Meeting Minutes

Lewis River Aquatic Technical Subgroup

To: Lewis River Aquatic Technical Subgroup   Date: June 18, 2024

From: Larissa Rohrbach, ATS Coordinator, Anchor QEA

Re: Final Minutes of the May 23, 2024, Lewis River Aquatic Technical Subgroup Meeting

The Lewis River Aquatic Technical Subgroup (ATS) meeting was held virtually on May 23, 2024, from 9:00 a.m. to 1:00 p.m. Attendees are listed in Section IV of these meeting minutes.

Action Item Summary

- A formal decision document for the Proposed Adult Coho Upstream Transport Target for 2024/2025 will be drafted for Aquatic Coordination Committee (ACC) review in June, with a vote to approve in July.
- Chris Karchesky will prepare an ACC Review Draft of the 2024 Habitat Preparation Plan (HPP) for ACC to review in June, with a vote to approve in July.
- Erik Lesko and Larissa Rohrbach will produce a final draft of the ATS Charter.

Agreements or Recommendations

- The ATS will recommend to the ACC that numbers of adult Coho Salmon to be transported above Swift Dam in 2024 and 2025 should be increased beyond the current target of 9,000 fish. Additional monitoring for potential effects on Bull Trout will also be included in this recommendation. Final proposed numbers will be documented in an ACC decision document that will be drafted by PacifiCorp and distributed to the ACC for review and approval.

Review Items

- None.

Finalized Documents

- The Utilities will finalize and submit the 2023 Lewis River Annual Operations Report to the Federal Energy Regulatory Commission by June 30, 2024.

I. Welcome (Lesko)

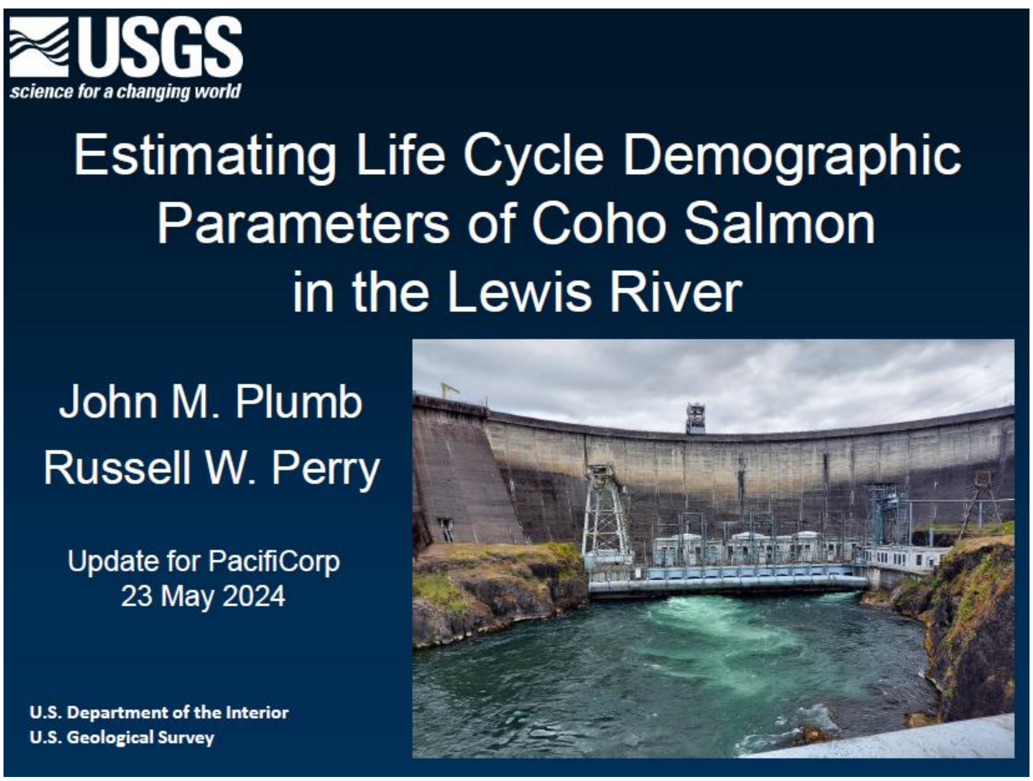
A. Review Agenda

The National Marine Fisheries Service Hatcheries Branch Information Request Update (B) was moved to the second topic of discussion due to time constraints.

II. ATS Meeting Topics

A. Lewis River Coho Salmon Integrated Population Model – Progress Update by the U.S. Geological Survey

Russel Perry and John Plumb are research fish biologists on the quantitative biology team at the U.S. Geological Survey Western Fisheries Research Center. Their work includes mark-recapture analysis and integrated population models (IPM) on the Snake and Cowlitz rivers. Perry and Plumb presented on the progress and components of the Lewis River Coho Salmon IPM.



Overview

- Model purpose and structure
- Input Data
- Life Cycle Model Results
- Future Data Needs

USGS

Integrated Population Model

- Adapted from Fleischman et al. (2013) CJFAS
  - Courter et al. 2019 (TAFS)
  - Perry et al. (2017) (BPA report)
  - Plumb and Perry (USGS OFR)
- Observation error
  - Abundance estimates
- Process error
  - Annual variation in productivity

USGS

Data Needs for an IPM

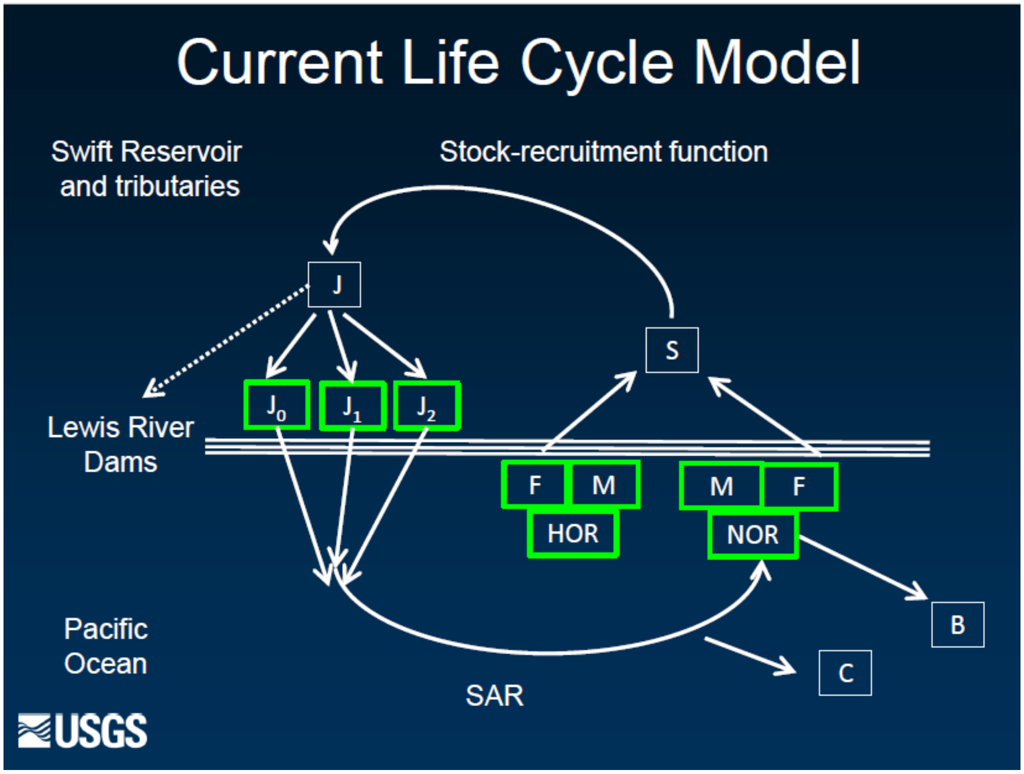
- Abundance
  - Juvenile and adult
- Age Structure
  - Juveniles – collection data
    - Ages 0, 1, and 2
    - Adult – collection data
      - Jacks and Adults
      - Two ocean ages
      - Total range 1 to 5 due to juvenile age
  - Lack juvenile ages in adult age composition
  - Need to link adults to brood year

USGS

Two-Stage Model

- Stages affected by different factors over time
  - Operates on an annual time scale
  - Spawner → juvenile emigration
    - Environmental factors
    - Collection and Transport
    - Habitat capacity and productivity
  - Juvenile emigration → spawner
    - Ocean conditions
    - Harvest and brood take
    - Juvenile life history

