

*Science, Service, Stewardship*



# Marine Recreational Information Program Update

Presentation to the CCC  
January 11, 2011

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FISHERIES  
SERVICE**



# Overview

1. What we've done
2. What we're working on
  - Rollout of the new estimation method
3. What do you need from us

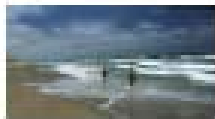
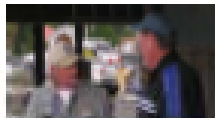


## Meeting Two Critical Needs

1. Provide the detailed, timely, scientifically sound estimates that fisheries managers, stock assessors and marine scientists need to ensure the sustainability of ocean resources.
2. Address head-on stakeholder concerns about the reliability and credibility of recreational fishing catch and effort estimates.



# Dynamic and Evolving



## MARINE RECREATIONAL INFORMATION PROGRAM

Implementation Plan  
Revision 2: 2010-2011 Update  
November 2010



To help address the long-term sustainability of U.S. fisheries through enhanced estimates of marine recreational catch and effort, a partnership of public and private organizations has developed the Marine Recreational Information Program. The Implementation Plan outlines the history of the program, its current status, and future needs.

[www.CoastalFish.noaa.gov](http://www.CoastalFish.noaa.gov)

## 2011 Implementation Plan Update

- Update on MRIP progress to date
- Blueprint for future action
- Revised annually

*Is this meeting your  
information needs?*



## Progress to Date

- Operations Team funded 31 projects across the country
- Developed cooperatively with state and regional partners
- Address major concerns identified by NRC
  - Focus on fundamental design and sampling methods



## Key Accomplishments

- Pilot testing electronic for-hire logbook in Gulf
- Implement National Saltwater Angler Registry
- Test registry-based surveys
- Address potential sources of bias in survey designs
  - New estimation design for CPUE
  - Alternative sampling design for intercept survey



# Angler Registry

## 4 Things to Know

- 25 of 29 coastal states and territories exempt
- Over 700,000 registered anglers
- \$15 registration fee in effect Jan 1, 2011
- Pilot testing dual-frame phone and mail surveys to determine effort



