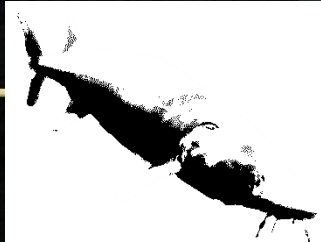


ERTWG Meeting

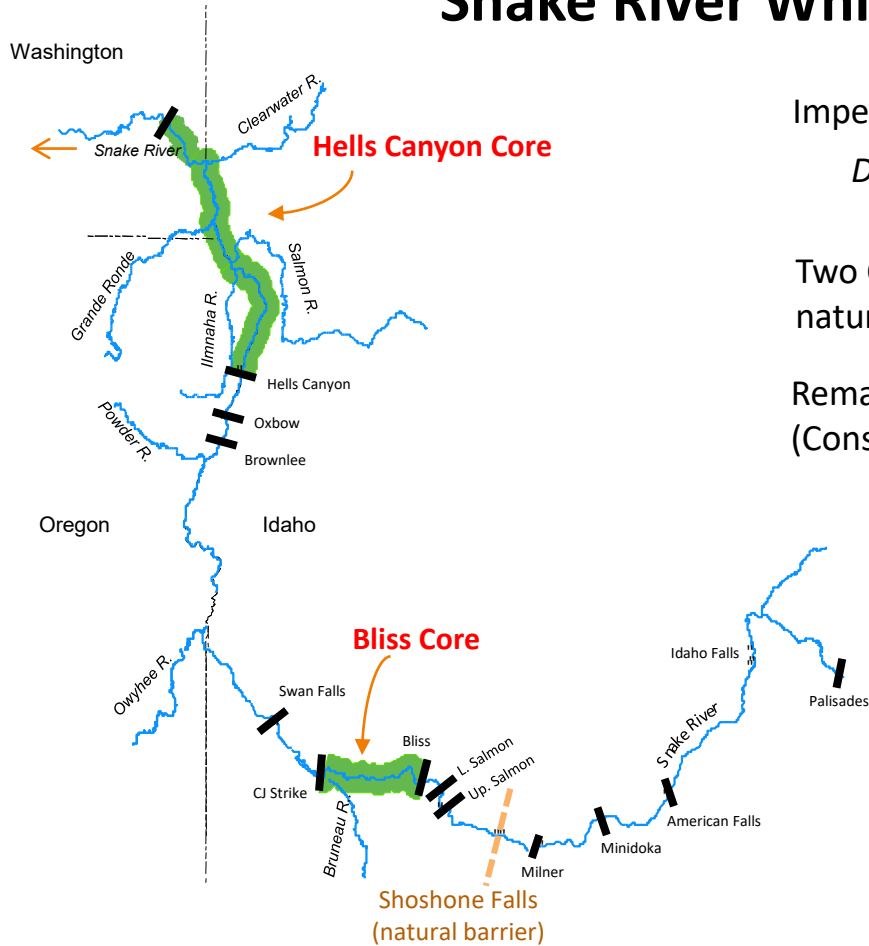
April 21, 2021



White Sturgeon Program

Ken Lepla
Idaho Power Company

Snake River White Sturgeon



Imperiled (ID state designation)

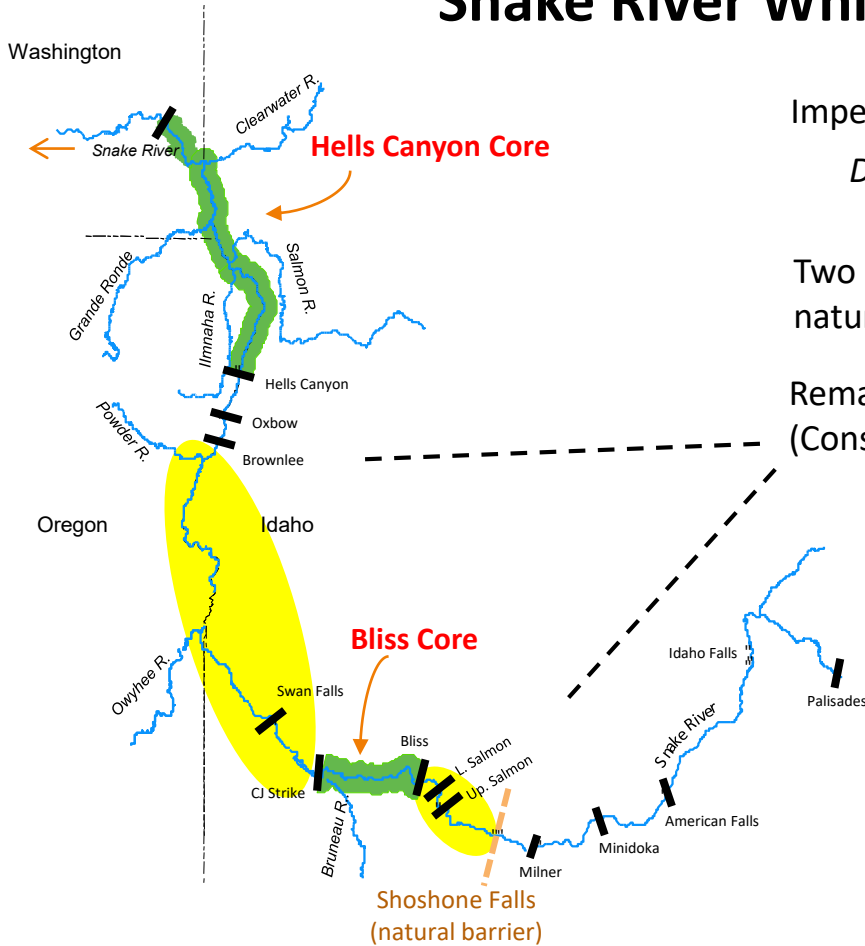
Dams, flow regulation, loss/degradation of habitat, water quality

