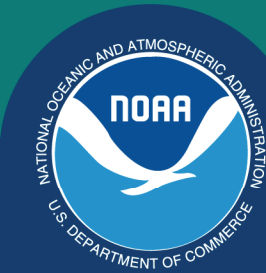


Science, Service, Stewardship



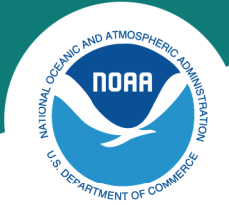
The First U.S. National Bycatch Report

Samantha Brooke

Office of Science and Technology

NOTE: Information in this presentation is based on a draft analysis and is superceded by the final National Bycatch Report, published September 22, 2011. The national bycatch ratio listed in the presentation was calculated based on 1 shrimp trawl per boat; since an average of 3.1 trawls are used, the final ratio is higher than that shown in this PowerPoint presentation.

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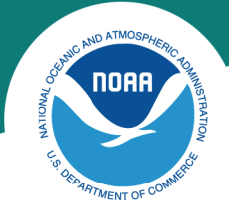


Key Accomplishments

The report provides:

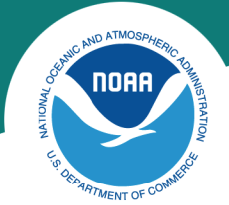
- Comprehensive documentation of data sources and analytical methods available for estimating bycatch.
- Detailed bycatch estimates for fisheries and species (fish, marine mammals, seabirds, and sea turtles).
- Four innovative tracking tools with strategic value:
 - *Tier System*: A new system for ranking and tracking improvements to bycatch data and estimates over time.
 - *Key Stocks*: A new list of stocks with bycatch concerns we can use to monitor changes in bycatch levels over time.
 - *Fisheries of Focus & Improvement Plans*: Regional and national recommendations for enhancements to bycatch data collection and analytical methods.
- A national bycatch ratio for fish (0.11) that is much lower than previously reported (Oceana, FAO).

Overall, the National Bycatch Report constitutes a comprehensive baseline for evaluating improvements and informing strategic investments in estimating and reducing bycatch.



Overview

1. Background and Context for the Report
2. Report Goals
3. Contents
4. Overview of Results
5. Next Steps
6. Rollout
7. Parting Thoughts



Background: Other NOAA Fisheries Bycatch Reports

1996 Sustainable Fishing Act Amendment to MSA

... mandates NOAA Fisheries and the regional FMCs “implement conservation and management measures for living marine resources that will minimize, to the extent practicable, bycatch and the mortality of bycatch that cannot be avoided”.

...included requirement for all FMPs to establish a “Standardized Bycatch Reporting Methodology” (SBRM).

1998 Managing the Nation’s Bycatch

...established national bycatch goal: *“to implement conservation and management measures for living marine resources that will minimize, to the extent practicable, bycatch and the mortality of bycatch that cannot be avoided.”*

...outlined related bycatch objectives & goals.

2003 National Bycatch Strategy

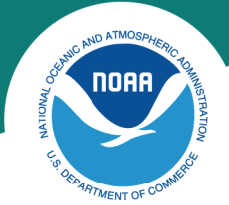
...outlined six new recommendations to achieve national bycatch goal described in “Managing the Nation’s Bycatch”.

...set up yearly “regional implementation plans” for monitoring & reducing bycatch.

2004 Evaluating Bycatch

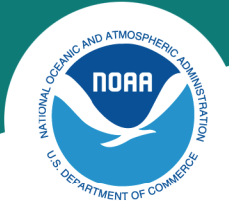
...Addresses recommendations from the 1998 report & the National Strategy by inventorying existing data collection programs and identifying the need for improved bycatch data collection and assessment.

...expanded upon SBRM concept.



National Bycatch Report: Background

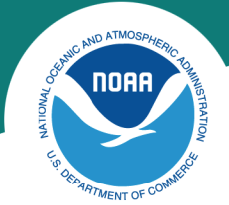
- Report initiated in 2006
 - Report requested by NMFS Chief Scientist
 - Not requested or required by Congress
- A collaborative effort:
 - Overall HQ coordination: Office of Science and Technology: Samantha Brooke, Dr. Lisa Desfosse
 - NBR Steering Committee: Dr. Bill Karp, Alaska Fisheries Science Center (Chair)
 - Regional NBR Teams: Fisheries managers, stock assessment scientists, protected resource experts
 - Coordination with: Science Board and Offices of PR, SF, and Policy
- Report approved by Chief Scientist in Oct., 2010
- **Release Date: anticipated to be early May 2011**



Reporting on Bycatch – the next step

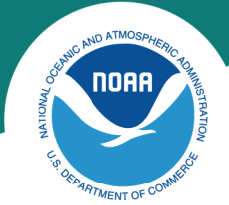
Report Goals:

1. Provide a comprehensive summary of current bycatch estimates at the fishery and species level for all NOAA Fisheries regions.
2. Evaluate the quality of bycatch data and bycatch estimation methods for federal fisheries.
3. Recommend improvements to bycatch data collection & estimation.



