



# VMS – Logsheet Reconciliation

First TUFMAN Tuna Data Workshop (TTDW-1)  
3-7 December 2012  
SPC, Noumea, New Caledonia



# Background on fisheries data



- Fisheries data management is about several different sources of data
  - Logsheets
  - Observer Logbooks
  - Port Samplings
  - VMS
  - Canneries databases
  - Unloading
  
- Each source of data is independent and brings more information to ensure good statistics and good decisions at both national and regional level
  
- In theory, data sources should match exactly
  - Logsheet catches and unloading count should match on a trip
  - Logsheet, Observer and VMS positions should match for a trip
  - Annual catch estimates for a particular EEZ and the sum of catches from logsheet for the same EEZ

# Background on fisheries data



- By experience, data usually doesn't match perfectly, so data sources should be reconciled and the data raised to approach the reality
  - Usually each data source has its pros and cons in terms of quality
  - The best data source should be used to raise the other sources
  
- Example: Trip catches
  - Logsheet catches are based on visual estimation
  - Unloading catches are based on an actual count
  - Logsheet catches should be raised using unloading data (if any)
  - It is already the case in the TUFMAN system

# Logsheet reconciliation, why ?



- Logsheet data is the main fisheries data source. It contains most of the fisheries information for each fishing trip
  - Catches: by species and by set
  - Effort: number of sets, number of hooks
  - Position: latitude and longitude for each set and also for non fishing days
- It is used by every vessel fishing in the region, and its format is standardized
- The main drawback of logsheet data source is its complicated workflow
  - The logsheet is usually sent to the fishing company by the captain at the end of the fishing trip
  - The fishing company has to send it to the different countries where fishing happened
  - The member countries must manage the logsheet internally and enter it into TUFMAN
- The logsheet can be lost in any of these multiple steps , making the completeness of this data source usually not perfect
- Your reports based on logsheet data are biased and cover only the portion of logsheet actually entered in TUFMAN in country

# Logsheet reconciliation, with what ?



- In order to reconcile logsheet on its completeness, another data source with a better coverage has to be used
  
- The best data source regarding completeness is VMS
  - Each FFA vessel provides its position every X Hrs
  - The workflow is simple (sending and receipting the data via satellite)
  - FFA VMS coverage is greater than 90%, by far the best coverage possible
  
- The logsheet data source and the VMS data source must be compared
  - To generate the coverage of logsheet compared to VMS in percentage
  - To highlight missing logsheet
  - To raise the data from logsheet from its coverage rate to 100%

# Use of logsheet reconciliation



- Raising catches
  - The annual catch estimate in your EEZ for albacore is 8000 metrical tons
  - The result of the logsheet reconciliation with VMS gives a logsheet coverage of 80%
  - The raised catch estimate in your EEZ is 10000 metrical tons
  - The better the logsheet coverage rate, the better the raised catch estimate
  
- Listing missing logsheets to be requested from fishing companies
  - A VMS Trip not reconciled with a logsheet could be a missing logsheet
  - The reconciliation process generates a detailed list of missing logsheets
  - This missing logsheet list can be provided to fishing companies to request them to “fill the gaps” of missing logsheets



