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Further Updates of Gulf of Mexico Lane Snapper Updated OFL and ABC: Incorporating MRIP-FES Recreational Catch Estimates

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Outline

Background

Updated OFL and ABC- using MRIP-FES Estimates of Recreational Catch

Background Review

Cummings (September 2019)

- Provided updated Headboat Abundance Index 1986-2018
 - Added 4 new years of catch per unit of effort data (2015-2018)
 - Followed CPUE standardization approach of Rios and Smith (SEDAR 49, 2016)

“Cummings, Nancie J. September 2019. Updated Catch per Unit of Effort (CPUE) Indices and Effort Time-series for Lane Snapper from the Gulf of Mexico Recreational Headboat Fishery (1986 - 2018). 6pp. GMFMC SSC Meeting, Tampa FL, September 2019”

Cummings and Sagarese (September 2019)

- Provided updated OFL and ABC from application of DLMTool Itarget Method
 - Incorporated updated MRIP Estimated Recreational Catches through 2018
 - Incorporated updated commercial landings through 2018

“Cummings, Nancie J. and Skyler Sagarese. September 2019. Updated Calculations of OFL and ABC for Gulf of Mexico Lane Snapper using the Itarget Data Limited Method (DLM). NOAA Fisheries, SEFSC, SFD, 11pp. GMFMC SSC Meeting, Tampa FL. September 2019”

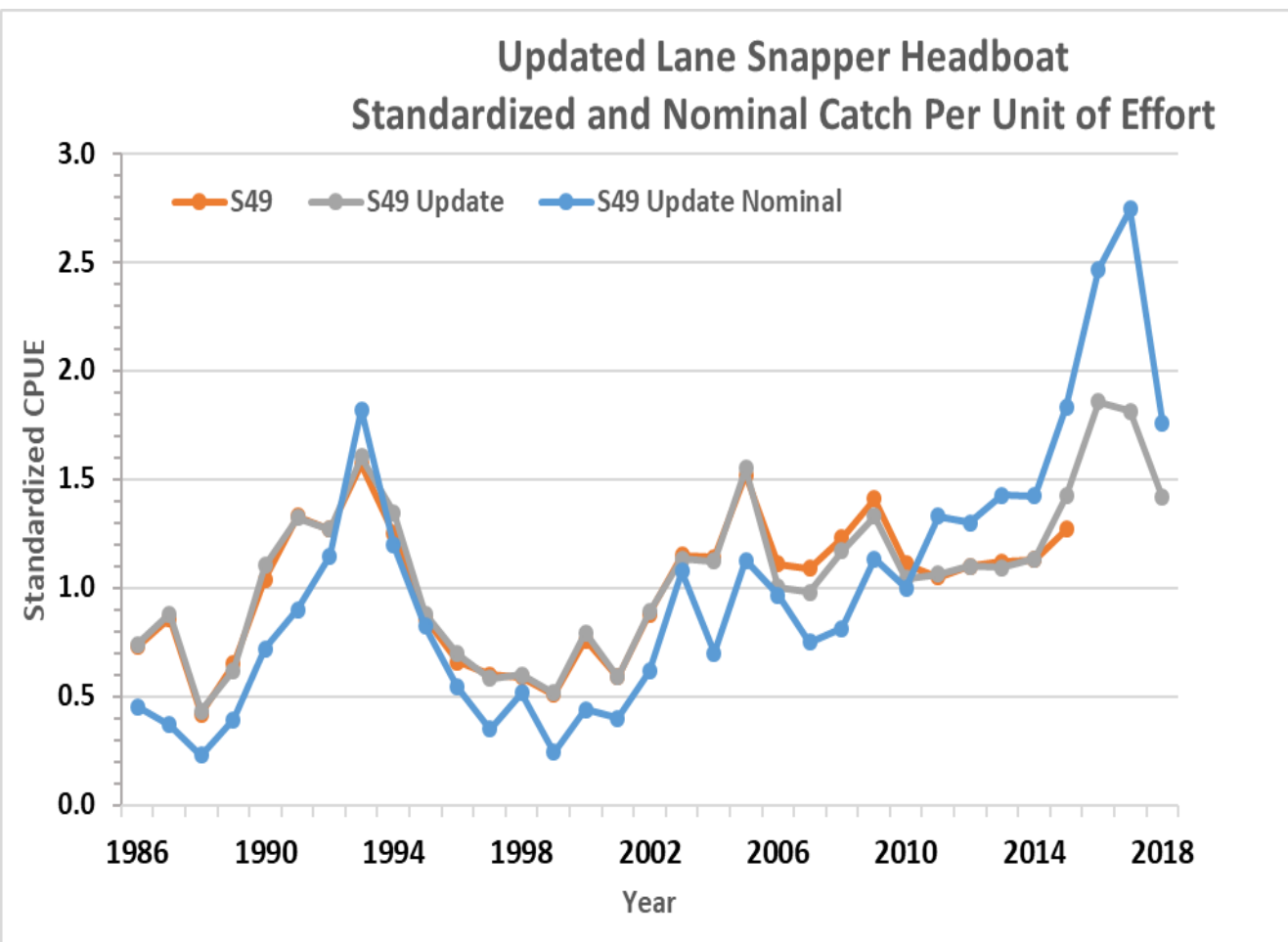
Purpose of this Presentation

Further Update of OFL and ABC using Itarget DLM method:
Specifically:

- Application of Itarget DLM method using Cummings 2019 updated headboat index of abundance to estimate updated OFL and ABC for lane snapper (Cummings September 2019)
 - Incorporating MRIP-FES Estimates of recreational catch
- Itarget Method described in Cummings and Sagarese (2019) as presented to GMFMC, SSC September 2019.

