Spiny Dogfish
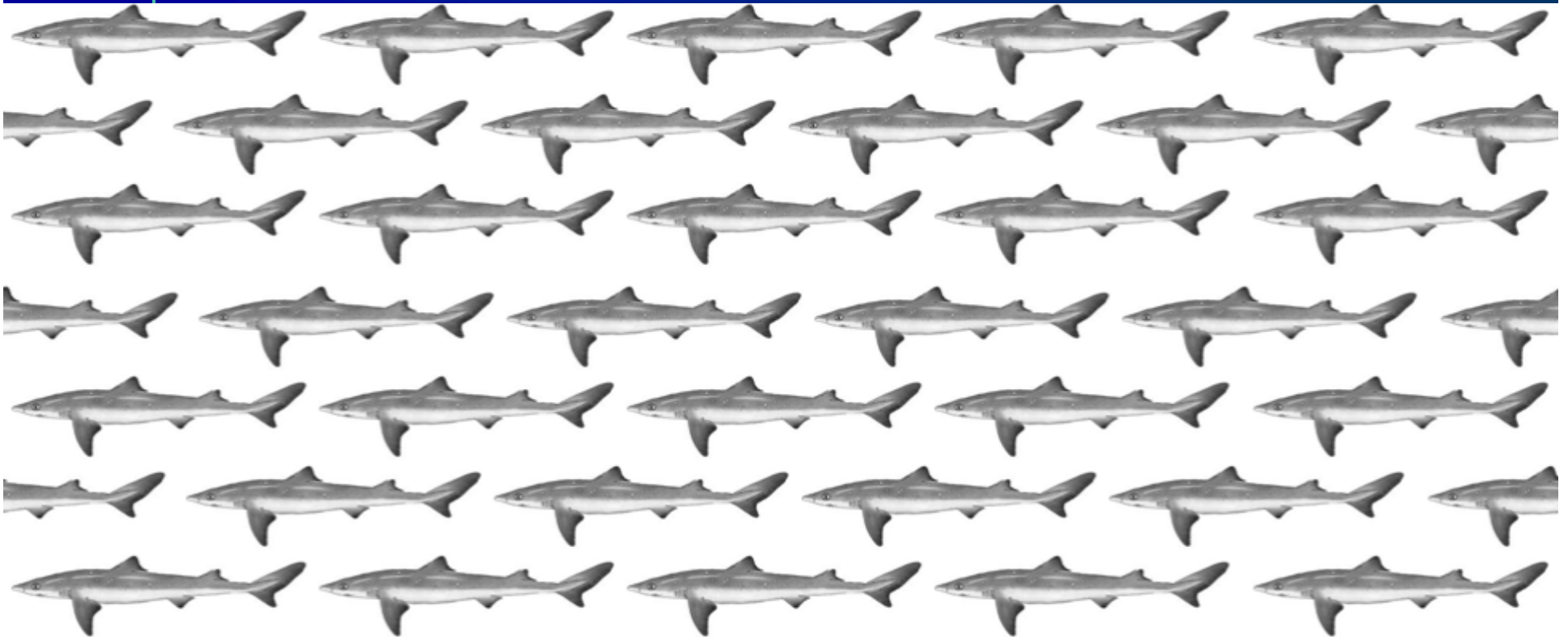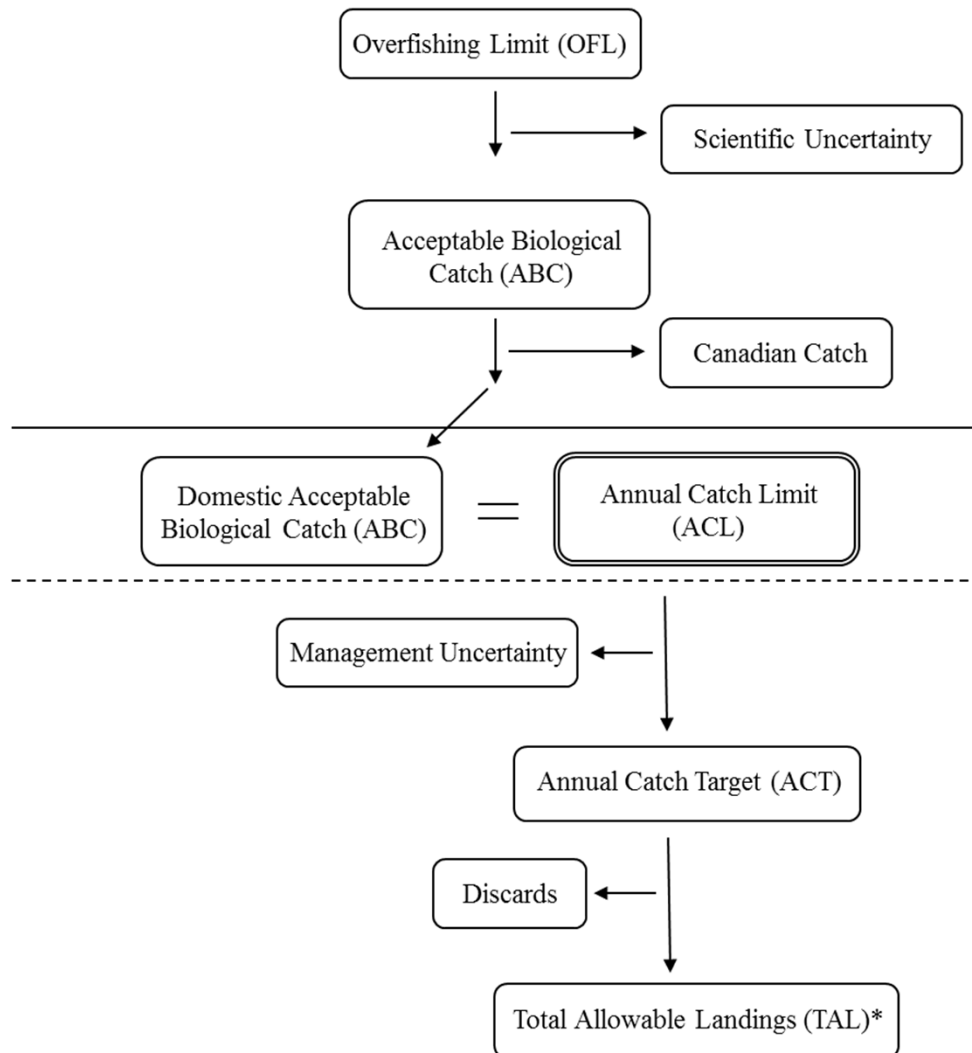
Spiny Dogfish Flowchart

Assessment Update

Spiny Dogfish Flowchart

Overfishing Limit (OFL)
→ Scientific Uncertainty

Acceptable Biological Catch (ABC)
→ Canadian Catch

Domestic Acceptable Biological Catch (ABC) = Annual Catch Limit (ACL)

Annual Catch Limit (ACL) → Management Uncertainty

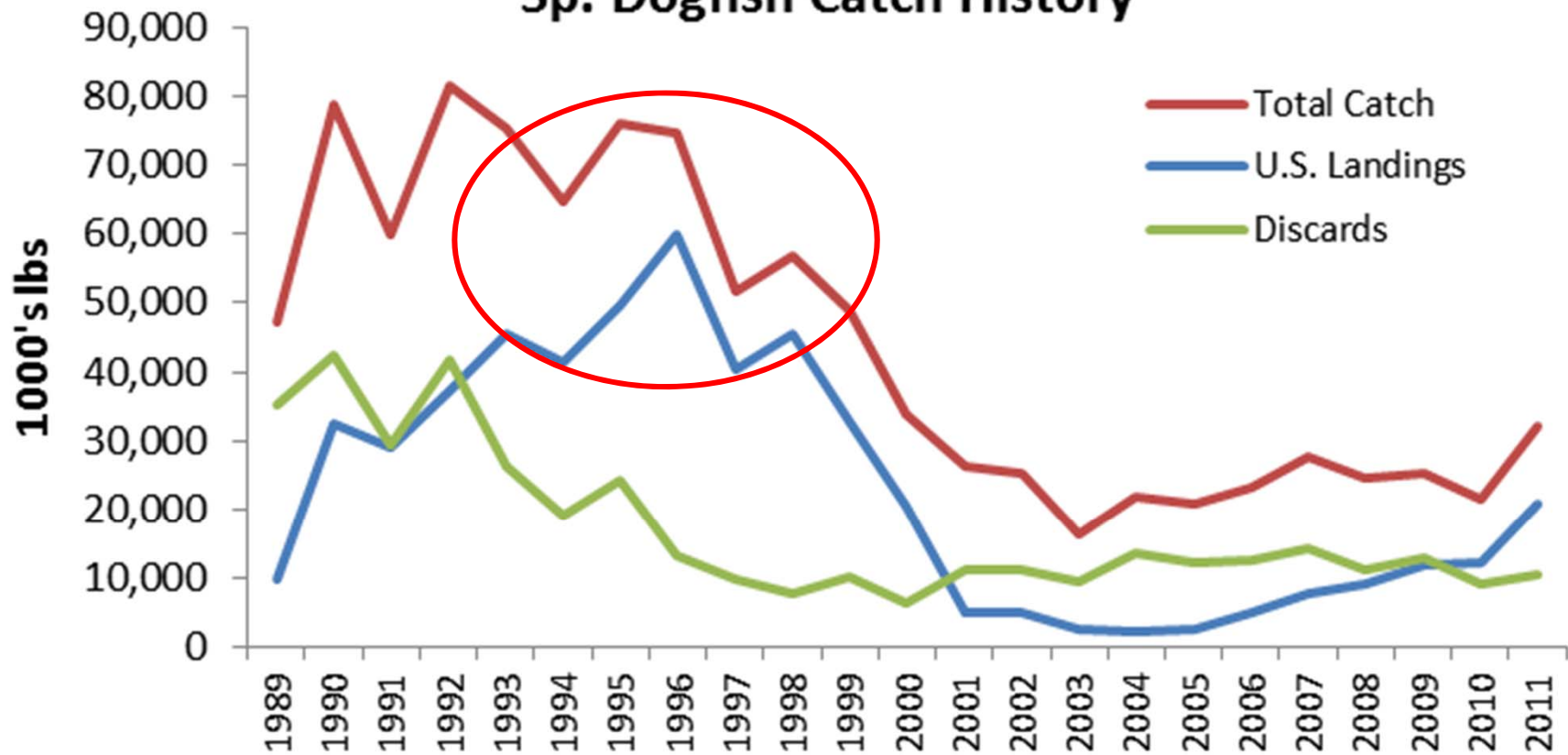Annual Catch Target (ACT)

