PIR Data Needs for Stock Assessments
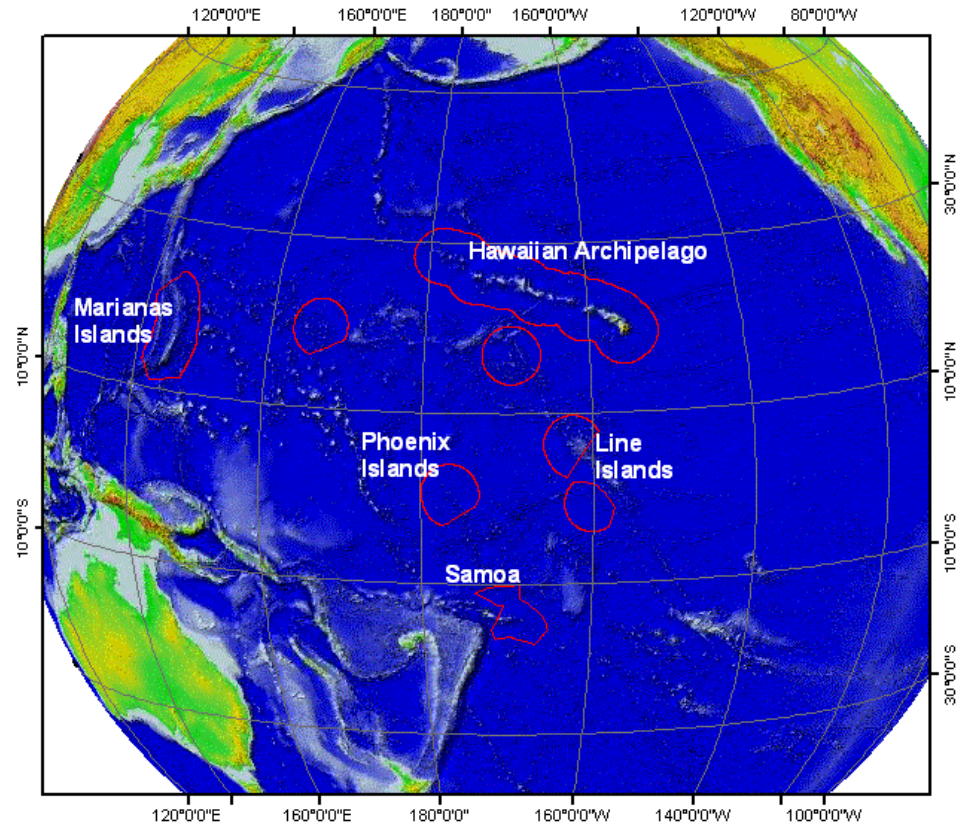
Gerard DiNardo

NOAA Fisheries

Presentation Topics

- **The Landscape**
- **PIFSC Stock Assessment Program**
- **Stock Assessments – Process and Complexity**
- **Data Collection Programs**
- **Bottlenecks**

The Landscape:
Geographic Area of Responsibility

Characteristics
- **Vast Area**
- **Multiple Jurisdictions**
- **Tropical, Sub-tropical and Temperate Ecosystems**
- **Pelagic and Insular Fisheries**

PIFSC Stock Assessment Program Goals

- **Provide scientific advice to resource managers on the current status and future trends in abundance and productivity of exploited marine resources in the Central and Western Pacific Ocean.**

- **Provide the technical basis for setting annual catch limits and other fishery management measures that achieve optimum yield from the fishery while avoiding overfishing and ecosystem harm.**

- **Provide scientific and quantitative support to RFMOs and RFOs**

- **Overarching Mandate -- Magnuson-Stevens Act (MSFCMA)**

PIFSC Stock Assessment Program Responsibilities

To Support Goals, the PIFSC Stock Assessment Program:

- **Conducts Resource Evaluations and Assessments**
- **Develops Improved Quantitative Techniques (Model Development)**
- **Develops Science and Decision Support Tools (control rules) to Support Implementation of Ecosystem Approaches to Fisheries Management in PIR**
- **Quantifies Fishery Interactions (Bycatch Estimation)**
- **Provides Scientific and Quantitative Expertise to PIFSC, PIRO, WPRFMC, State of HI, WCPFC, ISC, IATTC, and other emerging RFMOs (NPFC)**