## **2. The VMS process**

# What is VMS data ?



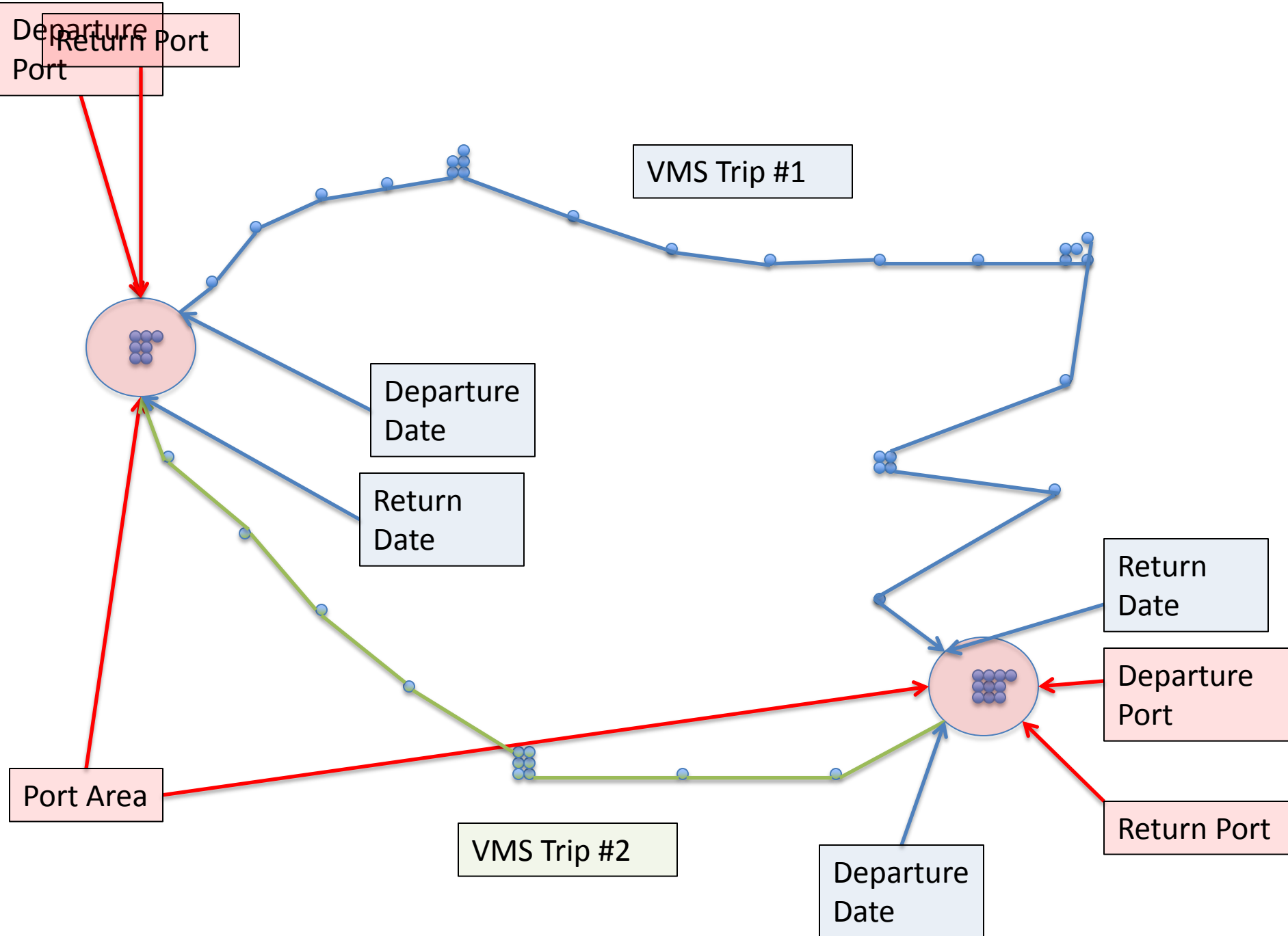
- Simple data
  - Vessel Identifier
  - Date and time
  - Latitude
  - Longitude
  
- Almost 100% accurate
  - No human interaction
  - Computer sending data to a satellite, which forwards the data to another computer
  
- Almost 100% complete
  - Frequent position polling (4 Hrs for longline, 1 Hr for purse seine)
  - Few breakage of on board devices



# Generation of VMS trips



- VMS data is only a position at a certain time
- The main output of SPC VMS process is a list of VMS trips
  - Aggregated piece of information
  - Perfect for comparison with logsheets (fishing trip Vs VMS trip)
- A VMS trip is aggregated VMS data that **starts and ends in a port**. If a trip last longer than a year, it is terminated in a port called **AT-SEA**. This is done mainly for **distant-water longline vessels** that undertake very long trips and often tranship their catch AT SEA and not in a PORT
- VMS trip definition
  - Vessel Identifier
  - Start Port / Start Date
  - End Port / End Date
- It is linked to the different EEZs
  - Each VMS trip has a list of EEZs it entered during that period
  - For each EEZ entered, the number of days spent in the EEZ is also computed



# VMS trip days by EEZ



- The next step is to generate the number of days each VMS trip spent in each EEZ
- If a vessel entered several EEZ during the same day, the day is divided by the number of VMS polling during this day
- Example

VMS trip Id	EEZ	No of days
1	Vanuatu	7.8
1	Fiji	12.2
2	Kiribati	7.2
2	Tuvalu	12.5
2	Tokelau	3.3

# VMS trip fishing days by EEZ



- The final step is to generate the number of days each VMS trip spent fishing each EEZ
- Transit days can only happen at the beginning or at the end of a fishing trip
- They are computed based on average speed between VMS pollings
- Example

VMS trip Id	EEZ	No of days	No of days fishing
1	Vanuatu	7.8	6.8
1	Fiji	12.2	11.2
2	Kiribati	7.2	7.2
2	Tuvalu	12.5	10.5
2	Tokelau	3.3	3.3



## **3. The Reconciliation process**

# VMS trip = logsheet?



- The reconciliation is only **based on start and end dates**, not on the ports
  - Sometimes ports are missing on logsheet
  - Sometimes two ports are so close that the VMS trip ends in one port and the logsheet in another one (i.e. Japan)
- A **VMS Trips is reconciled with a logsheet** if
  - The vessel is the same (uses ffa vessel id in TUFMAN vessel table)
  - The vessel is licensed to fish in the EEZ
  - The depart date and return date match
- Not a perfect science
  - **Not all the logsheets are reconciled with VMS**, and vice-versa
  - A particular VMS Trip can be reconciled with several logsheets, and vice-versa

# VMS Trip must “meet” the logsheets



- The VMS trip list is generated at SPC based on VMS data sent by FFA
- The logsheet list is updated everyday by each member country on their TUFMAN national database
- These two system have no direct link
- Reconciliation performed at SPC
  - SPC has recently started putting in place an automated upload of TUFMAN backup to SPC during in-country visit
  - So far FSM and Cook Islands are sending on weekly basis their TUFMAN data to SPC ensuring up-to-date reconciliation from SPC
- Reconciliation performed in country
  - SPC is providing on its website the VMS Trip list to be loaded into TUFMAN
  - Process details explained later in the presentation

# Logsheet – VMS reconciliation report



- The report is in **Excel format**
  
- It is generated for
  - A particular gear : longliner or purse seiner
  - A particular year
  - A particular fleet
  - Your EEZ / The WCPFC area in case of national fleet
  
- The filename contains the different parameters above :
  - 2008 VMS Logsheet Recon Report - FM area - LL CN fleet.xlsx



# Header Part of the report



The header of the report shows the different parameters used to generate the report

VMS / Logsheet Reconciliation Report						
Gear: <b>Longline</b>						
Fleet :						
Year: <b>2010</b>						
Source: <b>Tufman</b>						
Sub Source:						
EEZ: .....						