Annual Catch Target (ACT) → Discards

Total Allowable Landings (TAL)*

Sp. Dogfish Catch History

- Unregulated fishery targeted mature female dogfish

- Female stock overfished in 1997

- FMP implemented in 2000

- Landings greatly reduced from 2001 – 2008

- Stock rebuilt in 2010

- Quotas expanded in 2009 - 2012
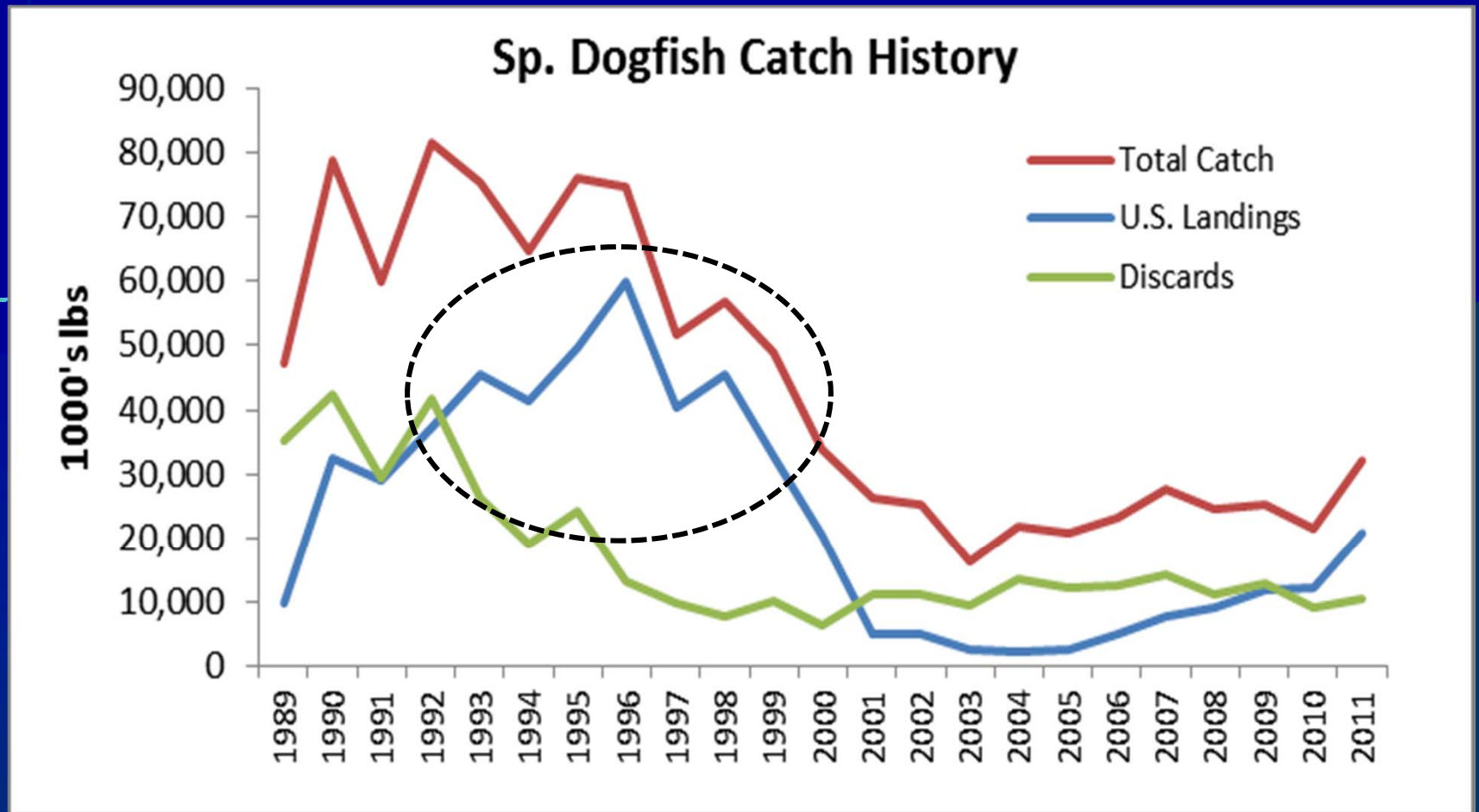
Sp. Dogfish Catch History

