Updates to topics discussed in “Snake River Spill-Transport Review” ISAB (2008-5)

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U.S. Fish and Wildlife Service

Comparative Survival Study Oversight Committee members

Comparative Survival Study approach for evaluating transportation

Primary focus on estimating and comparing SARs for:

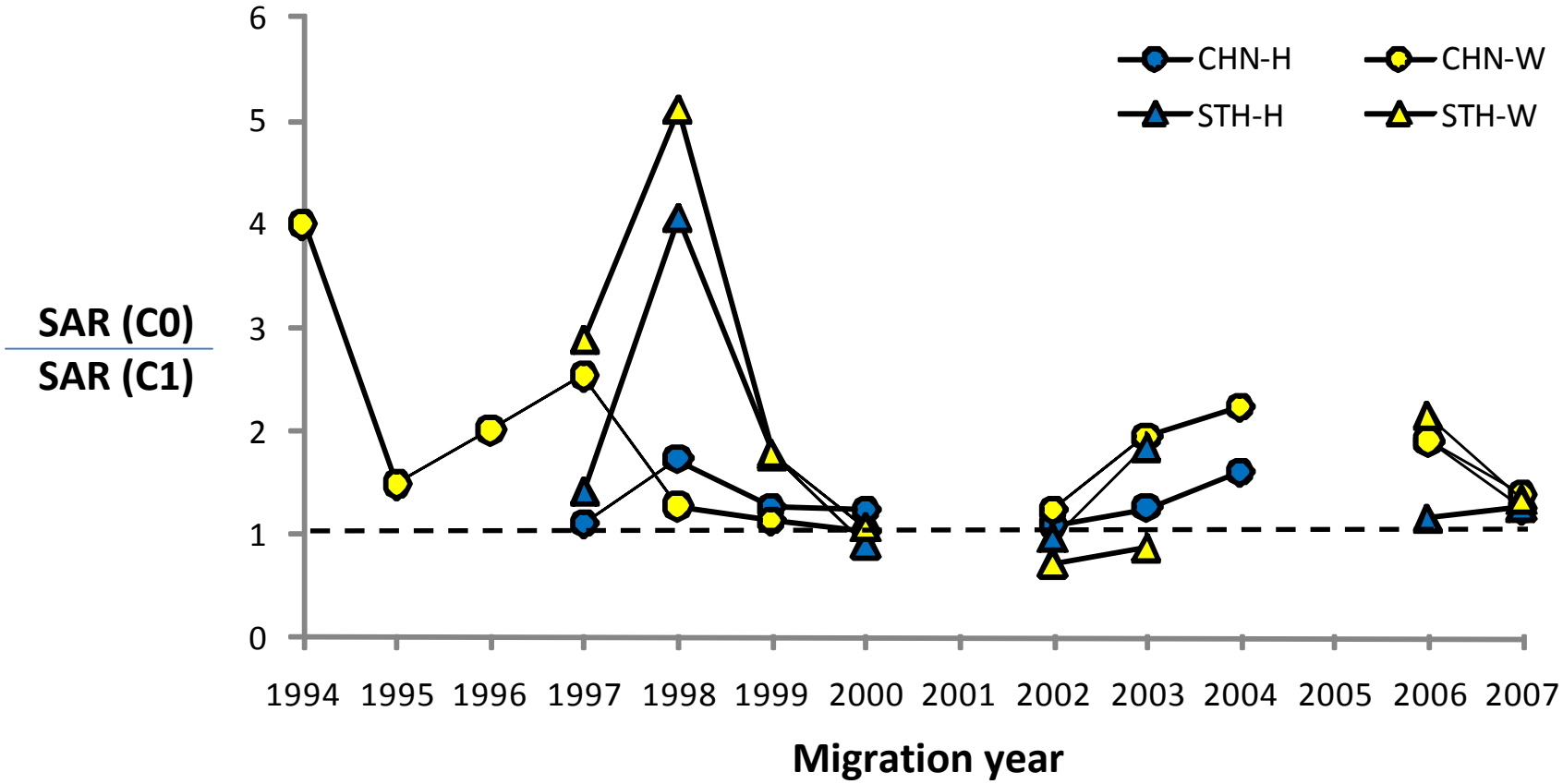
- collected and transported smolts (T0)
- undetected smolts (C0)

Main reason for estimating C0 group is observed bias associated with bypassed smolts

We also calculate SARs for bypassed smolts (C1)

Prior to 2006, the management strategy was to transport all untagged smolts that were collected

Collection and bypass effects on SARs:

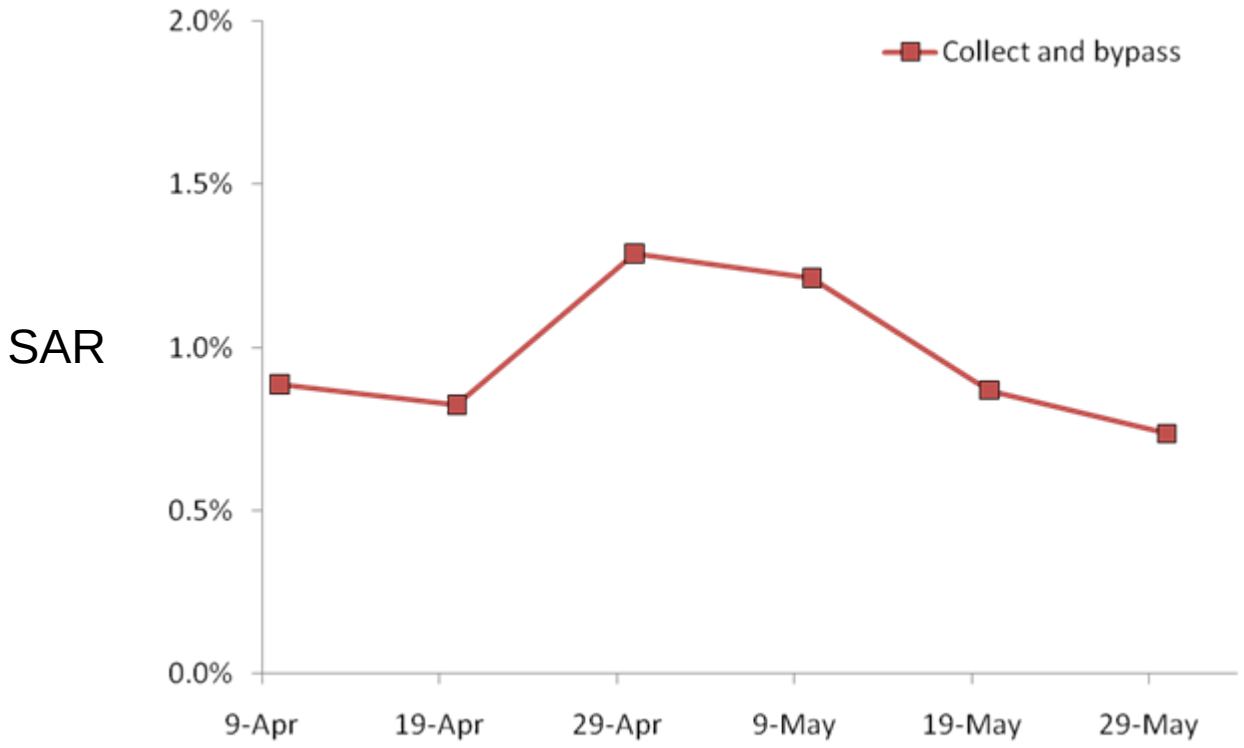


	CHN-H	CHN-W	STH-H	STH-W
Geometric Mean CSS:	1.35	1.71	1.52	1.67
NOAAF (2009) Table 2:	1.26	1.09	1.81	1.27