Two Core Conservation Populations supported by natural production, ~4,000 sturgeon in both reaches

Remaining reaches contain small numbers of wild sturgeon
(Conservation Aquaculture in Mid Snake reaches)



Snake River White Sturgeon



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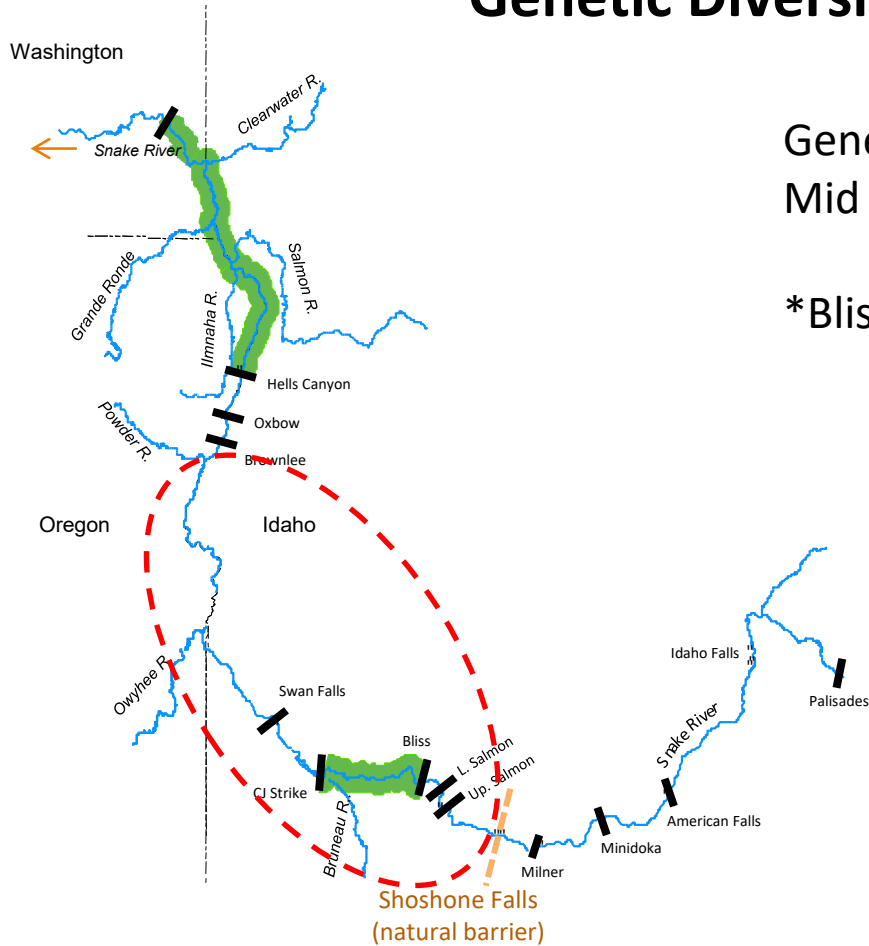
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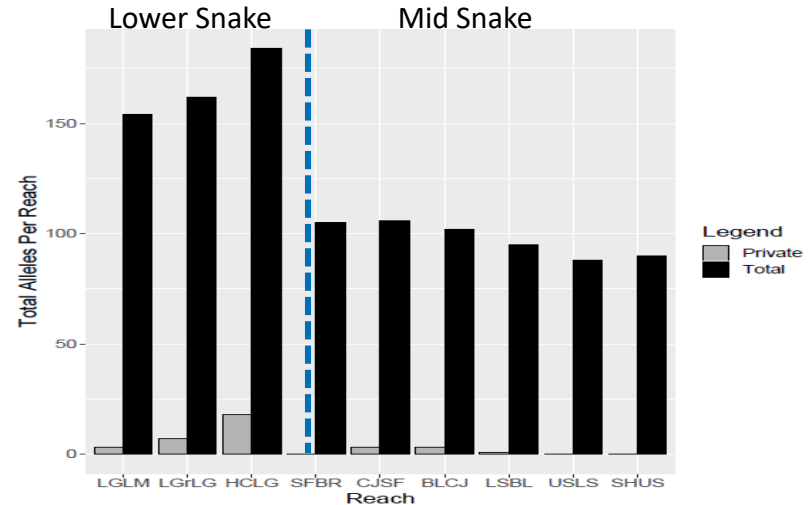
Photo credit IDFG