USGS



Coho Salmon Transition Matrix

Observed Data

Year	Brood year			Juveniles			Adults							
	y	S	J	Age 0	Age1	Age 2	Age 0.0	Age 1.0	Age 2.0	Age 0.1	Age 1.1	Age 2.1	RJ	RA
2011	3	1127	[illegible]05	10170	16253	1782	0	113	225	451	113	225	17928	756
2012	4	805	17089	900	10632	5557	0	81	161	322	81	161	36613	1070
2013	5	997	13046	805	7085	5156	0	100	199	399	100	199	50317	1669
2014	6	108	43421	3087	30391	9943	0	11	22	43	11	22	22757	2090
2015	7	1127	48438	1348	41673	5417	0	113	225	451	113	225	53511	1539
2016	8	3390	31980	10170	16253	5557	0	339	678	1356	339	678	96912	2603
2017	9	441	45451	2511	37784	5156	0	44	88	176	44	88	39380	3818

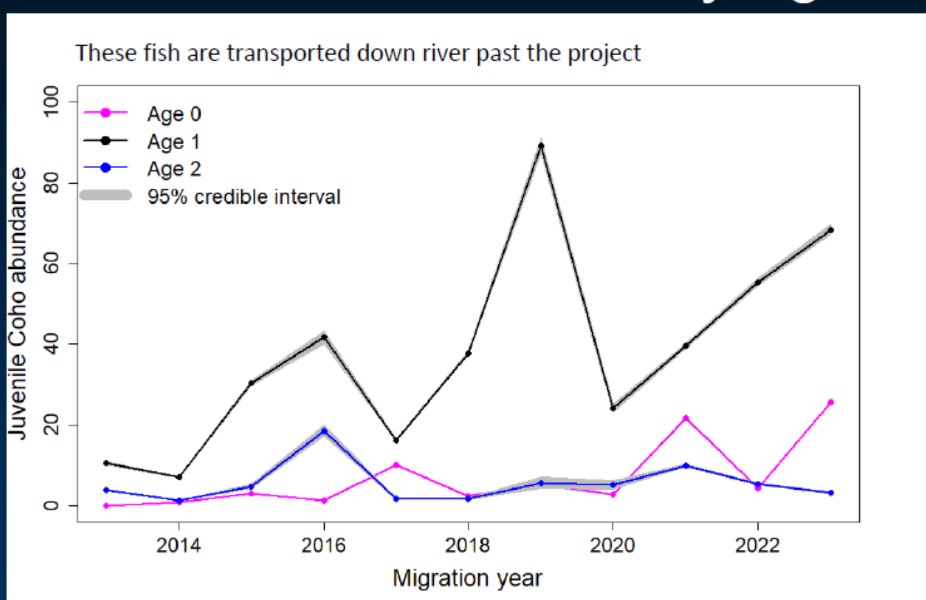
Not real data

USGS

Input Data

USGS

Juvenile Abundance by Age



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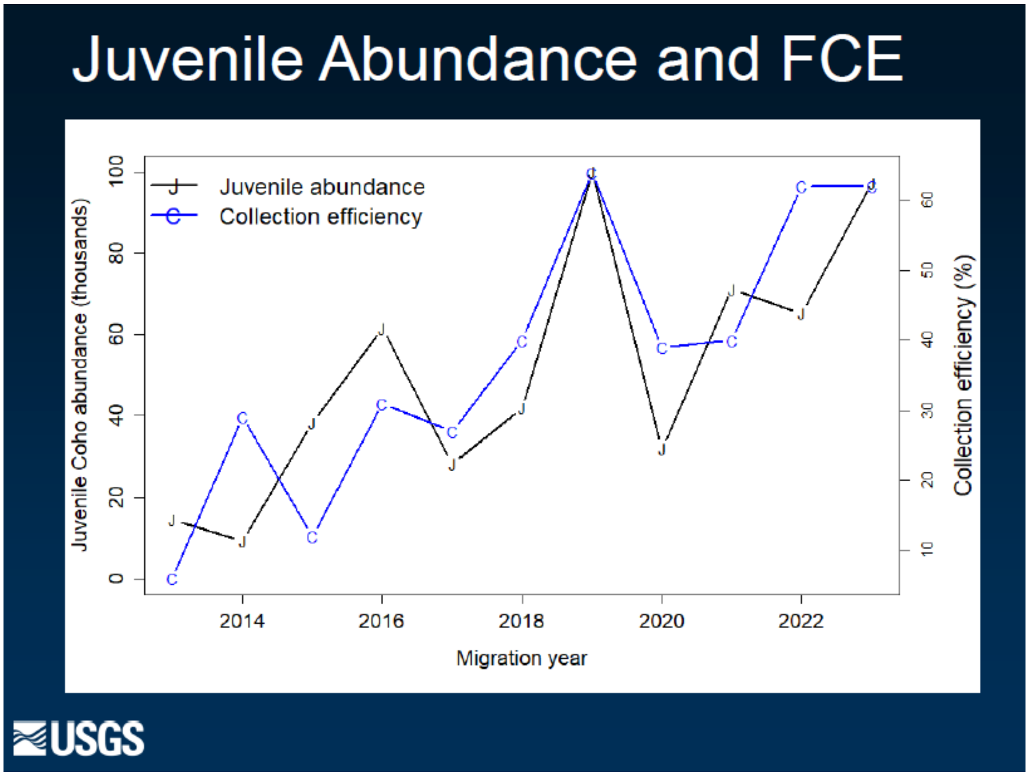
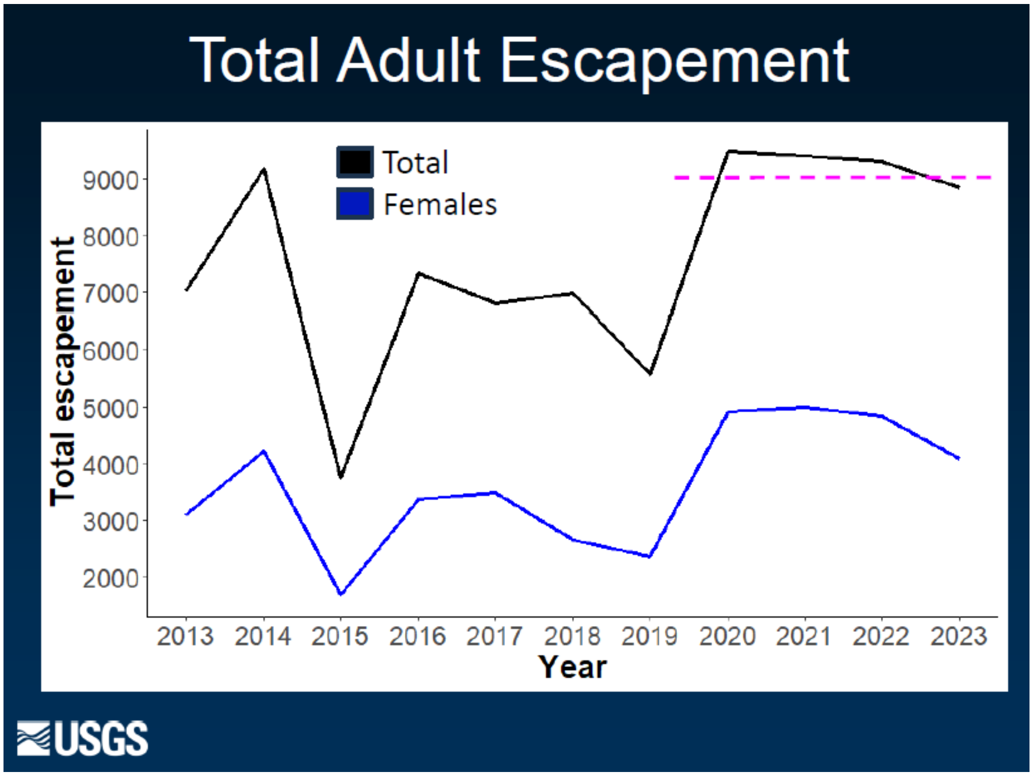
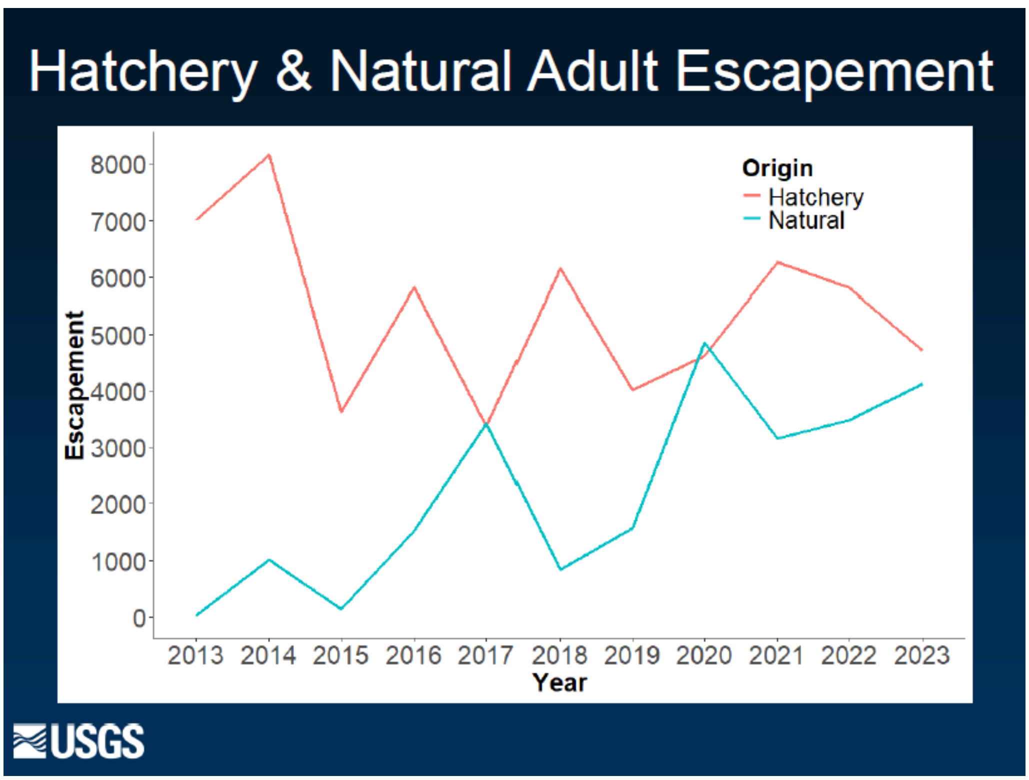


