COWLITZ RIVER · FERC PROJECT P-2016 · DRAFT FOR REVIEW

Same River, Same Ocean

Upper Cowlitz wild fish collected at Cowlitz Falls survive to adulthood at several times the rate of Cowlitz hatchery fish released in the same reach.

Northwest Fisheries Enhancement Group (NWFEG) · Larry Pryor, Chairman · November 2026

Prepared for Tacoma Power leadership, the Cowlitz Fisheries Technical Committee, and the FERC record

THE BOTTOM LINE

7–9×

Over the last five years, wild Upper Cowlitz spring Chinook captured at Cowlitz Falls returned at 7 to 9 times the rate of Cowlitz hatchery spring Chinook. Both groups leave from the same hatchery and share the same ocean.

5.5%

Wild coho: 11,758 adults a year from 214,086 collected

3.6%

Wild late winter steelhead: 385 adults a year from 10,760 collected

3.1%

Wild spring Chinook: 607 adults a year from 19,503 collected

0.35–0.42%

Hatchery spring Chinook: about 5,800–6,900 adults a year from ~1.66 million released

Five-year averages. Wild: fish collected at CFFF 2020–2024 (all life stages) → wild adults at the separator, lagged by life cycle. Hatchery: 2021–2026 adult returns ÷ annual release goal.

THE FEDERAL STANDARD

Hatchery survival should be high relative to wild fish

> *"The reproductive success and survival of hatchery releases must be high relative to those of naturally spawning populations."*

Hatchery Scientific Review Group, Report to Congress on Columbia River Basin Hatchery Reform (Feb. 2009), p. 11; restated in the HSRG Annual Report to Congress on the Science of Hatcheries (2015), §1.1, p. 8

Measure adults, not releases

"The primary performance measurement for hatchery programs should be the total number of adults produced." (2009, p. 11)

Survival shrinks the program needed

"With higher survival, harvest and/or conservation goals can be reached with smaller hatchery programs." (2009, p. 18)

WHY THE COMPARISON IS FAIR

Same river, same ocean: the cleanest comparison there is

Same release point and method

CFFF-collected wild fish are trucked to the Cowlitz Salmon Hatchery, held in raceways and released volitionally, the same way hatchery fish leave (WDFW release site Cowlitz R 26.0002).

Same ocean, same years

Wild and hatchery fish entering the ocean in the same spring share the same estuary, plume, predators and ocean conditions.

Same trap, same counters

Both return to the Cowlitz Salmon Hatchery separator and are counted by Tacoma Power staff, and WDFW reports the counts in the same escapement reports. No harvest of wild fish on the Cowlitz.

Wild fish start behind

Wild juveniles survive reservoirs, collection and trucking first, and the counts include fry and parr. Hatchery spring Chinook leave as yearlings, which should survive better.

This report compares Cowlitz hatchery fish with Cowlitz wild fish, not with other rivers. Comparisons between rivers mix in different stocks, estuaries, hydro systems and counting methods. Here the main thing that differs is how the fish were raised, and that is the test the HSRG

HOW THE WILD SARS WERE CALCULATED

Five years of fish collected, five years of adults back

SARs from capture at CFFF to adult return, not for all fish born above Cowlitz Falls

The calculation

- Average fish collected at Cowlitz Falls Fish Facility, 2020–2024, every life stage
- Average wild (“W”) adults at the separator over the matching five return years
- Adults ÷ juveniles. One division anyone can check from Tacoma and WDFW reports

