



June 2014: 2015-2017 MSB Specs

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MAFMC Plan Coordinator

Process

- Summarize Fishery Performance Reports
- For each species go through:
 - Catch history
 - Recent assessment/biological information
 - SSC findings
 - Monitoring Committee findings
 - Motions for specifications

Fishery Performance Report Highlights (p21-29)

- Spiny dogfish are a big problem
- Catch fluctuations may be related to environment, distribution, market, abundance trends, or other fisheries
- Concern that once a quota is reduced, it will never be restored

Fishery Performance Report Highlights (p21-29)

- Ecological roles should be considered
- Trimesters affect total longfin catch
- Proceed slowly with management changes (real-time squid management)
- Butterfish fishery redevelopment uncertain – 2014 first full year

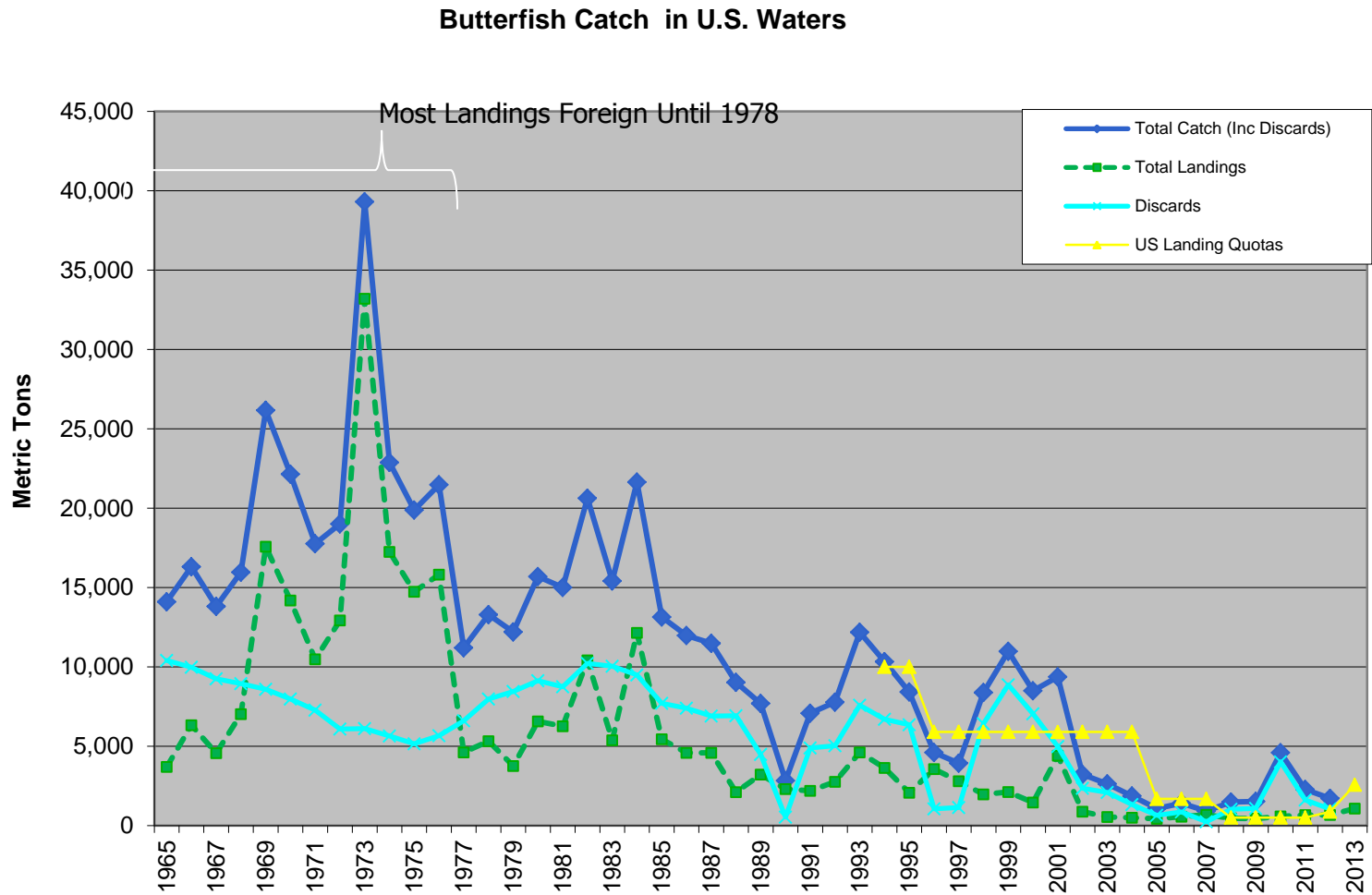
Fishery Performance Report Highlights (p21-29)

- Some issues raised were out of the scope of specifications and I advised attendees to contact the Council regarding those, e.g.:
 - Butterfish cap's existence
 - Unused annual quota rollover
 - Latent squid permits