Genetic Diversity



Genetic differences between Lower Snake & Mid Snake sturgeon populations

*Bliss Core important to Mid Snake



Population Monitoring

(where, when, how often)

Population Surveys (Status & Trend)

- Mid-Snake reaches (Shoshone Falls to Brownlee) surveyed every 5 years
- HCC reaches (Brownlee, Oxbow, Hells Canyon) surveyed every 10 years
- Metrics: abundance, size structure, fish condition, growth rates, reproductive potential, genetics, ingested tackle, individual tag history

Recruitment Indexing

- Annual Fall gill net surveys in Bliss & Hells Canyon Core Pops
- Age-0 / Age-1 detection
- Indices of year class production



Population Monitoring

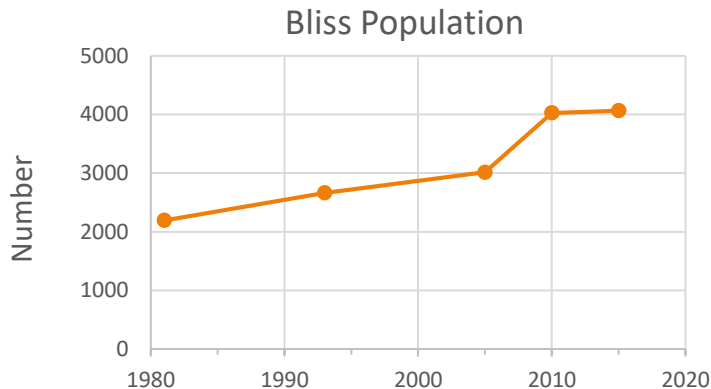
(what does sampling generally tell us about sturgeon)

Life History Traits

- Long-lived
- Late maturing
- Protracted spawn cycles
- Only portion of population spawns

Bliss Core Population (Mid Snake)

- Increasing population since 1980s
- Abundant spawners
- Annual spawning
- Periodic recruitment (stock structure/indexing)

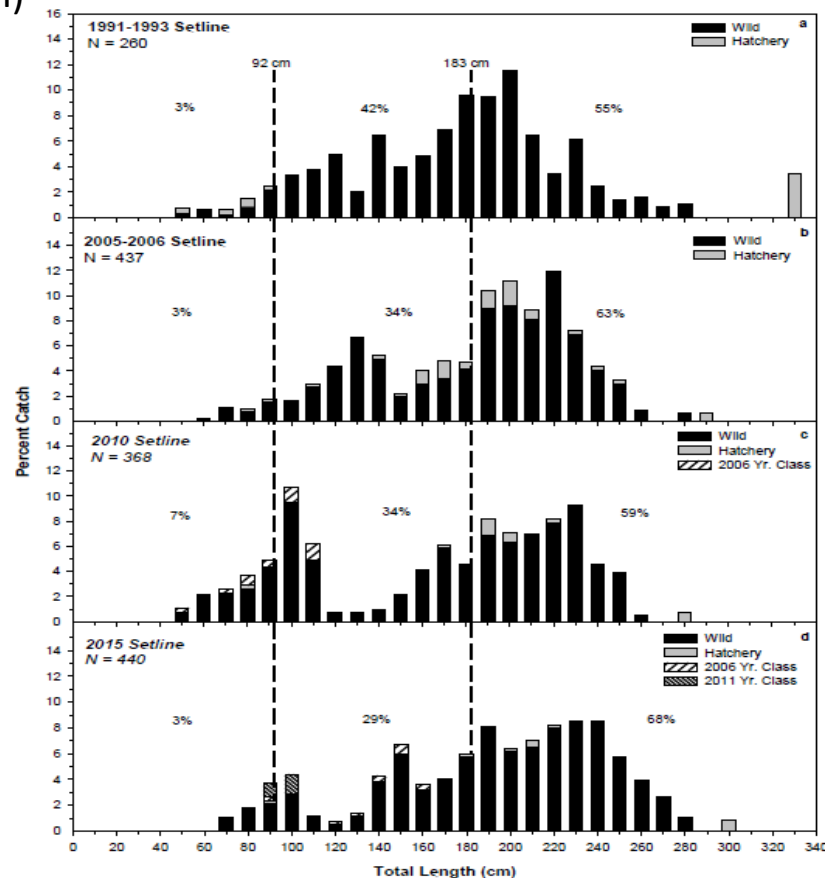
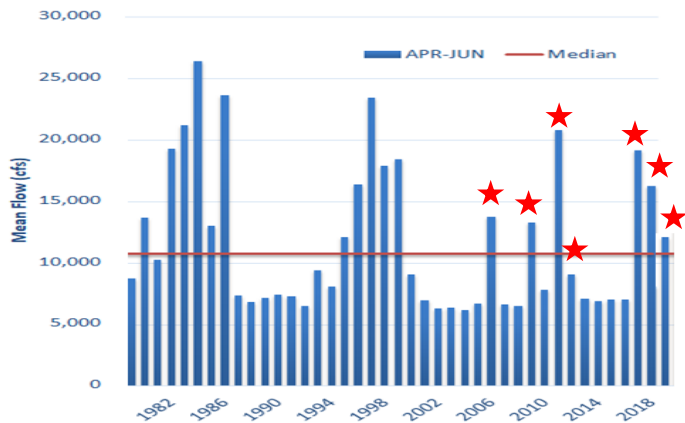


