

2015 Smolt Monitoring Program Juvenile Passage Data and Noteworthy Events

2015 TMT Year-end Review
December 2, 2015

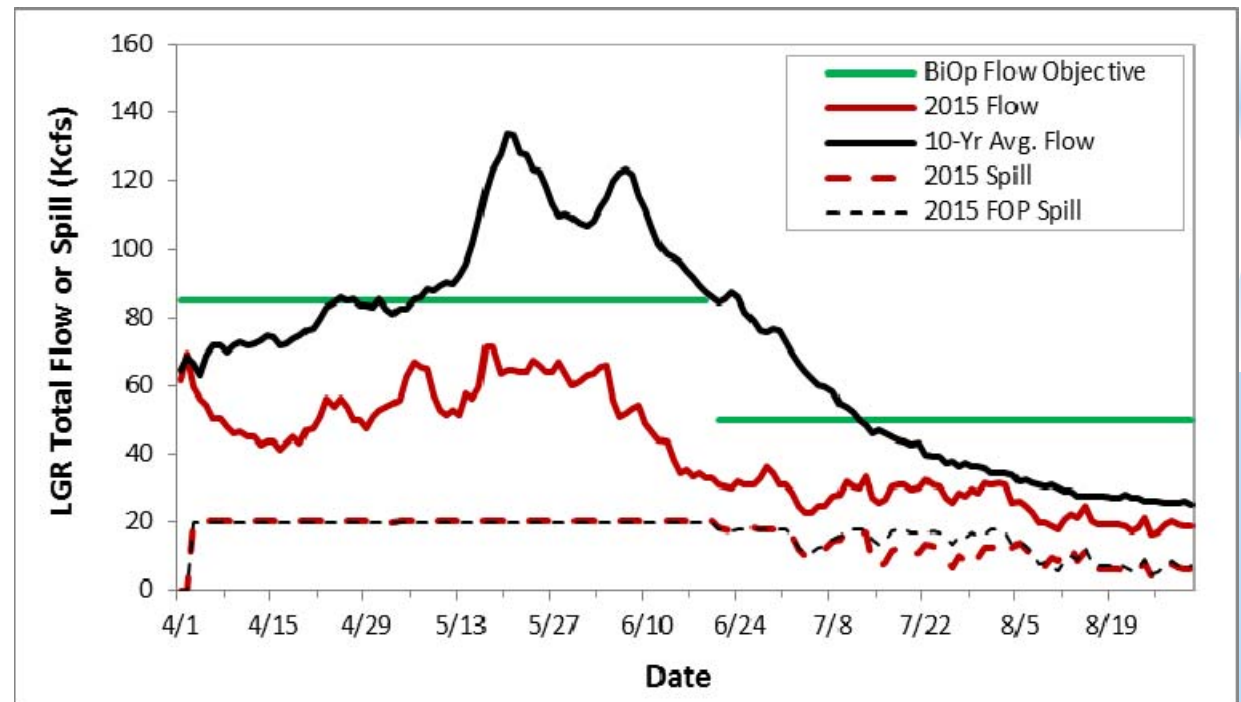
Brandon R. Chockley
Fish Passage Center

Juvenile Timing

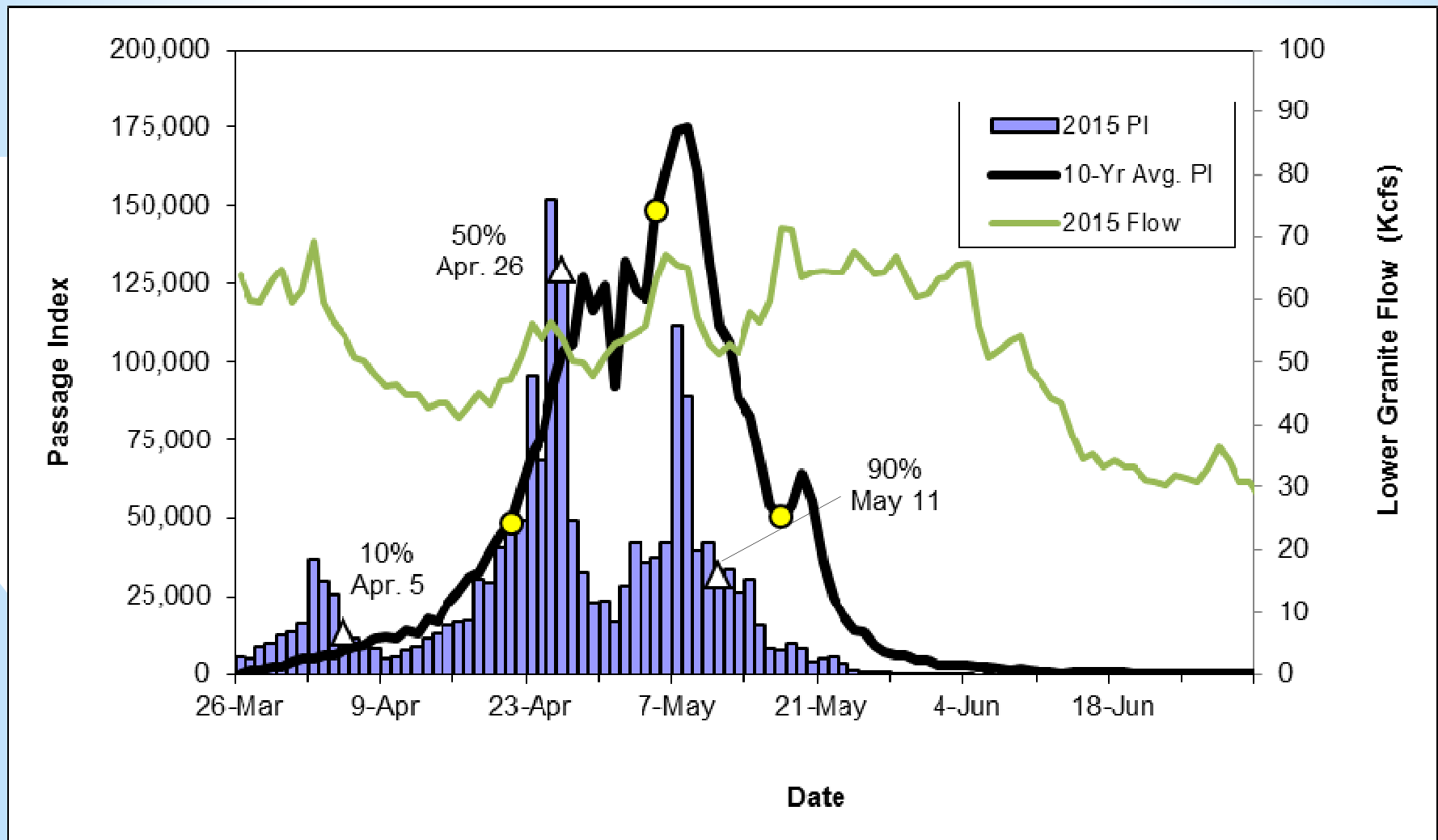
- Presenting 2015 timing compared to 10-year average, based on passage index
- Several factors can affect juvenile timing at a project:
 - Hatchery releases (both magnitude and timing)
 - Flows
 - Temperatures
 - Spill volumes
 - Survival to point of interest
- More detailed analyses are needed to identify and explain timing differences

Lower Granite Dam

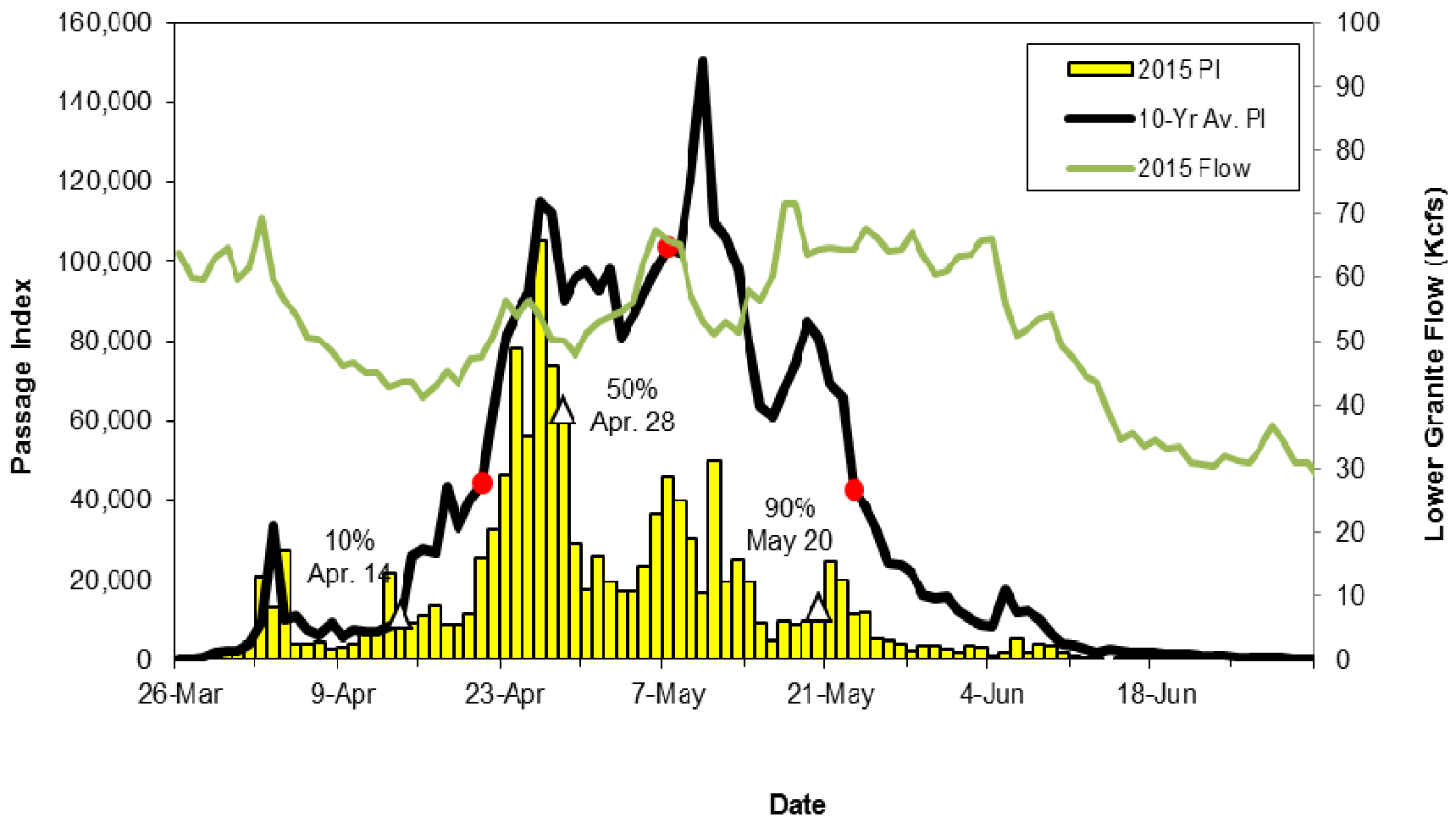
- Snake River runoff volume (Jan-Jul) at LGR ranked 74th over last 87 years
- BiOp flow objectives not met
- No spill in excess of FOP
- Modified operation in July led to reduced spill