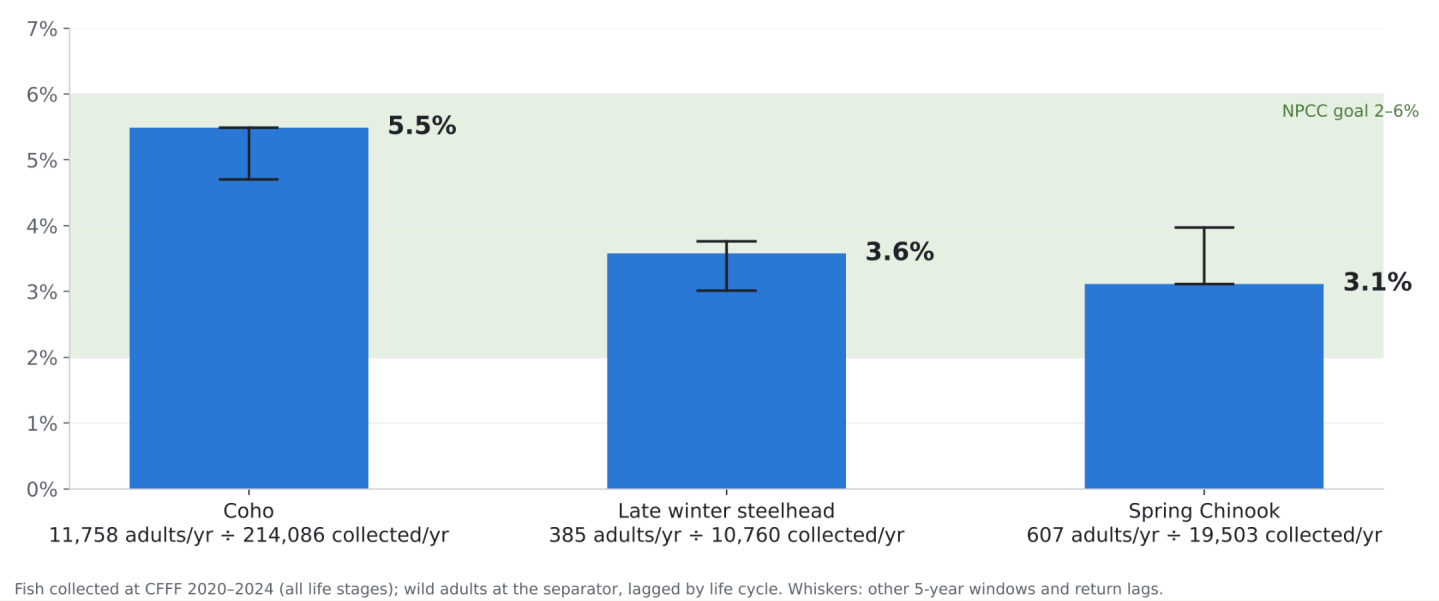
The life-cycle lag

- Coho: 3-year life cycle, mostly out as 1+ smolts → back 1 year after collection
- Spring Chinook: 3-year life cycle, mostly out as 0+ → back 2 years after collection
- Late winter steelhead: 4-year life cycle, out as 1+ smolts → back 2 years after collection

Why five-year averages: captured fish range from fry to smolts and leave over one to two years. Over a five-year window, a fish credited to the wrong year still lands inside the window, so the life-stage assumptions largely cancel. Shifting the window or the lag by a year moves the results only within a narrow band (shown as whiskers). A brood-year analysis by life stage gives the same picture and is in the appendix.

