

# Upper Columbia White Sturgeon Recovery Initiative

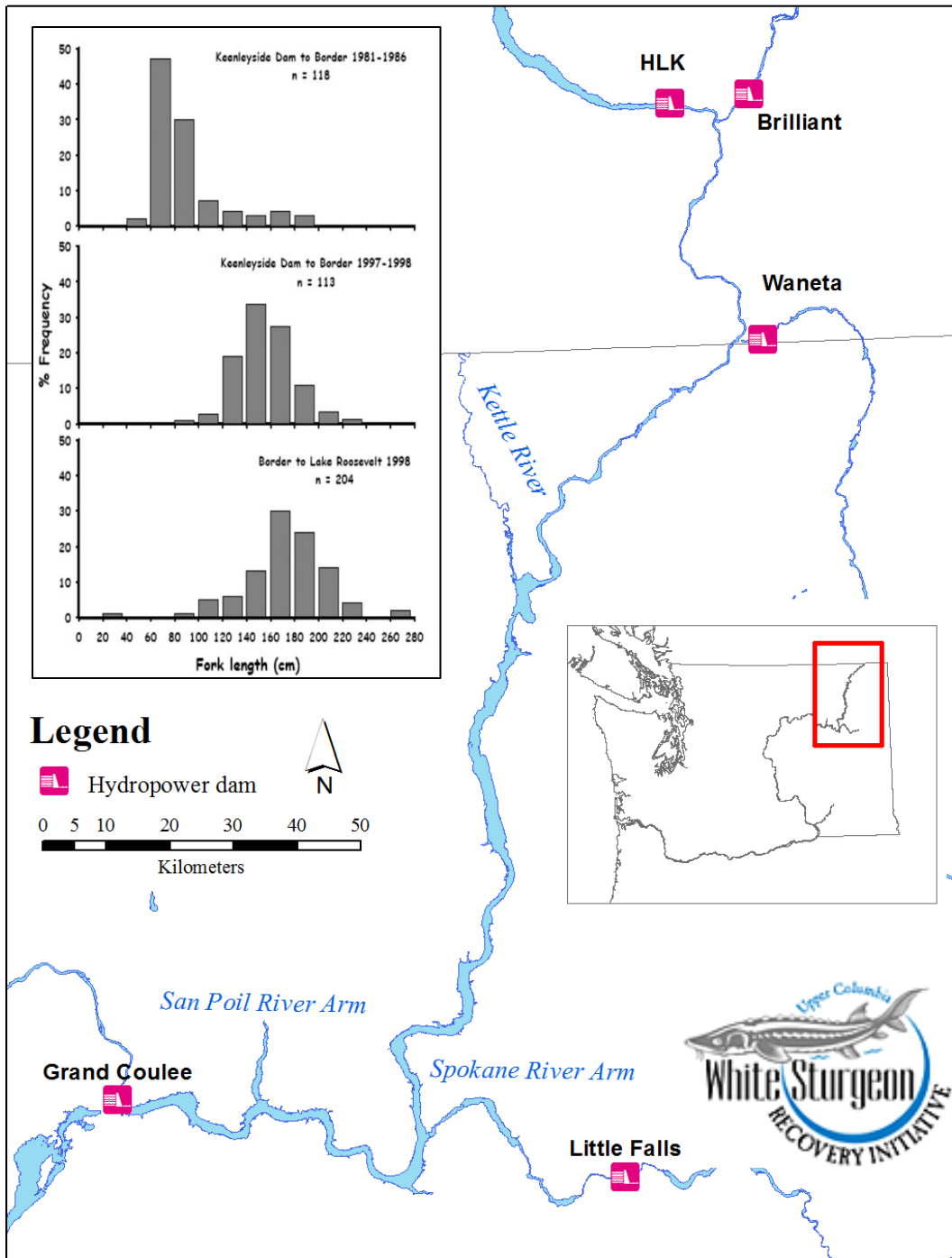
## Conservation Aquaculture



Jason McLellan  
Colville Confederated Tribes

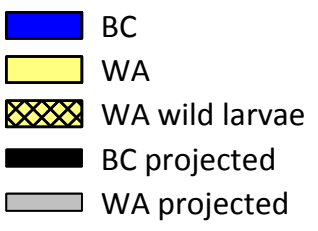
# UCWSRI

- Established - 2000
- Recovery Plan - 2002
- Goal: “...ensure the persistence and viability of naturally-reproducing populations...” and “restore opportunities for beneficial use if feasible.”

