



An overview of tuna tagging campaigns in the western and central Pacific Ocean

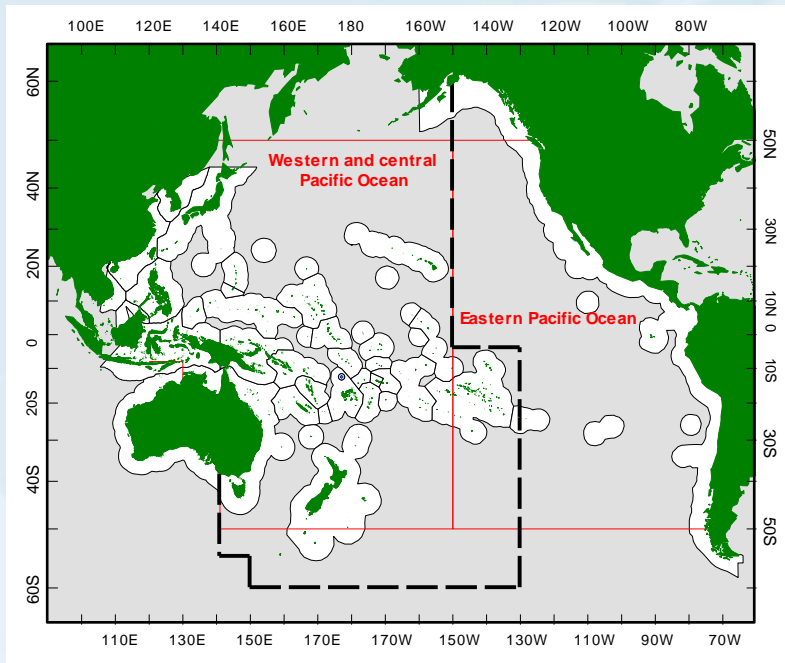
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QUICK OVERVIEW OF THE WCPO TUNA FISHERIES

