NOAA FISHERIES

The Linkages between the Economic Performance Indicators and Ecosystem Status Indicators

Dr. Minling Pan

Pacific Islands Fisheries Science Center

PICES FUTURE Open Science Meeting

April 14-18, 2014

Kona, Hawaii

samoa news

Home | Local News | Sports | Regional | Opinion | Le Lali | Associated Press | Linking Samoans | Our Troops

Features | Photos | Videos | iShare | Archives | Contact | Classifieds | Subscriptions, Ads & Offers | Bulletin Board

On December 18, 2013

Longline fleet to tie up boats, post FOR SALE signs

Wed, 12/18/2013 - 9:37am | Category: Local News Show

By Samoa News staff

ShareThis

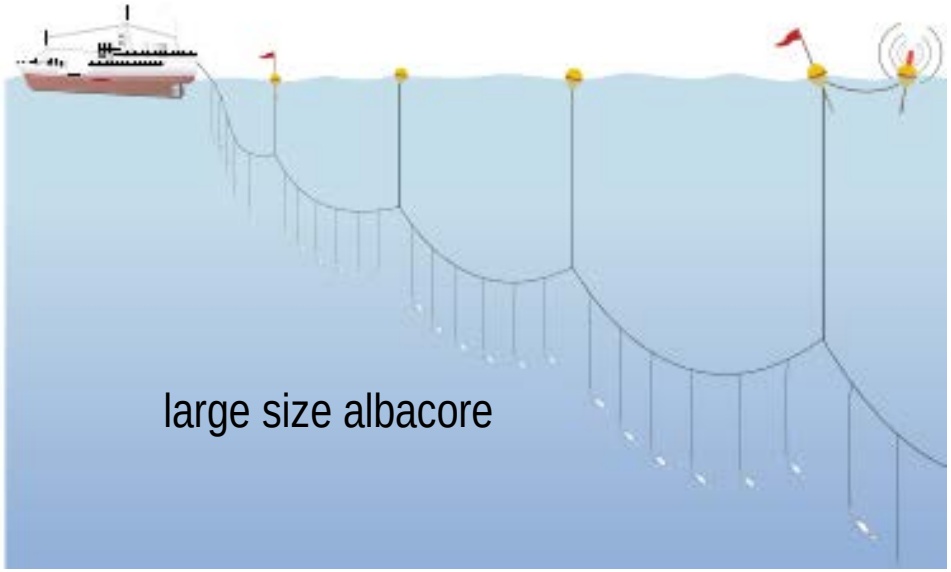
reporters@samoanews.com

About this Presentation

- American Samoa longline fishery is used as an example for the discussion
- What type of economic performance indicators can be used to reflect the economic health?
- How they may link to the ecosystem status indicators
- What happened in 2013 and the future of the fishery