Scope of Report

- Report focuses on 152 of 275 fisheries identified. Limited to domestic fisheries:
 - federal commercial fisheries
 - fisheries with federal data collection programs.
- Estimates use 2005 data, except for some rare event species estimates, which required multiple years of data.
- Includes estimates for fish, marine mammals, sea turtles, and seabirds.



Definition of Bycatch Used

- **Bycatch:** *Discarded catch of any living marine resource plus unobserved mortality due to a direct encounter with fishing gear.*
- **Discards:** *Living marine resources returned unprocessed to sea or elsewhere, including those released live.*



Report Content: Tier System

Tier System: evaluating the relative quality of bycatch estimates within and between regions, bycatch categories, stocks, and fisheries will serve as an evaluation tool.

Scoring Areas:

- Adequacy of bycatch data
- Availability of supplemental data
- Database and IT considerations
- Analytical approaches

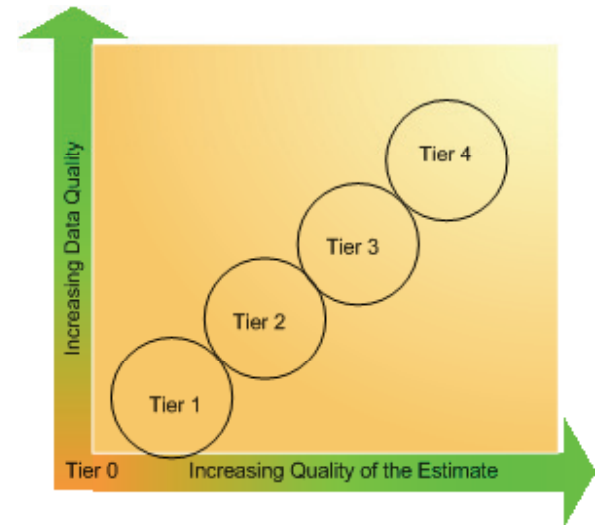
Quantifiable criteria (e.g. longevity of observer program).

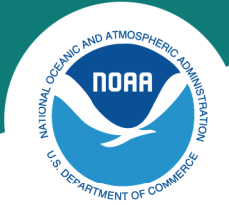
Qualitative criteria (e.g. vessel and observer bias, database and IT considerations).

Assigned to one of five Tiers (Tiers 0 – 4):

0 = No information available,

4 = highest quality bycatch data & estimation methods.





Examples: Tier Score

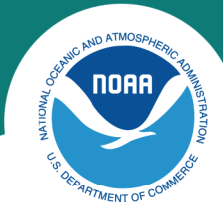
Gulf of Mexico Reef fish bottom longline

- Observer program prior to 1995
- Lack of recent observer data (in 2005)
- Lack of a bycatch estimation method
- Overall score: 18 of a possible 73
- Classification in Tier 1

Bering Sea/Aleutian Islands Pollock Trawl

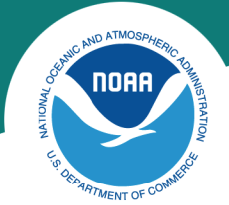
- Long-term observer program
- Self-reported industry program for collection of bycatch data. Supplemental data were available
- Analytical approach received a high score.
- Overall score: 67 of a possible 73
- Classified as Tier 4

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Scores based on 2005; many improvements have been made since that time.

Scoring Criteria	Maximum possible points	Gulf of Mexico reef fish bottom longline	Bering Sea/Aleutian Islands pollock trawl
Adequacy of observer bycatch data			
<i>Longevity of observer program</i>	5	1	5
<i>Sampling frame</i>	3	2	3
Sampling design			
Vessels/permits/licenses	4	2	4
Trips	4	2	4
Hauls	4	2	3
Design implementation			
Spatial coverage	2	1	2
Temporal coverage	2	1	2
Vessel Selections bias	2	2	2
Observer bias	2	2	2
Data quality control	5	3	5
Subtotal	33	18	32
Adequacy of industry bycatch data			
Subtotal	2	0	2
Supplemental data			
<i>Extrapolation factors for unobserved components of the fishery</i>	2	0	2
<i>Stratification</i>	2	0	2
<i>Imputation</i>	2	0	2
<i>Model covariates</i>	2	0	2
<i>Industry data verification</i>	2	0	2
Subtotal	10	0	10
Database / IT considerations			
Subtotal	3	0	3
Analytical approach			
<i>Assumptions</i>	10	0	8
<i>Peer review / publication</i>			
Observer program sampling design	4	0	4
Analytical approach	4	0	4
<i>Statistical bias of estimators</i>	4	0	3
<i>Measures of uncertainty</i>	3	0	1
Subtotal	25	0	20
Total	73	18	67
Tier	4	1	4



