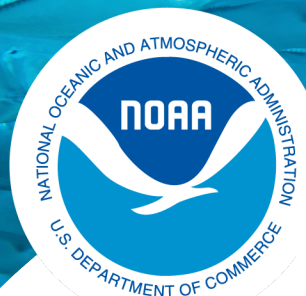


# HMS – International Activities SWFSC Report



**NOAA**  
**FISHERIES**

**Gerard DiNardo**  
**Cisco Werner**  
**SWFSC**

**PFMC**  
**Item D.2**  
**Tacoma**  
**June 2016**

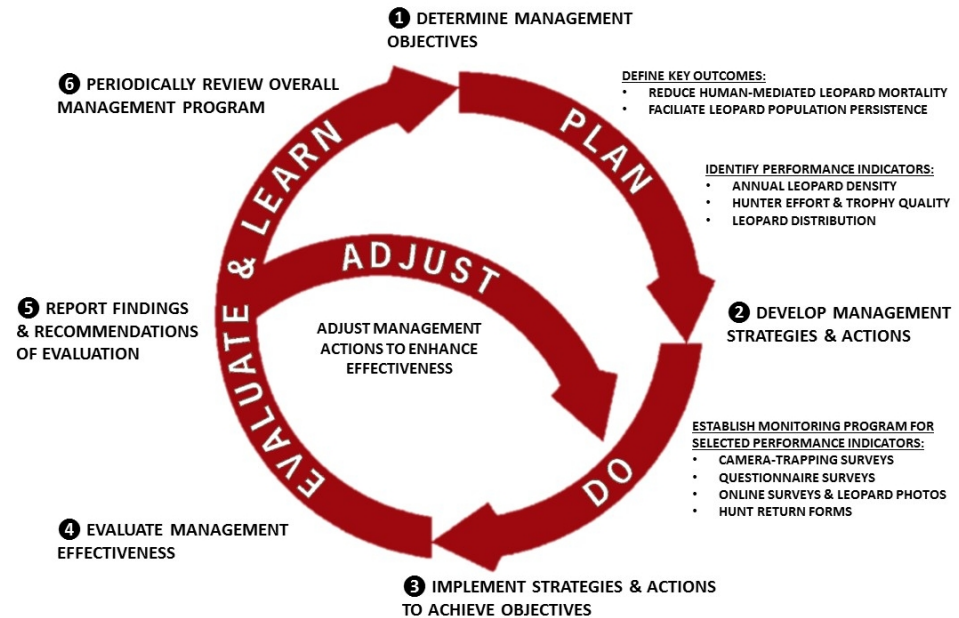


# Outline

- **ISC MSE Research**
- **ISC 2016 PBF Stock Assessment**
- **16<sup>th</sup> Meeting of the ISC Plenary (ISC16)**
- **ISC-PICES Working Group**
- **PBF Research**
  - **close kin (genetic mark-recapture)**
  - **otolith microchemistry**

# ISC MSE Workshop

- May 24-25 Yokohama, Japan;  
NP Albacore focus
- Participants included:  
Scientists, Managers, Industry,  
and Stake holders
- Management objectives and  
performance indicators table  
completed. Some discussion  
on acceptable levels of risk.
- Present results at ISC16.