Scientific and Management Mosaic Insular Fisheries
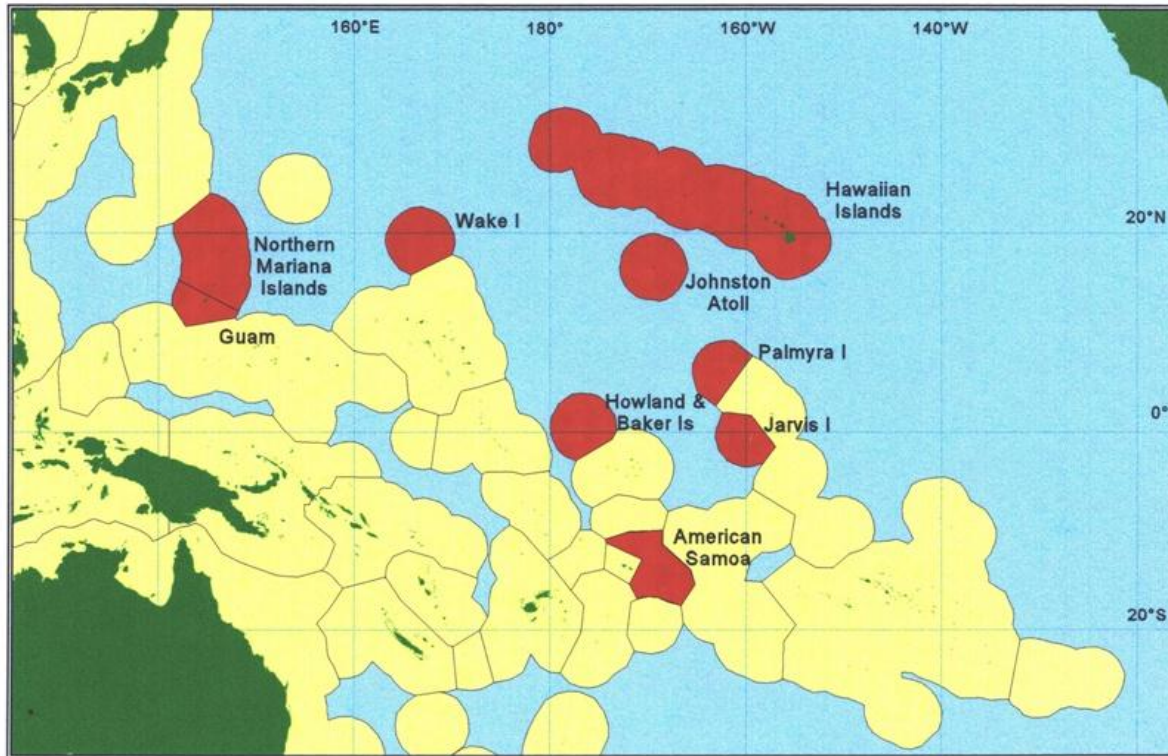
Exclusive economic zones (EEZs) of the Pacific Islands.
Western Pacific Regional Fishery Management Council EEZ area shown in red.

Constituents/Partners
- **WPRFMC**
- **State of HI**
- **Territories**
- **Other US Gov't Agencies (NOS)**

Species of Interest – Insular Fisheries

- **Bottomfish (Data Poor Stocks)**
  - **Snappers, groupers, jacks (BMUS = 14)**
    - **Deep 7 focus**
  - **Seamount groundfish (GMUS = 3)**
- **Coral Reef Fish (Data Poorer Stocks)**
  - **> 200 species**

- **Crustaceans (Data Poor Stocks)**
  - **spiny and slipper lobster; crabs; shrimp (CMUS = 10)**
- **Precious Corals (Data Poor)**

