Northwest Power and Conservation Council

February 5, 2013

MEMORANDUM

TO: Council Members

FROM: Tony Grover

SUBJECT: Fish Tagging Forum Update

Therese Hampton, Chair of the Fish Tagging Forum, will be joined by Pete Hassemer, Idaho Fish and Game, Guy Norman, Washington Department of Fish and Wildlife, Tom Rien, Oregon Department of Fish and Wildlife, facilitator Kevin Kytola, Sapere Consulting, and Council staff to update the Council on the work of the Fish Tagging Forum.

The Fish Tagging Forum (Forum) was chartered in July 2011, to evaluate the program and cost-effectiveness of fish tagging under the Program as well as other issues discussed in the March 2009 ISAB/ISRP report regarding fish tagging technologies and programs. The Forum has held ten meetings between November 2011 and January 2013. Presentation materials, meeting summary notes, and related documentation are available at http://www.nwcouncil.org/fw/tag/. The meetings have been regularly attended by 20 to 30 subject matter experts from the following entities: BPA, USACE, NOAA, NPCC, USFWS, USGS, WDFW, ODFW, IDFG, PSMFC, tribes, Public Power Council, Northwest River Partners, Mid-Columbia PUDs, consultants, universities, and other interested parties.

Tagging Technologies: The Forum has received presentations from subject matter experts on various tagging technologies/methods including:

- Acoustic Tags
- Passive Integrated Transponder (PIT) Tags
- Genetic Marking (PBT and GSI)
- Coded Wire Tags (CWT)
- Otolith Marks and Scales
- Fin Clipping

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- Radiotelemetry Tags

For each technology, the Forum has discussed the basic design/function of the tags; associated detection, recovery, and data management infrastructure; unit and life-cycle costs; relevance to specific management questions, application limitations, and potential for technological advancement. Attributes such as these will provide a basis for evaluating program and cost-effectiveness.

Evaluation Criteria: The two basic criteria the Forum will use to evaluate tagging technologies and investments are:

- Cost effectiveness
- Fish and Wildlife Program effectiveness, including the level of coordination

Additional criteria that may be used to help the Forum evaluate tagging technologies are:

- Amount of fish handling required
- Tag effects on fish health/behavior
- Lethal versus non-lethal tag recovery/detection
- Amount of life stage information obtained
- Geographic coverage of tag
- Proportion of technology/infrastructure investment versus labor investment
- Tag purpose - general versus specialized

Other criteria may emerge as the Forum participants work to meet the May 2013 goal of making recommendations to the Council's Fish and Wildlife Committee.

Management Questions and Indicators: In addition to the technology focused presentations and discussions, the Forum has identified the specific Management Questions and Indicators used in the region that are supported by fish tagging data. The Management Questions and Indicators have been organized around Hydro, Hatchery, Harvest, Habitat, Predation, and Species Recovery decision making. This effort established a clear connection between management questions and tagging efforts, including instances when more than one technology is being, or can be used, to support decision making. For the purposes of conducting analyses and developing recommendations, the management questions and indicators of importance to the Council's Fish and Wildlife Program have been identified and prioritized. Visual aids and spreadsheets have also been developed to document and communicate these relationships.

Program and Cost-Effectiveness Evaluations: The Forum is working through a series of analyses to define primary and secondary tagging technologies and the consequences of not having specific tag types available to support decision making. A number of information synthesis tools have been developed to support the development of recommendations, including:

1. Tag-specific summaries;
2. Tag infrastructure schematic;
3. Data collection and management schematic;
4. Management Question and Indicator Spreadsheet;

5. Management Question, Indicator, and Tagging Technology Network Diagram;
6. Tag-specific Cost Information (from BPA and USCOE).

The Independent Economic Analysis Board is exploring how they can assist the Forum in structuring the cost-effectiveness evaluation.

Costs of Tagging: To assist the Forum, Bonneville staff has estimated cost-related information for each tagging technology that includes all activities, including tag insertion costs, tag detection costs and analysis of data generated from the tags. For a variety of reasons, the current tagging costs in FY2012, shown in the table below, are considered generally accurate, though not precise.

CWT	$	7,000,000
PIT	$	24,500,000
Genetic	$	5,600,000 (or more)
Radio	$	1,800,000
Acoustic	$	18,000,000
Others	$	1,200,000
TOTAL	$	58,100,000

Path Forward: During February and March 2013, the Forum will be focused on the evaluation of program and cost-effectiveness and formulation of preliminary recommendations. Formal recommendations will be drafted, reviewed, and finalized between March 2013 and May 2013.

