



## IATTC Database timeline

- 1954 Tuna section data collection
  - Emphasis on tuna landings
- 1979 Observer program data collection
  - Emphasis on marine mammal involvement in purse seine fishery
- 2000 Database conversion
- 2010 Establishment of single Data Collection and Database program



### IATTC Datasets – tuna and non-tuna catch

- EPO Purse Seine Fishery
  - Tuna Length Frequency (1955 )
  - Logbooks (1959 )
  - Cannery Unloading (1959 )
  - Observer (1979 )
- Other gear
  - Longline
  - Pole and Line
  - Gillnet
  - Troll
  - Harpoon
  - Recreational

### Purse seine Logbook data

- Data collected at ports by IATTC staff
  - Fishing effort, positions, dates, times
  - Set information
  - Tuna retained catch (landed)



Purse seine Cannery unloading data

- Data collected at cannery by IATTC staff, also received directly from canneries
  - Tuna unloaded species and weight



## Purse seine Length Frequency data

- Data collected by IATTC staff during vessel unloading
  - Predetermined number of tuna measured
  - Set information
  - Tuna retained catch (landed)





### Purse seine Observer data

- Data collected at sea during fishing trips
  - Fishing effort, positions, dates, times
  - Tuna and non-tuna capture and discard
  - Compliance, marine mammal involvement



## IATTC and National observer programs

8 active – all using an identical database structure

United States         1979 - IA TTC           1979 - IA TTC         1992 - Mexico           2000 - V enezuela         2001 - Ecuador           2001 - Ecuador         2003           Colombia         2003           Panama         2006           Nicaragua         2007           5261         5261           1261         18861           1261         18861           1261         18861	1968									6
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- 1966 United States (discontinued in 1994)
- 1979 IATTC
- 1992 Mexico
- 2000 Venezuela
- 2001 Ecuador
- 2003 European Union
- 2005 Colombia
- 2006 Panama
- 2007 Nicaragua

### Time frame of Observer data sets

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- 1979 Trip logs
- 1979 Cetacean life history
- 1987 Flotsam (significant redesign in 2005)
- 1989 Billfish (redesign in 2006)
- 1990 Sea turtle
- 1993 Bycatch
- 2004 Shark

# Floating Object field form

(2005 version)

Trip   Object   Count		
Number No. No.	No. YY	MM DD TIME LATITUDE N/S LONGITUDE
A. COMPONENTS (check all that are	applicable)	B. LOCATING EQUIPMENT (check all that are applicable)
	found As left	As found As left
Tree	[] 1 []	Flag [] 1 []
	_ [ ] 2 [ ]	Satellite buoy [] 2 []
Chain/cable/rings/weights	[]3[]	Buoy, corks, etc. [] 3 []
Cane/bamboo	[] 4 []	Lights [] 4 []
Bait container / bait	[]5[]	Radio transmitter / beeper [] 5 []
Cord / rope	[]6[]	Radar reflector [] 6 []
Floats / corks		Unknown [] 7 []
Artificial light for attracting fish	[] 8 []	Other[] 8 []
Netting material	[] 9 []	C. LOCATING METHOD (check only ONE)
Sacks / bags	[] 10 []	Radar [] 1 Direction finder [] 2
Planks / pallets / plywood / spools Metal drum / plastic drum	[] 11 [] [] 12 []	Direction finder [] 2 Satellite [] 3 check
PVC or other plastic tubes	[] 12 []	
Plastic sheeting	[] 14 []	Visual – the object itself [] 4 only Visual – birds [] 5 one
Jnknown	[] 14 []	Notapplicable [] 6
Dther		Unknown [] 7
	_ [] [0 []	Other [] 8
D. IF THERE IS NETTING ON THE OF	RIECT:	E. OTHER DATA
	Yes No Unk	Yes No NA Un
Netting hanging from the object?	[][][]	Bait container refilled? [][][][
Estimated area of hanging netting (	m*)	Fauna entrapped? [ ] [ ] [ ] [
Predominant mesh size (inches)	•	Maximum depth of the object (m)
		Dimensions (m)
		Water clarity Clear [] Turbid [] Very turbid [
		% epibiota Tag number
F. CAPABILITY OF TRANSMITTING E all that are applicable)	QUIPMENT (check	G. PRIOR ORIGIN OF OBJECT (check only ONE)
	s found As left	Your vessel – this trip [] 1
Direction to the object	[] 1 []	Your vessel – previous trip [ ] 2
Geographic position of the object	[]2[]	Deployed [] 3
Water temperature	[]3[]	Other vessel - with owner consent [ ] 4 check
Tuna quantity	[]4[]	Other vessel - no owner consent [ ] 5 only
Tuna species	[]5[]	Drifting object found [] 6 one
Unknown	[]6[]	Unknown [] 7
		Other [] 8
Other	_ [] 7 []	Other [ ] 8