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Sp. Dogfish Catch History

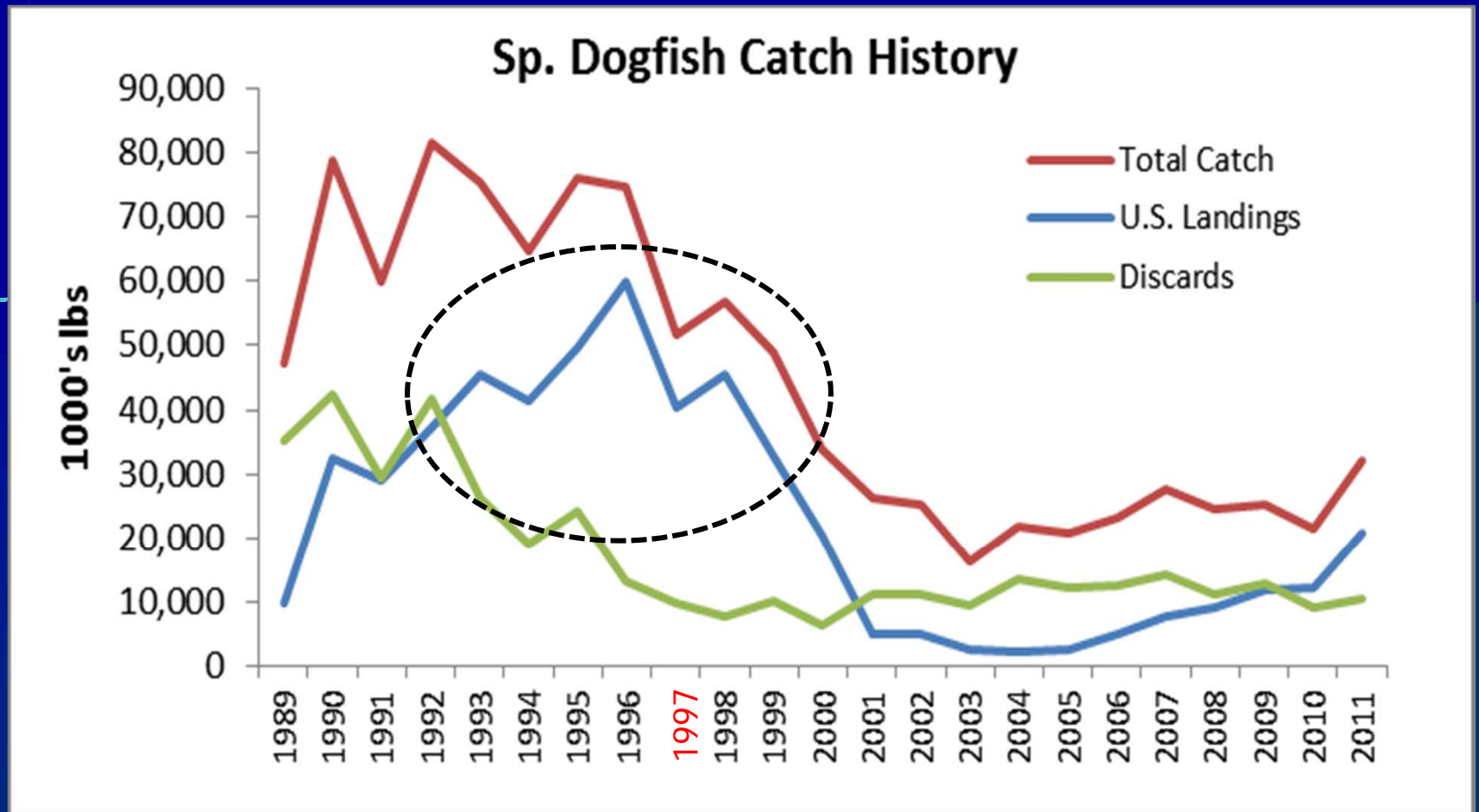- Unregulated fishery targeted mature female dogfish
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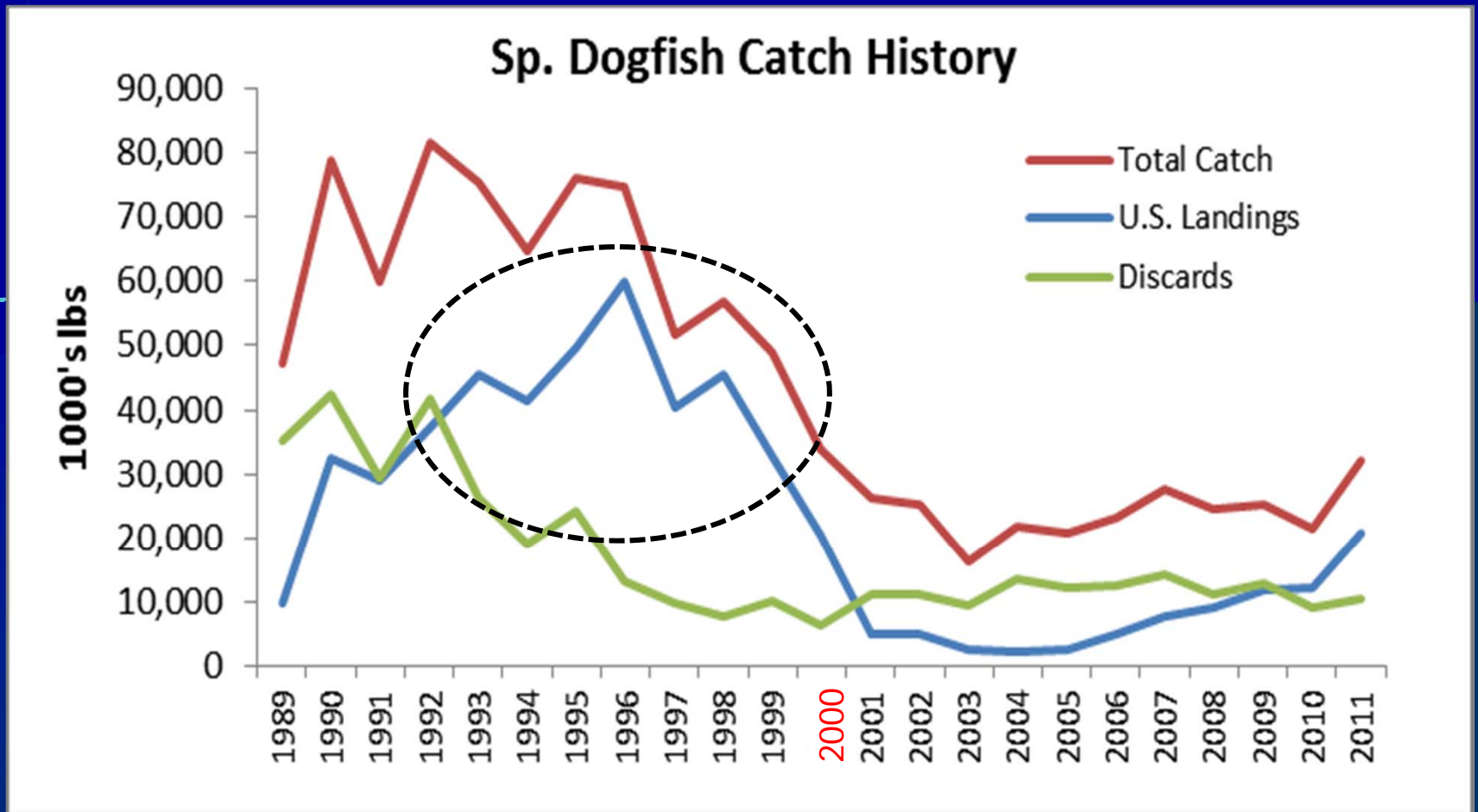
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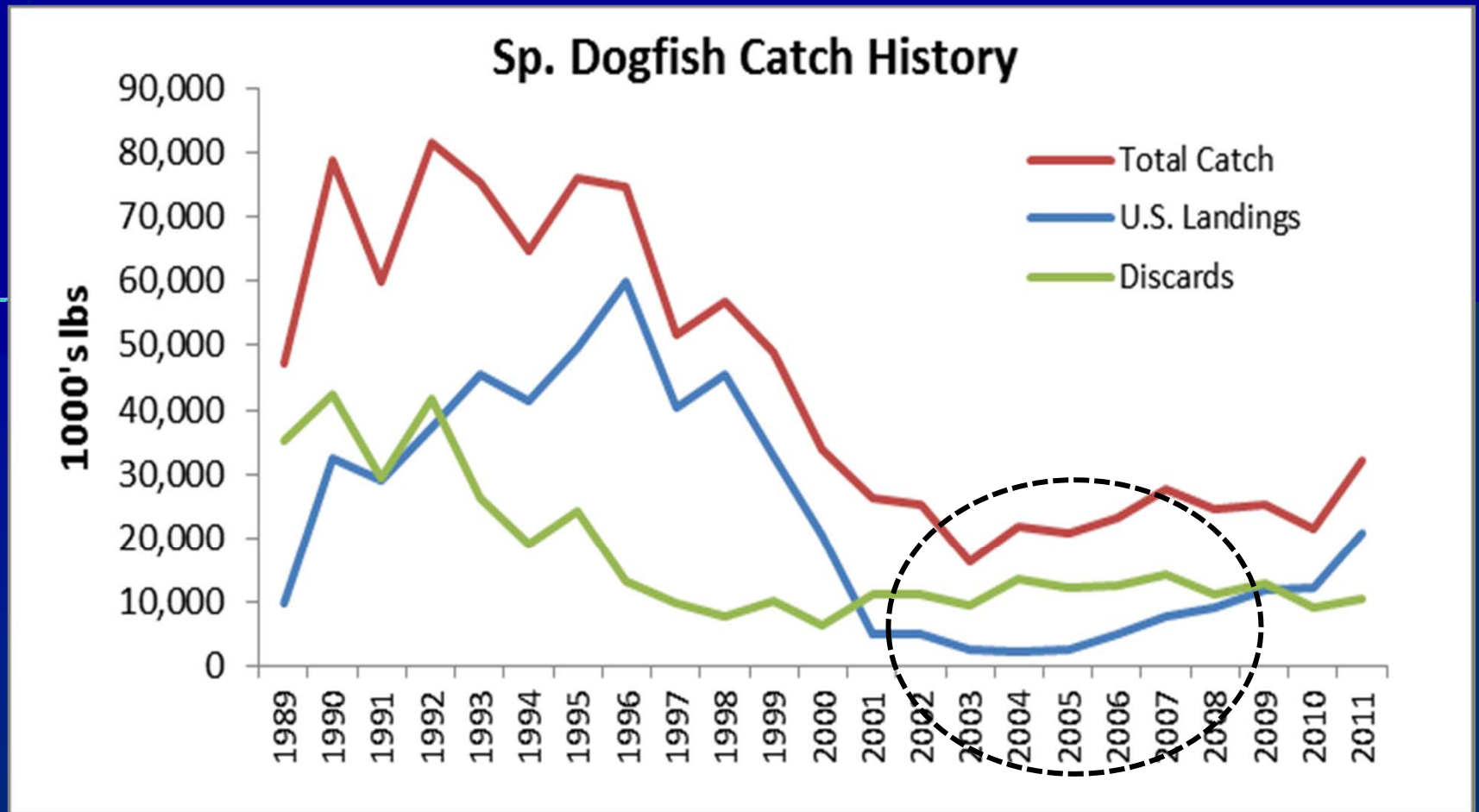
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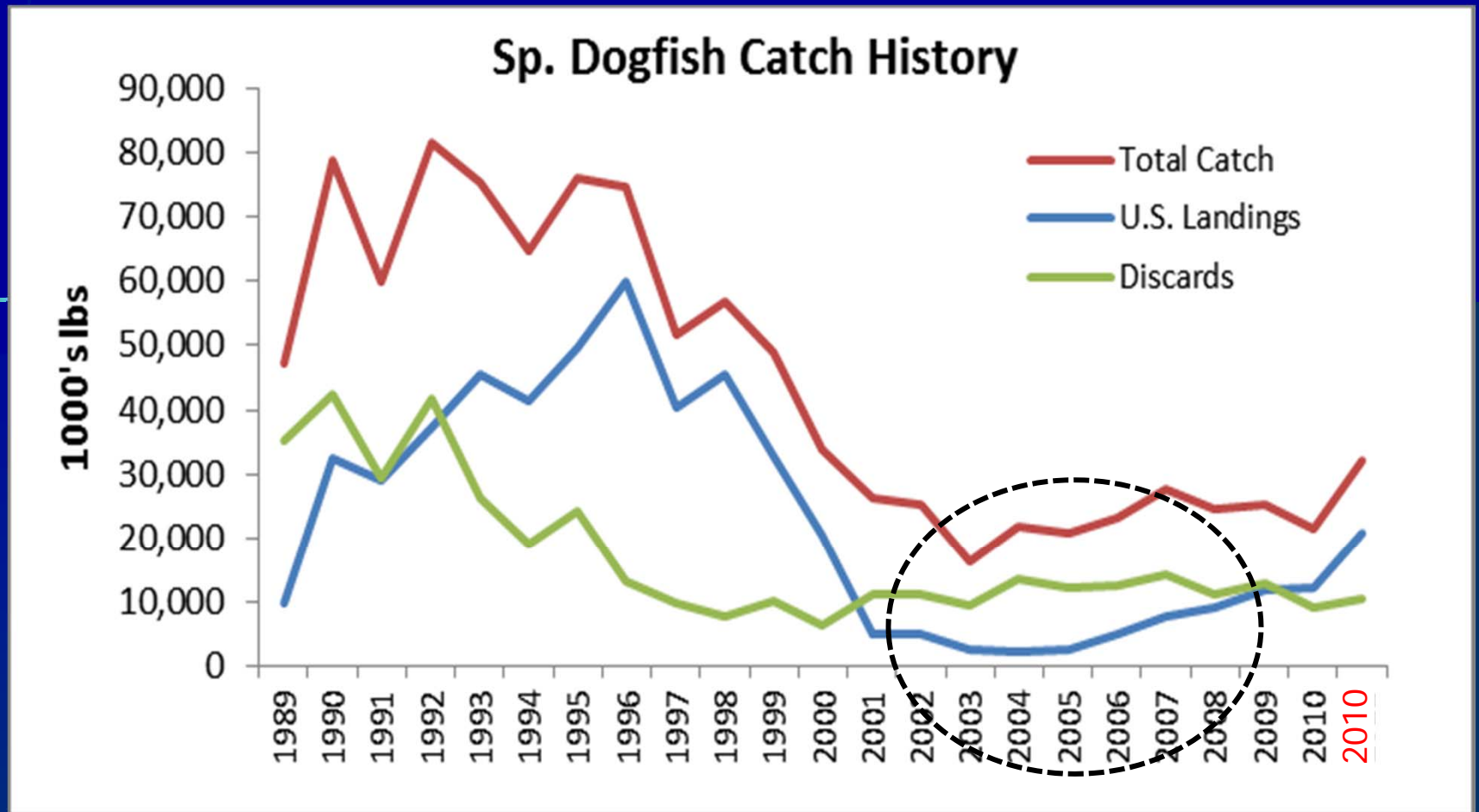
- Quotas expanded in 2009 - 2011

Stock Biomass

Female spawning stock biomass Estimates 1982-2012
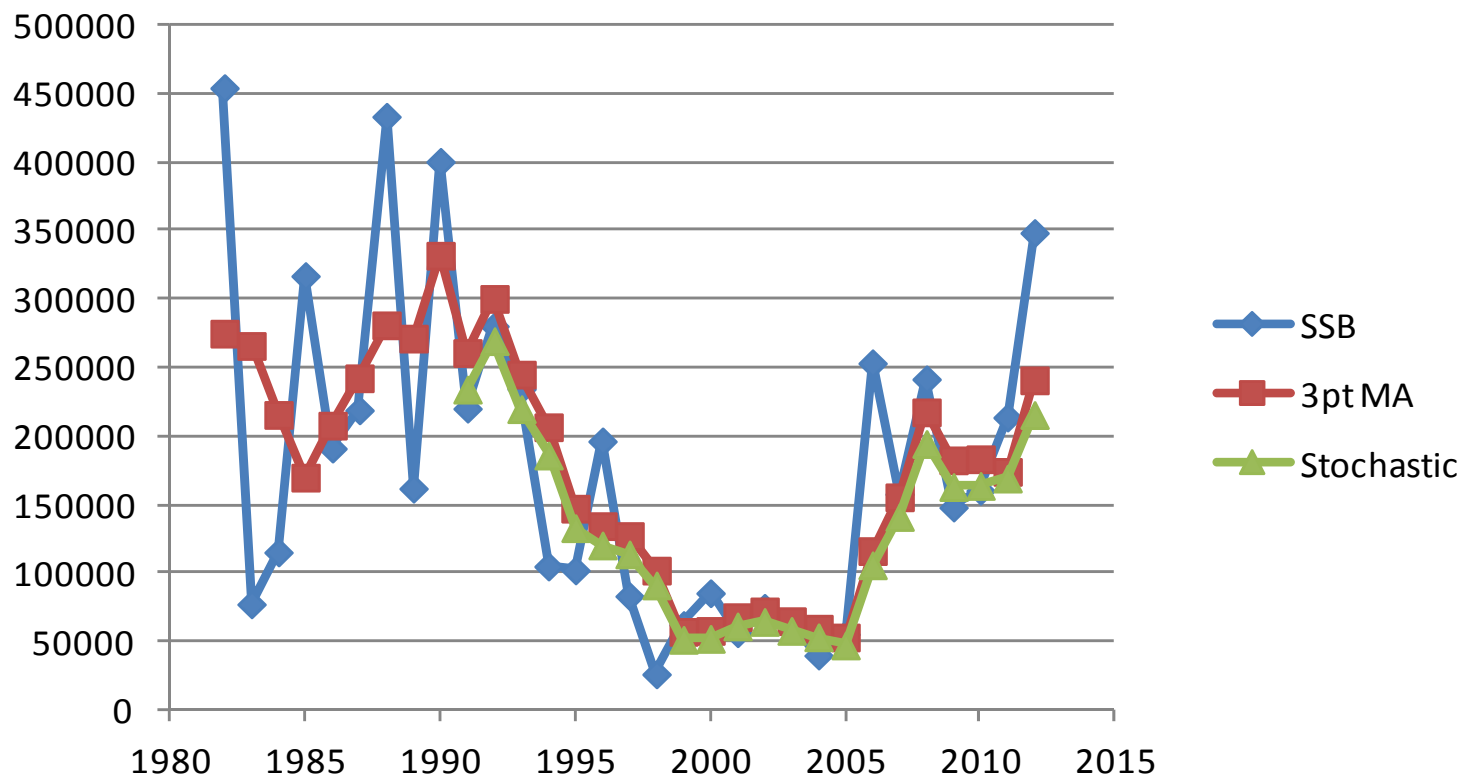
Biomass 2012