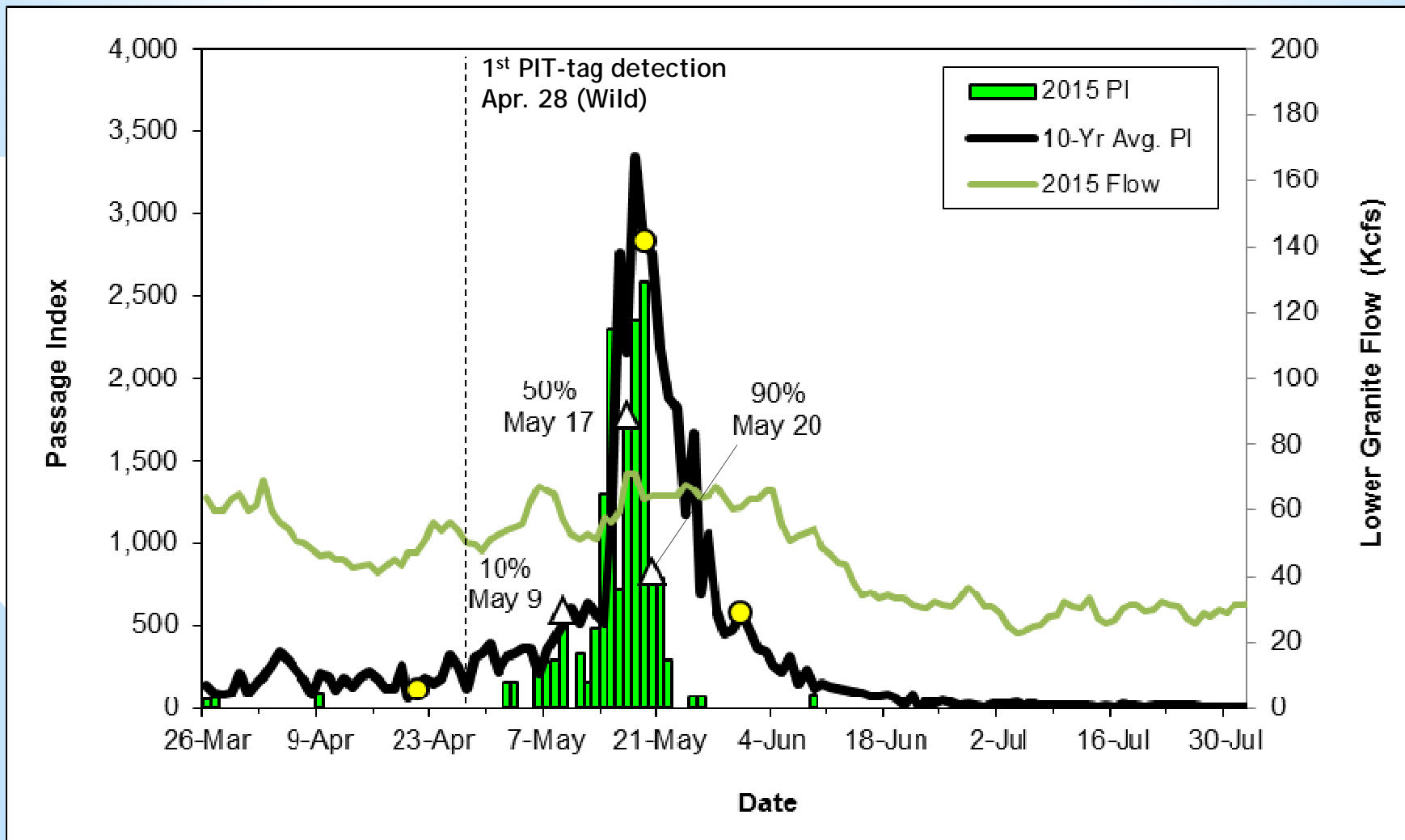
Lower Granite Dam: Yearling Chinook



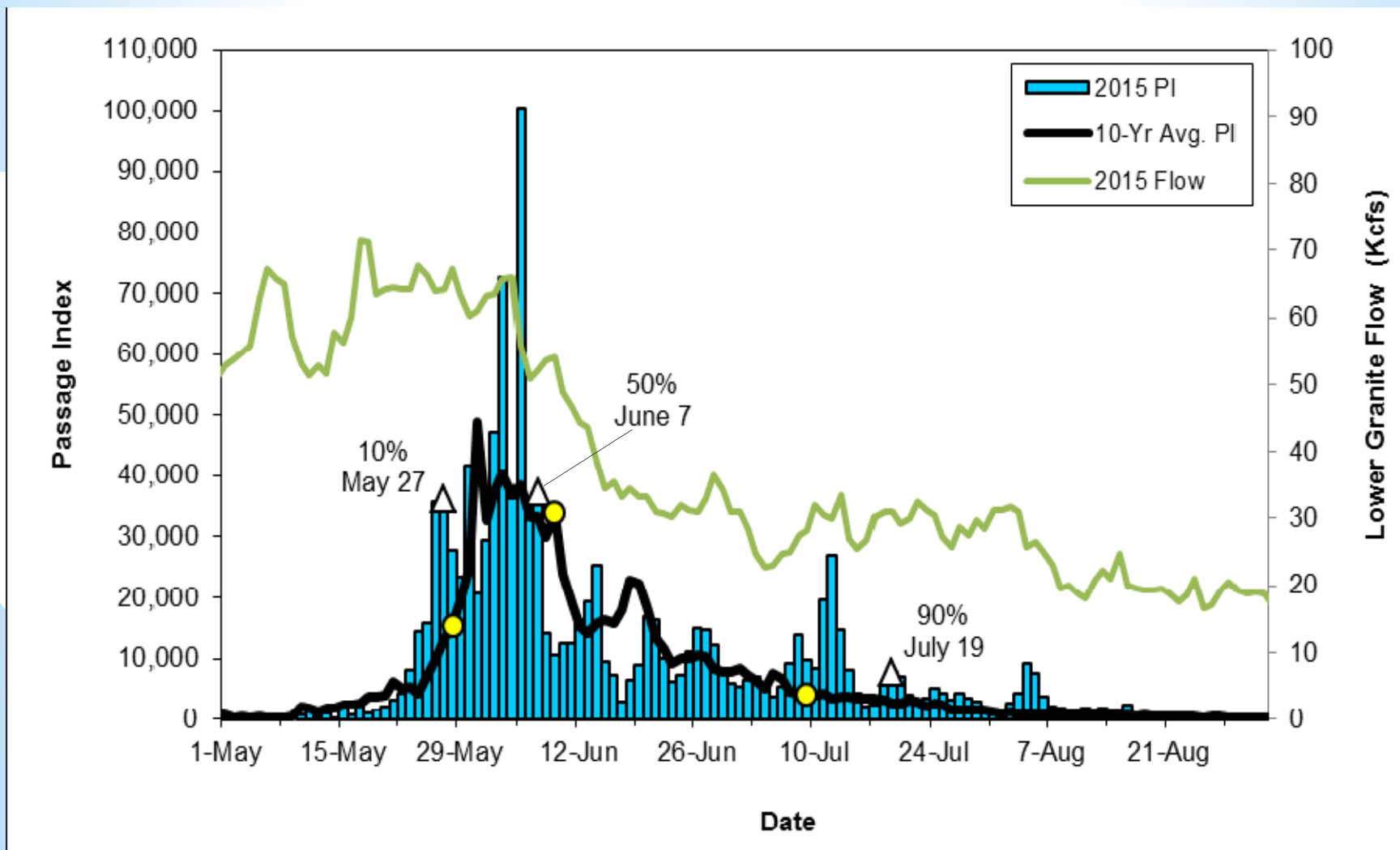
Lower Granite Dam: Steelhead



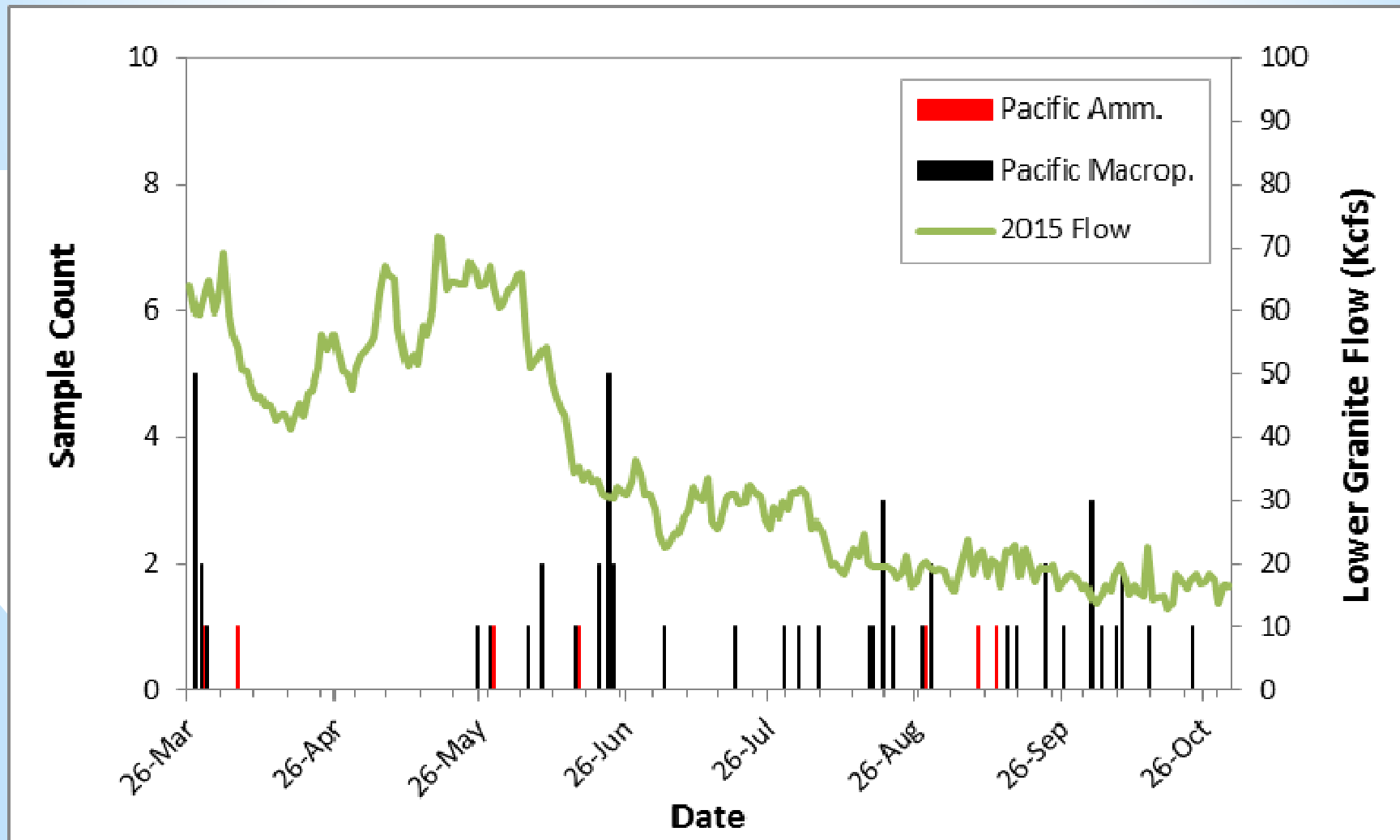
Lower Granite Dam: Sockeye



Lower Granite Dam: Subyearling Chinook

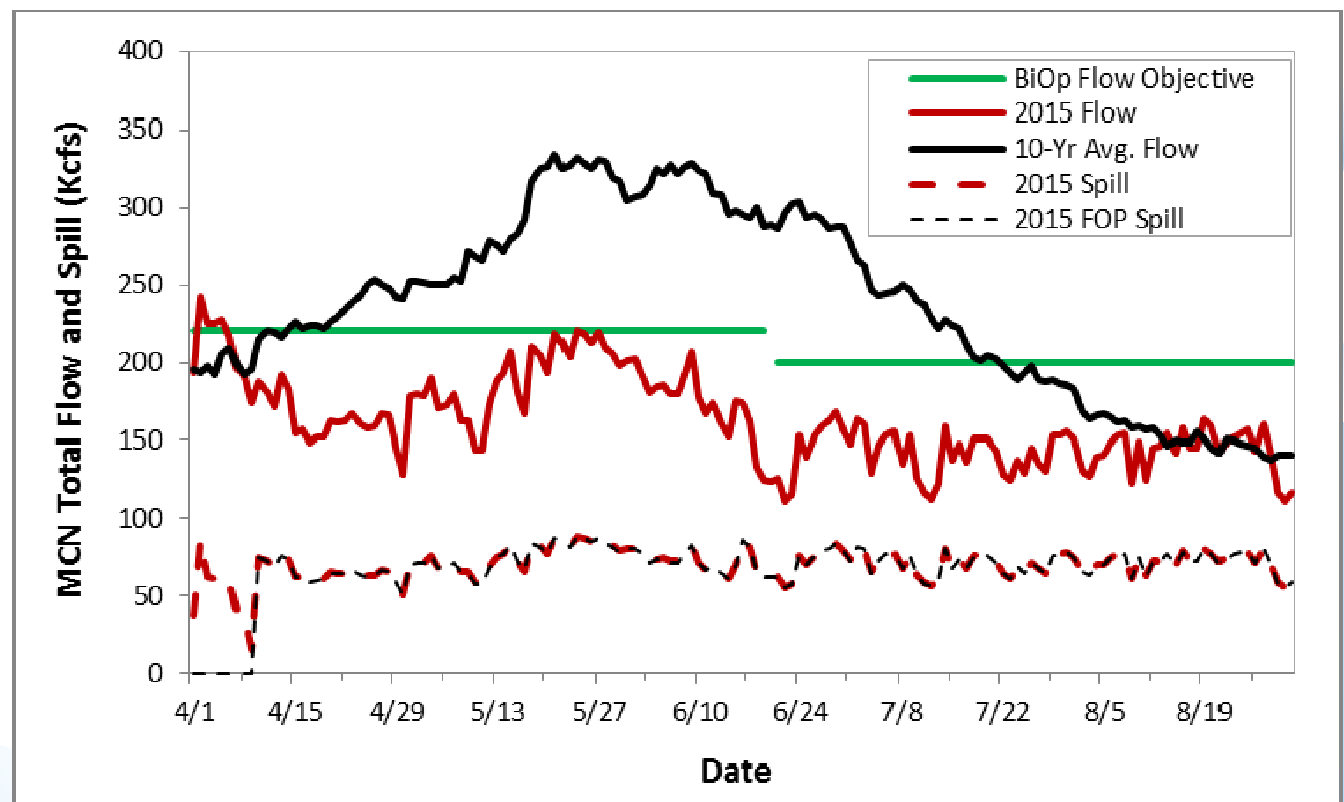


Lower Granite Dam: Larval/Juvenile Lamprey