Population Monitoring

(what does sampling generally tell us about sturgeon)

Bliss Core Population (Mid Snake)

- Increasing population since 1980s
- Abundant spawners
- Annual spawning
- Periodic recruitment (stock structure/indexing)



Sturgeon Spawning

(what does sampling generally tell us about sturgeon)

- Broadcast spawners (mid April - early June), coincide w/spring runoff
- Spawning temperature range 10 to 18C (12-18C more typical)
- 14-16C optimal of egg development
- Spawning areas – rocky substrates, high velocity, hydraulic complexity
- Flow Benefits: substrate cleaning, egg & larval dispersal, turbidity, reduced predation

Egg & Larvae

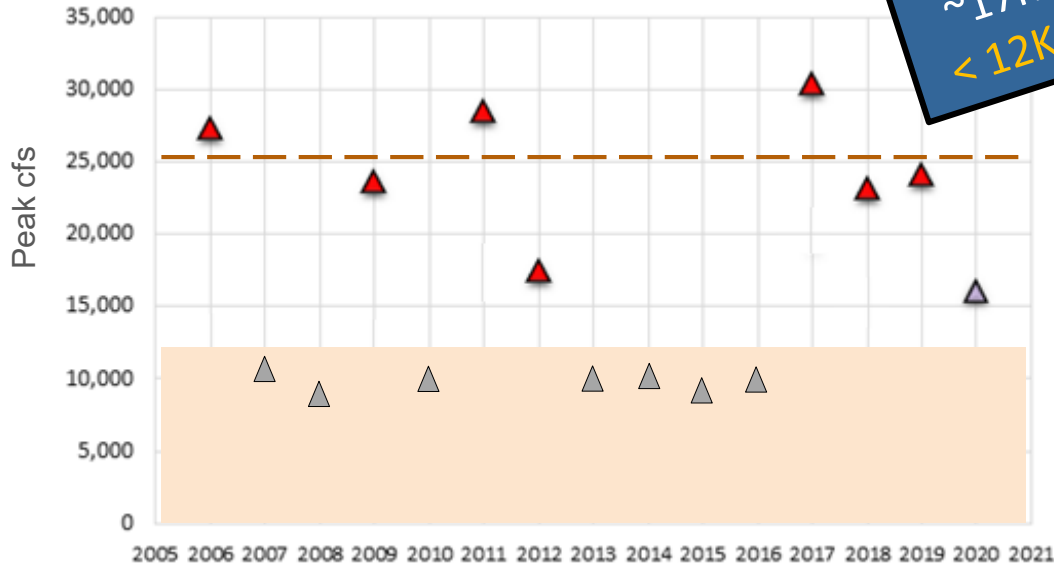
- Eggs hatch ~7 days @ 14C
- Larval hiding/drift phases, feeding ~7-14 days dph
- Metamorphosis complete ~45 days
- Year class strength determined within first 2-3 months