### Time frame of Observer data sets

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- 2004 Shark



# Billfish field form

(2006 version)



# Sea Turtle field form

Cruise Rec Number Num		YY MM	DD	TIME	LATITUD	E N/S L	
· · · · · · · · · · · · · · · · · · ·	ACTIVITY:		OTHER	DATA:			
	Alive & immo	obile []1	Number of	fturtles			
	Swimming	[]2		more than			
	Copulating	[]3		rious indivi	-		]1
	Feeding	[]4	- Or	ne group wit	th multipl	eturtles [	]2 Yes
	Dead	[]5	-		-	a floating obj	
	Other/Unkr		-	alivethroug	gh the po	wer block?	[]
CONDICION UPON LEA		URTLE	ASSOCI	ATION:			
Entangled alive in a FOB	[]0		Martin and de	e mammals			
Already dead	[]1			BREEZER)	[]2	No. MMSSR:	
Released unharmed	[]2		Unassocia	· · · · · ·	[]2		
Released with light injury	[]3	Mark		(not turtles)	[]4	Other:	
Released with grave injury	[]4	only		ng object		No. FIR:	
Accidentally killed Escaped/evaded the net	[]5	one	with hoatin	ig object	1 19	NO. FIN.	
	[]6						
Treated as catch (consumed)	[]7		Distance	file eccesie	tion:	m	
Mark in our cash in Fighting and setting	. [ ]0						
Not involved in fishing operation Other / Unknown Comments on the condi	[]9		Distance o	ine associal			
Other/Unknown	[]9						
Other / Unknown Comments on the condi	[ ]9 ition:		for INDIVID	UAL turtle	sighting	5.	ling.
Other/Unknown Comments on the condi The following section s Be sure to carefully rea IDENTIFICATION:	[ ]9 ition: hould only d the notes		for INDIVID	UAL turtle .7 of the m	sighting anual be	s. fore proceed	-
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#### Inter-American Tropical Tuna Commission SEA TURTLE RECORD

# Bycatch field form

Inter-American Tropical Tuna Commission

#### MARINE FAUNA RECORD

Trip Number	Set Number	·			sons for discard of t pecies/size undesirable for	
					ondition undesirable for ma ipped sack	arket 5 - Well limitation 6 - Other
TUNA: Use co	de table 2	_				
TONA: 030 CO		MT Ca	apture		MT D	iscard to the sea
	Small	Medium	Large	Total	Small Medium	Large Total Reaso
Code	<2.5 Kg	2.5 - 15.0 Kg	> 15.0 Kg		<2.5 Kg 2.5 - 15.0 Kg	
			•			
		<b></b>	· ·	L • ]		
	•	•	•	•		
		•				
BILLFISH and I	RAYS: Use	code table	e 13			
		by numbe			Destiny	Additional codes
Code	Small < 90 cm	Medium 90 - 150 cm	Large ≻ 150 cm	Total	SMLT	Code
				, 		
OTHER BIG an		FISH: Use	code tab	le 13		
		by numbe			Destiny	
	Small	Medium	Large	Total		
Code	< 30 cm	30 - 60 cm	> 60 cm		SMLT	
				 I I		
SEA BIRDS: Us	e code tabl	e 14	OTHER	FISH INVE		R FAUNA: Use code table 13
Code	Number	U 14	Code		Number Destiny	
						Destiny codes
						1 - Human consumption 2 - Discarded
			L			2 - Discarded 3 - Mixed
			L			

