

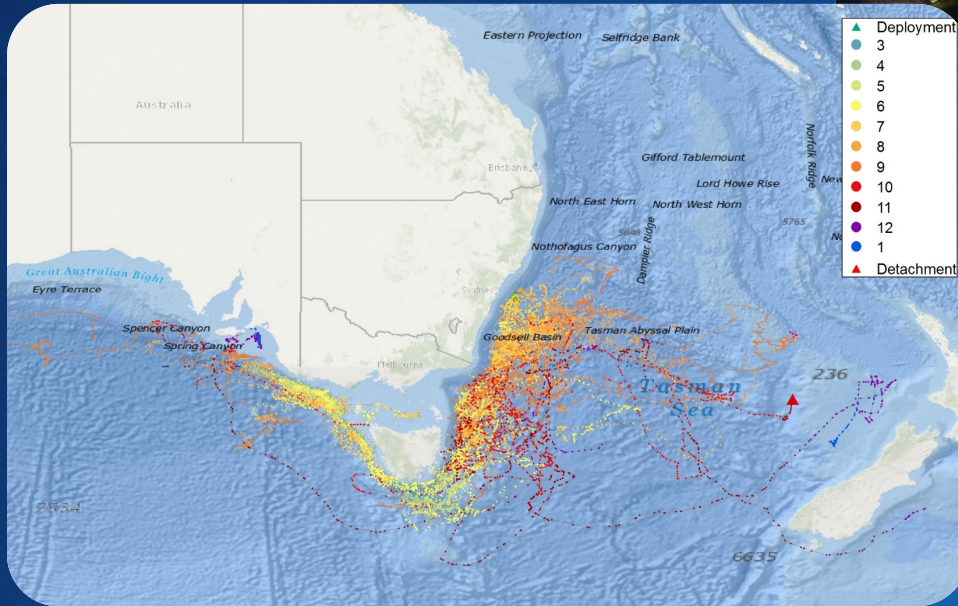


TUNA CHAMPIONS

Bluefin forever



Working with the
recreational fishery to
deliver a large post-
release survival study
using satellite tags on
**Southern Bluefin
Tuna**



Not your average
recreational fishery...



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$$H_i = \begin{pmatrix} \sigma_{lon}^2 & 0 & 0 \\ 0 & \sigma_{lat_i}^2 & 0 \\ 0 & 0 & \sigma_{SST}^2 \end{pmatrix}. \quad (4)$$

The variance of the latitude measurements $\sigma_{lat_i}^2$ is closely related to the equinox, as measurements close to an equinox have large latitude errors. The following variance structure is assumed:

$$\sigma_{lat_i}^2 = \frac{\sigma_{lat_0}^2}{\cos^2\{2\pi[j_i + (-1)^{s_i}b_0]/365.25\} + a_0}, \quad (5)$$

$$y_i = z(\alpha_i) + d_i + \varepsilon_i, \quad i = 1, \dots, I$$

The first two coordinates of z comprise the coordinate change function, and the last coordinate describes the expected SST at a given position. z is given by:

$$z(\alpha_i) = \begin{pmatrix} \frac{\alpha_{i,1}}{60 \cos(\alpha_{i,2}\pi/180/60)} \\ \frac{\alpha_{i,2}}{60} \\ \tau\left(\frac{\alpha_{i,1}}{60 \cos(\alpha_{i,2}\pi/180/60)}, \frac{\alpha_{i,2}}{60}\right) \end{pmatrix}.$$

Citizen science
+ scientific research
and analysis
+ clear communication
= knowledge-building

Survived - Premature release	
Actual tag retention duration	12 Jul 2013 - 8 Dec 2013
Program tag retention duration	150 days
Tagging location	Offshore Sydney, NSW
Tag detachment location	East coast of New Zealand
Fish (fork) length	130 cm
Estimated weight (L_W cm)*	40 kg
Hooking location	Mouth hooked
Hooking damage	Minor mouth
Baited circle hook	
Time 28 sec	
Time 12 sec	
Time 0 sec	
Active	NA
NA	NA

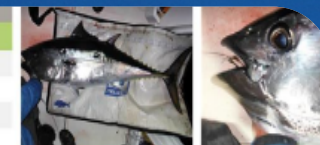


Fig. 1. Photo of the fish immediately after landing.

