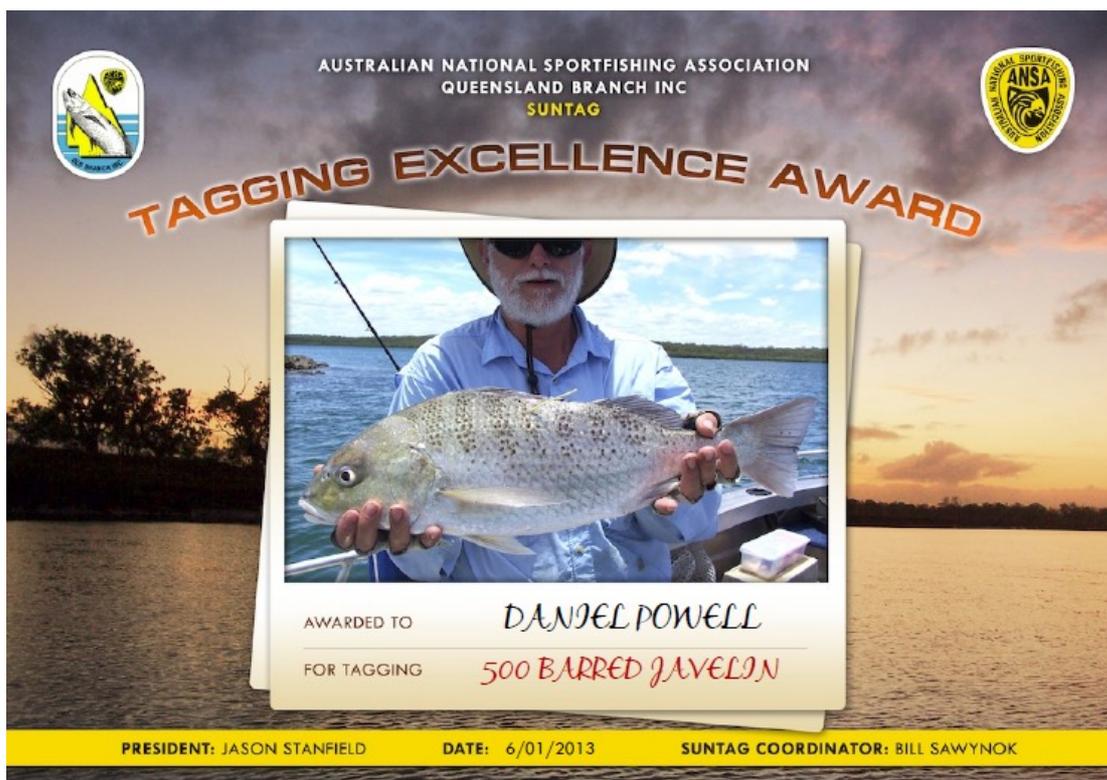


Figure 28: Tagging Excellence Award Certificate introduced in 2013

Training and Accreditation

Training and accreditation are currently limited to tagging but as data collection expands it is likely that these elements will also be expanded.

Training videos, as shown in *figure 29*, on how to tag fish are available from the Suntaggers website www.suntaggers.com.au.

Last year saw the introduction of Suntag Training Online. Training of taggers has always posed significant challenges given the limited funding available and the geographic spread of taggers. There are now 47 accredited taggers and that number will grow.

A 3 step accreditation process allows taggers to gain basic accreditation (*figure 30*). The process involves:

- ✦ A Personal Tagging Plan
- ✦ A number of available courses on the tagging process requiring tests to be passed
- ✦ Submission of 3 photos of tagged fish

All taggers that complete the process successfully become Accredited Suntaggers and are issued with an accreditation card. The training module will be added to for specialised tagging and refined as feedback is received.



Figure 29: Video clips on tagging available through SunTag website

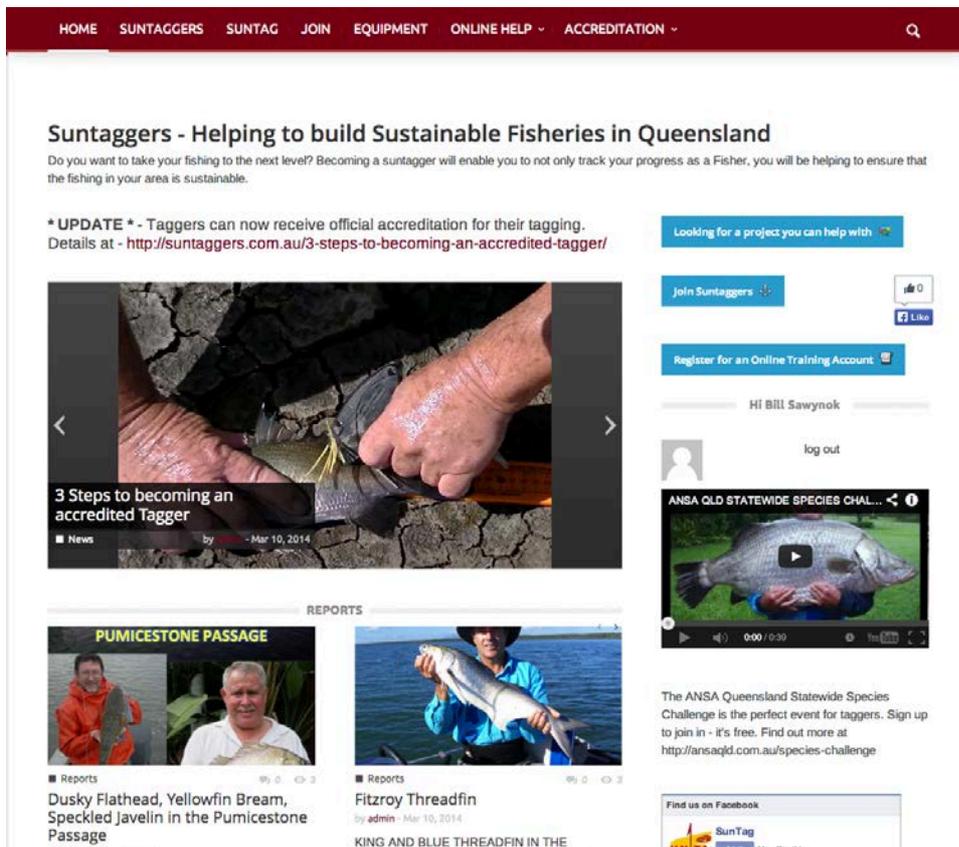


Figure 30: SunTag accreditation available through online training

Equipping our volunteers

At this stage equipment provided to our volunteers is tagging related however as data collection expands this will also likely expand.

Tags used in Suntag are Hallprint tags obtained from Hallprint Pty Ltd of South Australia. The long-standing support of David Hall of Hallprint for Suntag is acknowledged. The two types of tags most commonly used in Suntag programs are the dart or spear tag and the anchor or gun tag (*figure 31*). Both these tags are used in a number of sizes.

The durability of these tags is demonstrated by recaptures of fish up to 20 years after tagging and having the number still able to be read.

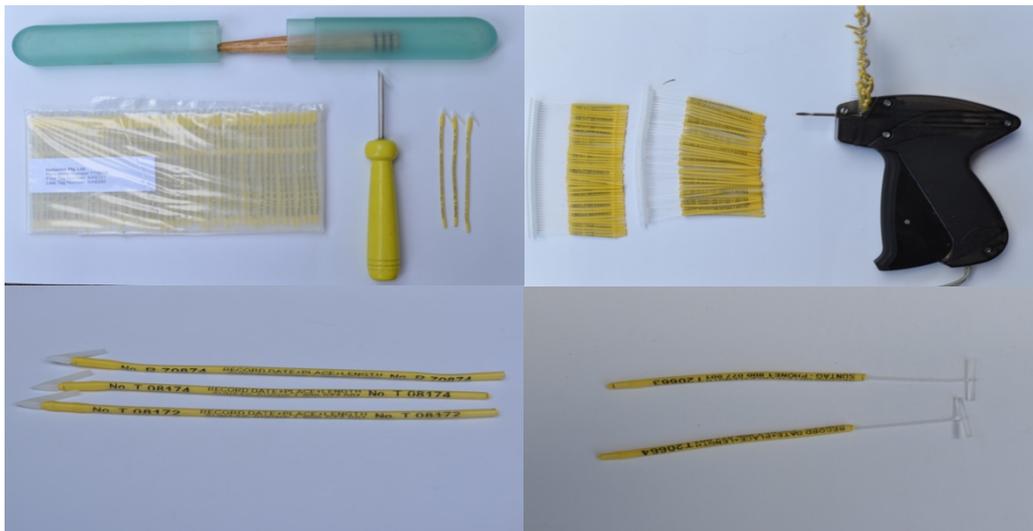


Figure 31: Tags and tagging equipment used in Suntag

A full range of tagging equipment is available from the Suntaggers Shop and can be purchased at the same time as joining Suntaggers. All the equipment required to tag is available including starter kits, tag applicators, record books, measuring rulers and other ancillary equipment. The shop includes a secure payment method for online purchases. *Figure 32* shows a part of the Suntaggers Shop.

JOIN SUNTAGGERS

Note: New Suntaggers will need equipment as well as a membership.

Be sure to add the Starter Kit that best suits your order. Gun Kits are suitable for all fish over 20cm including freshwater. Standard Kits are for fish over 30cm preferably in the salt.



SUNTAG GUN STARTER KIT

\$85.00

ADD TO CART



SUNTAG STANDARD STARTER KIT

\$45.00

ADD TO CART



SUNTAGGERS MEMBERSHIP - ADULT

\$75.00 / year

SIGN UP NOW



SUNTAGGERS MEMBERSHIP - JUNIOR

\$30.00 / year

SIGN UP NOW



SUNTAGGERS MEMBERSHIP - STUDENT



SUNTAG STANDARD STARTER KIT

\$45.00

Suitable for fish over 30cm (not freshwater)

In stock

- 1 +

ADD TO CART

SKU: STK-01 Categories: Kits, Membership

Description Reviews (0)

PRODUCT DESCRIPTION

Suitable for fish over 30cm (not freshwater)

Suntag Starter Kit includes an information pack, applicator, waterproof tag record book, pen and 80cm ruler – for participants in Suntag only.

Figure 32: Suntaggers Shop allows membership registration and easy purchase of tagging equipment and accessories

Leading edge technology

Strategy 4: Use leading edge technology to empower the community with knowledge

Strategy tools (applying technology)

Suntag database

Suntag Online

Infofish-Suntag maps

Trackmyfish

Crystal Bowl dashboards

Technology partnerships

Suntag 2016 Database

The Infofish 2016 online database is the central hub for the collection and storage of a range of fisheries data through Suntag and Infofish Citizen Science projects. The database is located at <http://qld.info-fish.net/infofish> and requires a secure login for access. *Figure 33* shows the login page for the database.