# Body part of the report



- The body part has a line for each trip (VMS and/or logsheet)
  - The body column headers :

Vessel Name	Flag	VMS				LOGSHEET						VMS	LOGSHEET
		VMS Depart Date	VMS Return Date	VMS Depart Port	VMS Return Port	Logsheets Depart Date	Logsheets Return Date	Logsheets Start Date	Logsheets End Date	Logsheets Depart Port	Logsheets Return Port	VMS nb days	Logsheets nb days

- The common part
- **The VMS Trip part.** Filled whether or not the VMS Trip is reconciled with a logsheet. Highlighted in Green
- **The logsheet part.** Filled whether or not the logsheet is reconciled with a VMS Trip. Highlighted in Blue.
- VMS nb days / Logsheets nb days represent the number of days this VMS Trip / logsheet spent in the EEZ, **except transit days**

# Body part of the report



Three different scenarios

- A VMS Trip **not reconciled** with a logsheet

Vessel Name	Flag	VMS				LOGSHEET						VMS	LOGSHEET
		VMS Depart Date	VMS Return Date	VMS Depart Port	VMS Return Port	Logsheets Depart Date	Logsheets Return Date	Logsheets Start Date	Logsheets End Date	Logsheets Depart Port	Logsheets Return Port	VMS nb days	Logsheets nb days
HSIANG YUAN 101	VU	26-Nov-09	24-Feb-10	SUVA	LEVUKA							1.17	

- A logsheet **not reconciled** with a VMS Trip

Vessel Name	Flag	VMS				LOGSHEET						VMS	LOGSHEET
		VMS Depart Date	VMS Return Date	VMS Depart Port	VMS Return Port	Logsheets Depart Date	Logsheets Return Date	Logsheets Start Date	Logsheets End Date	Logsheets Depart Port	Logsheets Return Port	VMS nb days	Logsheets nb days
EMELEE 1	VU					2-Jun-10	23-Jun-10	3-Jun-10	22-Jun-10	PORT VILA	PORT VILA		20

- A VMS Trip **reconciled** with a logsheet

Vessel Name	Flag	VMS				LOGSHEET						VMS	LOGSHEET
		VMS Depart Date	VMS Return Date	VMS Depart Port	VMS Return Port	Logsheets Depart Date	Logsheets Return Date	Logsheets Start Date	Logsheets End Date	Logsheets Depart Port	Logsheets Return Port	VMS nb days	Logsheets nb days
YUH CHANG 1	VU	5-Aug-10	29-Aug-10	SUVA	PORT VILA	5-Aug-10	30-Aug-10	7-Aug-10	29-Aug-10	PORT VILA	PORT VILA	23.00	23

# Summary part of the report



The number of trip coverage

- This summary provides the **coverage** of both VMS Trips and logsheet compared to the total number of trips

	Trips	Coverage (%)
Estimated Trips	47	
VMS Trips	39	82.98
Logsheet Trips	21	45

- **Estimated Trips** : Count the rows in the body part
- **VMS Trips** : Count the rows with a VMS Trip in the body part
- **Logsheet Trips** : Same as above for logsheets
- Here, data established from logsheet should be raised **from 45 % to 100 %**



The number of days coverage

	Nb Days	Coverage (%)
VMS Days raised to 100%	647	100
Logsheet Days	279	43

- This summary raises the total number of VMS Trip days to 100 % using it's previous number of trip coverage
- The total logsheet days are then compared to the raised total VMS Days to generate the logsheet coverage



We recommend to use **the highest logsheet coverage rate** in order to raise data based on logsheets

