

Cowlitz River Fisheries and Hatchery Management Plan Species Decision Rules

– WDFW

July 10, 2019

Definitions

- **FHMP = Fisheries and Hatchery Management Plan**
- **pHOS = Proportion of natural spawners composed of hatchery-origin fish**
- **pNOB = Proportion of hatchery broodstock composed of natural-origin fish**
- **PNI = Proportion of natural influence**
 $\sim = \text{pNOB} / (\text{pNOB} + \text{pHOS})$

Definitions

- **HOR = Hatchery Origin Recruit**
- **NOR = Natural Origin Recruit. “from the gravel”**

Background



COWLITZ RIVER
MAYFIELD, WASH.

Background

- Endangered Species Act
- Wild Salmonid Policy
- Settlement Agreement
- Hatchery Scientific Review Group
- Biological Opinions
- Sustainable Fisheries Plan
- Lower Columbia Salmon Recovery Plan

Fisheries and Hatchery Management Plan

- Required by Article 6 of the Cowlitz River Hydroelectric Project Settlement Agreement
- Update every 6 years:
 - 2004
 - 2010 (*2011*)
 - 2016 (*2019*)

FHMP - Components

- a) Number and Size of Cowlitz Hatchery Releases
- b) Rearing and Release Strategies
 - a) *+/- production adjustments ~ recovery*
- c) Credit Mechanism
- d) Monitoring and Evaluation
- e) Fisheries Management Strategies