Review: Lane Snapper Updated Headboat CPUE 1986-2018

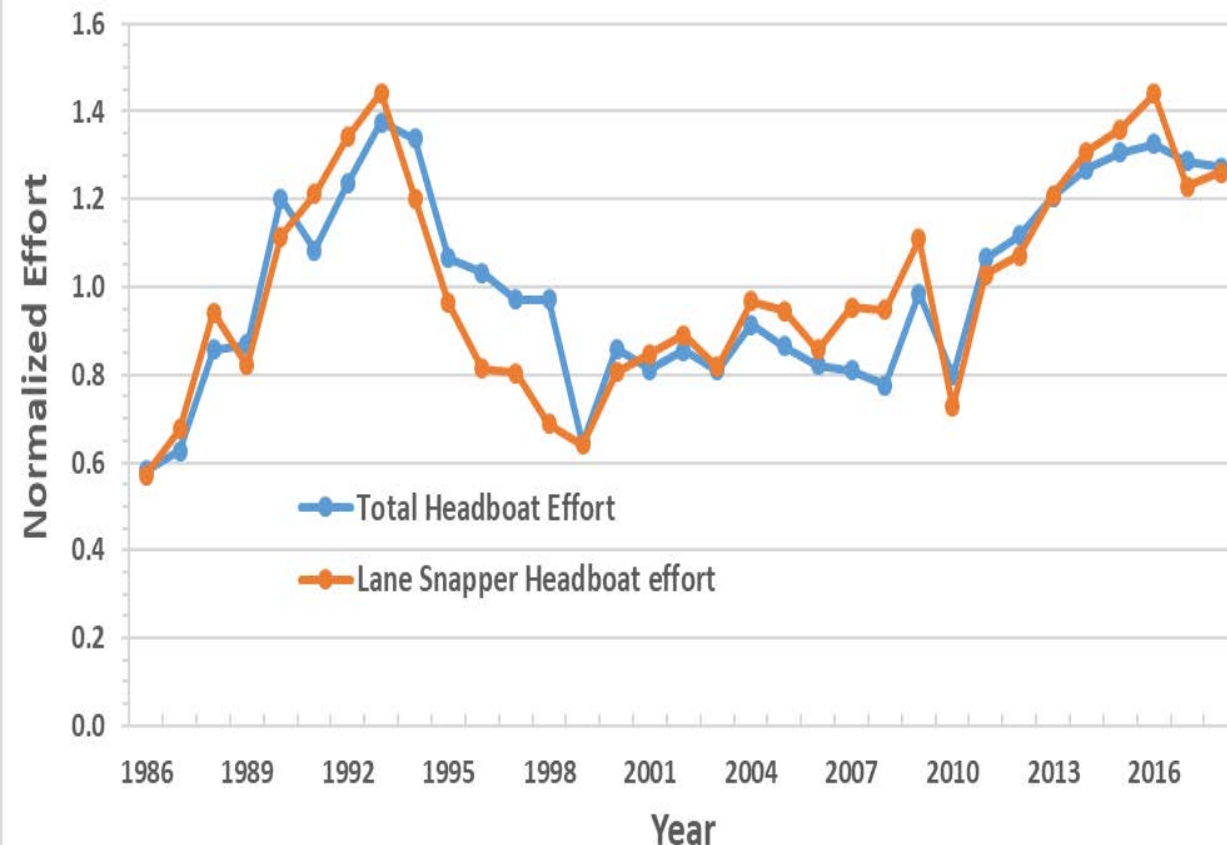
Standardized CPUE
(Updated=brown line)



- Increased from 1986-1993
- Declined 1994 - 2001
- Increased 2001- 2005
- Without trend 2006-2014
- Exhibited a brief 3 year strong increasing trend (through 2016)
- Declined from 2017 to 2018
- Large increase in standardized CPUE in last 5 years (2014-2018) vs the status quo reference period (1999-2008)