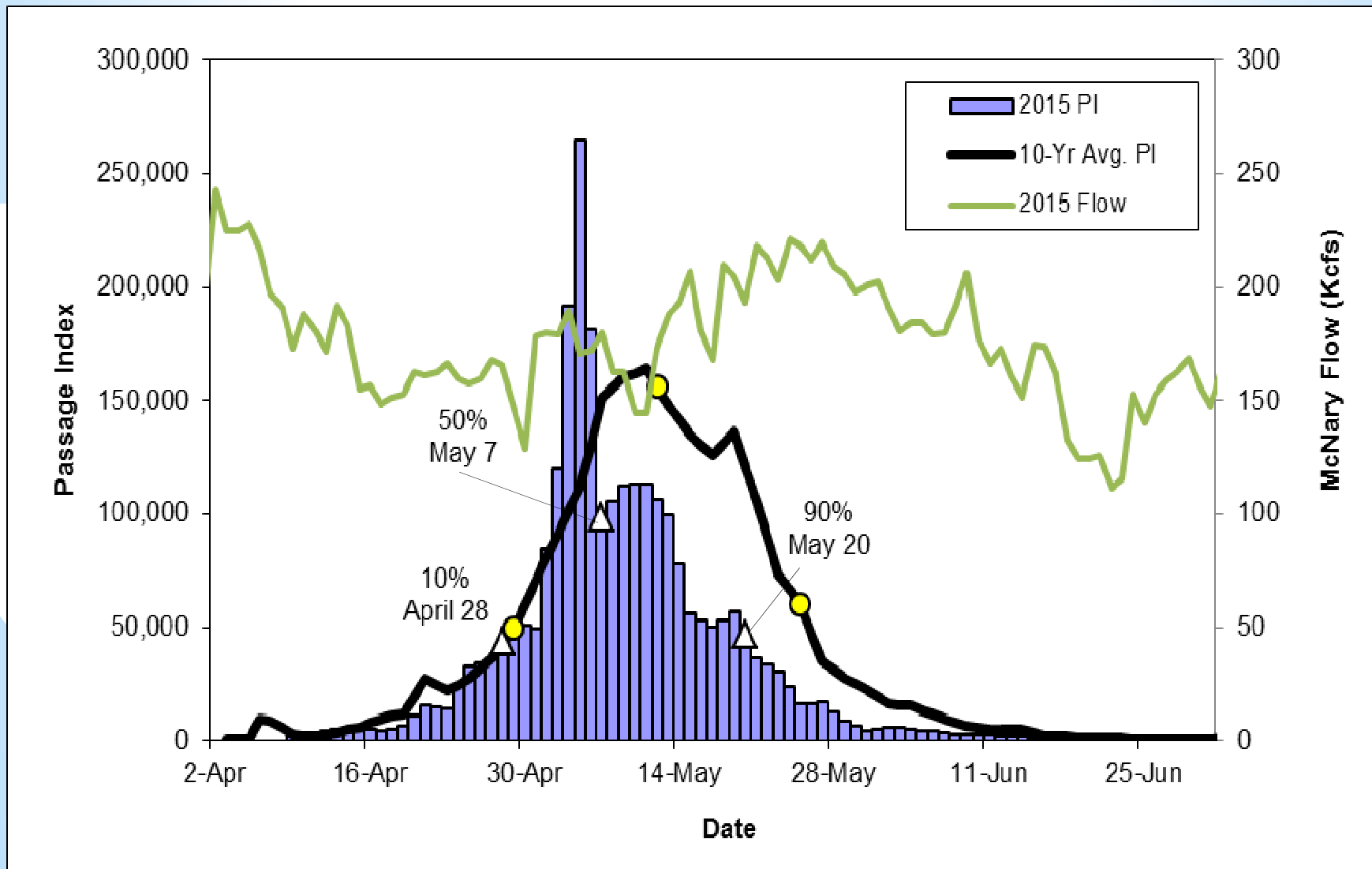


McNary Dam

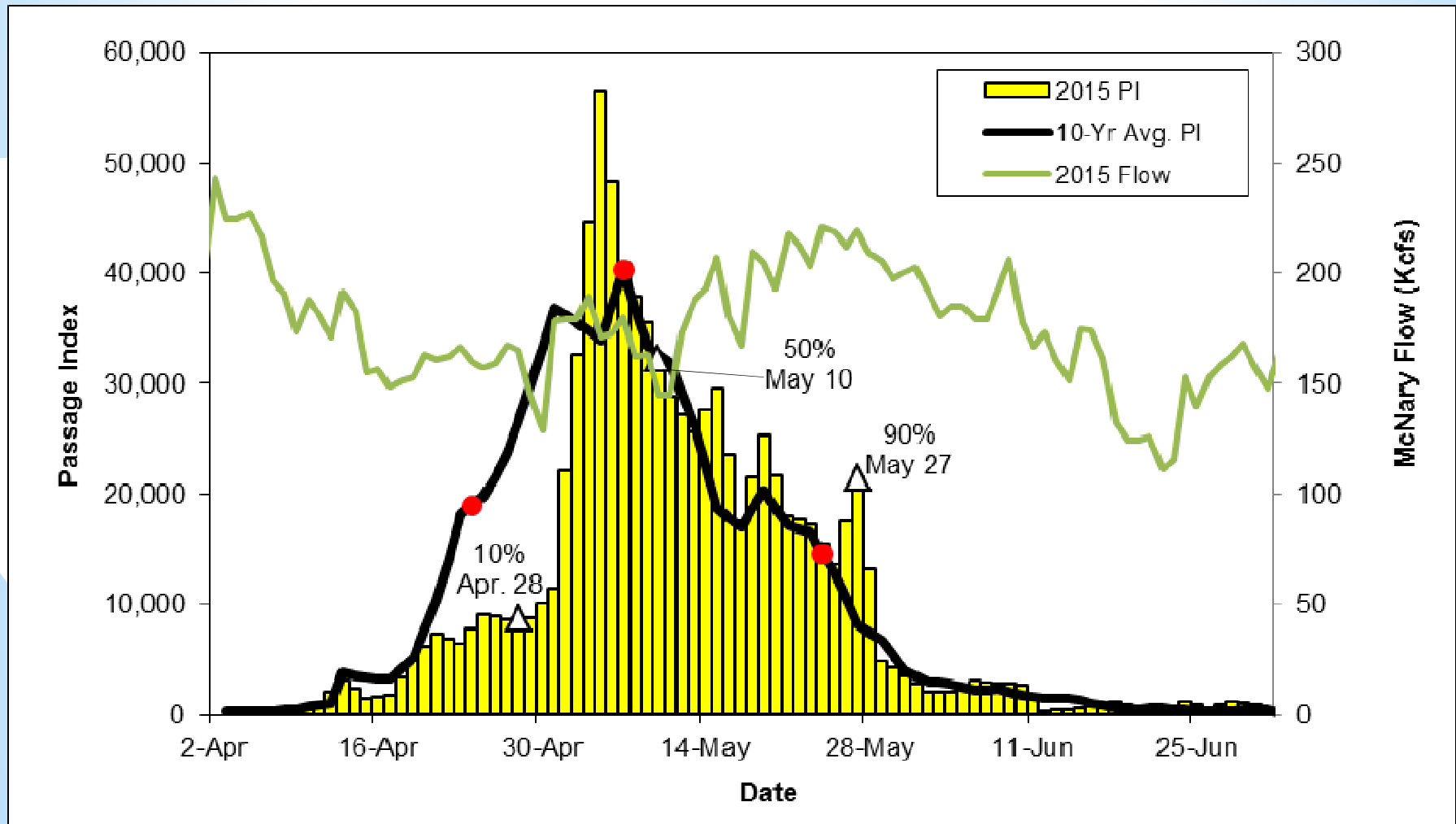
- Mid-Columbia runoff volume (Jan-Jul) at TDA ranked 68th over last 87 years
 - BiOp flow objectives not met
 - FOP spill provided at MCN over entire passage season
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- FOP spill provided at MCN over entire passage season