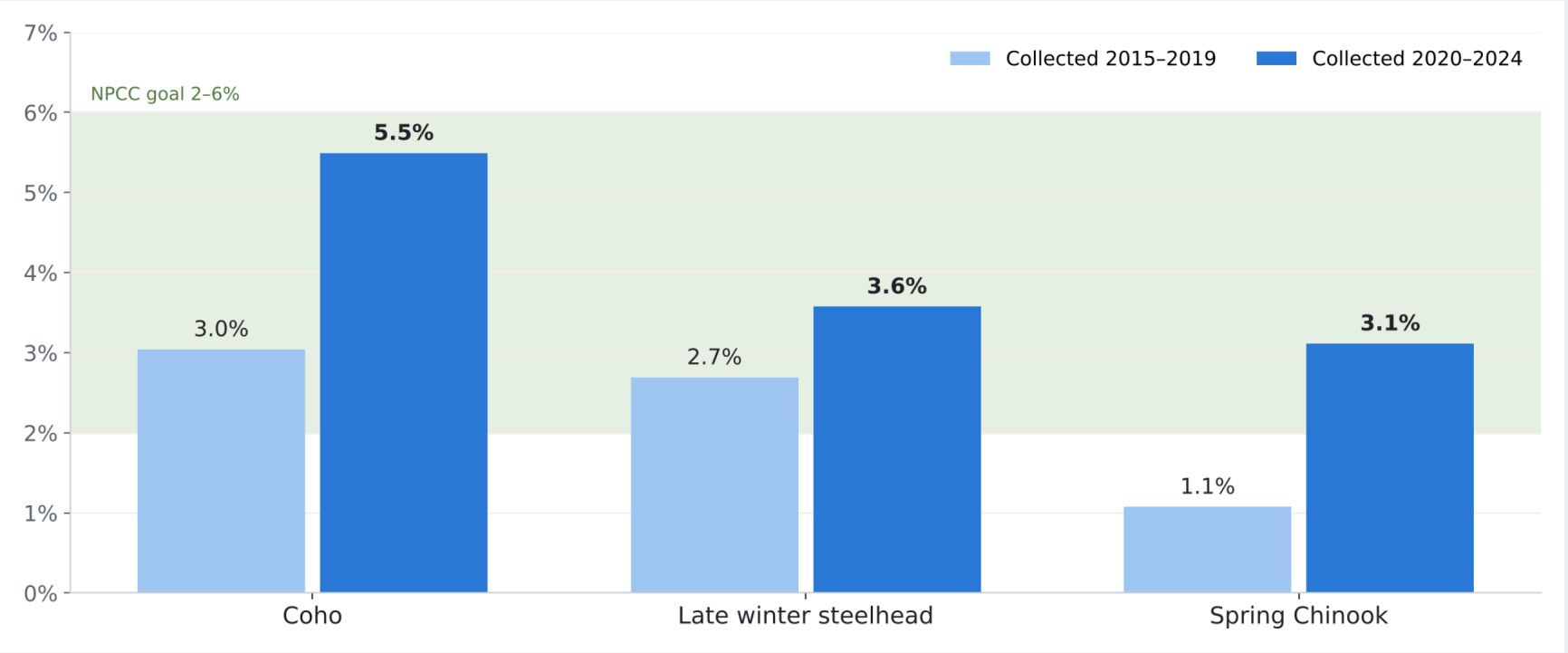
WILD SURVIVAL, FIVE-YEAR AVERAGES

Wild fish return at 3–6%, inside the NPCC goal band



Small numbers, real SARs: spring Chinook and steelhead are collected in the thousands to tens of thousands and return in the hundreds, so single years are noisy. That is why five-year averages are used. Both runs remain far below recovery: targets are 3,600 spring Chinook and 1,000 winter steelhead for the Upper Cowlitz and Cispus, against about 600 and 370 wild adults a year since 2021. Wild coho, at about 11,800 a year, exceed their 2,000 target.

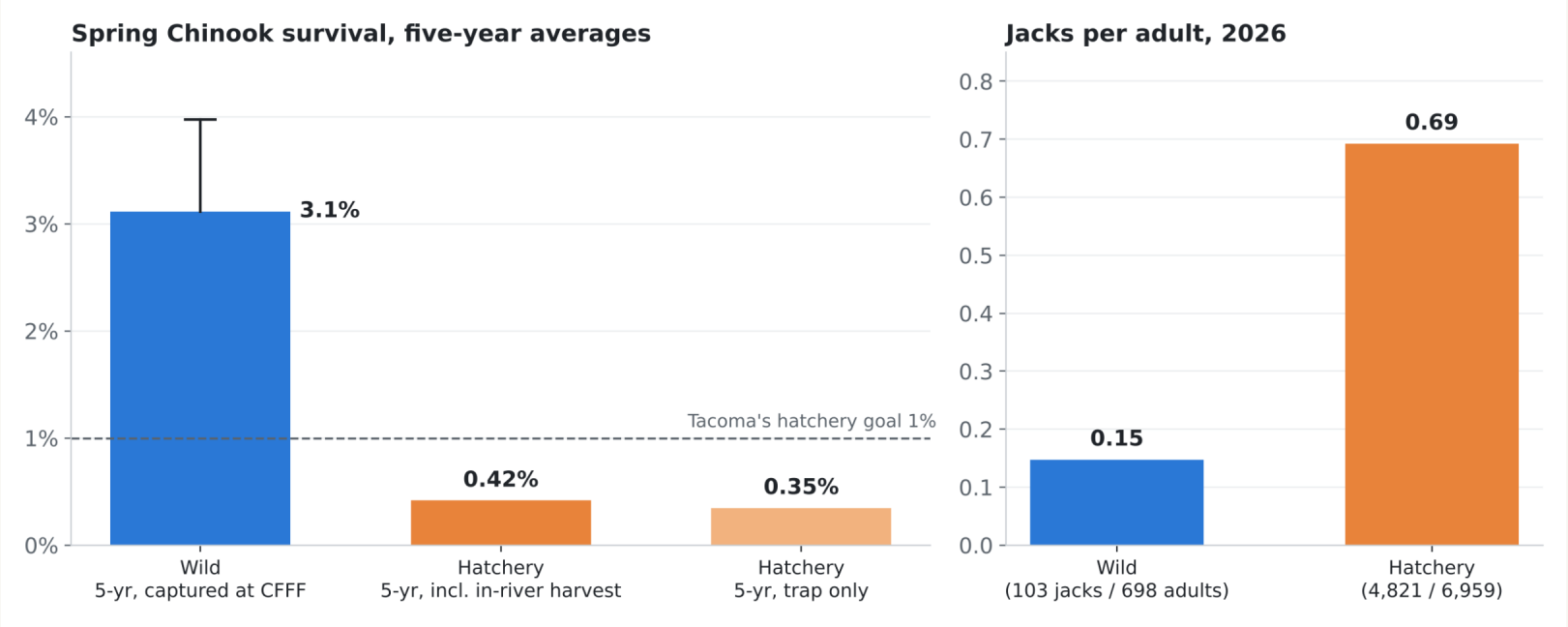
Wild survival is improving, not declining



Same five-year method, earlier window. Coho adults rose from about 4,600 a year to 11,800; spring Chinook from about 280 to 610. The earlier window includes the partial 2019 facility season.