Stochastic Estimate of Spawning Stock Biomass with nominal target and threshold biomasses, 2012
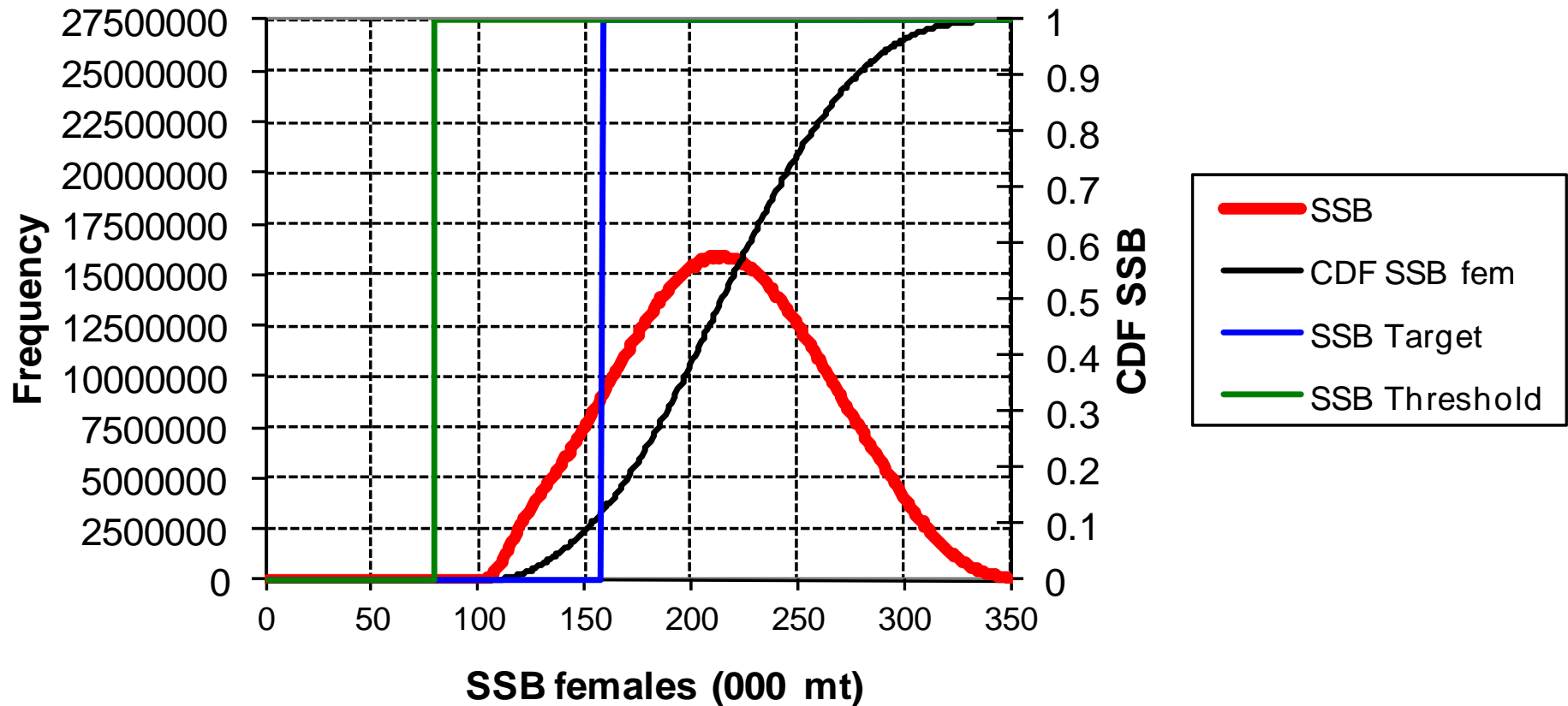
Fishing Mortality 2011

F1: Female Catch vs exploitable biomass: 2011

Stock Status

- Not overfished, overfishing not occurring

- SSB and F stable for now

- $Biomass_{2012}$: 215,444 mt (SSB_{MAX}: 159,088 mt)

- $F_{1,2011}$: 0.114 (F_{MSY}: 0.2439)

Spiny Dogfish Flowchart
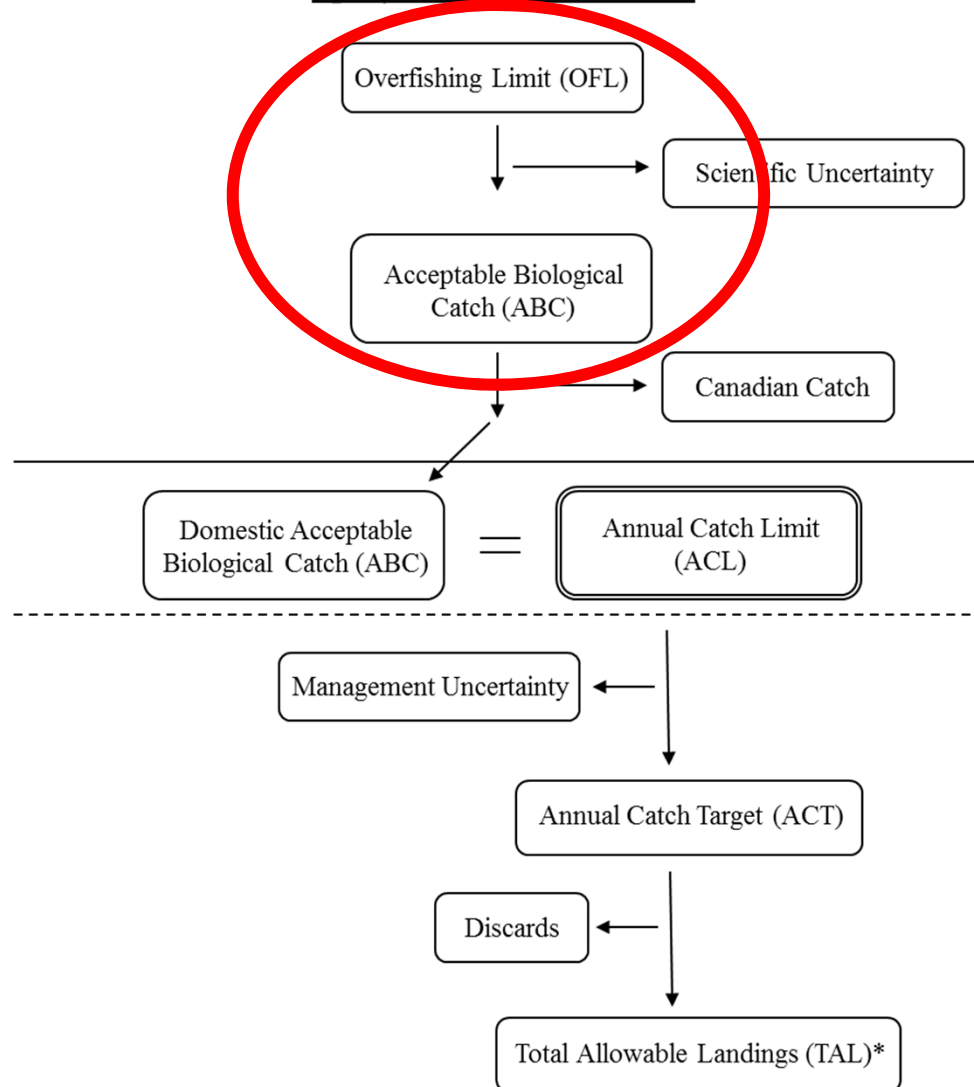
Fishery Performance Report

- Fishery underperformed in early part of the year because fish were offshore

- Poor economy in Europe constraining demand

- Market not ready for huge increases in dogfish supply, but more processors may get involved over time.
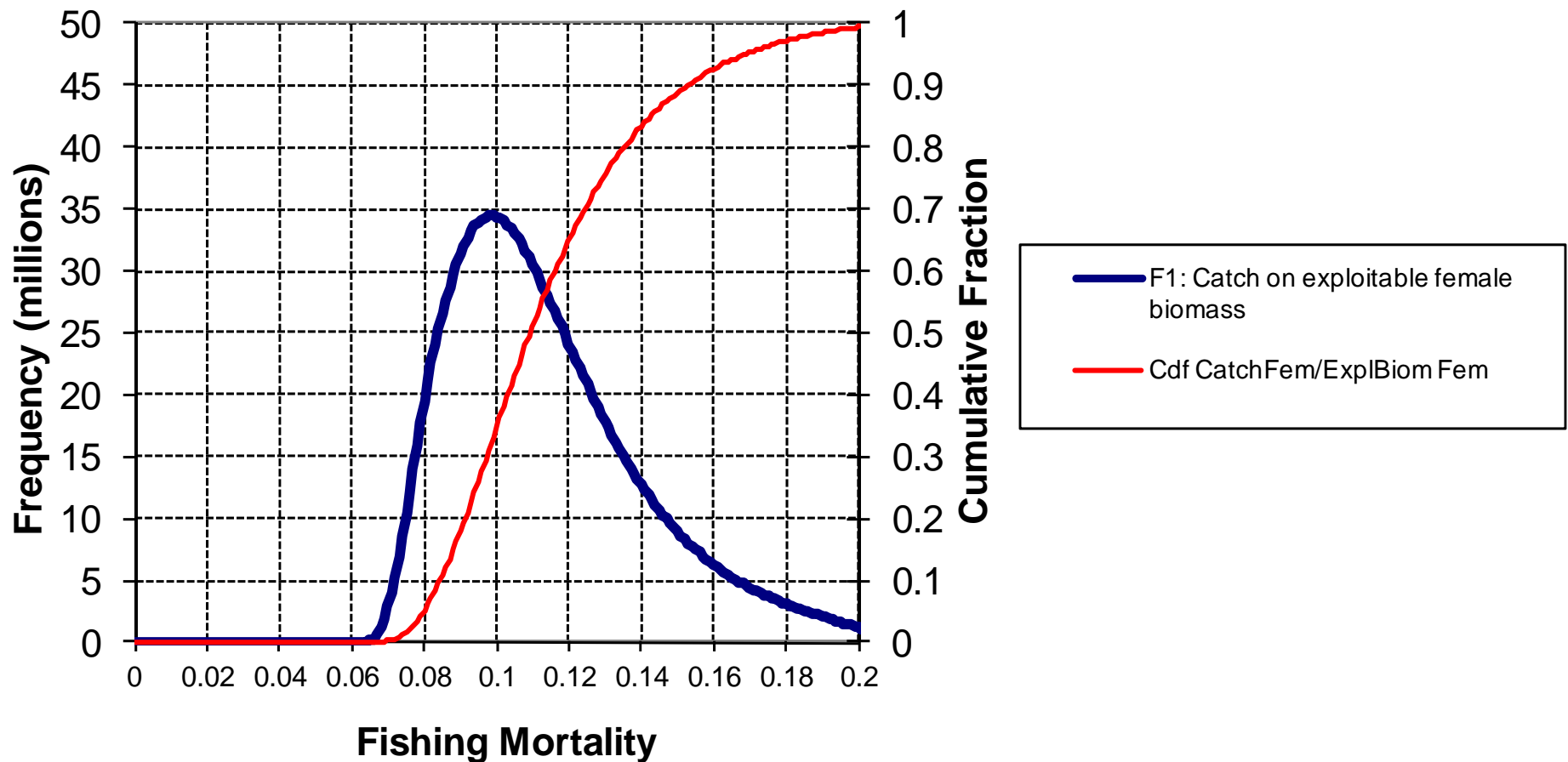
- Longer term specifications (multi-year) desirable for planning