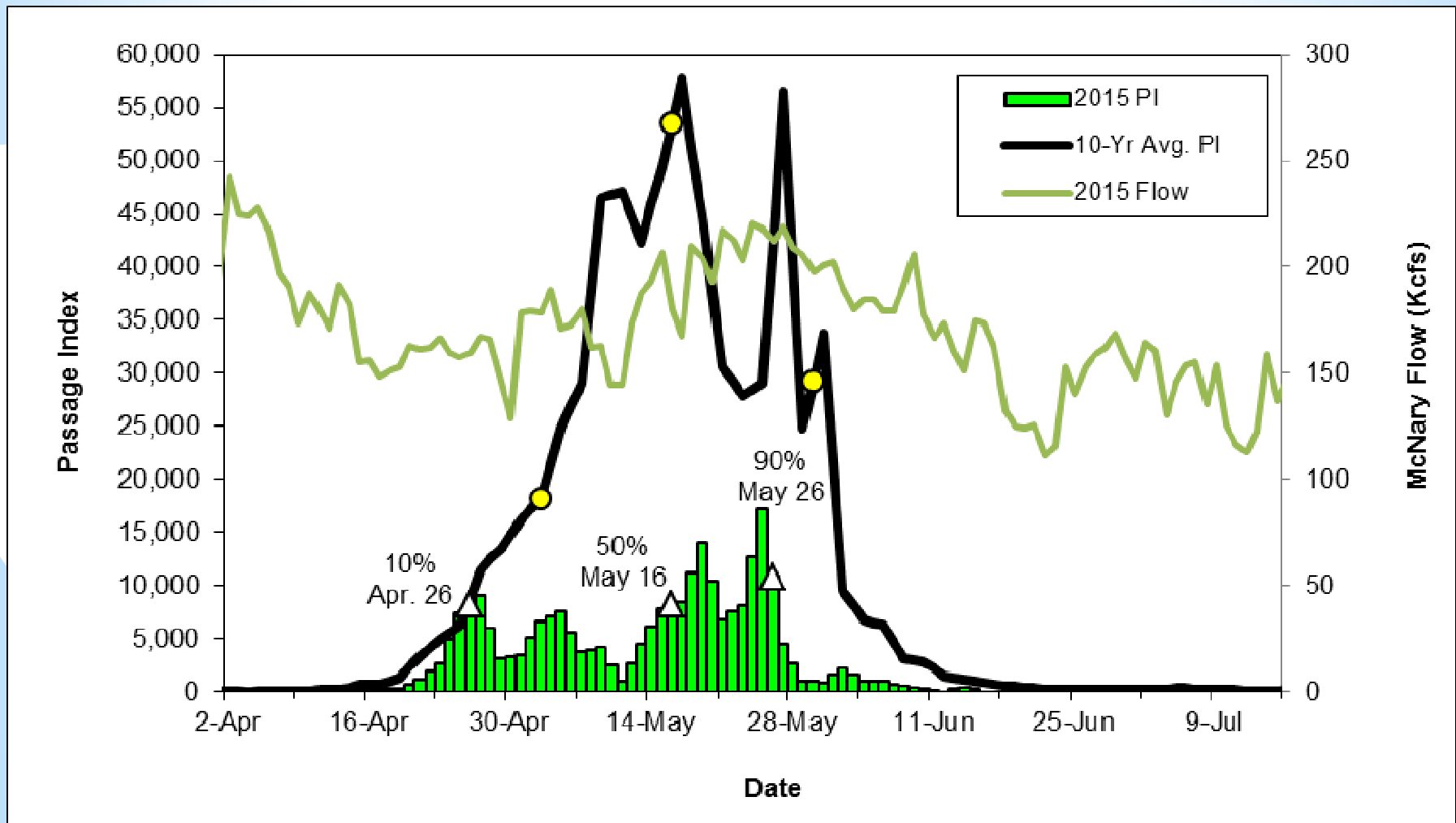
McNary Dam: Yearling Chinook



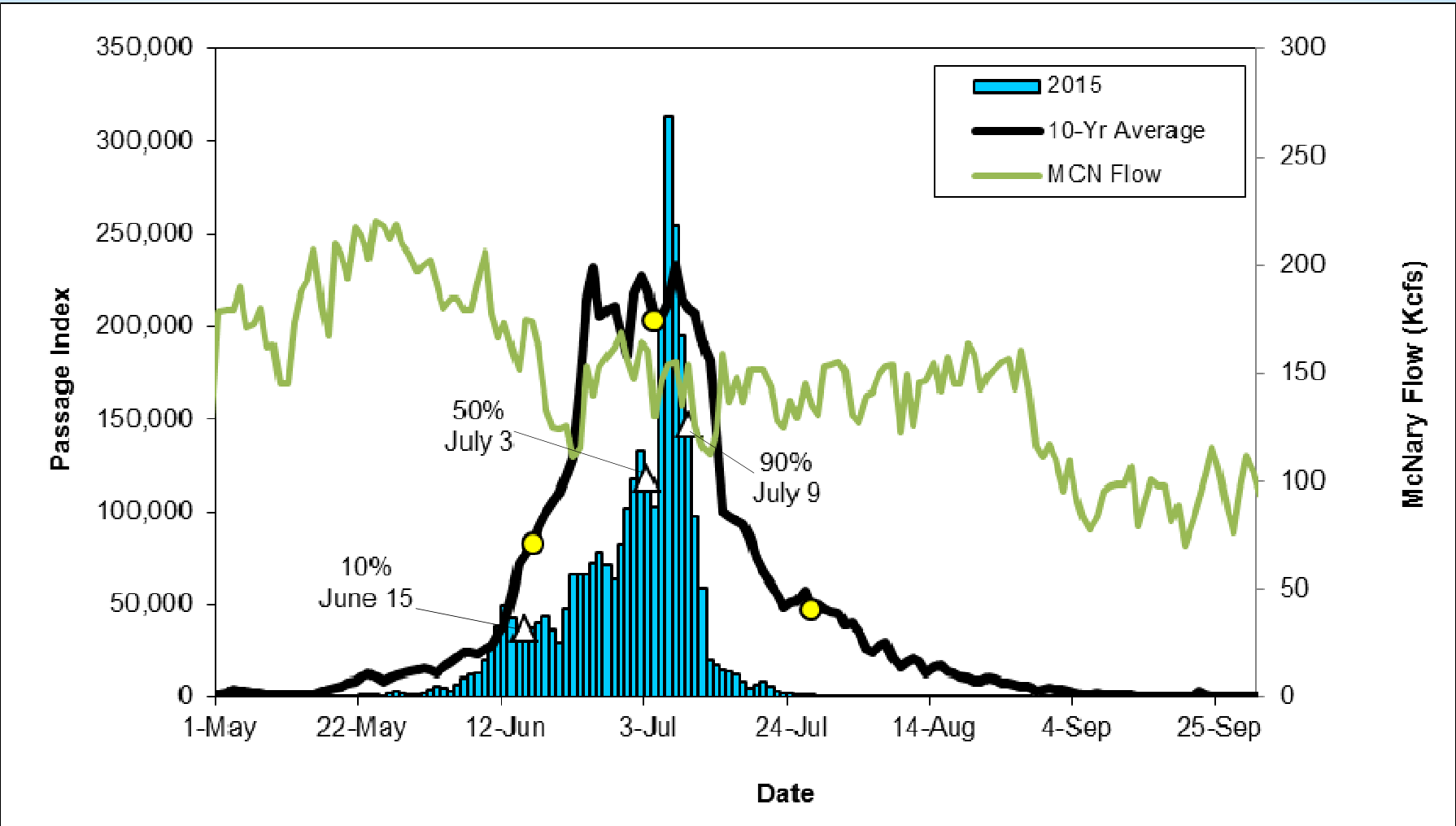
McNary Dam: Steelhead



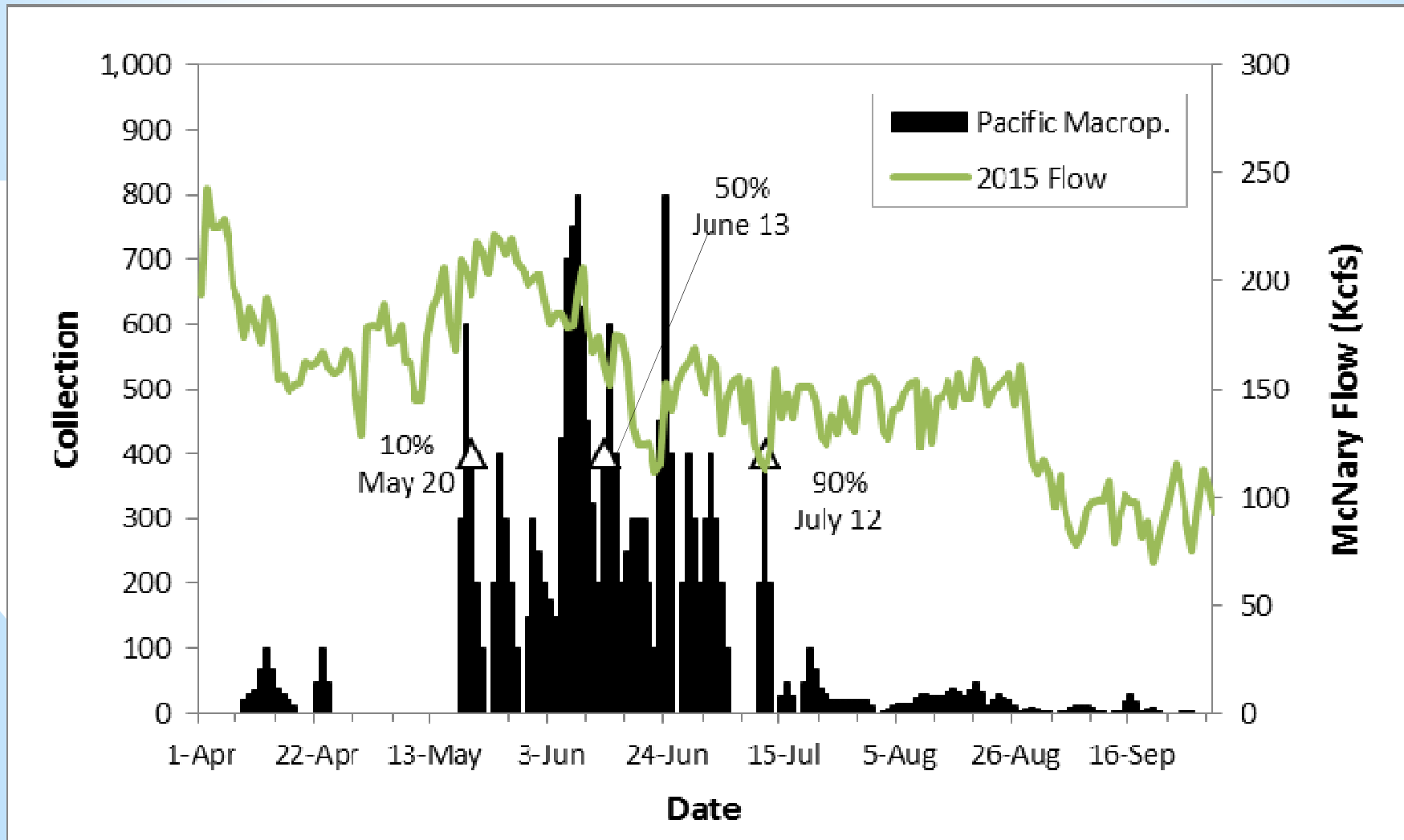
McNary Dam: Sockeye



McNary Dam: Subyearling Chinook

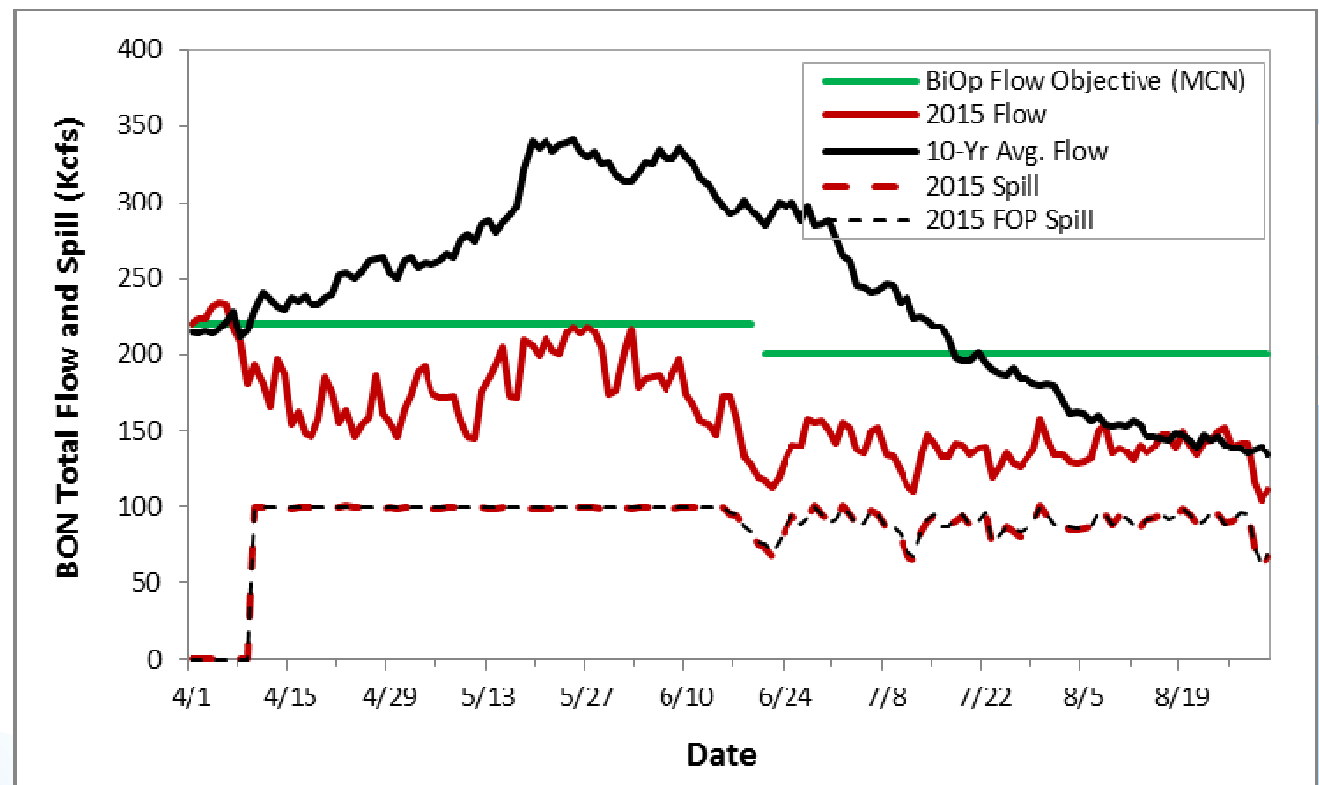


McNary Dam: Juvenile Lamprey

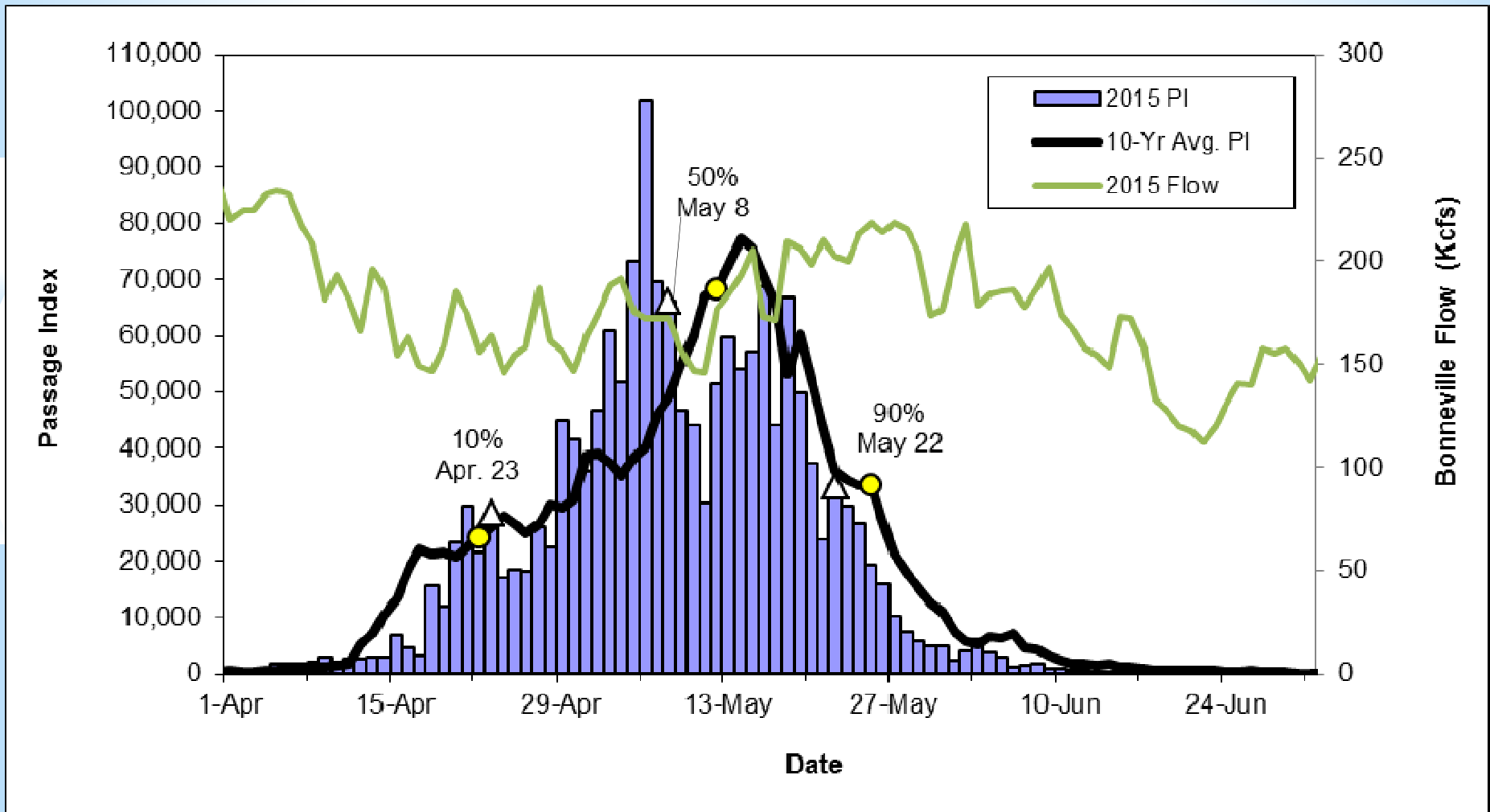


Bonneville Dam

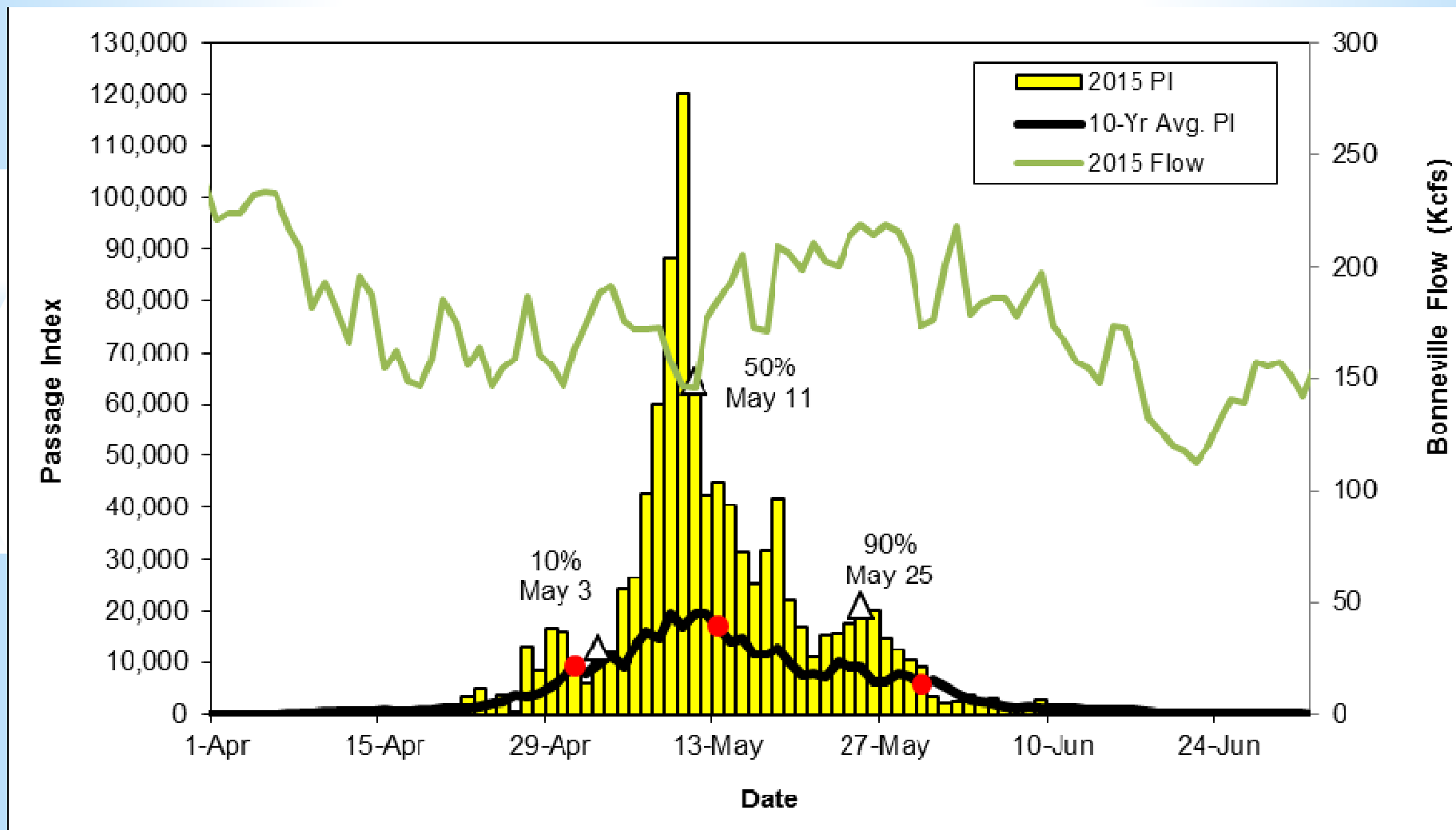
- Mid-Columbia runoff volume ranked 68th over last 87 years (1929-2015) (@ TDA)
- BON flows also below MCN flow objectives
