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DATA REFERENCES

Data reference table. The table has baseline model value inputs and supporting references of where the values were derived.

IMMIGRATION, ESCAPEMENT AND SPAWNING

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Productivity	Klamath immigration survival	• Asarian et al. 2023; Bartholomew et al. 2023 ; Isaak et al. 2015; Keefer et al. 2018; Ray et al. 2012; Snyder et al. 2022 • Professional judgment • Tuning and calibration parameter	Table 2	Fall = 0.97 Spring = 0.98
	Straying into Klamath	• De Jong and Mills 1992; Keefer et al. 2006; Keefer et al. 2018; Keefer and Caudill 2014; Strange 2012 RMPC 2026: Westley et al. 2013 • Professional judgment	Table 3	Fall = 0.95 Spring = 0.95
	Straying from the Klamath	• De Jong and Mills 1992; RMPC 2026 • Professional judgment	-	0.05
	In river harvest	• PMFC Annual Report (2026 table II-6, preseason 1 report) • Professional judgment	Table 4	Age 2 = 0.20 Age 3 = 0.33 Age 4 = 0.33 Age 5 = 0.10
	Trinity River migration survival	• Professional judgement	Table 5	Spring and Fall = 0.96
	Holding habitat survival (spring-run only)	• Barnhart and Hillemeier 1994; Isaak et al. 2015; Keefer et al. 2018; Moyle 2002; Strange 2010 • Professional judgment • Tuning and calibration parameter	Table 7	Holding habitat survival = 0.95 No holding habitat survival = 0.00
	Proportional female	• Trinity River Hatchery return data	Table 8	**Age # = Fall; Spring** Age 2 = 0.01; 0.01 Age 3 = 0.43; 0.48 Age 4 = 0.44; 0.58 Age 5 = 0.59; 0.47

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
	Redd territory	• Burner 1951	Table 9	Age 2 = 5.8 Age 3 = 10.5 Age 4 = 14.6 Age 5 = 16.5
	Proportion hatchery origin spawners per reach	• Gough et al. 2024 • Professional judgment	Table 10	Portion of escapement that is hatchery origin = 0.10 Maximum naturally spawning HOS = 570 Reach 1 = 0.82 Reach 2 = 0.18 Reach 3 = 0.00
Capacity	Holding pool capacity	• Clear Creek spring-run holding habitat study, 2021; Healey 1991 • Professional judgment	Table 6	Depth = 1.5 (meters) Density = 0.21 (fish/m3) Area = 317,460 (m2)
	Spawning capacity by reach (m2)	• S3 informed proportional reach breakdown • Tuning and calibration parameter	Table 10	Reach 1 = 35,000 Reach 2 = 140,000 Reach 3 = 175,000

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INCUBATION TO EMERGENCE

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Productivity	Fecundity	• Healy and Heard 1984	Table 12	Age 2 = 2,461 Age 3 (hatchery proxy) = 3,712 Age 4 = 4,674 Age 5 = 5,093
	Gravel size multiplier (redd success, age based)	• Burner 1951; Kondolf and Wolman 1993; Reiser and Bjornn 1979 • Professional judgment	Table 11	Baseline gravel for reach 1-3 is 5cm. Resulting survivals are: Age 2 = 1.00 Age 3= 1.00 Age 4 = 1.00 Age 5= 1.00
	Egg quality survival (redd success, age based)	• Beacham and Murray 1990; Ohlberger et al. 2020 • Professional judgment • Tuning and calibration parameter (Age 3 and 4)	Table 12	Age 2 = 0.80 Age 3 = 0.85 Age 4 = 0.95 Age 5 = 1.00
	Fine sediment (redd success, reach based)	• Tappel and Bjornn 1983 • Tuning and calibration parameter (Reach 1)	Table 13	Reach 1 (low fines) = 0.95 Reach 2 (low fines) = 1.00 Reach 3 (low fines) = 1.00
	Hydrologic disturbance (redd success, reach based)	• Beechie et al. 2008; DeVries 1997; Montgomery et al. 1996; Montgomery et al. 1999 • Professional judgment • Tuning and calibration parameter (Reach 1)	Table 14	Reach 1 (Stable Conditions) = 0.95 Reach 2 (Stable Conditions) = 1.00 Reach 3 (Stable Conditions) = 1.00
	Temperature incubation survival (reach based)	• Alderdice and Velsen 1978; Asarian et al. 2023; Beacham and Murray 1990; Plumb et al. 2025 • Professional judgment • Tuning and calibration parameter	Table 15	Incubation Temp Reach 1-3 = "Cool-moderate" = 0.92
	Thiamine deficiency (age based)	• Brown et al. 2005; Fisher et al. 1995; Fitzsimons et al. 2007; Mantua et al. 2025 • Professional judgment	Table 16	Age 2-5 = 1.00