Juvenile emigration is the most uncertain life stage in the model. Relationships can be made between juvenile life history and ocean conditions, harvest, and brood take when juvenile emigration is further informed within the IPM. Juvenile abundance input data is sorted by age, with age-1 fish comprising most of the model's data. Juvenile abundance is strongly correlated with fish collection efficiency (FCE). Marc Johnson noted that age-0 and age-2 fish made up half of the captured and observed outmigrants. Johnson asked whether these fish caught at the collection facility exhibit smoltification. Plumb confirmed the fish caught were smolting and in the process of downstream migration.

Plumb said the age of a fish is determined by their size and timing of passage through the collection facility. Karchesky said parr are observed early in the season. Covariates, such as flow, push younger fish through the collection facility at an earlier age than smolts. The year 2021 exhibited high water levels that resulted in small fish arriving at the collection facility in December and January. Perry said it is assumed that fish ages 1 and 2 migrate to the ocean; however, age-0 fish upon the timing of collection spend another winter in the lower Lewis River or Columbia River. Scale analyses of juvenile migrants should be conducted to confirm migration age. Without this information, the brood years of returning adults will be uncertain because the juveniles can pass through the collection facility at three different ages. Kale Bentley asked whether age is based on weekly size data. Plumb answered that daily counts, size distributions, and sample rates are used.


Total Adult Escapement
Total
Females
Total escapement
9000
8000
7000
6000
5000
4000
3000
2000
2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year
USGS


Hatchery & Natural Adult Escapement
Origin
Hatchery
Natural
Escapement
8000
7000
6000
5000
4000
3000
2000
1000
0
2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year
USGS

Life Cycle Model Results

USGS

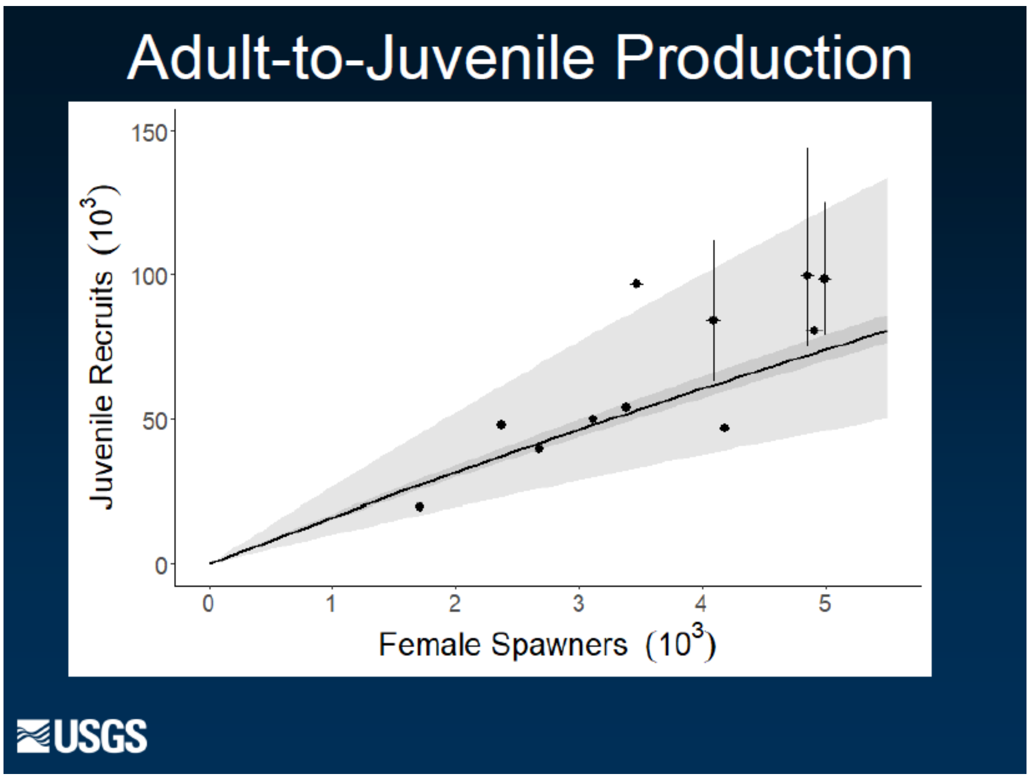
Life Cycle Model Output

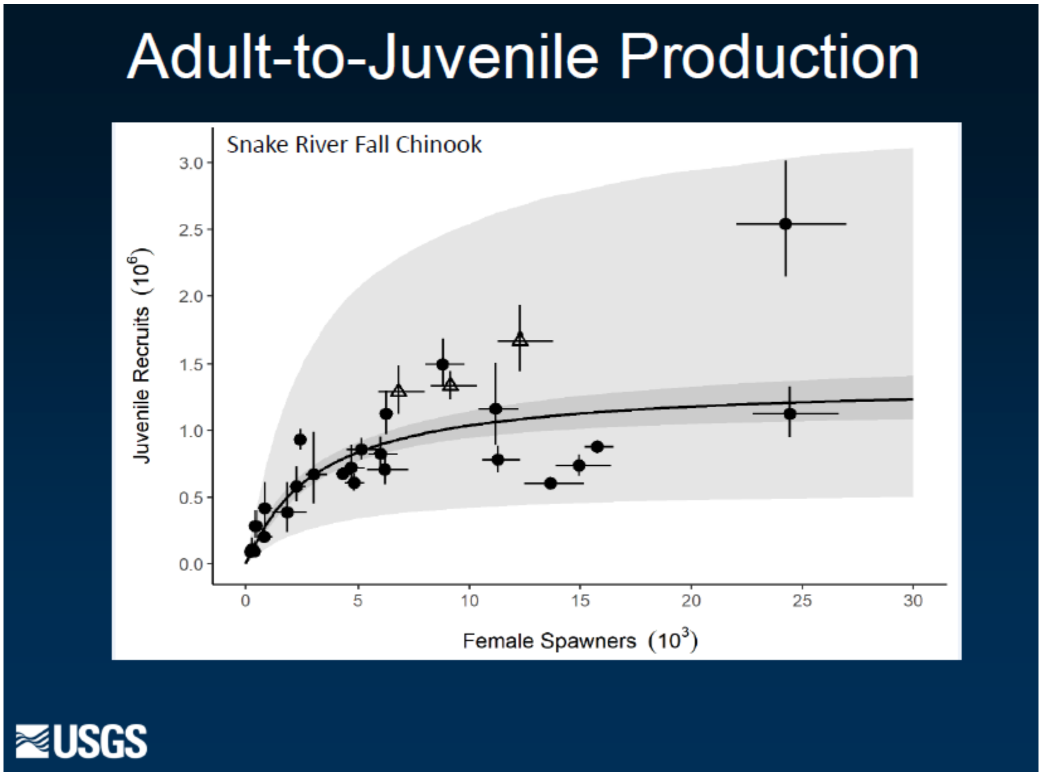
- Adult-to-Juvenile Production
  - Beverton-Holt model
  - Productivity (juveniles per spawner)
  - Capacity (maximum juvenile production)
- Smolt-to-Adult Survival (SAR)
  - Includes Harvest
  - Brood stock removal
  - Does not account for age at outmigration