Fishery Performance Report Questions

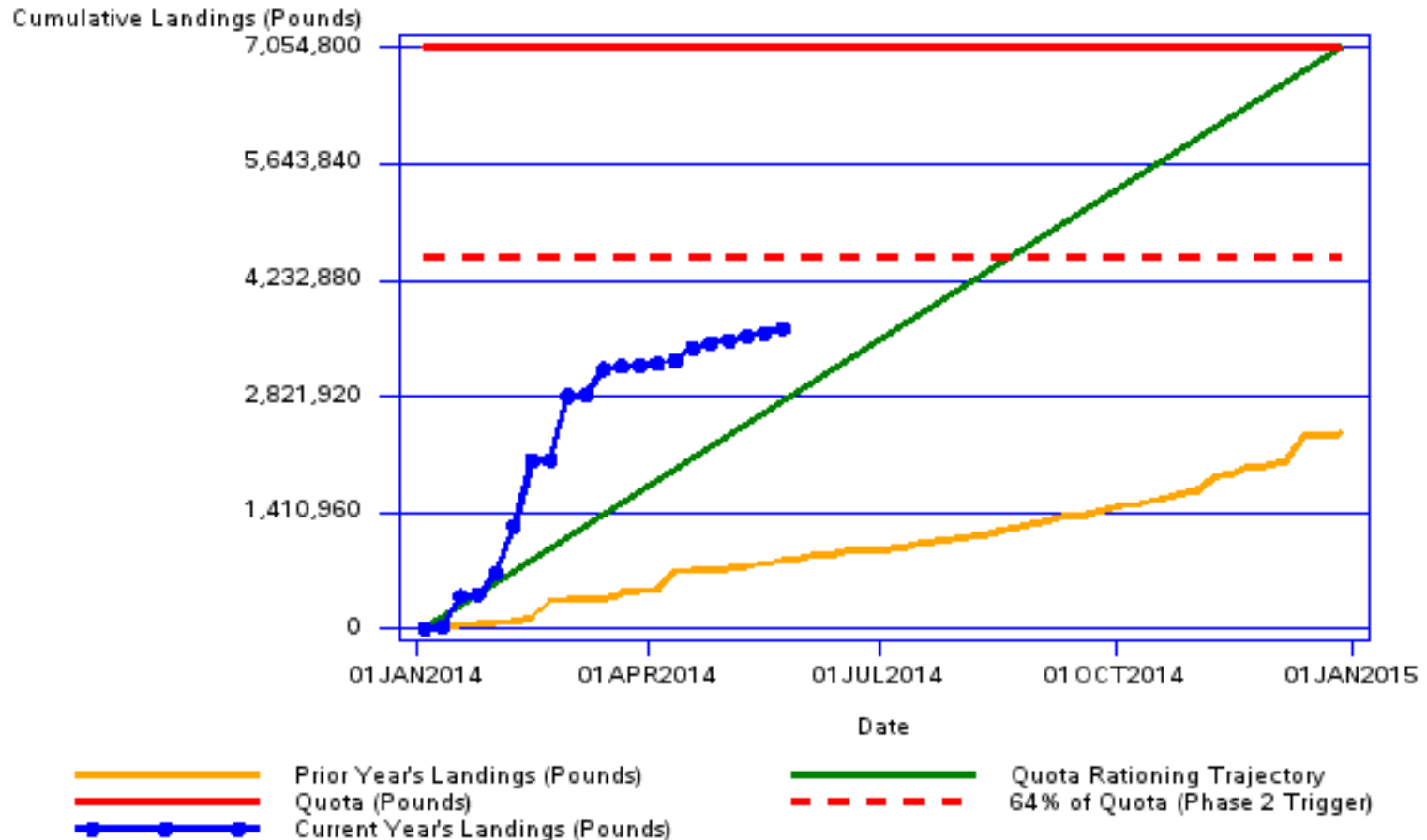
Butterfish

Butterfish Catch



Butterfish Land 2013-2014

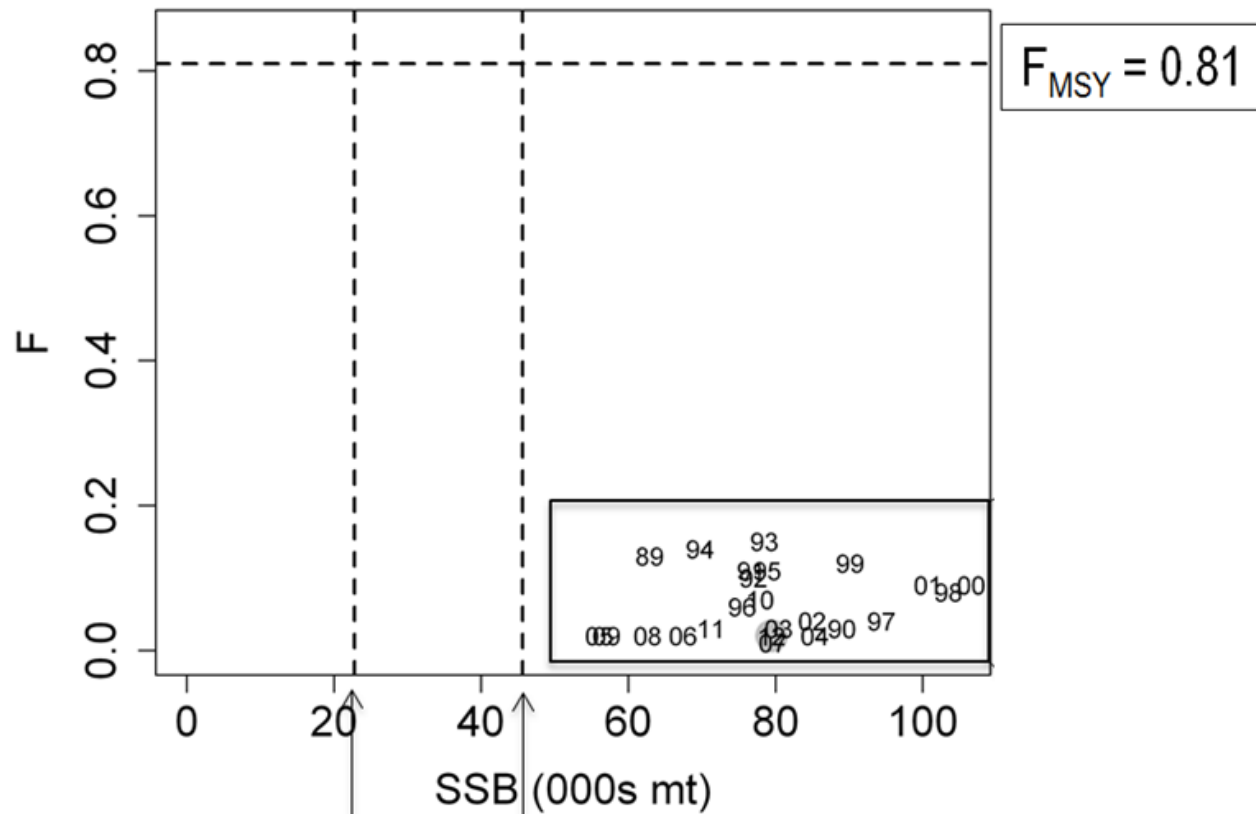
Butterfish Quota Monitoring Report



Butterfish Assessment

- 2014 Assessment Passed (ASAP)
- 1989-2012: not overfished, no overfishing; 174% of rebuilt
- Positive comments from reviewers on progress
- 2012 recruitment very low, but terminal year most uncertain

Butterfish SSB & F relative to BRPs



$SSB_{threshold} = 22,808$ mt

$SSB_{MSY} = 45,616$ mt



Don Flescher, NEFSC

May 2014 SSC Meeting

ABC Recommendations for Butterfish

Level 3 Assessment

- An OFL was provided in the assessment
- Estimates of uncertainty around the OFL developed in the assessment substantially underestimated the true level of uncertainty present.
- For example, the CV on the natural mortality rate (M) from the assessment (0.05) is unrealistic given the life history of this species.