Total Headboat fishery and Lane Snapper effort

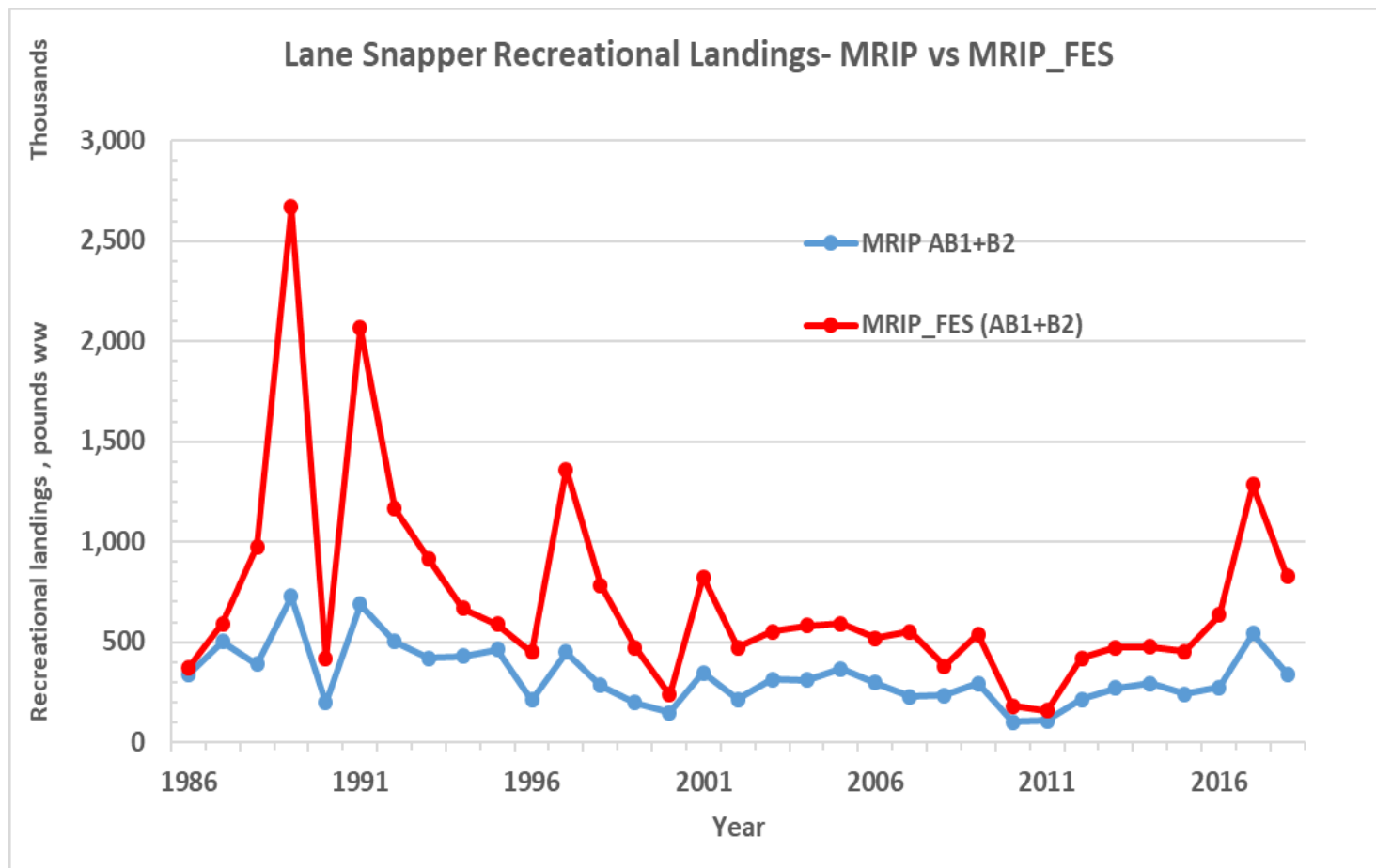
Annual Headboat Effort



Normalized lane snapper and total headboat effort snapper (orange line)

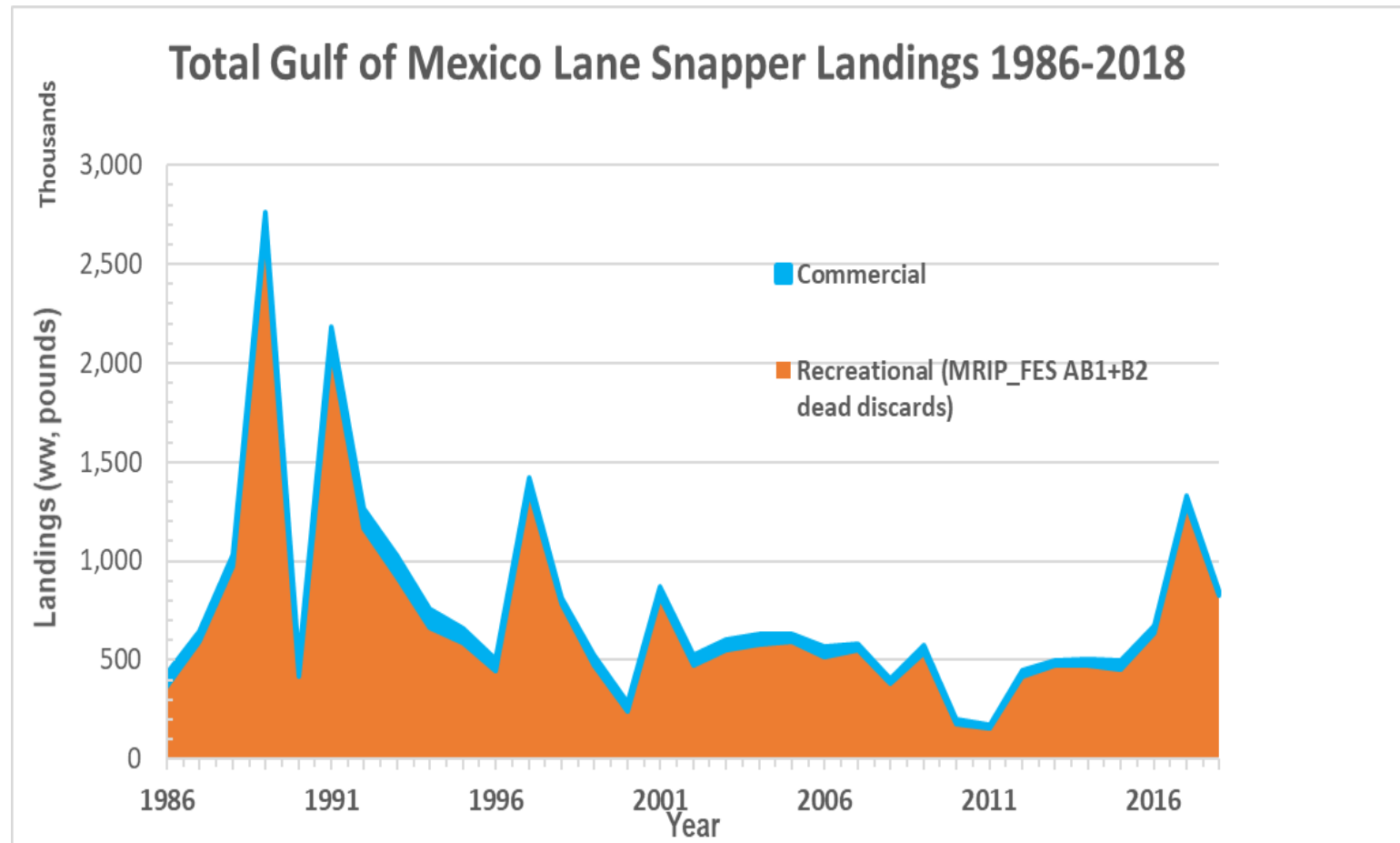
- Steady increase 1986-1993
- Declined through 1999
- Steady increase since 1999 (except in 2010, and after 2017)
- Generally follows similar trend in total headboat effort (blue line) with minor divergences