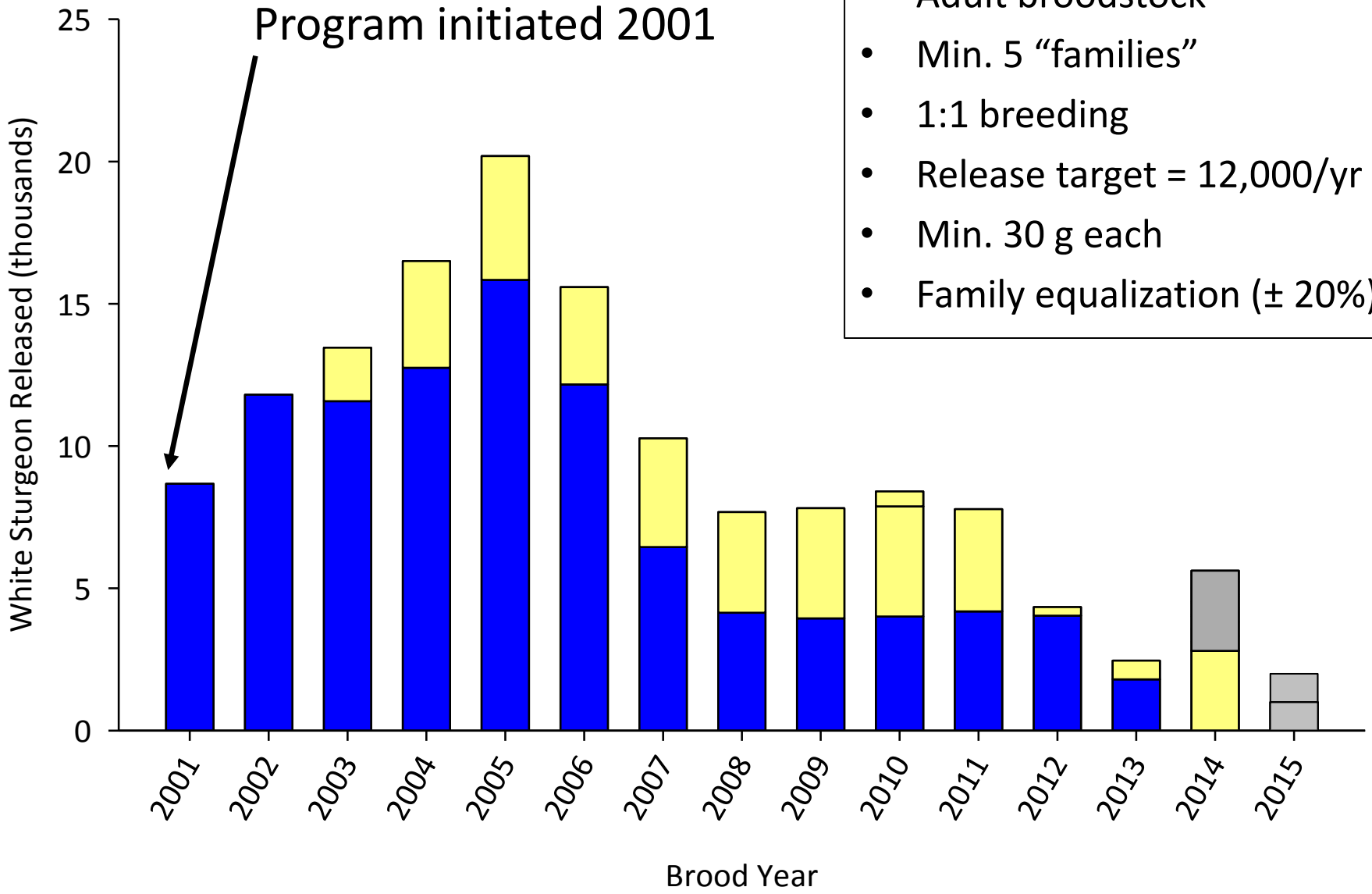


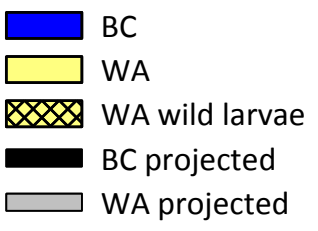
- Recovery Objective
  - Prevent declines in distribution, abundance, and genetic diversity
  - Natural age structure
- Recovery Strategy
  - Conservation aquaculture
    - preserve genetic diversity
    - restore demographics



