

Western Pacific Fishery Information Network (WPacFIN) Program at PIFSC

Pacific Islands Data Technical Support and Historical Overview

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WPacFIN Program Overview

1. Program established in 1981.
2. Vision and Mission
 - Provide best available fisheries dependent data in support of federal and state/territorial fishery requirements in the US Pacific EEZs.
 - Assist state and territorial agencies in establishing, maintaining and sharing computerized fishery data collections.
3. Member Agencies:
 - American Samoa, Department of Marine & Wildlife Resources (DMWR)
 - Commonwealth of the Northern Mariana Islands, Division of Fish and Wildlife (DFW, Dept. Lands & Natural Resources)
 - Guam, Division of Aquatic and Wildlife Resources (DAWR, Dept. Agriculture); Bureau of Statistics and Plans (BSP)
 - Hawaii, Division of Aquatic Resources (DAR, Dept. Land & Natural Resources)
 - Western Pacific Regional Fisheries Management Council (Council)
 - PIRO and PIFSC

Pacific Islands Resources Availability and Requirements

Availability IT Resources Local Limitations:

- Limited local funding available
- Limited technical expertise and local staffing
- Computer equipment, computer supplies and IT service support are limited on all non-Hawaiian islands (AS, CNMI and Guam). A few examples:
 - During the 80's, there were no computer stores in these areas (computers were brought in by WPacFIN)
 - Gradually IT equipment available in the islands, but expensive and very limited
 - Internet connection still a limited resources at time.
- Local procurement limitations & red tape.

Fishery data summary requirements for the Pacific Islands Area:

- Annual Council plan team summary reports (since 80's)
- Fisheries of the US (since 80's)
- Fisheries Statistics of the Western Pacific annual report (since 1979)
- Local data needs
- Local, PIFSC, Council and national ad hoc data requests



Setup wireless connection repeater for DAWR's fishery new building in April 2013. Wireless signal is captured from adjacent Wildlife building.

WPacFIN Central Services

WPacFIN Central is a one-stop shop for island agencies to obtain technical support, which:

1. Works with island staff to design and implement fishery dependent data collection programs
2. Designs and develops database and software applications that help islanders capture collected time series data in electronic form and produce data summaries to support data needs and requirements
3. Provides IT technology recommendations and direct support services
 - Computer hardware and software upgrades (*increasingly procurement issues make this infeasible*), trouble shooting and repair
 - Internet setup (LAN, WiFi)
 - Software training
 - Training in data collection procedures and techniques
4. Serves as a conduit to share data within and between participating agencies:
 - Manages a central WPacFIN database to support data needs and serve as an offsite data backup.
 - Provides specified non-confidential data summaries to meet management needs.

About Pacific Islands Data

- **Data collections designs were based on local needs and adapted to serve federal data requirements.**
- **Main focus since early 1980s was on tracking trends in CPUE for commercial landings and major shoreline and offshore fisheries.**
- **Field data implementation, collections and processing are done at local agency and based on local capabilities and resources.**
- **Except for Hawaii (commercial data), there are few legal reporting requirements.** Providing catch and sales information is mainly voluntary.
- **Any WPacFIN grant funding to agencies has generally been an add-on to support mainly commercial landings data collection programs.**
- **Major funding support for most data collection programs in the Pacific islands has been:**
 - **Federal Aid in Sport Fish Restoration grants (Dingle-Johnson/Wallop-Breaux funds)**
 - **Interjurisdictional Fisheries Act (rescinded two years ago).**

Databases, Data Processing and data reporting software Systems

WPacFIN Central has developed and continued to maintain the following data systems:

1. Boat-based Surveys - AS, CNMI and Guam
2. Shore-based Surveys - AS, CNMI and Guam
3. Dealer (Commercial Receipt Books) - AS, CNMI, Guam and Hawaii
4. Fishers Catch Report (Commercial Marine License) – Hawaii
5. Foreign Longline Vessels Transshipment – Guam
6. Federal Longline Logbook (DMWR collects and processes; PIFSC manages) – AS
7. Cannery Offload Sampling – American Samoa (PIRO staff)
8. Cannery Vessel Departures and Arrivals Log – American Samoa (PIRO staff)
9. Local Boat Registration System – AS and CNMI
10. Fish Import System – CNMI
11. Council Plan Team Data Summary Modules - AS, CNMI, Guam and HI
12. Fisheries of the US data summary modules (for Pacific island areas) - AS, CNMI, Guam, HI
13. Fisheries Statistics of the Western Pacific data summary modules - AS, CNMI, Guam, HI