Issues with applying adjustment factors to collected and bypassed smolts:

- Annual adjustment factors vary across years and are not constant

- "The adjustment factor is estimated from annual SARs and may not be the appropriate value for adjusting seasonal SARs." -ISAB 2008-5



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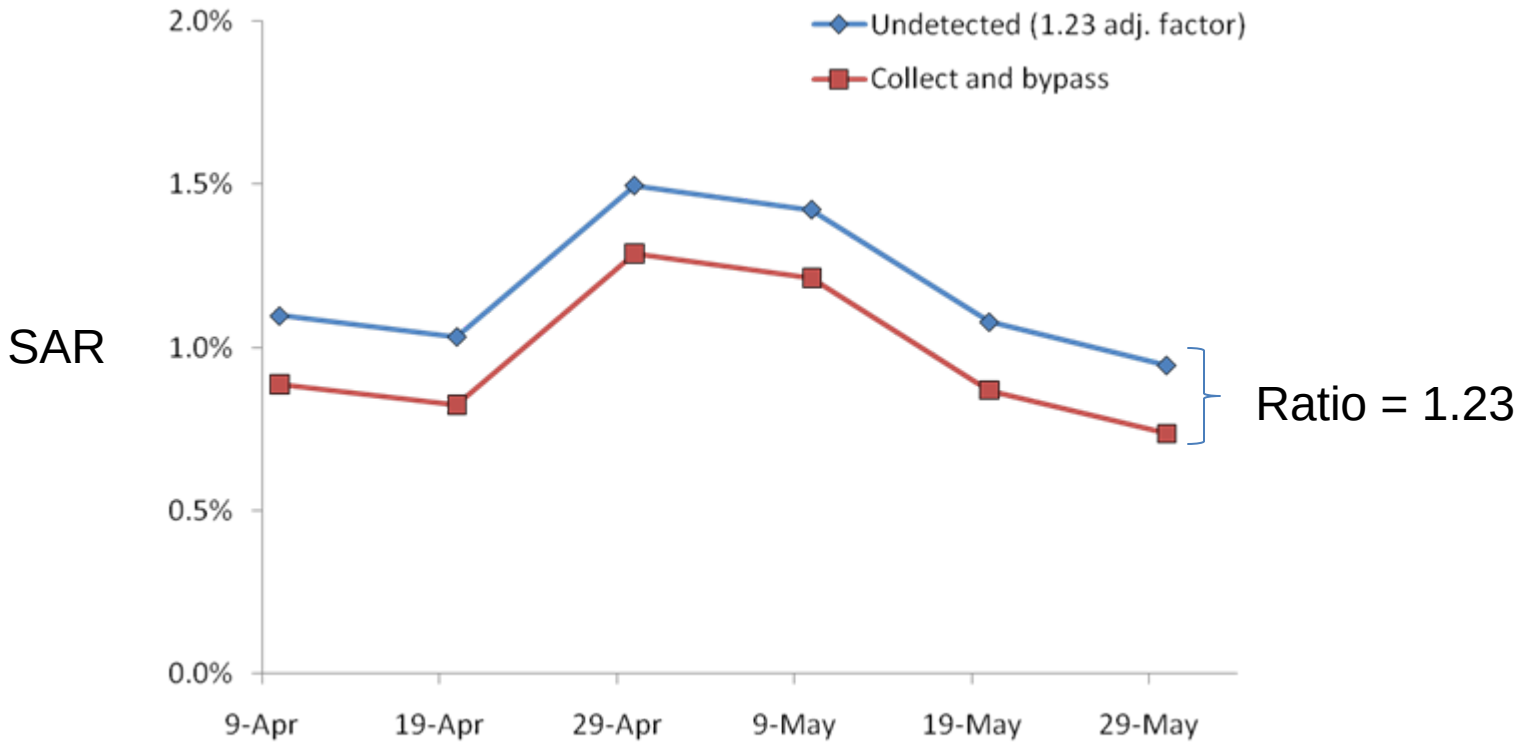

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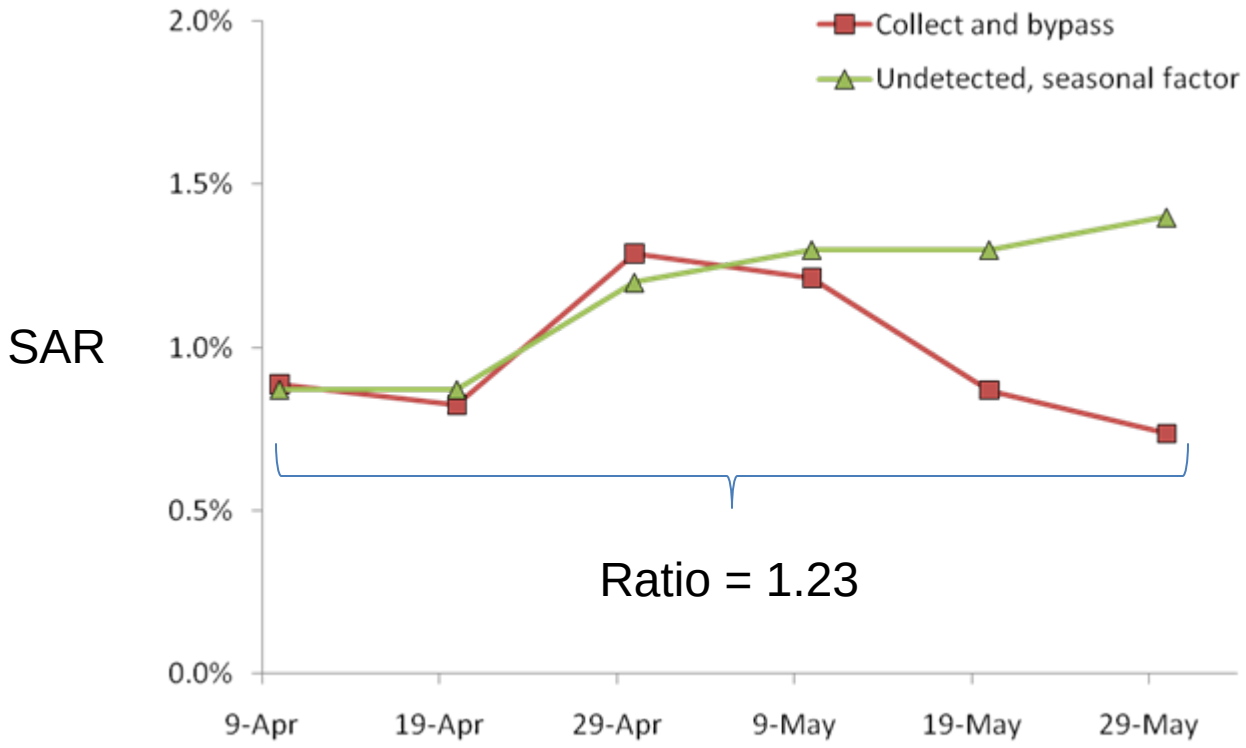