Stock Assessment Process Insular Fisheries
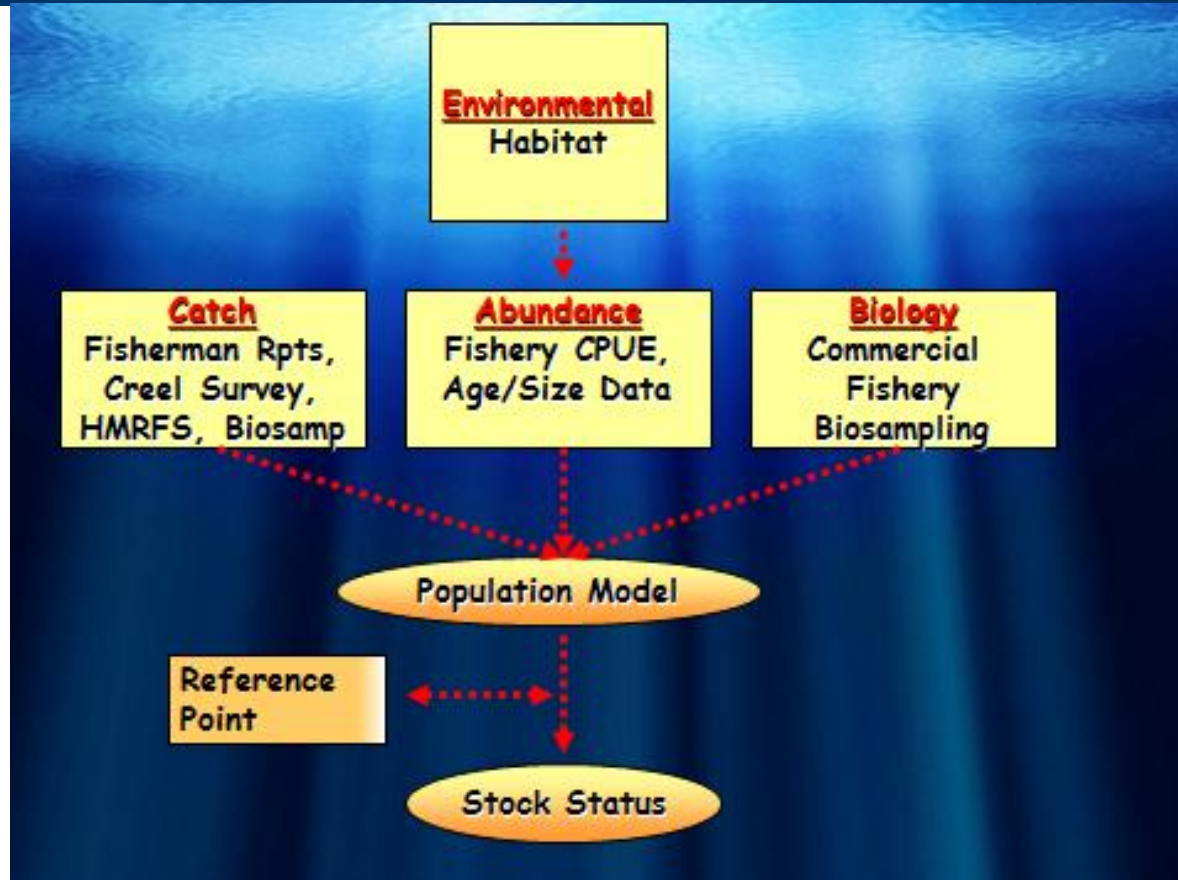
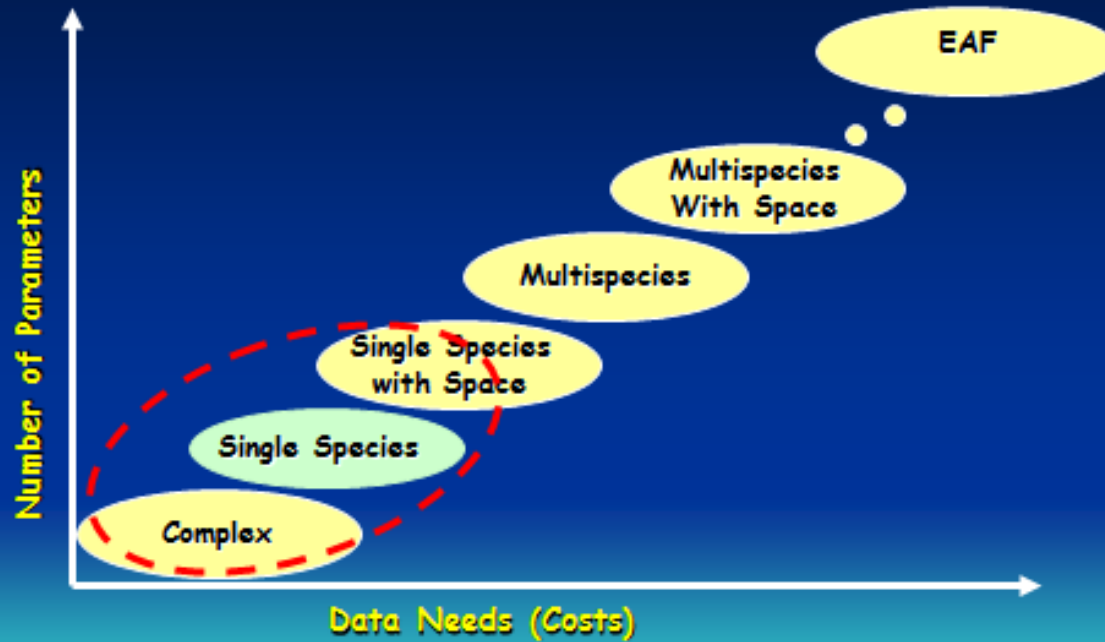# Stock Assessment Data Sources – Insular Fisheries