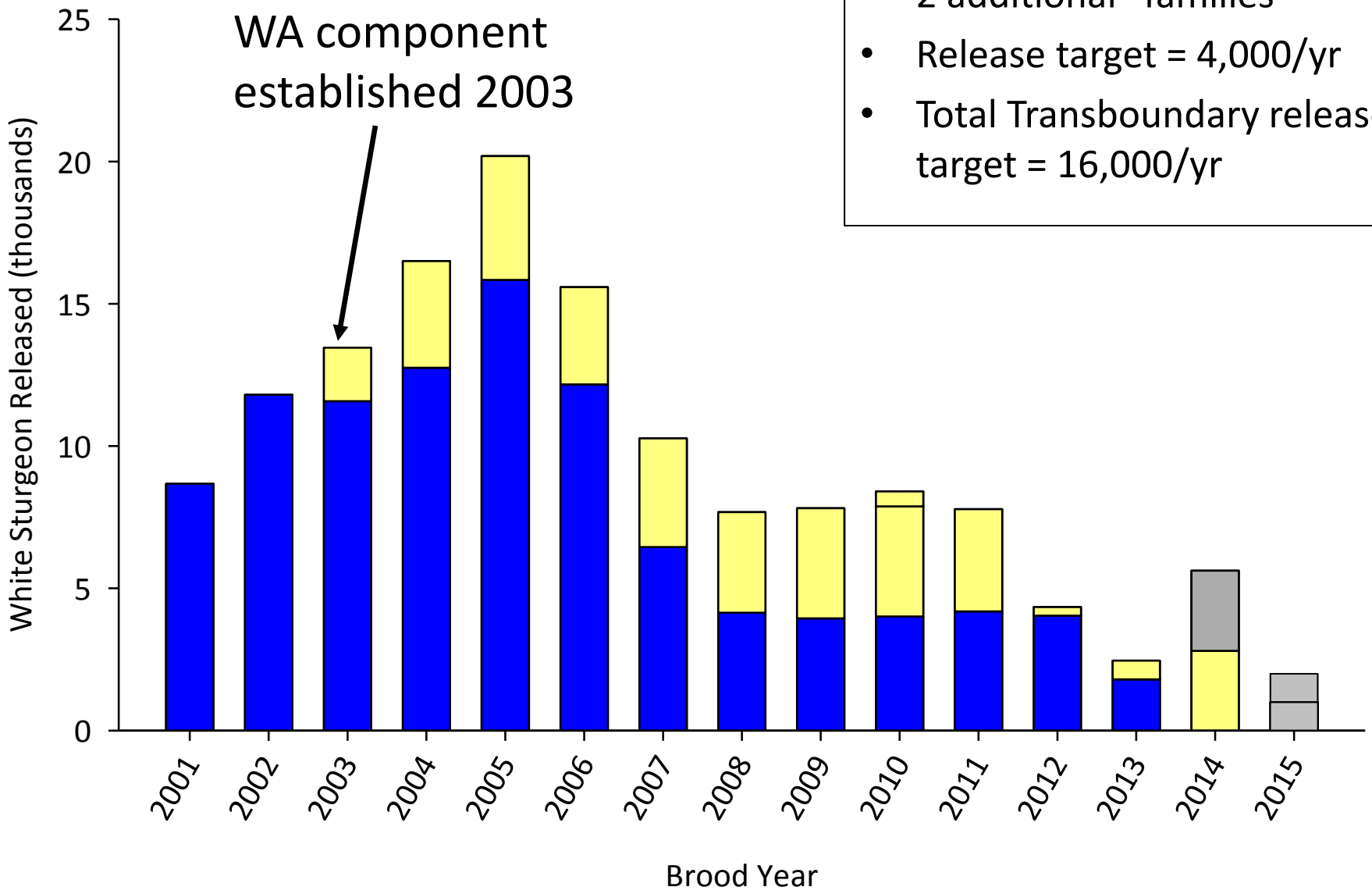


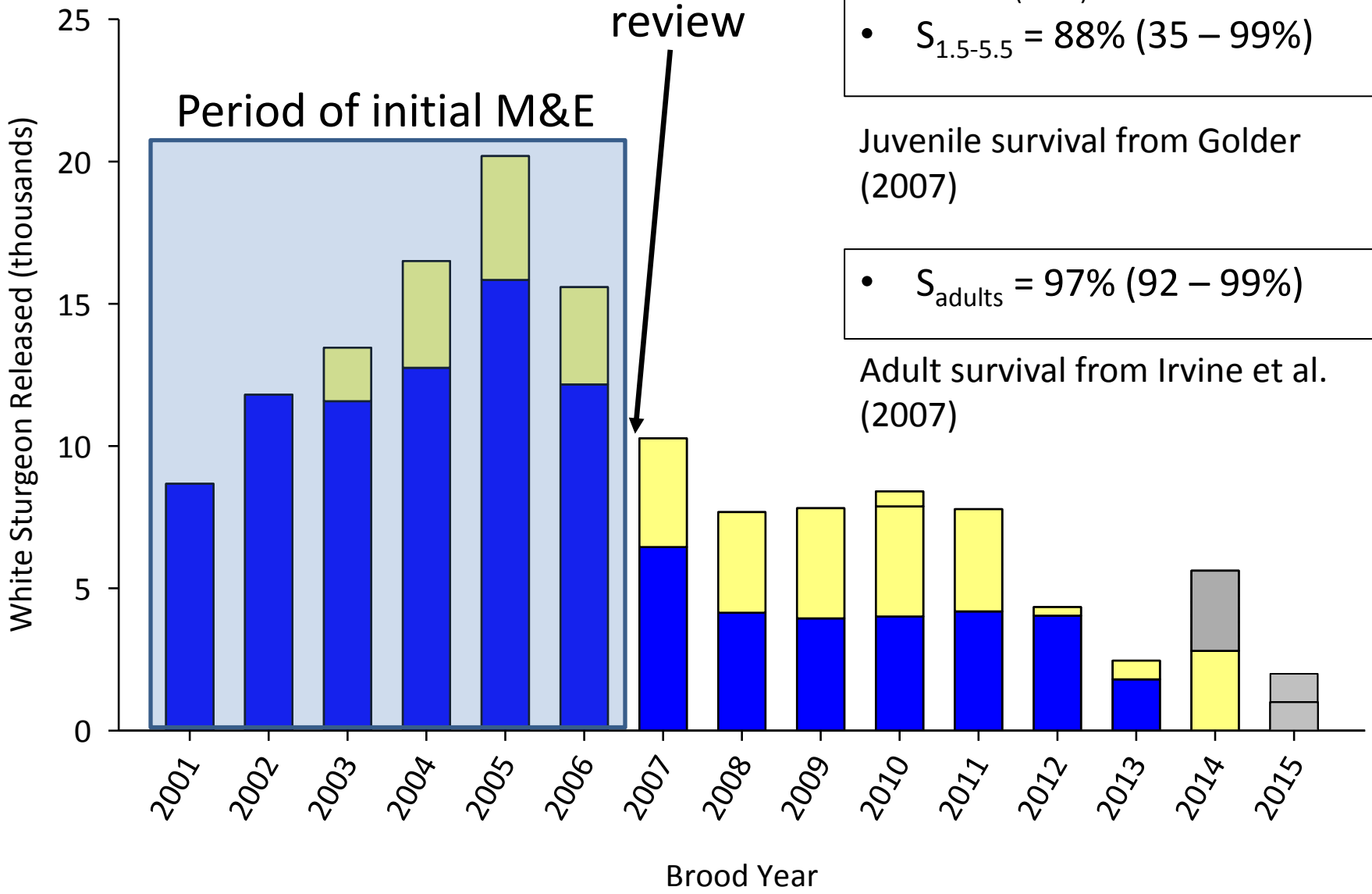
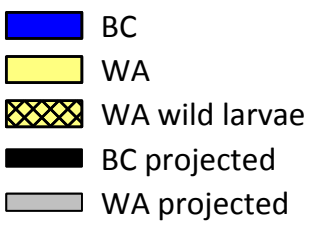
- Abundance goal = 2,500/RA
- Adult broodstock
- Min. 5 “families”
- 1:1 breeding
- Release target = 12,000/yr
- Min. 30 g each
- Family equalization ( $\pm 20\%$ )





- Fish/eggs provided by BC
- 2 additional “families”
- Release target = 4,000/yr
- Total Transboundary release target = 16,000/yr