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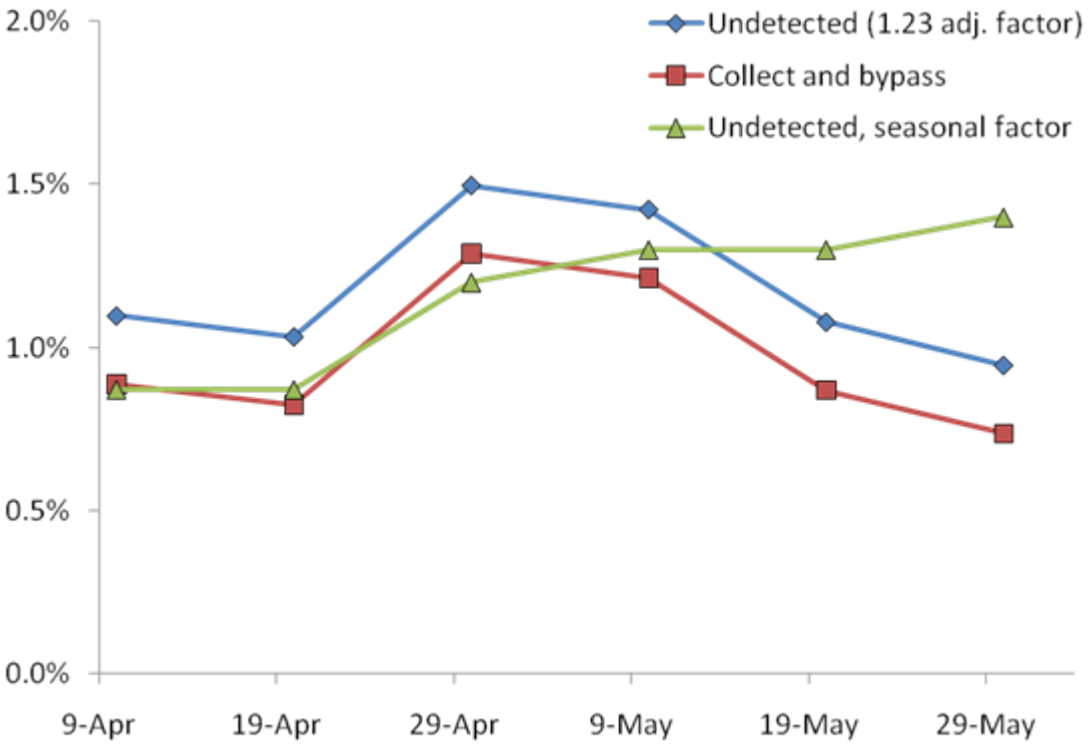
SAR



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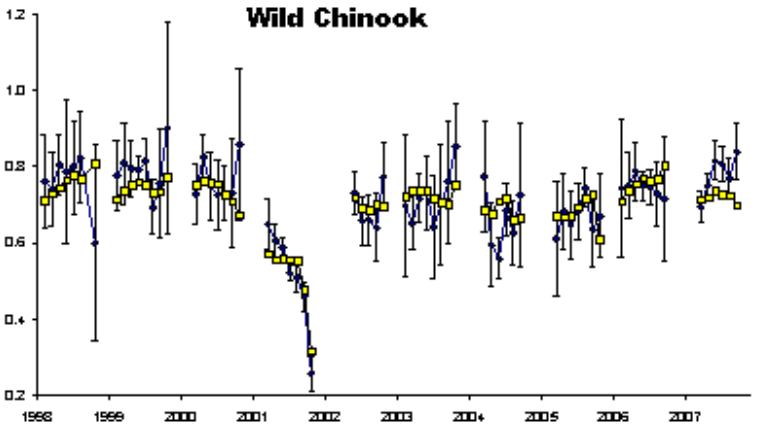
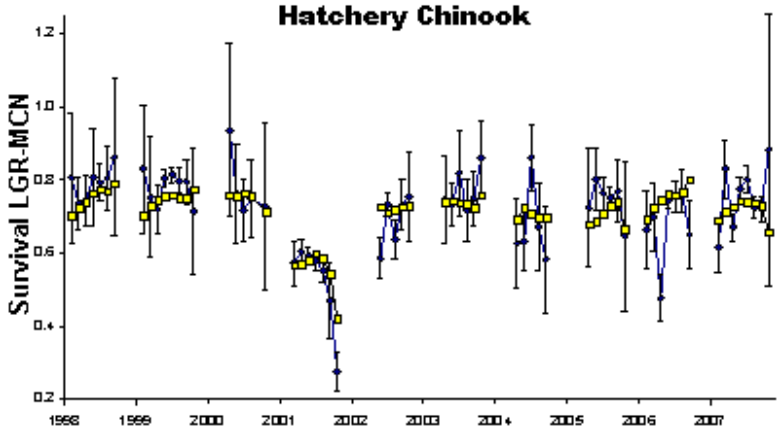
Smolt survival

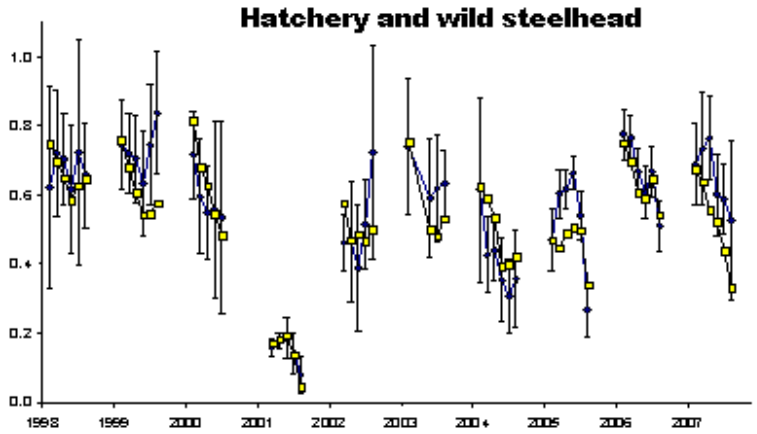


Variance accounted-for:

60%

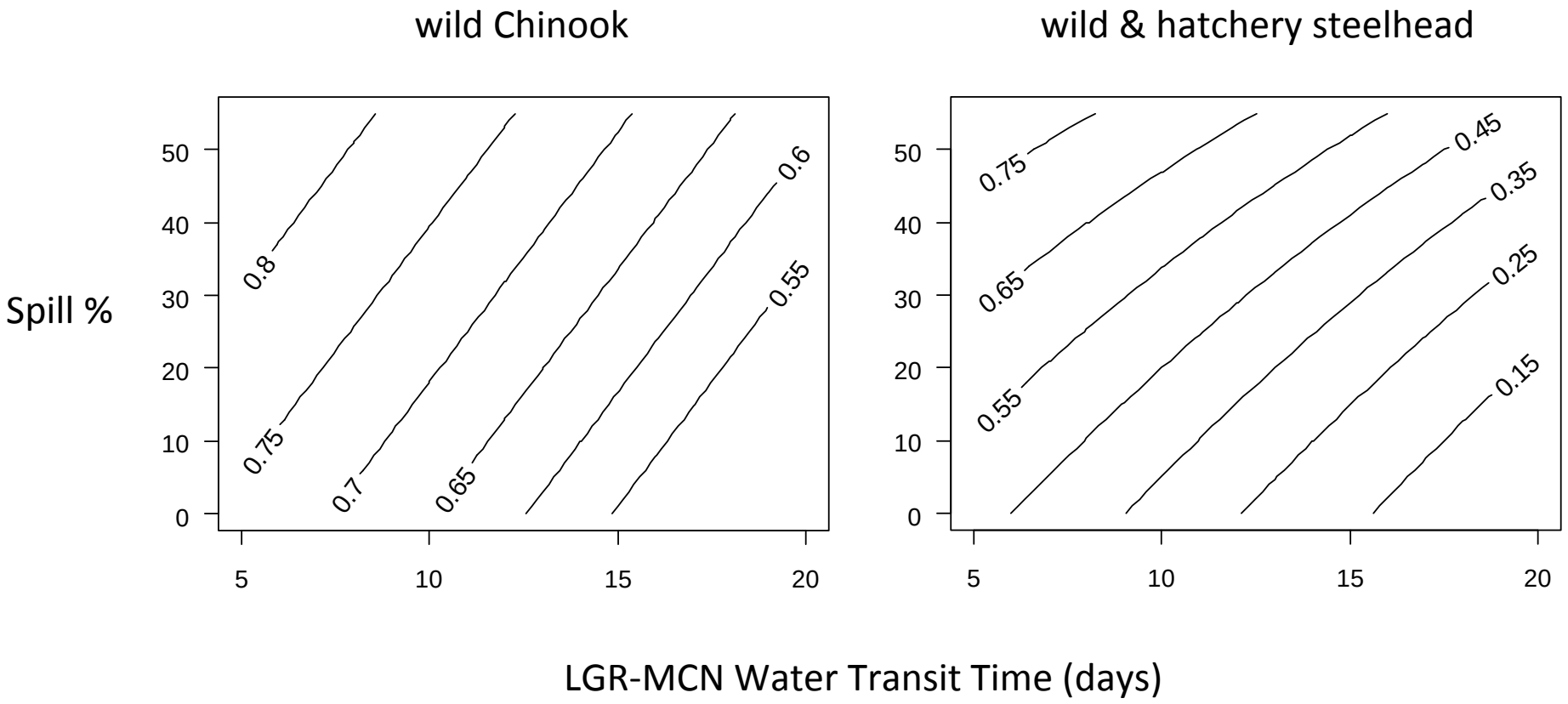


48%

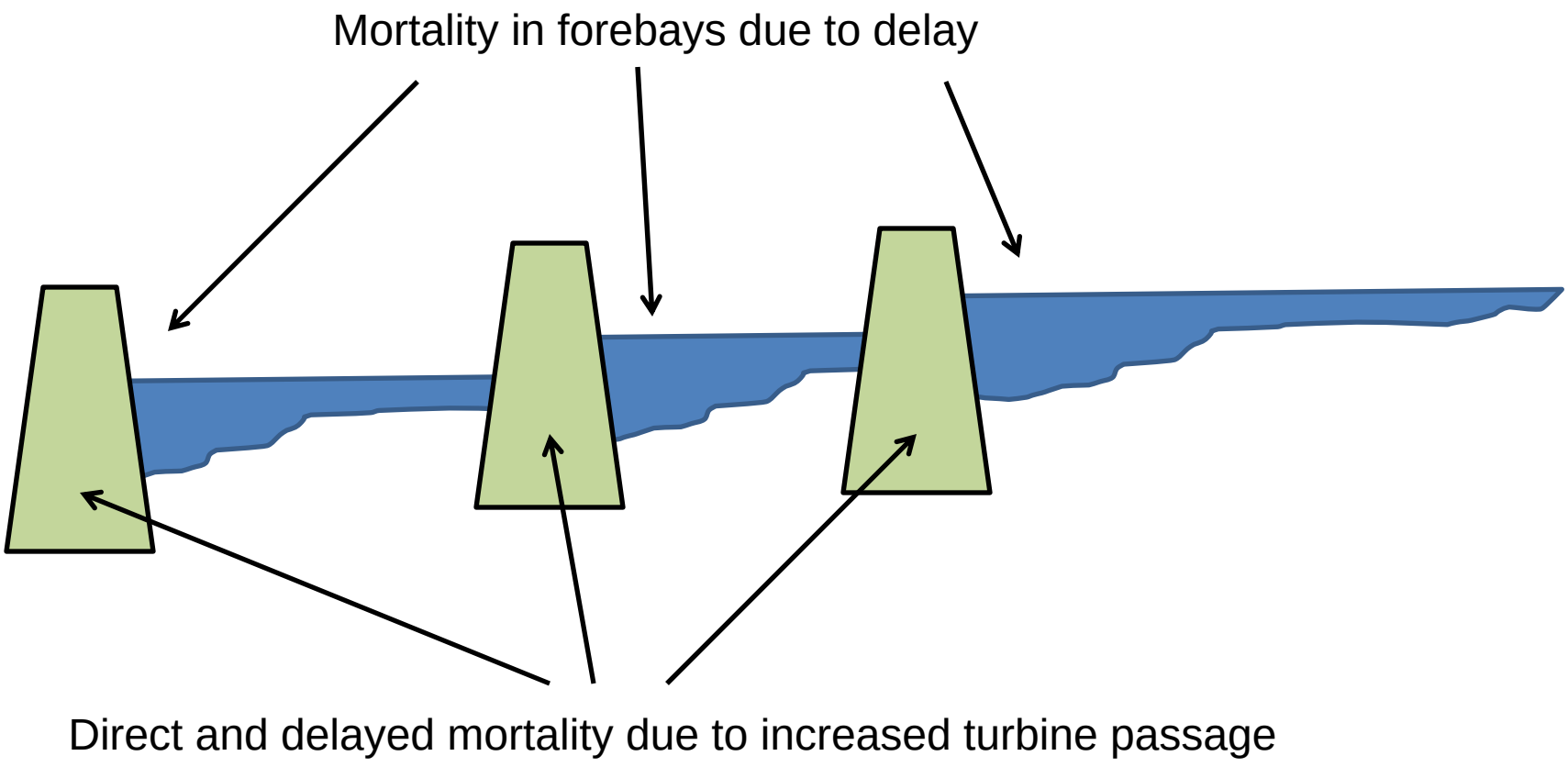


73%

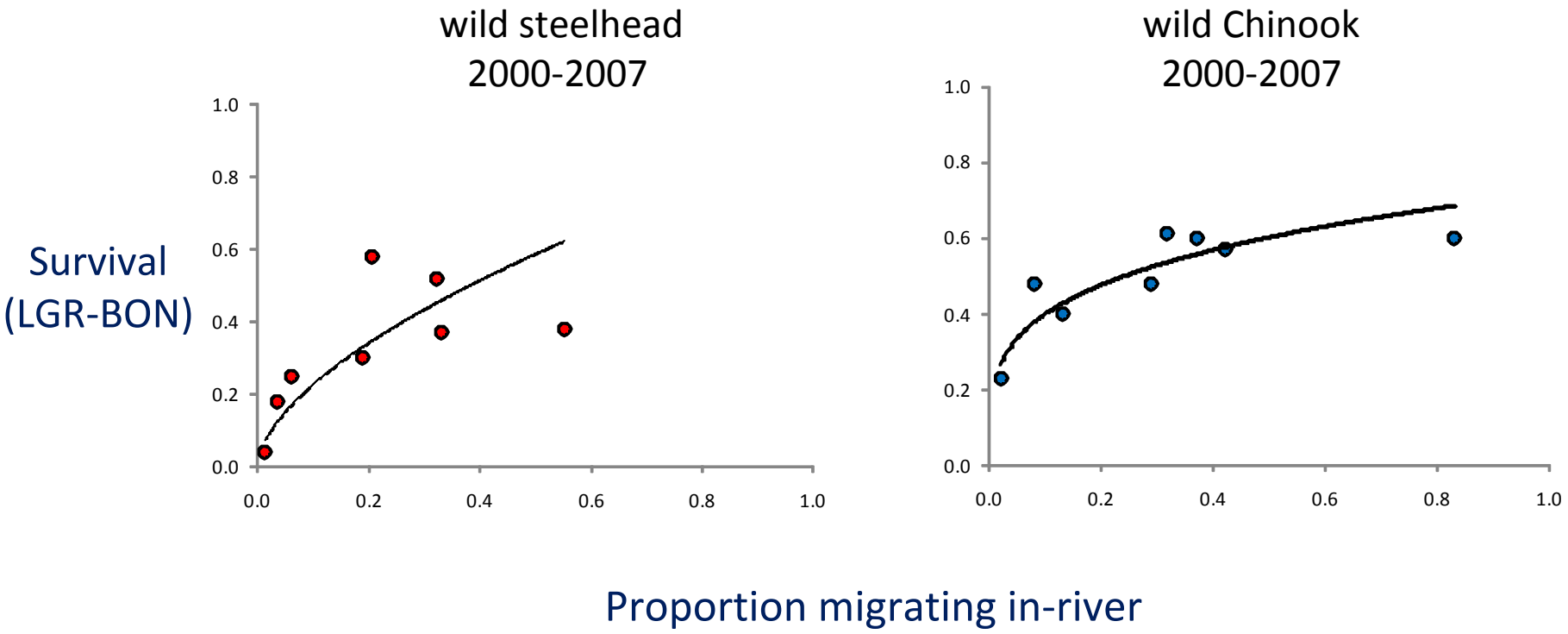
Effects of spill and water transit time on LGR-MCN survival:



Mortality associated with spill/no-spill operations



CSS data on survival versus proportion migrating in-river:



Learning opportunities affected by spill/no-spill decisions:

• 2007 is the only low-flow year where spill was provided at the transportation projects. Additional years would help improve understanding of spill effects under low-flow conditions.

•The first large-scale release of PIT-tagged sockeye for evaluating transportation versus in-river migration with spill occurred in MY 2009, with adults returning in 2010 and 2011

•Second year of large-scale release of sockeye is MY 2010, with adults to return in 2011 and 2012. Eliminating spill in 2010 would severely limit the information obtainable on sockeye in 2010.

Considerations for other Species
Pacific Lamprey

ESA Petition to list lampreys

- January 2003, request to list Pacific lamprey, western brook lamprey, river lamprey, and Kern brook lamprey in Oregon, Washington, Idaho, and California
- In March 2004, USFWS was sued for failure to act (due to budget concerns)