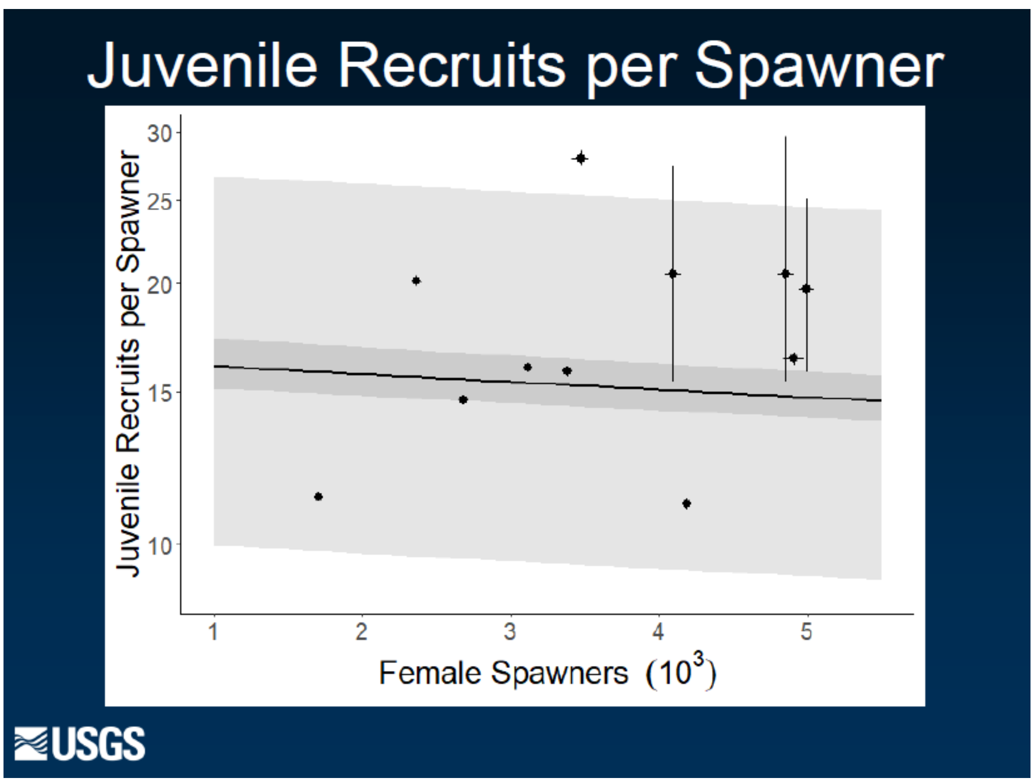
USGS

Juvenile recruits per spawner are based on expanding the number of juveniles collected in the floating surface collector and transported downstream. The productivity slope is the average production given the number of fish collected. Productivity is adjusted for historical collection efficiencies.

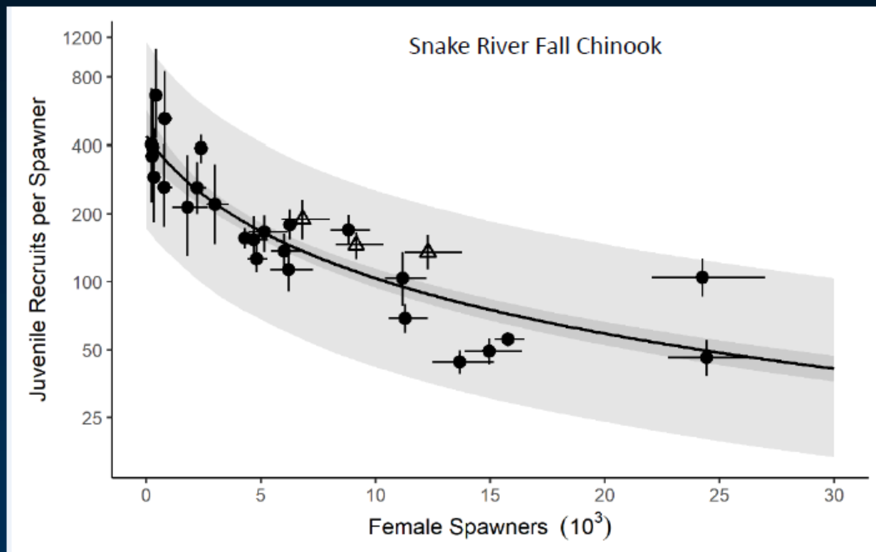
The relationships suggest a carrying capacity cannot be detected from the existing data for the Lewis River. Comparisons to the dataset for the Snake River were presented for contrast, showing a population that has reached carrying capacity in some years, indicated by a plateau of adult-to-juvenile production numbers.




Adult-to-Juvenile Production
Snake River Fall Chinook
Juvenile Recruits (10^6)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
25
30
Female Spawners (10^3)
USGS


Juvenile Recruits per Spawner
Juvenile Recruits per Spawner
30
25
20
15
10
1
2
3
4
5
Female Spawners (10^3)
USGS

Juvenile Recruits per Spawner



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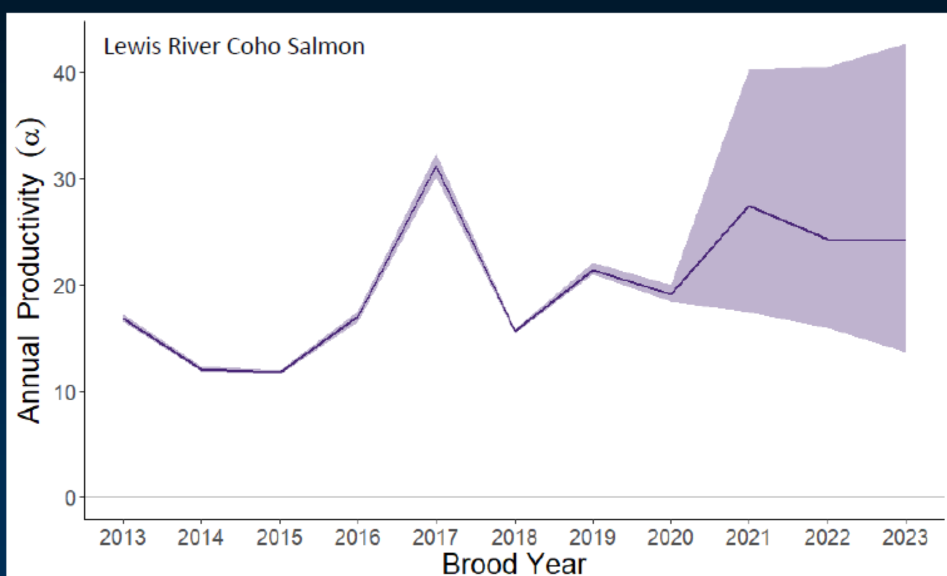
Adult-to-Juvenile Productivity (α)