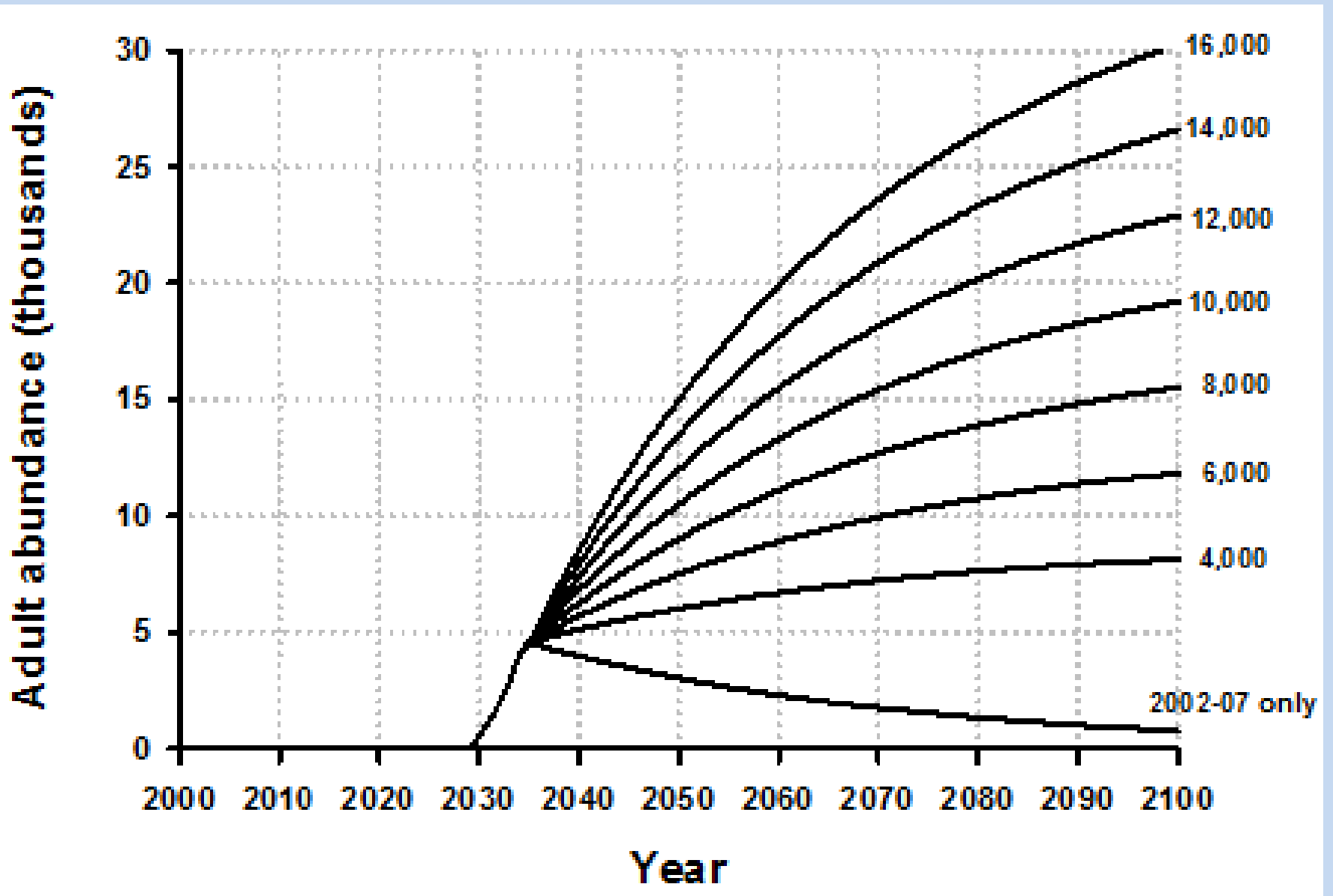


- Primarily gill nets
- Mark/recapture
- $S_{rel-1.5 (6 mo)} = 28\% (12 - 54\%)$
- $S_{1.5-5.5} = 88\% (35 - 99\%)$

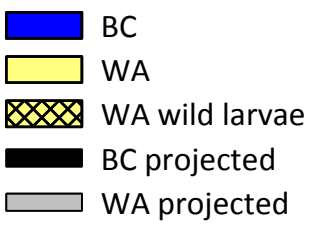
Juvenile survival from Golder (2007)