- Settlement agreement - 90-day finding on December 27, 2004. Finding- listing was not warranted

Finding of the petition to list

- There is a decline in Pacific lamprey abundance and distribution throughout California, Oregon, Washington, and Idaho

- Threats to the species occur in much of the species range (CA, OR, WA, ID)

USFWS Conservation Initiative

- July 2008 - Steering Committee to guide process
- October 2008 work session
  - Information on biology, distribution, habitat preference and threats
  - Regional information by life history stages and identify differences
  - Identified uncertainties and knowledge gaps and the research, monitoring, and evaluation approaches to narrow gaps
  - Proceedings available at:

http://www.fws.gov/pacific/fisheries/sp_habcon/lamprey/

Regional Meeting Procedure

- Information on abundance, distribution, and short-term trend by watershed
- Classified threats by scope and severity within watersheds
- Actions to address threats in each region
- Research, monitoring and evaluation needs in each region

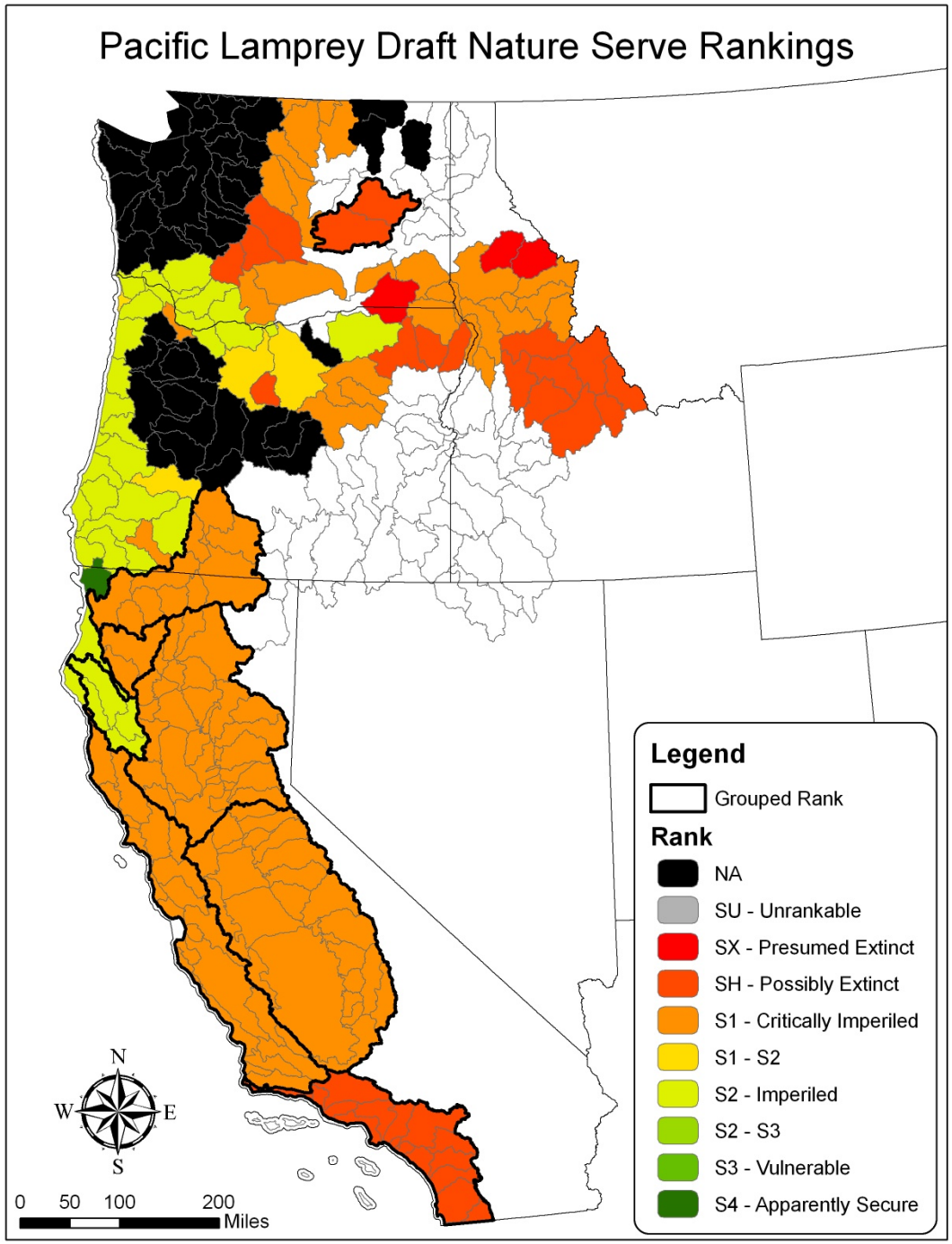
*mainstem sub region – 35 attendees, 4 Fed, 4 Tribes, 3 states, FPC, CBFWA, Univ., Power Comp., NGOs