WILD VS. HATCHERY

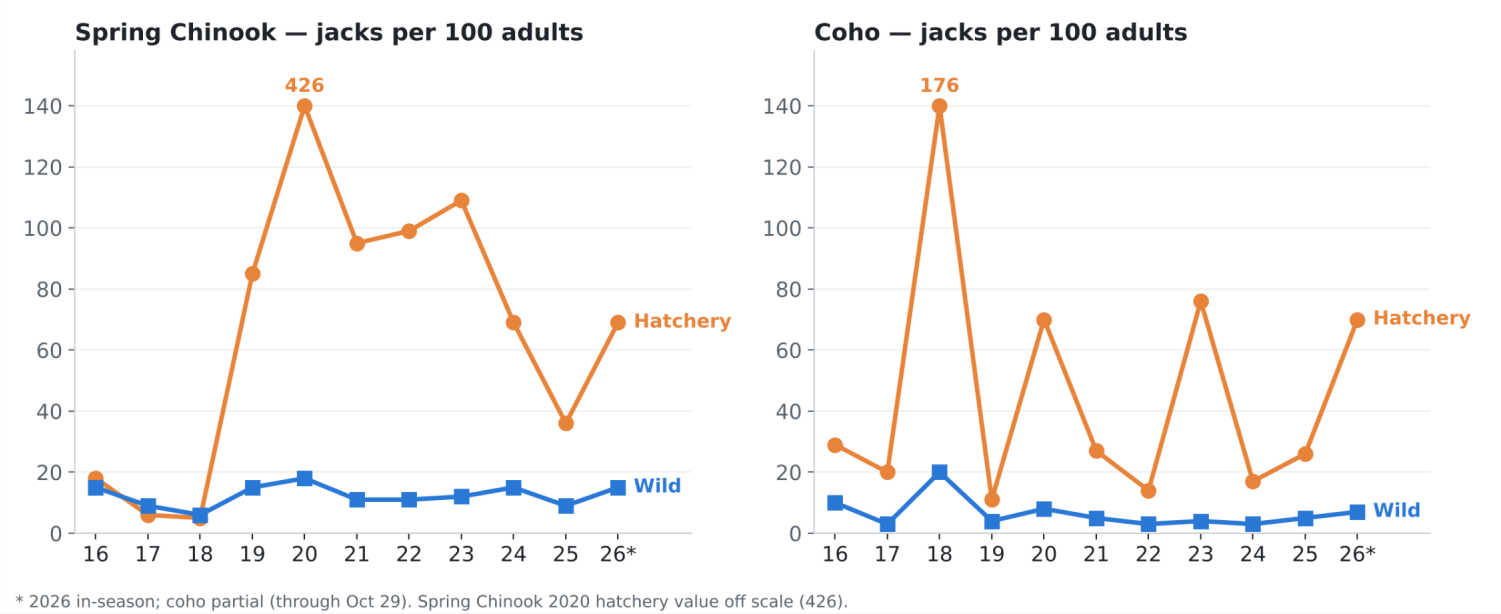
Spring Chinook: wild fish survive 7 to 9 times better



Tacoma's own hatchery spring Chinook SARs have fallen: about 0.86% (2011 FHMP Update), 0.72% (2019 FHMP), and 0.35–0.42% on the five-year average now, all below Tacoma's 1% goal. Coho show the same gap in Tacoma's 2019 FHMP: wild 8.5–8.8% vs. hatchery 0.64–0.96% including harvest.

A SECOND SIGNAL: JACK RATES

Hatchery jack rates run 6–8 times the wild rate



2019–2025 medians, jacks per 100 adults: spring Chinook hatchery 95 vs. wild 12; coho hatchery 26 vs. wild 4. Research links high rates of early male maturation in hatchery spring Chinook to growth and size during rearing (Larsen et al. 2004, Trans. Am. Fish. Soc. 133:98–120).