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Fish Tagging Forum

Update

February 12, 2013

Significance of Tagging/Marking

- Roughly $50M to $60M spent in 2012 on tagging/marking related activities
  - Labor and infrastructure for application, detection/recovery, and data analysis
- 7 primary tagging/marking technologies
  - PIT, CWT, Acoustic, Radio, Genetic, Otolith, Adipose Clip
- Approximately 100 biological indicators rely on tags/marks to support decision making
  - Hydro, Habitat, Harvest, Hatchery, Predation, Population Status & Recovery

Purpose of Fish Tagging Forum

(from the Charter)

- address costs, efficiencies and gaps for all fish tagging efforts that take place under the Council's Fish and Wildlife Program, including expense, capital and reimbursable programs.

- address the cost effectiveness and the program effectiveness of tagging under the Program as well as other issues discussed in the ISAB/ISRP report

FTF Timeline and Process

PARTICIPANTS:

Federal:	**State:**	**Tribes:**	**Regional Interests:**	**Other:**
USACE	IDFG	CRITFC	PSMFC	IEAB, ISAB, ISRP
BPA	ODFW	Nez Perce Tribe	NW River Partners	Consultants
USFWS	WDFW	CTGR	Public Power Council	Universities
NOAA		Colville Tribes	NPCC	
USGS			Mid-C PUDs	

Accomplishments to Date

- Reviewed and summarized all major tag types.
- Developed a summary of BPA costs by tag type.
- Developed summary of management questions and indicators supported by tagging information.
- Identified which tagging technologies provide information for the management questions and indicators.
- Identified the management questions and indicators that are a priority to the Council Program.

What's Going on Now in the Forum and What's Next?

- Evaluating the effects of removing funding for a particular tagging technology:
  - Management Questions and Indicators
  - Species
  - Geographic Coverage
  - Shared Resources
  - Cost
- Involving IEAB in cost-effectiveness evaluation
- Developing and reviewing recommendations
  - Gaps, Overlaps, Efficiencies, Policy Choices & Consequences

Some Context For Costs

BPA 2012 Estimated Costs by Tag Type

CWT	$	7,000,000
PIT	$	24,500,000
Genetic	$	5,600,000
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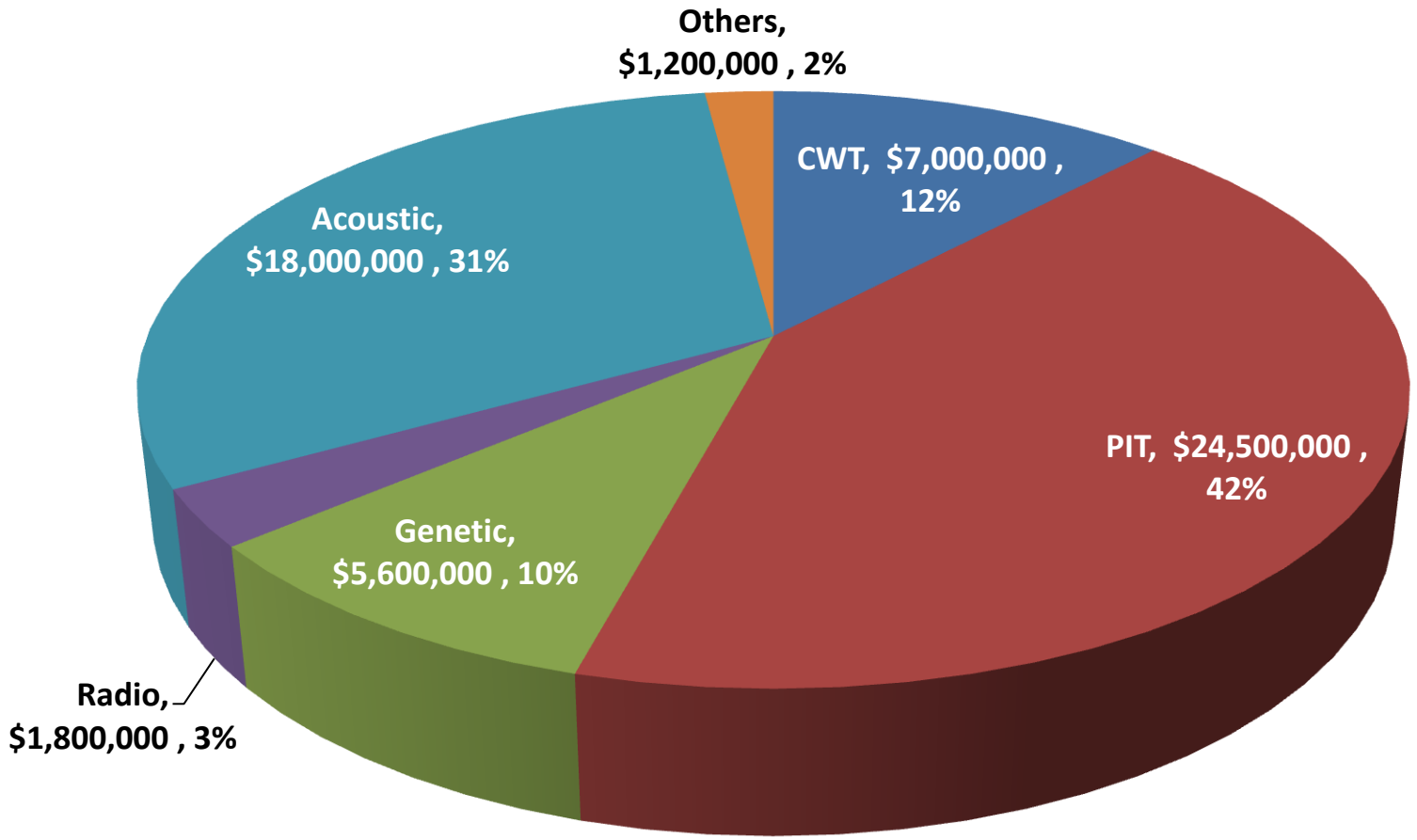
TOTAL	**$**	**58,100,000**