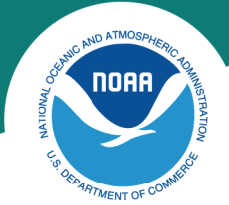
Report Contents: Key stocks

Key Stock – evaluation of bycatch status of key stocks over time will constitute an evaluation tool (monitor and report changes in future reports).

A Key Stock was defined as having:

- high bycatch
- stock status concerns
- lack of bycatch estimates
- other relevant concerns (qualitative process)

**All ESA listed stocks were considered key stocks.

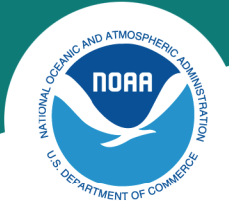


Report Contents: Bycatch Estimation Improvement Plans

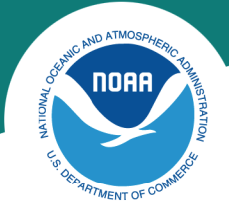
Plans provide:

- A formal process for identifying fisheries with potential bycatch concerns (“fisheries of focus”).
 - Quantitative & Qualitative process
 - Bycatch estimation improvement plans
 - Address bycatch data collection & estimation
 - Include DAS, FTEs, feasibility and management issues.
- A link to Agency’s strategic planning and budgeting processes.

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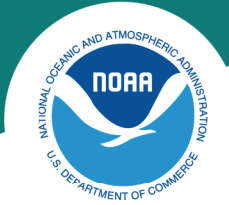