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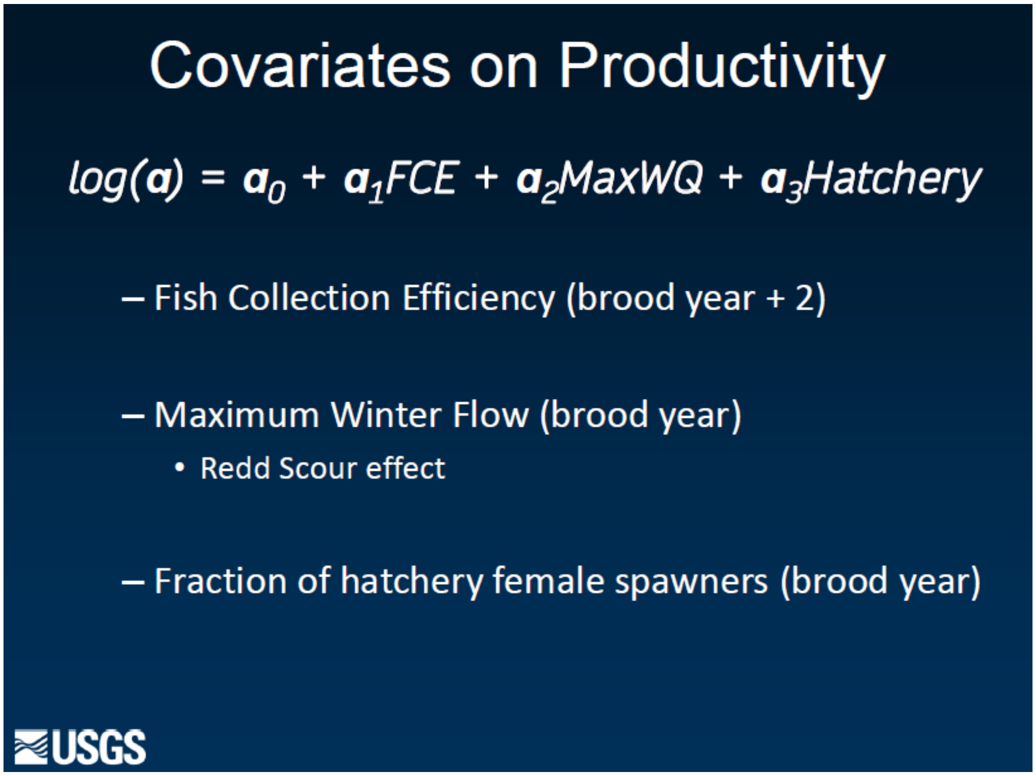
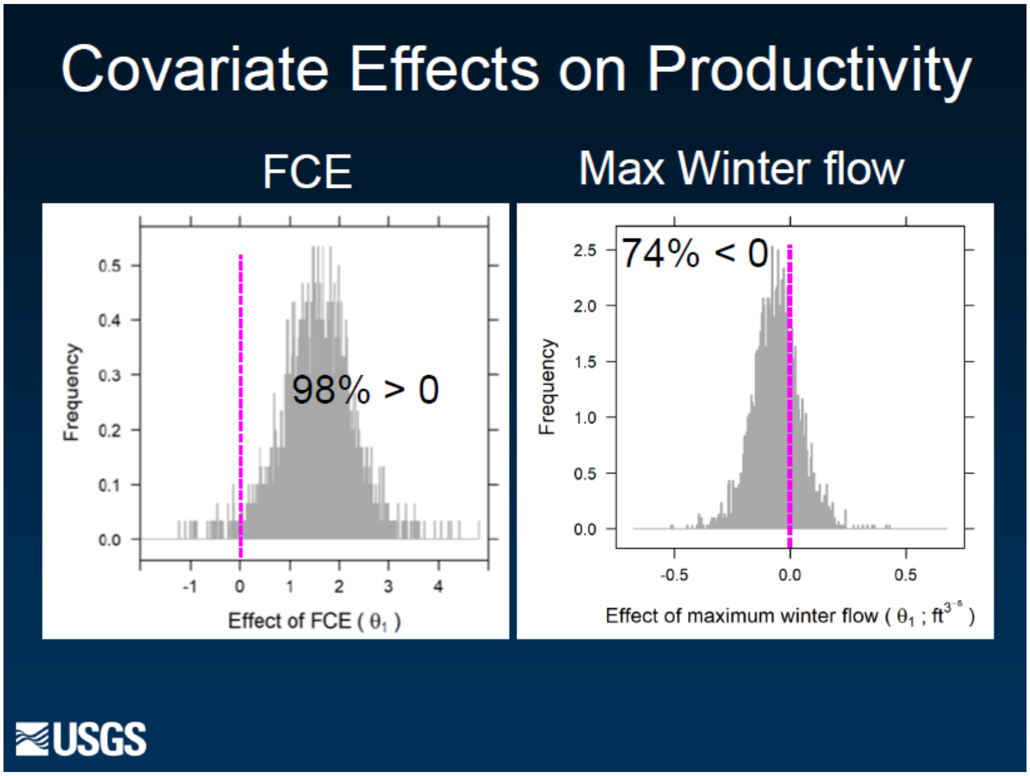
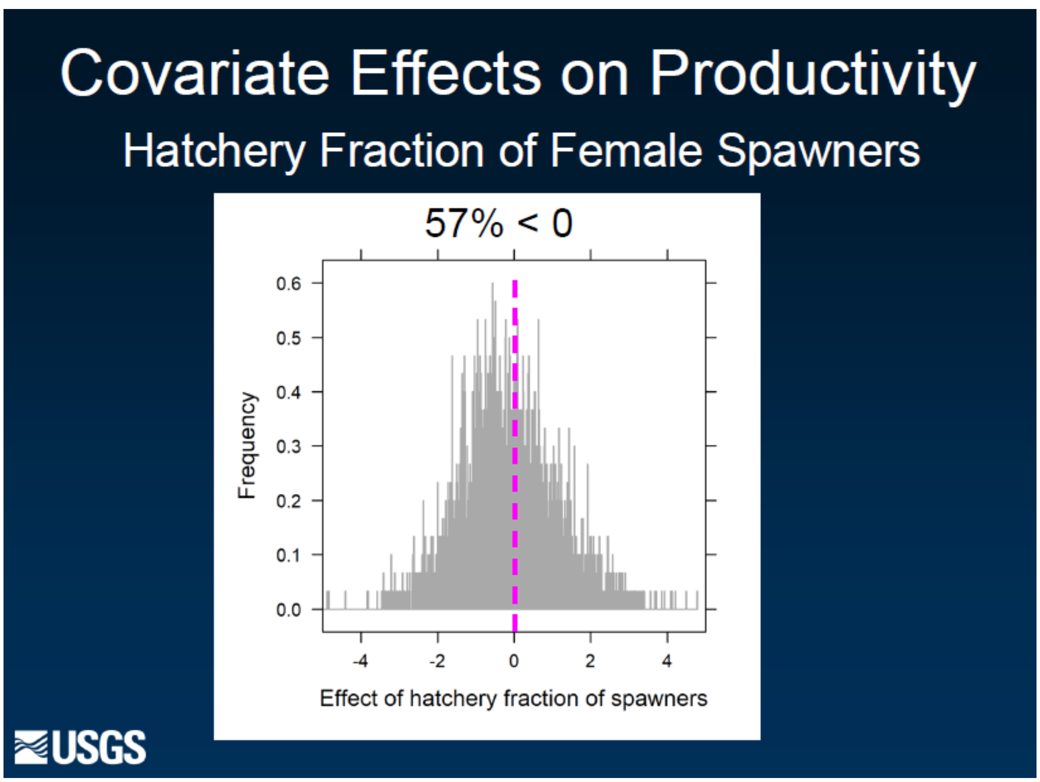
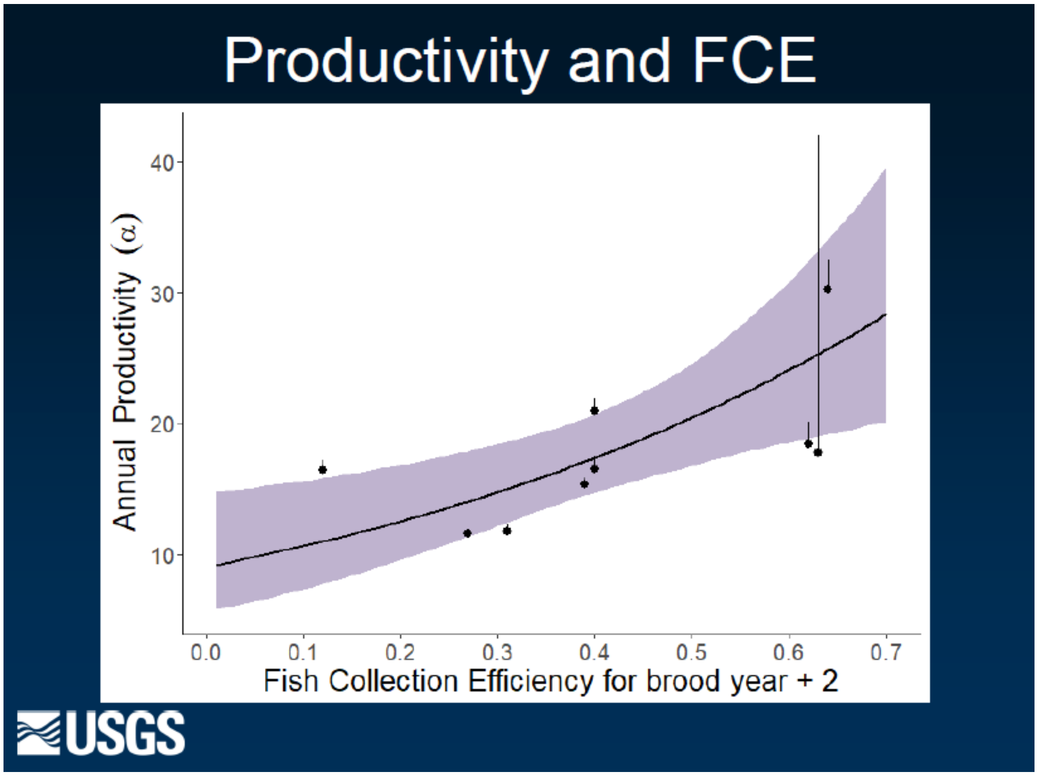
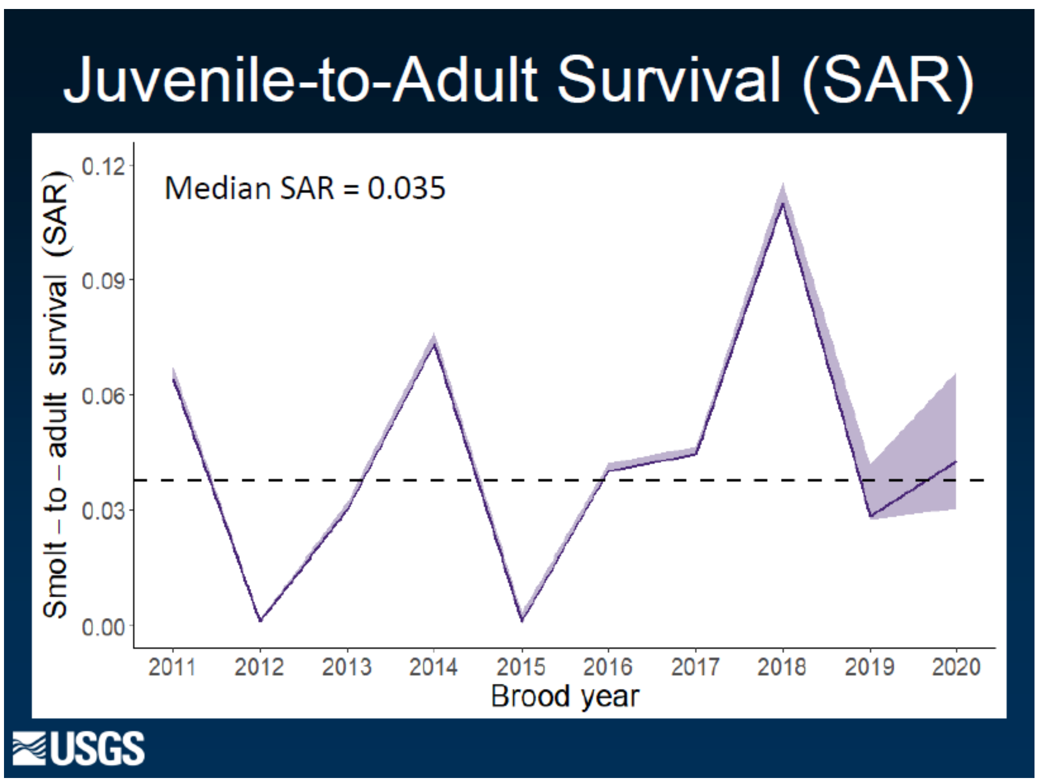