- Closure of Oregon Inlet affecting NC commercial effort

- Recommendation for developing models (management and population) for administering and assessing male fishery

- Interested in limited entry

Fishery Performance Report
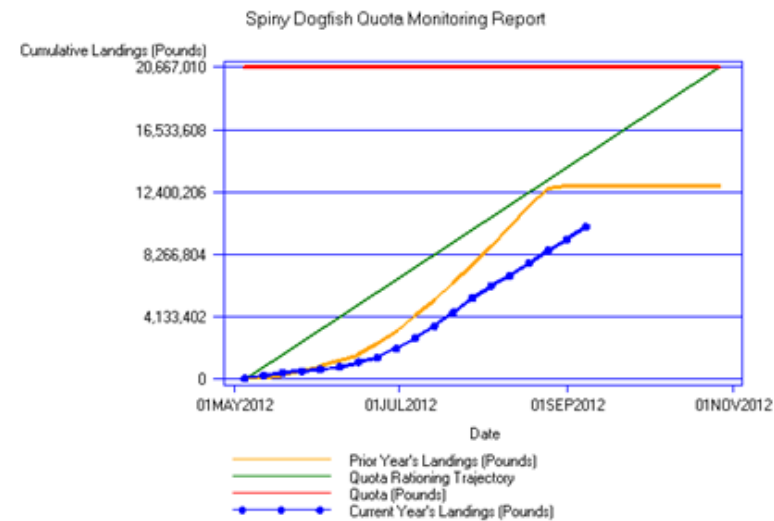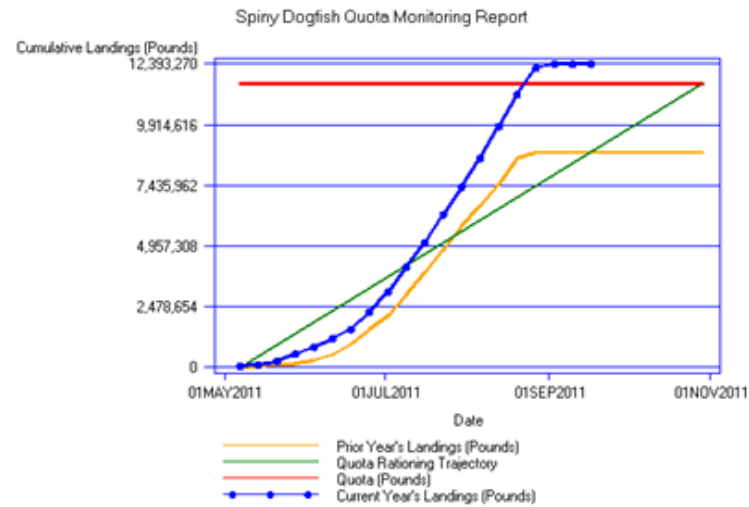
MAFMC SSC
ABC Recommendation

Spiny Dogfish

2013 Fishing Year

The level (1-4) that the SSC deems most appropriate for the information content of the most recent stock assessment, based on criteria listed in the Omnibus Amendment :

Level 3. The assessment provides plausible estimates of the absolute levels of biomass and abundances, and the assessment also provides a plausible set of reference points that together represent the best available science.

The SSC notes that the biological reference points were calculated outside of the assessment model. The SSC also believes that important sources of uncertainty were not incorporated into estimates for the biological reference points. Both concerns prevent this assessment from achieving a higher rank.

If possible, the level of catch (in weight) associated with the overfishing limit (OFL) based on the maximum fishing mortality rate threshold or, if appropriate, an OFL proxy:

The F_{msy} proxy is calculated from a projection model for which the finite rate of population increase = 1.0.   For spiny dogfish, the F_{msy} proxy = 0.2439. This is equivalent to a catch of **30,652 mt**, based on the projected biomass in 2013 and the assumption that the catch in 2012 will be equal to 20,352 mt (the ABC = ACL from last year).
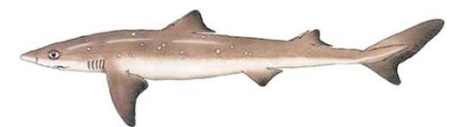
The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock.

The SSC applied the Council's risk policy for a typical life history[1], an estimated B_{2013}/B_{msy} ratio > 1 and a CV of the OFL distribution of 100%. Using these parameters, the Council's risk policy implies a P*=0.40. Applying this P* to the OFL, produces an ABC = **24,709 mt**

[1.] The SSC notes that the assessment for spiny dogfish has been structured to account for many aspects of the unique life history of this species

The level of catch (in weight) associated with the acceptable biological catch (ABC) for the stock (cont'd).

The SSC notes that the stock biomass is projected to decline in the future because of poor recruitment in earlier years, before recovering again. Current projections suggest that the ratio of (median $B_{current}$)/B_{msy} may be <1 for **2018 - 2023**. As a result, the P* value developed by the Council's risk policy will be lower, thereby leading to a reduced ABC for these years.

Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration:

The Draft SUN Committee report on setting multi-year ABCs permits multiyear ABC setting if the stock is not experiencing overfishing or if the stock is not subject to an upcoming assessment. Dogfish is therefore a candidate for multiyear ABC setting.

The SSC recommends a 3-year ABC specification. The SSC recommends that ABC be calculated based on a constant F policy, which translates to ABC in the subsequent years of:

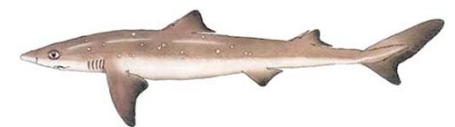|	
2013	**24, 709 mt**
2014	**25,154 mt**
2015	**25,057 mt**

Specify the number of fishing years for which the OFL and/or ABC specification applies and, if possible, identify interim metrics which can be examined to determine if multi-year specifications need adjustment prior to their expiration (cont'd):

The SSC will examine spiny dogfish discard rates, survey abundance trends (size composition, sex ratio and pup size), average size and sex in commercial landings, agreement between observed and predicted catch and survey forecasts, changes in Canadian landings and the spatial distributions of catch and survey abundances each year of the specification to determine if the multiyear ABC should be abandoned.

The most significant sources of scientific uncertainty associated with determination of OFL and ABC:

- The assessment relies heavily on an assumed efficiency of the survey gear in developing minimal swept area estimates of biomass.

- Inter-annual differences in availability of the stock to the survey gear.

- F_{msy} proxy is based on a projection model that relies on a time-invariant selectivity estimated from data up to 2008. The assessment assumes selectivity has not changed subsequently, but may be variable.

- Both the F_{msy} proxy and the projections rely on a model that assumes constant pup survival and pup production rates. Empirical evidence suggests pup survival correlates positively with maternal size.

The most significant sources of scientific uncertainty associated with determination of OFL and ABC (cont'd):

- Inconsistency between the estimation model and the projection model.

- Potential changes in fishery selectivity. Large increases in catches could induce changes in the overall selectivity pattern of the fishery.

- Potential inconsistency between the life-history based estimates of fishing mortality rates and the biomass reference points derived from the Ricker S/R curve.
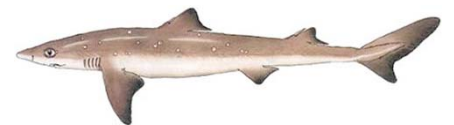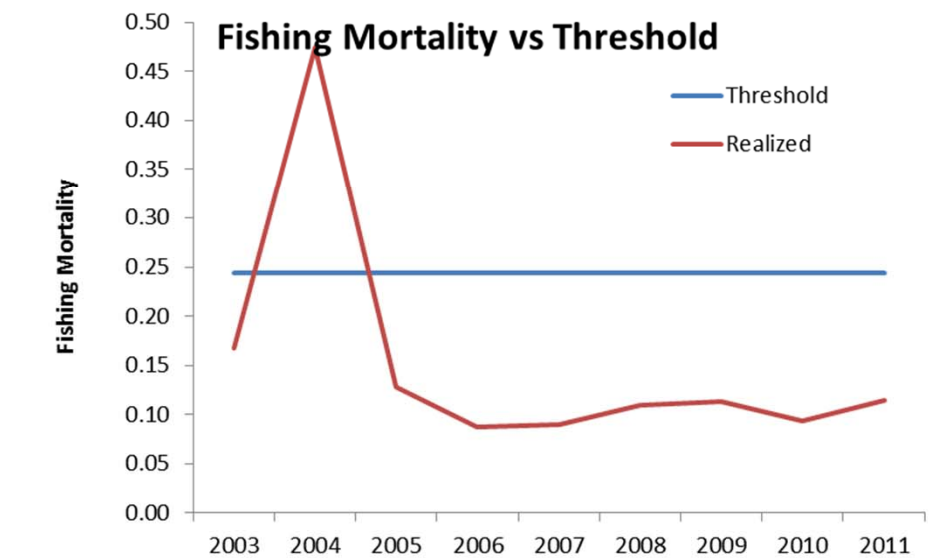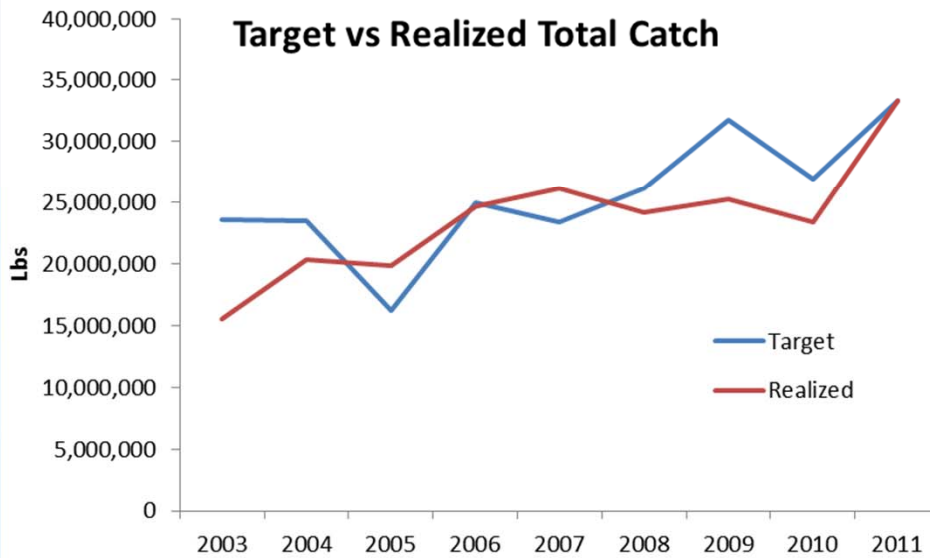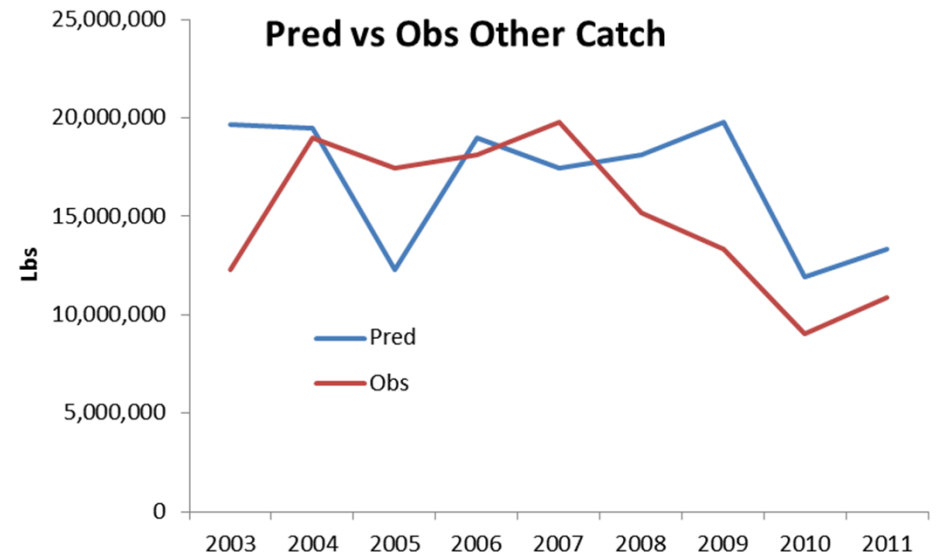
The most significant sources of scientific uncertainty associated with determination of OFL and ABC (cont'd):