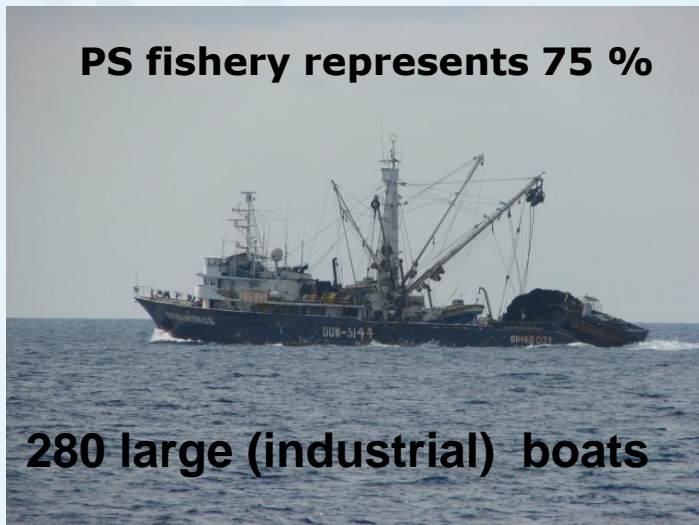


**Total tuna catch in the WCPO in 2011:
2,245,000 mt**

79% of whole Pacific ocean

55% of global tuna catch

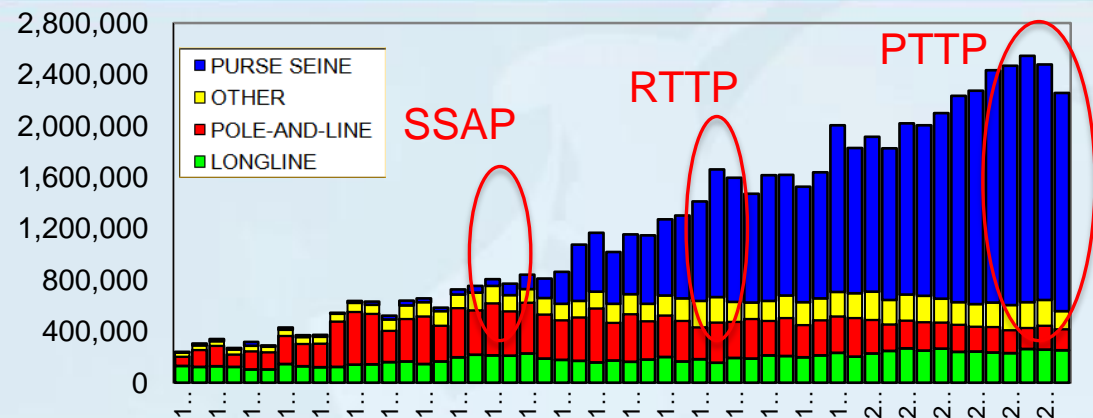
PS fishery represents 75 %



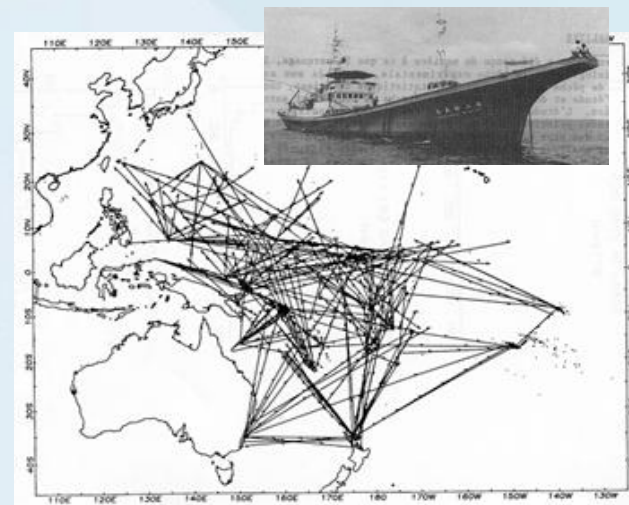
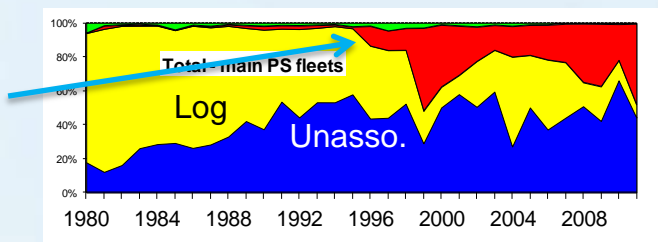
280 large (industrial) boats



HISTORY OF THE PAST TAGGING EXPERIMENTS



Growth of dFAD use from 1996



Skipjack Survey and Assessment Programme
1977 – 1980

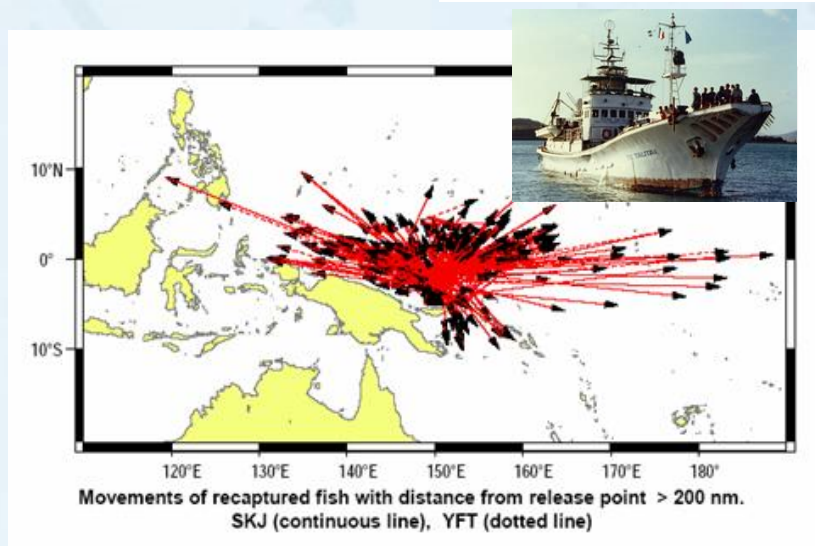
Over 155,000 rel (94% SJ)

5% recapture rate

Regional Tuna Tagging Project
1989 – 1992

Over 146,000 rel (67% SJ, 27% YF, 6% BE)

12.5% recapture rate





Multi-phase programme

- **Phase 1 : focus on PNG and Solomon Is.**
 - 8.5 months from Aug 06 to April 08
 - >100,000 releases and 15.4% recovery

Charter of FV “Soltai 6”, 27 m P/L, 24 crew



- **Phase 2 : extension throughout the Western equatorial Pacific from 120E (Indonesia) to 180 (Kiribati)**
 - 11 months from mid 08 to Oct 09
 - >146,000 releases and 16.6% recovery