Data Source	Catch	Effort	Size (len/wt)	Life Hist. Parm.	Abund / Density	$$
Comm. Fisherman Rpts. (HI)	X	X			X	
Creel Survey (Territories – WPacFIN)	X	X			X	
HMRFS (HI - Recreational)	X	X				
Comm. Fishery Biosampling	X		X	X		
Dealer			X			X

Model Complexity
Insular Bottomfish Fisheries

NMFS Assessment Tiers

0 = none
1 = index only (commercial or research CPUE)
2 = simple life history equilibrium models
3 = aggregated production models
4 = size/age/stage-structured models
5 = add ecosystem (multispecies, environment), Spatial & seasonal analyses

Scientific and Management Mosaic Pelagic Fisheries

Species of Interest
- Tunas
- Billfish
- Sharks
- Other pelagics

(PMUS = 30)

Scientific and Management Mosaic Pelagic Fisheries

GLOBAL MANAGEMENT OVERVIEW

Constituents/Partners

RFMOs
- **WCPFC**
- **IATTC**
- **NPFC**

RFOs
- **ISC**
- **PICES**

WPRFMC

Pelagic Fisheries Assessment Framework

U.S. Participates in the Assessment Process

- **Data Exchanges**

- **Assessments (area specific) – collaborative**
  - Management area specific
    - WCPO – WCPFC (tunas, billfish, sharks)
    - EPO – IATTC (tunas, billfish, sharks)
  - Stock specific
    - "North" Pacific – ISC (tunas, billfish, sharks)

RFMO Assessment Process (WCPFC and IATTC)

- **Commission Identify List of Species**
- **Science Providers Conduct Assessments**
  - **WCPFC – SPC**
  - **IATTC – Staff**
- **Assessment Reviews**
  - **WCPFC – SC Meeting (August)**
  - **IATTC – SAC Meeting (May)**

RFO Assessment Process - ISC

ISC Organizational Chart (July 2012)

Plenary
Gerard DiNardo (Chair)
Chi-Lu Sun (Vice Chair)