- FOP spill provided over entire passage season



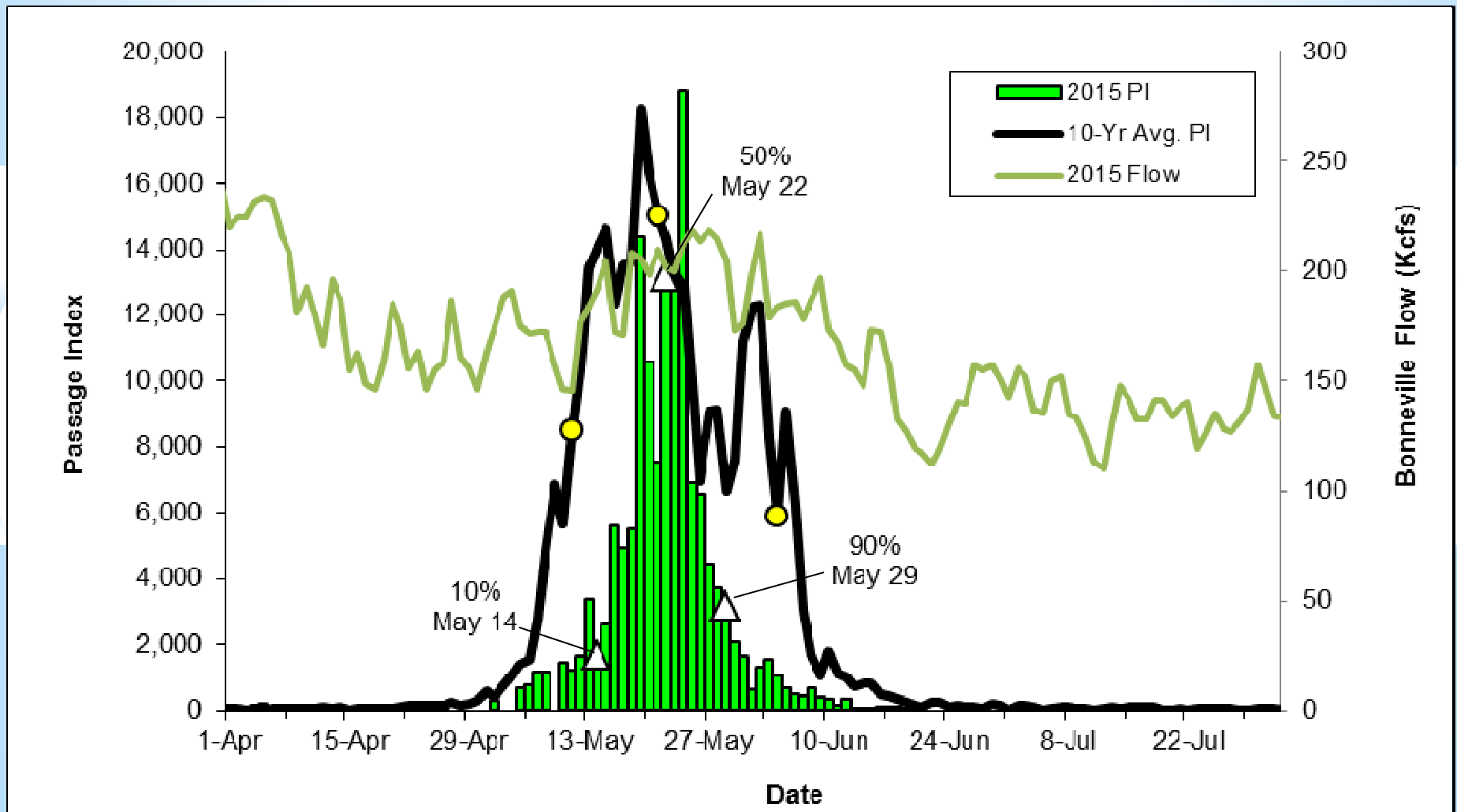
Bonneville Dam: Yearling Chinook



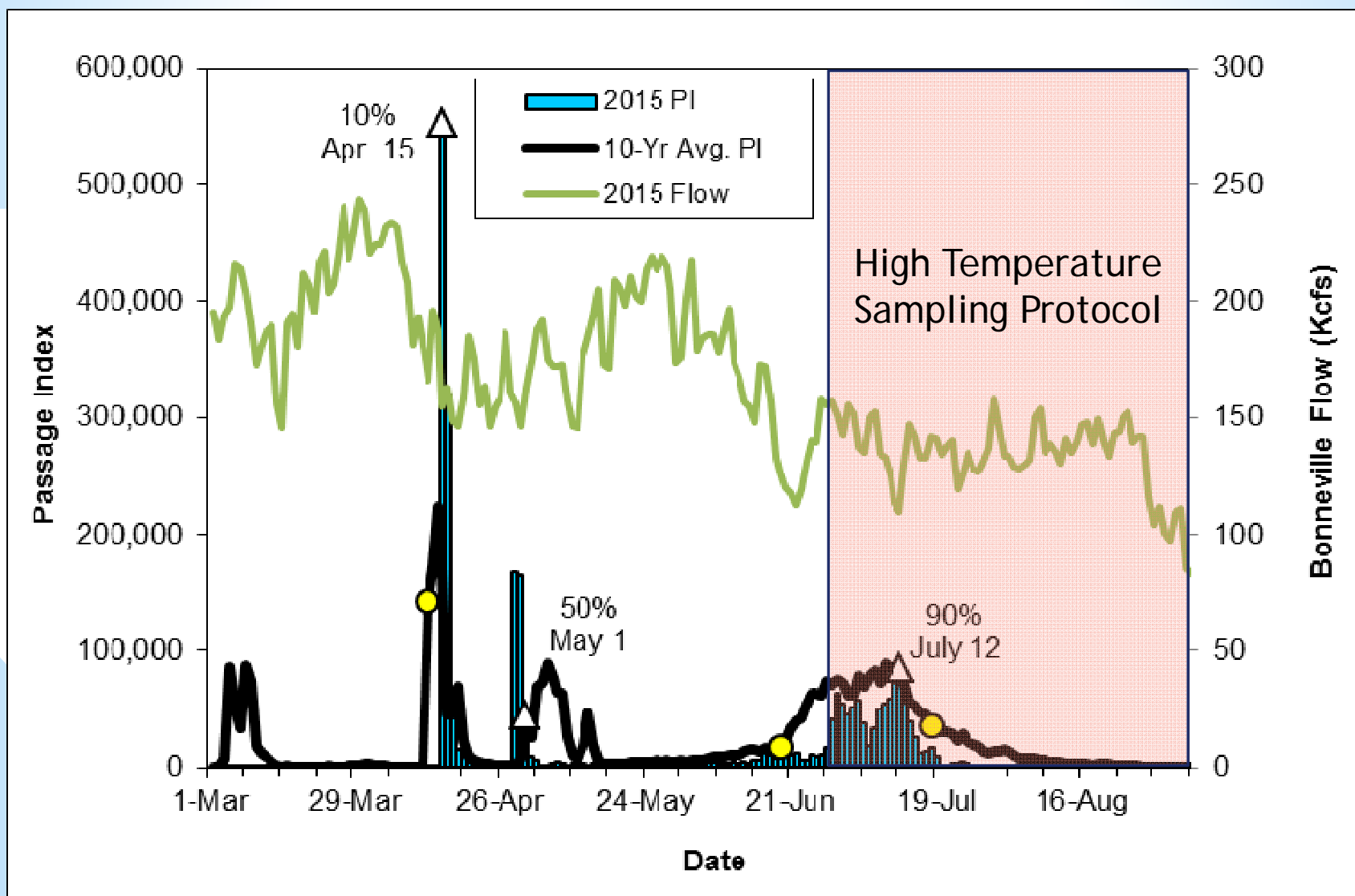
Bonneville Dam: Steelhead



Bonneville Dam: Sockeye



Bonneville Dam: Subyearling Chinook



Bonneville Dam: Larval/Juvenile Lamprey



Noteworthy Events: Weighted Average Mortality

Site	CH0	CH1	CO	SO	ST	MP [†]
LGR	1.2	0.3	0.0	4.2	0.4	N/A
LGS	0.6	0.2	0.0	0.0	0.2	N/A
LMN	0.7	1.0	0.2	N/A	1.3	N/A
MCN	2.9	0.2	0.0	0.3	0.2	N/A
JDA	5.8	0.3	0.2	0.5	0.3	0.7
BON	1.3	0.6	0.5	1.8	0.1	2.6
RIS	0.1	0.0	0.0	0.0	0.0	N/A