TRINITY RIVER REARING (EMERGENT FRY TO TRINITY RIVER OUTMIGRATION

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Productivity	Emergence timing (based on incubation temperature (Table 15))	• Alderdice and Velsen 1978; Asarian et al. 2023; Beacham and Murray 1990; Plumb et al. 2025 • Professional judgment	Table 17	Week -2 = 0.10 Week -1 = 0.20 Week 0 = 0.40 Week 1 = 0.20 Week 2 = 0.10
	Emergence size	• Murray and McPhail 1988; Beacham and Murray 1990	-	35 mm
	Baseline weekly growth	• Jeffres et al. 2008 ; Katz et al. 2017 ; MacFarlane and Norton 2002 ; Marine and Cech 2004; Myrick and Cech 2001: Myrick and Cech 2002; Sommer et al. 2001	Table 19	2.7 mm/week
	Temperature growth multiplier	• Asarian et al. 2023; Brett 1979; Myrick and Cech 2001; Plumb et al. 2025 • Professional judgment	Table 20	Weekly value depends on rearing temperature per reach (Default regime is T2 from Table 21) Cold = 0.60 Optimal = 1.00 Transitional = 0.90 Warm = 0.70 Stress = 0.40
	Food availability growth multiplier	• Brett 1979; Myrick and Cech 2001; Plumb et al. 2025 • Professional judgment	Table 22	Weekly value depends on rearing food available per reach (Default regime is F4 from Table 23) Limited = 0.70 Sufficient = 1.00
	Baseline weekly survival	• Mantua et al. 2010; Richter and Kolmes 2005; Wedemeyer et al. 1980 • Professional judgment • Tuning and calibration parameter	-	0.95
	Temperature survival multiplier	• Mantua et al. 2010; Richter and Kolmes 2005; Wedemeyer et al. 1980 • Professional judgment	Table 24	Weekly value depends on rearing temperature per reach (Default regime is T2 from Table 21)

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
				Cold = 1.00 Optimal = 1.00 Transitional = 0.96 Warm = 0.945 Stress = 0.92
	Disease survival multiplier	• Bartholomew et al. 2022; Ray et al. 2012; Robinson et al. 2022 • Professional judgment	Table 25	Weekly value depends on disease presence per reach (Default is no disease) None = 1.00 Elevated = 0.90 High = 0.80
	Weekly emigration propensity	• Professional judgment	Table 29	Fry = 0.035 Parr = 0.0075 Pre-Smolt = 0.0015 Smolt = 0
	Hatchery release schedule	• Professional judgment	-	Week 5, Reach 1, 500 fish, 55mm Week 10, Reach 2, 600 fish, 60 mm Week 16, Reach 2, 600 fish, 75mm
	Maximum rearing size	• Apgar et al. 2020; Greene et al. 2005; Healey 1991; Pinnix et al. 2022; Scheuerell et al. 2009 • Professional judgment	-	100 mm
	Portion yearlings	• Cordoleani et al. 2021	-	0.2
	Yearling overwinter survival	• Greene et al. 2005 ; Healey 1991; Plumb et al. 2025; Satterthwaite et al. 2014; Scheuerell et al. 2009 • Professional judgment	-	0.5
	Yearling Trinity survival	• JSATS Survival from 2022 - 2023 (Hoopa Tribe, unpublished)	-	0.38
	Weekly flow (dictates available rearing habitat)	• Plumb et al. 2025 • Professional judgment	Table 30	Week -2 to 4 = Moderate Week 5 to 9 = High Week 10 to 16 = Moderate Week 17 to 22 = Low

