***Generic and Species-Specific Parameter Estimates for Closed-Loop Simulation Tool***

Summary of stock recruitment and simulation modeling parameters from literature review. These values reflect averages from studies that used stock-recruit relationships of variable form and quality. Full data in litParameterEstimates.xlsx

*Sockeye*

* Alpha: mean 1.2 (0.22 – 2.99)
  + Populations from Bristol Bay, Chignik, Cook Inlet, Kodiak, Prince William Sound, throughout BC, and Puget Sound
  + Korman et al. 1995, Peterman et al. 2003, Dorner et al. 2008, Holt and Peterman 2008, Korman et al. 2013
  + Grand means also available from Mueter et al. 2002
* Rho: mean 0.29 (-0.47 – 1.7)
  + Populations from Bristol Bay, northern BC, and southern BC
  + Korman et al. 1995, Peterman et al. 2003, Holt and Peterman 2008
* Sigma : mean 0.75 (0 – 1.64)
  + Populations from Bristol Bay and Fraser
  + Korman et al. 1995, Peterman et al. 2003, Holt and Peterman 2008
* Variation in age: 0.4 and 0.9
  + Lower value from Togiak (Bristol Bay) and higher value from Chilko (i.e. N=2)
  + Holt and Peterman 2008

*Chum*

* Alpha: mean 1.41 (0.7 – 2.48)
  + Populations from Bristol Bay, throughout BC, northern AK, western AK, central AK and SEAK
  + Dorner et al. 2008, Collie et al. 2012, Korman et al. 2013
  + Grand means in Mueter et al. 2002
* Sigma : mean 0.49 (0.39 – 0.66)
  + Northern AK (Collie et al. 2012)
* Outcome uncertainty: mean 0.38 (0.33-0.49)
  + Northern AK (Collie et al. 2012)

*Coho*

* Alpha: mean 1.63 (1.32 – 2.1)
  + Skeena CUs; Korman et al. 2013

*Chinook*

* Alpha (stream) : mean 1.68 (0.97 – 2.55)
  + Central AK, SEAK, western AK, northern BC, WA
  + Parker et al. 2006, Fleischman et al. 2013, Korman et al. 2013
* Alpha (ocean) : mean 2.02 (1.50-2.69)
  + CA, OR, southern BC, SEAK, WA
  + Parker et al. 2006
* Sigma (stream): mean 0.33 (0.13 – 0.67)
  + Central AK, SEAK, western AK, northern BC, WA
  + Parker et al. 2006, Fleischman et al. 2013
* Sigma (ocean): mean 0.33 (0.07 – 0.73)
  + CA, OR, southern BC, SEAK, WA
  + Parker et al. 2006
* Rho (stream): 0.82
  + Central AK (Fleischman et al. 2013)

*Pink*

* Alpha (odd) : mean 1.39  (0.5-2.71)
  + WA, southern BC, central BC, northern BC, SEAK, central AK, western AK, northern AK
  + Su et al. 2004, Dorner et al. 2008, Korman et al. 2013
* Alpha (even) : mean 1.57 (0.31-2.9)
  + WA, southern BC, central BC, northern BC, SEAK, central AK, western AK, BB, northern AK
  + Su et al. 2004, Dorner et al. 2008, Korman et al. 2013

Generic simulation parameters

* Age variation: 0.9
  + Fraser River and Bristol Bay
  + Produced outputs consistent with long-term observations, but unclear whether other values were also systematically explored
* Depensation threshold: 500-1000 individuals or 0.1B
  + **Likely not sockeye specific**
  + Consistent with values from Bradford and Wood 2004; therefore presumably based on Cultus/Sakinaw sockeye
  + Holt and Bradford 2011
* Extinction threshold: 50-250 with median of 100
  + Holt and Bradford 2011
* Observed catch variation
  + Chinook: 0.05-0.7 (Fleischman et al. 2013); assumed to be small for commercial, intermediate for recreational, and large for subsistence fisheries
  + Sockeye: 0 (Holt and Peterman 2008); assumed for sake of simplicity
  + Chum: 0.5-1 (Holt and Folkes 2013); assumed to be large since most FN and subsistence fisheries
* Observed spawner variation
  + Coho: 0.1-0.7 with median of 0.5 (Holt et al. 2011); brackets values consistent with precise mark recapture studies and less precise visual estimates
  + Sockeye
    - 0.2-0.5 (Holt and Bradford 2011); within ranges observed across survey types
    - 0.02 (Holt and Peterman 2008); assumed to be approximately perfectly observed
  + Chinook: 0.025-0.072 (Fleischmann et al. 2013); bounds reasonable values based on weir counts
  + Chum: 0.2-0.5 (Holt and Folkes 2015); cite Couzens et al. 1982 and Szerlong and Rudio 2008
* Outcome uncertainty
  + Sockeye
    - 0.4-0.6 (Dorner et al. 2009); calculated using mechanistic equations for BB (low) and Fraser (higher)
    - 0.1-0.3 (Holt and Bradford 2011); difference between target and realized ERs for Fraser
  + Chum: 0.1-0.7 (Holt and Folkes 2015); based on relationship between catch and R on WCVI but thought to be poorly estimated
* Rho
  + Pink
    - 0-0.5 (Su and Peterman 2004); no justification provided
    - 0.6 (Peterman 2000); consistent with Bristol Bay sockeye observations
  + Sockeye
    - 0.2-0.8 with median of 0.4 (Holt and Bradford 2011); typical of previously studied sockeye populations
    - -0.6-0.8 with median 0.2 (Korman et al. 1995); bounded historical values
  + Chum: 0.2-0.8 with median 0.6 (Holt and Folkes 2015); based on values from Korman and English 2013
* Sigma
  + Pink
    - 0-1.5 with median 0.5 (Su and Peterman 2004); moderate and extreme values with 0 included to test independent effects of TS bias
    - 0.5 (Peterman et al. 2000); produced outputs consistent with long term observations
  + Sockeye
    - 0.55 (Dorner et al. 2009) ; produced outputs consistent with long term observations
    - 0.75 (Holt and Bradford 2011); consistent with upper values from Peterman et al. 2003 and lower values from Korman et al. 1995
    - 0.5-1.5 (Korman et al. 1995); bounded historical stock values
  + Chinook: 0.095 (Winship et al. 2013); estimated in earlier SR models focusing on CA CV chinook
  + Chum: 0.68-0.9 (Holt and Folkes 2015); values from Korman and English 2013 review on Skeena stocks
* Stray rate: 0-0.1 (Holt and Folkes 2015); values from McElhany et al. 2000

Literature Cited