Each data system (*except the data summary modules*) is a complete package that has its own database and supports the following functions:

1. Data entry and editing
2. Data quality control error reporting
3. Data expansions (creel survey systems)
4. Data summary reporting
5. Data exports and backup

The software has evolved over the years. Most recently developed systems are in Visual FoxPro, and are being translated to a MySQL/C# system and synchronized to Oracle at WPacFIN Central.

Databases

Boat-based Surveys (AS-DMWR, CNMI-DFW and Guam-DAWR)

- **Survey of boats that use boat ramps as an access point (or moor at designated boat docks/harbors).**
- **Data collections began:** AS-DMWR 1985, CNMI-DFW 2000, Guam-DAWR 1982.
- **Data are used to** create expanded landings estimates by fishing method for the offshore fishery.
- **Data components:**
 - Island-wide fishing effort counts (except American Samoa) – Spatial adjustments
 - Fishing trip counts by method at surveyed port – Estimated total fishing effort (trips) by fishing method for charter and non-charter sectors
 - Trip's catch data collected by port and fishing method via interviews – Estimated catch & effort by method for charter and non-charter sectors
 - Representative length and/or weight measurements by species – estimated weight by species or group
- **Data Used for:** Council data requests & data summaries, Pelagics Plan Team (PPT), Bottomfish Plan Team (BPT), Coral Reef Plan Team (CREPT), estimated recreational landing, ACL estimates and monitoring, estimated total catch, commercial landings (AS only), various other reports and landings estimates (Fisheries of the US, FOSS, etc.)

Databases (cont.)

Shore-based Surveys (AS-DMWR, CNMI-DFW and Guam-DAWR)

- **Survey of people fishing or gleaning along the shoreline.**
- **Data collections began:** AS-DMWR 1990, CNMI-DFW 2005, Guam-DAWR 1985. *Time series is fragmented in some areas.*
- **Data are used to** create expanded landings estimates by fishing method for the shoreline fishery.
- **Data components:**
 - Fisher counts and number of gears per fisher – Estimated total fishing effort (gear-hours) by gear type
 - Catch data collected via interview by gear type for surveyed route – Estimated catch and effort (per gear-hour) by gear type
 - Species length and/or weight measurement – estimated weight of catch by species
- **Data Used for:** Council data requests, Council Bottomfish Plan Team (BPT), Coral Reef Plan Team (CREPT), and ACL estimates and monitoring.

Databases (cont.)

Dealer Data (AS-DMWR, CNMI-DFW, Guam-DAWR, and Hawaii-DAR)

- **Trip ticket sale receipts of fish sale to local fish vendors from fishers.**
- **Data collections began:** 1990 (AS), 1983 (CNMI), 1979 (Guam), 1999 (HI)
- **Data Used for:**
 - Economic data portion of Council Plan Team data summaries, and various other reports on commercial landings estimates for the Pacific islands area (Fisheries of the US, FOSS, etc.)
 - Hawaii has multiple uses, including:
 - Cross-checking with fisher reporting data for quality control (delinquencies, numbers reported, etc.)
 - Augmenting Hawaii fisher catch report data to provide a second estimate of total landings for monitoring the Hawaii “Deep 7” Bottomfish ACL
 - Estimating mean weight for Hawaii longline species, used in estimating weight of total landings for the longline fishery and fast tracking longline quotas (e.g. bigeye tuna, yellowfin tuna, striped marlin).

Databases (cont.)

Fishers Catch Report (Hawaii-DAR):

- **Fish catch reports by fishers.** *Data before FY 2003 include commercial sales information.*
- **Data collection began:** 1948
- **Data Used for:**
 - Council Plan Team data summaries (Pelagics, Bottomfish, etc).
 - Hawaii “Deep 7” bottomfish ACL monitoring.
 - Stock assessments.
 - Support various reports on landings estimates for Hawaii (Fisheries of the US, FOSS, etc.)