# Summary part of the report



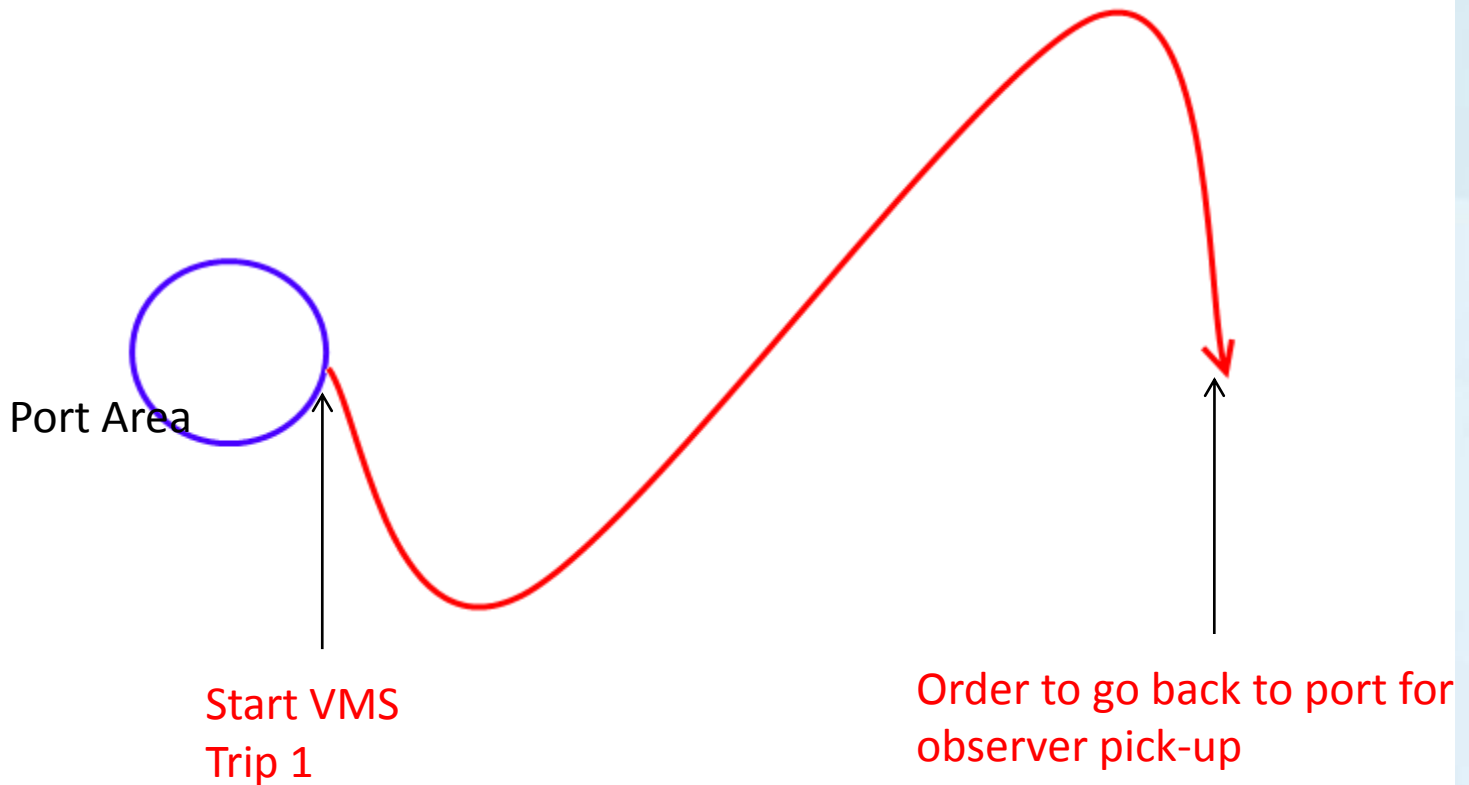
## The raised catches

- One of the possible use of the coverage rate is to raise the catches by species
- This feature is part of the Logsheet – VMS reconciliation report

	% cov	Total Catch By Species (MT)			
		SKJ	YFT	BET	ALB
Logsheet (unraised)		0.08	48.90	4.02	65.83
Logsheet (raised - DAYS coverage)	43.14	0.19	113.35	9.33	152.59
Logsheet (raised - TRIPS coverage)	44.68	0.18	109.44	9.01	147.33

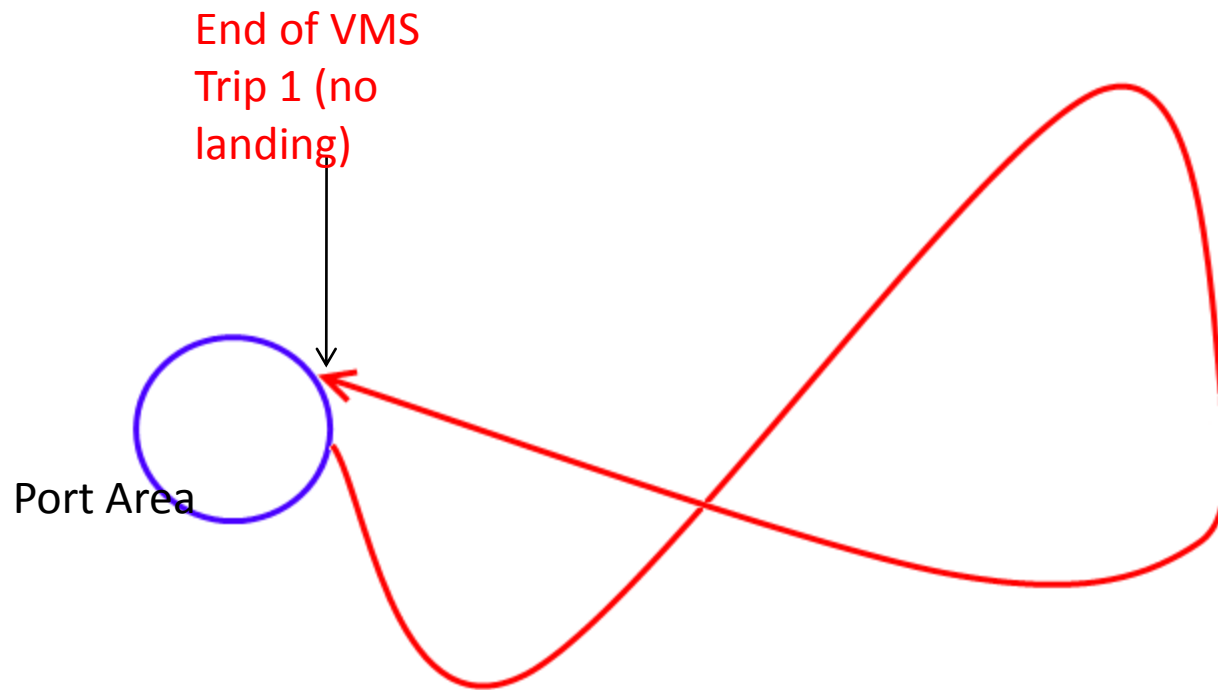
- This report sorts by species and uses both coverage type to generate the raise catches
- It only shows the catches within your EEZ
- Bill-fishes are also included