# 2016 PBF Stock Assessment

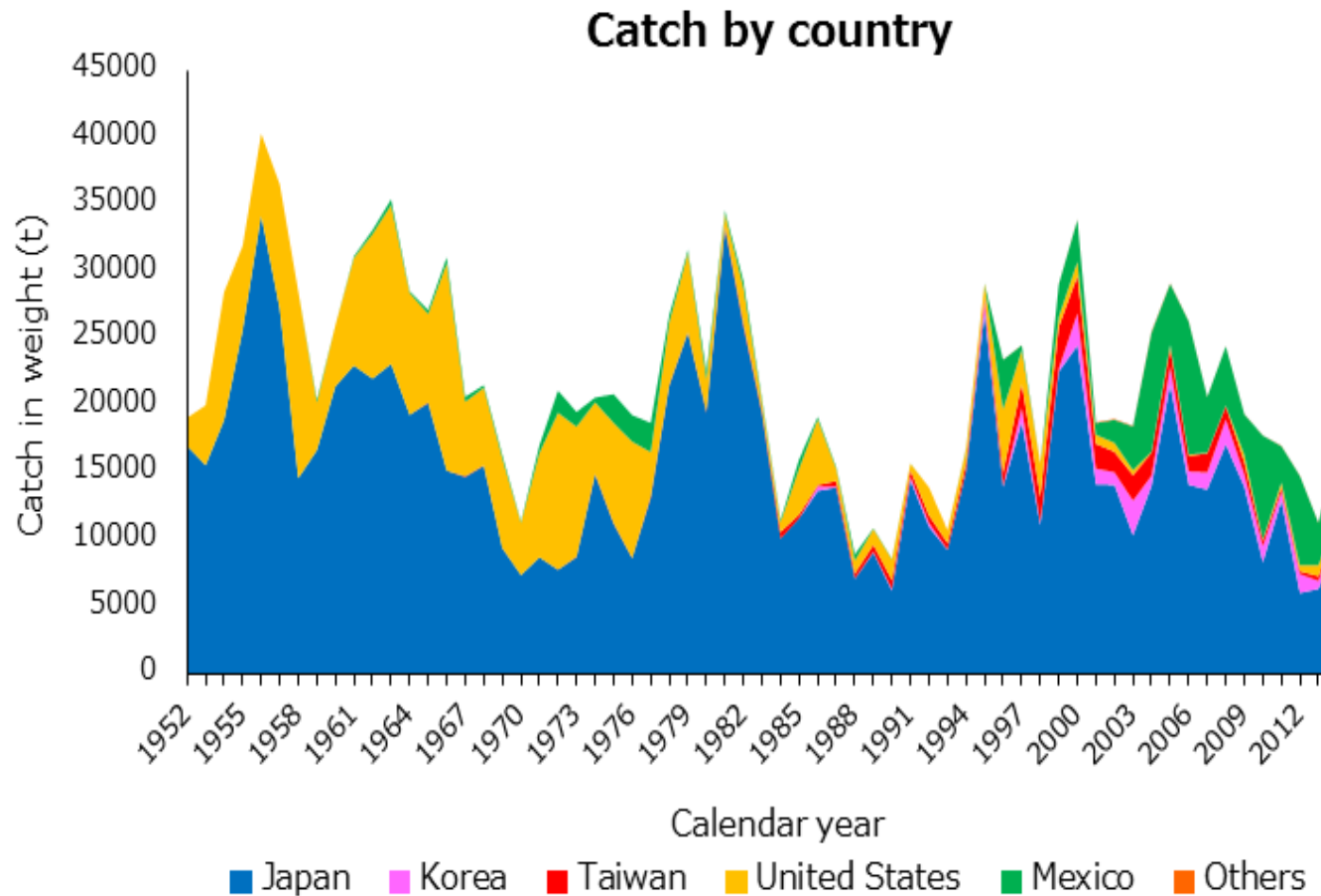
## Background

- **2016 Benchmark Assessment – improvement over 2014 Assessment**
  - more accurate historical catch data
  - better estimates of catch size composition by fleet
  - improved standardization of abundance indices
  - revised growth curve based on additional otolith information and standardization of aging techniques
  - improved model settings to represent the best input data.