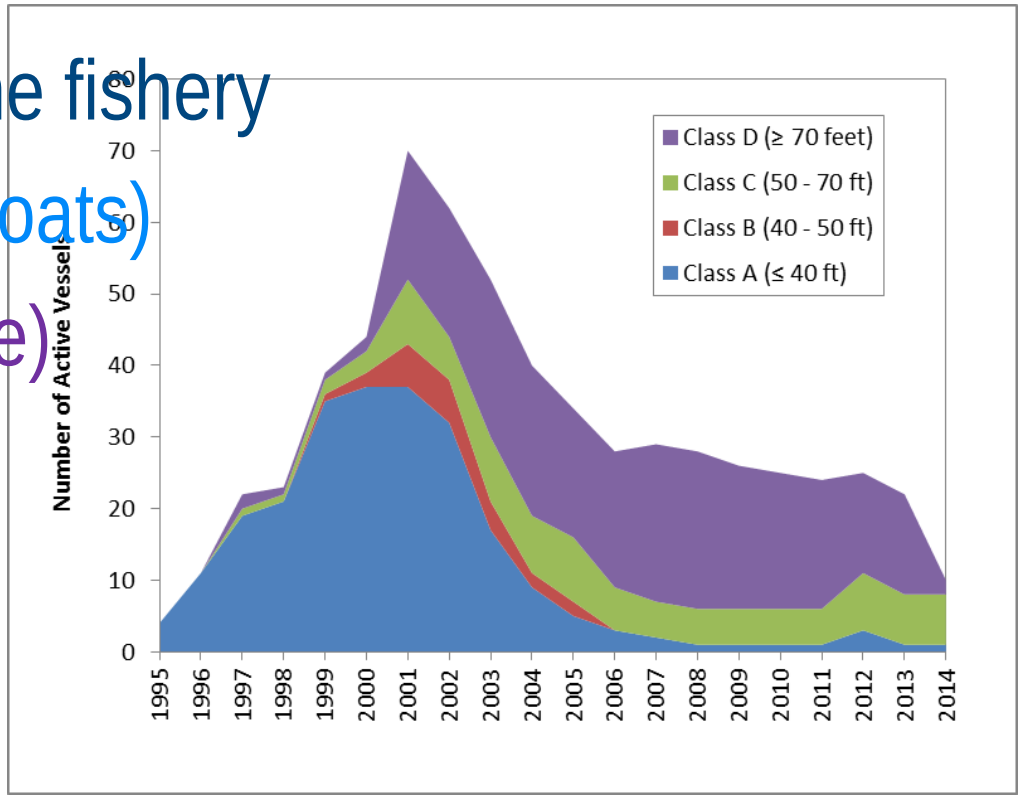
About this Fishery

- Mainly target albacore tuna
- Frozen products & sent to cannery

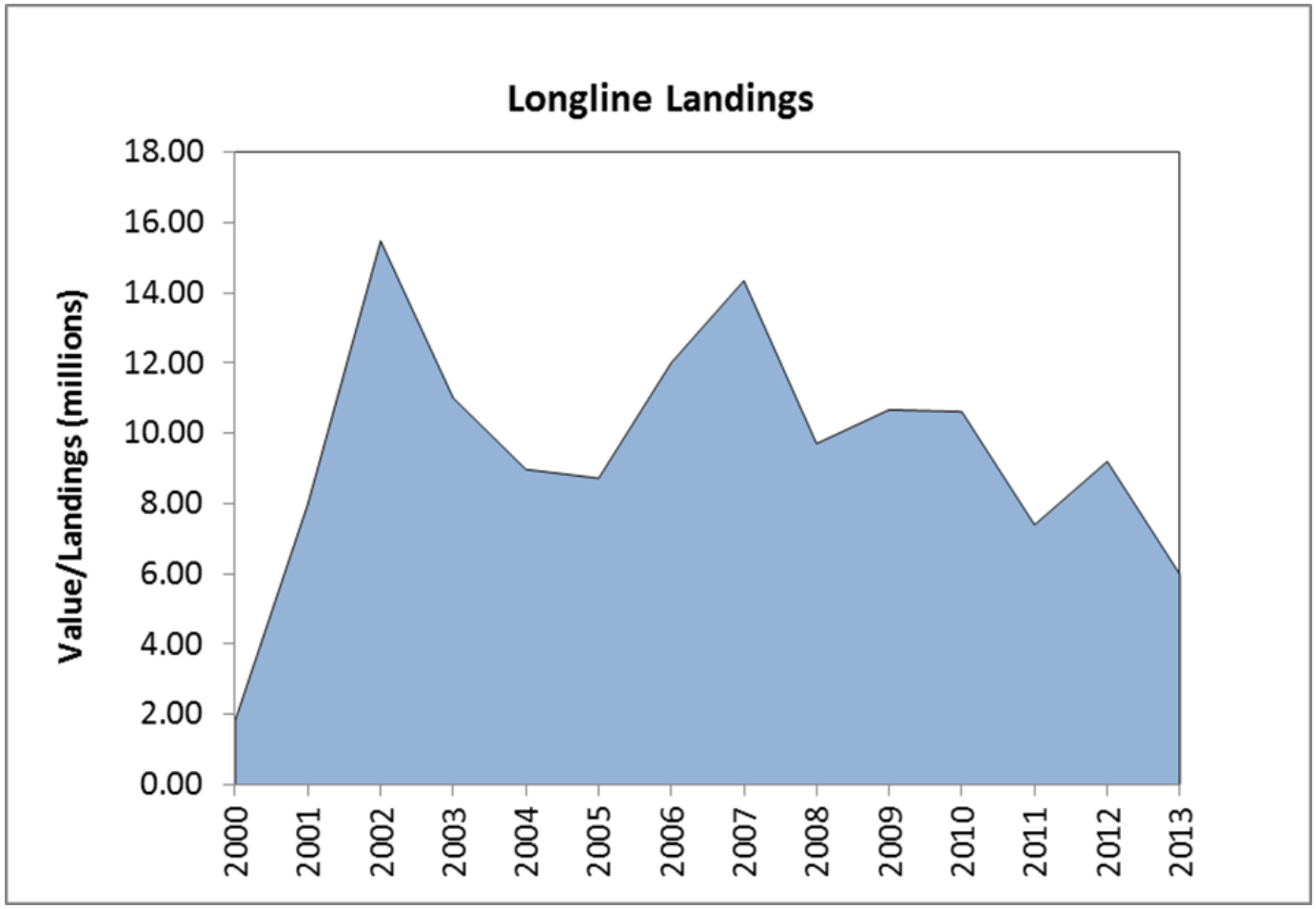


Fleet Dynamic of the Fishery

- No. of vessels by classes in 1991-2014
  - ✓2014 figure was not a full year
- Two “collapse” in the fishery
  - ✓Class A (small boats)
  - ✓Class D (longline)