[†] Weighted by estimated collection, instead of passage index

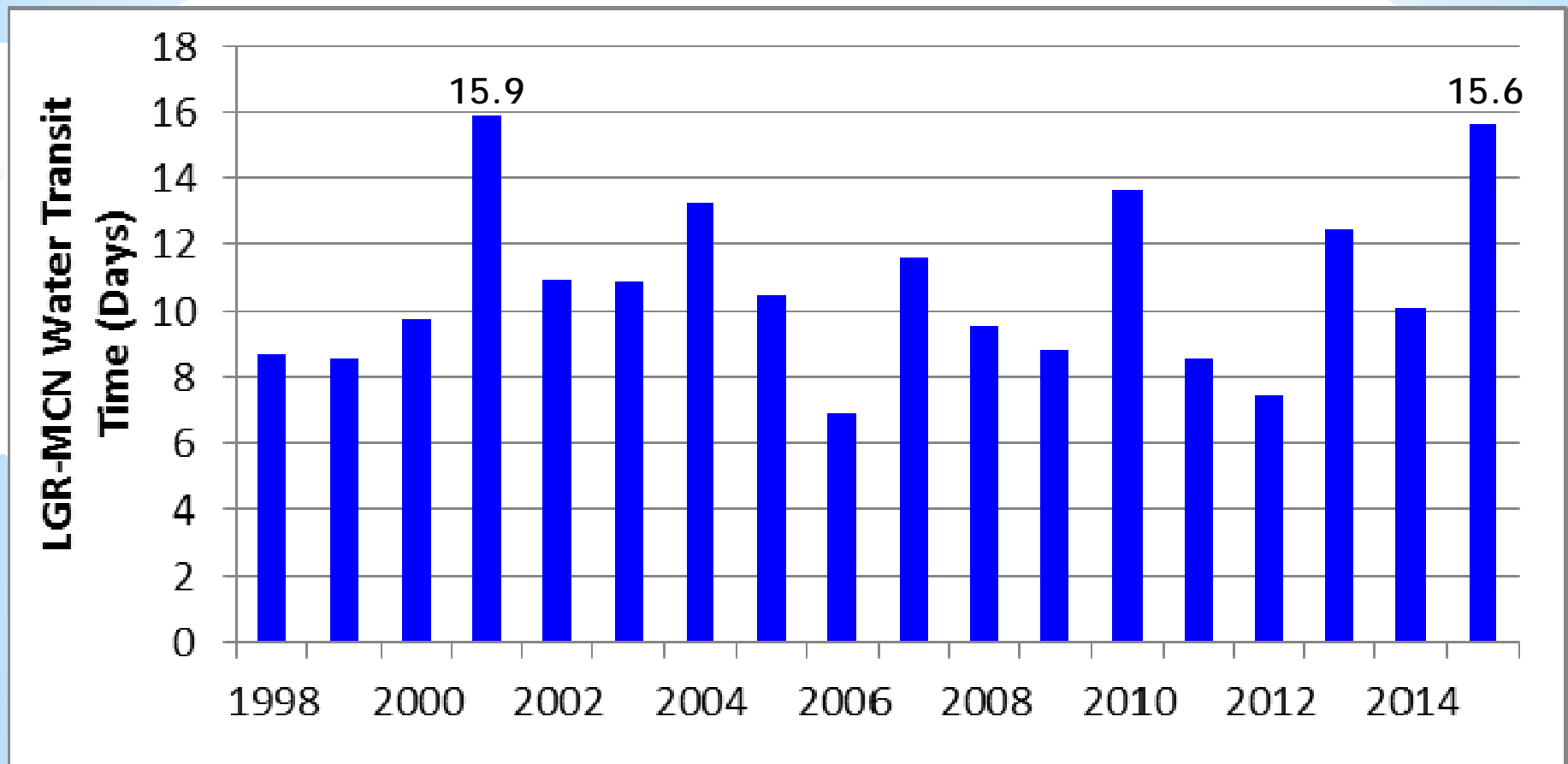
Noteworthy Events: Weighted Average Descaling

Site	CH0	CH1	CO	SO	ST
LGR	0.7	1.4	0.0	5.5	2.4
LGS	0.6	1.2	2.3	0.0	1.7
LMN	1.6	3.1	2.9	N/A	5.4
MCN	1.1	3.0	7.4	5.8	5.5
JDA	0.8	1.8	3.5	3.6	5.0
BON	0.1	2.6	1.2	8.9	2.4
RIS	0.5	0.3	0.4	1.3	0.4

Noteworthy Events:

2015 Survivals vs. Other Low Flow Years

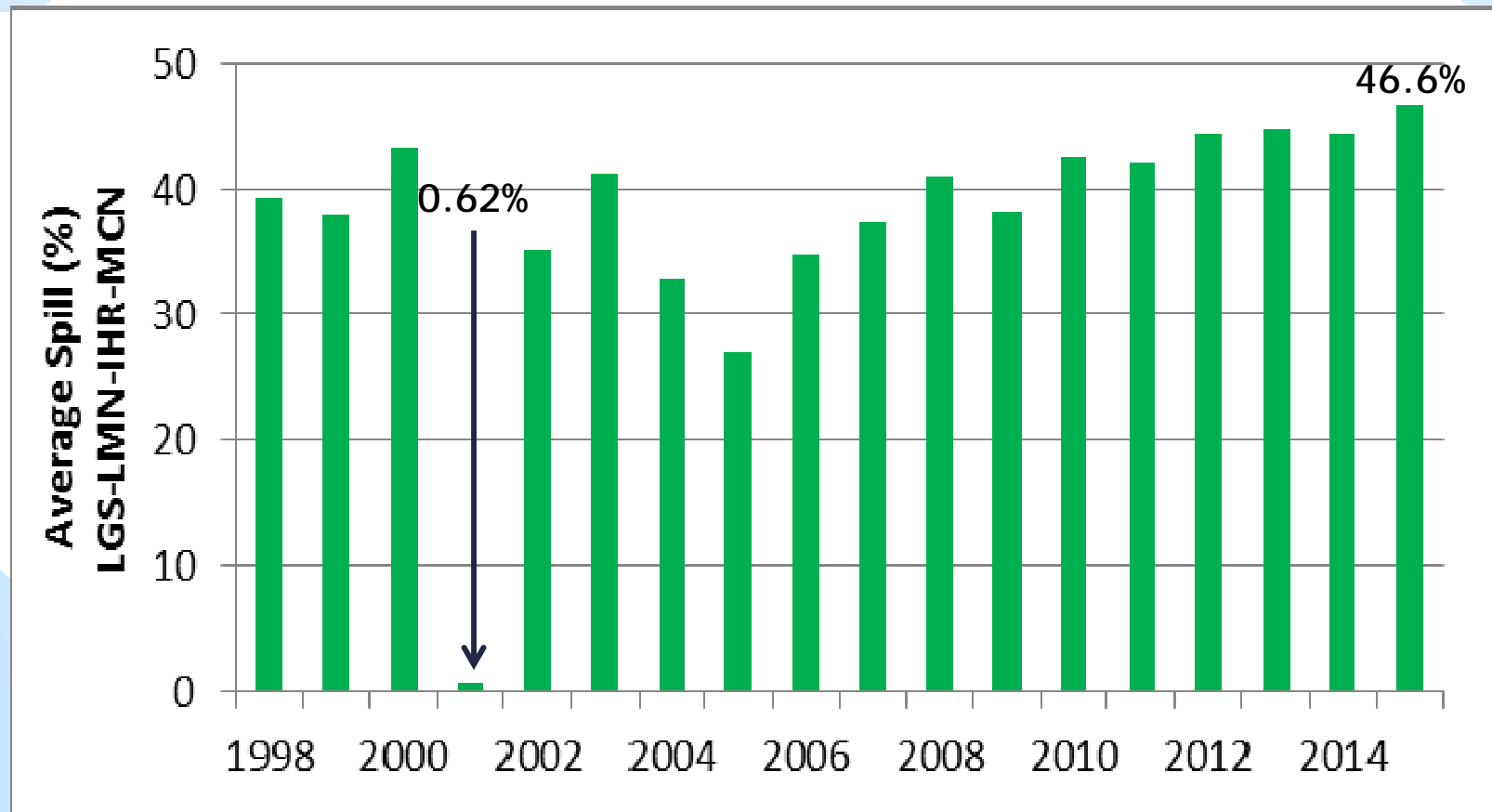
- Just how low were 2015 flows?



Noteworthy Events:

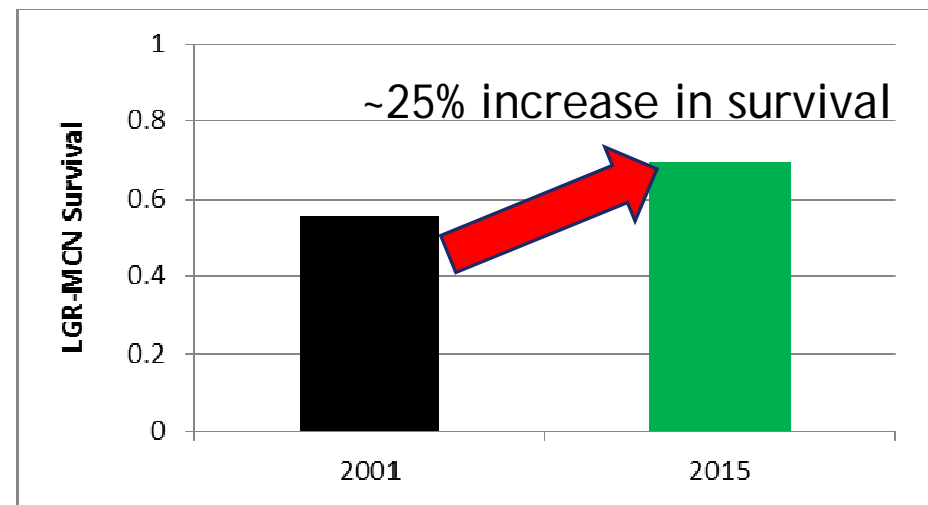
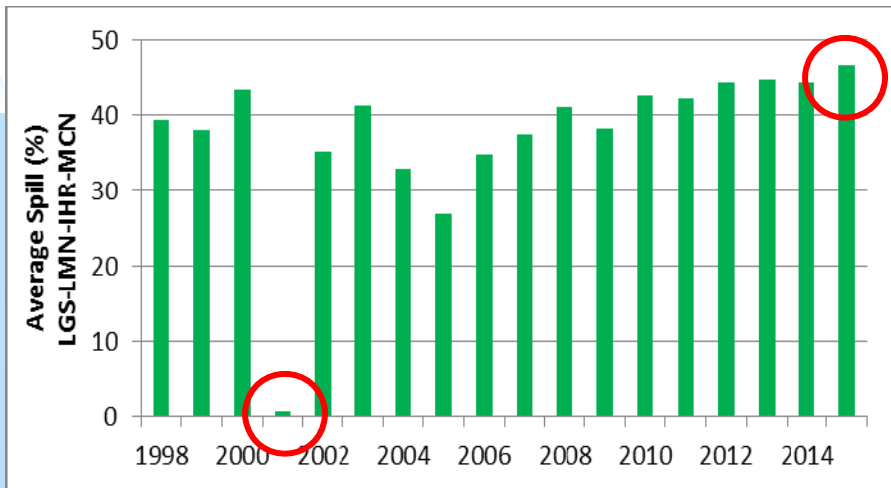
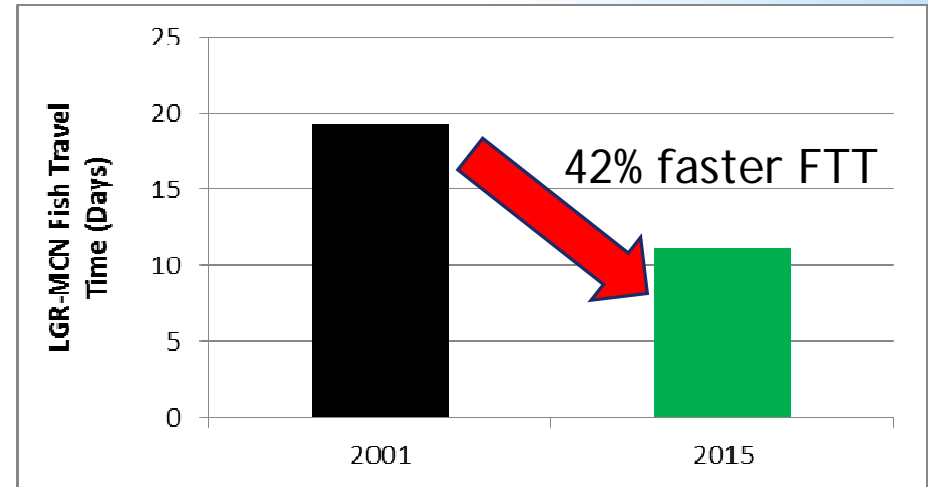
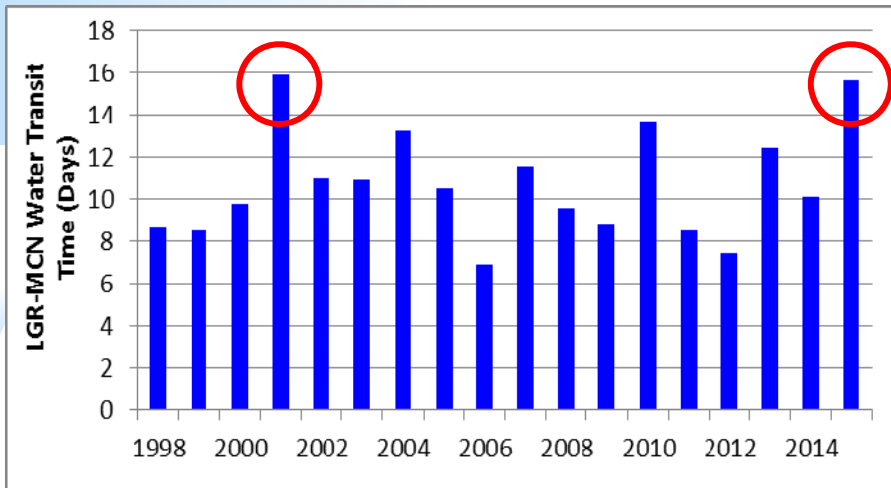
2015 Survivals vs. Other Low Flow Years