National Bycatch Report: Results

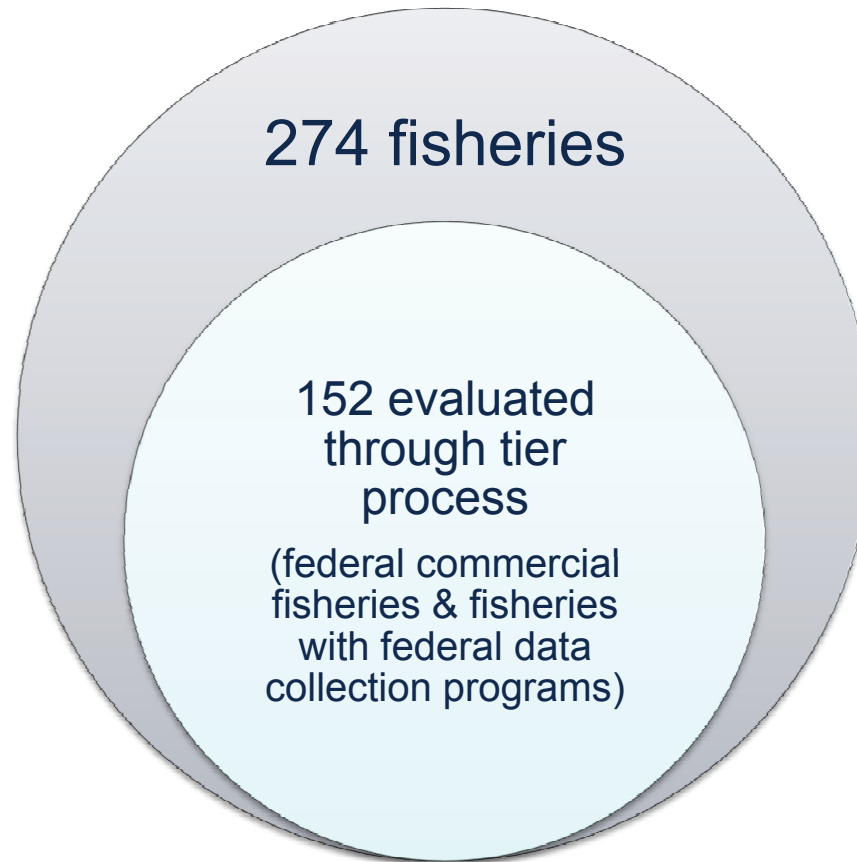


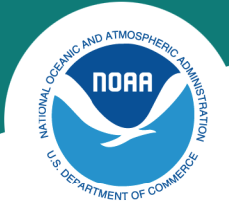
Results: Tier System

**275
fisheries**



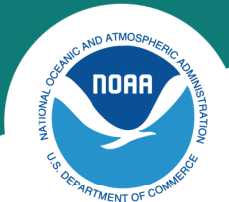
Results: Tier System





Results: Tier System





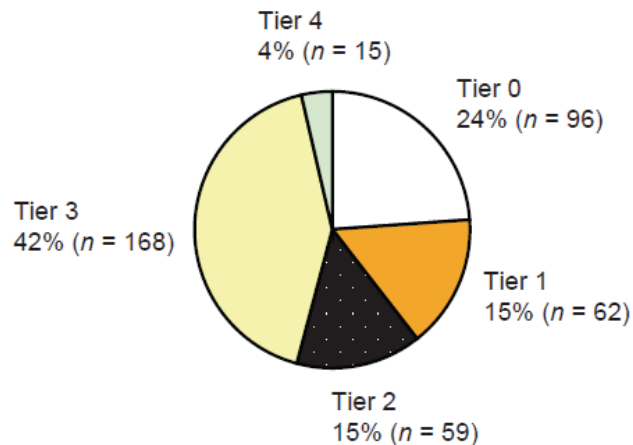
Results: Tier System

1. 46% of federal commercial fisheries included in the report have high quality (Tiers 3 & 4) bycatch data and estimation methods.

2. Collect more data on fish than marine mammals and other protected species.

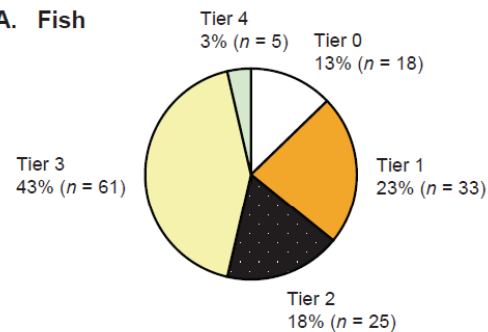
*results not shown for protected species, but they were the same as for marine mammals.