# Special case

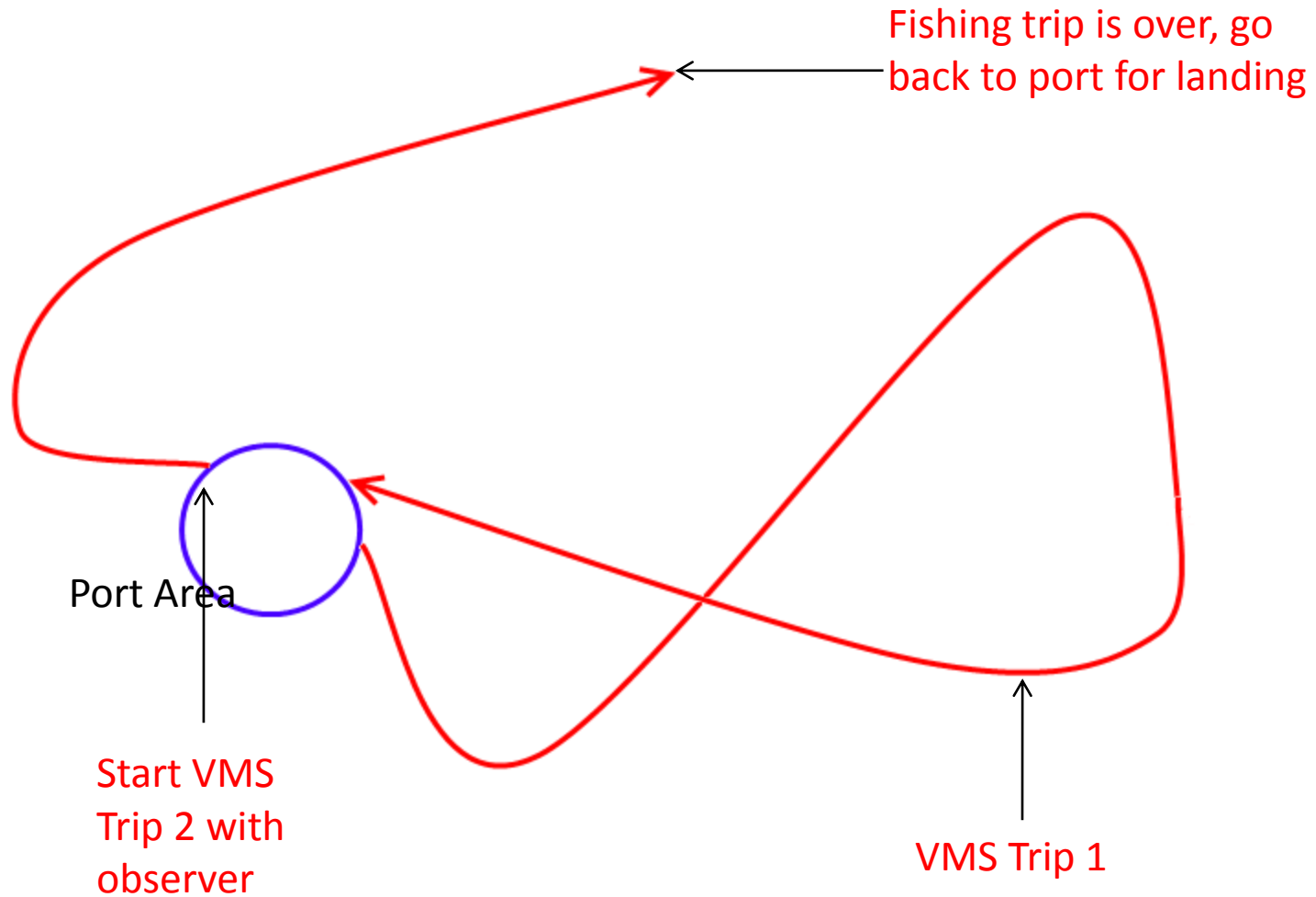




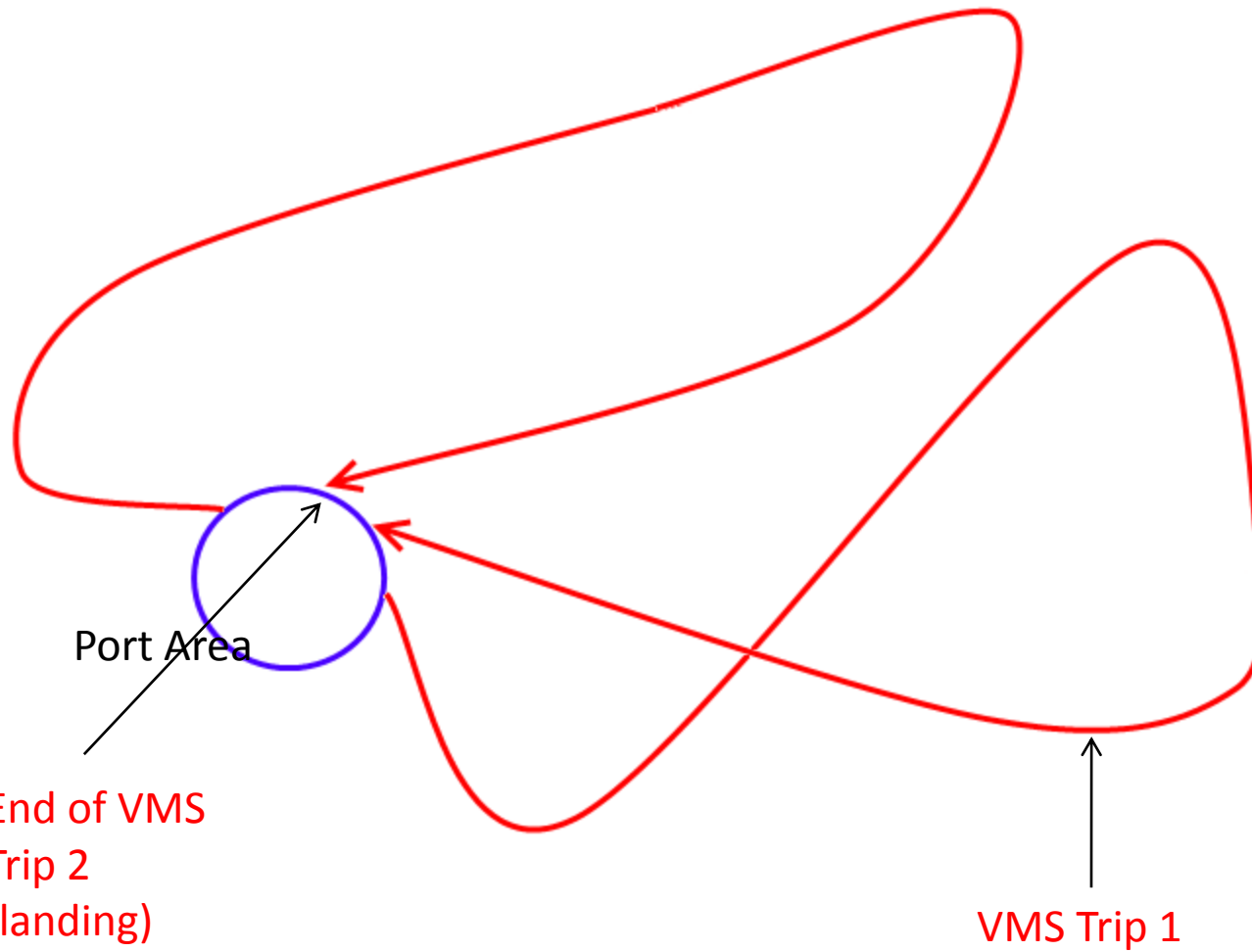
# Special case



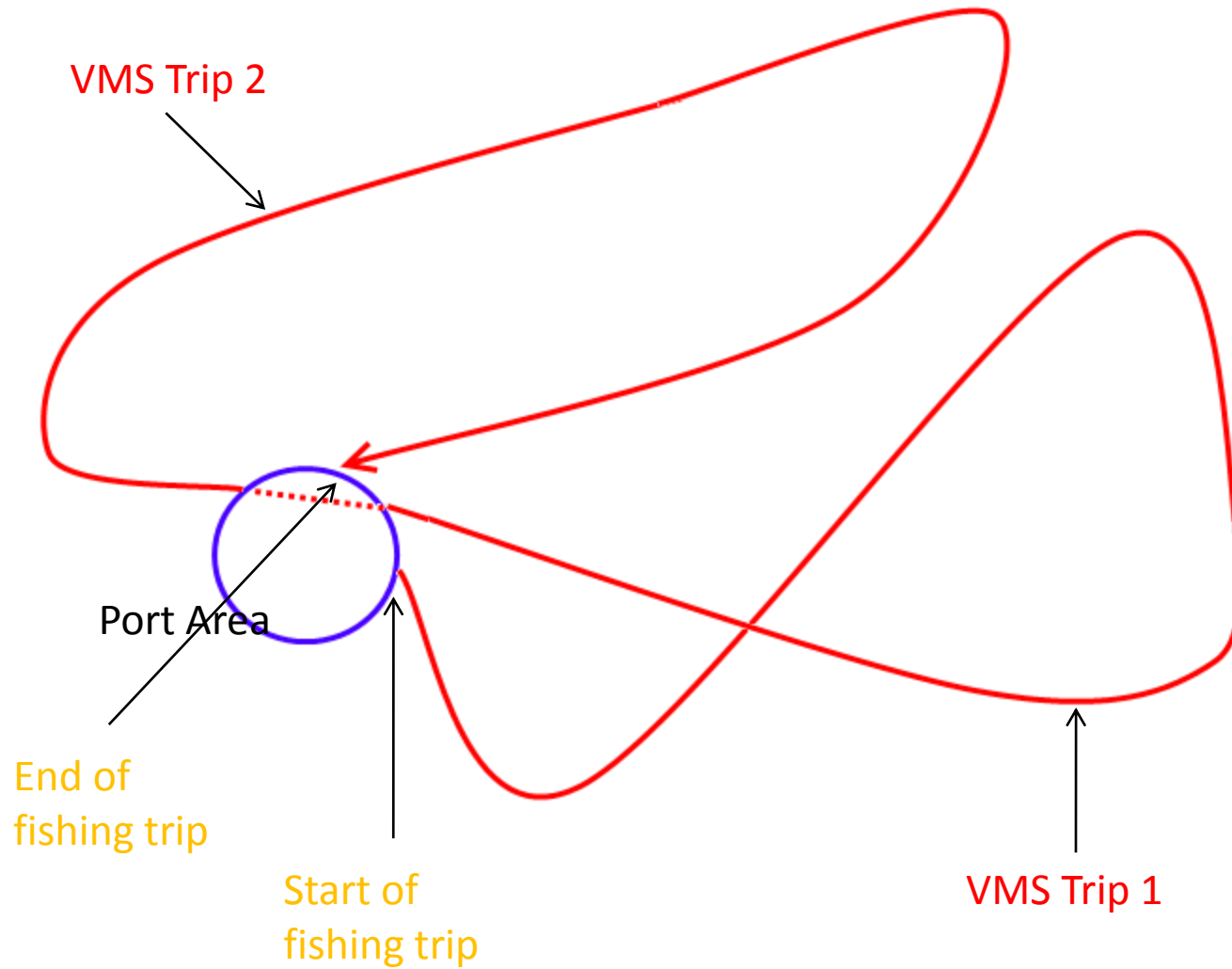
# Special case



# Special case



# Special case





## A Logsheet can be reconciled **with more than one VMS Trip**

- The reason could be that the vessel entered a port area in transit, ending the VMS Trip, but not the logsheet

Vessel Name	Flag	VMS				LOGSHEET						VMS	LOGSHEET
		VMS Depart Date	VMS Return Date	VMS Depart Port	VMS Return Port	Logsheet Depart Date	Logsheet Return Date	Logsheet Start Date	Logsheet End Date	Logsheet Depart Port	Logsheet Return Port	VMS nb days	Logsheet nb days
YUH Y11	TW	8-Aug-09	25-Aug-09	SUYA	PORT VILA	8-Aug-09	14-Sep-09	11-Aug-09	14-Sep-09	SUYA	PORT VILA	14.00	30
YUH Y11	TW	27-Aug-09	16-Sep-09	PORT VILA	PORT VILA	8-Aug-09	14-Sep-09	11-Aug-09	14-Sep-09	SUYA	PORT VILA	14.00	30

- In this case, the logsheet is reconciled with two VMS Trips