Updated Recreational Landings: MRIP vs FES



Updated Lane Snapper Total Landings 1986-2018

Recreational Data from MRIP-FES



Reminder: Updated Calculations of OFL and ABC

Approach- Apply the Data Limited Method 'Itarget_0.5_0.7_1.0'

The TAC was calculated for lane snapper as:

$$\text{if } I_y^{\text{recent}} < 0.7 \times I^{\text{ave}}, \quad w \times C^{\text{ave}} \left[\frac{I_y^{\text{recent}}}{0.7 \times I^{\text{ave}}} \right]^2$$

$$\text{if } I_y^{\text{recent}} \geq 0.7 \times I^{\text{ave}}, \quad C^{\text{ave}} \left[w + (1 - w) \frac{(I_y^{\text{recent}} - 0.7 \times I^{\text{ave}})}{(I^{\text{target}} - 0.7 \times I^{\text{ave}})} \right]$$

- Where:
- C^{ave} = average catch over reference time series (1999-2008)
- I^{ave} = average index over reference time series (1999-2008)
- I^{recent} = average index over 5 most recent years (2014-2018)
- $I^{\text{target}} = I^{\text{ave}} \times I^{\text{multi}}$ - where the " I^{multi} " scalar on I^{ave} was set as 1.0 for SEDAR 49 evaluations based on the assumption that the stock was near MSY during the reference period.
- $w = 0.5$, where w is the smoothing parameter that defines the catch advice when $I^{\text{recent}} = 0.7 I^{\text{ave}}$.

Geromont and Butterworth (2014)

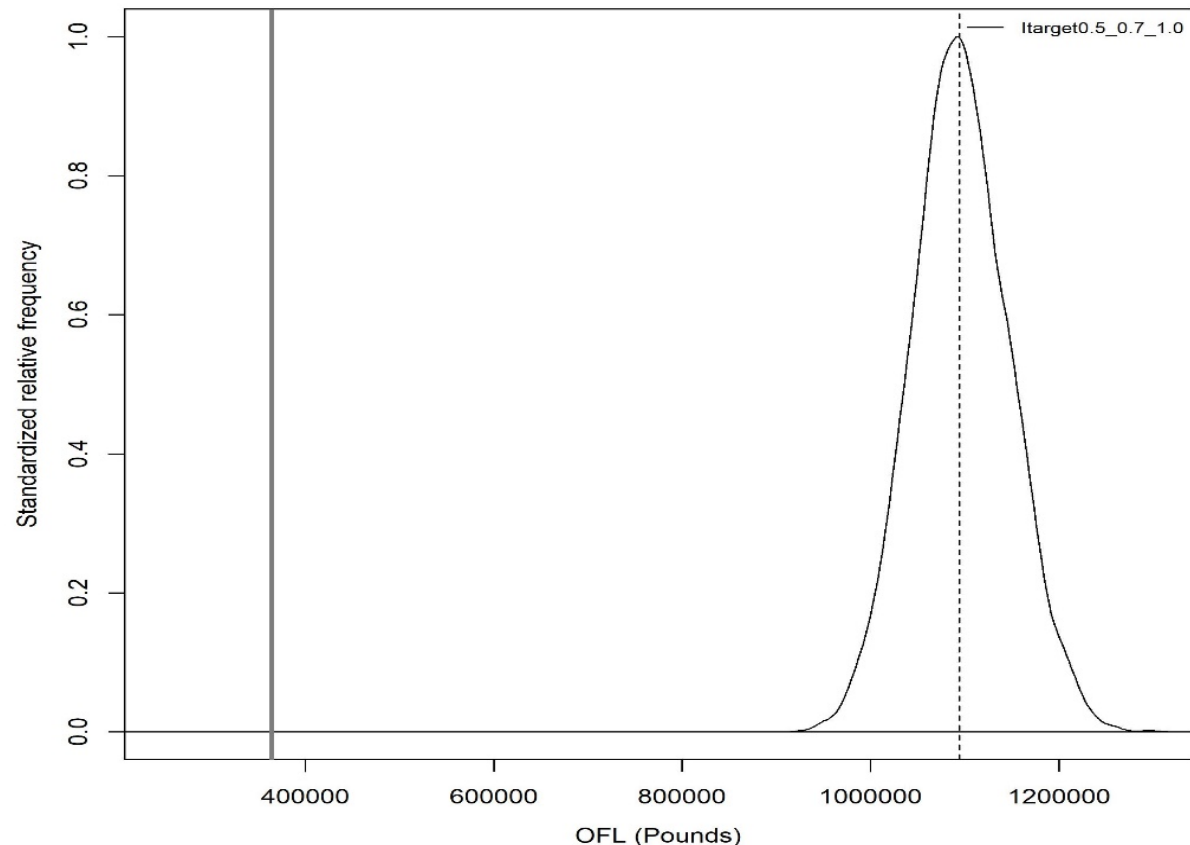
Updated Gulf of Mexico lane snapper OFL and ABC using MRIP-FES Recreational Catch Estimates

	ABC					
OFL/ABC Source	30%	40%	OFL	SD	SE	CV
Updated Itarget0.5_0.7_1.0, Cummings January 2020: Using MRIP-FES	1,068,508	1,081,903	1,094,324	50,102	501	0.046
Updated Itarget0.5_0.7_1.0, Cummings and Sagarese 2019: Using MRIP	588,965	596,349	603,195	27,616	276	0.046
Itarget0.5_0.7_1.0 SEDAR 49, March 2017	355,501	360,059	364,082	16,965	170	0.047

Following the determination of the March 2017 GMFMC SSC that OFL and ABC should be defined as the 50th and 30th percentiles of the OFL distribution

Updated Relative frequency of OFL for Lane Snapper from the DLM 'Itarget_0.5_0.7_1.0': Using MRIP-FES Catch Estimates

Thick gray line =
calculated OFL
(estimated TAC= 364,082
pounds ww) at the 50%
probability of exceeding
OFL from the March 2017
SSC Review of the
SEDAR 49 data limited
evaluation.