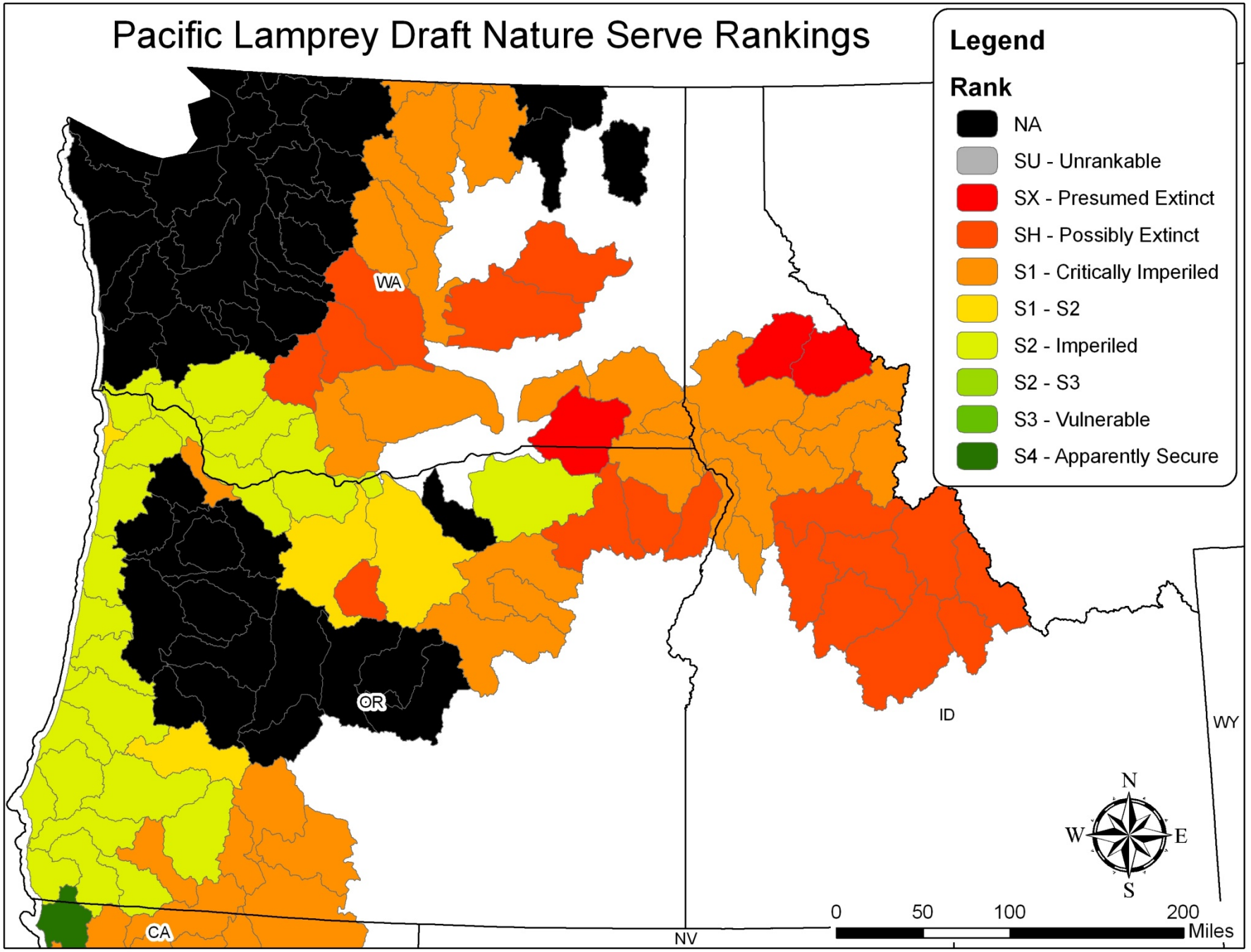
NatureServe Risk Assessment

Relative risk/status of Pacific lamprey throughout its range:

- **Rarity**: population size (abundance), range extent (historic dist.), area of occupancy (current dist.) and number of occurrences
- **Trends**: short-term trend in population size (27 years)
- **Threats:** threat impact (calculated considering the scope and severity of the threats)

NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. Faber-Langendoen, D., L.et al. 2009. NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. NatureServe, Arlington, VA.


Pacific Lamprey Draft Nature Serve Rankings
Legend
Grouped Rank
Rank
NA
SU - Unrankable
SX - Presumed Extinct
SH - Possibly Extinct
S1 - Critically Imperiled
S1 - S2
S2 - Imperiled
S2 - S3
S3 - Vulnerable
S4 - Apparently Secure
N
W
E
S
0 50 100 200
Miles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WA
OR
CA
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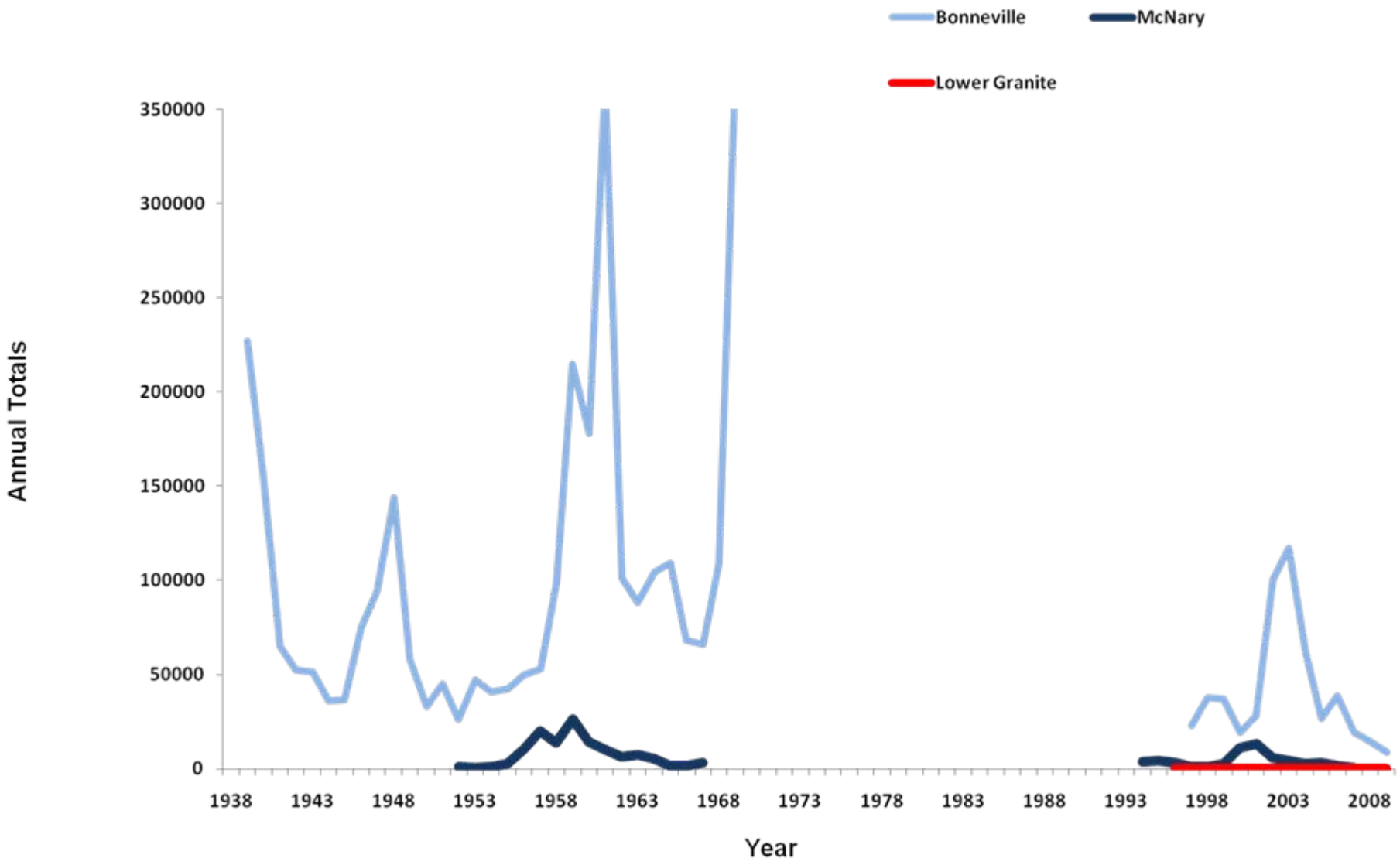
Pacific Lamprey Adult Counts