WHAT THE RECORD ALREADY SHOWS

Tacoma's own numbers point the same way

Source	What it says
Tacoma FHMP Update (2011)	Estimated wild SARs: spring Chinook 5.5%, steelhead 11.8%, coho 2.4%; hatchery spring Chinook about 0.86%. “SARs will be calculated for both the hatchery and wild component.”
Tacoma Draft FHMP (2019)	Wild coho tagged at Cowlitz Falls 8.53–8.82% vs. hatchery 0.64–0.96%. Goals: wild >5%, hatchery >1%. Hatchery spring Chinook 0.717% vs. 1% goal.
WDFW Wild Coho Forecasts	Annual wild coho marine survival from fish tagged at Cowlitz Falls: 0.9–11.5%, rising since 2015.
Tacoma M&E Plan (2024)	Commits to estimating wild SARs every year for coho, spring Chinook and steelhead. No results found published.
Coho Transition Plan	Lists “Complete analysis of SARs for current programs” as still needed.

The pieces exist, but scattered across plan tables and forecast reports. They have not been put side by side for all three species and reported to the FTC or the Annual Program Review. That is why NWFEG did this work.

THE USUAL EXPLANATIONS

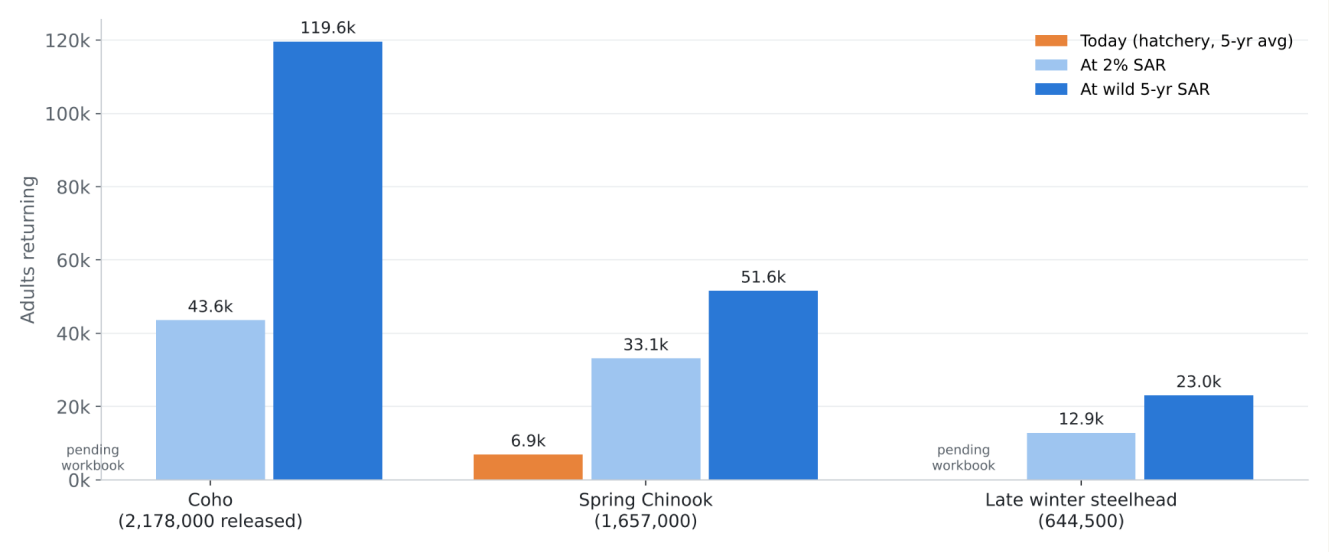
What the wild fish show

Explanation offered	What the Upper Cowlitz wild data show
“Poor ocean conditions”	Wild fish went to sea in the same years and returned at 3–6%. Wild survival rose over the same period hatchery returns stayed poor.
“Collection, trucking and handling stress”	Wild fish go through collection, handling and trucking, and still return at several times the hatchery rate.
“Harvest takes the hatchery fish”	2026 creel: 127 adult spring Chinook kept against about 7,000 hatchery adults at the separator. Harvest cannot explain a sevenfold gap.
“We are meeting release targets”	The HSRG told Congress the measure is adults produced, not fish released. Releases at about 0.4% survival do not deliver the program’s purpose.

The ocean explains the ups and downs both groups share. The hatchery explains the gap between them.

WHAT IS POSSIBLE

Today's releases, at wild survival, would pass the Vision goal



At wild five-year survival these three programs would return about 194,000 adults, more than the Cowlitz Vision's 160,000 river-wide goal for all seven runs, without releasing one more fish. Even 2% survival would mean about 90,000. As the HSRG put it, "with higher survival, harvest and/or conservation goals can be reached with smaller hatchery programs."