- Unlike in 2001, 2015 had voluntary spill at all projects during entire migration season



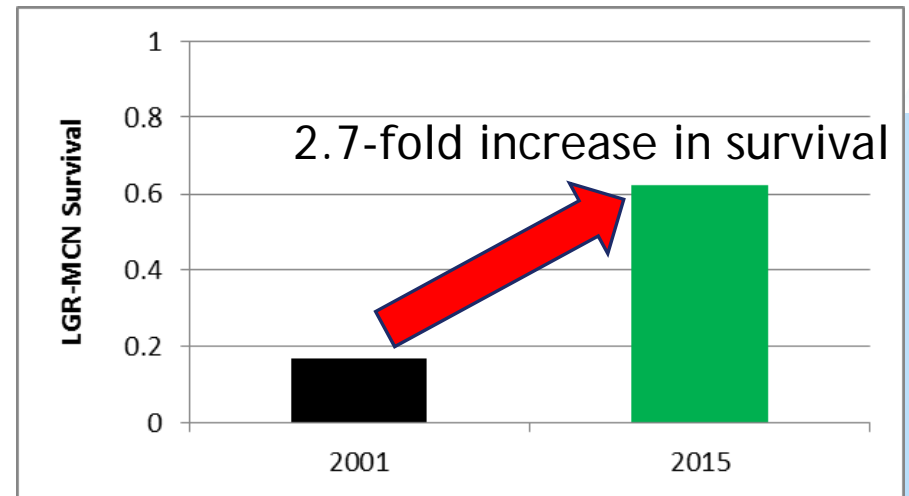
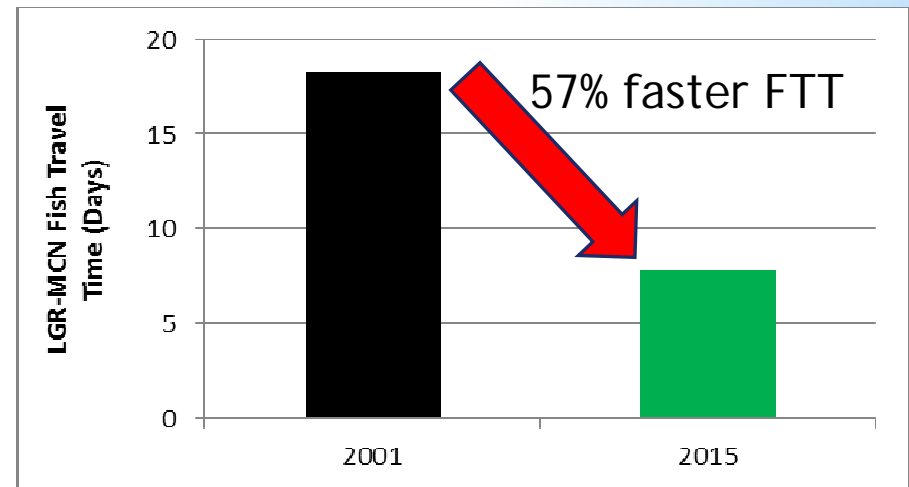
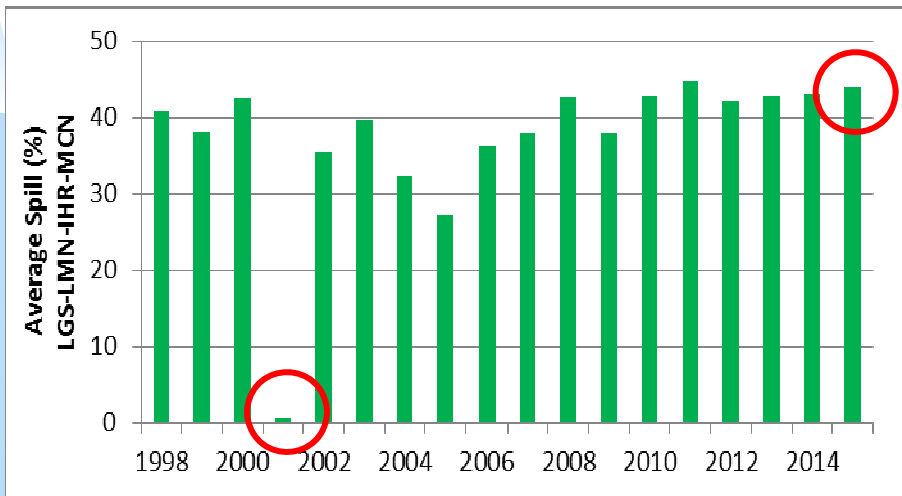
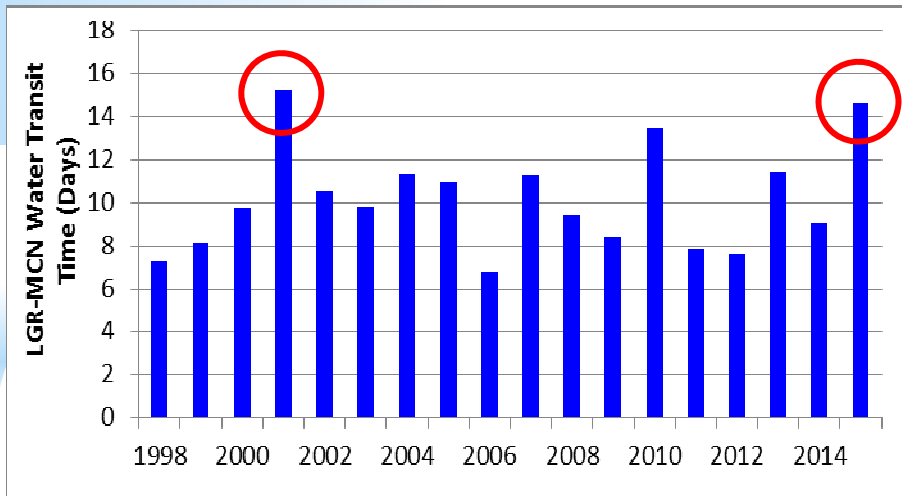
Noteworthy Events: 2015 Survivals vs. Other Low Flow Years

- Yearling Chinook



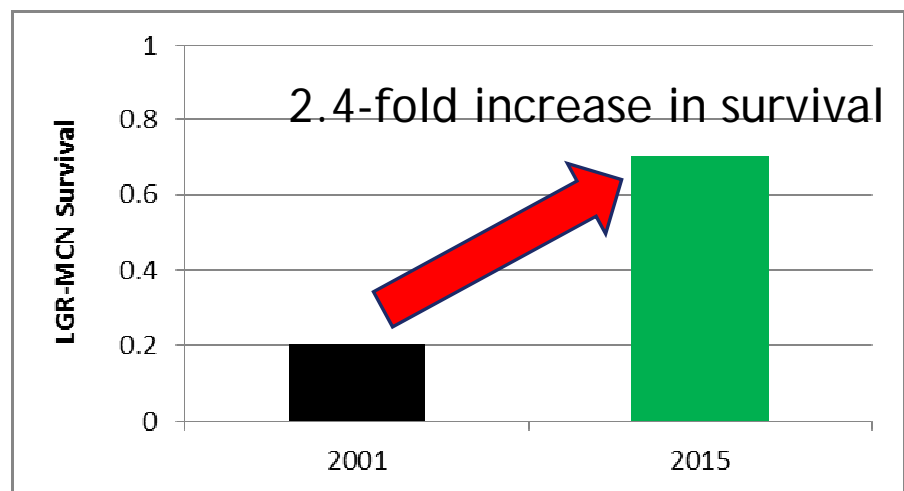
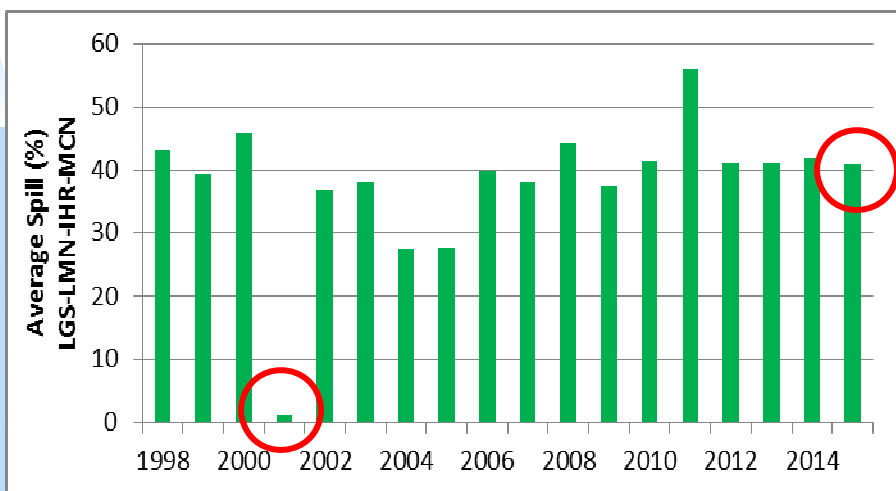
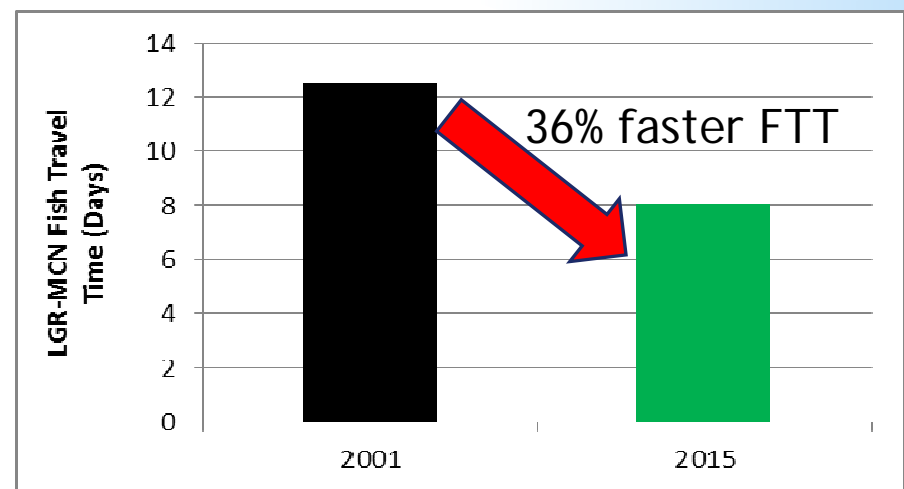
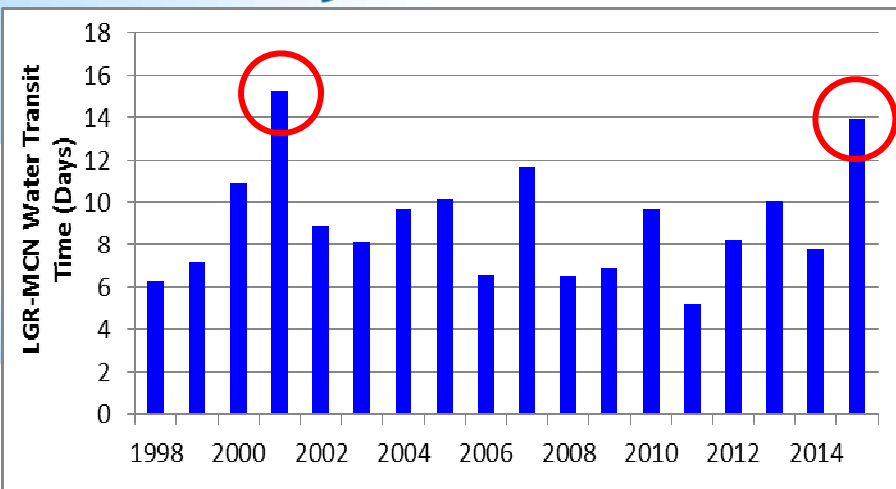
Noteworthy Events: 2015 Survivals vs. Other Low Flow Years