J. Holmes (Canada)   M. Dreyfus (Mexico)
L. Song (China)   F. Werner (USA)
S.-L. Lin (Chinese Taipei) J. Majkowski (FAO)
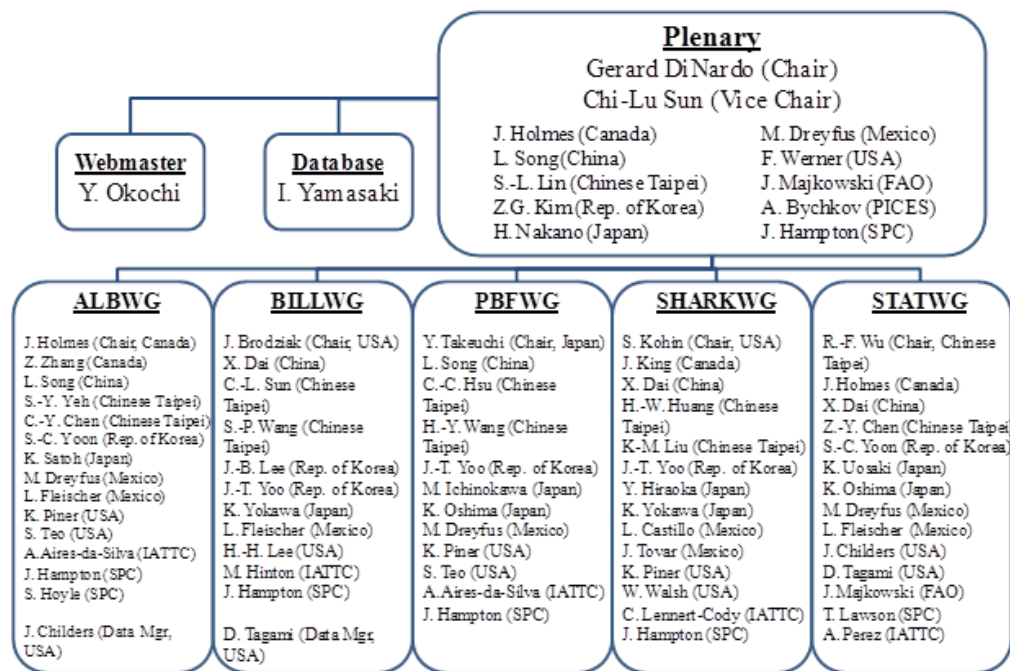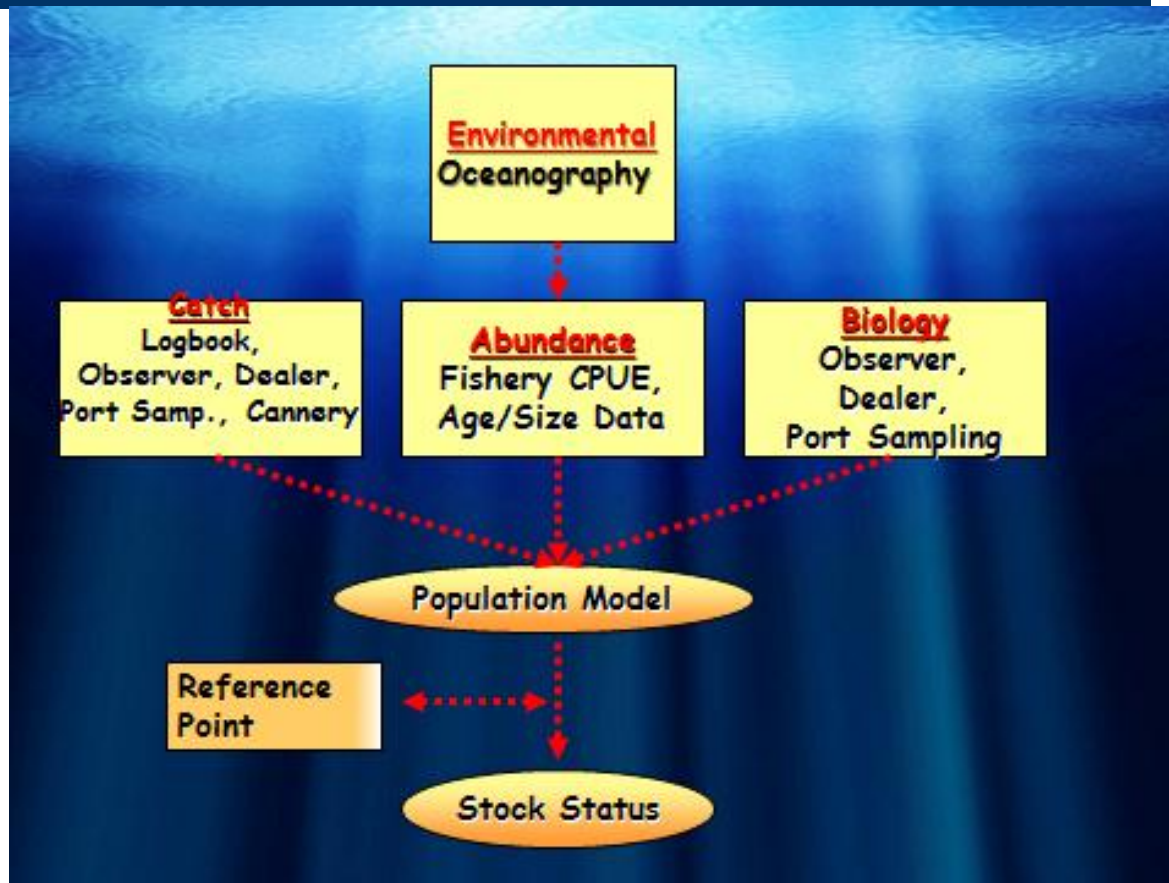Z.G. Kim (Rep. of Korea)   A. Bychkov (PICES)
H. Nakano (Japan)   J. Hampton (SPC)