WHAT WE ARE ASKING

Measure the hatchery against the river's own wild fish

Tacoma Power leadership

- Adopt adult returns and SAR relative to wild fish as the program's performance measure
- Evaluate the FHMP against its own goals before it is extended or re-dated
- Publish the annual wild SARs committed to in the 2024 M&E Plan
- Bring leadership-level attention to closing the gap

Fisheries Technical Committee

- Agenda item: wild vs. hatchery SARs and jack rates
- Hatchery SARs by release group, including harvest from CWT data
- Which CFFF life stages are trucked downstream, by year
- Review spring Chinook release size, timing and feed, and the jack spawning policy

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SOURCES AND CAVEATS

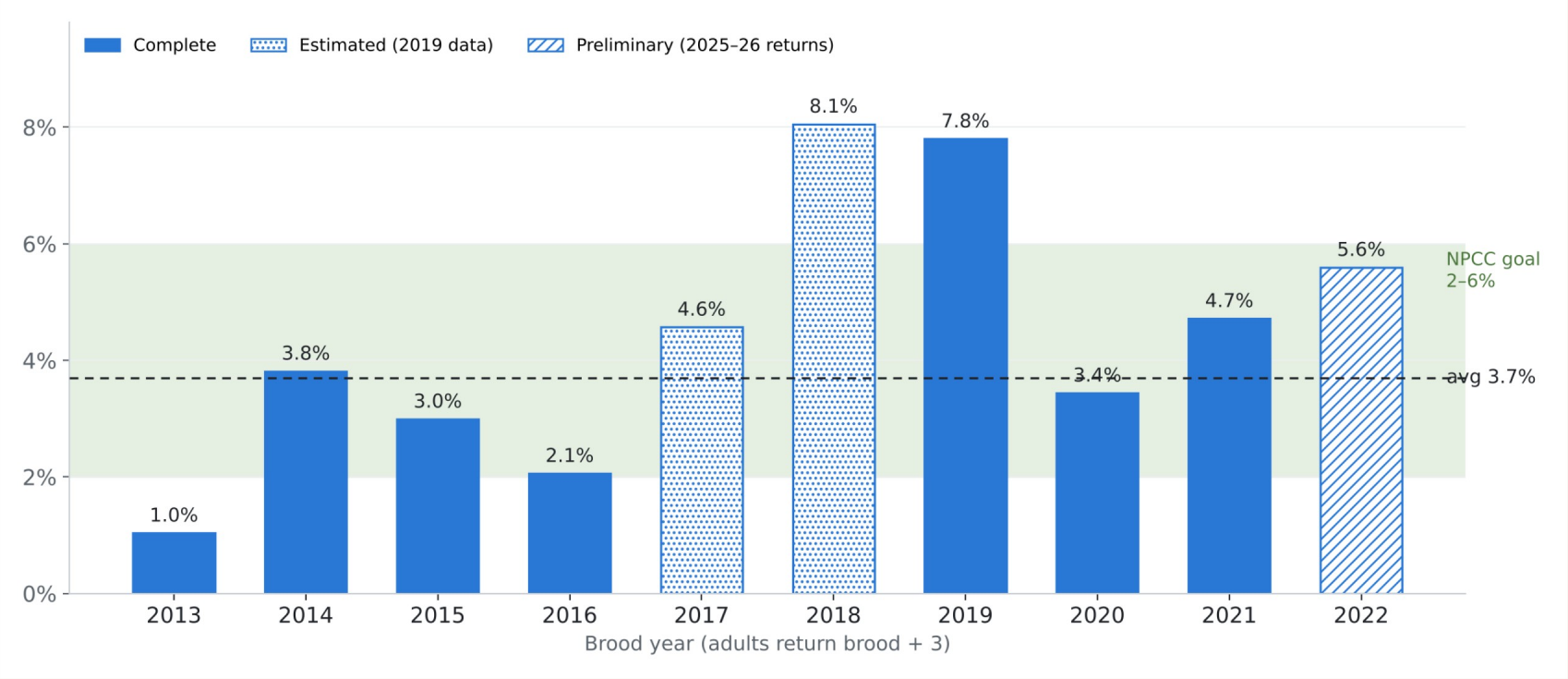
Sources

- Cowlitz Falls Fish Facility season counts, 2014–2018 daily data and 2019–2024 end-of-season reports (Tacoma Power)
- WDFW Final Hatchery Escapement Reports, 2016-17 through 2024-25; WDFW weekly escapement reports, 2025–2026
- Tacoma Power 2025 Annual Program Review, Hatchery Production; WDFW 2025 Future Brood Document, Region 5