- $S_{adults} = 97\% (92 - 99\%)$

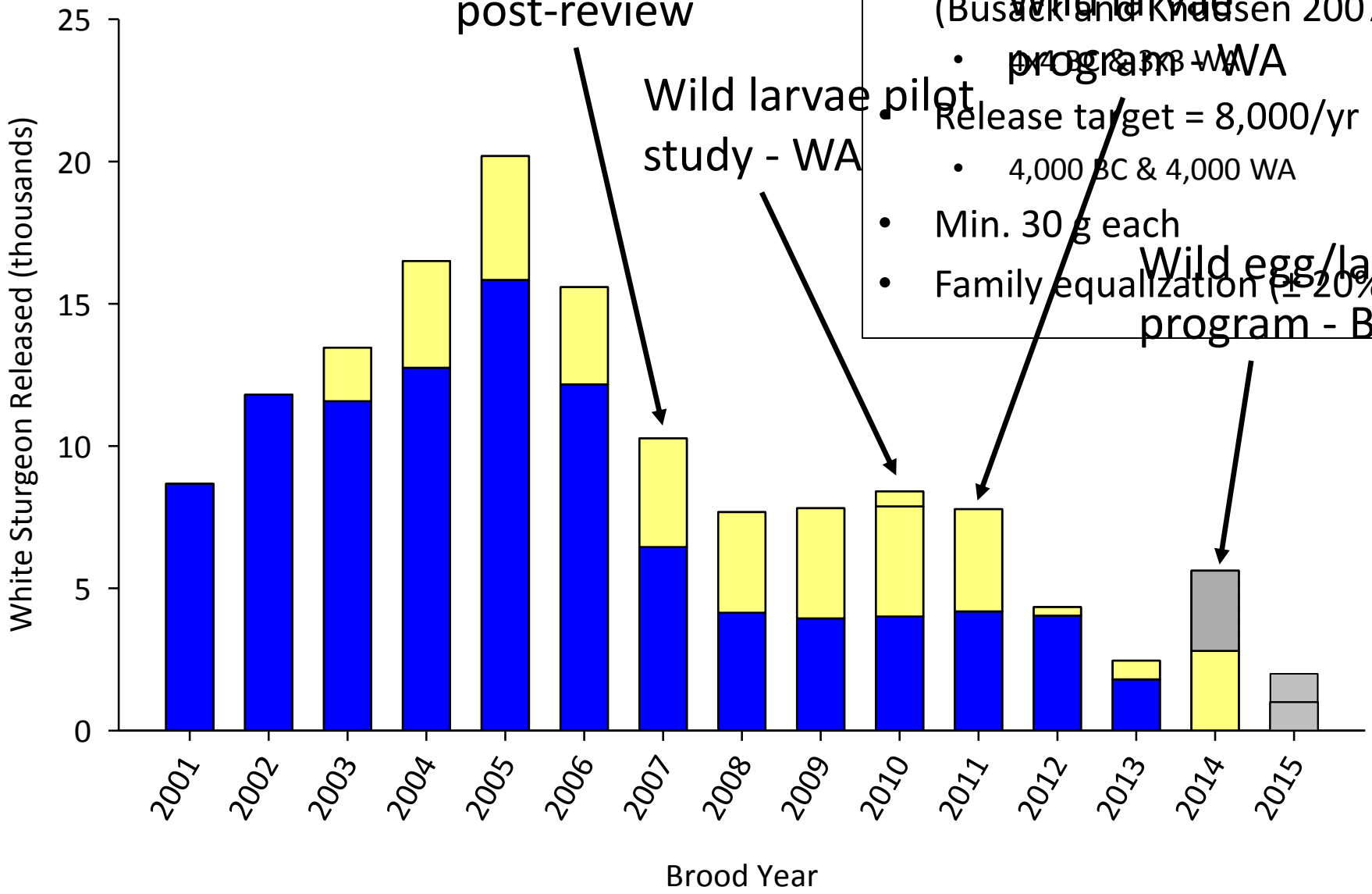
Adult survival from Irvine et al. (2007)



Beamesderfer and Justice (2008)



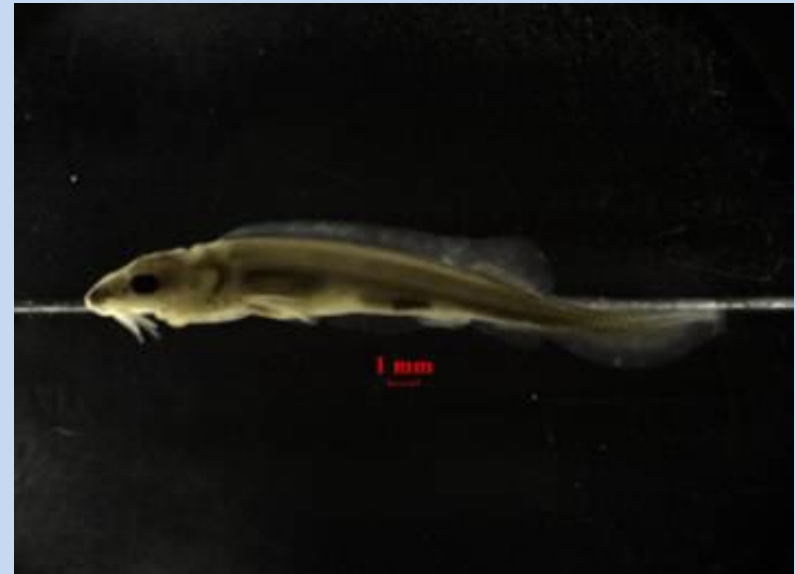
- Abundance goal = 3,000
- Adult broodstock
- Partial factorial breeding (Busack and Krause 2007)
- program - WA
- program - BC
- Release target = 8,000/yr
  - 4,000 BC & 4,000 WA
- Min. 30 g each
- Family equalization ( $\pm 20\%$ )

