# Independent Science Advisory Committee (ISAC)

## *Responses to Questions Posed by PRRIP in April 2014*

**Presentation to Governance Committee**

**June 10, 2014**

**Cheyenne, Wyoming**

# Outline

- ISAC composition & expertise
- What the ISAC was asked
- ISAC responses and recommendations
- Questions & Discussion

# Who's on the ISAC?

| Name & Affiliation | Expertise |
|---|---|
| Dave Marmorek, ESSA Technologies Ltd. (ISAC Chair) | Adaptive management, decision analysis, ecological modelling |
| Dr. David Galat (U. Missouri, retired) | Adaptive management, fish and bird ecology |
| Dr. Ned Andrews, University of Colorado and USGS | Hydrology, sediment transport, geomorphology |
| Dr. Brian Bledsoe, Colorado State University | Hydrology, sediment transport, geomorphology |
| Dr. Adrian Farmer, Wild Ecological Solutions, Fort Collins, CO | Bird ecology, modelling |
| Dr. Jennifer Hoeting, Colorado State University | Statistical analysis, experimental design |

# What was the ISAC asked? [1]

## PRRIP Tern and Plover Monitoring

1. Are the data being collected, analyzed, and reported by the Program the correct data to address Big Questions #6 and #7 and their related Tier 1 priority hypotheses?
2. Should the Program consider reducing or eliminating monitoring and research procedures such as banding, grid searching, and other intensive data collection methods?
3. Are you aware of alternative monitoring methods that could deliver the same or better quality data to the Program with reduced effort and at reduced cost?

# What was the ISAC asked? [2]

## CPR Habitat and Comparison to Other Systems

4. The EDO has evaluated other river systems and compared them to the CPR. Do the assumptions and methods used to arrive at our results and conclusions seem reasonable? Are we missing something? Are you aware of better approaches or data to use in these evaluations?

5. It is starting to appear that implementing the Flow-Sediment-Mechanical (FSM) management strategy will not result in suitable tern and plover nesting habitat as hypothesized. Does this seem to be a reasonable interpretation of Program data and comparative system analyses?

6. Should the Program subject the PRRIP Tern and Plover Habitat Synthesis chapters to peer review through the Program's approved peer review process?

1. Are the data being collected, analyzed, and reported by the Program the correct data to address Big Questions #6 and #7 and their related Tier 1 priority hypotheses?

Big Question 6 (BQ6) - Does availability of suitable nesting habitat limit tern and plover use and reproductive success on the central Platte River?