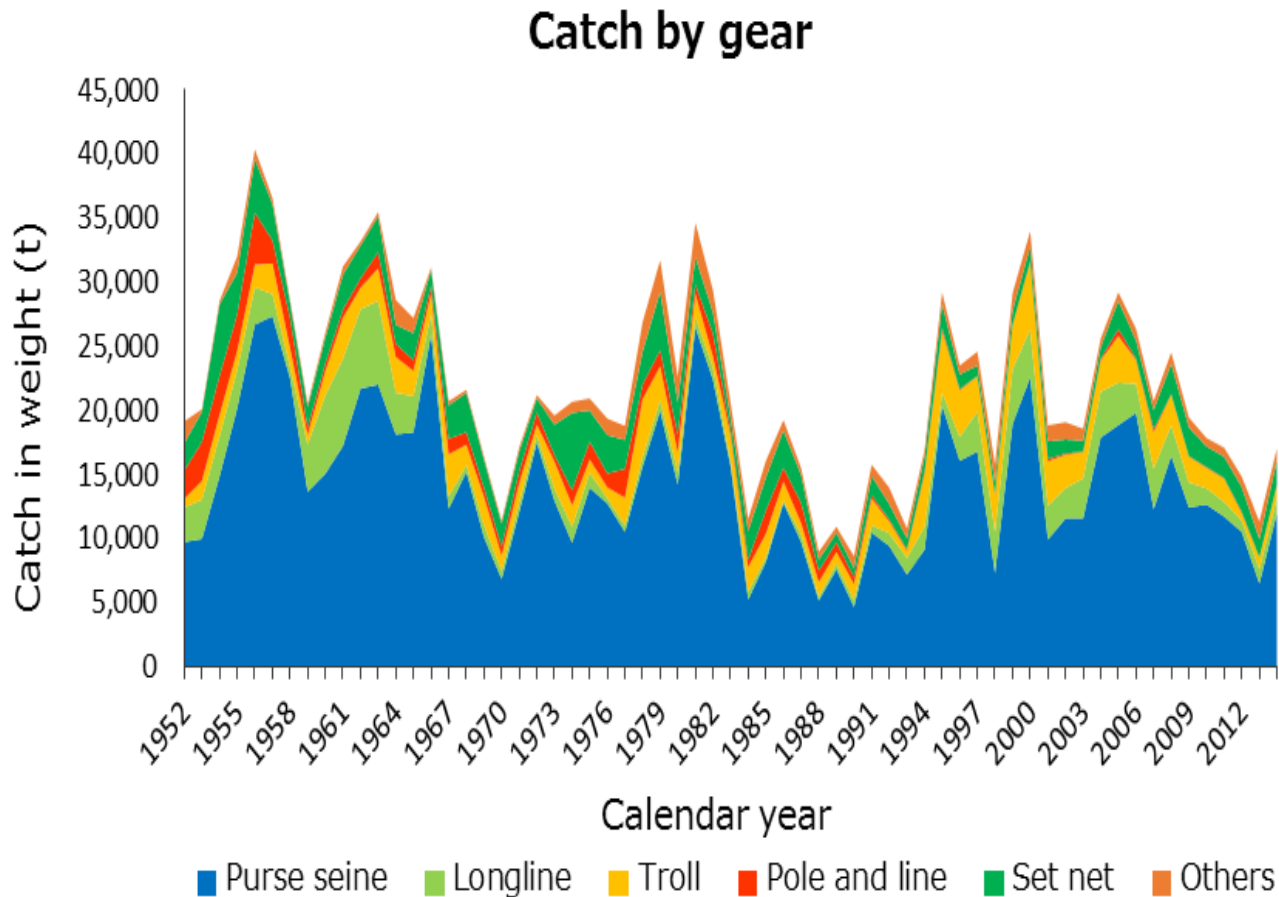
(See also

[http://www.iattc.org/Meetings/Meetings2016/SAC7/PDFfiles/INF/SAC-07-INF-C\(a\)-ISC-Letter-IATTC-Executive-Summary.pdf](http://www.iattc.org/Meetings/Meetings2016/SAC7/PDFfiles/INF/SAC-07-INF-C(a)-ISC-Letter-IATTC-Executive-Summary.pdf))