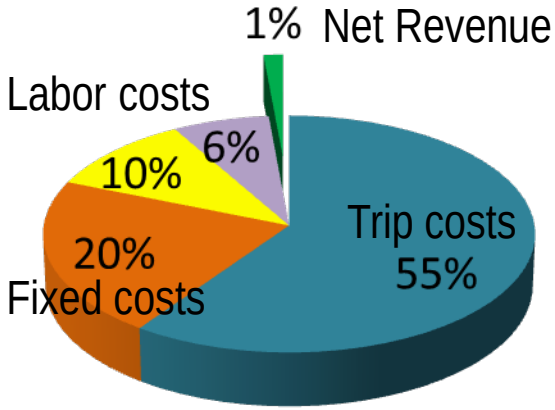


Fleet Dynamic of the Fishery



Cost-earnings Table 2009

Variables	2009
Revenue	488,817
Total trip costs	268,016
Total fixed costs	96,256
Payment to crew	47,573
Payment to captain	30,594
Net Return to Owner	6,379



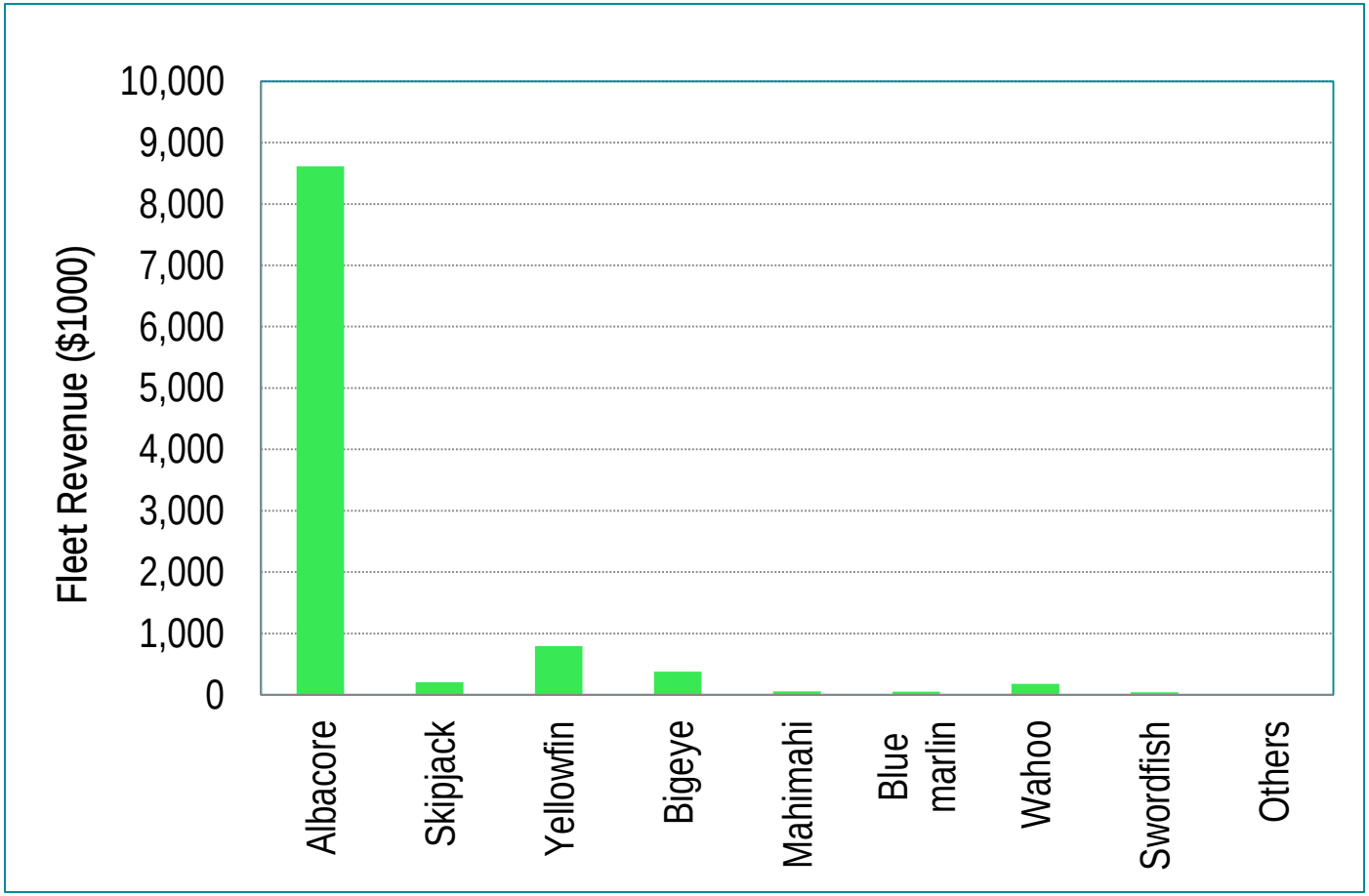
- Net return (cash flow) to an owner was $6,379
- Varied among the 23 vessels, 11 had positive returns, and 12 had negative returns
- If depreciation is induced, net return to owner would be negative