- The “join” of these two VMS Trip reconciles accurately the logsheet
  - The start date and end date are similar
  - The number of days is also similar : 28 Vs 30
- In this case, the number of days in the summary are accounted once for the logsheet : 30
- The same thing can happen for one VMS Trip and two logsheets



## **4. Reconciliation in country**

# Reconciliation in Tufman



- Real-time reconciliation process
  - No need to wait for SPC to provide the report
  - See the gaps in logsheet coverage being filled “LIVE”
  
- VMS Trips generated at SPC
  - VMS Trips are mandatory for reconciliation
  - SPC needs to send them to members TUFMAN
  - New Tufman feature: Data Importation
  
- New Reconciliation feature
  - Trips must be reconciled with logsheet in-country
  - New Tufman feature: Data Reconciliation

# Data Importation in Tufman



- VMS Trips are generated at SPC and are uploaded to the SPC member web site
- One file per member
- The frequency has to be decided (so far once a month)

The screenshot displays the SPC Oceanic Fisheries Programme website. The header includes the SPC logo and the text "SPC Oceanic Fisheries Programme" and "SPC Member Countries Tuna Fisheries web site". Below the header is a row of flags representing member countries. The main content area shows a breadcrumb trail: "Home > Downloads > Categories > Samoa > TUFMAN". A "LOG OUT" button is visible in the top right. On the left, there is a navigation menu with links for "HOMEPAGE", "COUNTRY HOMEPAGES", and "CATCH & EFFORT SUMMARIES" (with sub-links for AMERICAN SAMOA, COOK ISLANDS, and FIJI). The main content area features a search bar with "TUFMAN" entered, a file listing for "TUFMAN VMS Imports (13.42 KB)" with "Details" and "Download" buttons, and a "Display Num" dropdown set to "20". The footer indicates "Powered by Phoca Download".