Some of the features of the database are:

- ✦ Built using industrial strength database tools
- ✦ Uses data standards where available (eg standard fish names)
- ✦ Tagging Manual to Quality Assurance documentation standards (needs updating)
- ✦ Online access from anywhere in the world with data contributors (taggers/researchers) able to securely access their own data online (read only)
- ✦ Database linked to Google Earth to allow easy and near real time visualisation of data
- ✦ Photographs and video stored along with text data
- ✦ Recaptures can be lodged online through the Suntag website with instant feedback on the fish direct from the database
- ✦ Tagging and other data can be lodged online or via email with over 95% of data now lodged electronically
- ✦ Incorporation of recruitment survey data in 2015 including site details and photographs

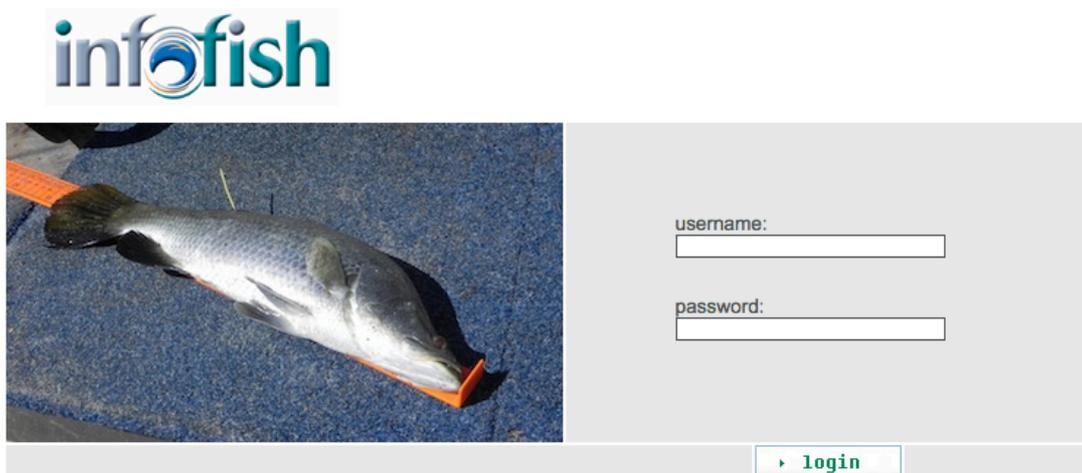


Figure 33: Suntag 2016 login page

Suntag Online

Suntag Online provides access to the database (currently Infotish 2016) and allows taggers to view and monitor their own tagging records and progress towards tagging awards. Access is through a secure login and password. Access is read only to prevent unauthorised changes to be made to the data.

It has been extremely successful in that there are now 500 registered users of Suntag Online. When taggers log in, they are provided with the top 10 taggers for the month, top 20 taggers for the year, top species tagged for the year and recaptures for the month (*figure 34*). This is automatically updated each time they log in and allows them to keep track of their own and the program's progress.

Administration	New Email	ANSA	FRDC	Infotish	Releasefish	Log Off				
Home	TOP TEN TAGGERS THIS MONTH									
User Groups	Fisher	Total Caught			Total Length (m)					
User Details	BAKER G	8				2.4				
Tag Series	ARNOLD C	7				2.3				
Tag Issues	ARNOLD P	6				2.2				
Tags	THOMAS R	6				1.8				
Species	HUTH B	5				2.3				
Tagging Zones	POWELL D	4				1.7				
Recruitment Sites	DOHNT M	4				1.2				
Media	COBB R	3				0.9				
	SAWYNOK W	1				0.3				
	BAKER L	1				0.2				
Research										
Projects	TOP TWENTY TAGGERS THIS YEAR									
Competitions	Fish	Total Caught			Total Length (m)					
Trip Sheets	CAFSG	911				228.5				
Pending List	FRFSG	532				140.3				
Catch Details	THOMPSON E	449				210				
New Recaptures	OXFORD B	389				142.2				
Recaptures	MRFSA	341				54.2				
Trip Details	POWELL D	292				127.4				
	MARIEN T	289				152.1				
	PEARCE D	278				111.3				
Reports	VESEL T	231				88.4				
Fishery Analysis	LATIMER E	222				117.3				
Frequent Taggers	POWELL M	200				97.2				
TAA	KENNEDY A	194				69.6				
TEA	STRAITFORD N	188				57.8				
Measures	GREGORY S	177				74.3				
Export Data	WOLHUTER S	167				97.7				
Adhoc Certificates	HARVEYSON K	155				34.2				
	MORGAN S	152				70.5				
	MURPHY PT	152				52.2				
	STEWART A	149				52.7				
	ROYLE A	145				43.8				
	TOP SPECIES THIS YEAR									
Species		Total Caught			Total Length (m)					
BARRAMUNDI		4355				1767.4				
AUSTRALIAN BASS		1504				537.4				
BUSKY FLATHEAD		737				319.8				
KING THREADFIN		477				345.2				
PIKEY BREAM		417				97.6				
SNAPPER		412				141.1				
YELLOWFIN BREAM		402				103.4				
BARRED JAVELIN		397				134.2				
MANGROVE JACK		333				112				
GOLDSPOTTED ROCKCOD		308				105.3				
BLUE THREADFIN		252				119.5				
REDTHROAT EMPEROR		199				72.3				
GOLDEN PERCH		195				81.5				
MULLOWAY		171				118.9				
GOLDEN SNAPPER		144				59.2				
RED EMPEROR		142				53.6				
GIANT TREVALLY		115				45.8				
BLACKSPOTTED ROCKCOD		110				34.5				
GRASS EMPEROR		107				32.3				
MUD CRAB		70				10.1				
	RECAPTURES THIS MONTH									
Tag	Fisher	Species	Date	TL	Movement	Growth	Location	Map	Grid	Distance
V4949	GREATOROX S	RED EMPEROR	1/01/2015	300	RECAPTURED SAME AREA	0	PEEL ISLAND	M92	Z26	0
V49410	GREATOROX S	MARIE ROCKCOD	1/01/2015	340	RECAPTURED SAME AREA	0	PEEL ISLAND	M92	Z26	0
R92520	PEARCE D	AUSTRALIAN BASS	1/01/2015	380	UP LAKE	30	LAKE SAMSONVALE	NPD	D481	1
U5912	PEARCE D	AUSTRALIAN BASS	1/01/2015	300	UP LAKE	20	LAKE SAMSONVALE	NPD	D481	1
R92525	DOHNT M	AUSTRALIAN BASS	1/01/2015	300	UP LAKE	10	LAKE SAMSONVALE	NPD	D481	1
V18582	OSTER C	MARY RIVER COD	2/01/2015	590	RECAPTURED SAME AREA	110	TINANA CREEK	BTC	K27	0

Figure 34: Initial screen when logged onto Suntag 2016

Fish Identification

To assist with fish identification of species that are recorded in the database images have been made available by Graham Cumming. These images have been included in the database and are also available on the Suntag website. *Figure 35* shows some of the images in the database and *figure 36* shows the images on the website.

Administration													
		New Email	ANSA	FRDC	Infofish	Releasefish	Log Off						
Home	Species												
User Groups	Species												
User Details				Short Name	Image		Action						
Contact													
Tag Series													
Tag Issues													
Tags													
Species	AUSTRALIAN BASS			AB			View Image Delete						
Mapping Zones													
Recruitment Sites													
Media													
Research													
Projects													
Competitions													
Trip Sheets													
Pending List													
Catch Details													
New Recapture							BARCHEEK CORAL TROUT			BCT			View Image Delete
Recaptures													
Trip Details													
Reports													
Fishery Analysis													
Frequent Taggers													
TAA													
TEA													
Masters													
Export Data													
Adhoc Certificate	BARRAMUNDI			B			View Image Delete						

Figure 35: Species images in the Infofish 2015 database

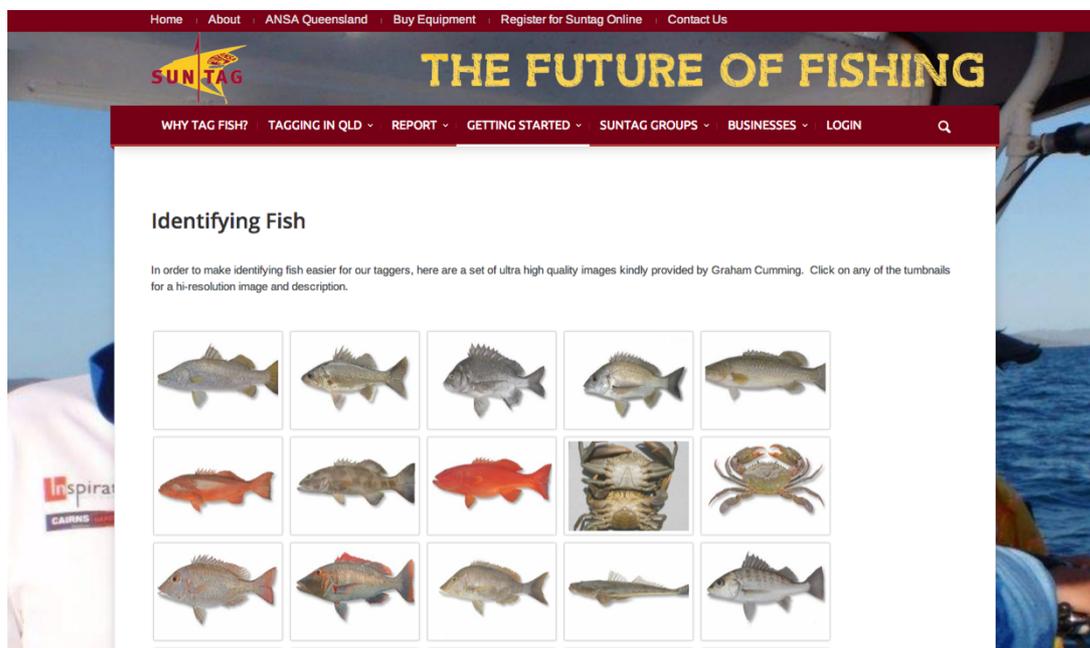


Figure 36: Species images on the Suntag website

Storing images in database

Storing images along with the textual data was added in 2011/12. This provides an additional pictorial record to the other data.

Photos in the database have been used to track the health of fish in the Gladstone region following fish health issues identified there in 2011. Taggers have been taking photos of tagged and recaptured Barramundi to monitor the extent of lesions and other visible health related issues.

In 2015 the ability to store a second image of a tagged fish was added to the database allowing for a brag shot to be included along with a photo of the fish on a measuring ruler.

There are now 3,700 images (460 added in 2015-16) of tagged fish and 300 images (90 added in 2015-16) of recaptured fish. *Figure 37* shows a sample of images of tagged fish stored in the database.