NOAA Fisheries other Considerations: *Pacific Lamprey**

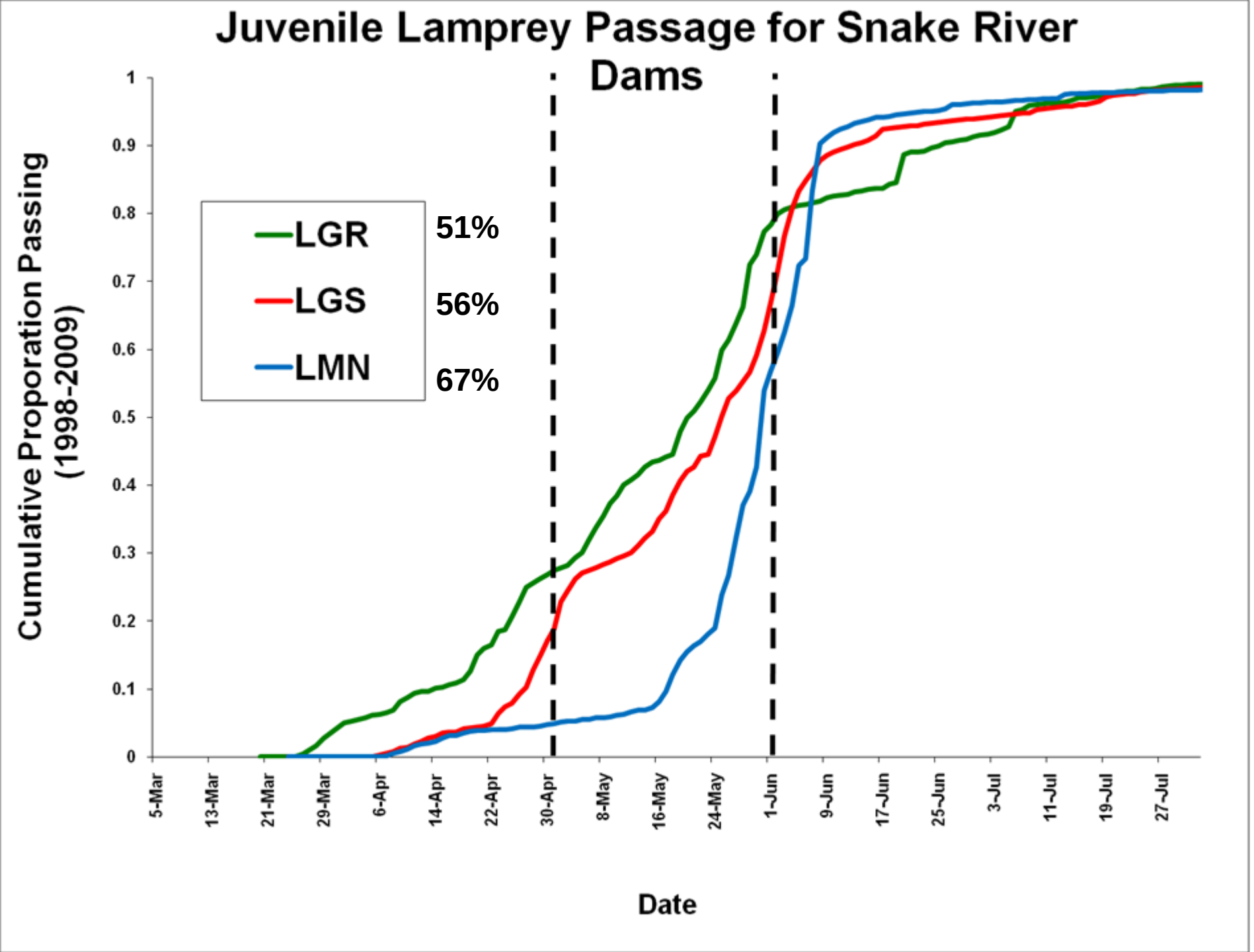
Pacific lamprey …. could be negatively affected by no spill/transport operations, either:

- directly (mortalities of transported lamprey or increased mortalities passing dams without spill) or

- indirectly (removing migrating salmon and steelhead through transport could increase mortalities from avian or fish predators)

- Magnitude is uncertain

***Request for ISAB Review by NOAA Fisheries February 25, 2010**


Juvenile Lamprey Passage for Snake River Dams
Cumulative Proporation Passing (1998-2009)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
LGR
LGS
LMN
51%
56%
67%
5-Mar
13-Mar
21-Mar
29-Mar
6-Apr
14-Apr
22-Apr
30-Apr
8-May
16-May
24-May
1-Jun
9-Jun
17-Jun
25-Jun
3-Jul
11-Jul
19-Jul
27-Jul
Date

Juvenile Passage at Dams

- Juvenile lamprey are poor swimmers (Dauble 2006)
  - Swimming endurance for macs decreased rapidly at H2O velocities>46cm/s
  - Swimming endurance of ammocoetes likely lower, due to greater dependence on anaerobic metabolism
  - Avoidance by juveniles greatly reduced when perpendicular velocities> 0.4m/s (Dauble et al. 2006)
  - Can not swim faster than velocities found @ screen face (Morsund et al. 2002 & 2003)