The three covariates in the IPM are fraction of hatchery-origin female spawners, FCE, and maximum winter flow. The median productivity is 44 recruits per spawner. FCE has a significant positive correlation with productivity. Perry said the relationship between FCE and annual productivity does not account for density dependence. If collection efficiency is set to 1, pre-collection efficiency can be analyzed. Maximum winter flow has a slightly negative effect on productivity. There is no indication the hatchery fraction of female spawners influences productivity. Bentley asked how FCE is estimated. Karchesky replied that FCE is a measure of system performance and is based on annual collection efficiency estimates. FCE is not a variable coming out of the IPM; rather, FCE is used as an index for efficiency to interpret the IPM output.


Covariate Effects on Productivity
FCE
Max Winter flow
98% > 0
Frequency
Effect of FCE (θ1)
74% < 0
Frequency
Effect of maximum winter flow (θ1 ; ft3-s)
USGS


Covariate Effects on Productivity
Hatchery Fraction of Female Spawners
57% < 0
Frequency
Effect of hatchery fraction of spawners
USGS


Productivity and FCE
Annual Productivity (α)
40
30
20
10
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Fish Collection Efficiency for brood year + 2
USGS


Juvenile-to-Adult Survival (SAR)
Median SAR = 0.035
Smolt – to – adult survival (SAR)
0.12
0.09
0.06
0.03
0.00
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Brood year
USGS

Plumb said the last three estimates of survival generated by the life-cycle model have more uncertainty due to incomplete returns for the last 3 years.

Future Data Needs

- Age Composition of Adults
  - Scale data
  - PIT-tag data

USGS

Questions?

Thanks to:

Chris Karchesky
Jeanie Heltzel
Stephen Yuncevich

USGS

At this time, the model output does not suggest that spawning Coho Salmon upstream of Swift Dam has reached carrying capacity, although this could be a function of not having enough data point at high densities of spawners upstream. Thus, the model only estimates productivity. High water flow can increase redd mortality and lower freshwater productivity. In the IPM, if juveniles are not collected, they are not contributing to productivity estimates. Johnson asked whether the relationship between proportion of hatchery males out-planted and system productivity has been explored. Relative reproductive success studies typically show larger differences between hatchery males and wild males than among females. Plumb has not explored this relationship, but it can be analyzed in the future. Bentley noted that FCE has increased each year, while the ratio of hatchery to natural-origin fish has become 50/50. Perry said that a lot of variation in the model is explained by FCE, and productivity could be influenced by the fraction of hatchery fish, but he would be cautious about adding more variables to explain a small amount of variation remaining in the model and only has 11 data points on recruitment to evaluate. Available data is limited because it is early in the reintroduction effort.

Karchesky asked whether the IPM output suggests an inflection point for productivity related to the number of fish transported upstream. Plumb replied that the IPM would not explicitly inform that number. Perry said there is little evidence in the data for density dependence and little information to estimate carrying capacity. The IPM suggests the number of juvenile recruits increases linearly as the number of spawners upstream is increased. There is an opportunity currently where experimentally increasing the number of spawners upstream is possible. If a leveling of recruitment is observed, the IPM will be able to estimate carrying capacity.

Bentley noted the fish that are collected and used to inform the IPM are the result of density dependence; density-dependent outmigration from tributaries may determine the number of fish that enter the collection facility. FCE has not achieved the targets laid out in the Lewis River Hydroelectric Projects Settlement Agreement. With FCE being relatively low and a significant driver of productivity and capacity estimates, it would be beneficial to estimate productivity from fish sampled before they reach the collection facility. This method would inform how many fish to transport upstream to Swift Reservoir. It is important to identify what FCE must consistently be to achieve replacement in the upper watershed. Bentley questioned the relevance of basing seeding capacity on juveniles that become collected in the FCE. Bentley said it would be beneficial to identify an interim viability goal, the number of adults needed to achieve this interim goal, and the percent seeding of total capacity.

Perry said the IPM controls for FCE by including it as a covariate; the adult-to-juvenile production slide shows results after including the two covariates of FCE and winter flow. The model could be extended to break it up into additional stage transitions input into the IPM to generate more abundance estimates for the tributaries, in the reservoir, at the dam, and in the lower river. This could be difficult to implement because adults not only spawn in several upper tributaries, but in the reservoir as well. It would be beneficial going forward to identify where density dependence is occurring.

Plumb said that IPM output is not a true estimate of FCE, rather an index of the number of fish milling around the front of the collector that chose to enter the collection facility. Perry said that using mark-recapture studies based on acoustic telemetry can identify what portion of the population is collected. Bentley said it will be informative to estimate carrying capacities independent of FCE to avoid transporting large numbers of fish with very low FCE resulting in diminishing returns. Karchesky said that due to the dynamic nature of the Lewis Basin, fish can pass through the watershed when facilities are not operating for collection and the number of fish moving through the reservoir is less easily estimated than originally thought. As the IPM evolves, identifying these data gaps will be important to further match juveniles with the correct brood and age. The IPM provides the best information available to make short-term management decisions.