# **Observer database - Quantity of data**

Observer database record counts: 1979 through 2009

<ul> <li>Number of trips</li> </ul>	11,500
<ul> <li>Number of sets</li> </ul>	356,000

Number of individual sightings in the database:

<ul> <li>Marine mammals</li> </ul>	799,000
<ul> <li>Sea turtles</li> </ul>	53,000
• Billfish	37,000
<ul> <li>Sharks</li> </ul>	67,000
• Rays	12,500
<ul> <li>Other large fish</li> </ul>	181,000
• Birds	317,000
<ul> <li>Floating objects</li> </ul>	228,000

### IATTC Datasets – other

- Trophic Ecology Studies (various: 1955 2005)
  - Diet studies
  - Stable Isotope studies
- International Review Panel (1993 )
- Achotines lab (1996 )
  - YFT spawning investigations
- Tuna tagging (2000 )
  - Archival time series and plastic dart tag deployment and recovery
- Tuna Tracking / Dolphin Safe Certificate program (2001 )
- Vessel Registry (2004 )
- EPO High seas Transshipments (2009 )

# **FUTURE PLANS**

### **Inter-American Tropical Tuna Commission**

Meeting of the Scientific Advisory Committee La Jolla, California, USA. Aug 31<sup>st</sup> – Sep 3<sup>rd</sup> 2010

## Data Life Cycle

• Data gathering

Sets of data reach the IATTC headquarters from different sources, usually from its field offices in numerous formats. Once at the IATTC, they are entered into the system and checked for errors using custom applications. The final product is stored in the database servers. Data processing

Data is processed to generate more useful data sets for analysis purposes.  Data analysis and reporting

> Processed data is used by the staff to perform analysis, generate reports, respond to data requests, etc.

### The current systems

- Multiple independent applications for data entry and error checking.
- A database server which holds most of the data sets in a single database. Raw and processed data are often stored together.
- Some processing tasks which are critical for analysis and reporting. (LF&SC, CAE, etc).
- A web site to publish information.



## POINTS TO IMPROVE

- The current database, resulting from two separate programs, has increased in complexity and is often difficult to maintain and support. The structure was designed for data entry and is not optimized for analysis.
- Limited documentation makes it difficult for scientists and non technical staff to access the data.

# IMPROVEMENTS

- Create separate databases oriented to each subject. These databases will be different representations of the existing data, optimized for analysis purposes.
- Create a centralized repository of information about data available, such as meaning, relationships to other data, origin, usage, and format.

## POINTS TO IMPROVE

 There are several critical processing tasks which are costly in terms of time and effort of the data group staff.

# IMPROVEMENTS

- Automate those processes where possible.
- Create new applications to manage those data sets that can not be automated.
   For example: an application to manage the fleet which allows the staff to easily update the fleet database and publish its data.

## POINTS TO IMPROVE

 There are a number of independently developed applications for data entry and data processing that are difficult to maintain and support.

# IMPROVEMENTS

- Develop a team work environment to share code and libraries so that custom applications may be more easily and efficiently maintained.
- Host most of the data entry and data processing applications on the internal website. This will improve security and ease of maintenance.

# POINTS TO IMPROVE

 The IATTC website has become the main mechanism for communication with the world. It has also grown in complexity, becoming difficult to maintain and update using the current design and software.

# IMPROVEMENTS

Develop a completely new website, based on new technology, to be able to release the information produced by the organization more efficiently. For instance: an organized search engine in a data repository to better find public domain data sets.

- Restructure and optimize the existing databases.
- Document the database contents and create the data dictionary.
- Automate critical processes such as the Length Frequency and Species Composition program and the Catch and Effort program.
- Automate data preparation for the Stock Assessments.
- Create applications to assist in managing other datasets; F.i.: Fleet management application, Unloading data managing application.
- Convert/Improve some existing applications for data management. For example the Vessel Register.
- Create a team-work environment to host and manage all of the applications.
- Create an internal portal to host all of the applications.
- Create a new updated website for the IATTC.

### The target

- Multiple related web based applications for data entry and error checking.
- Several database servers with specialized databases for analysis and reporting.
- Automated processing tasks critical for analysis and reporting.
- An updated web site to publish information.