- Steelhead



Noteworthy Events: 2015 Survivals vs. Other Low Flow Years

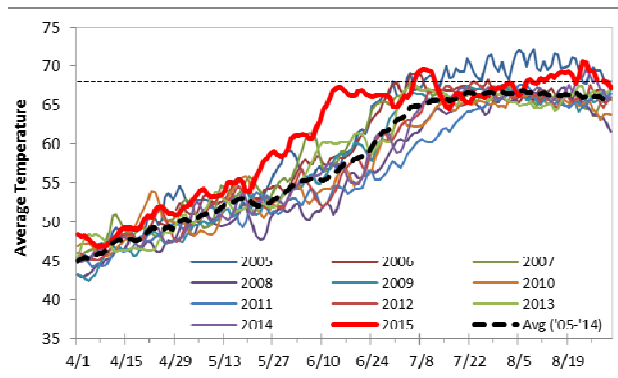
- Sockeye



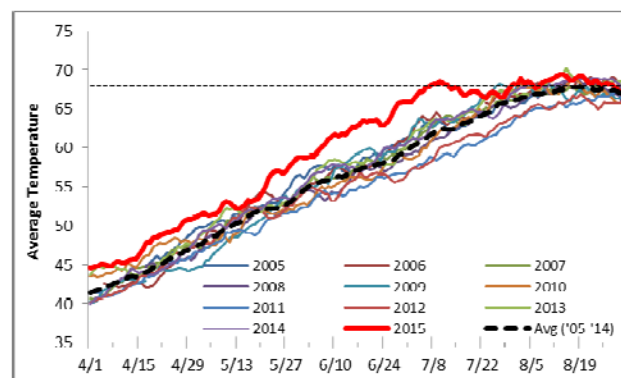
Lessons Learned from 2015 Adult Sockeye Return

- 2015 temps. were higher, earlier than previous 10-years

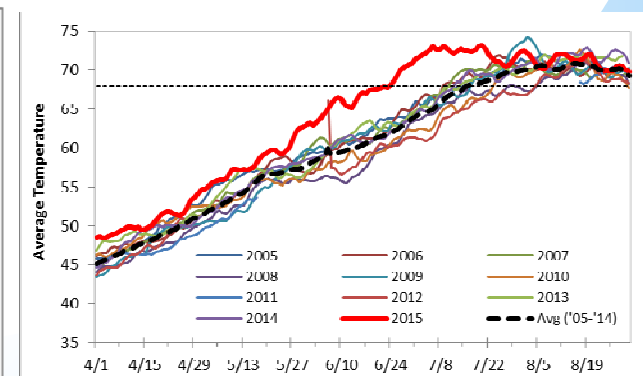
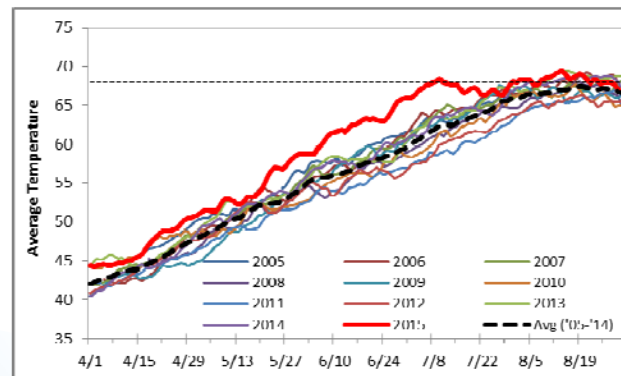
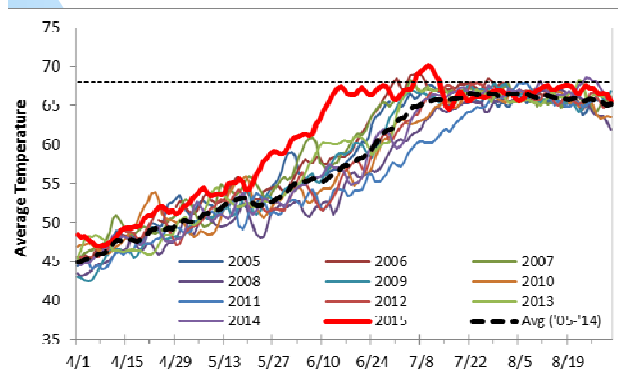
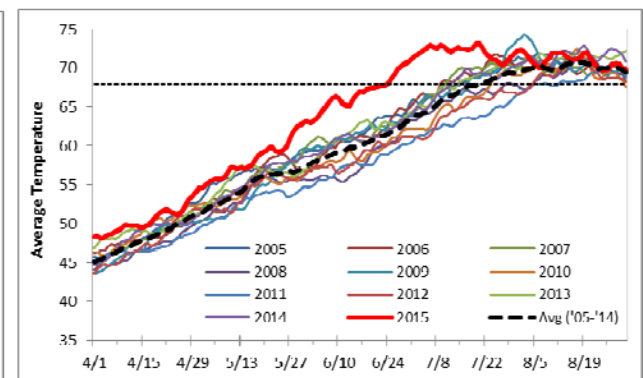
LGR



PRD



BON



Lessons Learned from 2015 Adult Sockeye Return

- 2015 adult survivals lowest for both stocks

Snake River

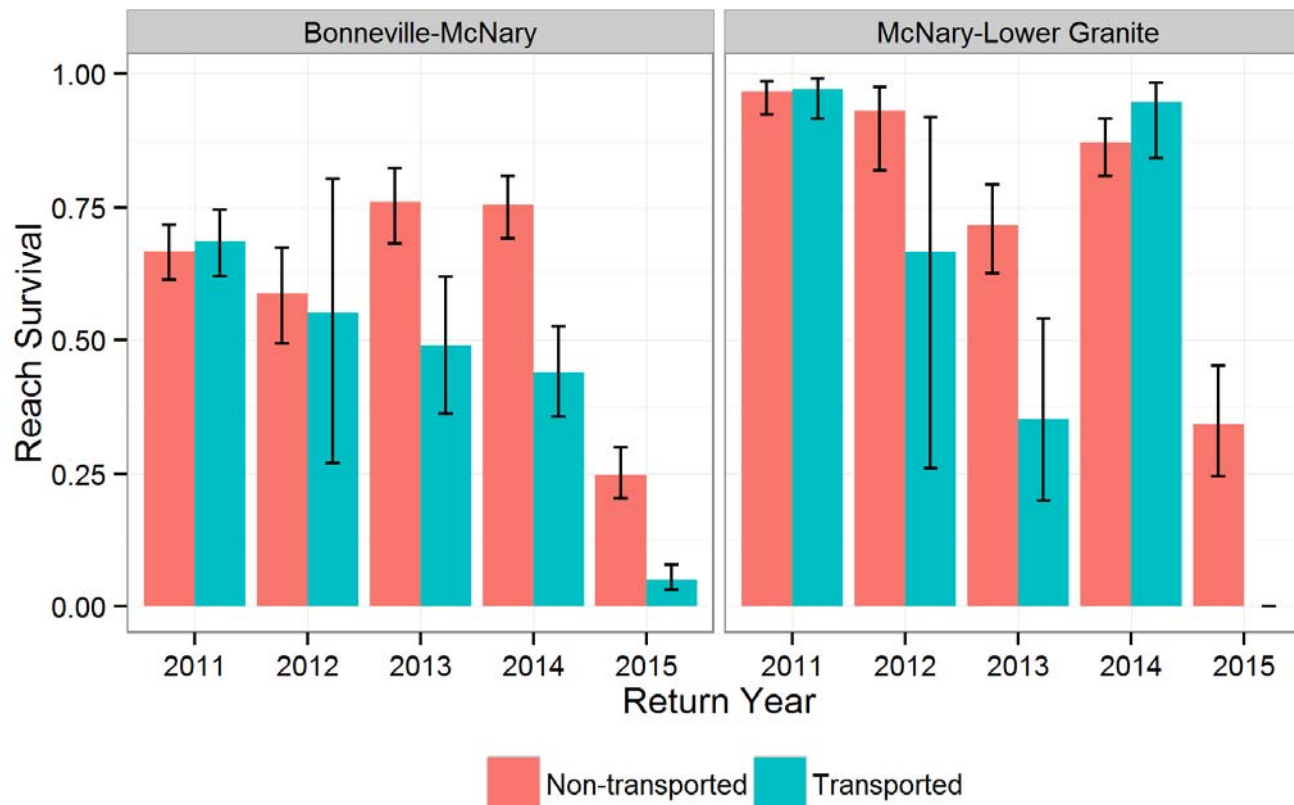
Return Year	BON to MCN	MCN to LGR	BON to LGR
2009	0.74	1.0	0.74
2010	0.85	0.91	0.77
2011	0.67	0.97	0.65
2012	0.58	0.91	0.53
2013	0.68	0.65	0.44
2014	0.64	0.89	0.57
2015	0.15	0.27	0.04

Upper Columbia

Return Year	BON to MCN	MCN to RIS	BON to RIS
2009	0.80	0.94	0.75
2010	0.82	0.95	0.77
2011	0.69	0.86	0.59
2012	0.72	0.93	0.67
2013	0.79	0.89	0.70
2014	0.87	0.91	0.80
2015	0.61	0.76	0.46

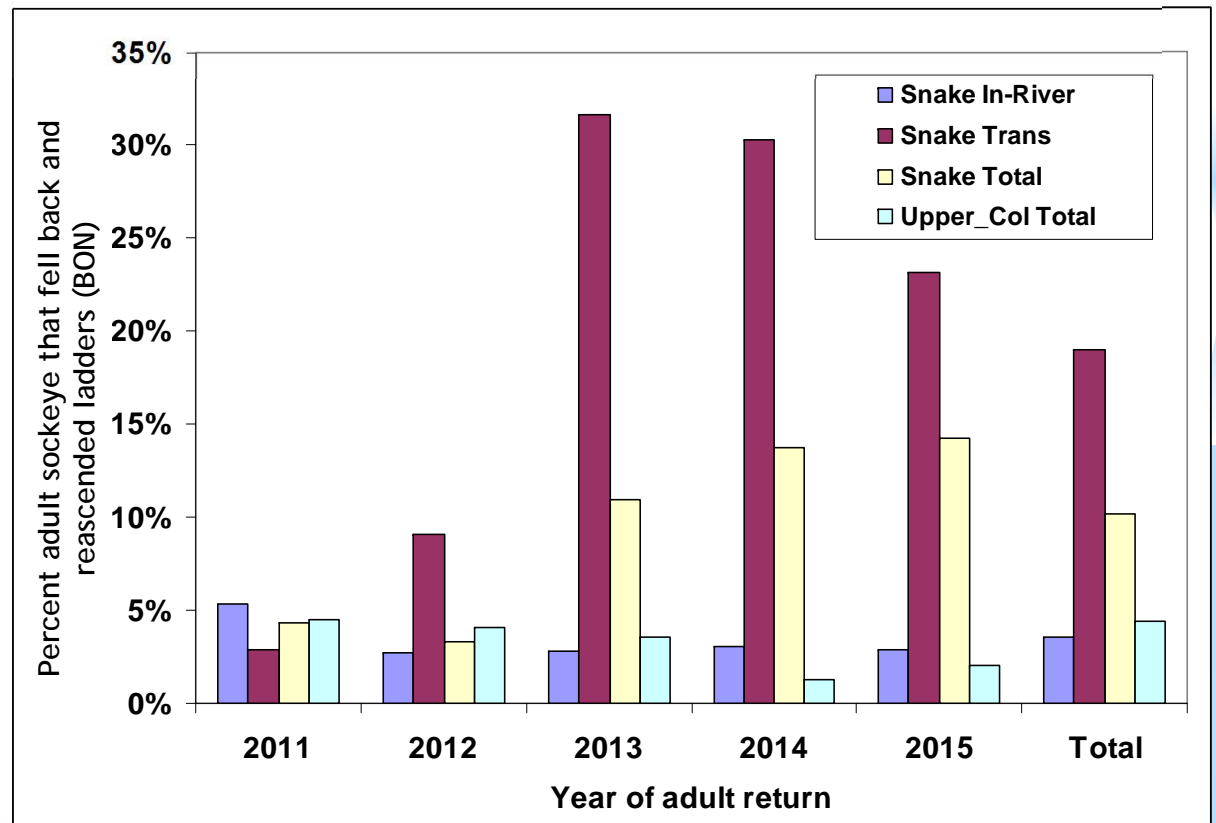
Lessons Learned from 2015 Adult Sockeye Return

- Sockeye transported as juveniles have lower adult survival than in-river migrants



Lessons Learned from 2015 Adult Sockeye Return

- SR sockeye transported as juv. have higher fallback rates than in-river migrants and UCOL sockeye



Lessons Learned from 2015 Adult Sockeye Return

- Accounting for transportation and differences in timing largely explained differences in adult survival between SR and UCOL sockeye

Lessons Learned from 2015 Adult Sockeye Return