Tracking

Competition:	<input type="text"/>	Latitude Act:	Number	Latitude Act for location where fish caught with south latitude being negative eg -23.23.567
Location:	<input type="text"/>	Longitude Act:	Number	Longitude Act for location where fish caught with east longitude being positive eg 153.24.456
Latitude Act:	<input type="text"/>	Latitude Summary:	Number	Latitude Summary for location where fish caught with south latitude being negative eg -23.23.567
Longitude Act:	<input type="text"/>	Longitude Summary:	Number	Longitude Summary for location where fish caught with east longitude being positive eg 153.24.456
Latitude Summary:	<input type="text" value="-23.5211978333333"/>	Description:	Description	Tag description on competition
Longitude Summary:	<input type="text" value="150.995471"/>	Video:	URL	Link to video source eg http://www.youtube.com/
Description:	<input type="text"/>			
Image:				
Second Image:				
Video:	<input type="text"/>			

Figure 37: Images of individual tagged or recaptured fish in the database

Recruitment Survey Data

Infofish started collecting data on fish recruitment (primarily Barramundi) in Central Queensland in 1999. With the development of the Crystal Bowl to predict fish stocks and the development of report cards on the health of waterways understanding recruitment has become more important. Recruitment survey data are now incorporated into Infofish 2016 bringing all recruitment data together.

Fish recorded during recruitment surveys are now stored in the tag table allowing easier analysis and integration with other data. Data on the survey sites is also stored and includes photos of the site and a site map so that all details of the site are stored in the one location. This year additional fields were added to the table to record additional site details including substrate description, vegetation and depth.

Figure 38 shows site details of 12 Mile Creek in Central Queensland that is used as a benchmark site for Barramundi recruitment.

Administration		Site	
Home	Site Id:	4	
User Groups	Site Name:	12 MILE CREEK	
User Details	Waterway:	INKERMAN CREEK	
Contact	Sub-Region:		
Tag Series	Map:	RAG	
Tag Issues	Grid:	N11	
Tags	Lat:	-23.677	
Species	Long:	150.753	
Mapping Zones	Tidal Influence:	Intermittent Tidal ±	
Recruitment Sites	Depth:	3	
Media	Access:	Land ±	
	Distance to Mouth:		
Projects	Substrate:	<input type="checkbox"/> Sand <input checked="" type="checkbox"/> Mud <input type="checkbox"/> Gravel <input type="checkbox"/> Rock	
Competitions	Description	Hole at top end of tidal limit of 12 Mile Creek/only king tides reach the hole	
Trip Sheets	Vegetation		
Pending List	Image:		
Catch Details	Second Image:		
New Recaptures			
Recaptures			
Trip Details			
Reports			
Fishery Analysis			
Frequent Taggers			
YAA			
YEA			
Members			
Export Data			
Adhoc Certificate			

Figure 38: Details of recruitment survey sites recorded in the database

Infofish Maps

Infofish introduced a mapping system in the early days of Suntag to allow locations where fish were tagged or recaptured to be recorded based on a map and grid. Grids were mostly 1km² while some were 2km². This allowed fine scale locations to be recorded without giving away “secret spots”.

Maps were originally produced using MapInfo GIS software and were later transferred to Google Earth. There are now over 300 maps in use and these are available from the Suntag website in Google Earth format or as a pdf. *Figure 39* is the map of the Fitzroy River both as a pdf and in Google Earth. This allows spatial analysis of the data at a fine or aggregate scale as required.

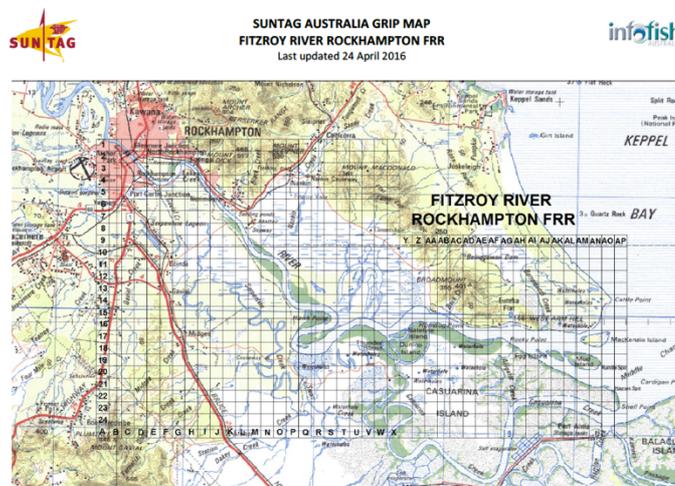


Figure 39: Tagging grid maps of the Fitzroy River in pdf and Google Earth format

Trackmyfish

With the ever increasing use of mobile phones for a range of new uses Infofish has invested in the development of a phone app to collect a broader range of fish catch data from more recreational fishers. The app was developed in conjunction with the App Team based on the Sunshine Coast.

The app can capture tag details or details of fish caught and is based around taking a photo of a fish. The app can be used even when there is no mobile reception as it stores the data until it is in service and then automatically uploads the data to the database. *Figure 40* shows the login screen of the app.

A competition version of the app is also being developed and will be trailed later in the year through the ABT Tournaments and Rocky Barra Bounty.

The app will allow significantly more data to be collected from a broader range of fishers and from a broader range of geographic locations including in other states besides Queensland and potentially overseas as well.

The trackmyfish app was released at the end of 2015/16. A Trackmyfish website has also been established at www.trackmy.fish.

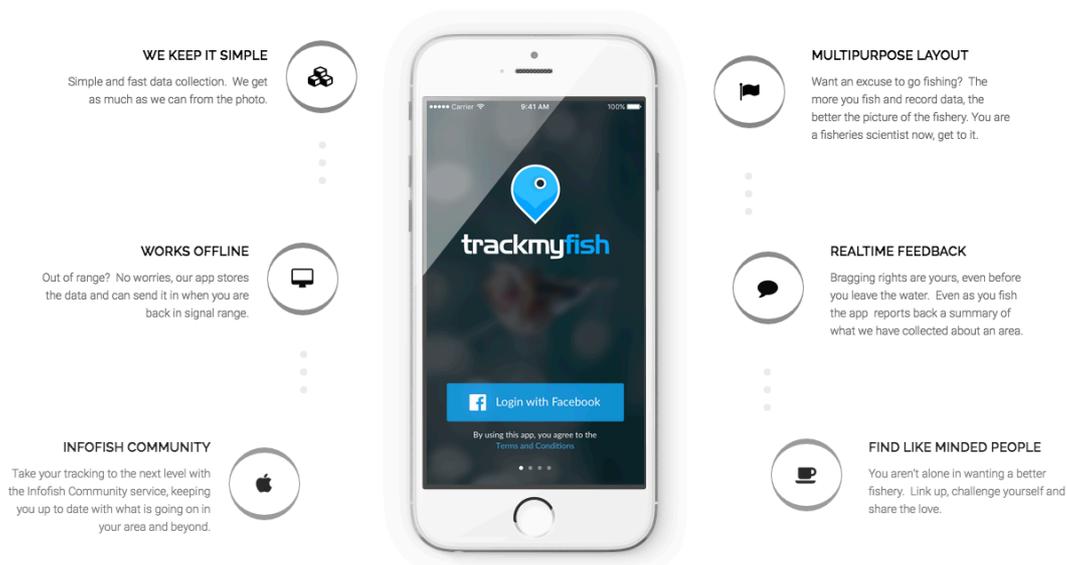


Figure 40: Trackmyfish app set to improve and increase data collection

Crystal Bowl real time tracking

This year saw the introduction of real time monitoring through the use of Periscope data technology. This allows dashboards to be set up through the Crystal Bowl website and elsewhere to reflect data in the Infofish-Suntag database. This provides an additional powerful tool for the presentation of information.

Figure 41 shows the dashboard set up for the Lake Samsonvale Monitoring Days held in Jun 2016. This shows the versatility of portraying the data in the database especially when used in combination with Trackmyfish.

Lake Samsonvale Monitoring Days

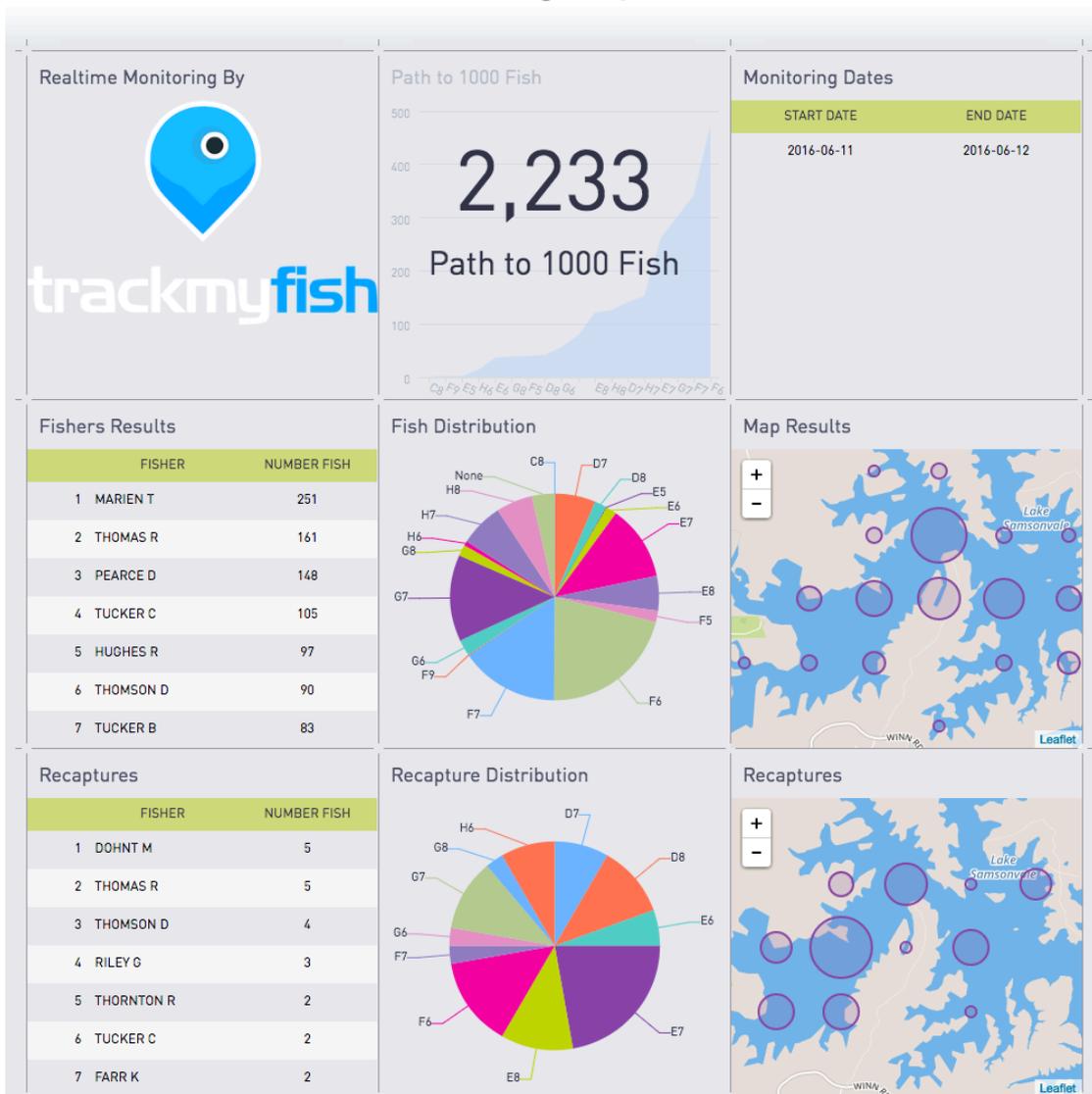


Figure 41: Periscope dashboard set up for data collected during the Lake Samsonvale Monitoring Days

Technology partnerships

Every so often a new piece of technology comes along that makes a big change in how we see the world. Insight Genesis is one such technology.