OFL

- The OFL developed in the assessment is an F_{msy} proxy = $\frac{2}{3} * M = 0.81$.
- This proxy is based on an earlier determination by the SSC for a forage species like butterfish.
- The level of 2015 catch associated with this **OFL is 41,092 mt.**



ABC

- The SSC adopted a CV for the OFL of 100% based on a meta-analysis of OFL distributions that the SSC has used previously.
- Since the foundation of the F_{msy} proxy considers forage species explicitly, the SSC considers Butterfish as exhibiting a typical life history.
- The SSC applied the Council's risk policy for $B/B_{msy} > 1$ and a $P^* = 0.4$ to generate a **2015 ABC = 33,278 mt.**



ABC (cont'd)

- The SSC recommends a 3-year ABC specification.
- Using an F-based approach, which assumes the ABCs are harvested in each year, the SSC recommends the following ABCs:

2016 31,412 mt

2017 30,922 mt

- The SSC will examine catch and updated indices in subsequent years.
- Projections used in subsequent years to calculate the ABCs for 2016 and 2017 be repeated using observed 2015 and 2016 catches.



Most Significant Sources of Scientific Uncertainty

- The foundation for the OFL was *ad hoc* rather than being derived internally in the model.
- The application of an assumed q -value to estimate M , while novel and well thought out, contributes to uncertainty.
- The assessment was limited to a period of low stock productivity, well after a period of higher exploitation, which reduces the data contrast available to the model.



Most Significant Sources of Scientific Uncertainty (cont'd)

- Conflicting trends among seasonal surveys were not incorporated in the model.
- Model-based estimates of F are imprecise and particularly influenced by three years of low catch.
- There are residual trends in the survey data that might be explained by environmental or biotic (predation) factors that were not incorporated in the model.



Butterfish MC

Staff assumptions:

Council would like level and stable fishery for 2015-2017.

Council wants similar constraints on the longfin squid fishery

Butterfish MC

Staff assumptions:

Council wants similar constraints on the longfin squid fishery.

Cap = 4,000 mt (now 3,884 mt)

Butterfish MC

Staff goal:

Level quota, avoid overages to avoid paybacks.

Leads to being conservative...

Butterfish

Staff assumptions:

Level = Use 2017 ABC = 30,922
mt, keep everything level
throughout

Butterfish

Staff assumptions:

Level across years also requires avoiding ABC overages (don't want deductions in future years).

Tradeoff...

Butterfish

Tradeoff:

Larger buffers mean less chance of overages/paybacks

Every 1,000 mt of “buffer” could potentially be about \$1.5 mil in landings plus about another \$4.5 mil in associated activity

Butterfish

- Overall management uncertainty buffer ABC-->ACT
 - 10%: closure issues, hard to predict discards, discard estimates may not be precise
- Assumed discards

Butterfish

- 2010 ABC = 1,500 mt
Catch = 4,593 mt
- 2011 ABC = 1,811 mt
Catch = 2,276 mt

Butterfish

- Discards
- Sixteen 10,000+ pound butterfish observed trips in observer database. Old – 1989-2000

21.7%

Butterfish

- Discards
- Five 25,000+ pound butterfish observed trips in observer database.

11.4%

Butterfish

- Discards
- VTR - 12 10K trips in 2013,
- 13 10K trips in 2014.
 - 2.9% and 4.2%
 - 5.0% and 4.9% for trips that reported some discards.

Butterfish

| Butterfish | | |
|---|-----------------|--|
| Specification | Butterfish (mt) | |
| Overfishing Limit (OFL) | 41,092 | |
| Total Acceptable Biological Catch (ABC) from SSC = ACL | 30,922 | Constant, from lowest SSC year |
| Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty) | 27,830 | Biggest management uncertainty concern is discarding in new butterfish fishery |
| Landings or "Domestic Annual Harvest (DAH)" | 18,161 | 27,830 - These 4 equal the ACT |
| Assumed discards in butterfish fishing | 5,032 | |
| Assumed other discards (highest from 3 cap years) | 637 | |
| Butterfish Cap (longfin discards) | 4,000 | |

Butterfish

- Simplified closure mechanisms:
- If DAH = 18,161 mt
- Go to 5,000 pound trip limit at 16,750 mt (1,411 mt)
- Go to 600 pound trip limit at 18,161 mt

Butterfish Specs

- OFL= 41,092 mt
- ABC=ACL=
- ACT=
- DAH=
- CAP=
- TALFF=

Butterfish Specs

- RSA...
- Close to 5,000 pounds at...
- Close to 600 pounds at DAH (?)