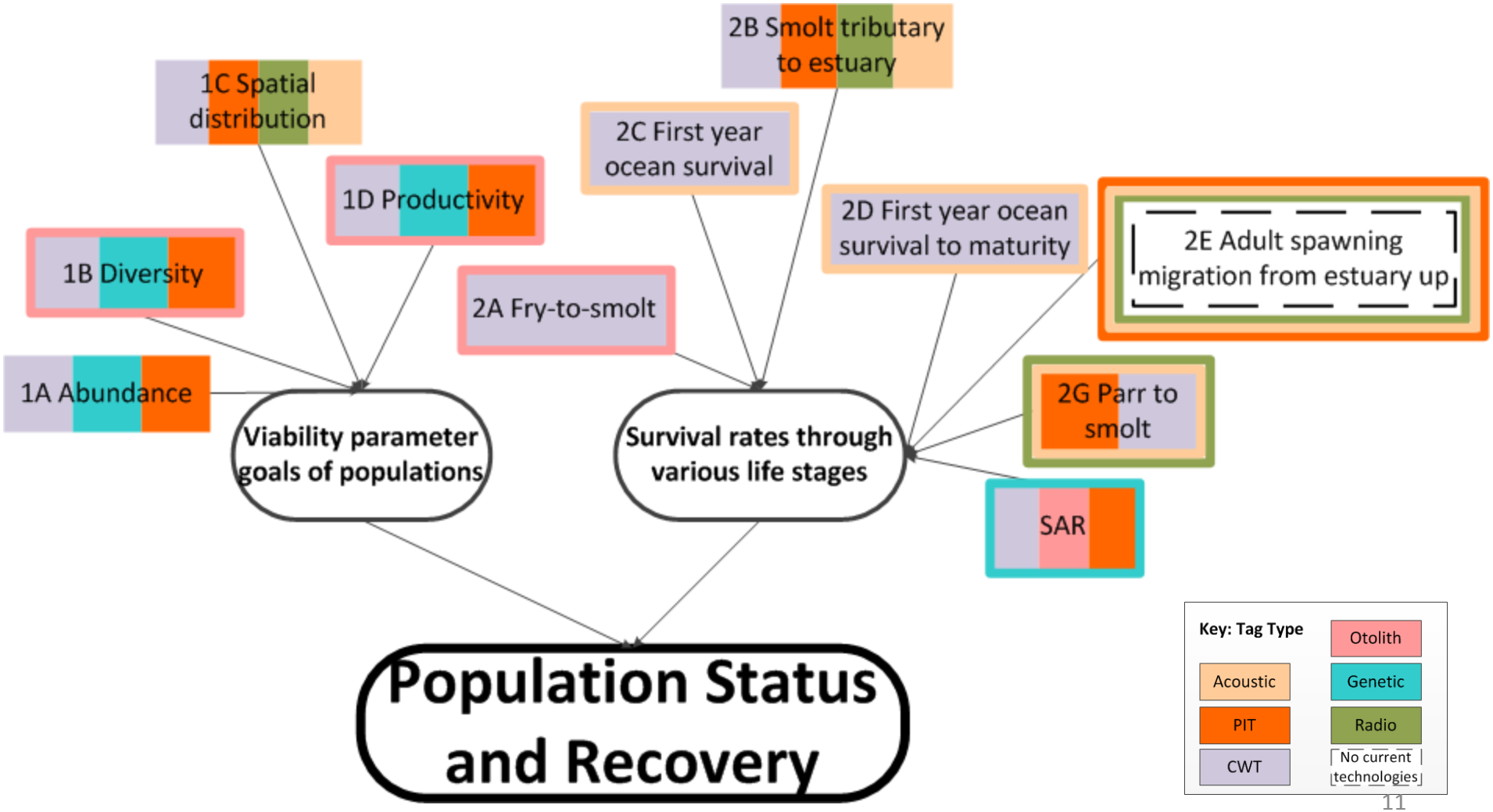
BPA 2012 Estimated Costs by Tag Type



Some Context For How Tag/Mark Data is Used

Example “Spider Chart” Framework

The Full-Suite of Application



The Whole Enchilada….