- Go to Tufman > Admin > Import FFA VMS Trip Data > Locate and then Import
- The import process can last several minutes




# Data Importation in Tufman



T U F M A N

**MAIN MENU**

- Main
- Licensing
- National Fleet
- Data Registry
- Logsheets
- Vessel Activity Log
- Observers
- Port Sampling
- Unloadings
- Packing Lists
- Reporting
- VDS Management
- Admin**



**Fiji**

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**Secretariat of the Pacific Community**  
**Oceanic Fisheries Programme**  
2003 - 2011  
Version 6.17

Exit Tufman

PowerUser: BRUNOD    Logged on the 17-Apr-2012 at 8:56:50 AM    C:\Users\brunod\Desktop    Server=nousql50\sqlexpress; DB=tufman\_fj

Form View    Num Lock

# Data Importation in Tufman



**T U F M A N**

User Administration

Change Admin Password

ReLink tables

Import FFA VMS Data

**Import FFA VMS Trip Data**

License setup

Profile setup

Mapinfo path

Run a full reconciliation

# Data Importation in Tufman



Tufman

Please enter the path for the FFA VMS Trip data file:

FFA VMS XML Data File :

Locate

Import New FFA VMS Trip Data

Close

Form View Num Lock

# Data Importation in Tufman



Choose an XML data file

Navigation: db1 (\\loche) (G:) > Tuna\_dbs > VMS > Tufman Export

Search: Search Tufman Export

Organize > New folder

Name	Date modified	Type
Backup	4/17/2012 9:40 AM	File folder
FJ_Full.xml	4/13/2012 11:35 AM	XML Document

File name: FJ\_Full.xml

File type: XML Files (\*.xml)

Buttons: Open, Cancel

# Data Importation in Tufman



Tufman

**Please enter the path for the FFA VMS Trip data file:**

FFA VMS XML Data File :

G:\Tuna\_dbs\VMS\Tufman Export\FJ\_Full.xml Locate

**Import New FFA VMS Trip Data**

Microsoft Office Access

**i** Import Successful - no errors

OK

Close

Form View Num Lock

# Data Reconciliation in Tufman



- After importing the VMS Trips, they have to be reconciled with the logsheets
- Go to Tufman > Admin > Run a full reconciliation
- The import process can last from several minutes to half an hour


# Data Reconciliation in Tufman



T U F M A N

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Form View    Num Lock

# Data Reconciliation in Tufman



**T U F M A N**

User Administration

Microsoft Office Access

This process could take a while

OK Cancel

License setup

Profile setup

Mapinfo path

Run a full reconciliation



# Reconciliation Report in Tufman



- After the import and the reconciliation, you can use the reconciliation report
- Go to Tufman > Reporting > VMS
- Set the parameters, just like any other Tufman Report

# Reconciliation Report in Tufman



T U F M A N

**MAIN MENU**

- Main
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Form View    Num Lock

# Reconciliation Report in Tufman



T U F M A N

**REPORTS**

- Post-entry Processing
- Catch / Effort**
- Licensing
- Mapping
- WCPFC
- Data Quality / Coverage
- ITDC Administration
- Compliance / Surveillance
- Position Reports
- Artisanal
- Custom Reports
- Vessel Data
  - VMS**
- Return to Main Menu

**VMS Reports**

1	Reconciliation - Logsheets with VMS
2	Reconciliation - Logsheets with VMS - Summary Only

**Gear**

**Nationality of Catch**

National Fleet

(Licensed vessels only)

Company Nationality

Flag of registration

**Time**

Year: 2012

**Company**

Select Company

**VMS Trip Duration**

Days: 0

Run Report    **Run and Open in EXCEL**

PowerUser: BRUNOD    Logged on the 17-Apr-2012 at 8:56:50 AM    C:\Users\brunod\Desktop    Server=nousq50\sqlexpress, DB=tufman\_fj    Num Lock



# **5. TUF WEB RECON**

## **Live Demo**



- Possibility to access reconciled data from any computer connected to the Internet, even without TUFMAN installed (use Chrome or Firefox)
- Provides detailed list of logsheet with multiple filters
  - Filter missing logsheet only
  - Logsheet list can be generated by fishing company
- Provides aggregated data to know in one click the coverage rate of any fleet fishing in your EEZ, with chart to see the evolution
- Export to Excel enabled
- Security ensured by the use of the member country website login and password



- Unlike TUFMAN regular reconciliation process, SPC doesn't send you VMS data, but you send SPC logsheet data
- TUF WEB RECON is web application hosted at SPC
- TUF WEB RECON will only work if SPC can have regular logsheet feed from member countries to be reconciled with SPC VMS data feed (coming from FFA)
- Thus, usage of electronic data transfer is mandatory to have actual information in TUF WEB RECON



## **6. Conclusion**



- The reconciliation process allows you to have a better view of the fishing effort in your EEZ by raising logsheet data
- It also provides the detailed list of missing logsheets to be requested and entered into your TUFMAN system
- The better the coverage, the best the raised estimation will be