Juvenile Passage at Dams

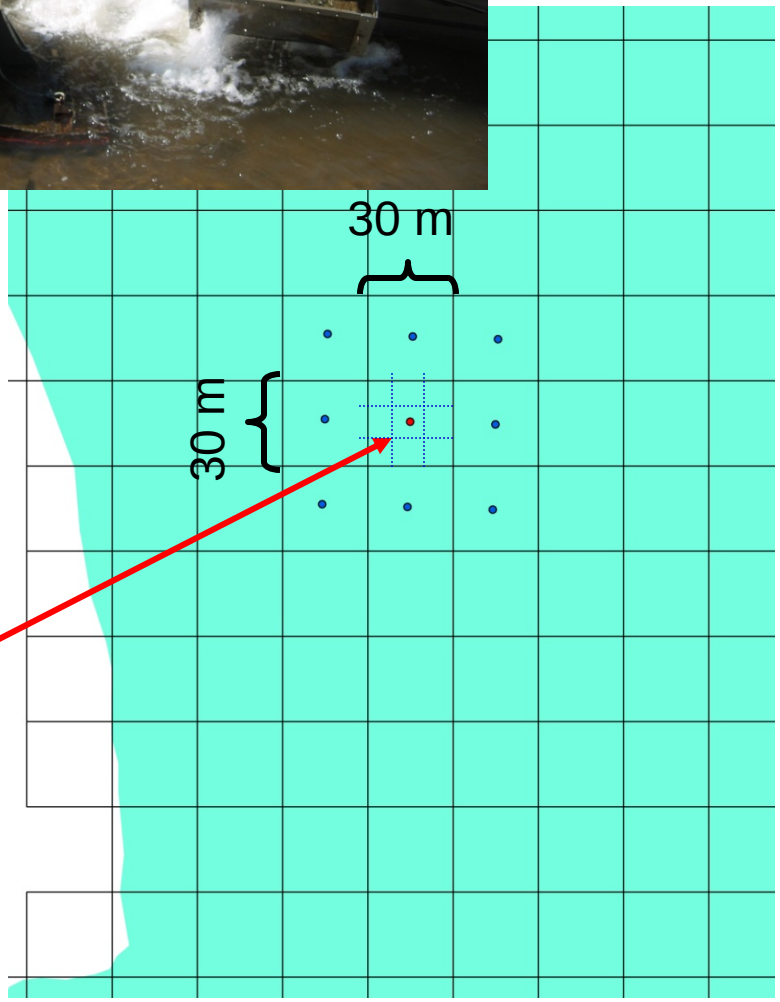
- Macs may require attachment surfaces to rest between bouts of movement (Moser & Mesa 2009)
- 70-90% of test lamprey impinged on bar screens@ vel. 1.5ft/s for 1-min and 12hrs exposures (Morsund et al.2000)
- Could be especially vulnerable to entrainment and impingement @ dams & associated structures (Mesa & Copeland 2009)
- Juvenile lamprey movement downstream mostly @ night, but profoundly affected by flow (Moser & Mesa 2009)

Pacific Lamprey Summary

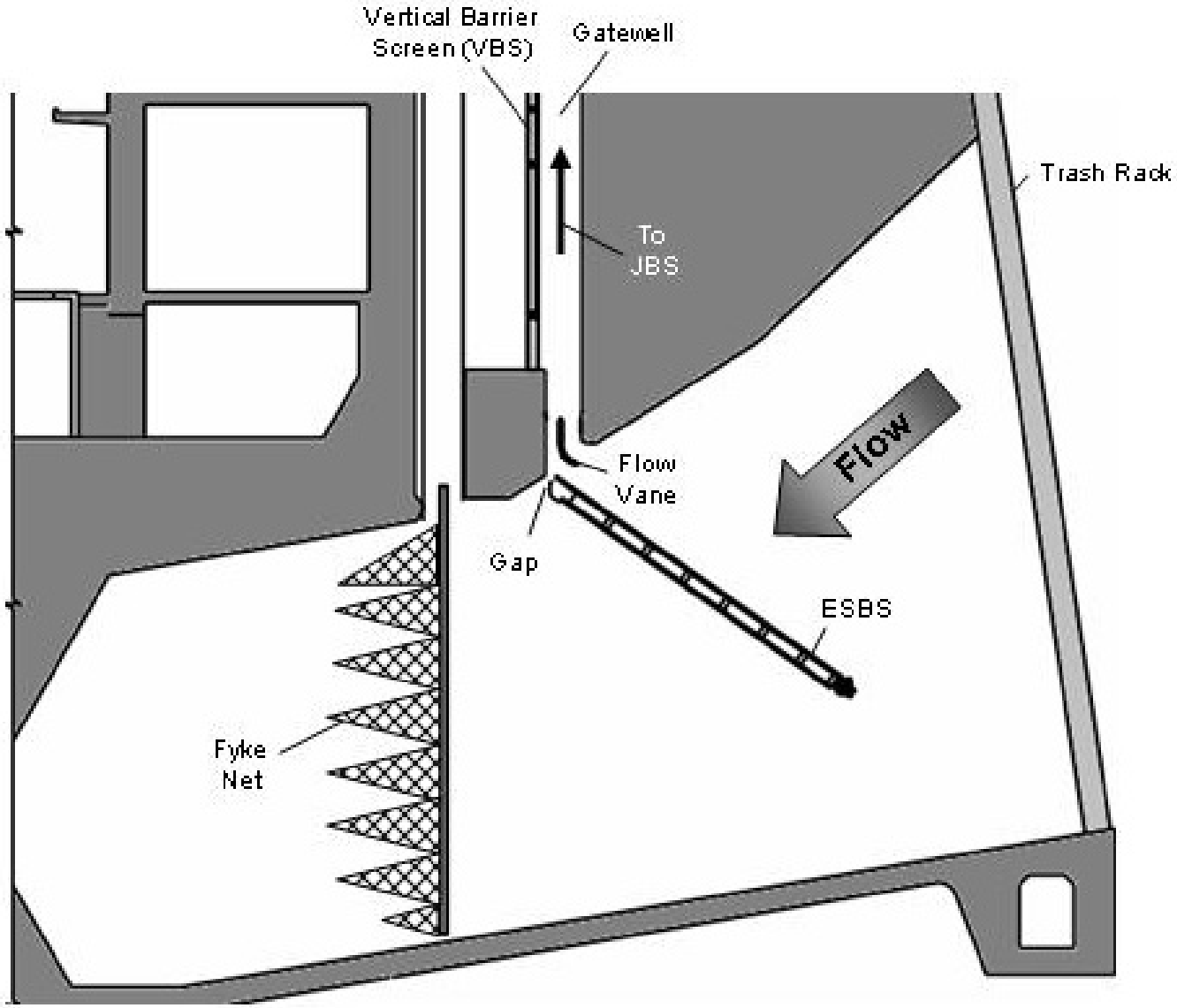
- Snake geographic grouping @ relatively high risk
- >50% of juveniles likely pass Snake projects during May
- Poor swimmers ~ impingement on screens
- No-spill operations would increase juvenile lamprey encounters with screens
- Likely increase risk for a geographic unit already @ relatively high risk category

Questions?

Willamette River




http://www.fws.gov/pacific/Fisheries/
sp_habcon/Lamprey/index.html


Vertical Barrier Screen (VBS)
Gatewell
Trash Rack
To JBS
Flow Vane
FLOW
Gap
ESBS
Fyke Net