Charter of “Soltai 105”, 37 m P/L, 30 crew



OPERATIONAL DETAILS OF THE PTPP

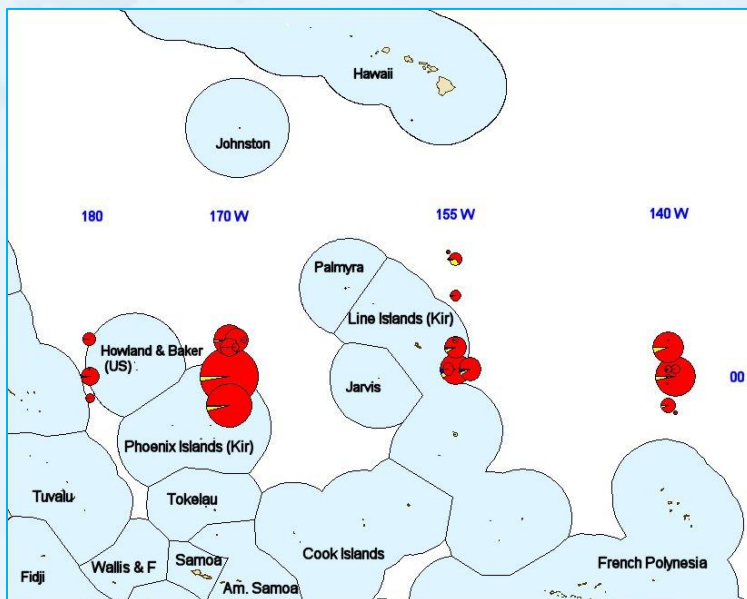
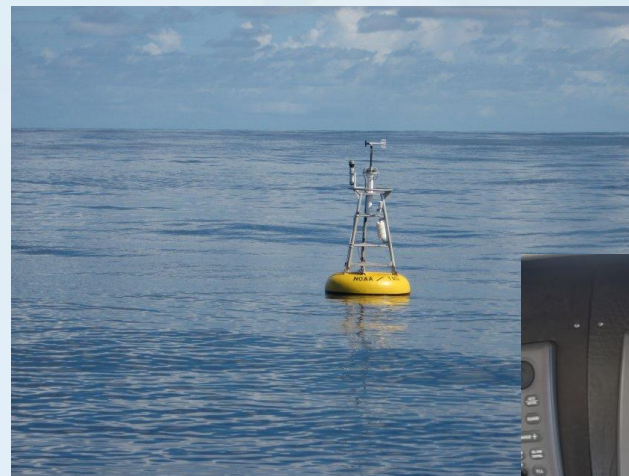


Additional component of Phase 2:

The Central Pacific (140°W – 170°W)

- 8 cruises of 3 to 6 weeks
- >33,000 releases (94% BE) and 17.7% recoveries (> 30% in early cruise)

Charter of multipurpose 20 m vessels based in Hawaii and Tonga



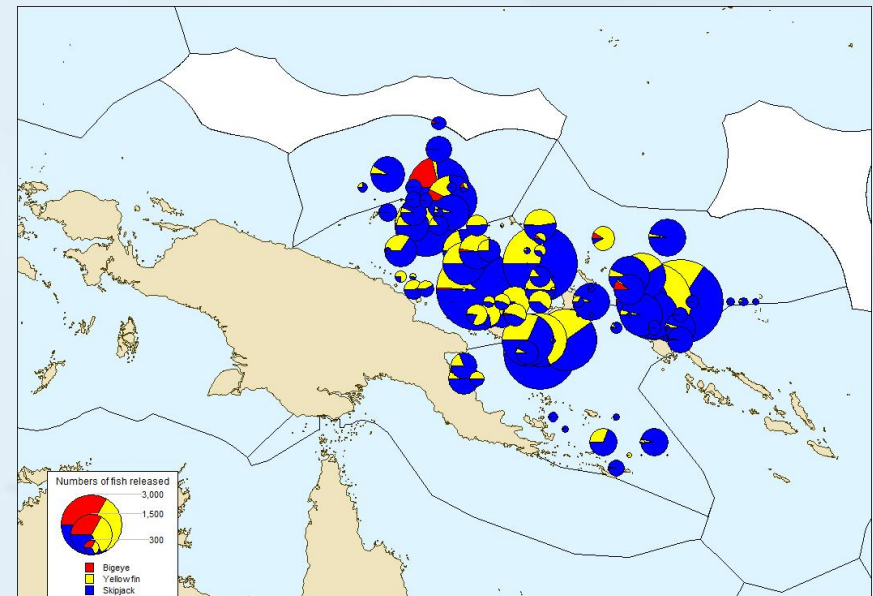
THE PNG TAGGING PROJECT (PNGTP)



In 2011, SPC and the PNG National Fisheries Authority (NFA) began a three-year tag release programme in the PNG EEZ, funded by NFA

- 3 months in 2011 and 2 months in 2012 ; >80,000 releases and 12.4 % recov
- 3rd and final cruise to start in Feb 2013