Jeff Garnett asked how the IPM relates to other fish species in the Lewis Basin. Karchesky said the goal is to develop IPMs for other transport species in the Lewis Basin; however, it may be challenging to develop a model for spring Chinook Salmon in the early years because of the acclimation program that occurred until 2019.

An IPM report will be sent out this summer/early fall. The report will include future data needs, such as determining the age composition of adults through passive integrated transponder (PIT)-tag and scale data, will be addressed. Bentley asked whether the IPM output would change if a prior was placed on carrying capacity. Plumb is unsure whether this would change the results. Literature that discusses how Coho Salmon numbers affect the carrying capacity of different watersheds will be included for discussion in the IPM report.

B. National Marine Fisheries Service Hatcheries Branch Information Request Update (Melton: 10 mins)

Emi Melton said Wild Fish Conservancy (WFC) Northwest has made a Freedom of Information Act (FOIA) request for all Hatchery and Genetic Management Plans (HGMP) in which Washington Department of Fish and Wildlife (WDFW) has been involved in operations. Specific Endangered Species Act coverage has not been provided for the Lewis River Hatchery complex HGMPs from 2015 in which the ATS is involved; however those have been provided. Additionally, several other HGMPs within the Lewis Basin where WDFW is the sole applicant to the program have been requested.

Glaser said that is appropriate because the older HGMPs submitted in 2015 are in the formal records, and hopefully they will be updated to match new programs. Glaser clarified that WDFW was not the sole operator of the programs pertaining to the HGMPs submitted in 2023; hopefully the WFC will reach out with questions. Melton would appreciate it if ACC representatives could be informed of this FOIA. Lesko will inform the ACC of this update at the June 13, 2024, meeting.

C. Proposed Adult Coho Salmon Upstream Transport Target for 2024 (Karchesky: 30 mins)

Karchesky summarized two proposals for the 2024 Adult Coho Salmon Upstream Transport Target. The IPM estimates of adult-to-juvenile Coho Salmon production support transporting larger numbers of fish (females) upstream than has been done in the past (goal of 9,000 fish per year).

It was decided the PacifiCorp shall draft decision document that the ACC can review for their June meeting and to be voted on in July. The first proposal is to transport 5,000 fish upstream in addition to the 2024 upstream transport target of 9,000 fish. The 5,000 fish will be composed evenly of 2,500 females and 2,500 males. This would result in a total of 14,000 adult Coho Salmon transported upstream. The second proposal is to transport only 2,500 fish upstream in 2024 in addition to the upstream transport target. This would result in a total of 11,500 adult Coho Salmon transported upstream. Transporting slightly fewer fish in 2024 would allow additional monitoring to occur to evaluate any interactions with Bull Trout. The intent under this scenario would be to transport the full additional 5,000 fish in 2025.

The current approved transport curve in the Annual Operating Plan would allow for both proposals to augment the number of early and late adult Coho Salmon transported each week according to the tables Karchesky shared in the meeting (below). These proposals are focused on 2024; however, a 2-year goal would help provide more direction when forming transport strategies.

	Current Upstream Transport Curve		Proposed 2024 Transport Curve		
Transport Timing	TOTAL	Cumulative	TOTAL	Cumulative	Diff
Sept 1 - 15	360	360	560	560	200
Sept 16 - 30	1,440	1,800	2240	2800	800
Oct 1 - 15	1,560	3,360	2380	5180	820
Oct 16 - 31	2,400	5,760	3780	8960	1,380
Nov 1 -15	720	6,480	1120	10080	400
Nov 16 - 30	960	7,440	1540	11620	580
Dec 1 - 15	840	8,280	1260	12880	420
Dec 16 - 31	720	**9000**	1120	**14000**	400

	Current Upstream Transport Curve		Proposed 2024 Transport Curve		
Transport Timing	TOTAL	Cumulative	TOTAL	Cumulative	Diff
Sept 1 - 15	360	360	460	560	100
Sept 16 - 30	1,440	1,800	1840	2800	400
Oct 1 - 15	1,560	3,360	1993	5180	433
Oct 16 - 31	2,400	5,760	3067	8960	667
Nov 1 -15	720	6,480	920	10080	200
Nov 16 - 30	960	7,440	1227	11620	267
Dec 1 - 15	840	8,280	1073	12880	233
Dec 16 - 31	720	**9000**	920	**11500**	200

Perry emphasized the opportunity to increase the range of the number of spawners transported upstream. Variability in transport numbers and FCE will help the IPM estimate productivity and capacity. It is just as important to release lower numbers of adult Coho Salmon upstream as high numbers. The low numbers of Coho Salmon transported upstream could result from future years of low return. Karchesky agreed and stated that it would be beneficial to take advantage of the fact that enough fish are available presently to meet the additional transport goal of 5,000. Following the implementation of the *Lewis Coho-Hatchery Transition Plan* (Transition Plan), Coho Salmon used in the segregated program will not be available for upstream transport. This will result in subsequent low abundance years likely.

Bentley agreed that if there are currently spawners on hand at the hatchery, the opportunity should be taken to reach for the additional 5,000 transport goal. In reference to the Bradford et al. (2000) study, the Swift Basin would be fully seeded at 1,200 Coho Salmon total using the lowest capacity per kilometer as a conservative approach—using the highest capacity the total would be approximately 14,000 Coho Salmon based on wild equivalent spawners. In future years where numbers available for upstream transport are low, only natural-origin returns (NORs) could be passed upstream. This would also provide variability in upstream transport composition data between NORs and hatchery-origin returns (HORs). Bentley suggested setting up experiments to obtain contrasting data points for composition and abundance.

Glaser agreed that they should move forward with supplementing an additional 5,000 fish upstream in 2024. The 2024 return forecast for combined earlies and lates is 19,000. Reaching this supplementation target upstream of Swift Dam is a higher priority than providing fish for the Yale Reservoir HPP. If the total amount of adult Coho Salmon transported upstream is 14,000, this would leave fewer fish available to use in the HPP.

Johnson asked what is known about adult-to-adult replacement for Coho Salmon moved above dams. Perry answered that composite life-cycle parameters can be generated across the two life stages used in the IPM. Capacity estimates will reveal where 1-to-1 replacement stands at a given number of spawners. Karchesky said when more adults are transported upstream, production increases would likely generate increased numbers of juveniles. In turn, the basin would see more NORs in subsequent years as a part of that initial brood.

Karchesky said that in 2019 during a hydrologic event (a high-flow year), a high number of yearling fish left the system at the Swift Collector. This doubled the FCE. Several years later, high returns of NORs were available for upstream transport. Johnson emphasized the need to balance the risk of transporting NORs above the dams without knowing the impacts of FCE on population fitness with an absence of information on carrying capacity for juvenile production. Perry said information-based assumptions of capacity would allow the model to look at life-cycle productivity and determine replacement at specific FCEs.

Bentley said that if hatchery reform phases and reintroduction targets are developed based on interim viability goals, proportion of hatchery-origin spawners (pHOS) can be more actively monitored. Currently, the primary concern is transporting fish to spawning grounds and not composition of the fish moved upstream; as the plan moves ahead, focus will shift to composition. Having an IPM that is independent of FCE is valuable to determine the level of replacement.

Johnson said he would feel comfortable with transporting adult Coho Salmon upstream if there is a clearly defined effort to inform the IPM. Glaser said a plan has not been formalized on how to move into the next phase of management; obtaining data points based on transport numbers will help craft future management strategies.

The Bull Trout Working Group supports the second proposal to taking a cautious approach to increasing numbers for upstream transport and monitor for potential negative effects of Coho Salmon to Bull Trout.

Jeremiah Doyle said the Bull Trout Working Group advises that adult Coho Salmon upstream transport proceeds with caution to anticipate possible negative impacts of Coho Salmon on Bull Trout. Currently the Bull Trout population above Swift Dam consists of at minimum 200 individuals and at maximum 500 individuals. There can not be a direct comparison between Coho Salmon and Bull Trout management because Bull Trout cannot be propagated in hatcheries. The Bull Trout Working Group is not against increasing the number of Coho Salmon transported upstream; however, they advise increasing the upstream transport target slowly and incrementally. Any negative effects from transporting the maximum number of Coho Salmon upstream will impact the already low numbers of Bull Trout above Swift Dam.