All tier results

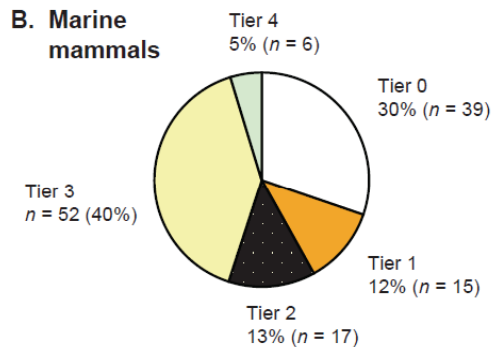


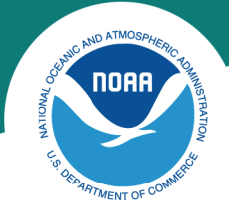
Tier results by resource type

A. Fish



B. Marine mammals

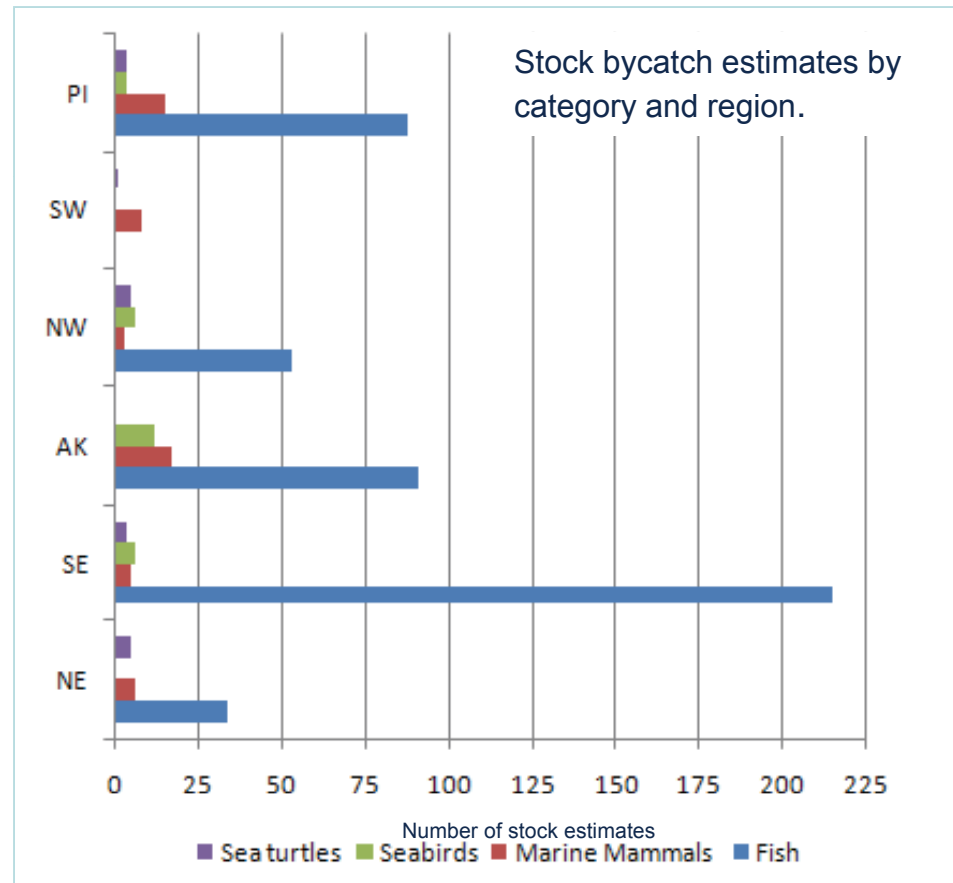
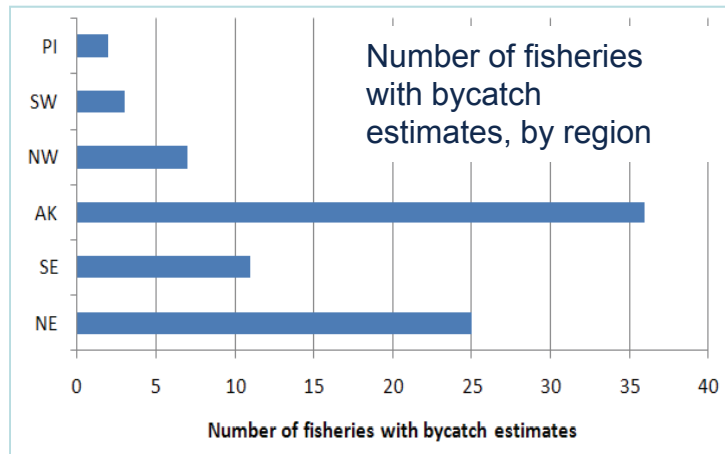


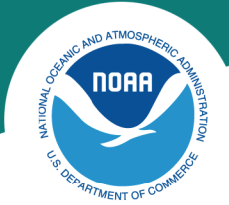


Results: Regional Bycatch Estimates Overview

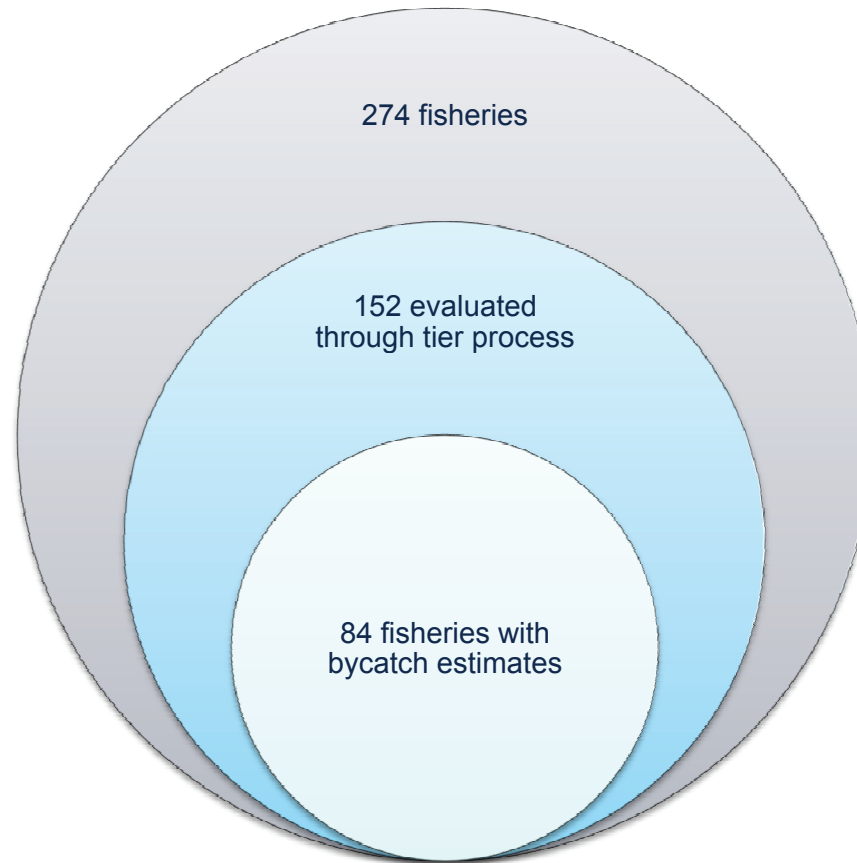
Bycatch estimates for 84 fisheries.