Charter of FV “Soltai 105”

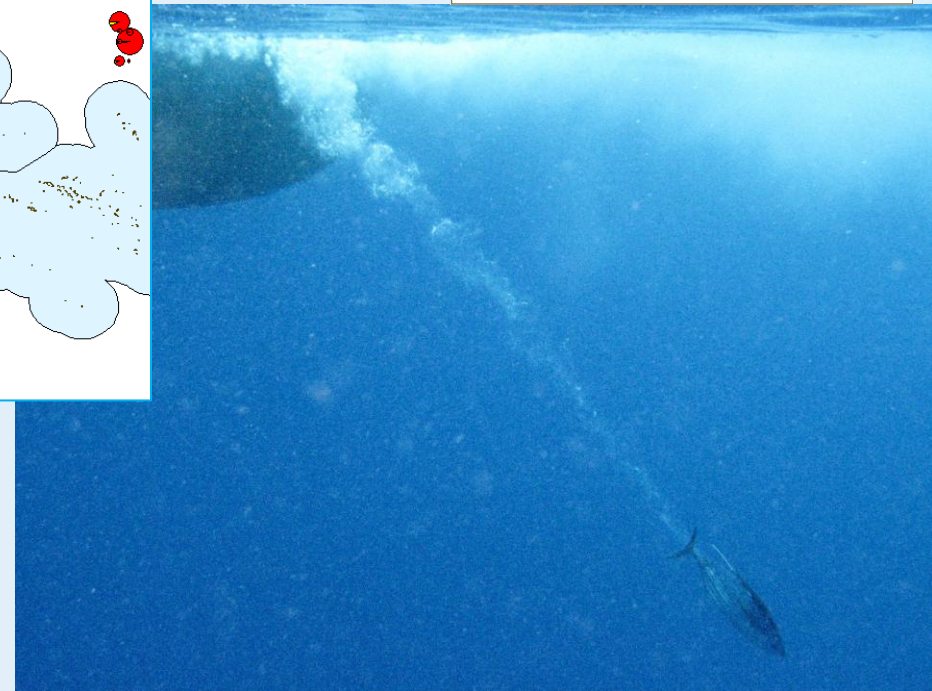
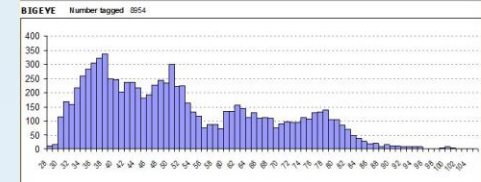
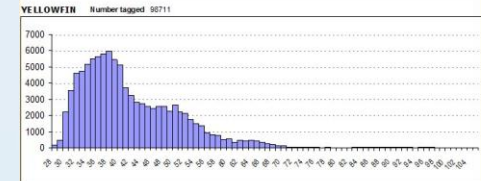
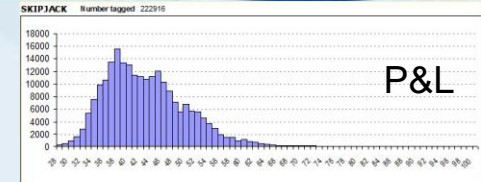
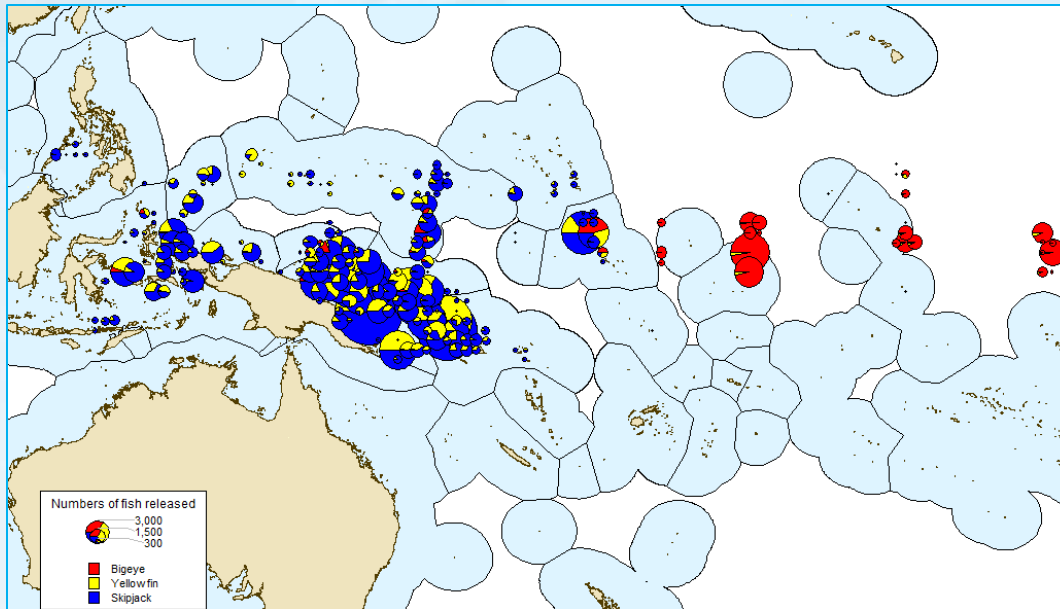