Mackerel

Mackerel Catch

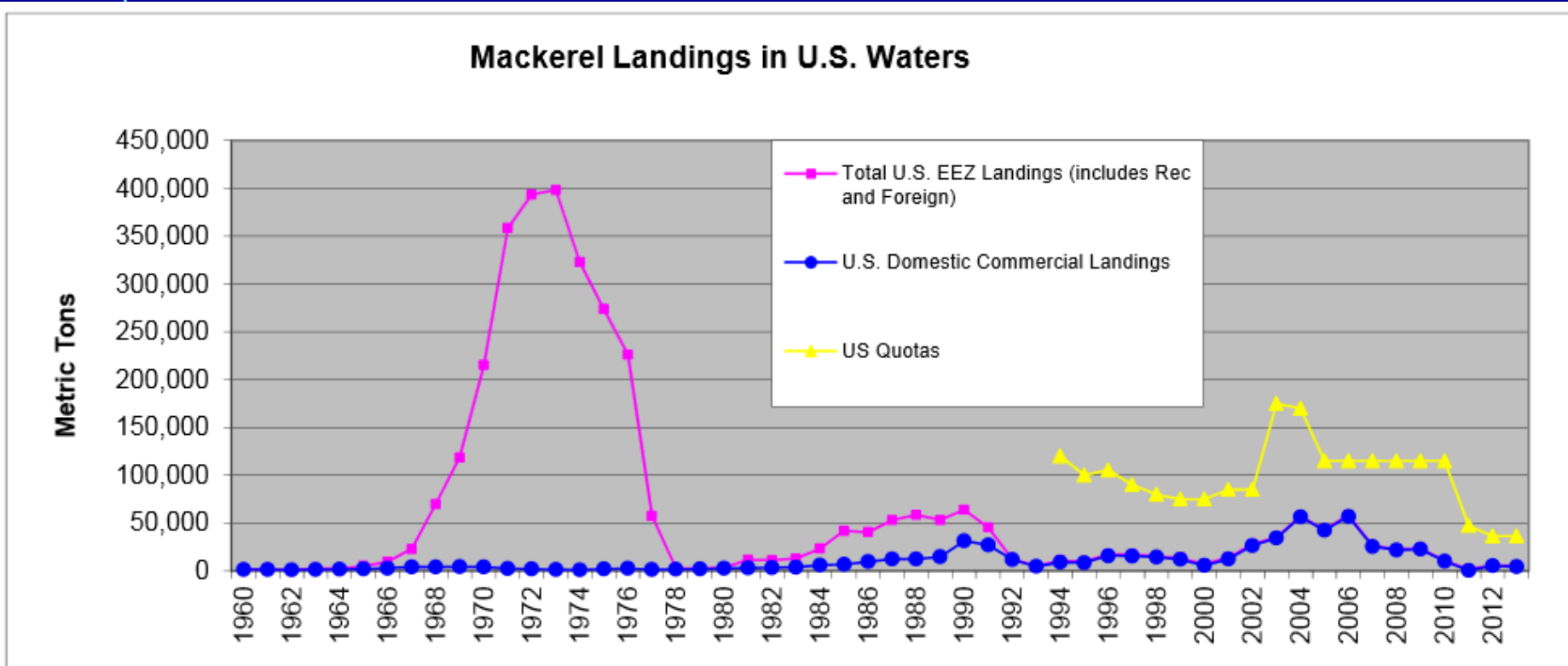
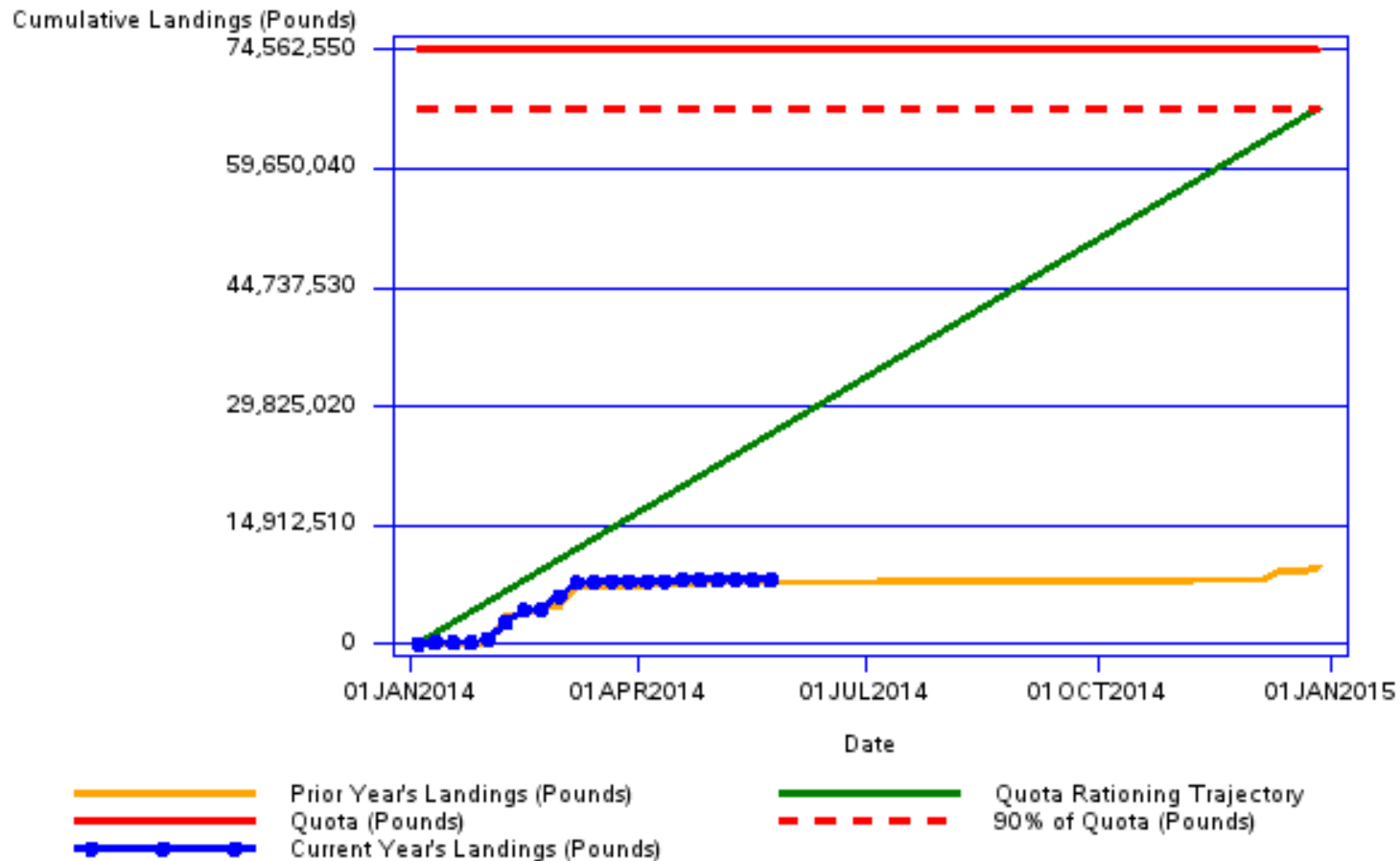


Figure 2. Atlantic mackerel landings within 200 miles of U.S. Coast (2013 Preliminary).
Source: TRAC 2010, unpublished NEFSC dealer reports