Webmaster
Y. Okochi

Database
I. Yamasaki

ALBWG
J. Holmes (Chair, Canada)
Z. Zhang (Canada)
L. Song (China)
S.-Y. Yeh (Chinese Taipei)
C.-Y. Chen (Chinese Taipei)
S.-C. Yoon (Rep. of Korea)
K. Satoh (Japan)
M Dreyfus (Mexico)
L. Fleischer (Mexico)
K. Piner (USA)
S. Teo (USA)
A. Aires-da-Silva (IATTC)
J. Hampton (SPC)
S. Hoyle (SPC)

J. Childers (Data Mgr, USA)

BILLWG
J. Brodziak (Chair, USA)
X. Dai (China)
C.-L. Sun (Chinese Taipei)
S.-P. Wang (Chinese Taipei)
J.-B. Lee (Rep. of Korea)
J.-T. Yoo (Rep. of Korea)
K. Yokawa (Japan)
L. Fleischer (Mexico)
H.-H. Lee (USA)
M Hinton (IATTC)
J. Hampton (SPC)

D. Tagami (Data Mgr, USA)

PBFWG
Y. Takeuchi (Chair, Japan)
L. Song (China)
C.-C. Hsu (Chinese Taipei)
H.-Y. Wang (Chinese Taipei)
J.-T. Yoo (Rep. of Korea)
M Ichinokawa (Japan)
K. Oshima (Japan)
M Dreyfus (Mexico)
K. Piner (USA)
S. Teo (USA)
A. Aires-da-Silva (IATTC)
J. Hampton (SPC)

SHARKWG
S. Kohin (Chair, USA)
J. King (Canada)
X. Dai (China)
H.-W. Huang (Chinese Taipei)
K-M. Liu (Chinese Taipei)
J.-T. Yoo (Rep. of Korea)
Y. Hiraoka (Japan)
K. Yokawa (Japan)
L. Castillo (Mexico)
J. Tovar (Mexico)
K. Piner (USA)
W. Walsh (USA)
C. Lennert-Cody (IATTC)
J. Hampton (SPC)

STATWG
R.-F. Wu (Chair, Chinese Taipei)
J. Holmes (Canada)
X. Dai (China)
Z.-Y. Chen (Chinese Taipei)
S.-C. Yoon (Rep. of Korea)
K. Uosaki (Japan)
K. Oshima (Japan)
M Dreyfus (Mexico)
L. Fleischer (Mexico)
J. Childers (USA)
D. Tagami (USA)
J. Majkowski (FAO)
T. Lawson (SPC)
A. Perez (IATTC)