Bentley noted that adding more Coho Salmon above Swift Dam may not automatically generate negative effects to Bull Trout. Positive effects of salmon subsidies to Bull Trout have been seen in the North Fork Lewis River. Bentley is not aware of information that egg-to-fry survival limits Bull Trout populations. Bentley said that it would be beneficial to evaluate the effects of higher numbers of Coho Salmon on the existing Bull Trout population to evaluate species interaction.

Doyle said that there have been instances of redd superimposition with the current number of Coho Salmon above Swift Dam. The Bull Trout population will be required to deal with increases in the Coho Salmon population in the future. Given that the Lewis Basin is an altered habitat and that the number of Coho Salmon transported upstream can be controlled, it would be recommended to gradually increase transport numbers.

Plumb asked whether there is information available from the past 11 years on how Coho Salmon upstream transport numbers affect Bull Trout redd counts. Doyle responded that there is 15 years of redd data from the upper basin available; however, for some areas there are only 5 years of available data. Bull Trout have three tributaries they are able to spawn in. Annual trends have been stable. Last year, however, the first major dip of redd counts in approximately 5 years was observed.

Glaser said that if 5,000 additional Coho Salmon are transported this year, it may be possible that subsequent years of high transportation numbers are not required. Karchesky asked whether it makes sense to increase the target by 5,000 for 1 year versus several years. Perry said that if there is evidence of reduced recruitment, multiple years of high transport numbers provide insight into the environmental factors driving year to year variability. More years of high transport numbers, rather than 1 year, would help inform the IPM.

Lesko said it would be beneficial to outline these proposals in a formal decision document for the ACC to provide formal justification for the proposal. Garnett's input will be important in formulating justifications within the decision document. Glaser proposed to formulate this proposal as a single-year goal to achieve a high data point. Bentley noted that recruitment information would not be available before next fall. Bentley proposed to formulate this proposal on a scale of several years. Lesko said the next steps are to bring this decision document to the ACC in June. Karchesky will discuss the points made in this meeting with Garnett to refine the decision document.

D. Coho Salmon Hatchery Implementation Alternatives Update (Young and Huff: 25 mins)

WDFW provided a cost breakdown for the installation and operation of water chillers and divided raceways at Lewis River Hatchery. PacifiCorp reviewed this document and responded with several concerns. A primary concern is the ongoing operations and maintenance costs for both alternatives. Lesko proposed having a small group discussion with interested ATS members to walk through these concerns.

Lesko said a third alternative could be using Speelyai Hatchery as a facility for rearing juvenile Coho Salmon. There would be no need for water chillers if Speelyai Hatchery has space for the early rearing of Coho Salmon during October when the water temperatures in Lewis River are warmest. Glaser proposed putting this alternative into writing, having a small group discussion with interested members, and bringing this information back to the ATS.

Kevin Young noted that this alternative is included in the cost analysis that shows the cost of egg incubation. Speelyai Hatchery's infrastructure does not provide adequate space to rear juvenile Coho Salmon. The facility is already being used to hold Rainbow Trout and for programs rearing spring Chinook Salmon and kokanee salmon which would then need to be transferred to Lewis River Hatchery. Glaser shared concerns that would constitute effects on other programs which is not consistent with the transition program goals. Young and Lesko will discuss the logistics of this alternative and bring this information back to the ATS.

Glaser said that the primary focus of ATS discussion should be the timing and capacity of implementing transition plans. Implementing the Transition Plan this year with current infrastructure would result in smaller egg takes, extension of current production by two to four egg takes, and smaller sizes of rearing vessels. Implementation either needs to be delayed this year or an alternative must be decided on before fall. Young responded that if water chillers were obtained this year, they would not be ready to operate before October. Young responded that the interim step to implementing the full Transition Plan would also require infrastructure modifications, such as new screens and dividers in raceways, so it is not a reasonable choice to partially implement the Transition Plan.

A small group meeting will be held to discuss the third alternative, capacity and related logistics outside of the ATS meetings. The effects of rearing Coho Salmon on other programs at Speelyai Hatchery will also be discussed and formalized into the alternatives document.

E. Yale Habitat Preparation Plan Review and Comments (30 mins)

Adult Coho Salmon recolonization upstream will promote nutrient enhancement and gravel tilling in Cougar Creek. All fish in the Yale HPP are from Lewis River Hatchery. Amelia Johnson proposed that comments from the Lower Columbia Fish Recovery Board on the HPP do not need to be discussed at today's meeting unless clarification is needed. The comments focused on how the HPP is framed within the broader scope of hatchery production and NOR recovery goals. Karchesky will prepare a final draft for ACC review in June. Comments and responses will be included in an appendix of the document.

Josua Holowatz updated the ATS on a rule change that will occur in early fall prior to the transport of fish to the basin. The minimum length of salmon transported upstream is 16 inches. This will not be a concern to the HPP because only adult Coho Salmon will be transported upstream. Signage will be placed at Swift Reservoir. Holowatz asked whether it would be helpful to add wagon-wheel PIT-tag antennae to tributaries of the Yale reservoir to determine how late arrivals will behave in higher water levels. In past years, a high-water event caused many fish to move into the constructed channel. Doyle responded that all wagon wheels are already in use. A foot survey would hold the same function as a wagon wheel. Karchesky said that the PIT-tag array placed near the bypass reach in Swift Reservoir last year detected over 100 fish.

F. ATS Charter Revisions (Rohrbach: 15 mins)

Rohrbach sent out the ATS charter for review. Revisions made to the document's language should be sent to Rohrbach no later than next week. Lesko and Rohrbach will then draft a final version of the charter.

G. Hatchery Practices and Pathology (Hatchery and Fish Health Staff: 20 mins)

Sean Roon provided an update on hatchery practices and pathology. All juveniles are healthy, and the June release of age-0 spring Chinook Salmon will occur next week. Adult spring Chinook Salmon being held for broodstock were examined at Speelyai Hatchery, and no concerns were noted. The veterinarian decided to forgo conducting injections on broodstock to limit prophylactic use of antibiotics. In previous studies, injected individuals were showing the same results as those that had not been injected.

Young provided updates on broodstock collection. Spring Chinook Salmon collection is on track with the week-ahead collection goal. Fish are being held at Lewis River Hatchery until Tuesday, May 28 for brood collection. Code-wire tagged (CWT) fish will be the only broodstock collected for the remainder of this week. Collection of winter steelhead for the conservation program will wrap up this week; 23 females have been spawned. Speelyai Hatchery planted Rainbow Trout to Swift Reservoir and the power canal on Wednesday. All smolts from Merwin Hatchery have been planted, and late winter steelhead are currently being released.

Holowatz said that the spring Chinook Salmon fishery may open earlier than June 1. Glaser added that the fishery may open the weekend of May 25. If the fishery opens early, fish would still be taken randomly to meet broodstock needs. The goal would be to achieve those needs with CWT fish and backfill with non-CWT fish. Excess fish that are not needed at Lewis Hatchery will be transported upstream.

Holowatz said juvenile fall Chinook Salmon seining activities will start on Tuesday, May 28.

Mike Chamberlain said both tagging trailers should be at Lewis Hatchery on Friday, May 24. Marking next week includes Coho Salmon.

Rohrbach asked whether pre-release sampling of spring Chinook Salmon is planned. Roon answered that routine pathology sampling is being conducted on a small number of fish, but he will coordinate with Erik Lesko.

III. ATS Administration (Rohrbach)

The next meeting will be on June 27, 2024, and will be virtual only.

IV. List of Attendees

Name	Affiliation
Caitlin Burd	Anchor QEA
Larissa Rohrbach	Anchor QEA
Amanda Farrar	Cowlitz PUD
Amelia Johnson	LCFRB
Kathryn Blair	NOAA Fisheries
Marc Johnson	NOAA Fisheries
Emi Melton	NOAA Fisheries
Jeremiah Doyle	PacifiCorp
Chris Karchesky	PacifiCorp
Erik Lesko	PacifiCorp
Jeff Garnett	USFWS
Russel Perry	USGS
John Plumb	USGS
Kale Bentley	WDFW
Mike Chamberlain	WDFW
Bryce Glaser	WDFW
Josua Holowatz	WDFW
Anja Huff	WDFW
Tracy Peterson	WDFW
Aaron Roberts	WFDW
Kevin Young	WDFW
Keely Murdoch	Yakima Nation