Mackerel Land 2013-2014

Atlantic Mackerel Quota Monitoring Report

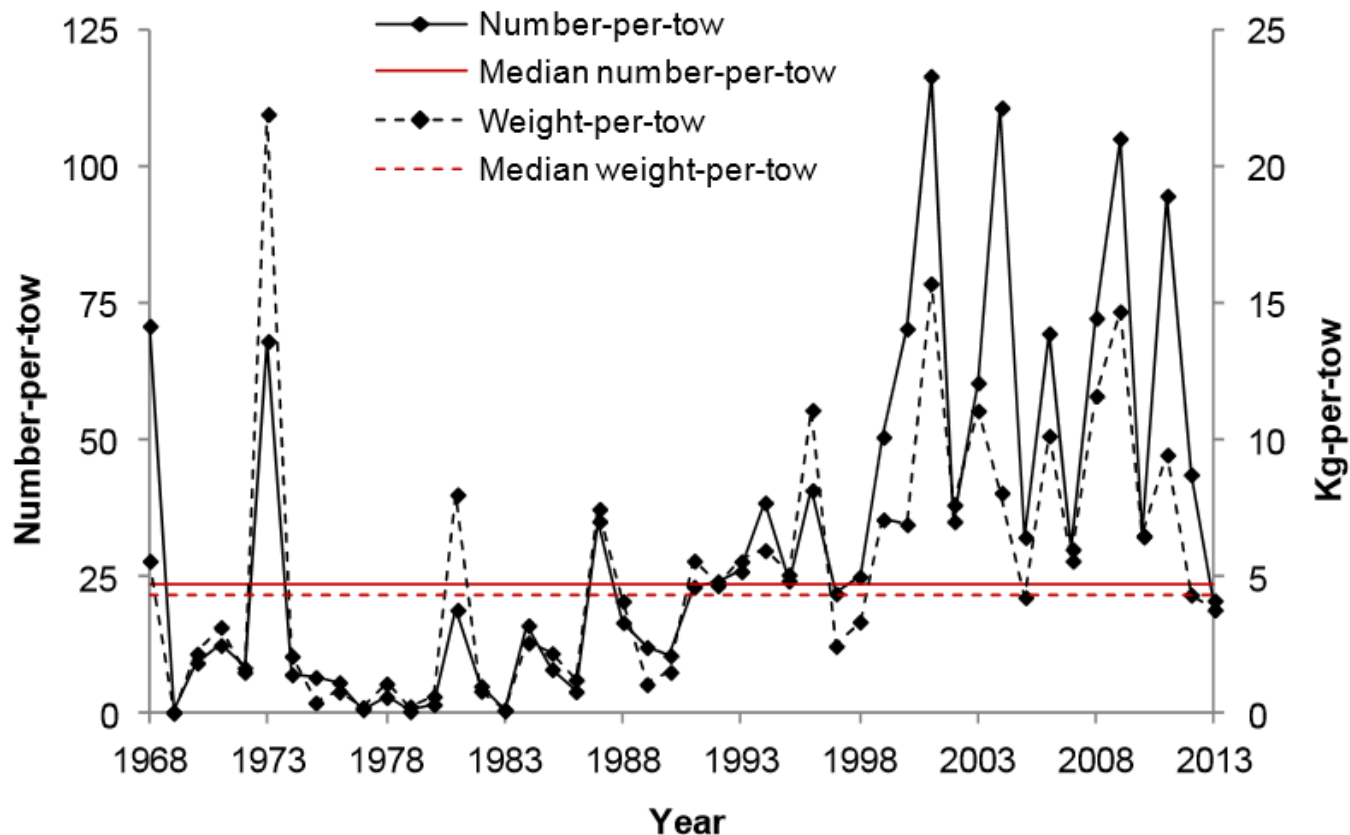


Mackerel Info

- No assessment – research track
- 2010 TRAC with Canada saw signs of lower productivity
- Recent Canadian findings fairly dismal, they have lowered their quota in 2014.

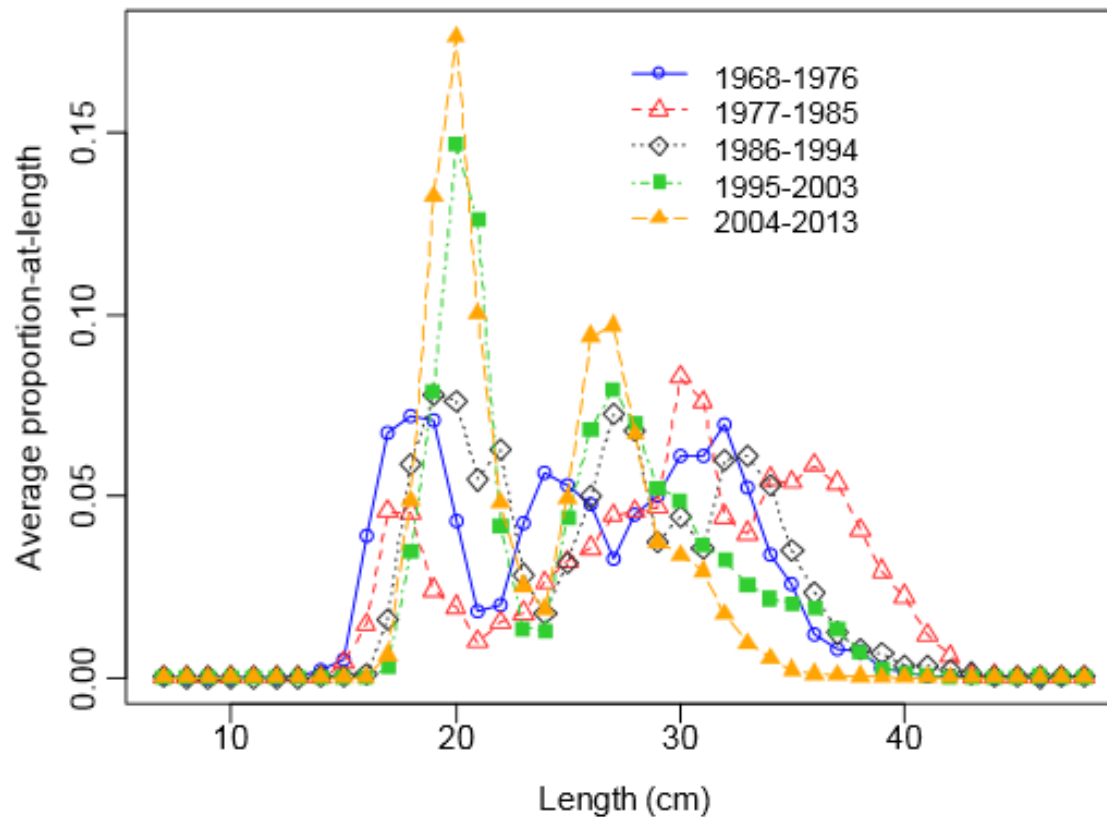
Mackerel Info

Figure 1: Atlantic mackerel relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices derived from the NEFSC spring bottom trawl survey for 1968-2013. The median number- and weight-per-tow values represent the median indices over 1968-2013.



Mackerel Info

Figure 3: Annual mackerel length compositions (stratified mean numbers-at-length), averaged over nine or ten year time intervals, from the NEFSC spring bottom trawl survey for 1968-2013.





Bill Overholtz, NEFSC

May 2014 SSC Meeting

ABC Recommendations for Atlantic Mackerel

Level 4 Assessment

- No new US assessment was presented to the SSC.
- A Canadian assessment was conducted in 2014. However, for both the prior US (Deroba, et al. 2010) and current Canadian assessments there is a substantial mismatch between the assessed area and the assumed total stock area.



OFL

Not possible.

No acceptable estimate of OFL is available.



ABC

- The SSC concluded that the foundation that it used for developing its previous ABC – the average of the 2006-2008 catches – was inappropriate because 2006-2008 included a period of unusually high catches.



ABC (cont'd)

- The SSC is unable to come up with a definitive ABC at this time because of concerns in the highly periodic nature of historical catches.
- Therefore, the SSC proposes an interim 1-yr ABC equal to the median of the 1978-2013 joint Canadian and US harvests.
- This period was chosen as a time when fisheries operations have been relatively consistent and foreign fleets were not in operation.
- The median of these harvests is **40,165 mt (= ABC)**.