Fig. 2. Photo of the hooking location immediately after landing.

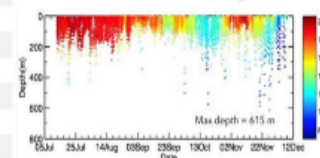


Fig. 3. Dive behaviour and temperatures for duration of tag deployment.

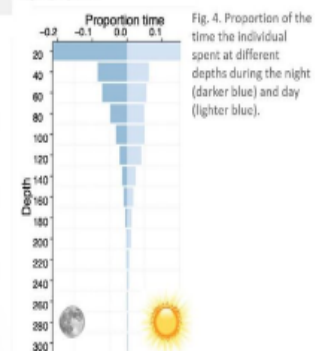


Fig. 4. Proportion of the time the individual spent at different depths during the night (darker blue) and day (lighter blue).



WORKING TOGETHER TO BUILD KNOWLEDGE



Regulation! Enforcement! Legislation!

...or education and a nudge?

Education:

Based on facts provided by science, plus learning from the commercial sector

Nudge theory:

Proposes positive reinforcement and indirect suggestions as ways to influence the behaviour and decision making of groups or individuals

Snowball effect:

A process that starts from an initial state of small significance and builds upon itself



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Tuna Champions is an initiative of the Australian Recreational Fishing Foundation in collaboration with the Institute for Marine and Antarctic Studies at the University of Tasmania.

It is funded by the Australian Government through the Fisheries Research and Development Corporation.



AUSTRALIAN RECREATIONAL
FISHING FOUNDATION



UNIVERSITY of
TASMANIA



IMAS
INSTITUTE FOR MARINE
& ANTARCTIC STUDIES



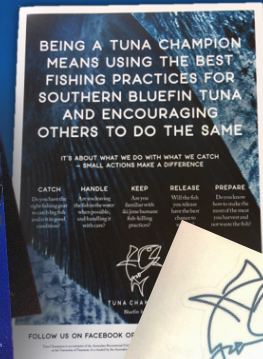
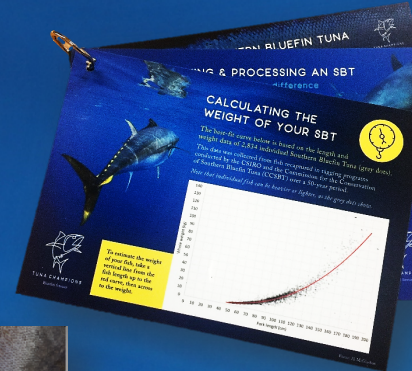
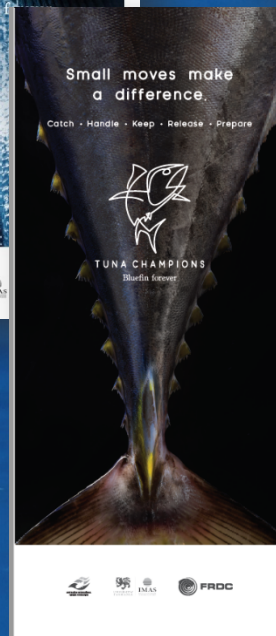
FRDC



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Who can be a Tuna Champion? Everyone can!



A clear pathway

...and a recognisable brand

COMMUNICATION STRATEGY





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ABOUT SBT

BE A TUNA CHAMPION

AMBASSADORS

SHOP

LINKS

WHO WE ARE

GET IN TOUCH



IT'S ABOUT WHAT WE DO WITH WHAT WE CATCH

SMALL MOVES MAKE A DIFFERENCE

BECOME A TUNA CHAMP - TAKE THE TUNA PLEDGE

I DO SOLEMNLY SWEAR TO CATCH, HANDLE, KEEP OR
RELEASE SOUTHERN BLUEFIN TUNA AS SAFELY AND
HUMANELY AS POSSIBLE - AND TO PREPARE IT WELL, SO NO
FISH IS WASTED.

☐ KEEP ME UP TO DATE

Your email address

I'M IN



TUNE UP YOUR TUNA SKILLS

Being a Tuna Champion means using the
best fishing practices for Southern Bluefin
Tuna - and encouraging others to do the
same. Small actions make a difference.