Suntag tagging maps use grids of 1km² partly because in estuaries smaller than that is not very meaningful but also to ensure that specific fishing spots are not published. In impoundments however that big brush masks how the fish use the space available to them.

Enter Insight Genesis from Navico, makers of Lowrance. Insight Genesis is a technology that combines the individual sounding data of fishers and boating enthusiasts into an underwater topographical map.

Using data from Lake Somerset combined with even a crude cut and paste of the Insight Genesis community map the tagging data makes a lot more sense as shown in *figure 42*. What it shows is the way in which the fish stick to the old riverbed. Regular fishers at Somerset were not surprised but getting a very visual confirmation that the environment and tagging data line up is a first.

Infofish continues to work with Insight Genesis collecting data on Lake Somerset.

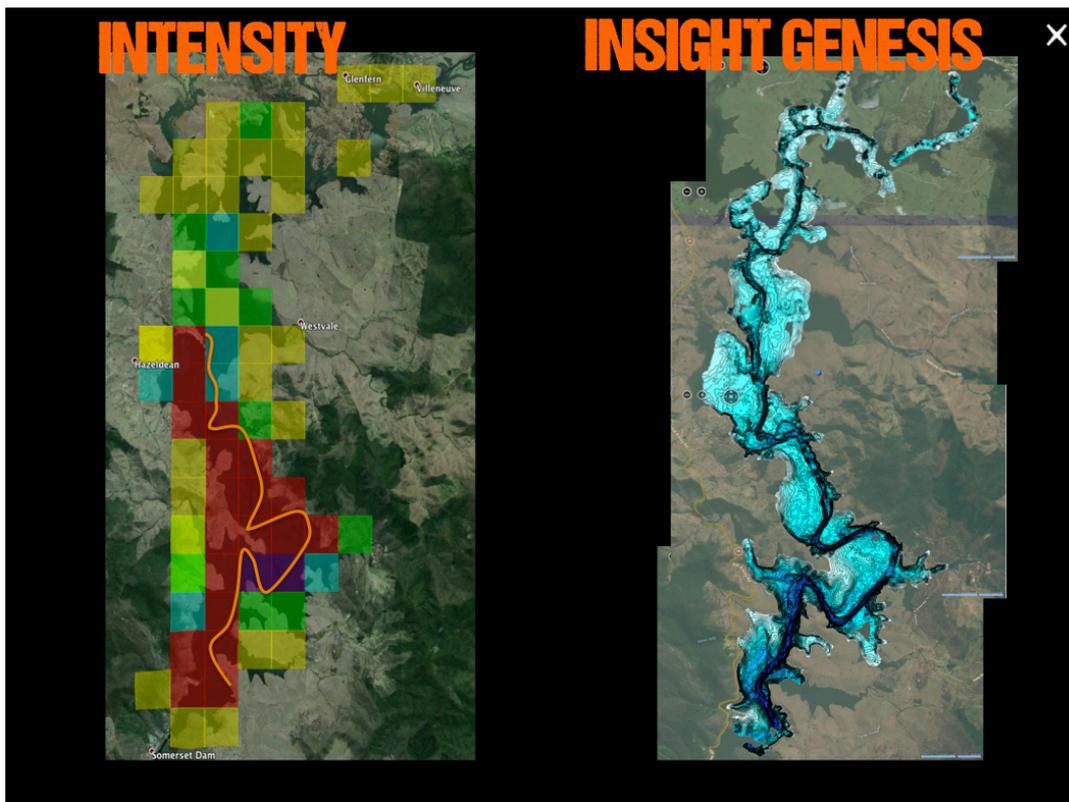


Figure 42: Tagging data in Lake Somerset matches bottom mapping by Insight Genesis

Suntag in 2015-16



Suntag Highlights 2015-16¹

- ✦ The establishment of Suntag Australia Inc is the most significant change in Suntag in the past decade
- ✦ Total fish and crab records in the database now exceed 1.2 million records with 765,000 tagged fish and 60,000 recaptures
- ✦ A total of over 9,750 taggers (570 this year) have now participated in Suntag and 17,400 fishers have reported the recapture of a tagged fish
- ✦ 111 Frequent taggers account for 309,500 (40%) of the total number of fish tagged while the remaining 9,600 taggers account for 317,000 (41%) of the fish tagged
- ✦ Mick Dohnt remains the top tagger overall having tagged a total of over 25,000 fish or 3.3% of the total fish tagged
- ✦ Fish stocking groups account for 101,300 (13%) of the fish tagged and researchers 40,000 (5%)
- ✦ Infofish recruitment surveys are now fully integrated into the database with 925 surveys and 58,300 fish recorded
- ✦ Fishing trips with catch and effort details now total 46,500 (3,500 this year)
- ✦ Barramundi is the most tagged species with 256,200 tagged and 18,600 recaptured (over 22,000 including multiple recaptures)
- ✦ The overall recapture rate for fish, excluding crabs was 6.5% with a 5.6% recapture rate for 2015-16
- ✦ The release rate of recaptured fish for the past 9 years was over 60% and over 70% in 2014-15 and 2015-16
- ✦ The released rate of legal sized fish by recreational fishers (excluding taggers) now exceeds 40% for Barramundi, Dusky Flathead and Mangrove Jack and over 70% for Australian Bass

Suntag Background

Suntag commenced in 1986-87 as the Sportfish Tagging Program under ANSAQ to obtain movement and growth of key recreational species. In the mid-1990s it became Suntag has been managed by Infofish since 1995. Over its 30 years it has grown to be one of the largest fisheries' databases in the world where data have been mostly collected by volunteers.

Suntag is now the primary repository of tagging data in Queensland for tagging carried out by Suntag taggers, QDAF researchers, fish stocking groups, government and community monitoring programs and some research institutions and universities.

¹ All figures to 30 June 2016

Infofish and Suntag now have a substantial dataset spanning a 30 years timeline and data have been used for a wide range of purposes including:

- ✦ Growth and movement
- ✦ Marine park planning
- ✦ Stock assessments
- ✦ Fish survival
- ✦ Monitoring stocked fish
- ✦ Environmental impact assessments
- ✦ Real time monitoring
- ✦ Ecosystem modelling
- ✦ Stock predictions
- ✦ Climate change
- ✦ Assessing recruitment
- ✦ Ecosystem and fish health
- ✦ Assessing local/regional fishing
- ✦ Impact of changes to regulations

Fish in Suntag Database

The Suntag database passed its most significant milestone with over 1 million fish and crab records in the database in 2013. Current statistics (added in 2015-16):

- ✦ 1,200,000 fish records (44,000)
- ✦ 765,000 tagged fish (27,300)
- ✦ 60,000 recaptures (1,500)
- ✦ 46,500 fishing trips with catch and effort (3,500)
- ✦ 318,000 other fish from catch records (30,200)
- ✦ 925 recruitment surveys (155)
- ✦ 58,300 fish from recruitment surveys (11,000)
- ✦ 3,700 photographs of tagged and recaptured fish (700)

Total fish added to the database each year is shown in *figure 43*. Fish from Infofish recruitment surveys were added to the database this year. The most fish were added to the database in 2007-08 when 108,170 fish were added.

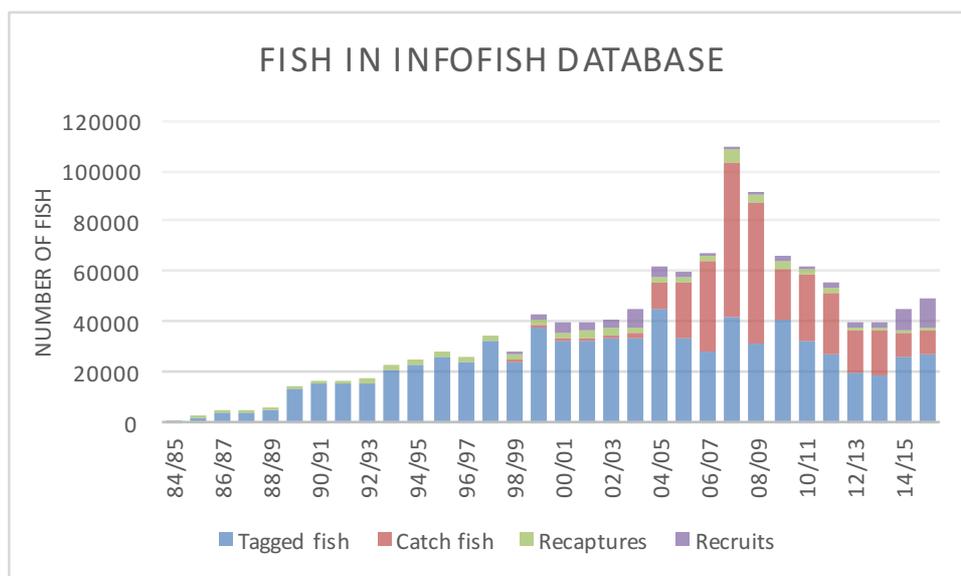


Figure 43: Total fish added to database each year from 1986-87 to 2015-16

Suntag Participation

Numbers participating in Suntag are shown in *figure 44*. A total of 9,750 taggers have now participated in Suntag having tagged fish since 1986-87. In 2015-16 there were 570 fishers that tagged at least one fish. A total of over 17,400 fishers have participated in Suntag though reporting the recapture of a tagged fish.

In 2015-16 there were over 1,000 fishers that reported the recapture of a tagged fish with many fishers recapturing more than one fish. A total of over 1,760 fishers contributed data to Suntag this year through tagging fish, reporting recaptures and catches.

The steady decline in fishers tagging from 2001-02 to 2008-09 reflected a general decline in participation in recreational fishing and a fall in fishing club numbers. Numbers participating in Suntag peaked from 1995-96 to 2001-02 when around 1,000 taggers tagged fish each year. This steadily declined to around 600 in 2008-09 and since then has fluctuated around 600.

The increased level in participation, from 2008-2012 is likely to be a result of the significant improvements in Suntag services over those years. The drop in 2012-13 was a result of the disruption caused by the loss of funding that year. While numbers participating have remained steady over the past few years the number of fish tagged has increased.