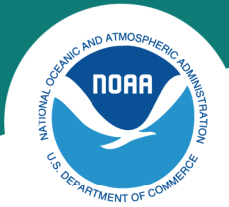
(Estimates were from fisheries in Tiers 1 – 4)





Results: Regional Bycatch Estimates





Results: Regional Bycatch Estimates

Results for fisheries included in the report:

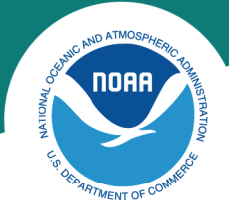
Estimates were annual averages in most cases

Region	Fish bycatch (lb)	Fish landings (lb)	Marine mammal bycatch (individuals)	Sea turtle bycatch (individuals)	Seabird bycatch (individuals)
Northeast	165,888,000	1,006,370,000	1,287	1,062	Not available
Southeast	212,760,000	219,086,000	233	10,671 ^a	186
Alaska	338,573,000	4,487,167,000	62	0 ^b	7,210
Northwest	25,564,000	332,396,000	37	0 ^b	106
Southwest ^c	Not available	-	242	1	Not available
Pacific Islands	8,556,000	18,894,000	26	38	197
Totals	751,341,000	6,063,913,000	1,887	11,772	7,699

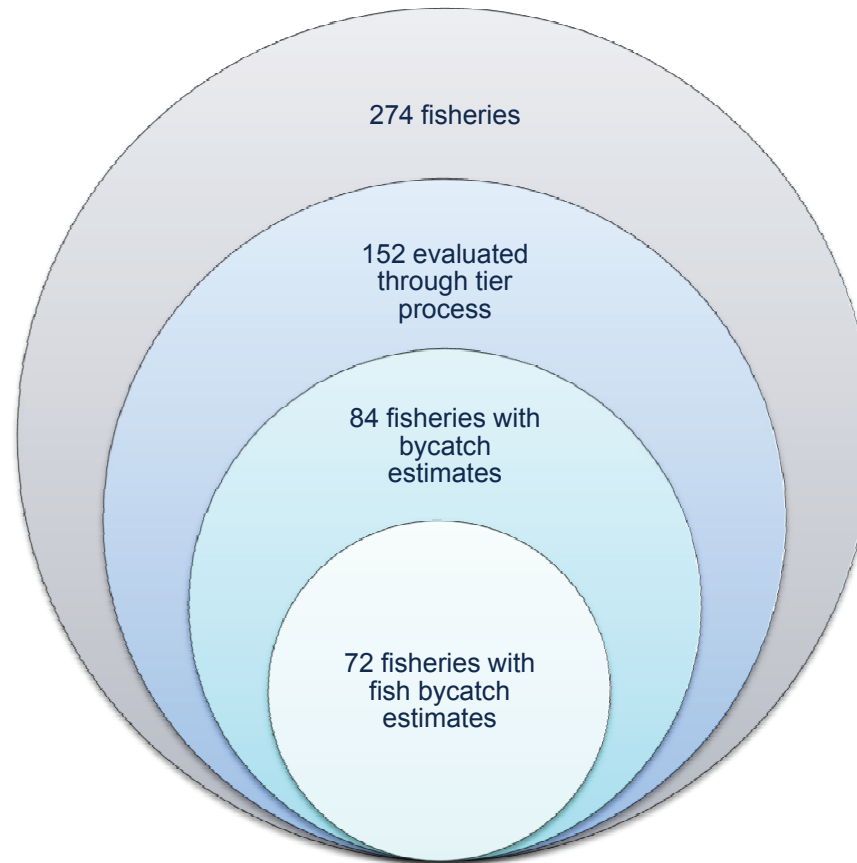
^a Bycatch mortality estimates from the NMFS 2002 Biological Opinion on the Shrimp Fisheries of the Southeastern United States. Since that time, effort in the shrimp fishery, and associated bycatch, has decreased markedly.

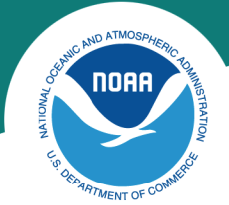
^b Sea turtles bycatch has not been observed in Alaska or the Northwest Region.

^c Southwest region landings are not included, since fish bycatch estimates from the region were not available.