- Total discard estimates and estimated mortality of discarded dogfish.
- The revised estimate of the biomass reference point is uncertain with an asymptotic CV of about 30%.

Mgmt Measures

2013 Measures	Basis	M lb	Mt
OFL	F_{MSY} (0.2439)	67.576	30,652
ABC	Constant F (0.19528)	54.474	24,709
Canadian Landings	= ave 2009-2011	0.179	81.0
Domestic ABC	= ABC - Canadian Landings	54.295	24,628
ACL	= Domestic ABC	54.295	24,628
Mgmt Uncertainty Buffer	Ave of quota overages (pct) in 2010-2011 (4.0%)	1.697	770
ACT	= Domestic ACL - management uncertainty	52.598	23,858
U.S. Discards	= ave 2002-2011	11.698	5,306
TAL	ACT - Discards	40.900	18,552
U.S. Rec Landings	= ave 2010-2011	0.058	26.5
Comm Quota	TAL - Rec Landings	40.841896	18,526

Comparison of total and estimated dead discards (mt), 1981-2011
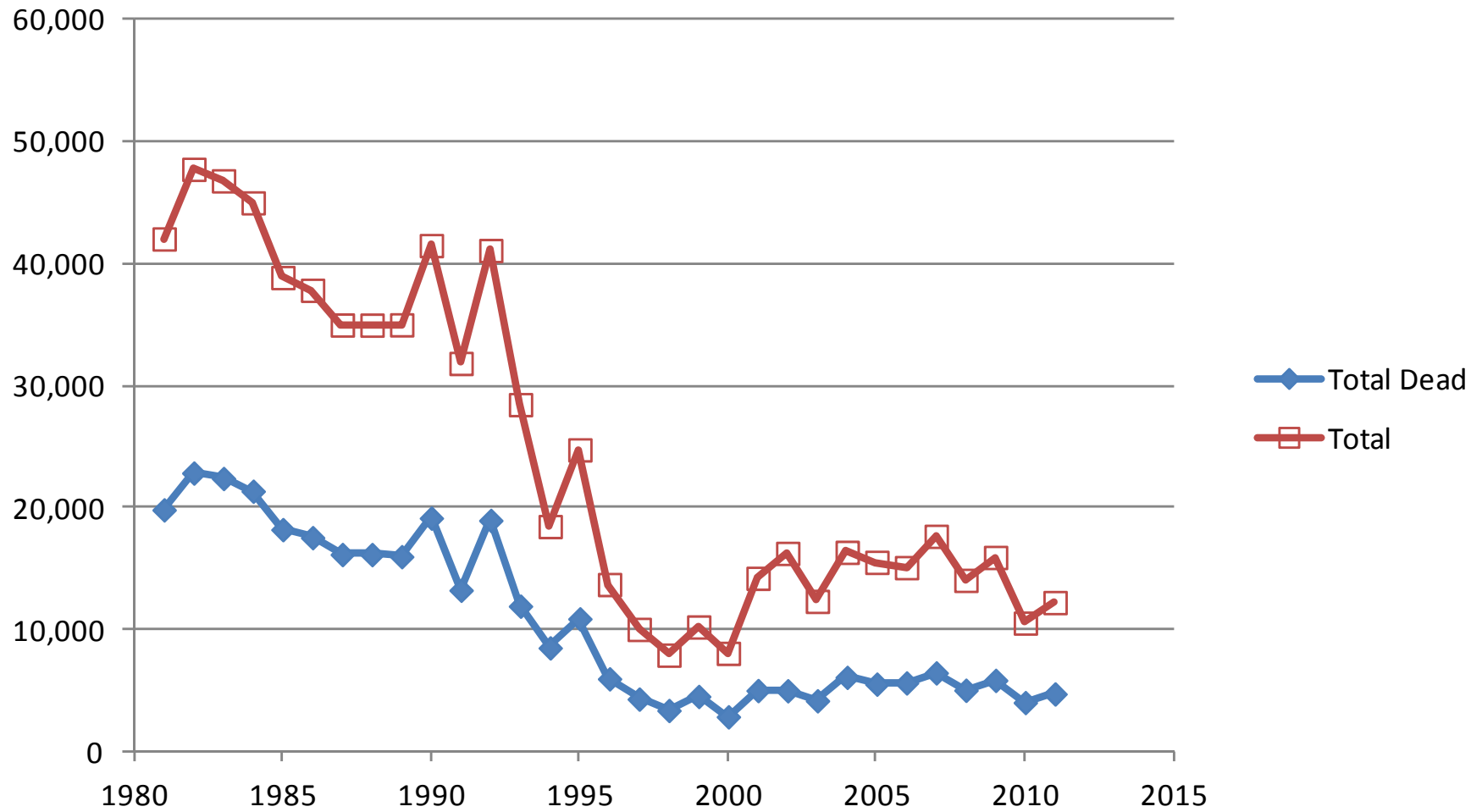
Ratio of Discards to Landings: 1989-2011
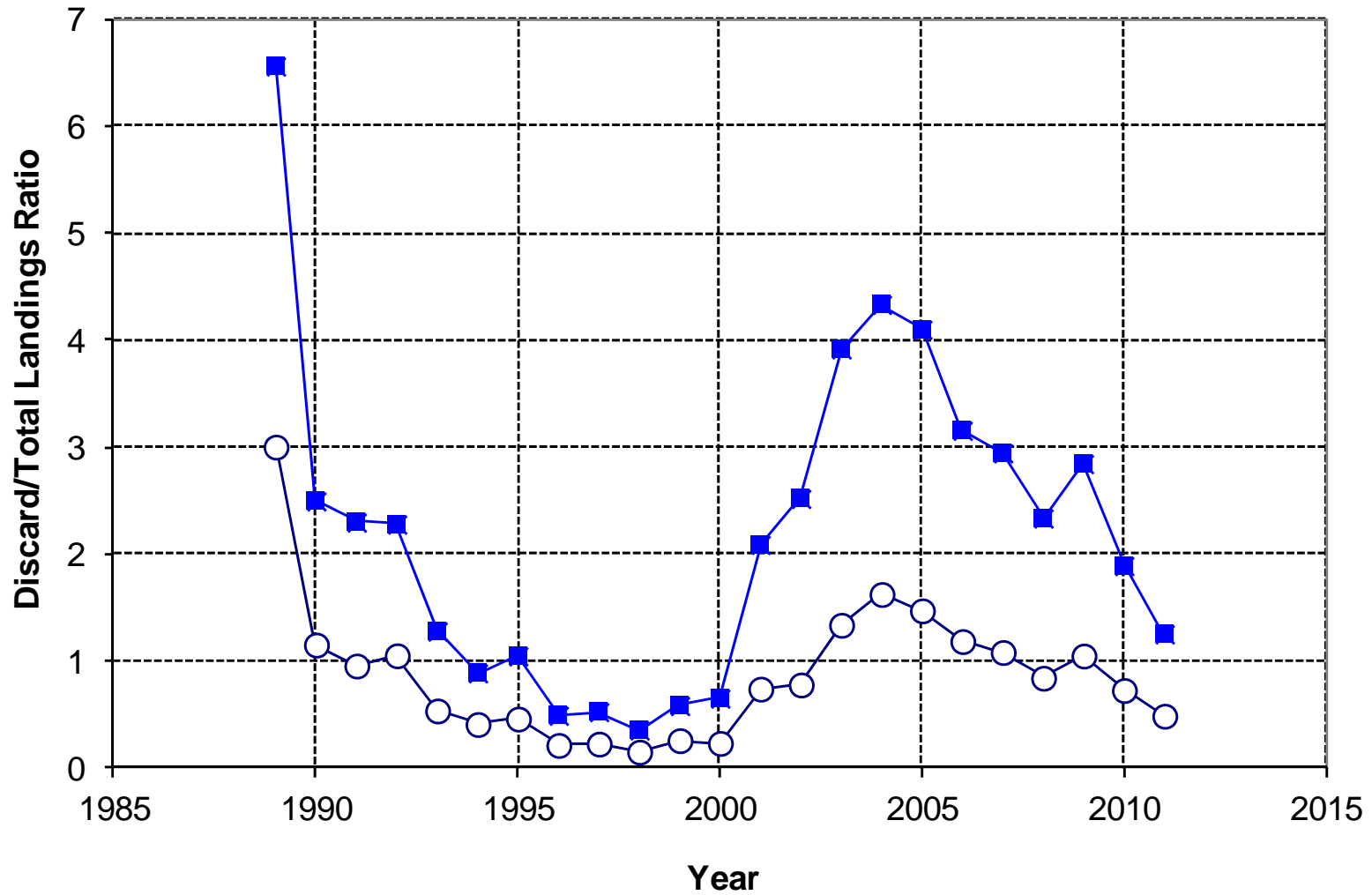
	Quota	Quota Mon	Landings	Difference		
2003	4,000,000	2,638,899	3,243,500	-756,500	-18.9%	-0.757
2004	4,000,000	1,637,790	1,376,848	-2,623,152	-65.6%	-2.623
2005	4,000,000	2,469,443	2,407,323	-1,592,677	-39.8%	-1.593
2006	6,000,000	6,230,636	6,583,134	583,134	9.7%	0.583
2007	6,000,000	5,829,693	6,391,341	391,341	6.5%	0.391
2008	8,000,000	8,176,328	9,027,624	1,027,624	12.8%	1.028
2009	12,000,000	11,318,703	11,956,686	-43,314	-0.4%	-0.043
2010	15,000,000	14,160,827	14,359,135	-640,865	-4.3%	-0.641
2011	20,000,000	20,094,196	22,450,564	2,450,564	12.3%	2.451
2012	35,693,943		20,260,953	6.9%	1,113,166	3.99%