Comparison between 2009 to 2001

Revenue/Cost/Profit	2009	2001	% of change
Revenue	488,817	657,063	-32%
Total trip costs	268,016	200,923	33%
Total fixed costs	96,256	101,039	-5%
Payment to crew	47,573	55,590	-14%
Payment to captain	30,594	68,421	-55%
Profit to Owner	6,379	177,207	-96%

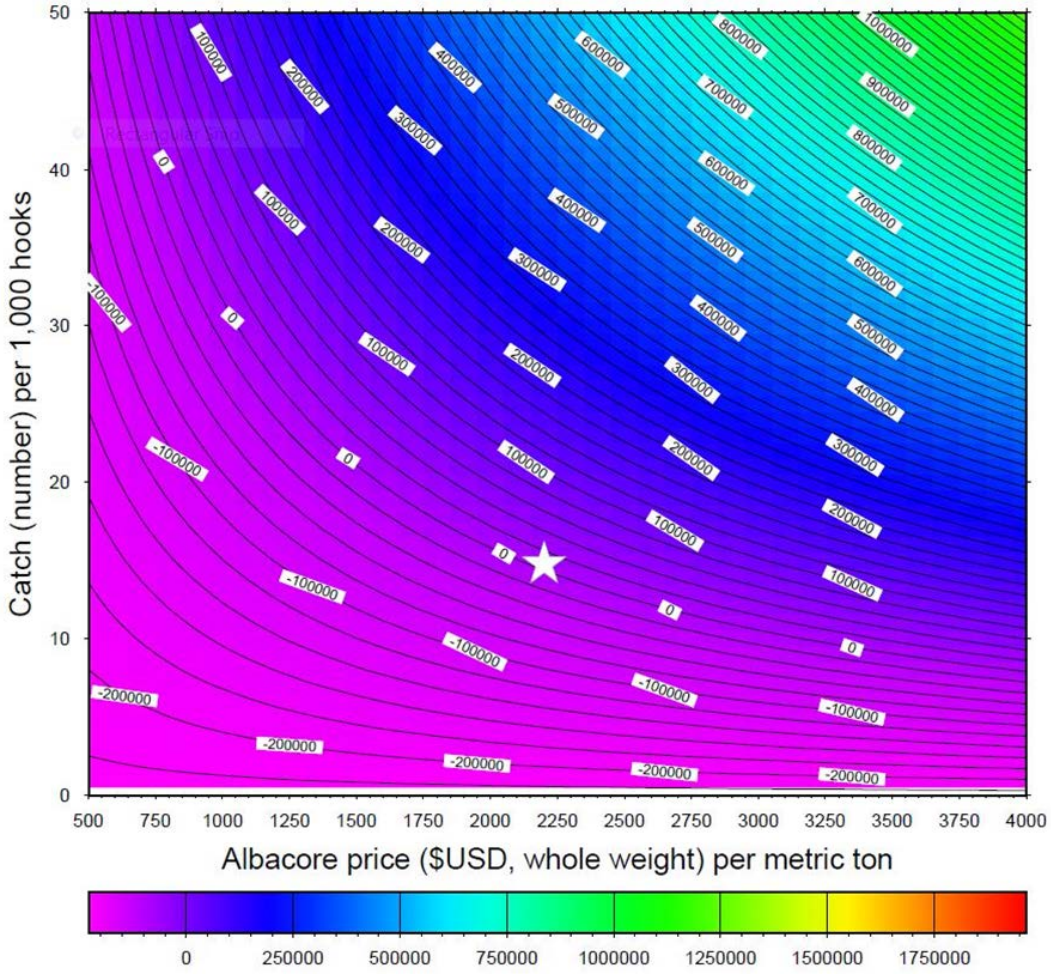
- Revenue declined, variable costs increased (mainly fuel cost increased)
- Fixed costs is slightly lower - vessel physical condition could get worse
- Returns to fishermen, crew, captain, and owners were lower.