Results: National Bycatch Estimate





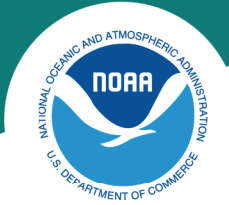
Results: National Bycatch Ratio

From the known information:

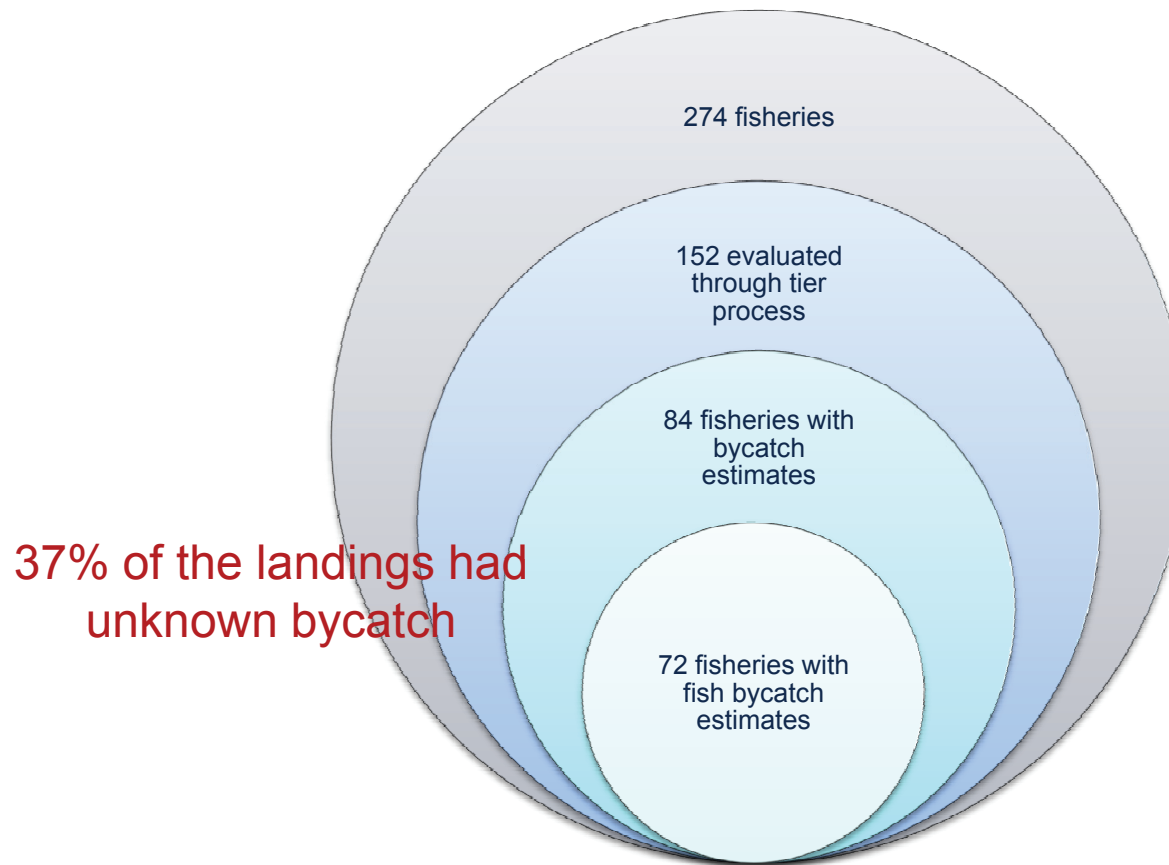
- 2005 National bycatch ratio (for fish): **0.11** (formula: $b/(b+I)$)

Next,

- We were asked to calculate an total fish bycatch estimate for all of the 152 fisheries.
- Known bycatch was for fisheries representing 63% of U.S. landings.



Results: National Bycatch Estimate



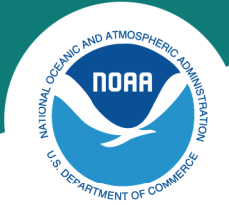


Results: National Bycatch Estimate

- 2005 National bycatch ratio: 0.11 (formula: $b/(b+I)$)
- 2005 Overall national bycatch estimate for fish: 1.19B lbs
 - Extrapolated for fisheries lacking fish bycatch estimates using national bycatch ratio.
 - Added this estimate to the known fish bycatch.
- Compared with FAO (2004) and Oceana (2005) studies.

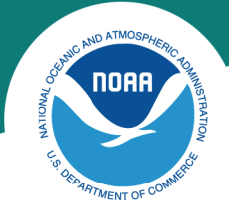
Reference	Year of source data	Total bycatch estimate (lb)	Total landings (lb)	Bycatch ratio
National Bycatch Report ((2011)	2005	1,190,397,000	9,607,440,000	0.11
FAO (Kelleher 2004)*	2002	2,045,006,000	7,373,224,000	0.22
Harrington et al (2005)*	2002-2003	2,332,894,000	8,194,516,000	0.22

*Converted from metric tons.