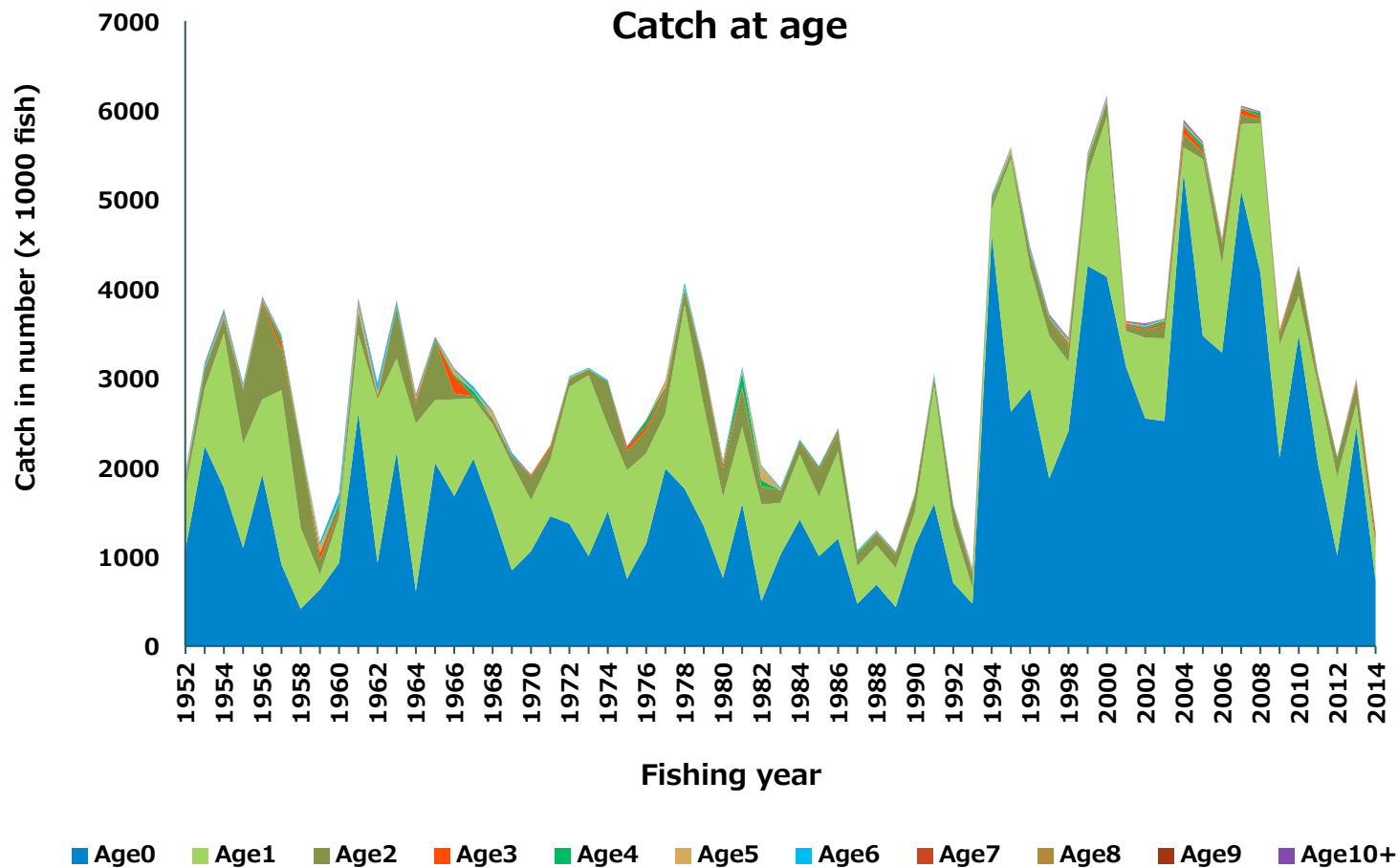
# 2016 PBF Stock Assessment: Catch History



# 2016 PBF Stock Assessment: Catch History



# 2016 PBF Stock Assessment: Catch History



# 2016 PBF Stock Assessment



## Data and Assessment

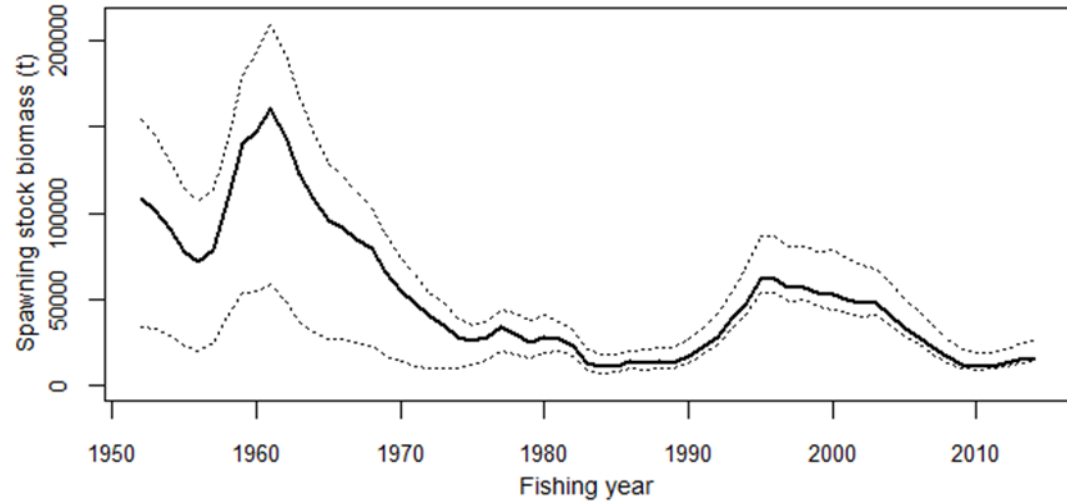
- Population dynamics estimated using a fully integrated age-structured model fitted to catch, size-composition and catch-per-unit of effort (CPUE) data from 1952 to 2015
- Life history parameters included a length-at-age relationship from otolith-derived ages, and natural mortality estimates from a tag-recapture study and empirical-life history methods.
- A total of 19 Fleets were defined for use in the stock assessment model based on country/gear/season/region stratification.
- CPUE from the Japanese distant water, off-shore and coastal longline, the Taiwanese longline and the Japanese troll fleets were used as measures of the relative abundance of the population