Species Important to the Revenue



- Albacore composed 83% of gross revenues in 2009

Sensitivity Analysis – Isoprofit Curves



Assuming no change in costs

Profit = *f* (CPUE, Price)

CPUE: fish/1000hooks

Price: $/MT

2009 cost-earnings ★

$6379 = *f* (14.8, $2200)

Zero profit iso-curve

0 = *f* (14.8, $2139)

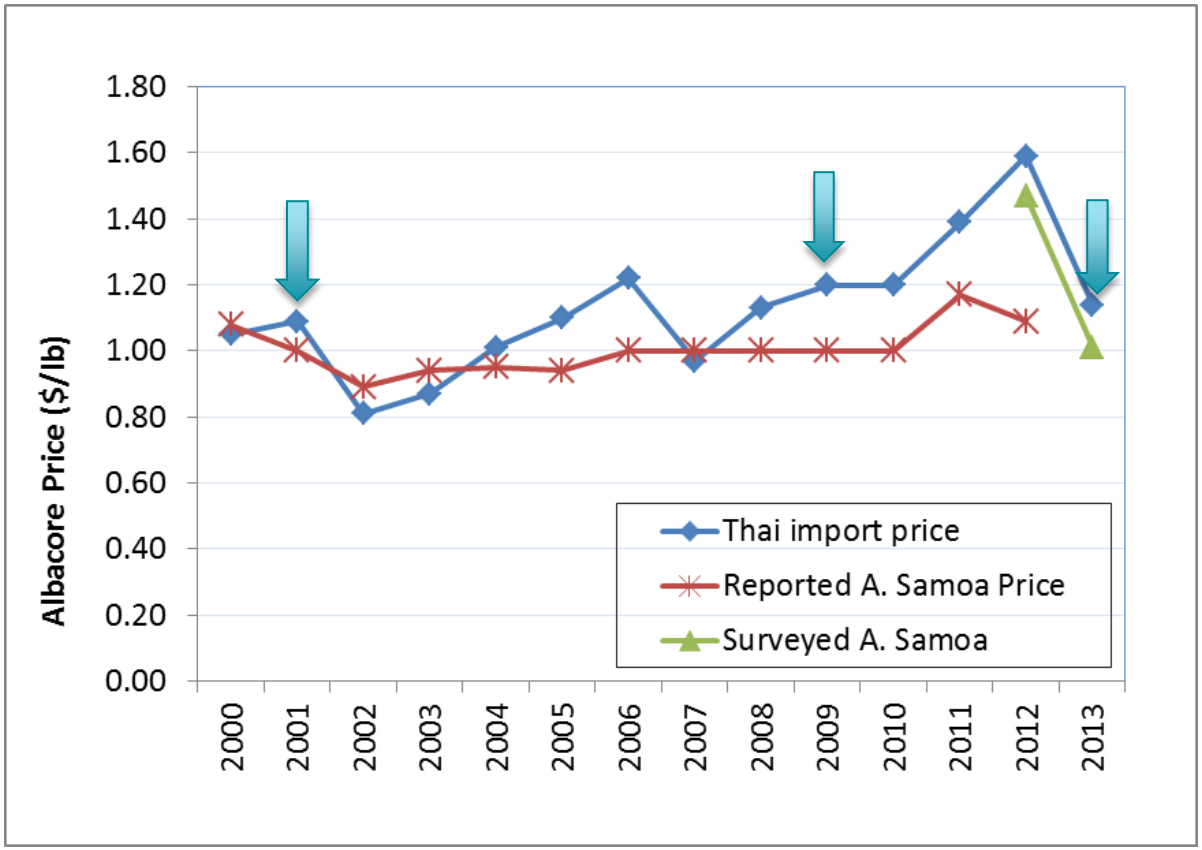
0 = *f* (14.3, $2200)