- **ISC Species Working Groups (WG) Develop Assessment Schedule**
- **ISC Plenary Reviews / Modifies Assessment Schedule**
- **WCPFC–SC informed of ISC Assessment Schedule**
- **WCPFC-NC Reviews / Modifies ISC Assessment Schedule**
- **ISC WGs Conduct Data Prep and Assessments Workshops**
- **Assessment Reviewed by ISC Plenary, Assessment Report to WCPFC-SC, External Review of Assessment**

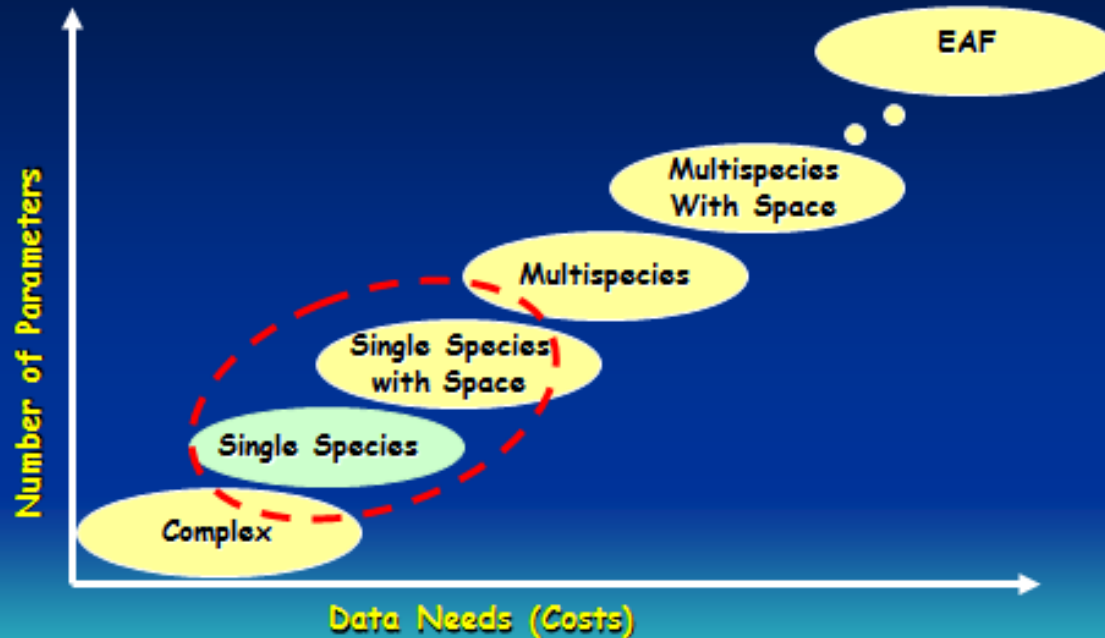# Stock Assessment Process Pelagic Fisheries

Stock Assessment Data Sources U.S. Pelagic Fisheries

Data Source	Catch	Effort	Size (len/wt)	Life Hist. Parm.	Abund / Density	$$
Logbook	X	X			X	
Observer			X	X		
Dealer	X		X			X
Port Sampling (Purse Seine - Am. Samoa)	X		X			
Cannery (Purse Seine – Am. Samoa)	X					X

- "Similar" data from international partners

Model Complexity Pelagic Fisheries

NMFS Assessment Tiers

0 = none
1 = index only (commercial or research CPUE)
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5 = add ecosystem (multispecies, environment), Spatial & seasonal analyses

Bottlenecks

- **Life History Data**
  - **Relevance and Representativeness**
  - **Standardization – Data Accessibility**
  - **Biosampling – Limited in Scope**
- **Catch**
  - **Underreporting - All Segments**
  - **Varying taxonomic detail (complex vs species)**
- **Environmental Data (Habitat and Oceanography)**
  - **Limited data and simple models**
- **Abundance**
  - **Biased (based on fishery data)**
  - **Pilot F-I Resource Survey – need to operationalize (*show me the $$*)**