Acknowledgements

- Thanks are given to SEFSC staff for editorial input
- Thanks provided to numerous SEFSC, SFD staff for historical continuity relating to developing catch per unit of effort subsetting and standardization approach dating to mid 1980s as applied to reeffish, coastal mackerels, and many highly migratory species

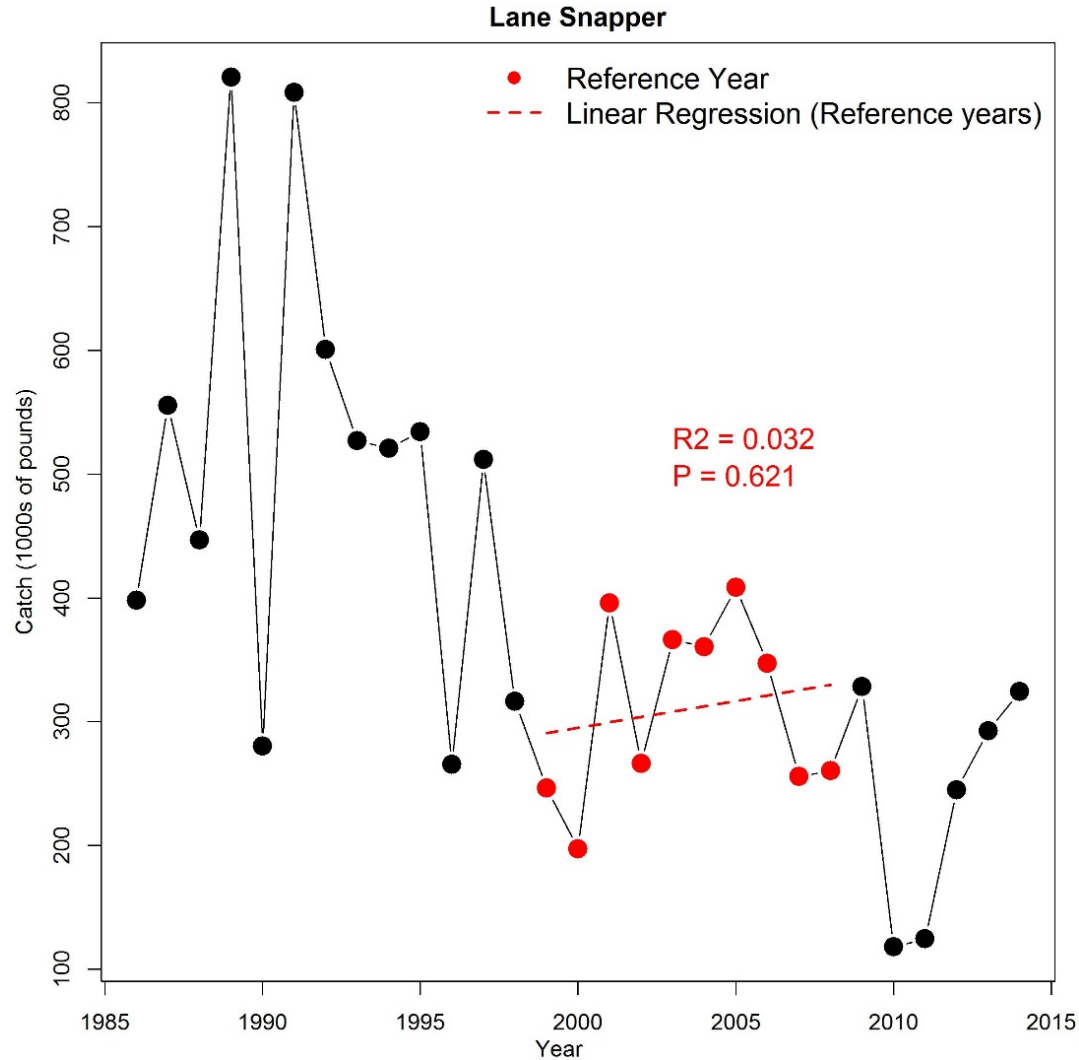
Thank you and any questions please



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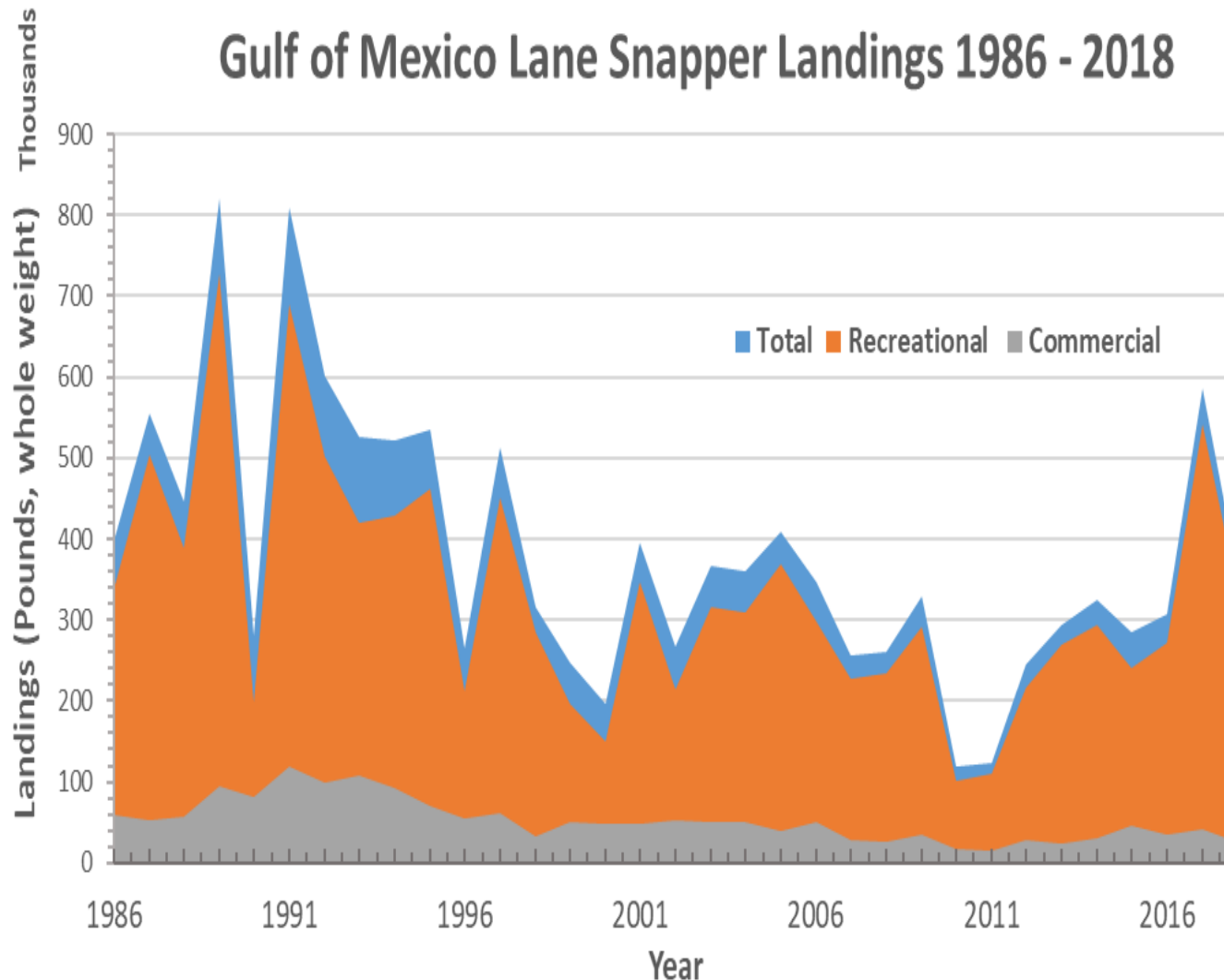