Flow - Recruitment Relationship

**Flow volume is a primary determinant of recruitment success*

▲ High spring flow = recruitment



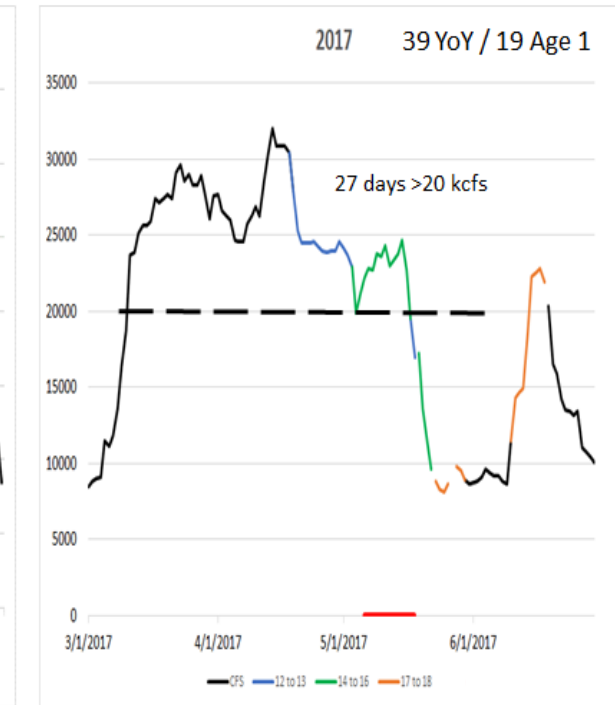
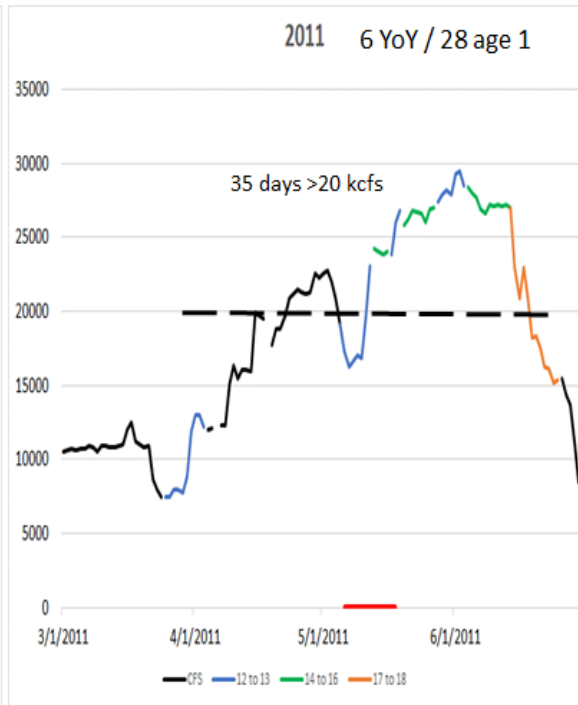
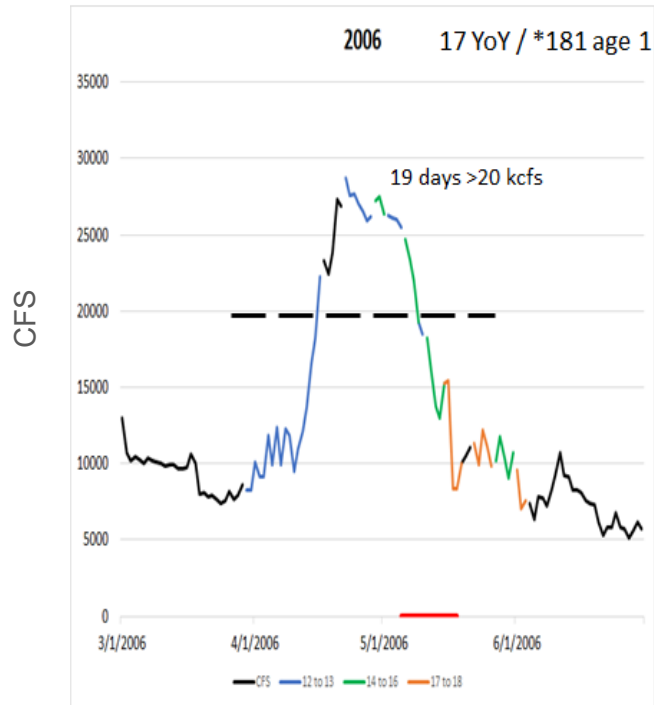
Recruitment
>25+ Highest
~17K Some
< 12K Failure