RELEASES : THE BIG PICTURE




363,658 fish tagged in all projects

- 61% skipjack, 28% yellowfin and 11% bigeye
- 74% of large size conventional tag (fish >38cm)
- includes 1364 archival tags (50% BE, 41%YF, 9%SJ)



DATABASES




**Main Menu**

- Data Entry/Editing
- Projects / Cruises
- Tag Register
- Reporting
- Mapping
- Administration
- Reward Finance
- Seeding
- About
- Exit

Tagging Database System

TagDager

Tagging Database System



Developed by
Secretariat of the Pacific Community
Oceanic Fisheries Programme
Version 5.7 July 2012

NOTE: View the 'TagDager Update Notes.doc' document for notes on updates to the system

User: brunol Logged on the 24/10/2012 at 8:49:22 AM SQL SERVER: WWW2008; Production database

Database system (SQL) for entering, analysing and processing tagging information. Linked to logsheet and VMS databases for recovery validations.

>10,000 days of data stored in ArcTag (115 tags)



ArcTag - Archival tags Database

ArcTag

- All tags
- Georeferenced Tags
- Query Builder
- Tools
- About
- Exit

Choose a Tag number:
A13547

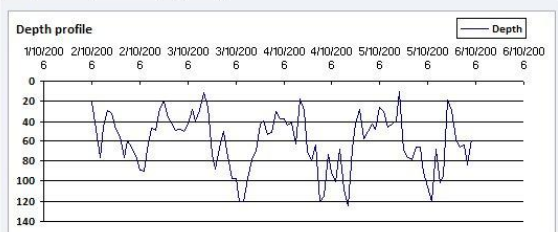

Zoom In
Zoom out
Pan
Full Extent
Select

04-Oct-2006 Temperature Depth Light

Selection details
Tag Number: A13547 -
UTC Date: 04-Oct-2006
12:00:00 AM - Lon/Lat:
145.08/-0.31