Extra

Lane Snapper Reference Catch



Updated Lane Snapper Total Landings 1986-2018

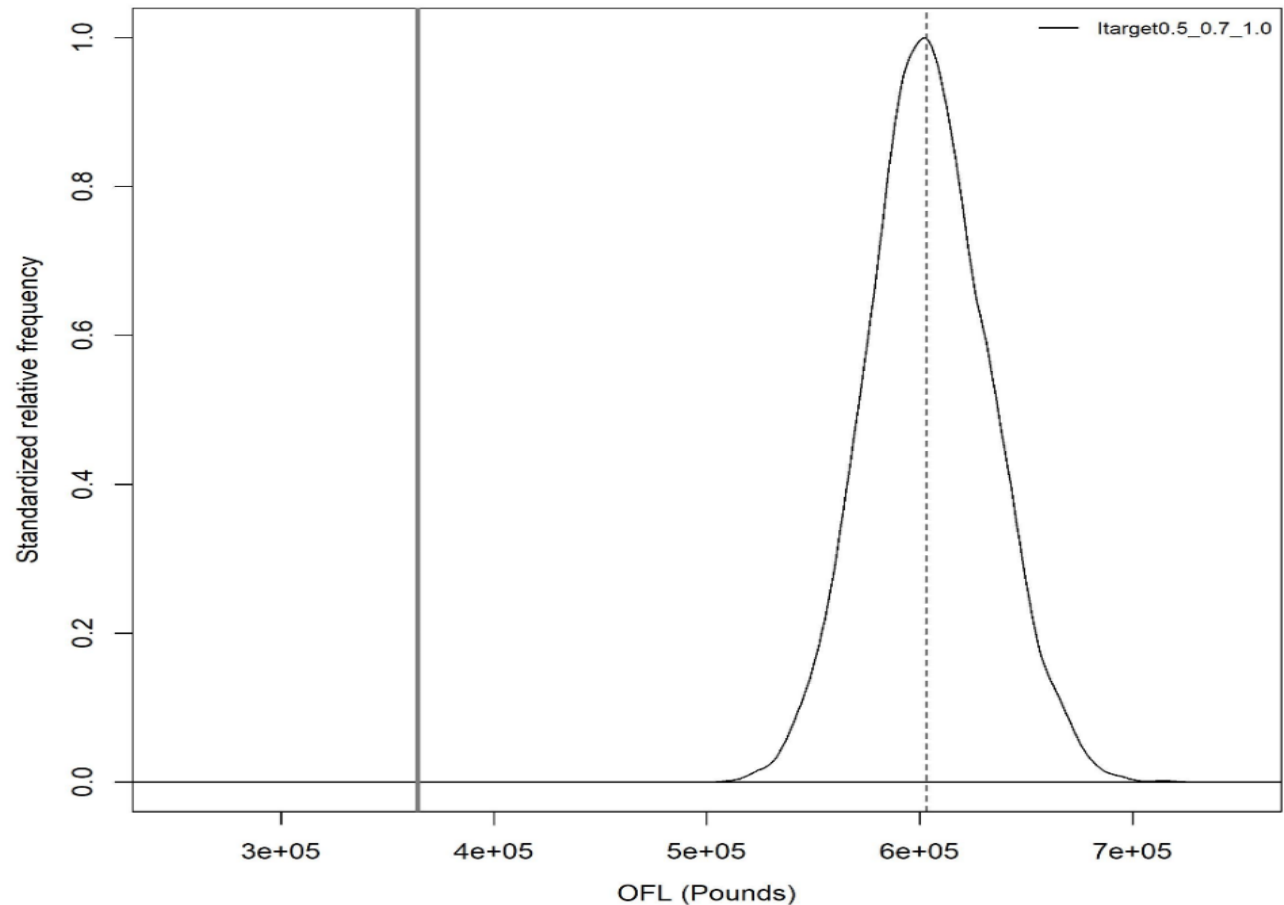
Recreational Data from MRIP



- Lane snapper landings varied from 118 - 820 thousand pounds over the time series
- Recreational component averaged 86% of total across all years
- Regulations:
 - 8 inch total length size limit and 20 fish aggregate recreational bag limit
 - OFL and ABC (March 2017) defined as **364,082 and 355,501 pounds ww**