ABC (cont'd)

- The SSC recommends extending the analyses funded by the Council (Wiedenmann, et al.) that considers the performance of data poor approaches to ABC determination to include highly periodic catch time series, such as exhibited by Atlantic Mackerel.



Most Significant Sources of Scientific Uncertainty

- Disparate trend between NEFSC trawl survey and both the commercial CPUE trend and landings together with Canadian egg survey data.
- Apparent, but not fully explainable changes in survey catchability.
- Surveys cover an unknown portion of entire range (variable availability).



Most Significant Sources of Scientific Uncertainty (cont'd)

- Using a bottom trawl survey gear for a semi-pelagic species.
- Lack of quantification of the linkage between US and Canadian catches.
- No Canadian discard information and poor precision of U.S. discard and recreational estimates (though likely low).
- Lack of progression of age classes in recent years.



Mackerel MC

ABC = 40,165 mt

Current Canadian quota plus
unreported catch est. plus
discards reasonable deduction =
15,126 mt.

U.S. ABC = 25,039 mt.

Mackerel MC

| OFL | Unknown |
|---|---------|
| ABC | 40,165 |
| Canada | 15,126 |
| U.S. ABC (Canadian Catch Deducted) | 25,039 |
| Recreational Allocation 6.2% | 1,552 |
| Rec Catch Target 90% | 1,397 |
| Commercial Allocation (93.8%) | 23,487 |
| Commercial Catch Target (90% of Com Allocation) | 21,138 |
| Commercial Landings DAH (minus 1.26% discards) | 20,872 |

Mackerel MC

- No changes suggested for monitoring/closing.

Longfin Squid

Longfin Squid Landings

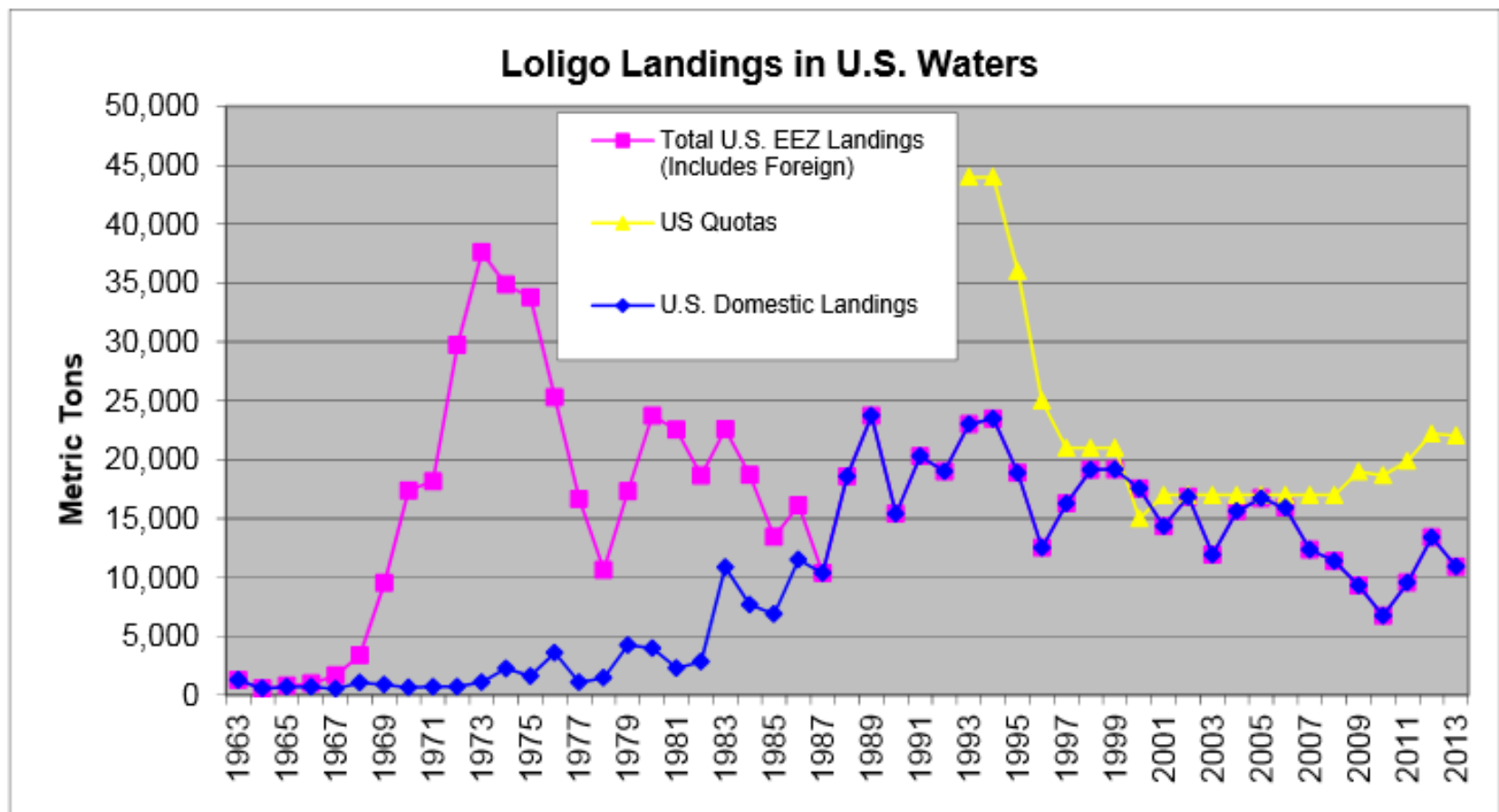


Figure 3. Longfin landings within 200 miles of U.S. Coast (2013 Preliminary).

Source: Saw/SARC 51; unpublished NEFSC dealer reports

Longfin Info

- 2010 assessment (SAW SARC 51),
- not overfished in 2009, but overfishing status not determined
- The assessment and reviewers concluded that the stock appears to be relatively lightly exploited.