Market and Price

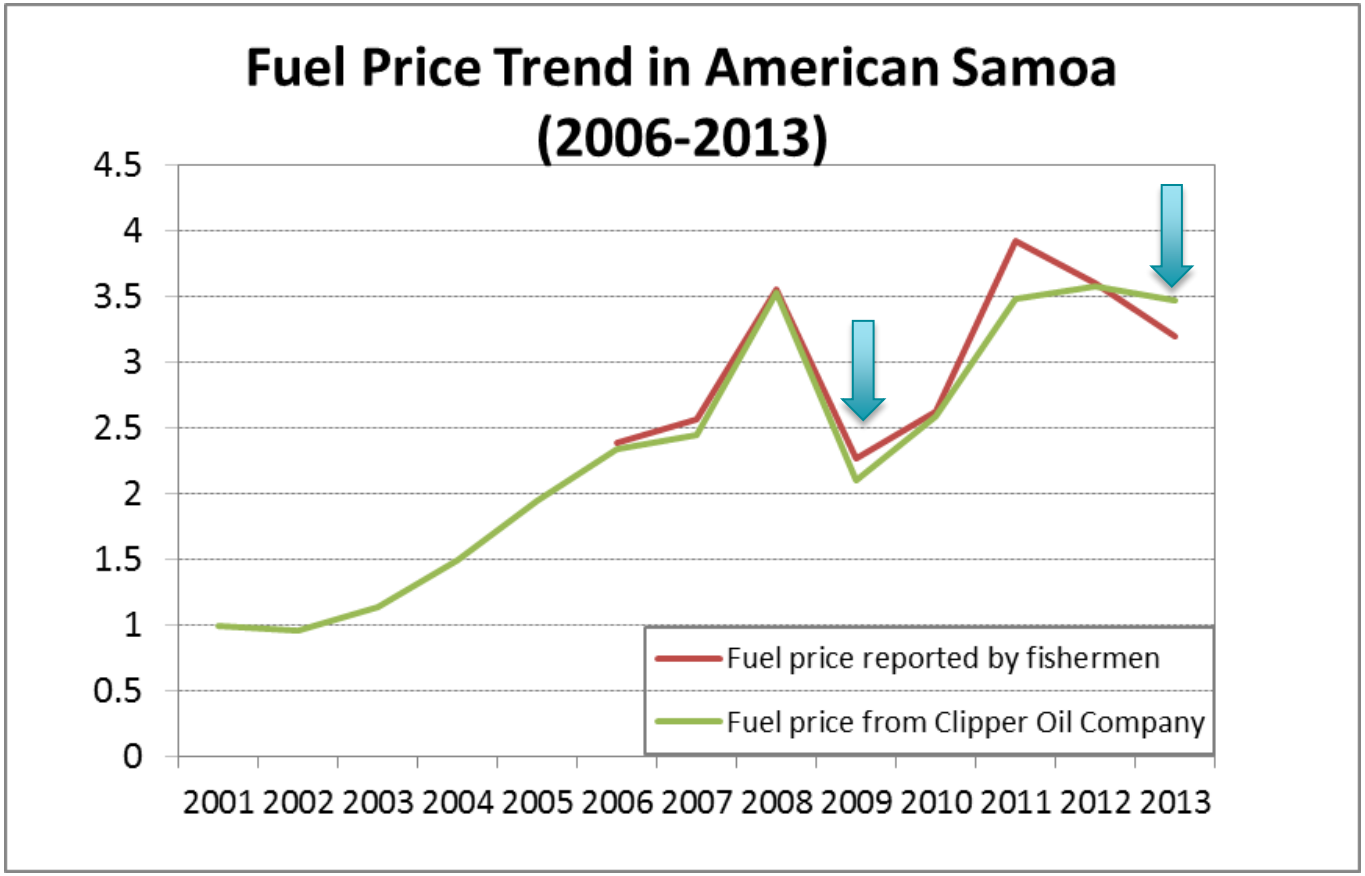
- Purse seiners and other tuna catches
  - ✓ Skipjack and yellowfin tunas
  - ✓ Production scale (Longline vs. Purse Seiners)
- Price taker - world cannery market

Albacore Price Dropped in 2013

- The data observed were consistent with Thai market prices
- The price in 2013 was lower than 2009 or 2001