Foreign Longline Vessels Transshipment out of Guam (Guam-BSP):

- **Data collection began:** 1989
- **Data are used to support:**
 - Council Guam PPT data summary.
 - SPC uses these data in its international pelagic landings summary.
 - Foreign longline vessel characteristics data summary for PIRO.

American Samoa Longline Logbook Data (AS-DMWR):

- **Data collection began:** 1996
- Data entry and preliminary quality control of the AS longline logbook data.
- Data are used to estimate AS commercial landings from the longline fishery.

Databases (cont.)

American Samoa Longline Cannery Offload Sampling Data (PIRO staff):

- **Data collection available since:** 2001
- **Data are used to** estimate mean weight and disposition (cannery vs local market) of longline catch (kept) species for the American Samoa longline data.

AS Cannery Vessel Departures and Arrivals Log (PIRO staff) and AS Longline Large Vessel Monitoring Data (PIRO Observer Staff)

- **Data collection available since:** 2004 (cannery vessel log); 2011 (longline vessel monitoring, maintained by the PIRO Observer Program)
- **Data Used to:**
 - Track delinquencies in submitting AS longline logbooks,
 - Supplement logbook data in tracking the number of vessels actively fishing (quarterly and annual longline reports).

Local Boat Registration System (AS-DMWR and CNMI-DFW):

- **Data Used to** validate vessel data collected in the boat-based creel survey
- Data processing is done by the CNMI Dept. of Public Safety and American Samoa's Division of Marine Patrol (Dept. Public Safety).

CNMI Fish Import System (CNMI-DFW):

- Frozen fish imported into Saipan by airplanes and containers.