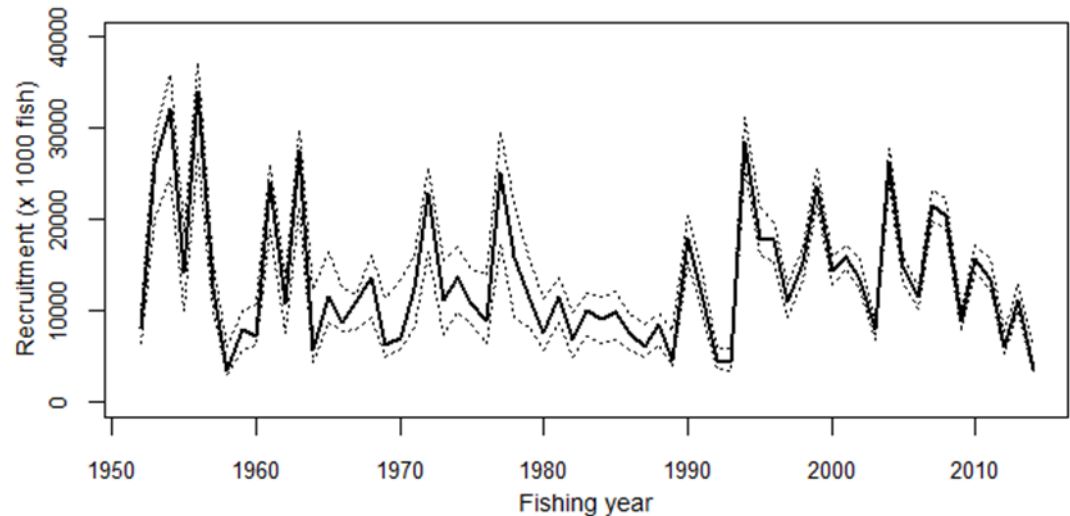


# 2016 PBF Stock Assessment: Stock Status

**SSB - declining since 1994;  
slight increase since 2012**

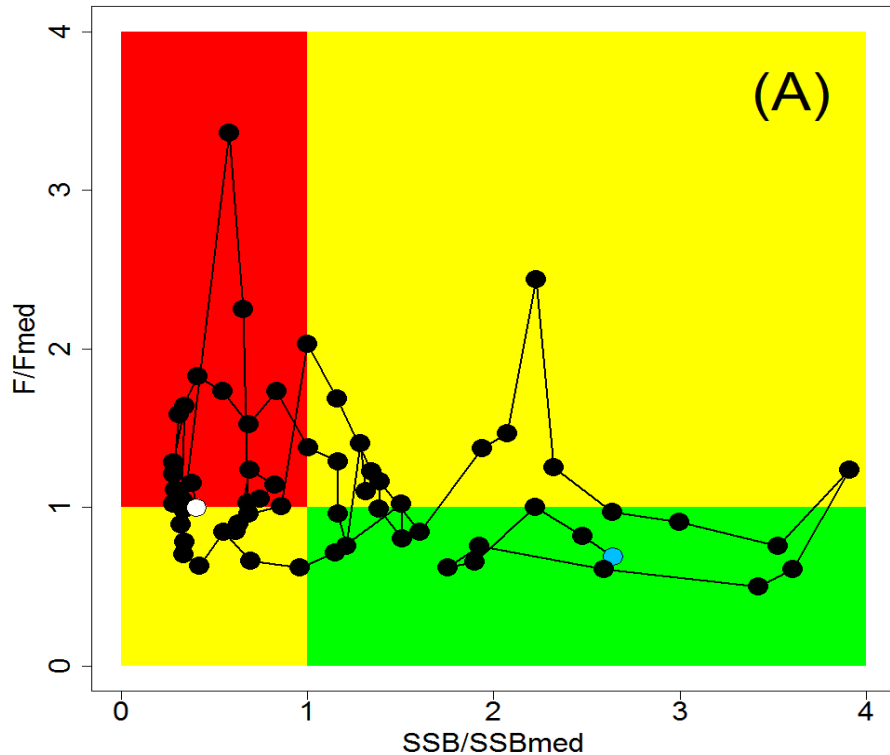


**Recruitment – variable with  
decline since 2009**

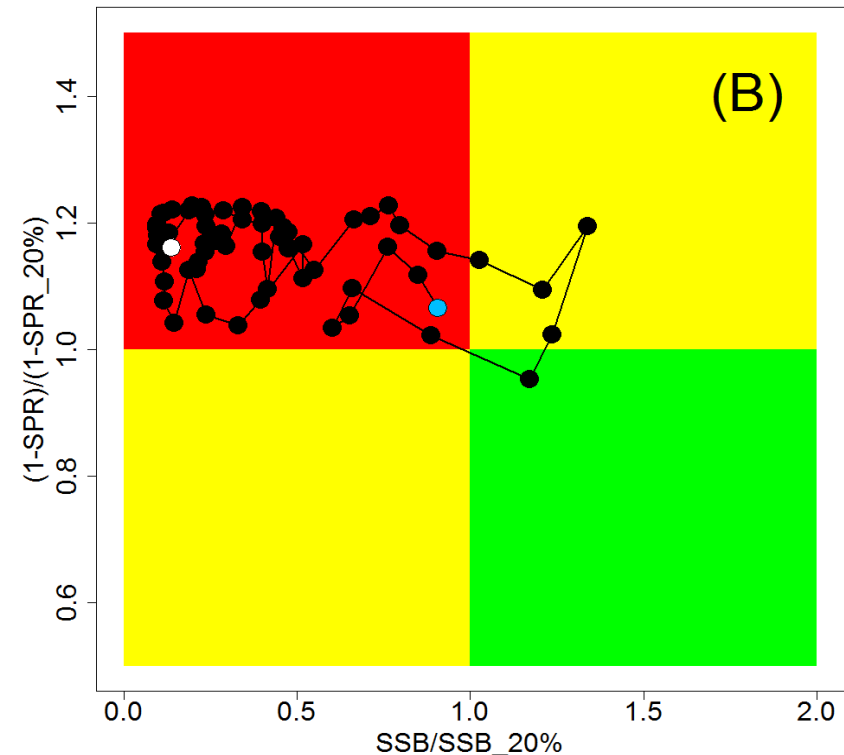


# 2016 PBF Stock Assessment: Stock Status

## KOBE Plots



**overfished but not  
experiencing overfishing**

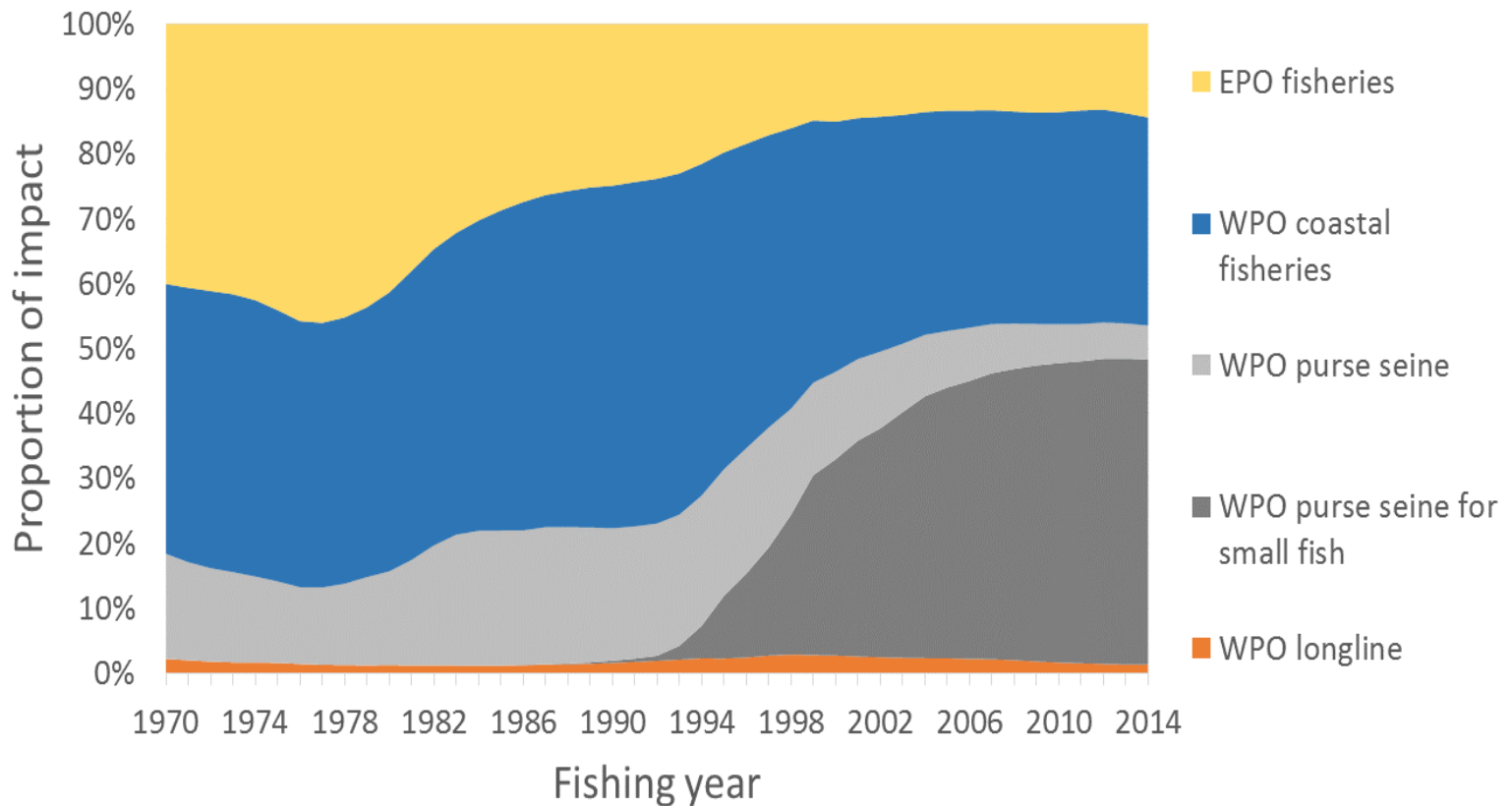


**overfished and  
experiencing overfishing**

**Slight improvement in SSB but status unchanged since last assessment**

# 2016 PBF Stock Assessment: Stock Status

## Impact Analysis



# ISC16



## Venue:

- July 13-18 – Sapporo, Japan

## Major Activities:

- Review stock assessments and develop conservation advice
- Progress of species working group work plans and endorsement of new plans
- ISC-PICES Working Group Research plan
- ISC Science Review
- Nominations – out with the “old” in with the new

# ISC-PICES Working Group



- **Established in early 2016 – 3 year program**
- **Research Themes**
  1. **Influence of oceanographic conditions on the distribution and production of commercial pelagic fish species in the North Pacific Ocean;**
  2. **Linking oceanographic conditions to fleet and fisher behaviour (ecosystem stressors) to improve understanding of fishery indices used in assessing stock status; and**
  3. **Climate change effects on North Pacific marine ecosystems and impacts on pelagic fish dynamics**