# Angler Registry



MRIP Data  
Collection  
Begins

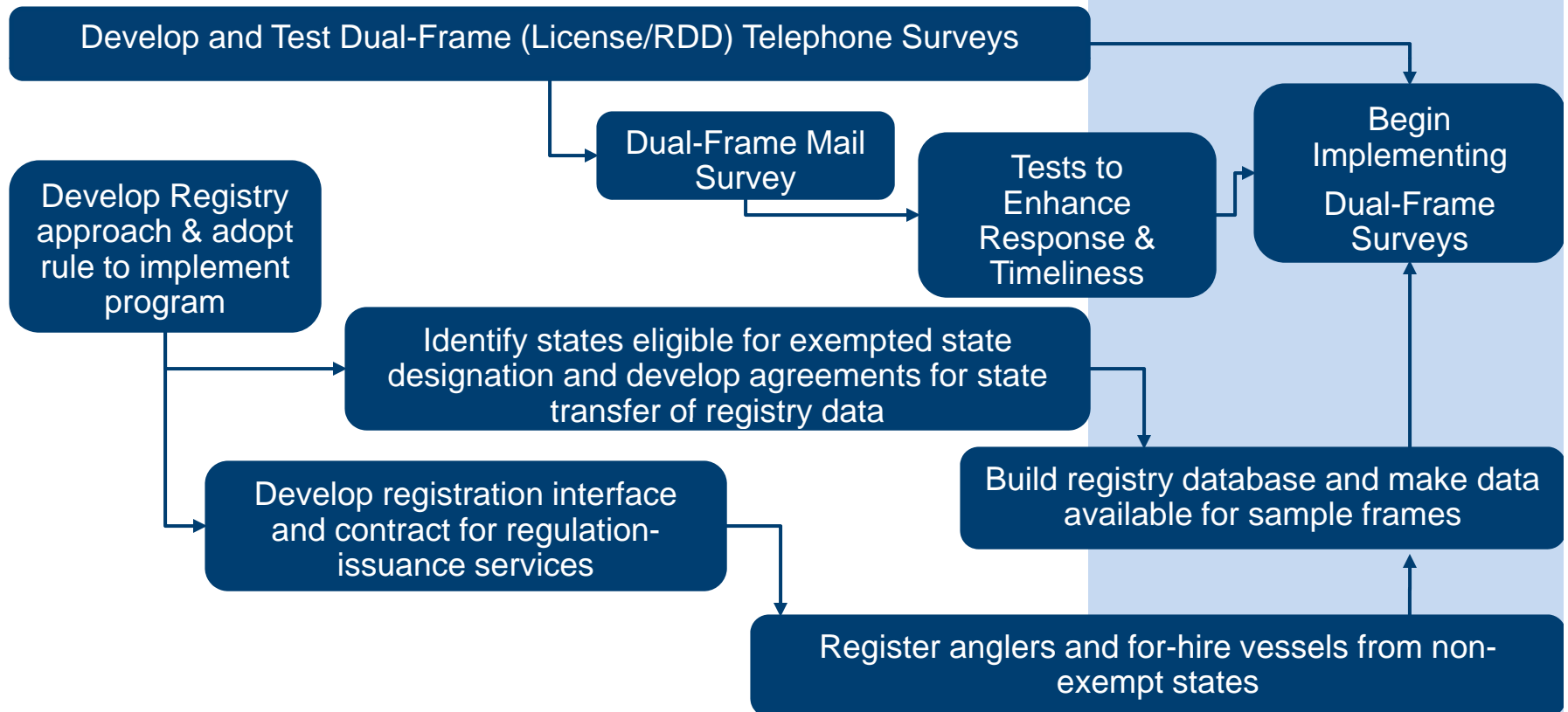
2008

2009

2010

2011

2012







## Reducing Potentials for Bias

- “...the estimation procedure for information gathered onsite does not use nominal or actual selection probabilities of the sampling design and therefore has the **potential to produce biased estimates...**”
- “**Assumptions should be examined** and verified so that biases can be properly evaluated.”
- “The current estimators of error associated with various survey products are likely to be biased and too low.”

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## Reducing Potentials for Bias

**The potential for bias was the  
NRC's chief concern about  
MRFSS**

**potential for bias** is the result of unaccounted for  
factors or untested assumptions



# Sampling Survey Design

**Current phone and in-person survey designs have potential for bias.**

*Some examples:*

- Fishing trips returning at times of day not covered by shore-side surveys (eg. nighttime or off-peak daytime) may catch more or less than those covered.
- Survey non-respondents may have different fishing activity or success rates than respondents.
- On-site intercept survey data not weighted to reflect complex, probability-based sampling designs.

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# Reducing Potential for Bias

## Re-estimation Team

- Jay Breidt, Colorado State University
- Jean Opsomer, Colorado State University
- Han-Lin Lai, NOAA Fisheries
- Dave Van Voorhees, NOAA Fisheries



# Reducing Potential for Bias

## **NRC Recommendations**

- Incorporate selection probabilities into estimation calculations
- Match the estimation and sampling designs

## **MRIP Responses**

- New unbiased estimation designs for catch rates
- Improved sampling protocols for intercept survey



## MRFSS Estimation Design “The Old Way”

$$\hat{Y} = \sum_k y_k / n$$

$$n = \sum_h^H \sum_i^{n_h} \sum_j^{b_{hi}} n_{hij}$$



# MRIP Estimation Design “The New Way”

$$\hat{Y} = \sum_h \frac{X_h}{X_{\bullet}} \hat{Y}_{1h}$$

Population Mean

$$= \sum_h \frac{X_h}{X_{\bullet}} \sum_i \frac{\pi_{hi}^{-1}}{\sum_i \pi_{hi}^{-1}} (X_{hi} \hat{Y}_{2hi})$$