CATCH

Do you have the right fishing gear to catch
Southern Bluefin Tuna sustainably?

KEEP

Are you familiar with the best humane fish-
killing practices?

RELEASE

Will the fish you release have the best chance
of surviving?

An information hub and a pledge

www.tunachampions.com.au



TUNA CHAMPIONS
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June 2018

IMAS University of Tasmania research into the recreational fishery for Southern Bluefin Tuna is underpinning a new national program to recruit recreational fishers as 'Tuna Champions' to enhance stewardship of this iconic species.

Launched in Hobart in June, the program is led by the Australian Recreational Fishing Foundation and MAS, and funded by the Australian Government through the FRDC.

TARFish sits on the Project Steering Committee and will update when further project details become available.



Put it in your diary now!

Australia will celebrate its third National Gone Fishing Day (GFD) with thousands of Australians going fishing and plenty of events promoting recreational fishing being held across the nation. Recreational fishing is arguably Australia's biggest leisure sporting activity and it doesn't matter if you haven't fished before, or you fish every day – GFD will have something for you. State wide events and further details relevant to Tasmania will be published shortly but meanwhile you block out your diary now for October 14th.



Game fishers with a real passion for Southern Bluefin Tuna are being invited to become Tuna Champions – experts able to seamlessly interweave sport, innovation and a duty to care for this iconic species

By Gjo Bratdottir

Southern Bluefin Tuna (SBT) populations are rebuilding after falling to as low as five per cent of their original global spawning biomass (those fish capable of reproducing), which is bringing the species back into the orbit of the recreational fishing community. SBT is a large, migratory pelagic species that has one single global population. It suffered heavily over several decades, up to the 1990s, as a result of high international fishing pressure and a lack of coordinated management. Since then, Australia's commercial sector

The decline in stocks and migration patterns has meant several of the most recent

Even passionate fishing enthusiasts such as Al McLaughlin—who produces and presents match-level fishing shows, such as *Fish'n with Mate*—says he grew up never encountering SFT.

But in recent years this has begun to change, with SFT appearing in greater numbers in southern Australian inland waters. Sport fishers are not only encountering them in greater numbers but are also encountering larger fish.

All those seeking to catch SFT, either commercially or recreationally, must continue to do so in a responsible way that ensures the upward trajectory for this species.

Positive trajectory

At the Australian Fisheries Management Authority (AFMA), Murray Doolan, senior

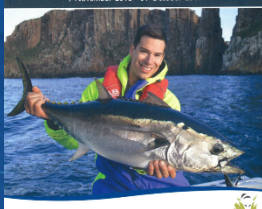
virgin spawning biomass and on a trajectory to reach 20 per cent by the mid to late 2020s.

The SBT's recovery has been warmly welcomed by sport fishers, many of whom are getting their first taste of fishing this superbly athletic species that can reach top speeds of 64 kilometres per hour and dive to 500 metres. The opportunity to encounter these fish, and the potential to catch a fish of 100 kilograms or more, has resulted in a rush to regional coastal towns during the annual SBT migration along Australia's southern coast, bringing economic benefits to local communities.

Al McGlashan says that the SBT's return has inspired a sense of wonder so profound that it has affected how he fishes, culminating in

Recreational **Sea Fishing** Guide 2018-19

1 November 2018 - 31 October 2019

Wild Fisheries Management Branch
Department of Primary Industries, Parks, Water and Environment

Tuna Champions



TUNA CHANNEL

what we catch. Because small mistakes make a difference.	
Catch	Do you have the right fishing gear to catch big fish – and is it in good condition?
Handle	Are you leaving the fish in the water when possible and handling it with care?
Keep	Is your ice-chest ready, and are you familiar with the game humane fish-killing practices?
Release	Will the fish you release have the best chance to survive?
Prepare	Do you know how to make the most of the meat you harvest and not waste the fish?

Are you a Tuna Champion? Join Tuna Champions on Facebook and visit www.tunachampions.com.au for new tips and information on the topics and more.



An initiative of the
Australian Recreational
Fishing Foundation in
collaboration with the
Institute for Marine and
Atmospheric Studies at the
University of Tasmania.
Funded by the Australian
Government through the
Fisheries Research and

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THE INS AND OUTS OF TAGGING TUNA

Tagging ocean voyagers like tuna adds a fascinating bonus fishing experience – where you can see how and how big will it grow. The Tuna Champions program gets you involved and how you can help more meaningful through tuna survive, and by in a social way so they don't fade.