- HSRG, Report to Congress on Columbia River Basin Hatchery Reform (2009); HSRG Annual Report to Congress on the Science of Hatcheries (2015)
- Tacoma Power FHMP Update (2011), Draft Final FHMP (2019), Cowlitz M&E Plan (2024), Coho Transition Plan; WDFW Wild Coho Forecasts (marine survival series)
- 2026 OR/WA Spring Joint Staff Report, Table 1; WDFW/LCFRB Lower Columbia Conservation and Sustainable Fisheries Plan (2015 draft)
- NOAA Fisheries, Salmon Life Cycle and Seasonal Fishery Planning; Larsen et al. 2004, Trans. Am. Fish. Soc. 133:98–120

Caveats: 2025–2026 returns are in-season and preliminary. 2019 facility data are partial. Five-year averages with a life-cycle lag; brood-year method in the appendix. Hatchery spring Chinook SAR uses the release goal; hatchery coho and steelhead SARs pending. Collection efficiency not applied; fry and parr counted, so wild SARs are conservative.

APPENDIX · BROOD-YEAR METHOD · COHO

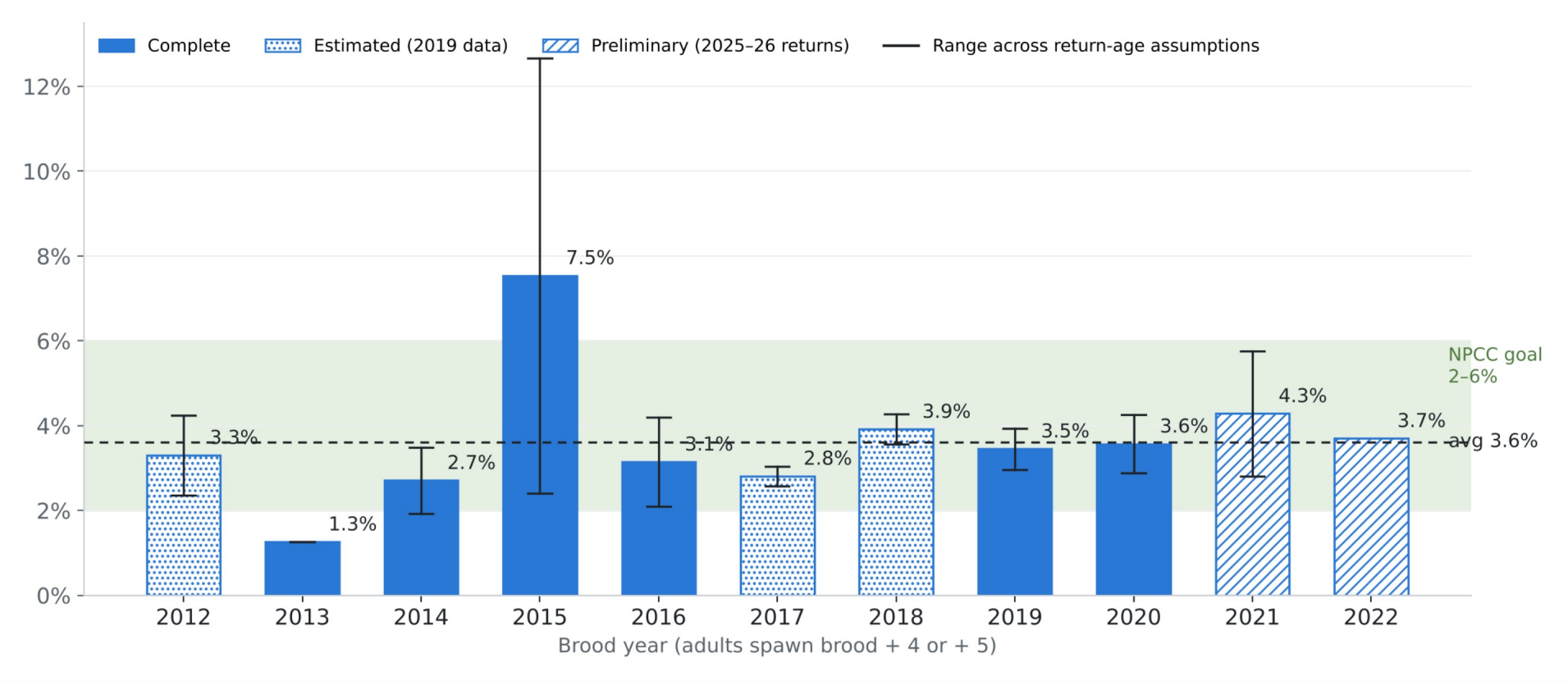
Wild coho: 3.7% average, 5.9% over the last five brood years



Coho Type N, Upper Cowlitz River W. Adults return at age 3. Juveniles include fry and parr.