Flow - Recruitment Relationship



Years w/highest recruitment



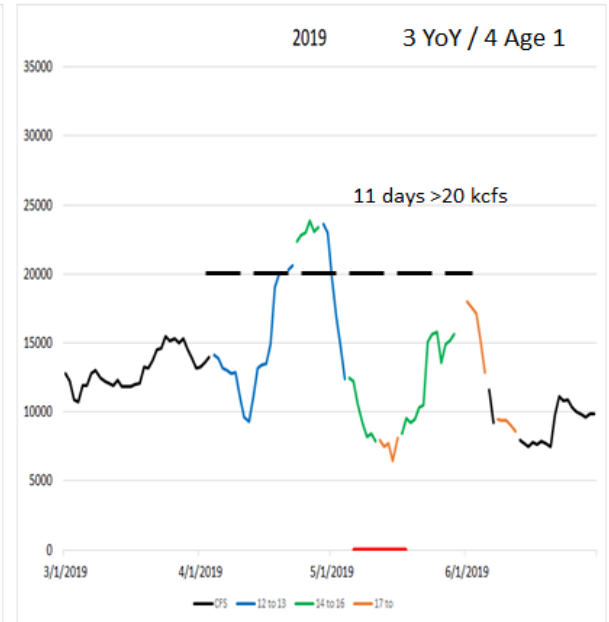
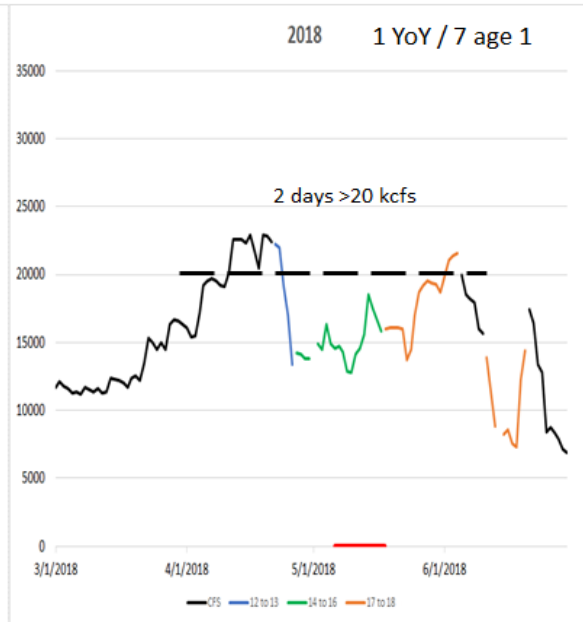
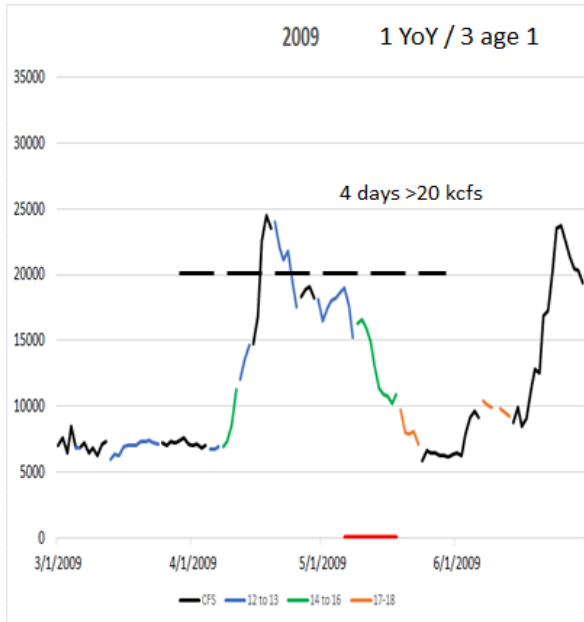
Flow - Recruitment Relationship



Years w/ lower recruitment

Few peak flow days >20 kcfs
14-16C spawning temps at ~15 kcfs or less

CFS

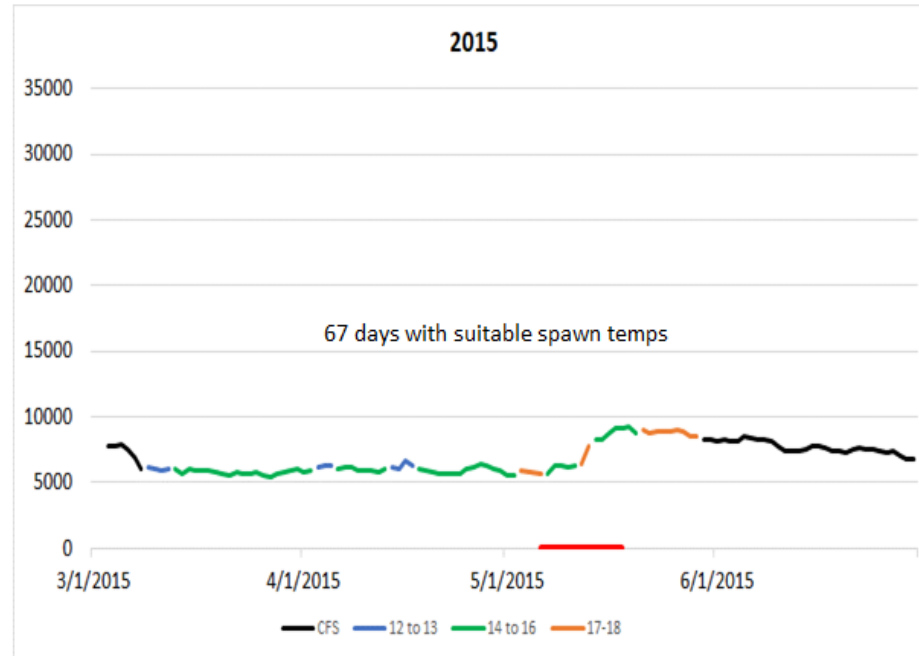
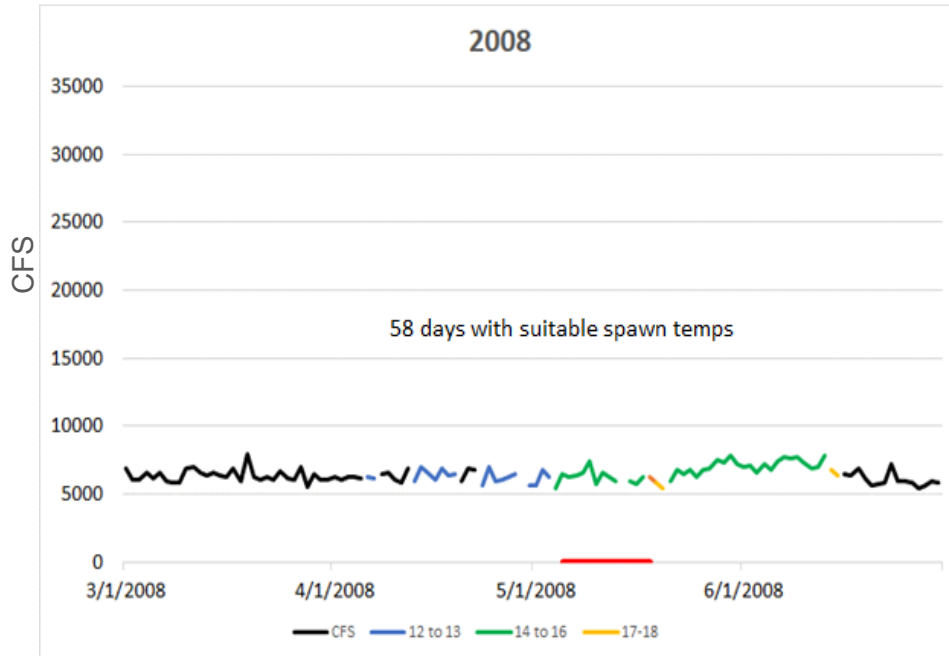