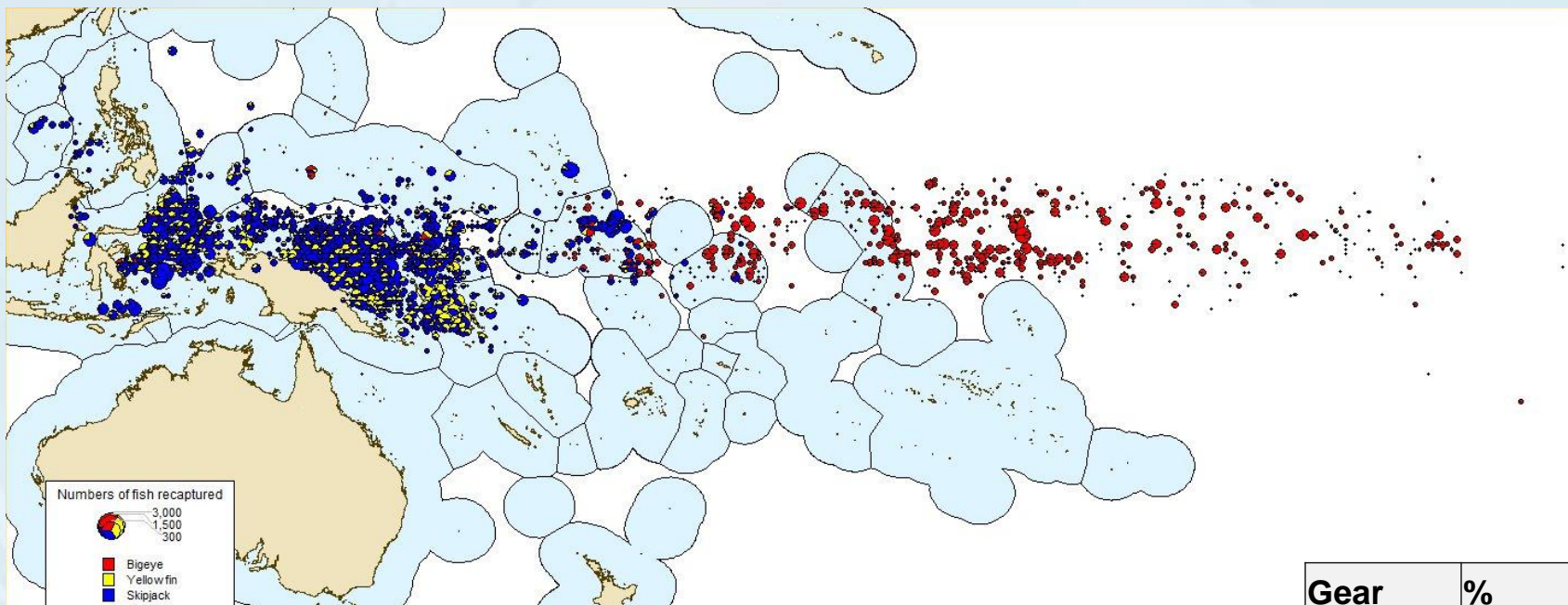
Depth profile

Moon Status



Logged on the 24/10/2012 at 1:33:17 PM ODBC;Description=Oceanan

RECOVERIES: THE BIG PICTURE



	RELEASES					RECOVERIES				
	BET	YFT	SKJ	TOTAL	%	BET-RC	YFT-RC	SKJ-RC	TOTAL	%
Unassociated	695	12912	54680	68287	19%	103	1112	6517	7732	14%
Associated	39509	87213	168649	295371	81%	7225	13933	28567	49725	86%
TOTAL	40204	100125	223329	363658		7328	15045	35084	57457	
%	11	28	61			18.2	15	15.7	15.8	

Gear	%
PS	88.9
PL	2.7
HL	0.9
LL	0.2
Troll	1.1
Drift N	0.2
Unclass	5.8

Currently 73% verified, essentially with VMS

RECOVERIES: THE PACIFIC SPECIFICITIES



Difficulties of retrieving accurate/complete information:

- Huge geographical area
- High degree of transshipment across wide area
- Unloading of carrier -> lack of traceability
- Language barrier
- Tags traded between vessel crew



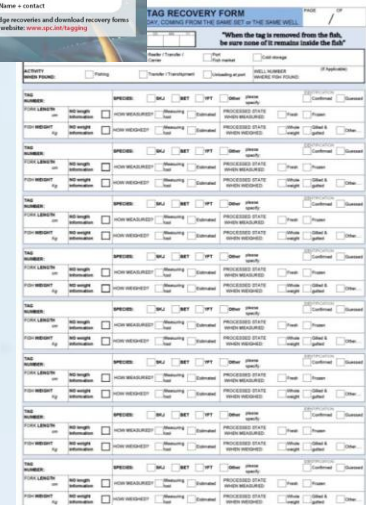
Recovery origins:

- 44% unknown
- 27% fishing vessels
- 15% cannery
- 6% during transshipment
- 4.5% fish market and/or during unloading at port
- 3% cold storage





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- Total of 2710 tags seeded by observers onboard Pure Seiners
- Total of 1246 recovered tags.

Out of 15 canneries, 34% of the recoveries is reported with uncorrect vessel name



SPC Pacific Tuna Tagging website

www.spc.int/tagging



To improve the visibility and develop the awareness of the Pacific Tuna Tagging Project:

- What is tagging?
- Videos
- Gallery



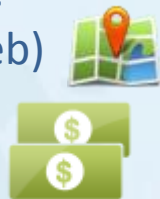
To provide a public access to tagging data:

- Summaries
- Maps
- Reports
- Graphs



To facilitate tag recapture:

- Recovery forms (web)
- List of TROs
- Reward posters



To provide analysis and tools to countries and users:

- Restricted access to Country profiles
- Live access to tagging databases (TagDager)



The screenshot shows the homepage of the SPC Pacific Tuna Tagging website. The header features the SPC logo and the title 'SPC Pacific Tuna Tagging'. Below the header is a navigation menu with links: HOME, ABOUT TAGGING, PROGRAMS, PUBLICATIONS, MEDIA, BROWSE DATA, RECOVERY FORMS, and DONORS. The main content area includes a 'Found a tag?' section with a 'Explore data' dropdown menu set to 'All Projects'. Below this is a table showing tagging data for various species. To the right of the table are links for 'Reward locations', '2D & 3D maps', 'History', 'Media', 'Programs', and 'Journal'. A large yellow banner announces 'Congratulations, 50 000th tag recovered!'. Below this is a section titled 'Information for monitoring and understanding our tuna stocks' with a welcome message and information about the tagging program. At the bottom, there is a 'Tag Information Browser' table showing specific tagging data.