Substitute  $\hat{Y}_{1h}$  by PSU mean

$$= \sum_h \frac{X_h}{X_{\bullet}} \sum_i \frac{\pi_{hi}^{-1}}{\sum_i \pi_{hi}^{-1}} \left( X_{hi} \left( \sum_j \frac{X_{hij}}{X_{hi\bullet}} \hat{y}_{3hij} \right) \right)$$

Substitute  $\hat{Y}_{2hi}$  by SSU mean

$$= \sum_h \frac{X_h}{X_{\bullet}} \sum_i \frac{\pi_{hi}^{-1}}{\sum_i \pi_{hi}^{-1}} \left( X_{hi} \left( \sum_j \frac{X_{hij}}{X_{hi\bullet}} \left( \frac{\sum_k y_{hijk}}{n_{hij}} \right) \right) \right)$$

Substitute  $\hat{Y}_{3hij}$  by TSU mean



## The New Way: What's Different

- Use selection probabilities to weight data
  - Assigned site-day probabilities are known
  - “Alternate site” probabilities can be estimated
- Take multi-stage cluster sampling design into account
  - Use available data on cluster sizes at each stage
  - Peak activity period counts must be expanded to estimate total counts for each sampled site/day
- Eliminate opportunistic sampling of fishing trips in other modes





# Reducing Potential for Bias

## Implementing the New Estimation Design

1. Responding to 3 external peer reviews
2. Finalizing report on new method
3. Vetting new method through MRIP internal teams
4. Applying new methods to 2011 data
5. Re-estimating historical data in Atlantic and Gulf Coasts and Puerto Rico back to 2003



# Reducing Potential for Bias

## New Estimation Design

- Onboarding and Outreach
  - Observer team of experts and stakeholders
  - Briefings to regional offices and science centers, councils and commissions
  - Create informed, trusted group to address questions

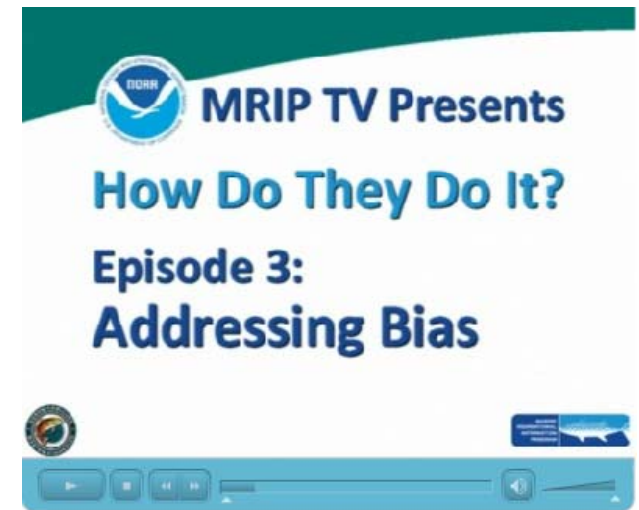
**Maximize factual understanding and minimize the possibility that the effort will be misconstrued or mischaracterized**



# Reducing Potential for Bias

## Improved Sampling Design for Intercept Survey

- North Carolina Pilot Project
  - Revised sampling frame
  - Assigned to specific sites and clusters
  - Assigned order and length of time
  - Assigned specific day parts
  - Sample at night



Video created in partnership with North Carolina Division of Marine Fisheries available at [www.CountMyFish.noaa.gov](http://www.CountMyFish.noaa.gov)