# ISC-PICES Working Group

## Action Plan:

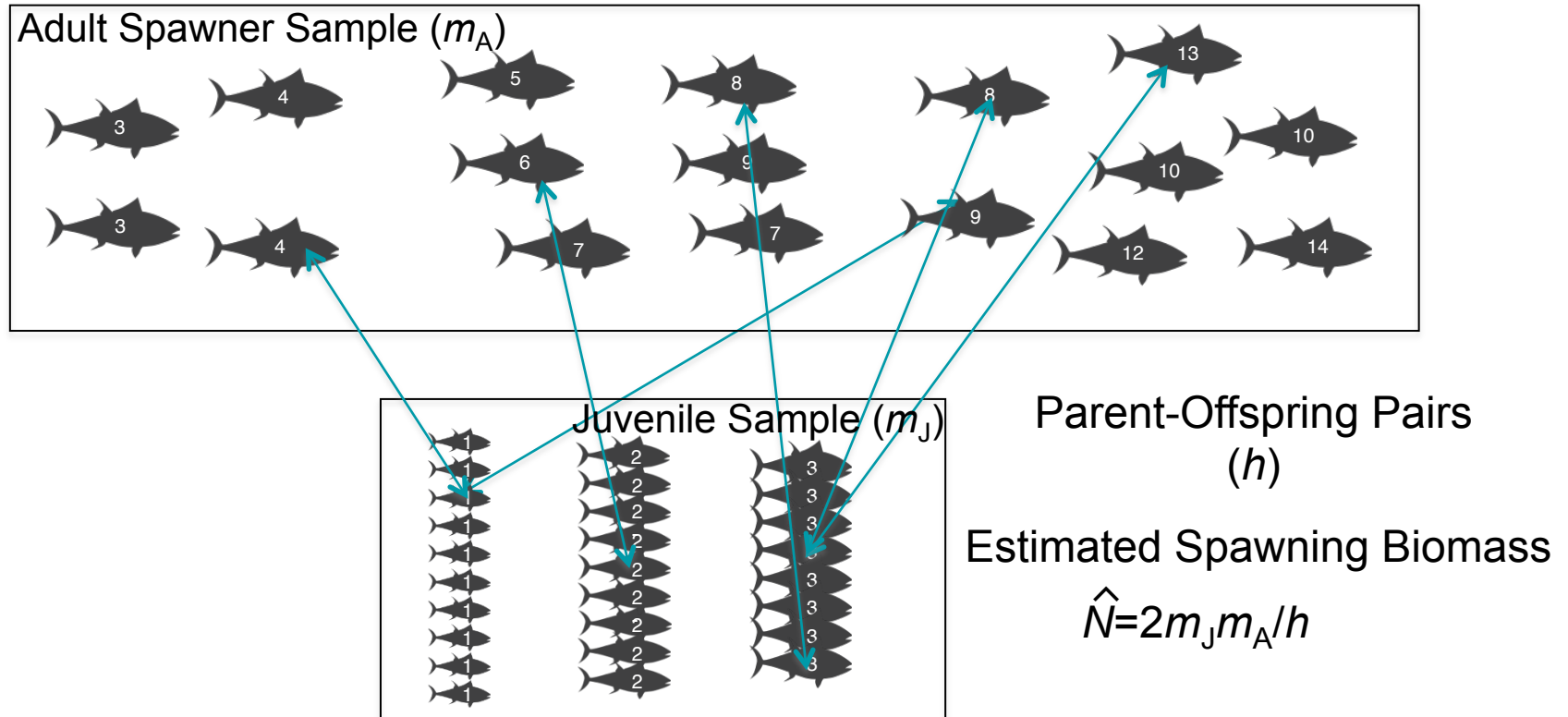
- **July 2016** – develop draft research plan at ISC16 (Sapporo)
- **November 2016** - finalize research plan at the PICES Annual Meeting (San Diego)
- **November 2016** – FIS Workshop (W4): Methods relating oceanographic conditions to the distribution of highly migratory species (1 day workshop)

# PBF Research

## Bluefin Tuna Close-kin Mark Recapture

Partners: SWFSC, ISC, Southern CA sport fleet, Mexico purse-seine fleet, Japan, Korea, Taiwan

- Sampling has begun by ISC Member Nations
- >200 juveniles collected off southern CA to date in cooperation with the sport fleet of which 180 have matching otoliths and tissue samples



# PBF Research

## Otolith Microchemistry Research – Japan, Taiwan and SWFSC Collaboration

- **Stock structure**
- **Spawning ground origin**
- **EPO residency times**
- **Proportion of fish migrating to the EPO annually**





# Thank You