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ABC	Constant F (0.19528)	55.455	25,154
Canadian Landings	= ave 2009-2011	0.179	81.0
Domestic ABC	= ABC - Canadian Landings	55.277	25,073
ACL	= Domestic ABC	55.277	25,073
Mgmt Uncertainty Buffer	Ave of quota overages (pct) in 2010-2011 (4.0%)	1.737	788
ACT	= Domestic ACL - management uncertainty	53.540	24,285
U.S. Discards	= ave 2002-2011	11.698	5,306
TAL	ACT - Discards	41.842	18,979
U.S. Rec Landings	= ave 2010-2011	0.058	26.5
Comm Quota	TAL - Rec Landings	41.783807	18,953

2015 Measures	Basis	M lb	Mt
OFL			
ABC	Constant F (0.19528)	55.241	25,057
Canadian Landings	= ave 2009-2011	0.179	81.0
Domestic ABC	= ABC - Canadian Landings	55.063	24,976
ACL	= Domestic ABC	55.063	24,976
Mgmt Uncertainty Buffer	Ave of quota overages (pct) in 2010-2011 (4.0%)	1.728	784
ACT	= Domestic ACL - management uncertainty	53.335	24,192
U.S. Discards	= ave 2002-2011	11.698	5,306
TAL	ACT - Discards	41.637	18,886
U.S. Rec Landings	= ave 2010-2011	0.058	26.5
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MID-ATLANTIC
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Mgmt Measures for 2013-2015

Table 1-rev
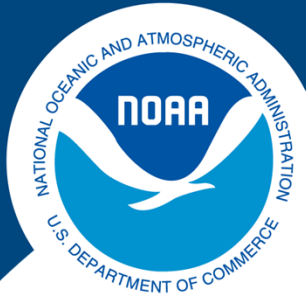
Spiny Dogfish
Trip Landings Analysis

Tobey Curtis, Mark Brady, Michael Pentony
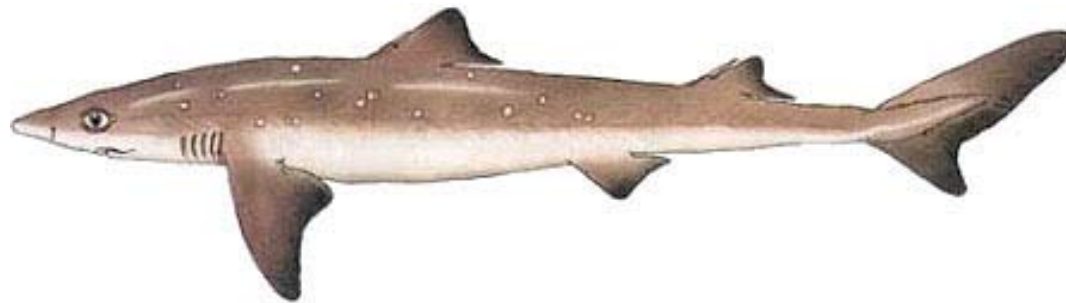
October 3, 2012

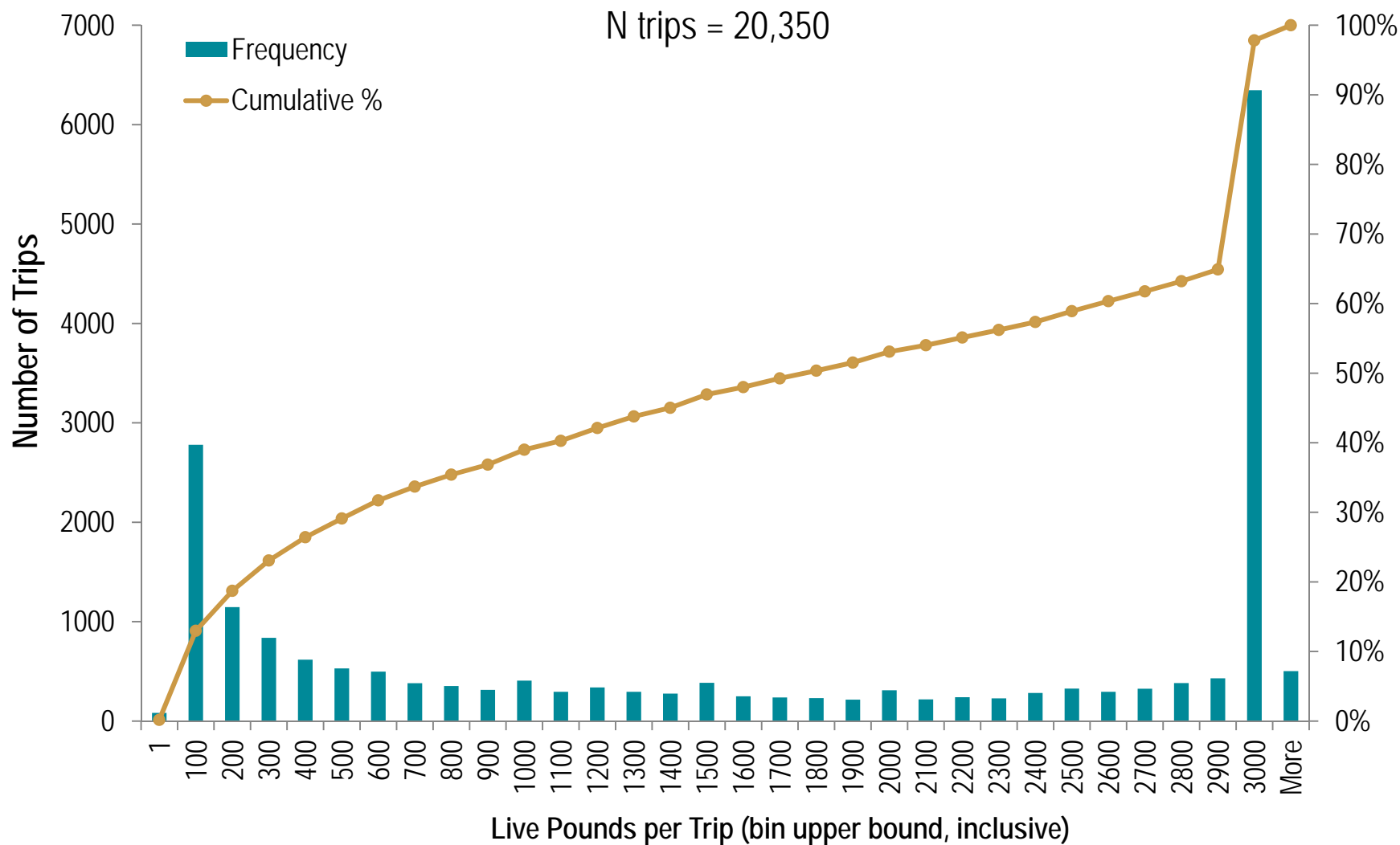# Trip Level Landings

- Determine if current trip limit is constraining
- Provide insights into number of trips that may be impacted by changing trip limits

Dogfish Landings 2010-2012

N trips = 20,350

Trip Level Landings

- % of Trips at Trip Limit (2,900-3,000 lb)
  - 2010: 29%
  - 2011: 36%
  - 2012: 35%

- These trips would likely continue fishing (or discard less) if trip limit was higher

Conclusions

- The 3,000-lb trip limit is constraining for a significant proportion (~1/3) of dogfish trips
- If the trip limit were to be increased, it would impact a large proportion of trips

Spiny Dogfish Quota Monitoring Report

2011
2010

Cumulative Landings (Pounds)