APPENDIX · BROOD-YEAR METHOD · STEELHEAD

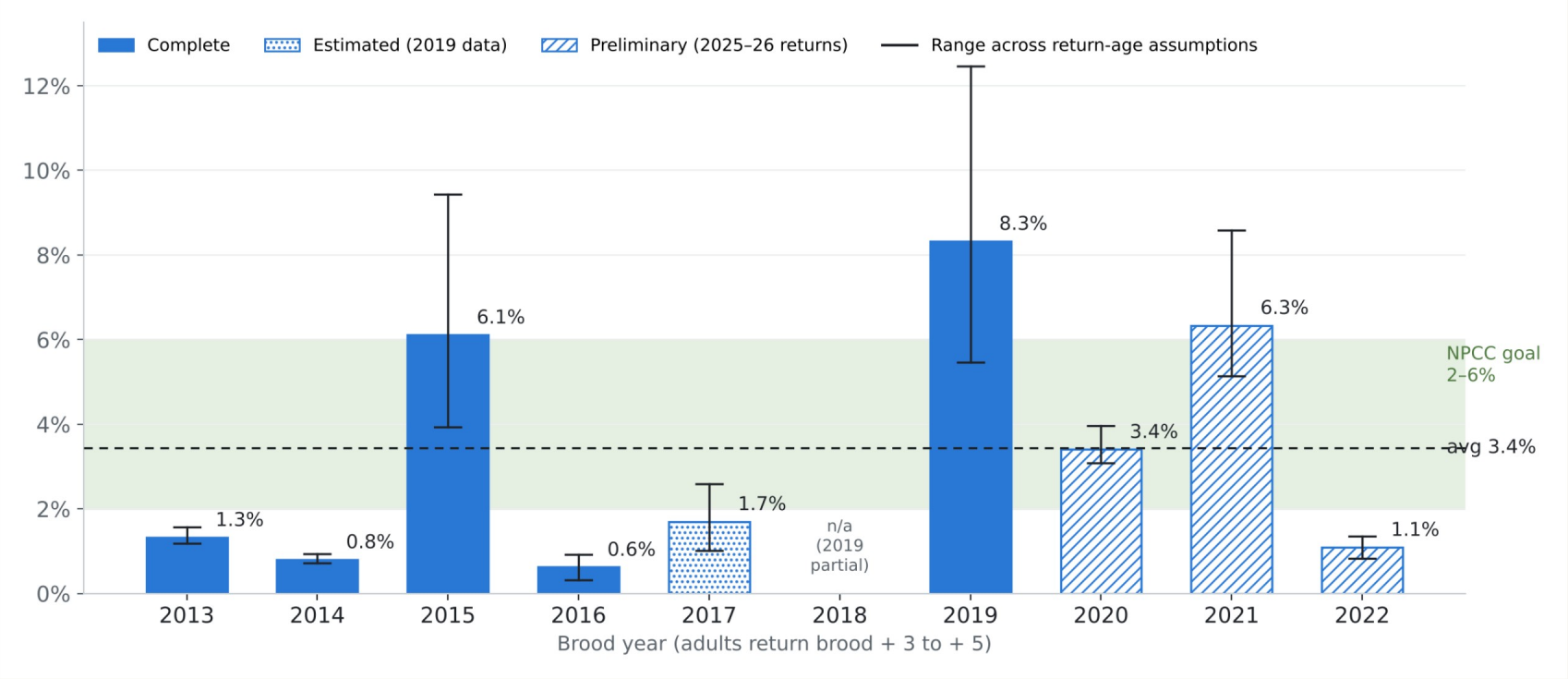
Wild late winter steelhead: steady near 3.6%



Steelhead Winter-Late, Upper Cowlitz River W, by spawning year. Bars: equal age-4/age-5 split; whiskers: range if all returned at one age.

APPENDIX · BROOD-YEAR METHOD · SPRING CHINOOK

Wild spring Chinook: 3.4% average, from far fewer juveniles



Chinook Spring, Cowlitz River W. Bars: equal age 3/4/5 split; whiskers: range if all returned at one age. Brood 2018 omitted (2019 facility data partial).