A sample of my latest article for *BlueWater* magazine is shown below. To see it in full, get issue 136 – on sale from 14th February.

BlueWater
SQUID GIGGERS

www.bluewatermag.com.au

Researchers have been tagging southern bluefin tuna (SBT) for decades as a way to learn more about their distribution and migration, including how far they travel. Fish tagging also provides insights into growth rates and abundance, as well as providing a better understanding of stock structure and how fisheries can be more effectively managed.

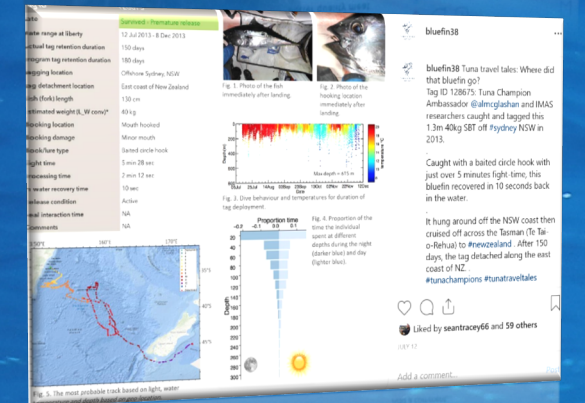
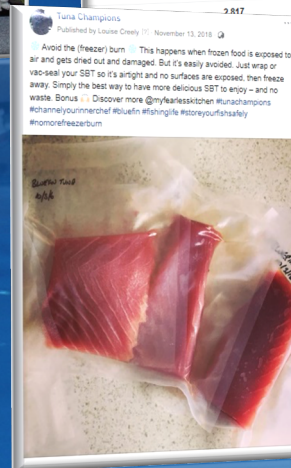
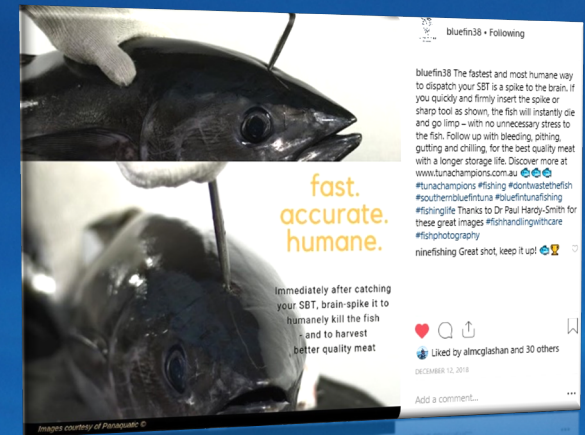
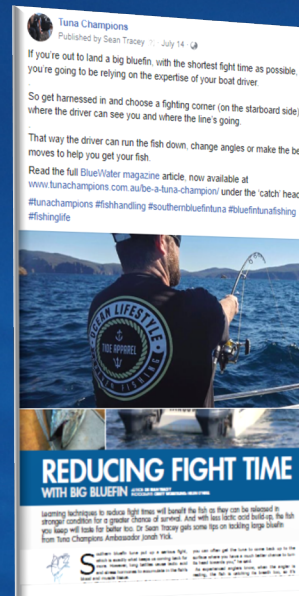
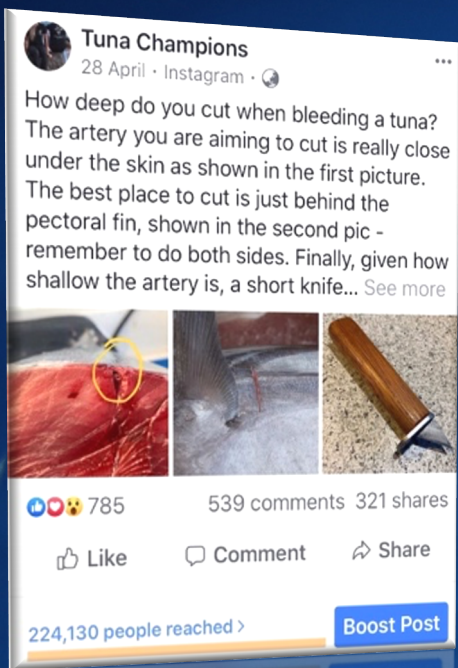


Spreading the word...