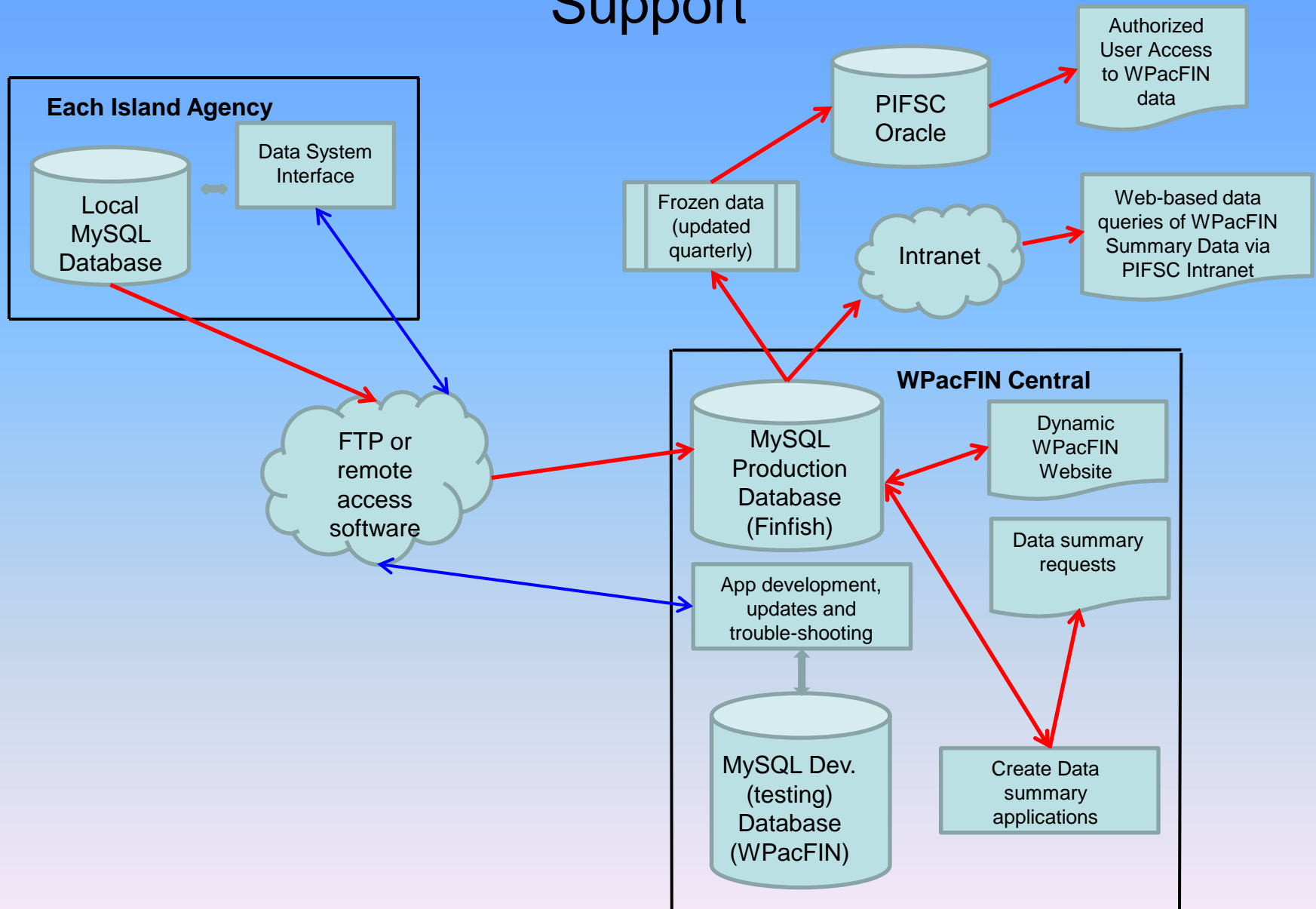
The New Frontier

WPacFIN Central is currently working on converting island data systems to a new environment – MySQL client/server database and C# to develop user interfaces for data entry/edit, data quality control, reporting and system maintenance tools.

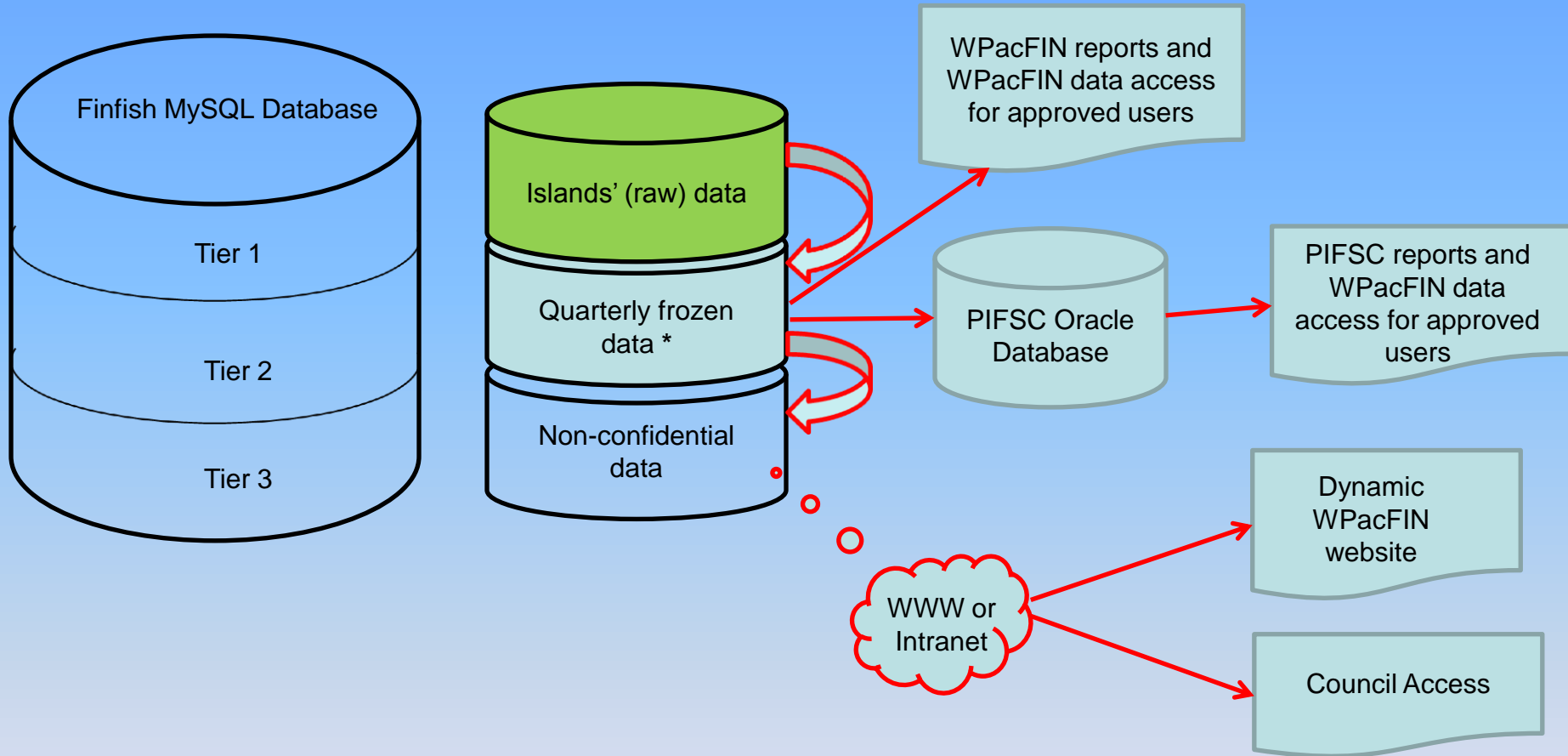
The objectives of and reasons for the conversion:

- Existing application development tool (Visual Foxpro) is obsolete
- Changes in WINDOWS operating systems and hardware
- NOAA security restrictions
- Maximizing use of existing (free) technology to “do more with less”
- Each island to have it own centralized database with the capability to support other non-fishery-dependent data
- Data sharing and remote support: Ability to access the data remotely (*reduce travel costs*) and locally from any computer within the same network
- Provide a wider range of software support to build user interfaces, which may be available locally (in-house or via contract)
- Easy to adapt to web-based technologies
- Data can be directly synched into Oracle database at the PIFSC to share with other (approved) users NMFS-wide.

New WPacFIN Generation Dataflow and IT Support



WPacFIN Central Database Distribution



** A "frozen" data set is created on the 15th of the month, following the previous quarter (Apr 15th, July 15th, Oct 15th, and Jan 15th).*

New WPacFIN Generation Development Priority

To minimize interruption to data support requirements and island data collection processes, WPacFIN Central has developed the following working priorities:

1. Continue to use existing VFP applications to process the data and produce required reports.
2. At the same time, staff will develop applications in MySQL/C# environment to:
 - a. Migrate data from VFP database into MySQL database
 - b. Migrate data from MySQL into the PIFSC Oracle database
 - c. Create island creel surveys data expansions in MySQL
 - d. Create commercial landings data summary tables in MySQL
 - e. Produce Council plan team reports
 - f. Produce FUS data summaries
 - g. Produce WPacFIN web-site data summaries
 - h. Produce FSWP data summaries
3. Develop C# applications to provide users an interface to:
 - a. Conduct routine data entry/editing
 - b. Run data quality control error reports and conduct cross-checking
 - c. Fulfill local and Council reporting requirements
 - d. Fulfill data maintenance functions
4. Conduct parallel data processing/testing, until the new environment is ready to replace the legacy VFP system.

Program Challenges

- Pacific islands encompass over 50% of US EEZ...High cost in distance travel and coordinating data support activities (travel restrictions, etc.)
- Local funding is experiencing a major short fall (IFA) and is restricted in the use of Sport Fish Restoration Funds (which do not support collection of commercial fisheries data)
- Constant turnover of local agencies' key staff...Loss of stability and local capacity (marine biologists and field data collection staff)
- Limitation and/or lack of IT capability and support in local island agencies
- Funding for WPacFIN program has been the same (or decreasing) for the past 20 years. Initial funding was not designed to support current fisheries monitoring mandates (MSA).
- Species level ACL monitoring requires a greater amount of detail than is supported by existing programs (fishing gear/method level CPUE).
- Data collection programs require modifications to properly support ecosystem based management
- Central WPacFIN workforce is 75% JIMAR contractors (only 2 federal staff)



Early 90's



2013

Questions?



Picture: Staff measuring fish during a boat-based creel survey (CNMI-DFW)