Flow - Recruitment Relationship



Recruitment failure flows

Below average – dry years

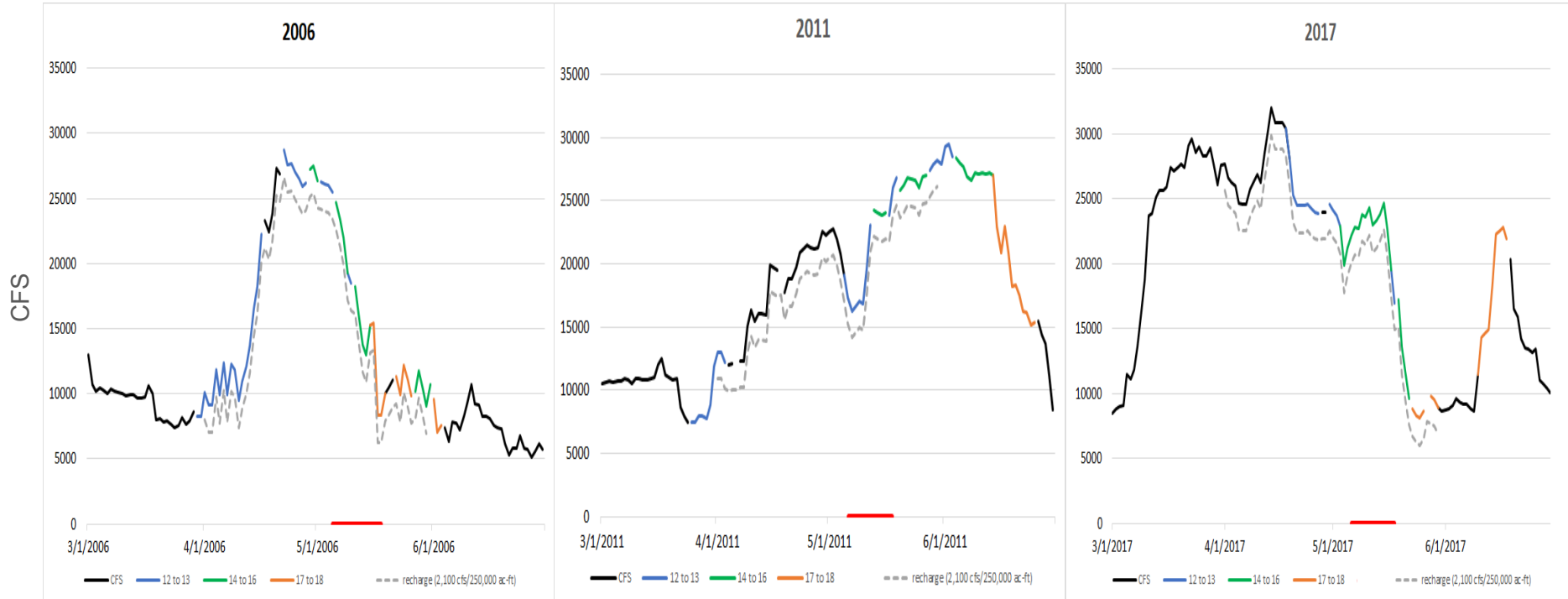


Flow - Recruitment Relationship



Years w/ highest recruitment minus “example” diversion flow

--- 2,100 cfs @ 60 days, ~250K ac-ft

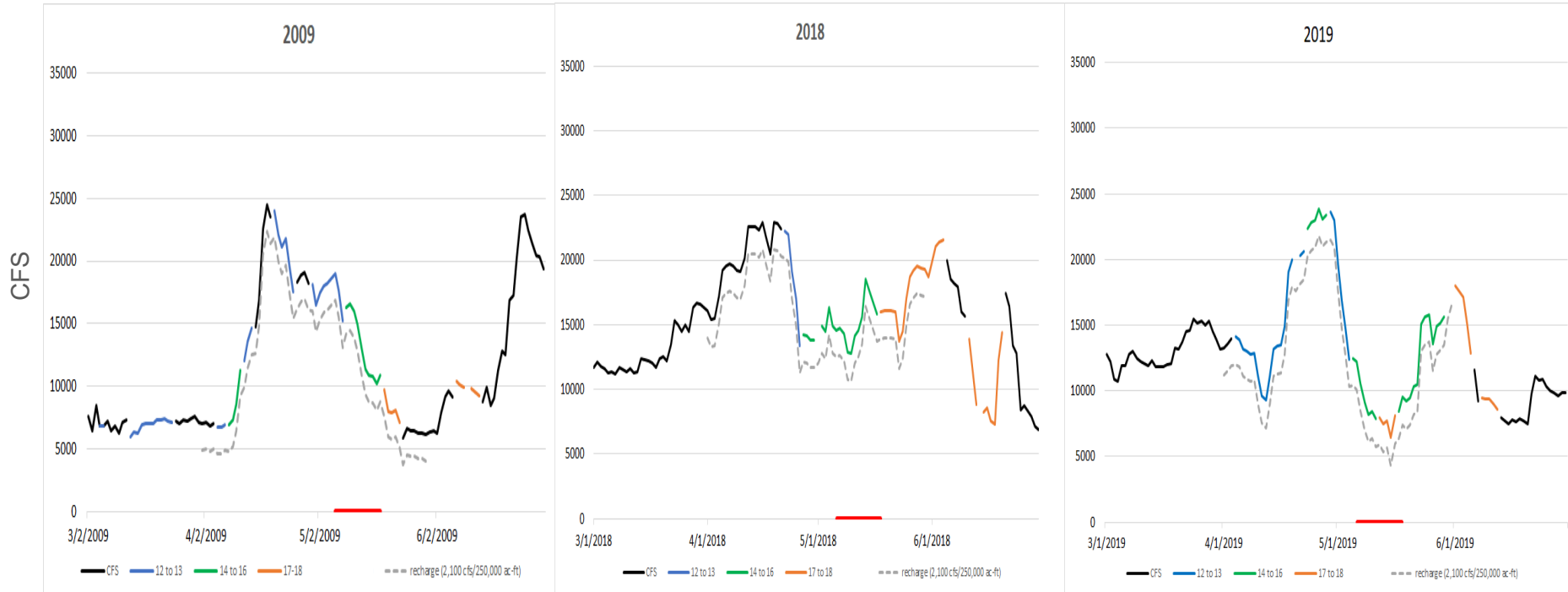