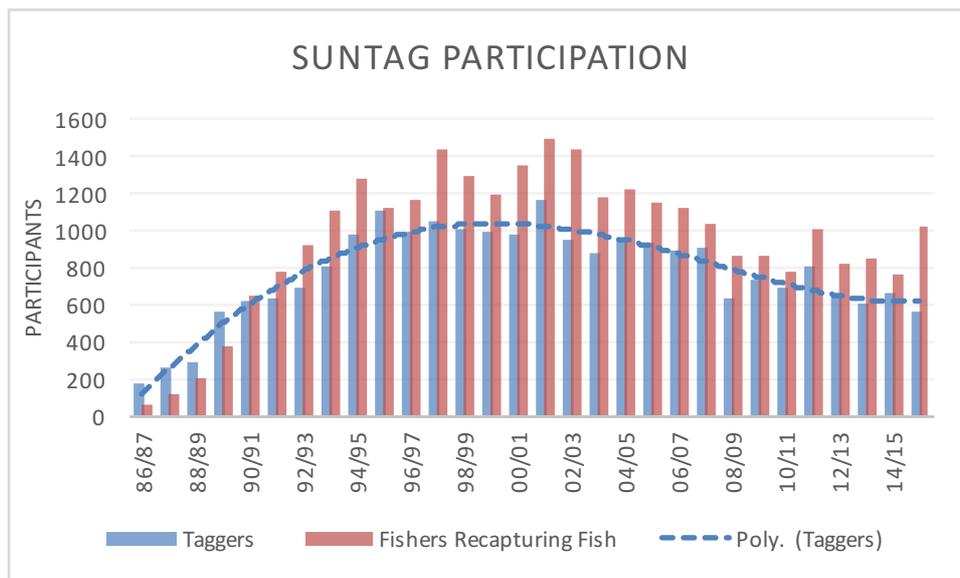


Figure 44: Summary of participation in Suntag from 1986-87 to 2015-16

Fish Tagged and Recaptured

Figure 45 shows the number of fish tagged and recaptured each year since 1986-87. In 2015-16 there were 27,000 fish tagged and 1,650 recaptures (including multiple recaptures) recorded. Since 1999-2000 there were over 25,000 fish tagged in each year except 2012-13 and 2013-14. The drop in numbers tagged in those years was mostly due to the significant reduction in funding that occurred in 2012-13. Numbers for this year will increase as late data are received and the total will exceed 28,000.

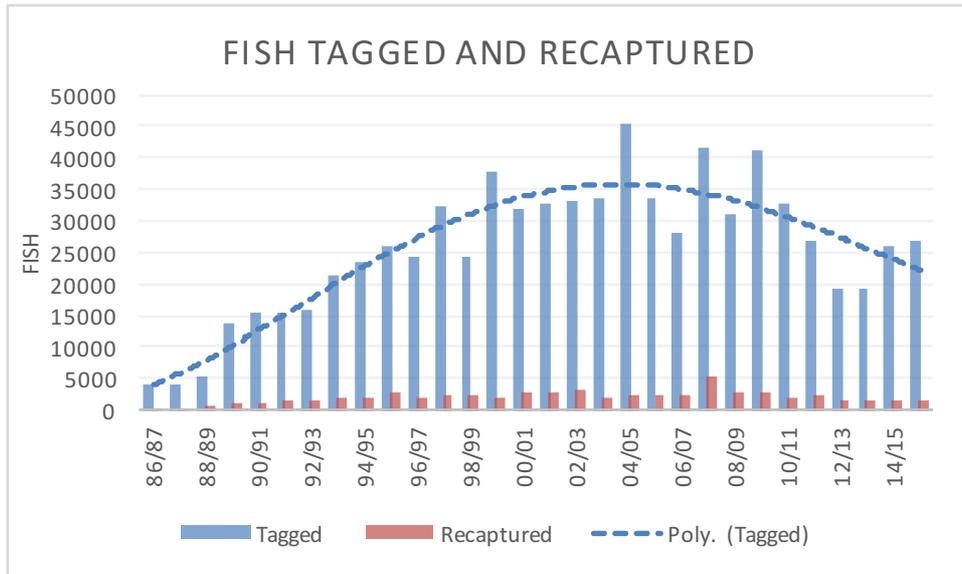


Figure 45: Fish tagged and recaptured each year from 1986-87 to 2015-16

Categories of taggers

Figure 46 shows the categories of taggers that have tagged fish. These are:

- ✦ Frequent taggers (tagged over 1,000 fish)
- ✦ Other Suntag taggers (tagged at least 1 fish)
- ✦ Fish stocking groups
- ✦ Researchers (QDAF and others)

Just 111 Frequent Taggers account for 309,500 (41%) of the total number of fish tagged while the remaining 9,600 taggers account for 317,000 (41%). Fish stocking groups have tagged 101,300 (13%) and researchers 40,000 (5%).

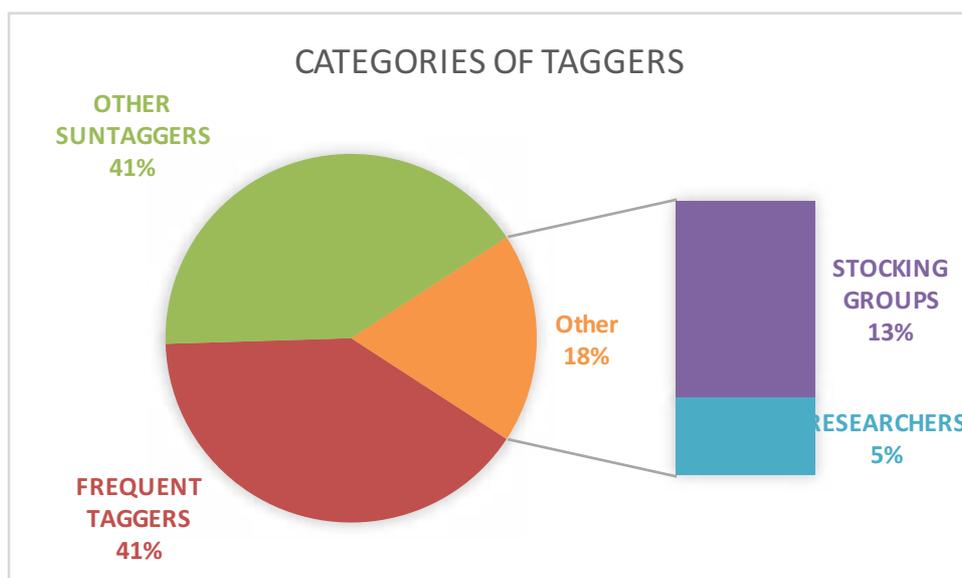


Figure 46: Categories of tagger participation in Suntag based on the total numbers of fish tagged

Suntag Key Species Tagged and Recapture Rates

Barramundi remains the most tagged species and was the first species where over 200,000 fish were tagged. The total number of Barramundi tagged is now 256,200 with 18,600 recaptures of individual fish and 22,000 total including multiple recaptures. Numbers of Barramundi tagged were significantly boosted from 2004-2010 when fish stocking groups released large numbers of tagged Barramundi into impoundments and waterways. The overall recapture rate for Barramundi recaptured once is 7.3% however is as high as 16.9% in the Fitzroy River estuary and 19.4% in 12 Mile Creek in Central Queensland.

Australian Bass is the second most tagged species with 73,800 tagged and 5,400 recaptured once and a recapture rate of 7.3%. *Figure 47* shows the number of the top 19 species with over 5,000 tagged with the corresponding recapture rate.

While many fish are recaptures several times the recapture rate here is based only on a single recapture of each fish. Species with over 5,000 fish tagged that have recapture rates above the average 6.8% include Dusky Flathead (8.3%), Goldspotted Rockcod (9.9%), Golden Perch (7.9%), Mud Crab (14.4%), Red Emperor (12.1%) and Blackspotted Rockcod (11.9%).

Species with recapture rates below 5% include Yellowfin Bream (3.8%), Barred Javelin (2.6%), Pikey Bream (4.7%), Speckled Javelin (2.1%), Giant Trevally (3.7%) and School Mackerel at (1.9%).

Saddletail Snapper has the highest recapture rate at 13.6% of any of the fish species tagged. This result is interesting as the survival rate for released Saddletail Snapper from experimental work is 50% and one of the lowest survival rates for any species assessed. The difference most likely results from fish being tagged in shallow water (less than 20m) where barotrauma is less of an issue.

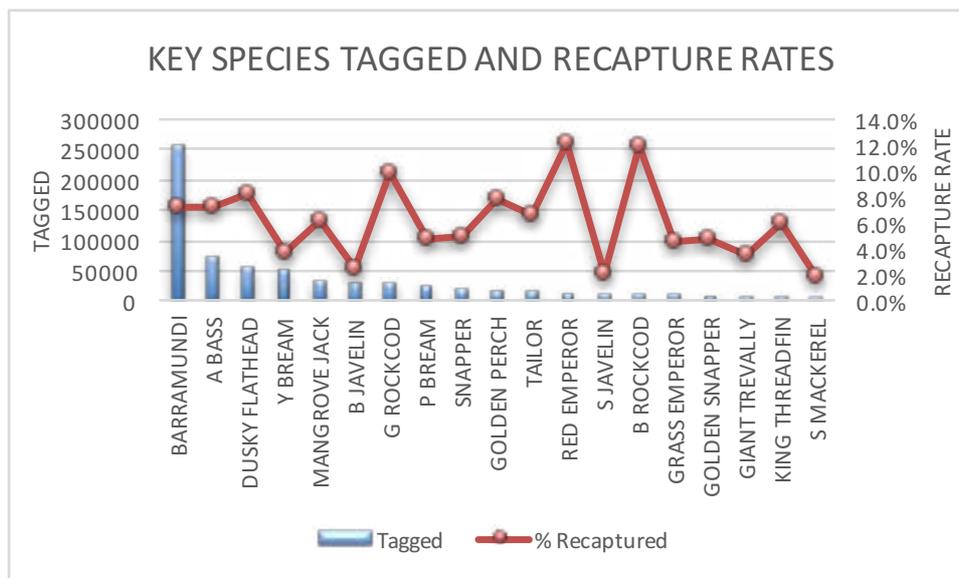


Figure 47: Total numbers of key species tagged and their recapture rate

Suntag Recapture Rate

The Suntag recapture rate has been used for a number of years as a coarse indicator of trends in fishing effort. While there are many factors that influence the recapture rate most of these are near constant from year to year or small in their effect on the recapture rate. The greatest variable is fishing effort and this can be demonstrated by comparing the recapture rate from heavily fished and remote lightly fished locations eg Barramundi recapture rate in Fitzroy River is 16.9% from 39,400 fish tagged and for Weipa is 1.6% from 37,200 fish tagged.

The recapture rate was simply calculated as the ratio of the total number of fish recaptured (once) over time compared with the total number tagged over that same time. Some data that were not typical of fishing effort were excluded.² The overall long-term recapture rate for all fish, excluding crabs, at the end of 2015-16 was 6.5%. The recapture rate for 2010-15 was 6.5% and the same as the long-term average. The recapture rate for 2015/20 has only 1 year of data and the rate was 5.6%.

Figure 48 shows the overall and 5 year recapture rates from 1985-90 to 2015-20 (part only) for all fish. This suggests that fishing effort peaked from 1990-95, fell significantly from 1995-2000 and has remained steady since then.