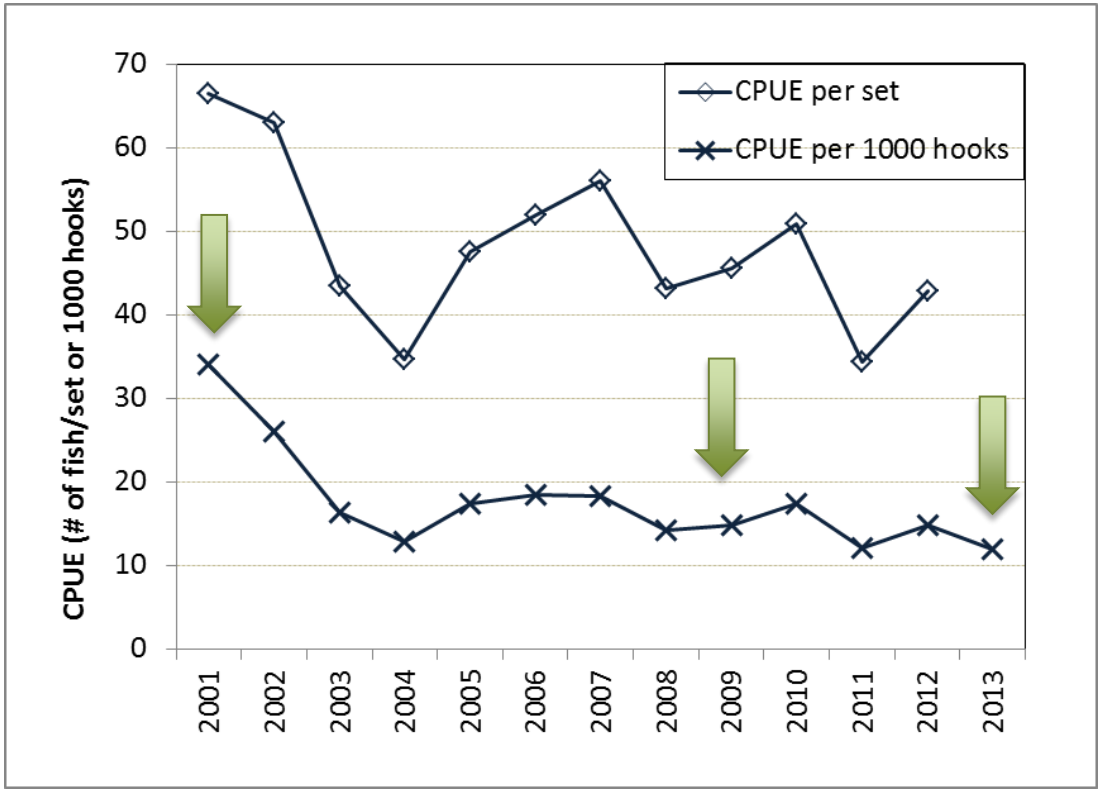


Fishing Cost -- Fuel Price (2001-2013)



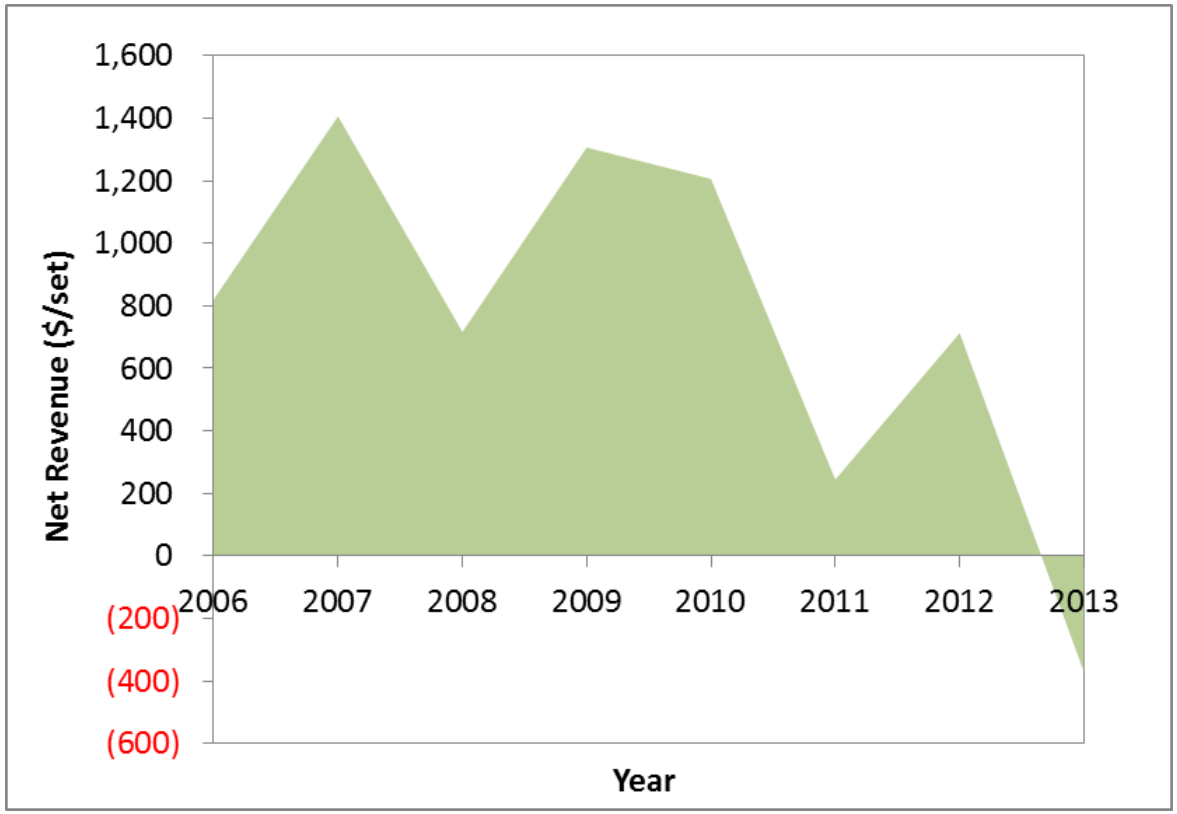
- Fuel cost in 2013 was much higher than 2009

Catch -- CPUE of Albacore (2001–2013)



- CPUE per set declined 32% (2001 vs. 2009)
- CPUE per 1000 hooks declined 65% (2001 vs. 2009)
- CPUE in 2013 was even lower, the lowest during 2001-2013