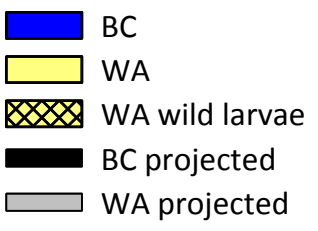




# Reasons for Wild Eggs/Larvae

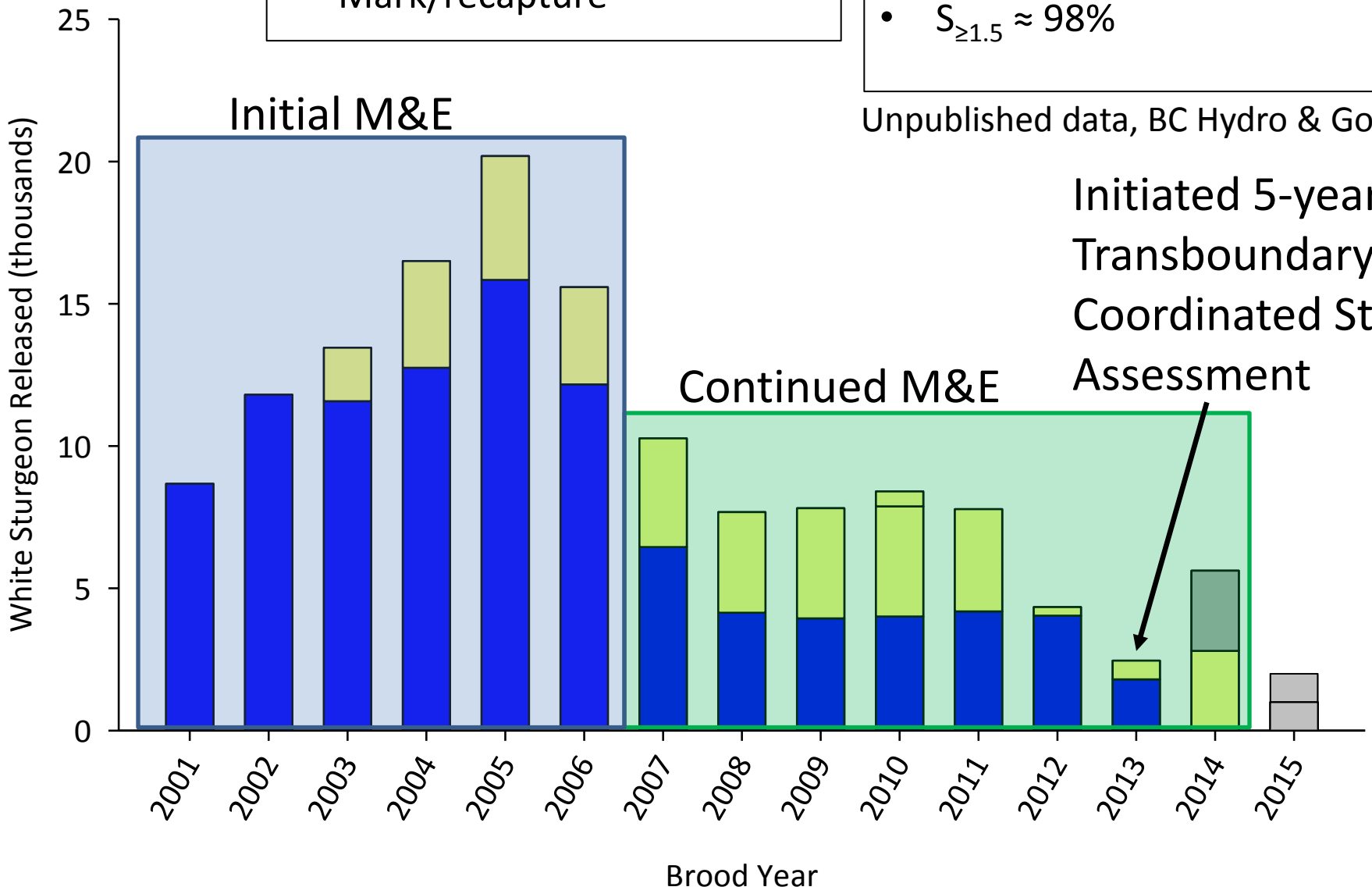
- Greater genetic diversity
  - Greater number of alleles/yr (Schreier and May 2012)
  - Substantially more breeders represented (Schreier et al., unpublished data; Jay et al. 2014)
  - Reduced selection
- Parents can still contribute
- No broodstock handling
- Less hatchery infrastructure





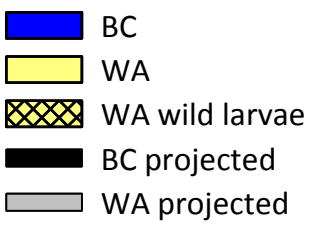
- Mix of gears
  - Gill nets, setlines, angling
  - Incidental captures
- Mark/recapture