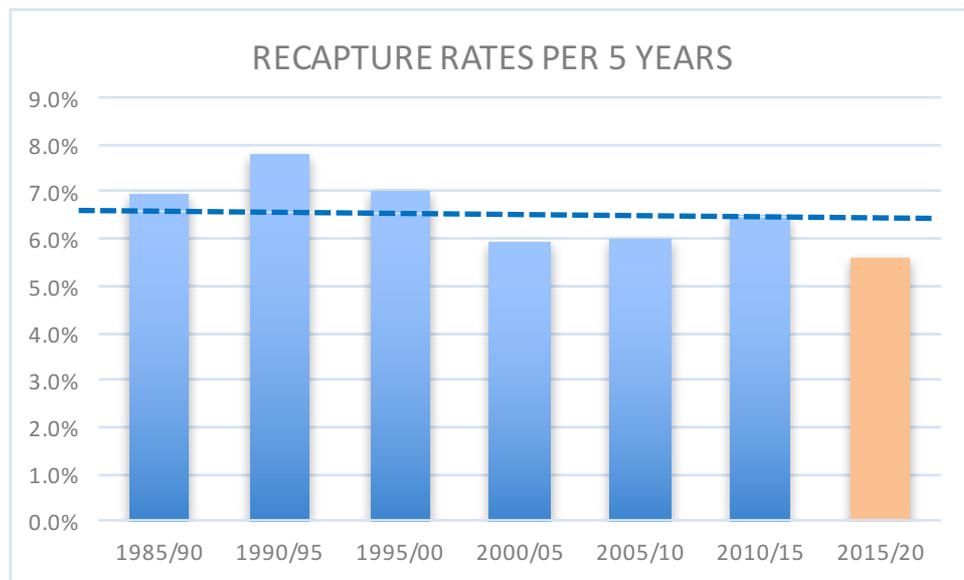


Figure 48: Recapture rate from 1985-2015 per each 5 year period

Figure 49 shows the number of participants and participation rates in recreational fishing as a percentage of the Queensland population from 1996-2014. This shows a drop in the percentage of the population participating in fishing from the mid 1990s to 2014. The trend in participation is also reflected in a reduction of fishing effort over the same time.

² Data from fish tagged in no fishing zones (green zones) in Keppel Bay in 2007-08 and 2011-12, Mud Crab and Northern Territory (McArthur River) tagging were not reflective of normal fishing effort and were excluded

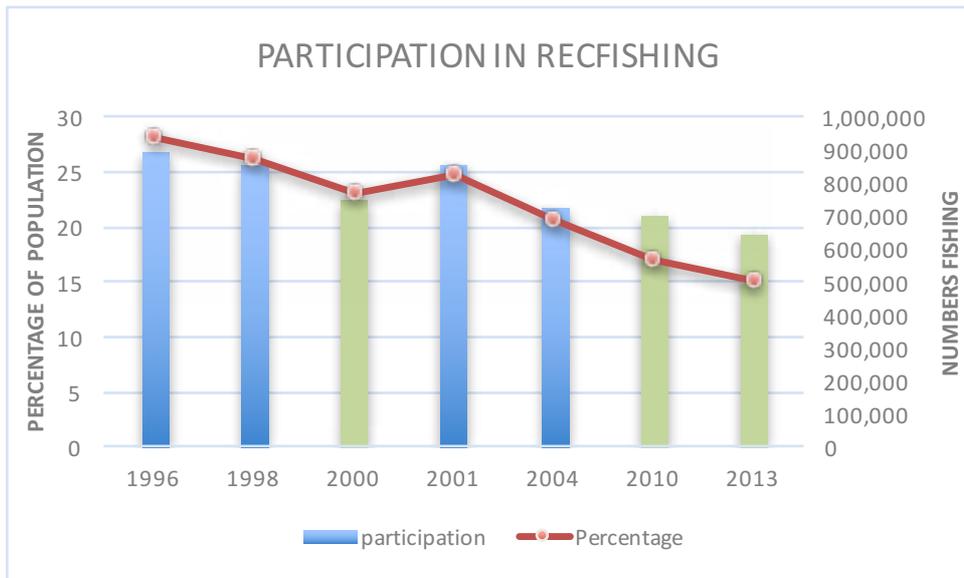


Figure 49: Participation rates in recreational fishing in Queensland from 1996-2014 - RFish surveys 1996-2004 and Statewide surveys 2000, 2010 and 2013-14

Suntag Released Fish Rate

The rate that recaptured tagged fish are released each year allows the trend in the numbers of fish released to be monitored over time. The released fish rate has been calculated by comparing the number of recaptured tagged fish that are released to the total number of recaptures each year for Suntag taggers and other recfishers (excludes Suntag taggers), however the analysis does not take into account whether the fish were of legal size or not.

Figure 50 shows the release rates for Suntag taggers and recfishers over the last 30 years. There is a clear trend among recreational fishers towards releasing more fish with the release rate for the past 12 years since 2003-04 over 60%. Suntag taggers have had a consistently high release rate of tagged fish of over 90% almost every year since 1991-92.

Figure 51 shows the release rate of recaptured legal sized Barramundi, Dusky Flathead, Australian Bass and Mangrove Jack by recfishers (excluding Suntag taggers) over the past 30 years. These were fish that could have been legally kept. For Barramundi up to 1989 the minimum legal size was 500mm, from 1989-1999 it was 550mm and then rose to 580mm. For Dusky Flathead the legal size was 300mm from 1985-2002, was 400-700mm from 2002-2009 and 400-750mm from 2009-2015. For Bass the legal length was 300mm and for Mangrove Jack was 350mm.

There is a clear trend over the 30 years with an ever-growing percentage of legal size fish being released for all 4 species. The trend for the saltwater species has followed a similar pathway over that time with the rate for each of the species exceeding 40% for the first time this year. Barramundi are leading the release rate being over 40% for the past 3 years and almost 60% this year. The release rate of legal size Bass has been considerable higher than the saltwater species and was almost 80% this year.

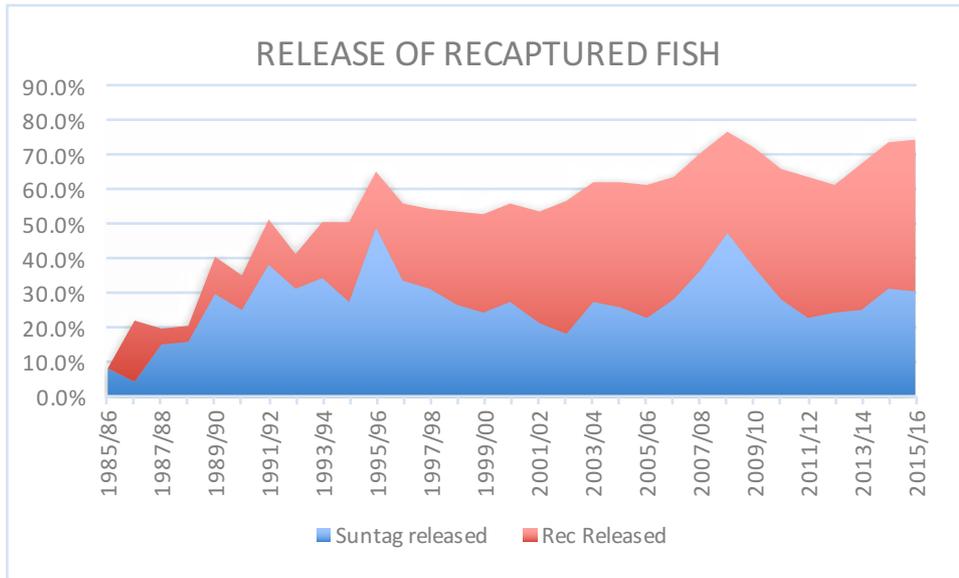


Figure 50: Percentage of recaptured tagged fish released by recreational fishers and Suntag taggers each year compared to total recaptures for both group

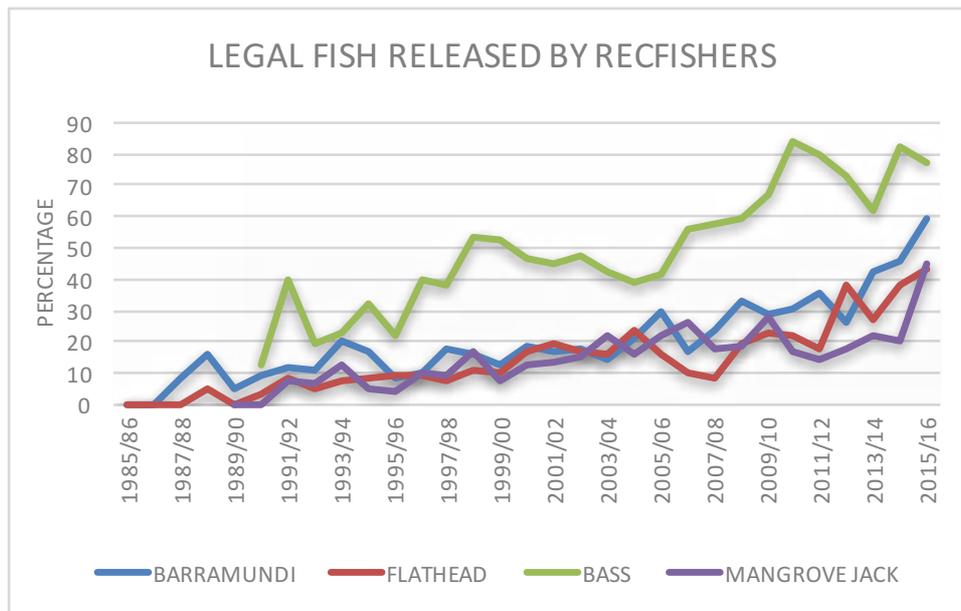


Figure 51: Trend in legal Barramundi, Flathead, Mangrove Jack and Bass recaptures released by recfishers

Support for research and monitoring projects

Infofish and Suntag provided support to a number of research and monitoring projects. That support is generally in the form of collecting tag and recapture data, catch and effort data, long-term data storage, data analysis including commercial catch and reporting.

In 2015-16 Infofish and Suntag supported the following research and monitoring projects:

- ✦ Crystal Bowl monitoring and forecasts
- ✦ Monitoring of catch in St Helens Bay to Cape Hillsborough Net Free Zone
- ✦ Monitoring in Fitzroy/Keppel Bay NFZ
- ✦ Gladstone Healthy Harbour Report Card
- ✦ Fitzroy Partnership for River Health Report Card
- ✦ Holloways Beach Environment Education Centre Mud Crab monitoring
- ✦ Monitoring of impoundments through FFSAQ and 15 stocking groups
- ✦ Pine Rivers Fish Management Association monitoring of Bass in Lake Samsonvale
- ✦ Captag monitoring in Shoalwater Bay
- ✦ Fish monitoring in Logan-Albert Rivers by SEQwater
- ✦ Catchment Solutions monitoring of Barramundi in Mackay
- ✦ Review of Tailor tag and recapture data by NSW Fisheries
- ✦ Monitoring of Threadfin and Mulloway in Brisbane River and Moreton Bay
- ✦ King Ash Bay Fishing Club monitoring of Barramundi in the McArthur River in NT
- ✦ Information to the review of Great Sandy Marine Park including tag and recapture data to the Department of National Parks, Sport and Racing and an assessment of the commercial net data for the Fraser Coast Fishing Alliance
- ✦ Forecasting Moreton Bay Prawns with Moreton Bay Seafood Industry Association

Suntag Data Requests, Reports and Scientific Publications

With the volume of data that are now in the Suntag database there are many significant datasets that are associated with specific projects. Every year there are requests for data from Suntag to be used in technical reports and scientific publications as well as reports associated with community monitoring projects. Many of those reports are produced in conjunction with other programs such as Crystal Bowl (*see Crystal Bowl section*), reports on monitoring of stocked fish (*see Stocked Fish section*) and reports on fishing competitions (*see Competition section*). This year there were a further 3 technical reports that were published that used Suntag data.