Prior Year's Landings (Pounds)
Quota Rationing Trajectory
Quota (Pounds)
Current Year's Landings (Pounds)
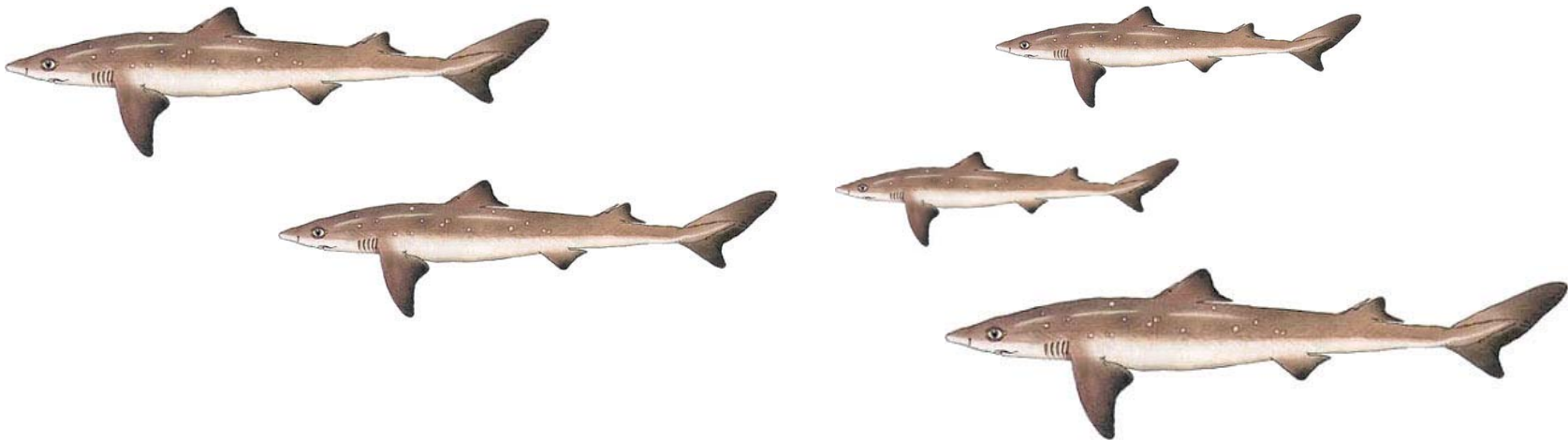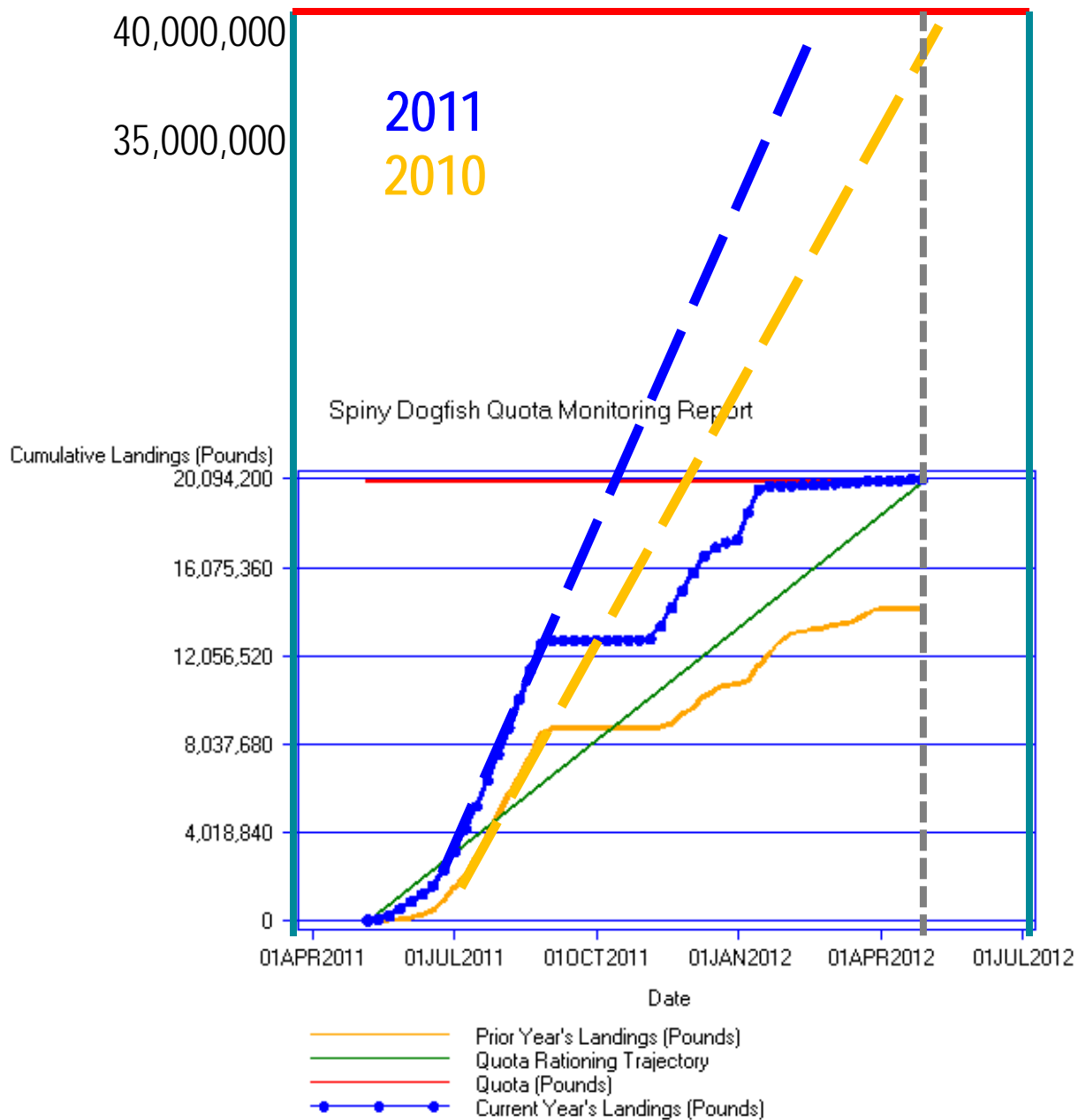
Spiny Dogfish Quota Monitoring Report
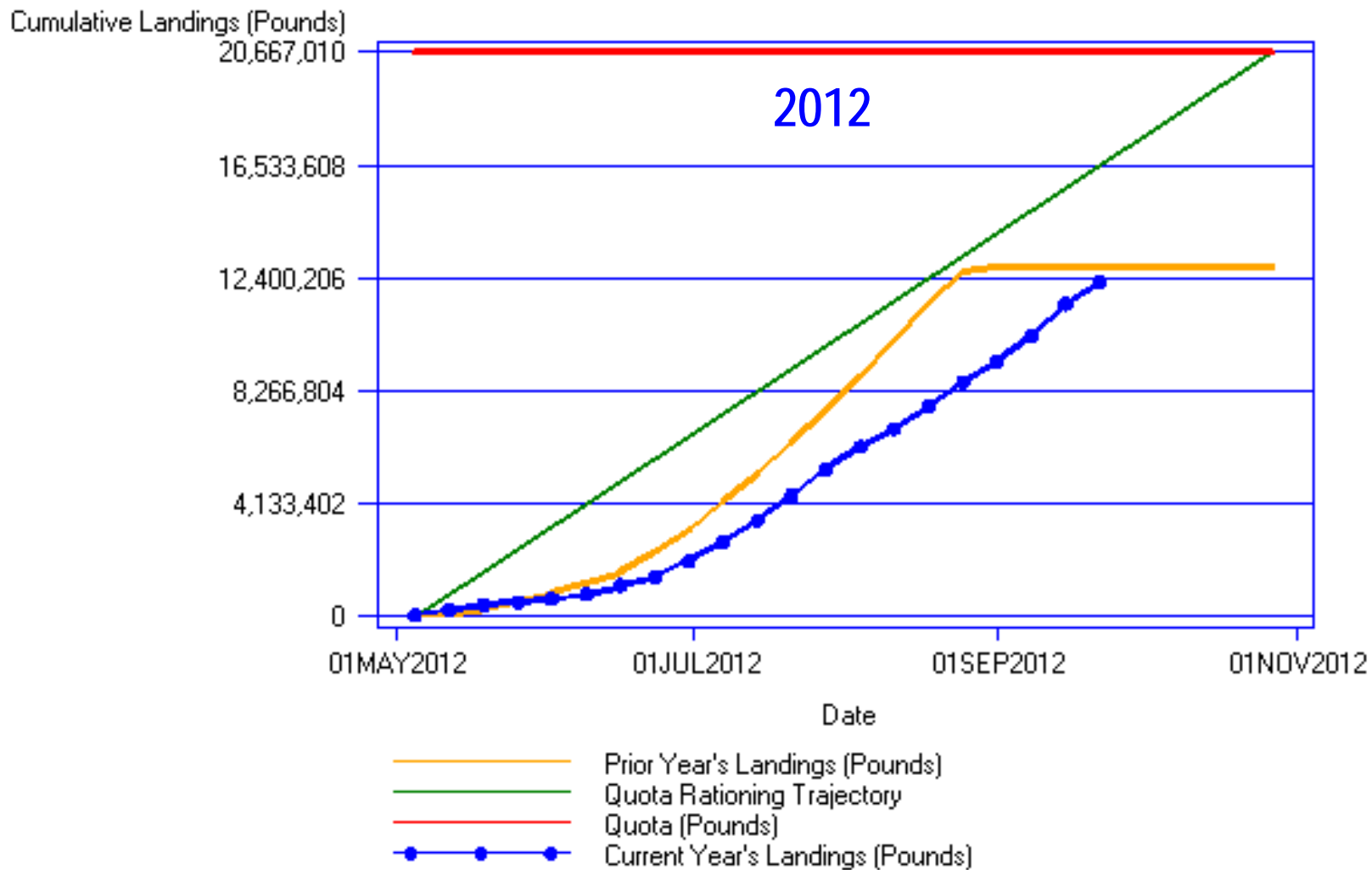
Conclusions

- The fishery may be able to land a 40+ million lb quota with a 3,000-lb (or slightly higher) trip limit
- Trip limits significantly higher than 3,000 lb would likely result in inseason closures

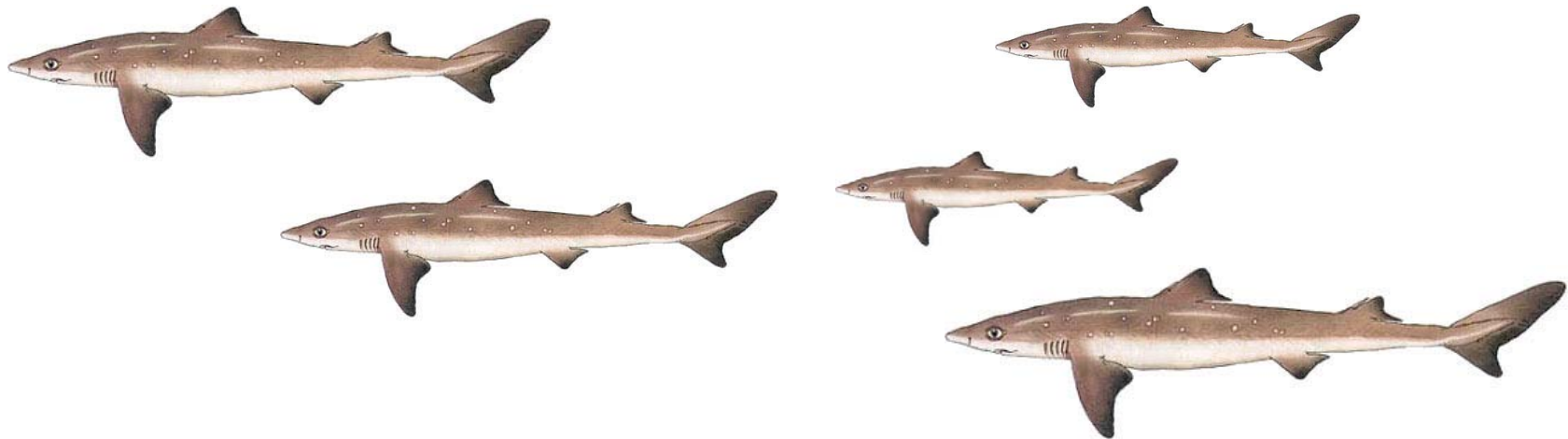| 2013 Measures	Basis	M lb	Mt
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Mgmt Measures for 2013-2015

No Trip Limit Recommendation from MC

Motions

Move to adopt for spiny dogfish in 2013 an ACL of 54.295 million pounds equivalent to Domestic ABC, an ACT of 52.598 million pounds corresponding to a TAL of 40.900 million pounds resulting in a commercial quota of 40.842 million pounds. Himchak/Berg
15/0/1

Motions

Move to adopt for spiny dogfish in 2014 an ACL of 55.277 million pounds equivalent to Domestic ABC, an ACT of 53.540 million pounds corresponding to a TAL of 41.842 million pounds resulting in a commercial quota of 41.784 million pounds.
Himchak/Berg
15/0/1

Motions

Move to adopt for spiny dogfish in 2015 an ACL of 55.063 million pounds equivalent to Domestic ABC, an ACT of 53.335 million pounds corresponding to a TAL of 41.637 million pounds resulting in a commercial quota of 41.579 million pounds.
Himchak/Berg
15/0/1

Motions

Move to adopt a trip limit of 4,000 lbs for spiny dogfish in 2013, 2014, and 2015.
Anderson/King
15/0/1

RSA
Move to allow a research set-aside of up to 3%, 1.254 M lb, of the commercial in 2014.

Move to allow a research set-aside of up to 3%, 1.247 M lb, of the commercial in 2015.

Motions

RSA
Move to allow a research set-aside of up to 3%, 1.254 M lb, of the commercial in 2014.
Pate/O'Reilly
16/0/0

Move to allow a research set-aside of up to 3%, 1.247 M lb, of the commercial in 2015.
Pate/O'Reilly
17/0/0