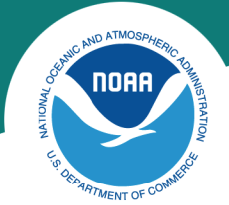
Future Editions - Scope

- Annual online updates of:
 - Bycatch estimates (by fishery and species)
 - Progress made on recommendations
 - Additional information on changes to bycatch management (or other related developments)
- Comprehensive reports produced every 5 years
 - Include data for additional fisheries
 - Full tier evaluation process
 - Changes in bycatch levels of key stocks
 - New recommendations for improvements to bycatch data collection & estimation.
- 3 year lag for data to allow time for data entry & quality control (e.g., next update would be in 2013 and would have 2010 data).



Future Editions - Content

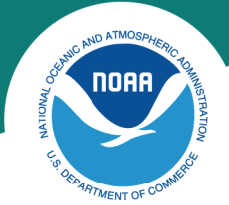
- Expand the number of fisheries included:
 - U.S. portion of international fisheries
 - Recreational fisheries discards
- Eventually would like to include state fisheries data, where available.



Engagement Strategy

Bycatch is of interest to many of NOAA Fisheries' & FMC stakeholders.

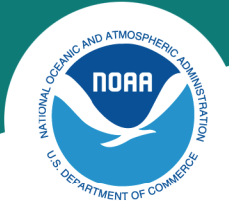
- Rollout strategy developed in coordination with Public Affairs & NOAA Communications Team.
- Opportunity for NOAA Fisheries & FMCs to publicize bycatch reduction “success stories”.
 - Work with your communications staff to conduct outreach to stakeholders
 - Optional - presentations to your Council



Parting Thoughts

- **NMFS took the initiative to evaluate the status of bycatch data collection and analytical methods nationwide.**
 - This was an unprecedented and cross-cutting effort.
 - We developed a comprehensive baseline of available information on bycatch levels, data collection, and estimation methods.
- **This effort was a success because it provides definitive and comprehensive information.**
 - Overall (national) fish bycatch levels are much lower than had been previously reported.
 - We have high quality data and estimation methods in many fisheries.
- The results of this report provide:
 - Information in the form of recommendations that can be used by NMFS in strategic planning & budgeting efforts.
 - A platform for NMFS and the Councils to work together and communicate on key issues.

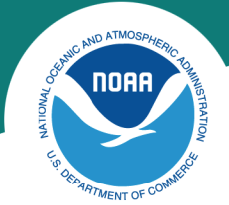
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Questions?



Samantha Brooke
Office of Science and Technology
Silver Spring, MD
301.713.2363 x 109
Samantha.Brooke@noaa.gov



Steering Committee Members

Executive Committee:

Bill Karp, Steering Committee Chair - Alaska Fisheries Science Center

Lisa Desfosse - Southeast Fisheries Science Center

Samantha Brooke – Office of Science and Technology

Members:

Lee Benaka - Office of Sustainable Fisheries

Randy Blankinship - Southeast Regional Office

Jim Carretta - Southwest Fisheries Science Center

Janell Majewski - Northwest Fisheries Science Center

Kristy Long - Office of Protected Resources

Lesley Jantz - Pacific Islands Regional Office

Jeremy Willson – Pacific Islands Regional Office

Marti McCracken - Pacific Islands Fisheries Science Center

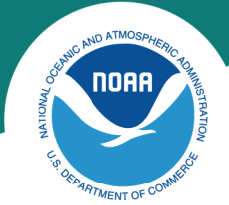
Jim Nance - Southeast Fisheries Science Center

Paul Rago - Northeast Fisheries Science Center

Kim Rivera - Alaska Regional Office

Constance Sathre - Office of NMFS General Counsel

Joe Terry - Office of Science and Technology (ret.)



Regional Team Members

Northeast Region:

Jessica Blaylock
Lynn Lankshear
Richard Merrick
Debra Palka
Mike Pentony
David Potter
Marjorie Rossman
Susan Wigley

Southeast Region:

Steve Branstetter
John Carlson
Jennifer Lee
Jack McGovern
Jim Nance
Paul Richards

Alaska Region:

Dave Ackley
Robyn Angliss
Shannon Fitzgerald
Jason Gasper
Jim Ianelli
Bill Karp
Jennifer Mondragon

Northwest Region:

Jonathan Cusick
Yvonne deReynier
Peter Dygert
Tom Good
Nancy Gove
Garth Griffin
Robert Kope

Southwest Region:

Lisa Ballance
Jim Carretta
John Childers
Al Coan
Lyle Enriquez
Tina Fahy
Craig Heberer
Jessica Kondel
Jason Larese

Pacific Islands Region:

Lesley Jantz
Marti McCracken
Lisa Van Atta
Lewis Van Fossen
Jeremy Willson