In 2015-16 there were 20 requests for subsets of data from the database including Google map showing Barramundi in Trinity Inlet and Barron River, Mary River Cod in Mary River, comparing Threadfin recapture rates in Fitzroy River and NT, Brisbane River Threadfin growth, Coral Trout growth, Golden Snapper tag data in Gulf to NT Fisheries, Bull Shark tagging and recaptures and movement of Barramundi tagged over 800mm.

Westag in 2015-16



Westag Highlights for 2015-16

Westag commenced in 1998-99 managed by ANSA WA. Westag adopted the Infofish database in 2011 and Infofish has provided technical support since then. In 2014 Infofish ran a Citizen Science workshop in conjunction with Westag in Perth looking to provide a more coordinated approach to citizen science and tagging. A report titled “Developing a Citizen Science Culture among Western Australian Recreational Fishers” is available outlining the outcomes from the workshop.

Westag tagging and fishing trip highlights³ for the year were:

- ✦ A total of over 1,040 taggers have now participated in Westag and 870 fishers have reported the recapture of a tagged fish
- ✦ Total tagged fish in the database is now over 36,600 and over 1,320 recaptures
- ✦ Key species tagged with recapture rates were Samsonfish 10,060 (2.5%), Barramundi 4,080 (3.4%), Mangrove Jack 3,950 (3.1%), West Australian Dhufish 2,000 (9.5%) and Sailfish 1,880 (0.1%).

Westag Participation

A total of 1,040 taggers have participated in Westag having tagged fish since 1988-89. In 2015-16 there were 58 participants that tagged at least one fish. There have also been 870 fishers that have reported a recapture of a tagged fish.

Numbers participating in Westag peaked from 2004-05 to 2005-06 where over 100 taggers tagged fish each year. There were also over 150 taggers in 2010-11. Participation in Westag is shown in *figure 52*.

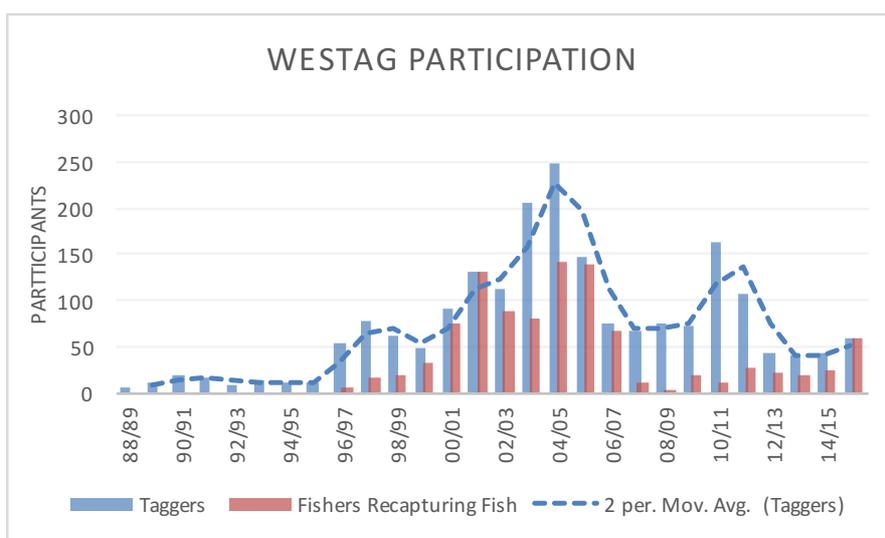


Figure 52: Summary of participation in Westag from 1988-89 to 2015-16

³ All figures to 30 June 2016

Westag Fish Tagged and Recaptured

The Westag database now has over 38,450 tagged fish records. There have been over 1,450 recaptures over the same period. The overall recapture rate is 3.8%. *Figure 53* shows the number of fish tagged and recaptured each year since 1996-97. In 2105-16 there were 907 fish tagged and 83 recaptures recorded.

Tagging peaked from 2000-01 to 2009-10 there were over 1,000 fish tagged each year with a peak of 6,415 in 2004-05.

The number of fish tagged in the last few years is greater than shown as taggers have not submitted all tag records. Efforts are underway to collect old tagging records as there are a number of recaptures where there is no corresponding tag record.

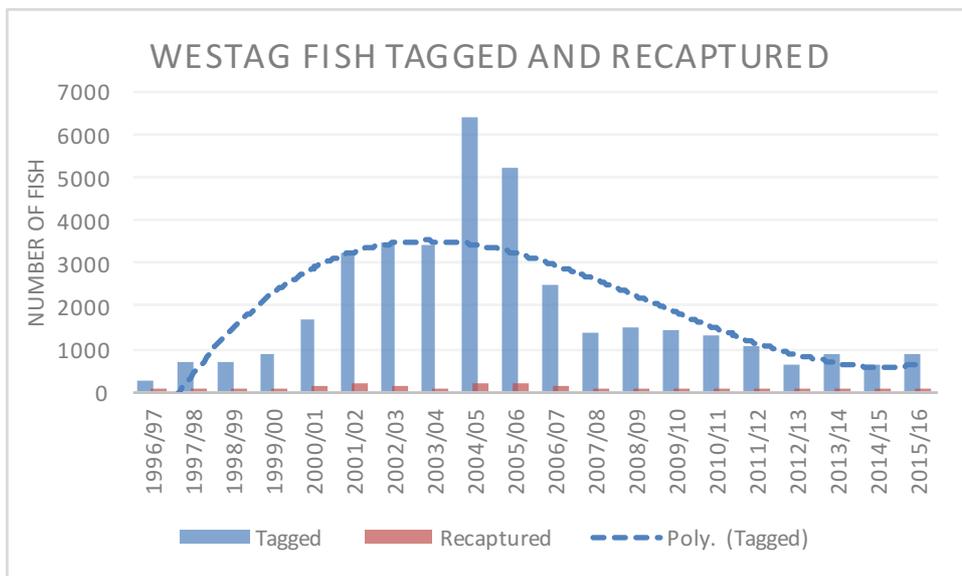


Figure 53: Westag fish tagged and recaptured each year from 1996-97 to 2015-16

Westag Key Species Tagged and Recapture Rates

There were 17 species where over 500 fish were tagged as shown in *figure 54*. Key species and their recapture rates are Samsonfish 10,071 (2.6%), Barramundi 4,932 (3.0%), Mangrove Jack 4,922 (2.7%), West Australian Dhufish 2,285 (10.2%), Sailfish 1,884 (0.1%) and Mulloway (15.5%).

While many fish are recaptures several times the recapture rates here are based only on a single recapture of each fish. Species with a recapture rate of over 10% were Mulloway and West Australian Dhufish. Other species where the recapture rate was above the overall average of 3.8% were Pink Snapper (7.3%) and Black Bream (4.8%).

Species with a low recapture rate of less than 1% were Black Marlin (0%), Sailfish (0.1%), Spangled Emperor (0.4%), Coral Trout (0.8%) and Spanish Mackerel (0.5%).

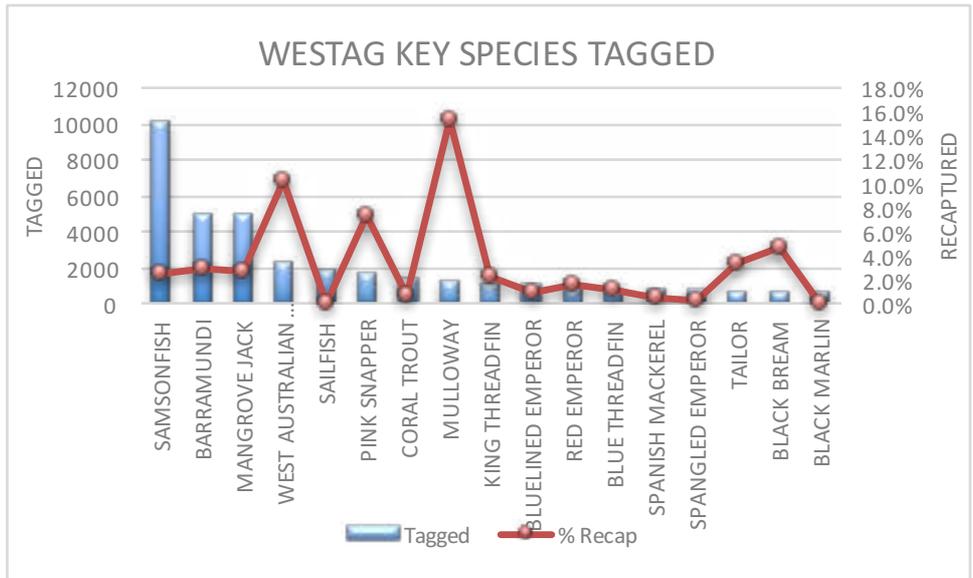


Figure 54: Westag key species tagged and recapture rates

West Australian Dhufish

From 1996-98 to 2015-16 there were 2,279 West Australian Dhufish tagged. *Figure 55* shows the numbers tagged each year, average length and the size range of fish tagged. The largest Dhufish tagged was fish of 1,260mm in 2002/03.

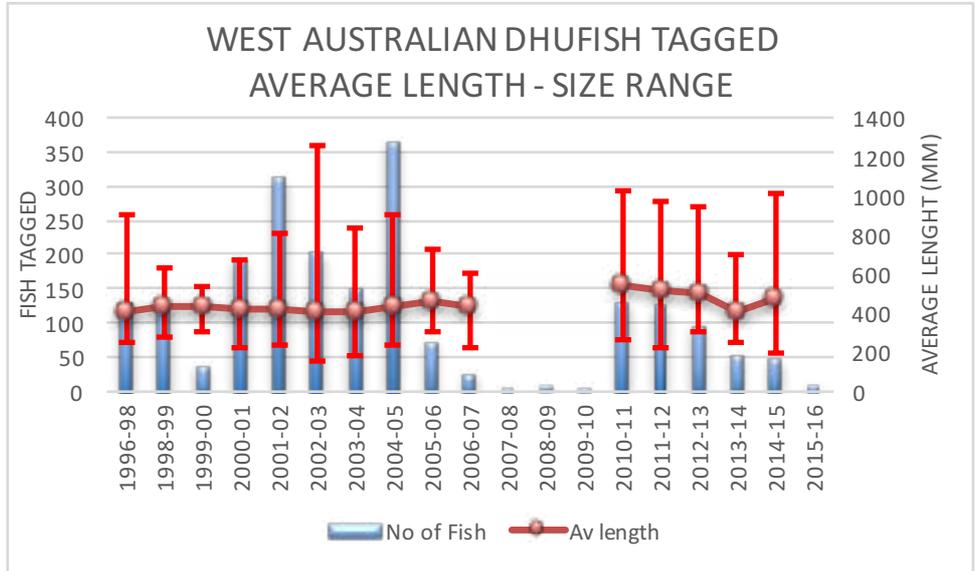


Figure 55: West Australian Dhufish tagged, average length and size range

Depth of capture was recorded for 2,125 Dhufish and *figure 56* shows the recapture rate for fish tagged at different depths. The recapture rate for fish tagged in over 100m depth needs to be treated with caution due to the low number (14) of fish tagged. The highest recapture rate was for fish caught from 20-49m at 14.6%.