- $S_{rel-1.5 (6 mo)} \approx 50\% @ 100 g$
- $S_{rel-1.5 (6 mo)} \approx 86\% @ 200 g$
- $S_{rel-1.5 (6 mo)} \approx 98\% @ 300 g$
- $S_{\geq 1.5} \approx 98\%$

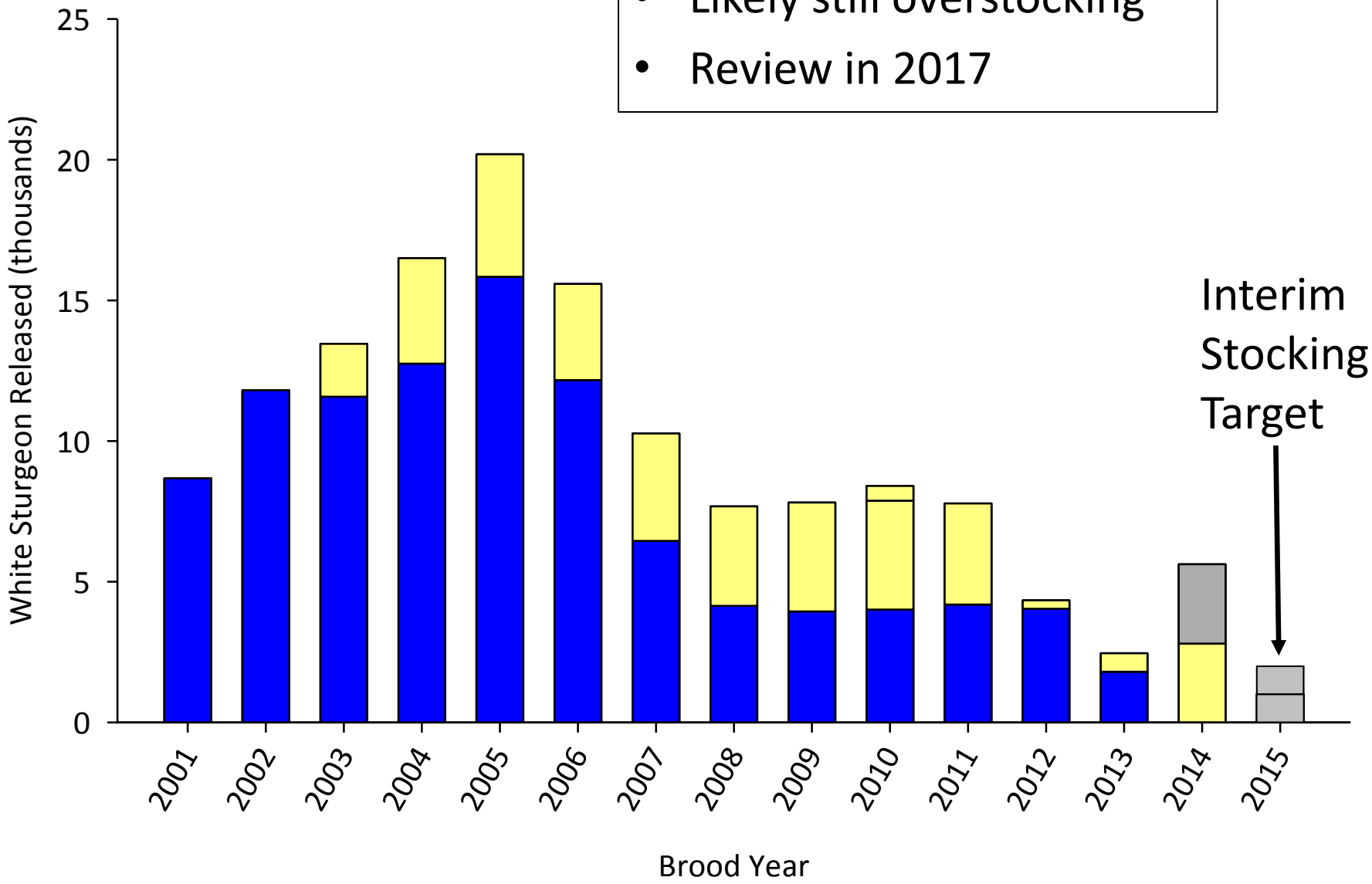


Unpublished data, BC Hydro & Golder

Initiated 5-year  
Transboundary  
Coordinated Stock  
Assessment



- 1,000/yr both BC & WA
- 200 g each
- Likely still overstocking
- Review in 2017





Questions?