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Capacity	Rearing capacity	• Tuning and calibration parameter	-	Low Flow; Moderate Flow; High Flow Reach 1 = 300,000; 315,000; 330,000 Reach 2 = 315,000; 330,000; 3450,00 Reach 3 = 330,000; 345,000; 360,000

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Productivity	Yearling Klamath survival	• JSATS Survival from 2022 - 2023 (Hoopa Tribe, unpublished)	Table 37	0.92
	Yearling estuary survival	• Dietrich et al. 2016 ; Michel 2010; Scheuerell et al. 2009	Table 37	0.90
	Klamath flow (determines the temperature and disease survival multipliers)	• Professional judgment	Table 35	Default is "Nominal"
	Klamath temperature survival multiplier	• Professional judgment	Table 32	Nominal flow = Nominal Temperature = 0.82
	Klamath disease survival multiplier	• Mantua et al. 2010; Richter and Kolmes 2005; Wedemeyer et al. 1980 • Professional judgment	Table 34	Nominal flow = Elevated Disease size dependent survivals: Fry = 0.68 Parr = 0.73 Pre-Smolt = 0.78 Smolt = 0.88
	Klamath exposure survival multiplier	• Plumb et al. 2019; Plumb et al. 2023; Ray et al. 2012; ; Richter and Kolmes 2005; Zabel and Anderson 1997 • Professional judgment • Tuning and calibration parameter	Table 33	Dependent on Klamath entry and size Fry; Parr; Pre-smolt; Smolt Early = 0.30; 0.40; 0.45; 0.50 Core = 0.40; 0.55; 0.60; 0.70 Late = 0.55; 0.65; 0.90; 0.96 Very Late = 0.45; 0.60; 0.80; 0.75
	Estuary condition (additional growth)	• Healey 1980; Moore et al. 2016; Wallace and Collins 1997 • Professional judgment	Table 36	Default is "Baseline" = 0.00

OCEAN REARING AND MATURATION TO RIVER ENTRY INTO KLAMATH RIVER

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
Productivity	Ocean entry: size survival	• Lindley et al 2009; Satterthwaite et al. 2014 • Professional judgment • Tuning and calibration parameter	Table 38	< 50 mm = 0.05 50–75 mm = 0.40 75–100 mm = 0.80 100–110 mm = 0.95 >110 mm = 1.00
	Ocean entry: timing survival	• Satterthwaite et al. 2014 • Professional judgment	Table 39	Early = 0.70 Core = 0.85 Late = 0.98 Very Late = 0.85
	Ocean entry: ocean conditions	• Lindley et al. 2009; Lindke 2014; Satterthwaite et al. 2014 • Professional judgment	Table 41	Neutral = 0.80
	Yearling ocean entry survival	• Professional judgment	-	0.8
	Maturation rate	• Cohort reconstruction model (M/N.n = Natural origin fish maturing to fresh water/ ocean abundance)	Table 43	Age 2 = 0.055 Age 3 = 0.323 Age 4 = 0.756 Age 5 = 1.000
	Straying rate	• Cohort reconstruction model (w = mean straying rate (Hatchery))	Table 44	Age 2 = 0.007 Age 3 = 0.008 Age 4 = 0.012 Age 5 = 0.020
	Impact rate	• Chen et al. 2024; Cramer and Ackerman 2009	Table 42	Age 2 – 0.50 Age 3 – 0.55 Age 4 – 0.50 Age 5= 0.65
	Survival	• Chen et al. 2024 • Professional judgment	Table 46	Age 3 = 0.65 Age 4 = 0.65 Age 5 = 0.65

Function	Parameter	Data Value Source(s)	Table in Appendix B	Baseline Model Value
	Run Type Portion	Junction City and Willow Creek Weir Data (Mean proportion from 1980 to 2023)	Table 45	Portion Fall = 0.6 Portion Spring = (1-Portion Fall)