Release method was recorded for 1,056 Dhufish and *figure 57* shows the recapture rate for fish released using different release methods. The highest recapture rate of 12.0% was for fish released using shotline (release weight used to return fish to the bottom).

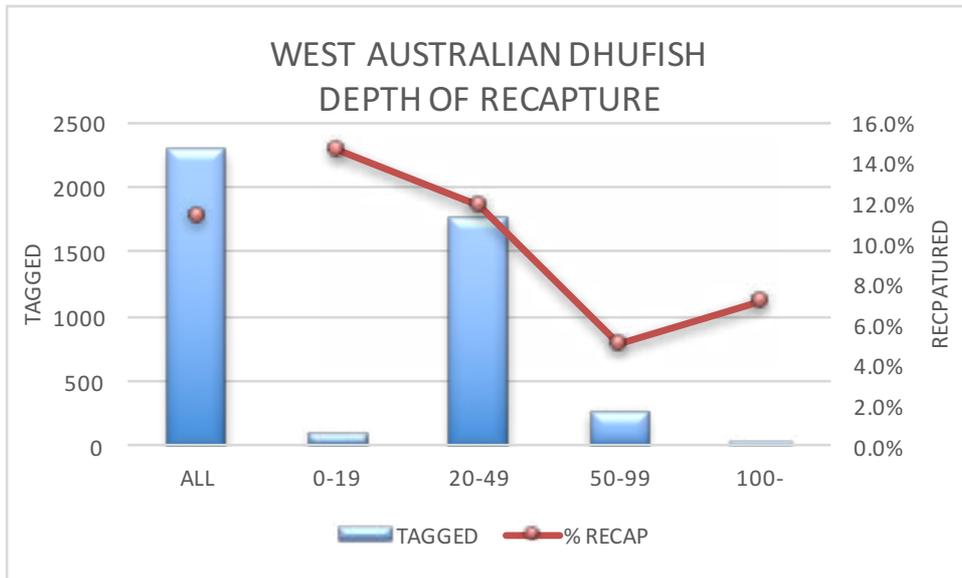


Figure 56: West Australian Dhufish tagged at different depths and recapture rates

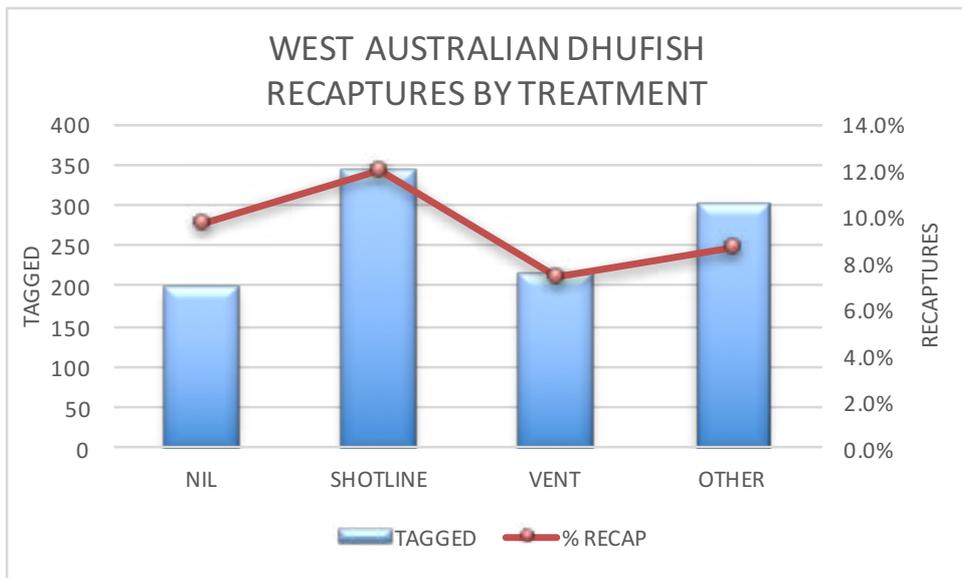


Figure 57: West Australian Dhufish tagged and recapture rate from different release methods

Mulloway

From 1996-98 to 2015-16 there were 1,064 Mulloway tagged. *Figure 58* shows the numbers tagged each year, average length and the size range of fish tagged. The largest Mulloway tagged was fish of 1,400mm in 1998-99.

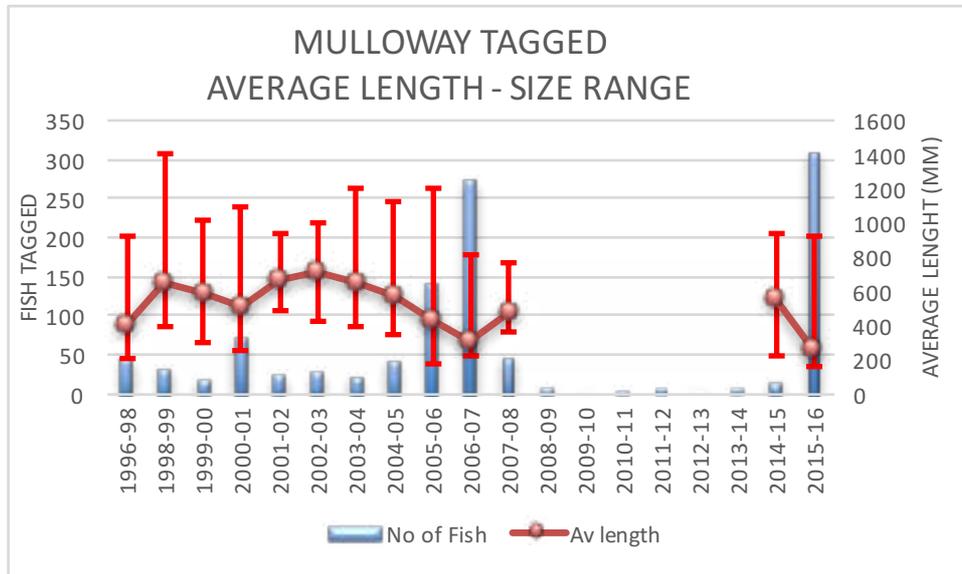


Figure 58: Mulloway tagged, average length and size range

The increase in tagging effort in 2015-16 was a result of the Mulloway Marathon when Suntag and Westag took part in a 6 week event from 15 Aug-26 Sep 2015. The event was designed to collect data on Mulloway in both states. In WA the event was centred on Kalbarri.

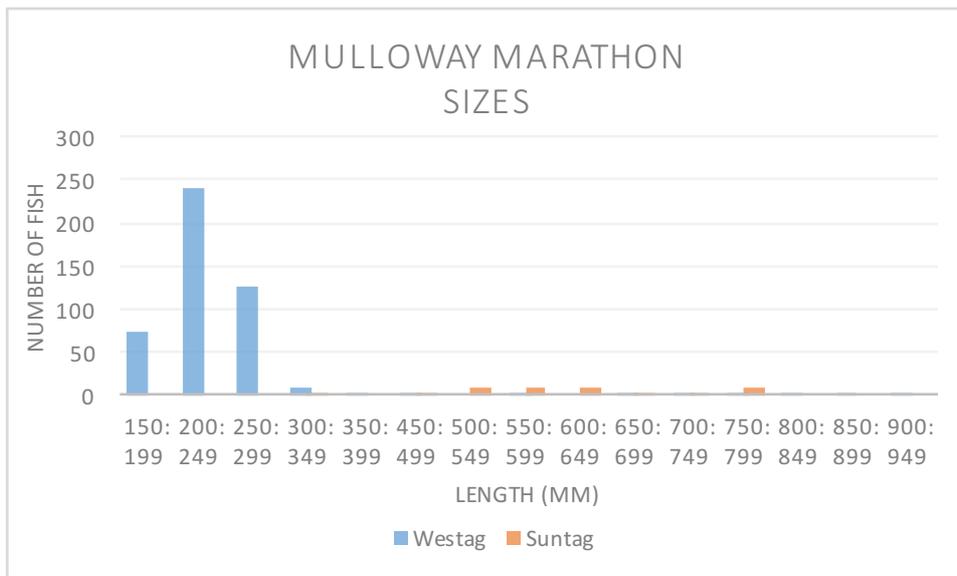


Figure 59: Mulloway Marathon fish sizes

There were a total of 461 Mulloway tagged by Westag while there were 48 tagged by Suntag. Most of the Westag fish were recruits in the size range 150-300mm while the Suntag fish were mostly 500-800mm. The Westag fish were likely from a strong recruitment in the Murchison River.

Where to in 2016-17?

This year saw a significant change in the delivery of Suntag with the creation of Suntag Australia Inc. This meant a restructuring of the services delivered by Infofish and Suntag and this was compounded by the decision by ANSAQ to not join in the change and to go with their own tagging program.

As well Infofish introduced new technology that allowed real time monitoring to be established through the Crystal Bowl. This was done through a dashboard approach that reflects data in the database in real time for a wide range of locations and species. This technology has already attracted interest from the commercial sector with it being trailed on Moreton Bay Prawns.

At the end of the year Infofish was ready to release Trackmyfish to improve data collection and expand the range of data being collected and a competition version that will collect data during competitions. This has the potential to significantly increase data collection.

In combination these provide the most significant changes in the history of Suntag and 2016-17 will be a year of bedding down those changes. These will profoundly change the way in which community groups will be able to undertake monitoring in the future. While we have some idea of some of the effect of those changes it is certain there will be others that are unexpected.

These are the main target areas for 2016-17:

- ✦ Normalise tagging activities through Suntag Australia Inc
- ✦ Establish the use of Trackmyfish as a primary method of data collection
- ✦ Improve data collection from competitions using Trackmyfish competition version
- ✦ Expand real time monitoring through the Crystal Bowl
- ✦ Upgrade websites to reflect the new technologies
- ✦ Million Dollar Fish promotion in Northern Territory
- ✦ Continue recruitment surveys in the Fitzroy River and Gladstone
- ✦ Continue intelligence gathering from the community, particularly in relation to recruitment of key species

Underpinning all that will be the need to continue the expansion of funding sources so that these developments can be delivered.



INFOFISH AUSTRALIA

PO Box 9793

Frenchville Qld 4701 Australia

Phone +61 7 49286133

suntag@info-fish.net

www.info-fish.net

www.suntag.org.au