Updated Relative frequency of OFL for Lane Snapper from the DLM 'Itarget_0.5_0.7_1.0' Using MRIP Catch Estimates

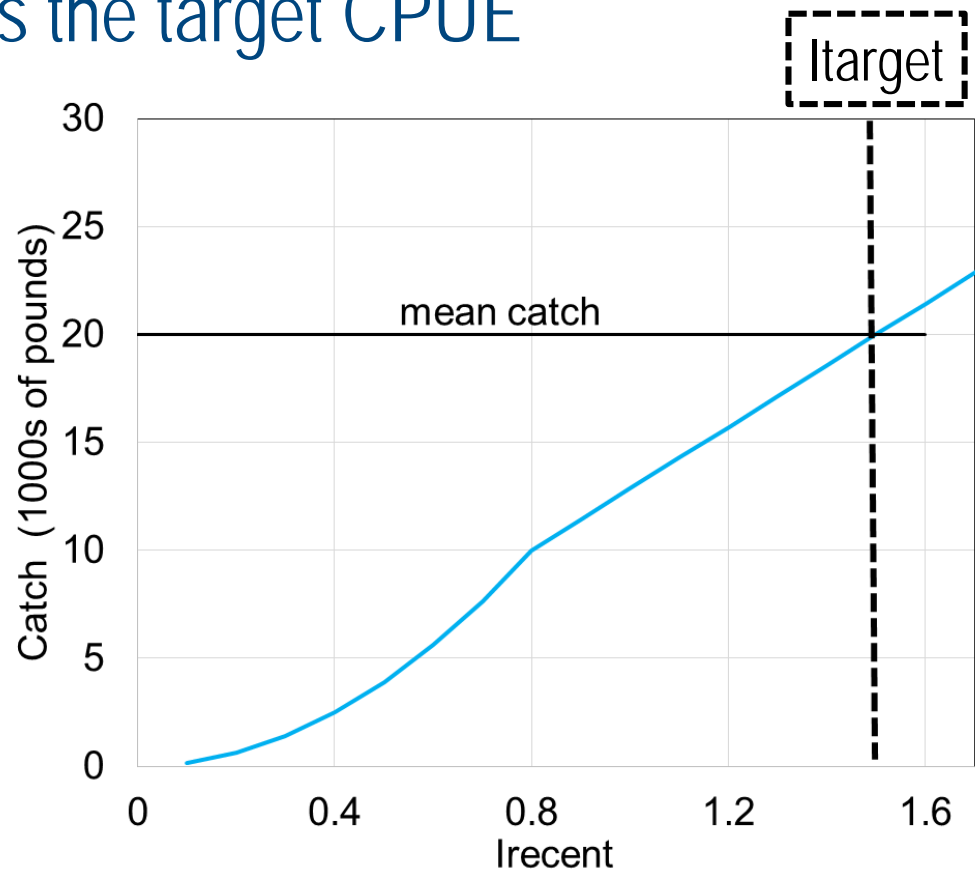
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Tuning of data-limited methods: I_{target}

- I_{target} scalar = determines the target CPUE
- $I_{target} = I_{target\ scalar} \times I^{REF}$
- How much of mean index during reference period do we want to achieve?

Stock Status During Reference Period	I_{target} Scalar
Overexploited	>1
Near MSY	1
Underexploited	<1