Longfin Info

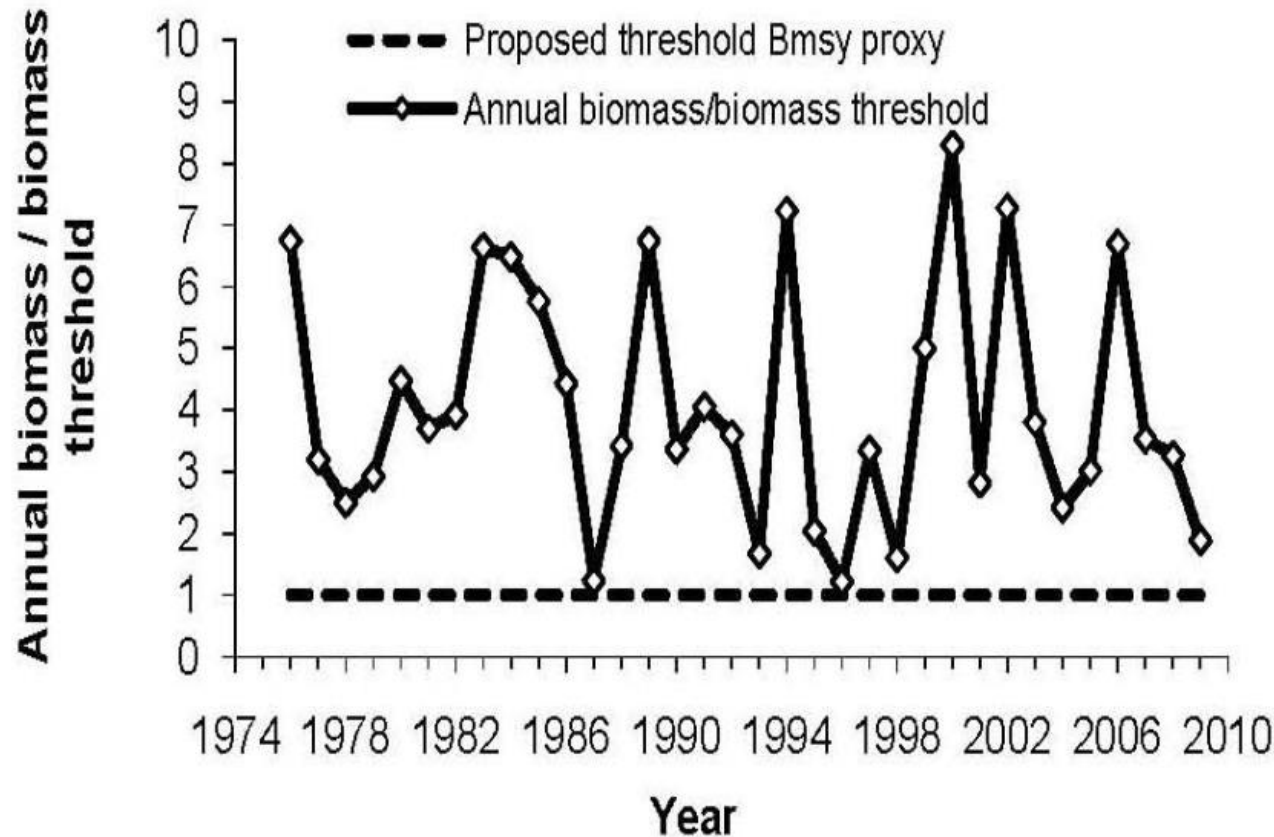


Figure 1. 2010 Assessment Figure B6 - Annual biomass in relation to the proposed biomass threshold (which is $\frac{1}{2}$ of the target) - shown here as a relative value



Don Flescher, NEFSC

May 2014 SSC Meeting

ABC Recommendations for Longfin Squid

Level 4 Assessment

Although an assessment is available from 2010,
it did not contain an OFL.



OFL

Not possible.

No acceptable estimate of OFL is available.



ABC

- The SSC recommends an ABC for a three-year period (2015, 2016, and 2017) equal to the catch in the year of the highest exploitation ratio (1993).
- Thus, the recommended ABC is **23,400 mt**, the same as was previously set for 2012-2014 by the SSC, which occurred during a period of apparent relatively light exploitation (1976-2009) according to the 2010 longfin squid assessment.



Most Significant Sources of Scientific Uncertainty

- Surveys cover unknown portion of entire range (variable availability) – the range may extend beyond survey coverage;
- Poor precision of U.S. discard estimates;
- Using a bottom trawl survey gear for a semi-pelagic species;
- Highly variable survey trends;
- Highly variable natural mortality;



Most Significant Sources of Scientific Uncertainty (cont'd)

- Extremely short life-span (less than 1 year), and unknown, but likely high, impact of environmental factors on recruitment;
- Because of its short life span, its high rate of natural mortality, and the delay in collating survey and catch information, there is an inherent lag in information pertaining to the current state of the stock; and



Most Significant Sources of Scientific Uncertainty (cont'd)

- Inability to distinguish between inter-seasonal differences in productivity and inter-seasonal differences in catchability.



Longfin MC

No changes needed – see page 5 of tab.