Flow - Recruitment Relationship



Years w/ lower recruitment minus “example” diversion flow

--- 2,100 cfs @ 60 days, ~250K ac-ft

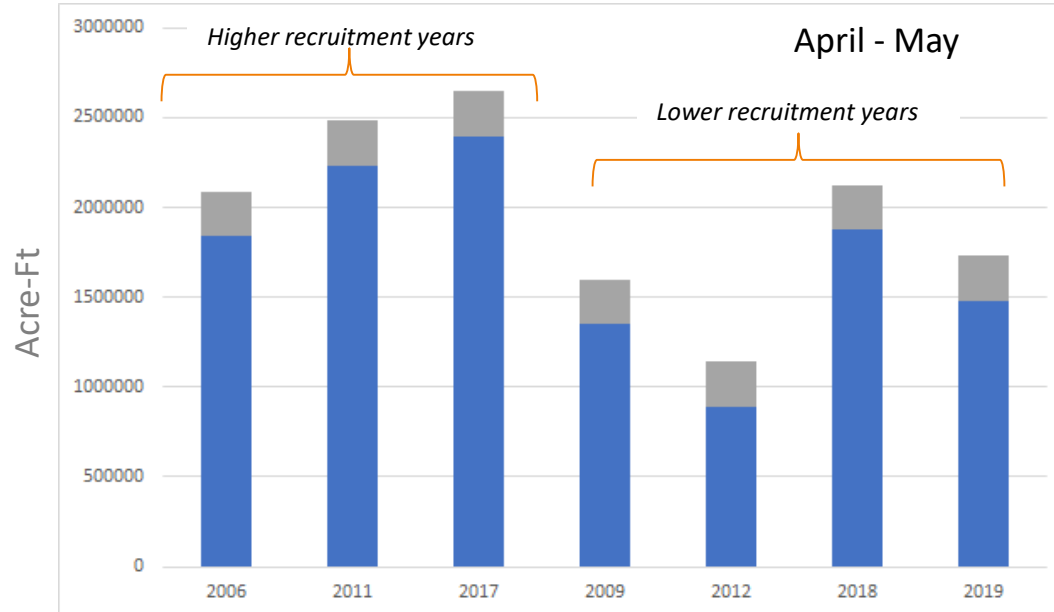


Flow - Recruitment Relationship



Change in acre-ft with “example” diversion flow

■ 2,100 cfs @ 60 days, ~250K ac-ft





Questions?