Progress on a range-wide inventory for Pacific salmon monitoring data.

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Original Distribution of Genus Oncorhynchus (Pacific Salmon)
The State of the Salmon Monitoring Data Inventory

The North Pacific

**Goals:**
- Describe distribution and quality of monitoring efforts
- Develop an approach to use data to track status and trends
Approach

Conceptual framework to identify, describe, and organize data

- **Criteria** – 10+ yrs (w/ exceptions), viability parameters
- **Classification** – raw/derived, monitoring tier, area of inference
- **Utility** – quality
Criteria

- Focus on four biological parameters – distribution, diversity, abundance and productivity (DDAP).

≥ 1 = considered for inclusion.
**SOS DICHTOMOUS KEY**

1. Is the sampling conducted on live, mature adults intercepted during their spawning migration?
   - Yes, go to........ 2
   - No, go to........ 4

2. Does sampling design conform to established run-timing period for individual species?
   - Yes, go to ......... 3
   - No .................. *MT 1*

3. Is the location and timing of spawning known precisely for run-timing group?
   - Yes.................. *MT 3*
   - No, go to.......... 6

4. Is the sampling conducted to enumerate adults (pre or post-spawn) on the spawning grounds, or to quantify number of reds, eggs, alevin or recently emerged fry from gravel?
   - Yes ................*. *MT 3*
   - No, go to ..........5

5. Can sampled individuals be assigned to discrete populations defined either by their replaceability (irreplaceable within 100 year time horizon) or by a measure of restricted gene flow (< 1 migrant per generation, estimated using either genetic markers or data on straying rate)?[1]
   - Yes.................. *MT 3*
   - No, go to.......... 6

6. Are sampled individuals assigned to discrete metapopulations defined using Waples’ (1991) criteria of evolutionary significance, or an accumulated measure of inter-population gene flow or straying among populations comprising the metapopulation (10 migrants per generation exchanged among populations) or evidence of demographic distinctness from other metapopulations?
   - Yes.................. *MT 2*
   - No ..................... *MT 1*
## SoS Research Questions

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<tr>
<td>Q2. What are the trends in species composition and diversity in the region?</td>
<td>– as measured by catch, CPUE, or coarse measures of escapement. Published example: Brodeur et al. (1999)</td>
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<td>Q3. What are the trends in marine derived nutrient transport into a region or basin?</td>
<td>– as measured by long-term escapement trends or lake coring records. Published examples: Finney et al. (2002)</td>
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<th>MT2 Metapopulation</th>
<th>Q1. What are the trends in abundance and productivity among species-specific metapopulations or comparable stock units, and the degree of spatial coherence?</th>
<th>Published examples: Hilborn et al. (2003), Yoshiyama et al. (1998), Welch et al. 2000, Mueter et al. (2002)</th>
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<td>Q2. What are the trends in metapopulation diversity? Are there significant shifts in the relative contribution of metapopulations within a region or basin?</td>
<td>Published example: Brown et al. (1994)</td>
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<td>Q3. What are the unique metapopulations by species?</td>
<td>– as defined by artificial, genetic, or elemental markers and/or unique life history traits. Published examples: Waples (1991).</td>
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<th>MT3 Population</th>
<th>Q1. What are the trends in abundance and productivity at the population level?</th>
<th>Published examples: Schubert et al. (2002).</th>
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<td>Q2. Are there trends in survival rates across life stages?</td>
<td>– as measured by abundance counts at each key life history stage such as fry counts, smolt outmigration, juvenile snorkel counts, escapement, redds/spawner, etc. Published examples: Ward (2000)</td>
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<td>Q3. What are the trends in life history diversity at the individual population level?</td>
<td>– as measured by five or six key life history parameters such as run timing, life history type, egg size, adult body size, emergence timing. Published examples: Cox and Hinch (1997)</td>
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<th>MT1 Regional Grouping</th>
<th>Q1. What are the trends in abundance and productivity at the population level?</th>
<th>Published examples: Beamish and Bouillon (1995), Hare and Francis (1995), Radchenko and Mathisen (2004)</th>
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Operating Principles

State of the Salmon:

- will work closely with agency and other monitoring entity staff to ensure appropriate identification and characterization of datasets.
- will make every effort to minimize its requests of staff time.
- does not presume any influence or role in an organization’s internal practices and procedures.
- is interested in acquiring specific values or parameters from existing datasets/databases to answer key questions about the status and trends of salmon at various biological scales.
- does not intend to become a data warehouse, create redundant databases, or otherwise re-create data systems already in existence.
- respects data security, data use restrictions, and statutory obligations concerning the release and sharing of datasets as specified by donor organizations.
- adheres to recognized standards for data exchange and discovery.
- will pursue innovative technologies, including open-source and free-ware when available and appropriate, to facilitate data sharing and communication of resulting analyses.
Progress to date :::

We expect to complete the North American inventory next year and initiate soon the Western Pacific inventory.

- Alaska
- Canada (BC/Yukon)
- Washington, Oregon, California, Idaho
- Russian Far East
- Japan
Products

Sockeye Subpopulations by HYDRO1k Basin

Salmon Monitoring Activities — ADFG Escapement Data in Bristol Bay

ADFG Escapement Data for Bristol Bay by Method and Quality

Data: E. Sullivan, ADFG, 2002

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WWW.TREEOFTHEJALALON.ORG
Synergy with other efforts:

- Wild Salmon Center and University of Montana has established a network of “salmon observatories” (SaRON) and a river typology classification approach to address relationship of river complexity with life history variability in *Oncorhynchus* spp.

- Wild Salmon Center and University of Washington has proposed to develop an approach to simulate marine migration and growth of pink salmon in the Gulf of Alaska (GLOBEC)
Looking ahead:

Results will be available in multiple formats.

- The metadata database will be fully searchable on our website, including an Arc-IMS site.
- Analytical results will be available in peer-reviewed publications, white papers, and other report formats.
- Results incorporated into the next edition of the PICES Ecosystem Status Report?
Conclusion :::

Our inventory effort will ...

- help advance progress and standardization in data collection and management;
- provide, for the first time, a way of visualizing the heterogeneity of the “data landscape” intended to monitor the condition of Pacific salmon; and
- provide a platform from which to conduct status assessments for these species, in the spirit of the PICES Ecosystem Status Report.
State of the Salmon

State of the Salmon is a joint program of Wild Salmon Center and Ecotrust.