TUNA CHAMPIONS IN PRINT



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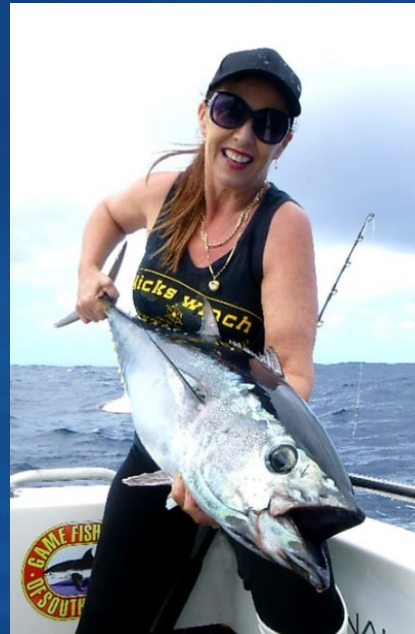


Building a switched-on community

TUNA CHAMPIONS ON SOCIAL MEDIA



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...to inspire and share what we're learning

TUNA CHAMPION AMBASSADORS



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...to inspire and share what we're learning

TUNA CHAMPION AMBASSADORS



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YOU ARE INVITED TO THE
WORLD PREMIERE OF

Life on the Line

AN AL MCGLASHAN PRODUCTION
BROUGHT TO YOU BY ARFF, AFMA,
FRDC AND THE TUNA CHAMPIONS



Life on the Line
is now streaming on
Channel Nine
Live & On Demand

November 6, 2019, 7 pm
MAX Melbourne Museum
Street, MELBOURNE Victoria
[register here at eventbrite](#)
for this FREE event



...to inspire and share what we're learning

TUNA CHAMPION AMBASSADORS



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An episode of
ifish
featuring
Tuna Champions
goes to air on
29 December
on **Channel 10**



...to inspire and share what we're learning

TUNA CHAMPION AMBASSADORS



Watch our
Tuna Champion
videos on
YouTube



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From the grassroots fishers...

EVENTS, PRESENTATIONS & MEDIA



TUNA CHAMPIONS
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THE TUNA CHAMPION MOVEMENT





*In support of the Tuna Champion program, all fished weighed in have to be gill-gutted for the month-long **Hooked On Tuna competition** for 2019...*

Michael Cottee
Tourism and
Events Manager,
Glenelg Shire
Council, Victoria



With the help of the Tuna Champion movement, competitions are moving from whole-fish weigh-ins to gill gutted. We're seeing a real change in how people bring in the fish, including how much ice they take on their boat."

John Johnstone, Owner,
Portland Bait & Tackle



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Port Lincoln Tuna Classic becomes treble hook free

Jarrad Delaney

October 17 2019 - 10:15AM



HOOKED: Riviera Port Lincoln
Bianco with a single-hook lure.

The 2020 Riviera Port Lincoln
event being the first to not allow

The Tuna Classic is a 10 kilometre
10kg to score a point.

Event co-manager Russell B
which would disallow three.

"We are making sure the fish released have the best possible chance of survival, in fact by not using trebles it gives the fish better than 83 per cent chance of survival," he said.

"We have been consulting with an organisation called Tuna Champions, they aim for using the best fishing practices for southern bluefin tuna and getting others to do so.

"They haven't been around for long but they have certainly had a huge impact in changing the way people think and behave about sustainable fishing for southern bluefin."

Momentum is building...



We'll have Tuna Champions stickers on single hook lures throughout the store to encourage those entering the comp to use them.



Owners Alicia Bolitho
and Shane Hodgins
Tackle World Port Lincoln



TUNA CHAMPIONS
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WHO CAN BE A TUNA CHAMPION?

EVERYONE CAN!

Catch. Handle. Keep. Release. Prepare.
Small moves make a difference.



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tunachampions.com.au



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Tuna Champions



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Tuna Champions is an initiative of the Australian Recreational Fishing Foundation in collaboration with the Institute for Marine and Antarctic Studies at the University of Tasmania. It is funded by the Australian Government through the Fisheries Research and Development Corporation.