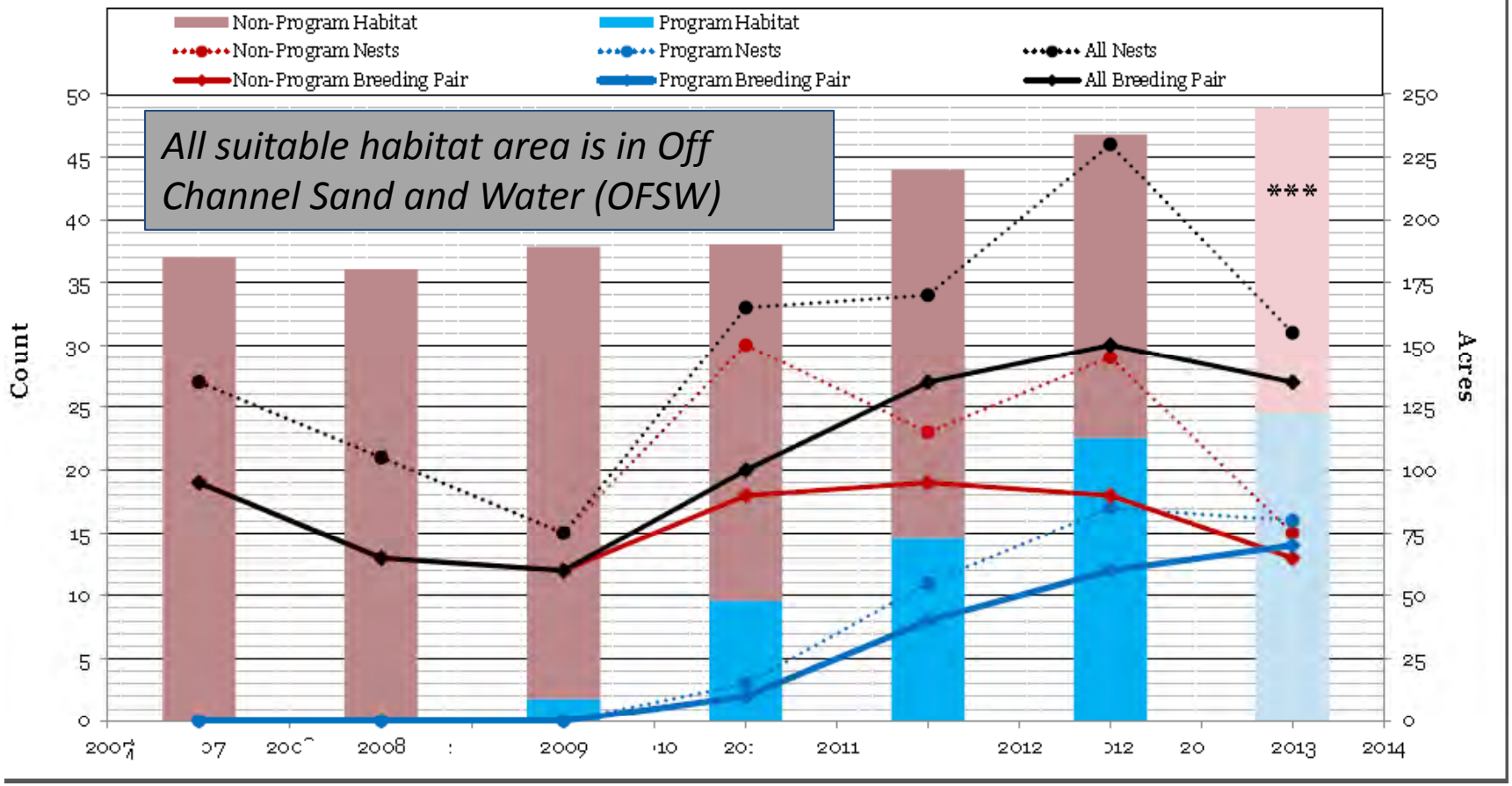
2013 State of the Platte Report: 

Big Question 7 (BQ7) - Are both suitable in-channel and off-channel nesting habitats required to maintain central Platte River tern and plover populations?

2013 State of the Platte Report: 

ISAC Short Answer: **YES**, the data (habitat metrics, # nests, # breeding pairs) are appropriate for answering BQ6 and BQ7.