Species	Releases	Recoveries	%
Albacore	2877	11	0.38
Bigeye	40207	7328	18.23
Skipjack	223329	35084	15.71
Yellowfin	100131	15046	15.03
Total	366544	57469	15.68

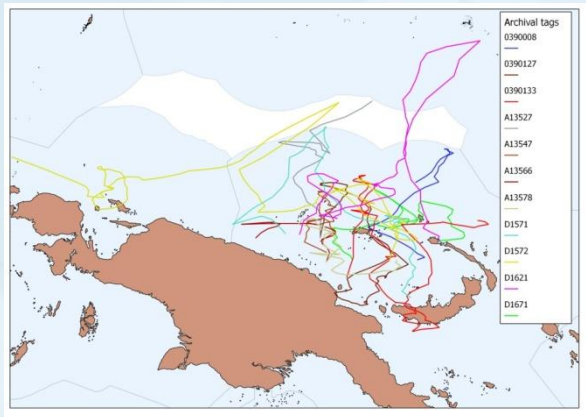
Tag No	Type	Species	Release date	Recovered	Recovery date
P123417	Y13	Skipjack	30-Apr-2009	Yes	26-Oct-2009
PTTP Phase 2 - Western Pacific #2					
P123418	Y13	Skipjack	30-Apr-2009	No	
PTTP Phase 2 - Western Pacific #2					

SPC Home | OFP Home | Copyright © SPC 2010-2012

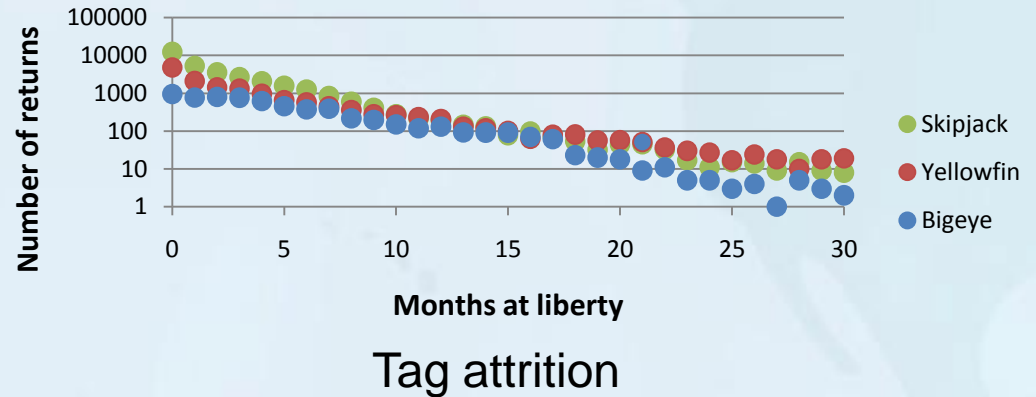
TAG DATA ANALYSIS



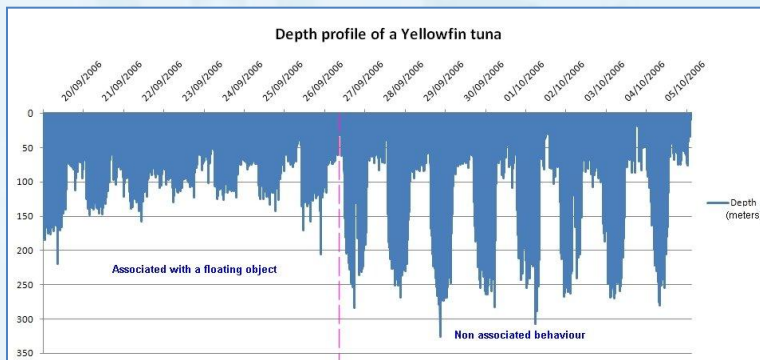
- Tagging data started to be incorporated in the stock assessment of SJ, YF, BE in 2010