Net Revenue Declined (2006-2012)



- Net revenue in 2013 negative
- Net revenue declined in general

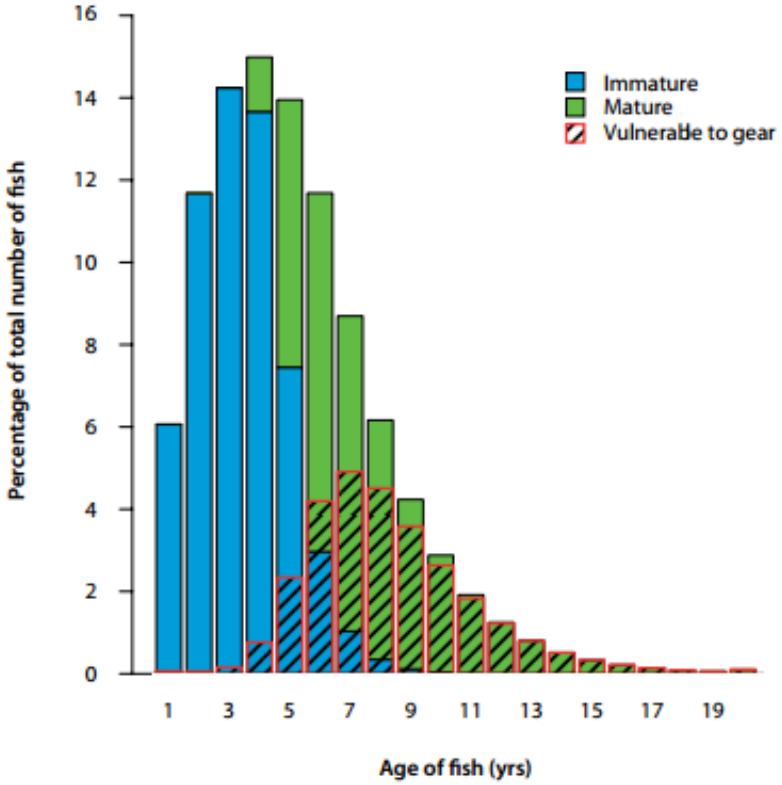
Transboundary Stock Fisheries

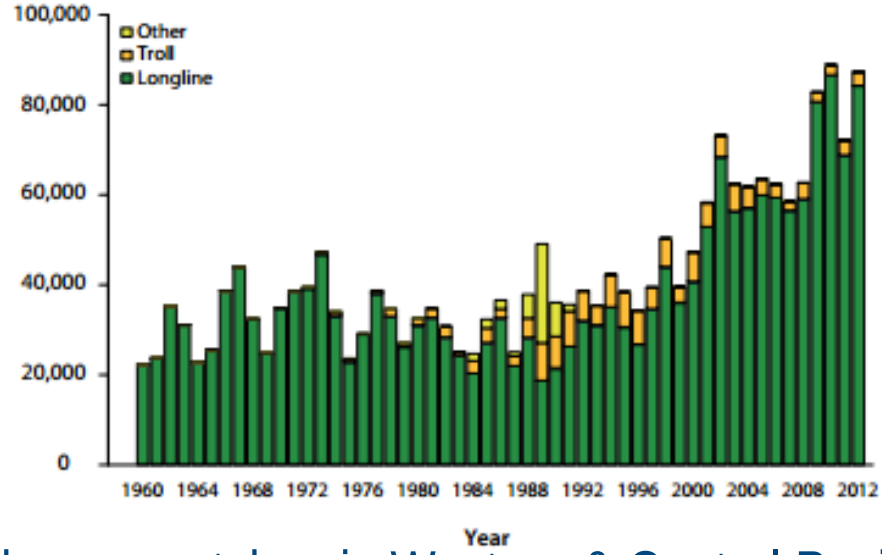
Tuna longliners anchored
in PagoPago, American Samoa

Tuna longliners anchored in Suva harbor, Fiji

Albacore Stock and Catch

Age distribution (population vs. catch)





Albacore catches in Western & Central Pacific

Important Indicators

- Economic Indicators
  - ✓Fishing effort – by different vessel size, by gear
  - ✓Catches – local vs. total from fisheries using the same stock; catches by age
  - ✓Price and Cost
  - ✓Revenue and net revenue (vs. profit)

- Ecosystem Indicators
  - ✓Stock Assessment (fish by age – stock vs. caught)
  - ✓CPUE (standardized CPUE) indicates abundance

Summary in Selecting Indicators

- Measurable/quantified
- Data availability
  - ✓Across regions (NMFS used Tier 1, 2, 3)
  - ✓Over time period (long term monitoring is important)
- Both Economic Indicators & Ecosystem Indicators


Any questions?
Its Saves Lives