## Non-Program, Program, and Total Piping Plover Nest & Breeding Pair Counts Versus Habitat Availability, 2007-2013



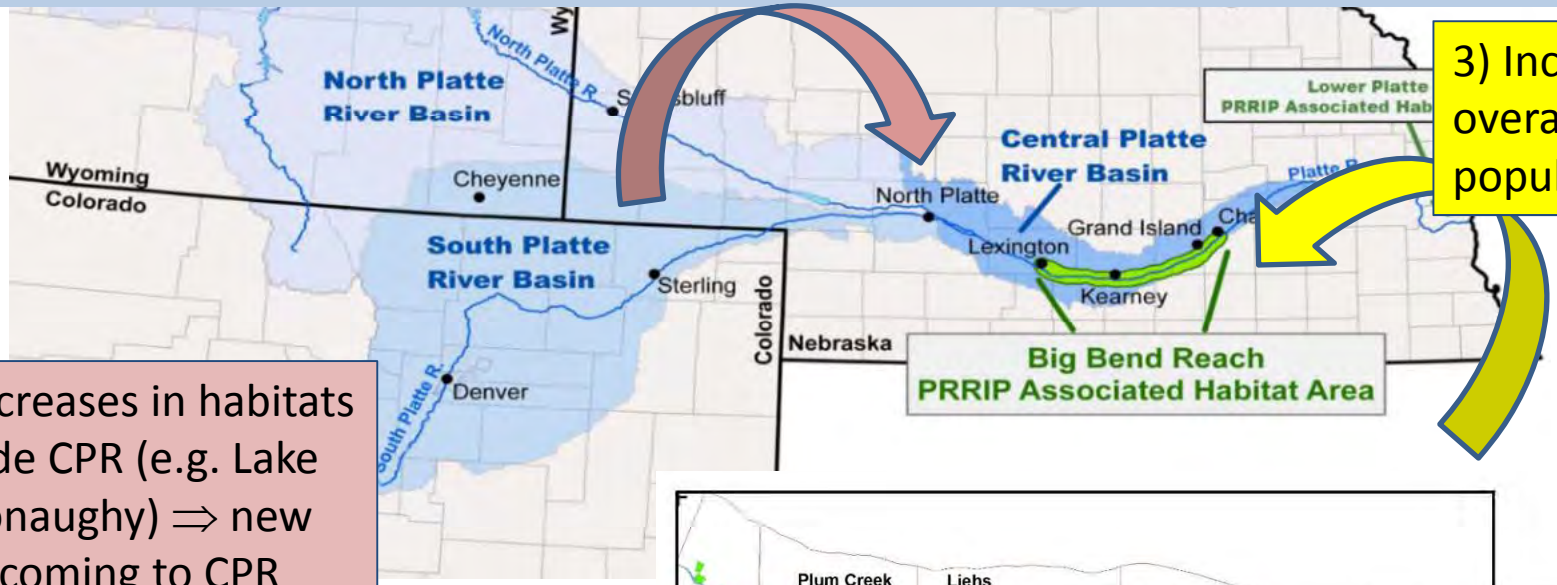

*Outside counts*

*Grid counts (census)*

# ISAC Recommendations for BQ6

- Document sampling effort and probability of detecting birds for each year and each site
- If appropriate, adjust estimates to reflect changes in sampling effort (e.g., 2007/2008)
- Add uncertainty estimates for # nests, # breeding pairs
- Learn what makes the best kind of sand pit
  - Sand pit scale, LIDAR scales, 1 $m^2$ scale
- Continue to gather detailed data from OSCW
  - Creating in-river habitat is going to be difficult
- Acknowledge that you can't answer BQ6 for in-channel habitat if such habitat is unavailable
- Acknowledge alternative explanations for observed increases in # nests and breeding pairs over time

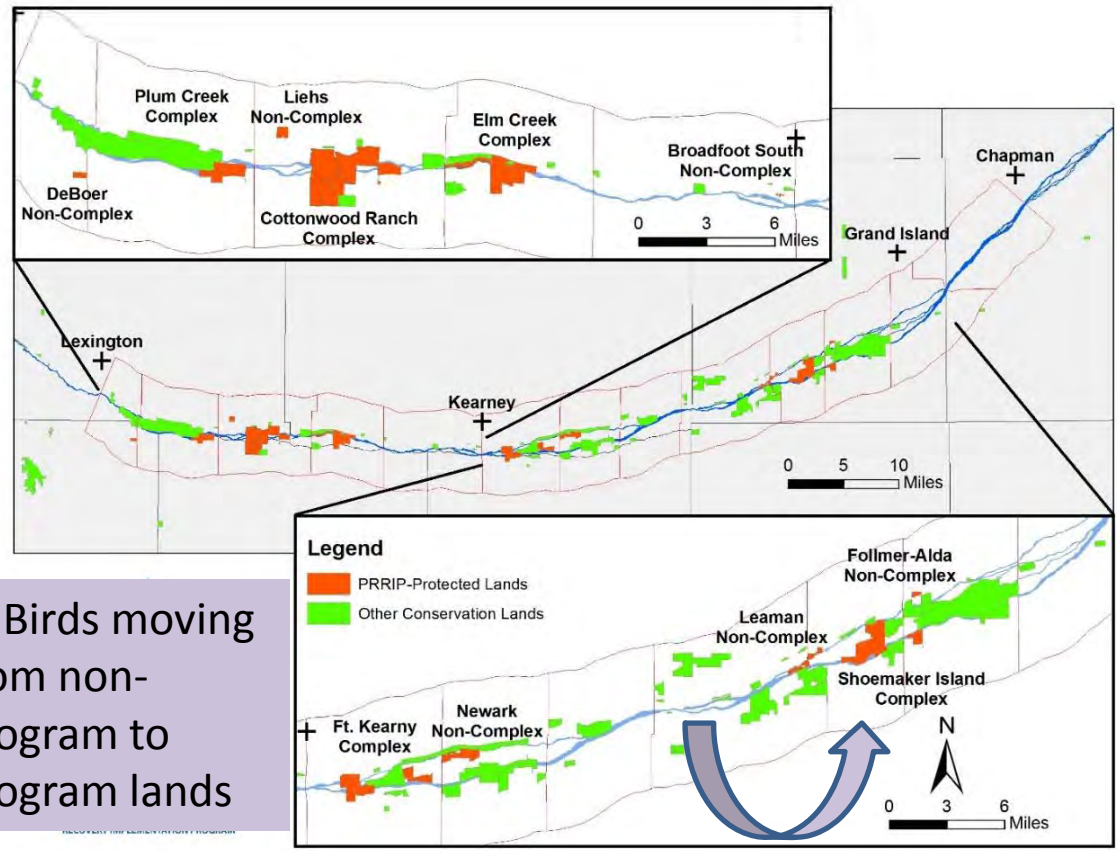
# Alternative Explanations for increasing # nests, birds