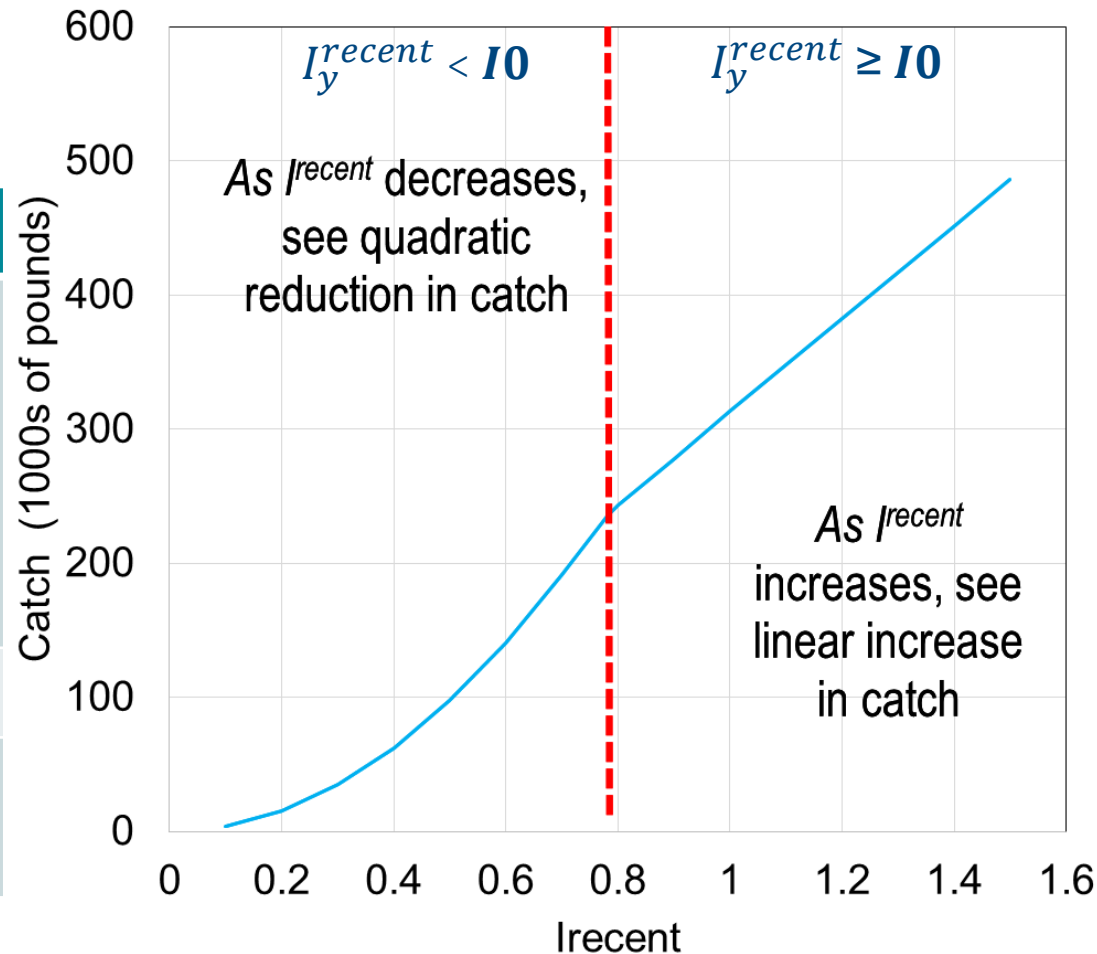
Example (overexploited)

Geromont and Butterworth (2014)

Tuning of data-limited methods: I_{target}

- I_0 = determines lower limit
- $I_0 = I_0 \text{ scalar} \times I^{\text{REF}}$

Conditions	I_0 scalar
Stock overexploited or is likely to require a long rebuilding period if overfished, low productivity	0.8
Stock near MSY	0.7
Stock underexploited, high productivity	0.5

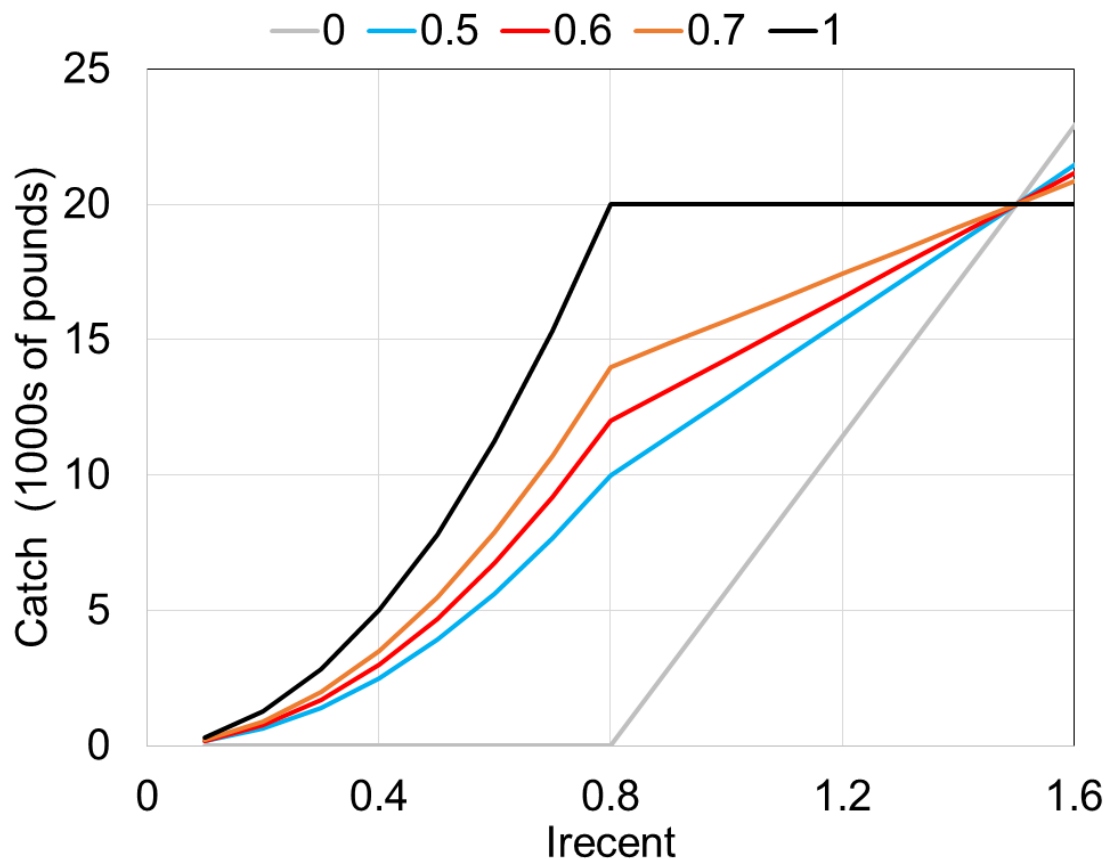


Geromont and Butterworth (2014)

Tuning of data-limited methods: I_{target}

- Smoothing parameter (w) = controls the rate of change in catch advice

W	Condition
0	Catch advice = 0 below limit (I_0)
0.5	Relatively large slope when above limit (I_0)
0.6	Intermediate slope both above and below limit (I_0)
0.7	Relatively large slope when below limit (I_0)
1.0	Catch advice capped when above limit (I_0)



Geromont and Butterworth (2014)