Illex Squid

Illex Squid Landings

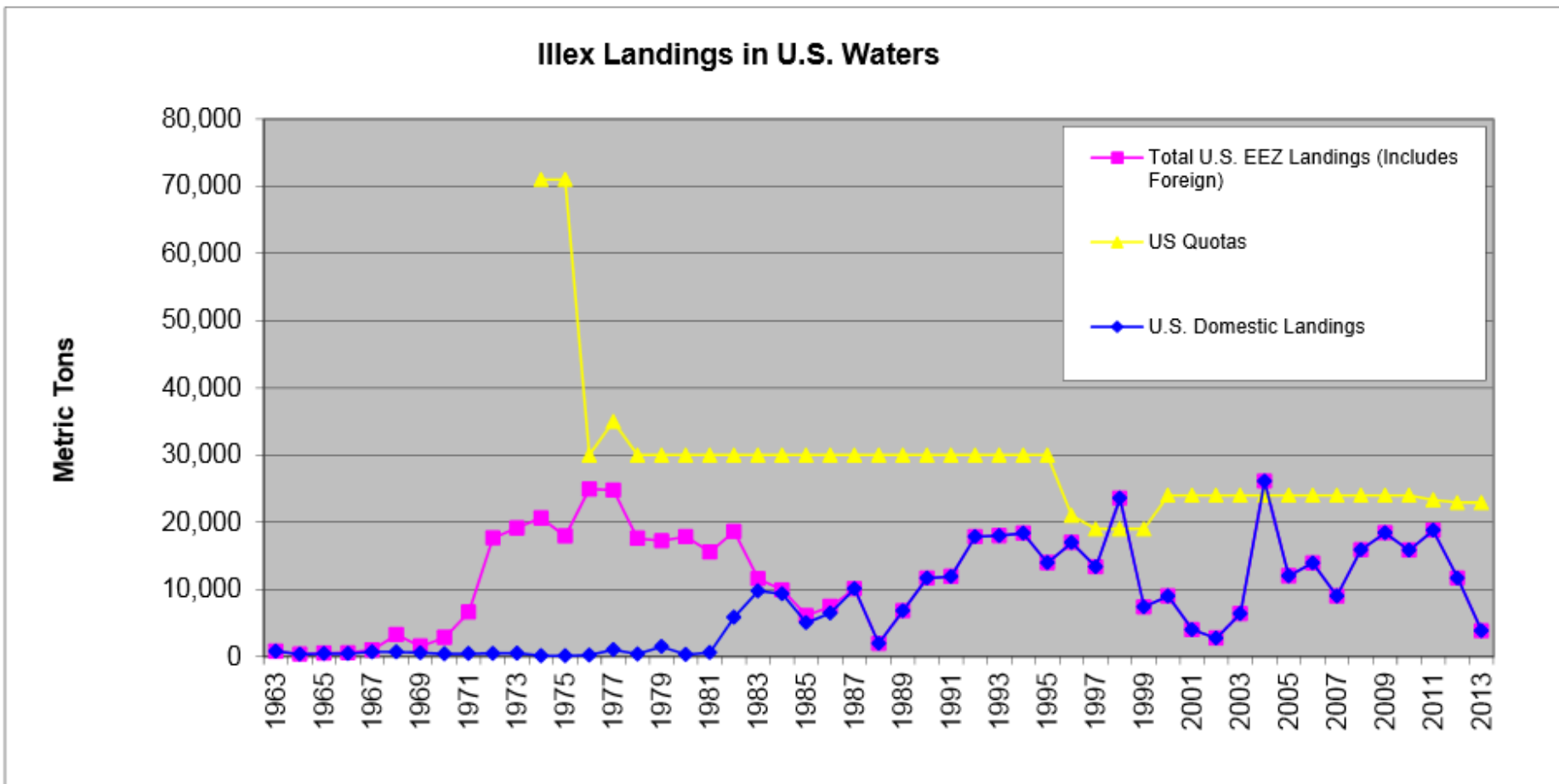


Figure 1. Illex landings within 200 miles of U.S. Coast (2013 Preliminary).

Illex Info

- No accepted assessment.
- Needs full-season age/maturity data before proceeding
- SSC requests new assessment before next 3-year cycle

Illex Info

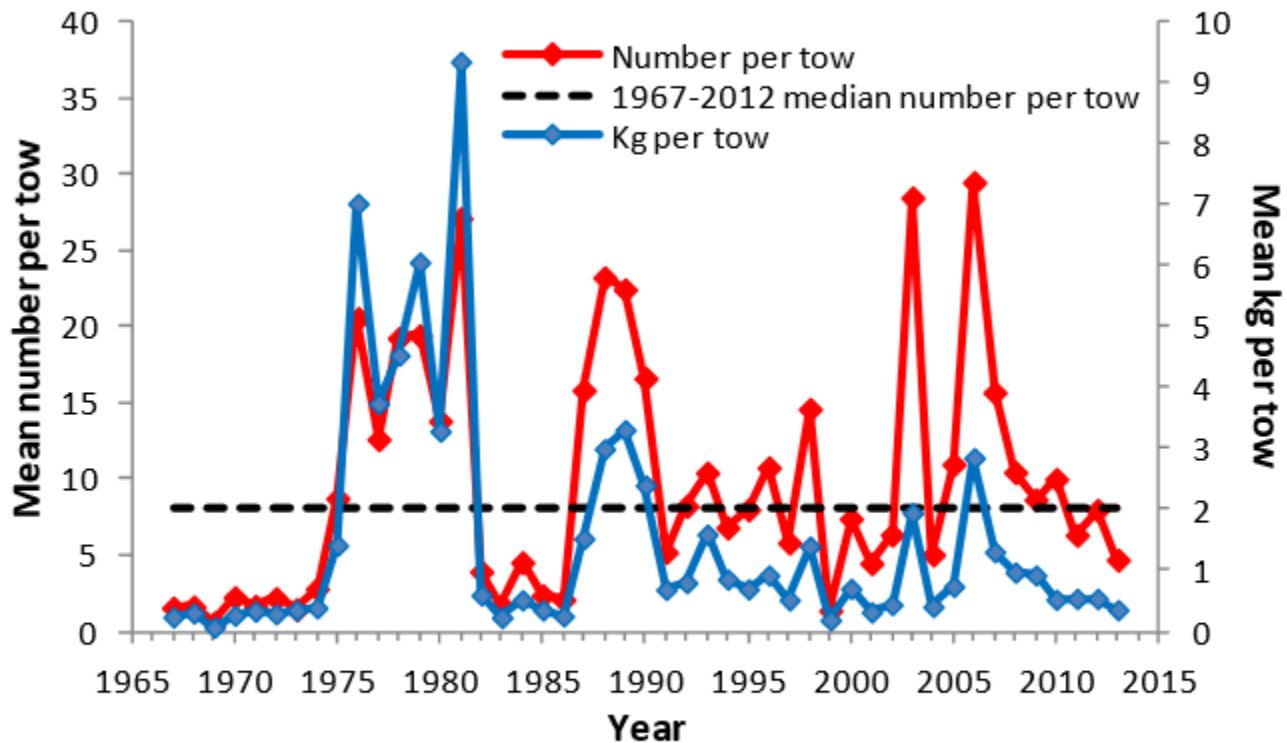


Figure 2. *Illex illecebrosus* indices of relative abundance (stratified mean number per tow) and biomass (stratified mean kg per tow) derived from NEFSC fall bottom trawl surveys conducted during 1967-2013.



Don Flescher, NEFSC

May 2014 SSC Meeting

ABC Recommendations for
Illex Squid

Level 4 Assessment

- No acceptable estimate of OFL is available.
- The last benchmark assessment for *Illex* was conducted in 2006.



OFL

Not possible.

No acceptable estimate of OFL is available.



ABC

- The SSC recommends a 2015-2017 multi-year ABC specification of **24,000 mt** (the same as was previously set for 2012-2014 by the SSC).
- This is based on the observation that landings of 24,000 - 26,000 mt do not appear to have caused harm to the *Illex* stock, based on indices and landings in years following when landings were in the range of 24,000 mt - 26,000 mt.



ABC (cont'd)

- The method used by the SSC for setting the ABC assumes that the stock has been lightly exploited.
- The SSC recommends that a benchmark assessment or a research track examining the effects of environmental variables on survey trends in *Illex* be undertaken by 2017, which would be 11 years since the last benchmark assessment was conducted.



Most Significant Sources of Scientific Uncertainty

- Surveys cover an unknown portion of the entire range (leading to variable availability);
- Poor precision of U.S. discard estimates (but of low magnitude);
- Using a bottom trawl survey gear for a semi-pelagic;
- LPUE values are sensitive to availability;



Most Significant Sources of Scientific Uncertainty (cont'd)

- Highly variable natural mortality;
- Extremely short life-span (less than 1 year), and unknown, but likely high, impact of environmental factors on recruitment and growth; and
- No available estimates of biological reference points (F & B), and no estimates of recent biomass and/or fishing mortality.



Illex MC

No changes needed – see page 5 of tab.