3) Increases in overall meta - population

2) Decreases in habitats outside CPR (e.g. Lake McConaughy) ⇒ new birds coming to CPR

1) Increased Program habitat area and quality leads to better survival and birds return to same sites year after year




4) Birds moving from non-Program to Program lands

**BQ7.** Are both suitable in-channel and off-channel nesting habitats required to maintain central Platte River tern and plover populations?

MCM

FSM


# ISAC Recommendations for BQ7

## Five step process:

1. **mechanically** create in-channel habitats which persist long enough for birds to nest on them (while still doing FSM experiments)
2. collect demographic data on both in-river and OCSW habitats
3. create **population models** which incorporate data on demographics, river dynamics and the costs of creating / maintaining habitats (*build on previous modelling work)*
4. assess population outcomes of different ratios of habitats, in both the CPR and the Niobrara River
5. expand the population models into a **formal decision analysis**, incorporating costs and other values

2. Should the Program consider reducing or eliminating monitoring and research procedures such as banding, grid searching, and other intensive data collection methods?

ISAC Short Answer: **NO**, current procedures are generally appropriate.

- High quality data are needed for BQ 6, 7 and 10, and to understand alternative mechanisms behind patterns.
- Use grid data to estimate accuracy of outside counts (for BQ6)
- Continue banding and grid searching until:
  - Program has established in-channel nesting for 5 years, or
  - has proved it's infeasible (given Program resources) to create in-channel suitable nesting habitat.
- Evaluate explanatory power of habitat data collected at each nest site to estimate nesting success and presence/absence.
- Habitat data which have no explanatory power could be dropped from future surveys, saving crew time.

## 3. Are you aware of alternative monitoring methods that could deliver the same or better quality data to the Program with reduced effort and at reduced cost?

ISAC Short Answer: **NO**, but it's worthwhile to evaluate benefits and costs of alternative approaches, *such as:*

- evaluating power of habitat data to explain nesting success and presence/absence at multiple spatial scales;
- discontinue collecting data that are time consuming but don't have explanatory power,
- developing mark-resight estimate of the population (potential 2nd estimate of population size (though banded birds not a random sample);
- select a subset of high and low count sites with goal of moving from census to probability-based statistical sampling

4. EDO has evaluated other river systems and compared them to the CPR. Do the assumptions and methods used to arrive at our results and conclusions seem reasonable? Are we missing something? Are you aware of better approaches or data to use in these evaluations?

ISAC Short Answer: **YES**, the assumptions, methods, results and conclusions in these three papers were reasonable and a very valuable contribution

- Keep the three chapters as separate papers, ideally published as 3 journal articles **following internal and external peer review**, which would.
  - introduce Platte River as a place for testing various hypotheses related to tern and plover habitat / populations,
  - clarify the questions being addressed,
  - gradually build arguments using different lines of evidence,
  - answer those questions to the degree that is possible so far, and
  - include appropriate caveats concerning what aspects of the questions cannot currently be answered.
- If new evidence is collected which alters the preliminary conclusions, then subsequent articles could be written, reviewed and published.

5. It is starting to appear that implementing the Flow-Sediment-Mechanical (FSM) management strategy will not result in suitable tern and plover nesting habitat as hypothesized. Does this seem to be a reasonable interpretation of Program data and comparative system analyses?

ISAC Short Answer: **YES**, this seems to be a reasonable interpretation of Program data and comparative system analyses, thus far.

- where FSM is as described in AMP (i.e., F = 3 days of 5,000 to 8,000 cfs at Overton; S=sediment balance).

6. Should the Program subject the PRRIP Tern and Plover Habitat Synthesis chapters to peer review through the Program's approved peer review process?

- ISAC Short Answer: **YES**, after revising manuscripts to respond to ISAC and other comments
- All documents submitted for peer review should include a cover memo clarifying the scope and context;
- Reviewers should be provided with references to the PRRIP website;
- Documents to be reviewed should be provided to the peer review panel **prior** to a conference call so they can review the documents beforehand and ask any clarification questions