# Reducing Potential For Bias



MRIP Data  
Collection  
Begins

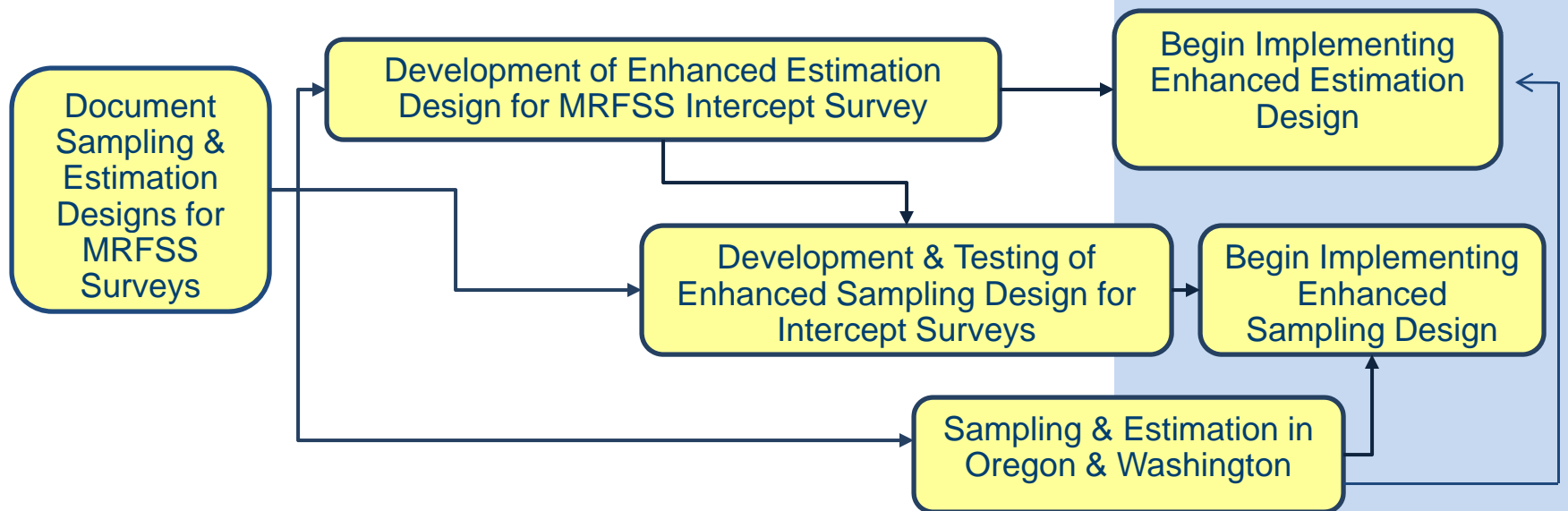
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# When Does MRIP Begin?

**Transition to MRIP has already started and is ongoing**

- Angler registry
- New estimation methods
- Revised intercept sampling design

*“MRIP is a new data collection and reporting effort created by NOAA Fisheries and a broad collection of partners...to generate better estimates of anglers’ catch and effort.”*



# What do you need from us?

- Talking Points
- Project Updates
- Implementation Plan
- Others...

**MRIP AT-A-GLANCE**  
August 2010

**WHAT IS MRIP AND WHY DO WE NEED IT?**  
The Marine Recreational Information Program, or MRIP, is the new way NOAA Fisheries is counting and reporting recreational angling catch and effort. It is a customer-driven initiative that will not only provide better data, but also allow us to improve our management in the process of transparency, accountability and engagement. MRIP replaces the former Recreational Fisheries Statistics Survey, which has been in place since the 1970s.

MRIP is designed to result from several needs:

- Provide the best of statistical science that Fisheries Managers would like to have with MRIP

**PROJECT UPDATES**  
June 2010

**Overview**

To date, the MRIP Operations Team has funded more than 20 projects to develop enhanced survey designs and information management tools. For 2010, the OT has asked project teams to provide monthly updates describing completed and upcoming milestones, as well as potential issues that could interfere with project progress. Each month, these updates will be summarized and distributed to OT members. We anticipate that more regular reporting will: 1) keep OT members better informed about the status of MRIP projects, 2) provide greater accountability for adhering to project schedules, and 3) provide a clear mechanism for identifying and addressing project risks.

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This phase of the project will focus on the development of a participatory MRIP estimator of participation at a maximally unbiased.