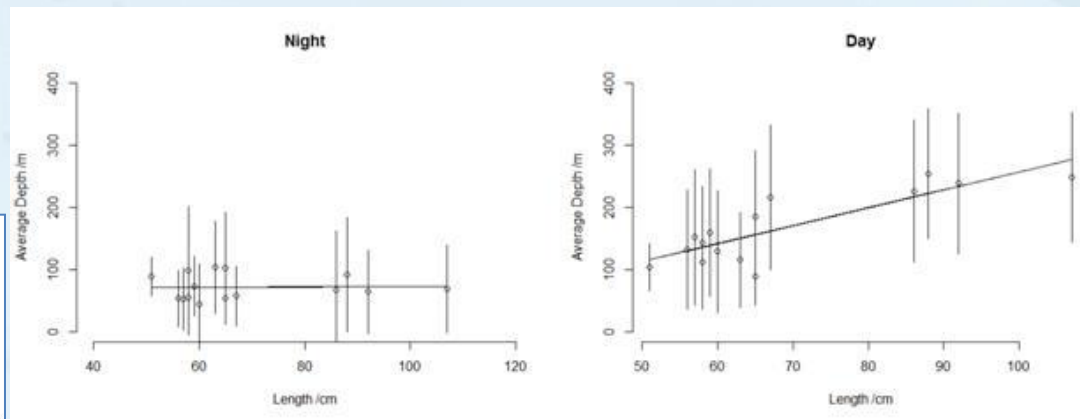
Fish horizontal movement



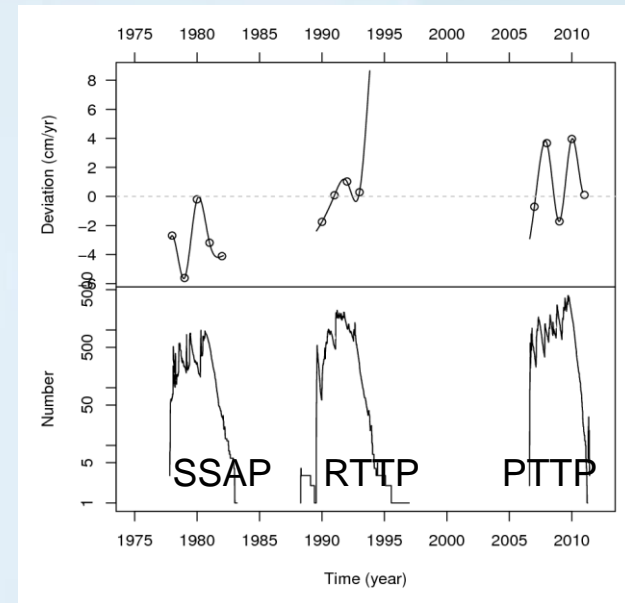
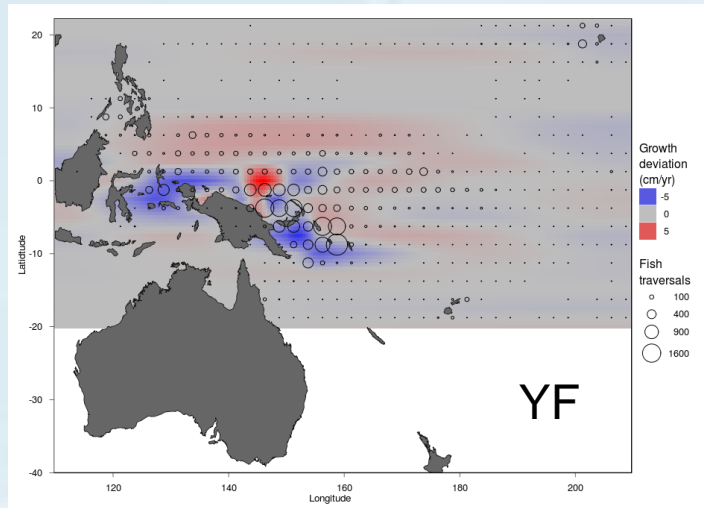
Tag attrition



Fish vertical behaviour



Bigeye archival tag: Avge depth vs size
Diurnal/lunar variation in behaviour



SJ

Observation of growth rate variation in association with longitude and exploitation, and also through time with present faster observed growth rate of skipjack suggests need to include spatial and temporal variation in growth in future assessment models

LESSONS LEARNED FROM (AND FOR) CONTEMPORARY LARGE SCALE TUNA TAGGING PROGRAMMES



1. Data quality issues

- *Tag recapture data:*

Most recaps are nowadays from p/seine vessels and not found on vessel

- *Catch effort / logsheet data:*

Generally good for p/s vessels but not always good for developing countries and artisanal fisheries

- *Tag seeding*

Essential to calibrate Z estimates; difficult experiments

2. Tags used (conventional vs archival)

3. The longline paradox

4. Restrictions on size and species caught if use pole-and-line vessel

5. Decreased availability of pole-and-line vessels for tagging charter

6. Publicity is everything in international/global fisheries for highly mobile species such as tuna (the 1:1 principle)

4. Increasing cost of large scale programmes

5. Timely analysis and dissemination of results to stakeholders

Merci !