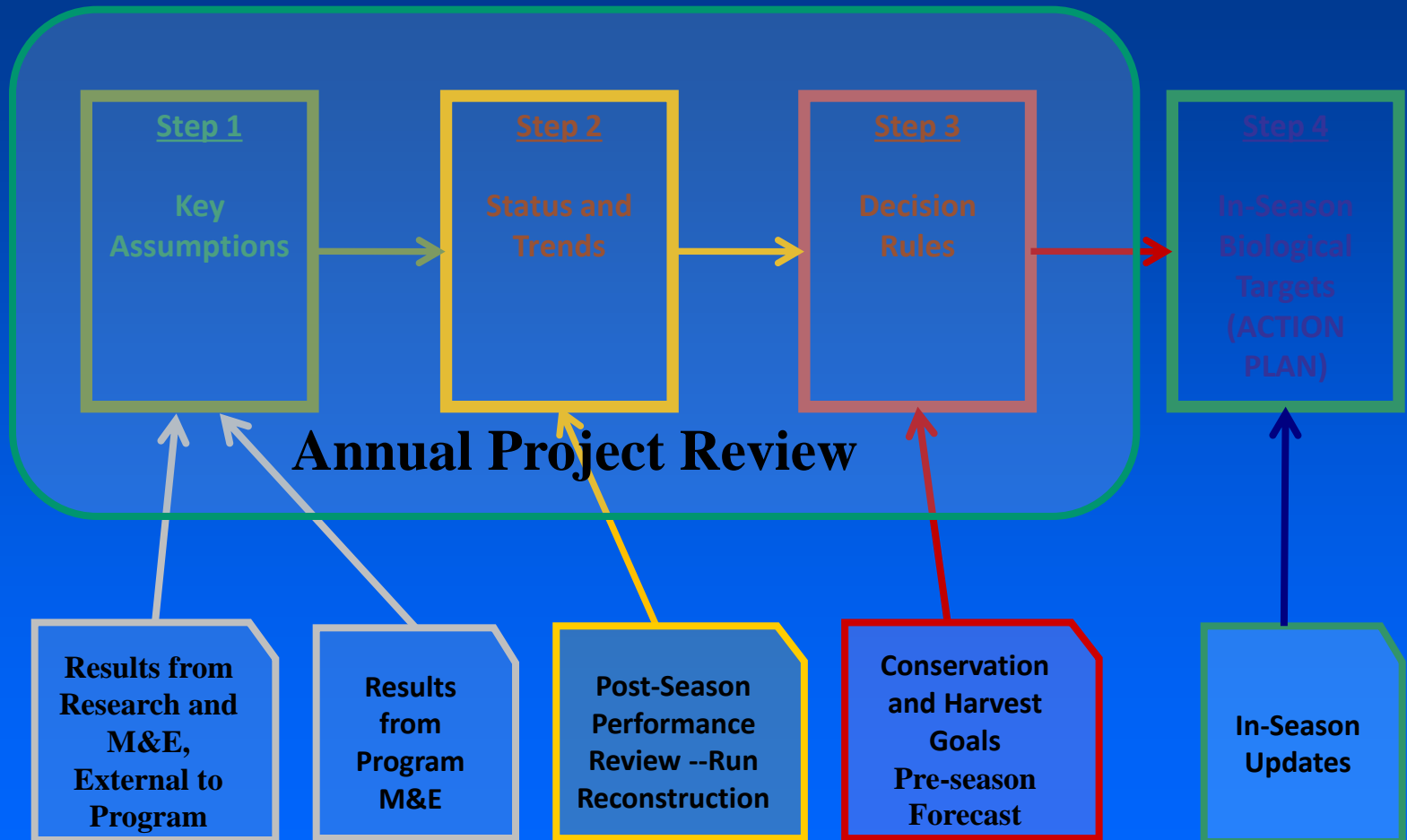
2011 FHMP Decision Rules

Decision Rules Link

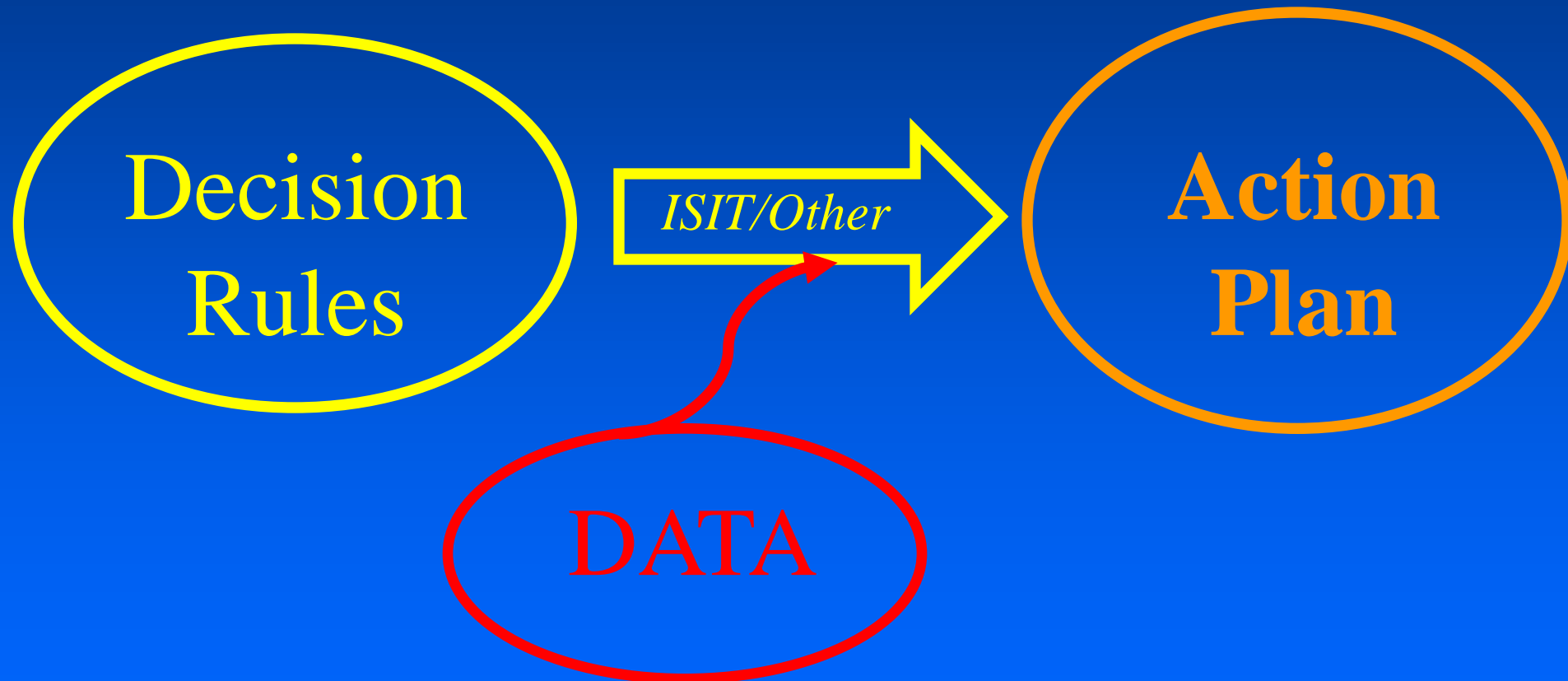
Key Assumptions to Recovery Goals

- Pre-Determined and Agreed Upon
- Based on Key Assumptions
- Designed towards Recovery
- Set Goals for Hatchery Production, Broodstock, fisheries, etc.

Annual Decision Making Process



Annual Decision Making Process





Fall Chinook Spawning

LC Fall Chinook Decision Rule

Decision Rules for Lower Cowlitz Fall Chinook

For NOR less than

711

Minimum
Production

1,100,000
400,000

Smolts-Integrated and
Smolt-Segregated

For NOR greater
than

1,659

Maximum
Production

1,100,000
2,400,000

Smolts-Integrated and
Smolts-Segregated

NOR prediction

3,368

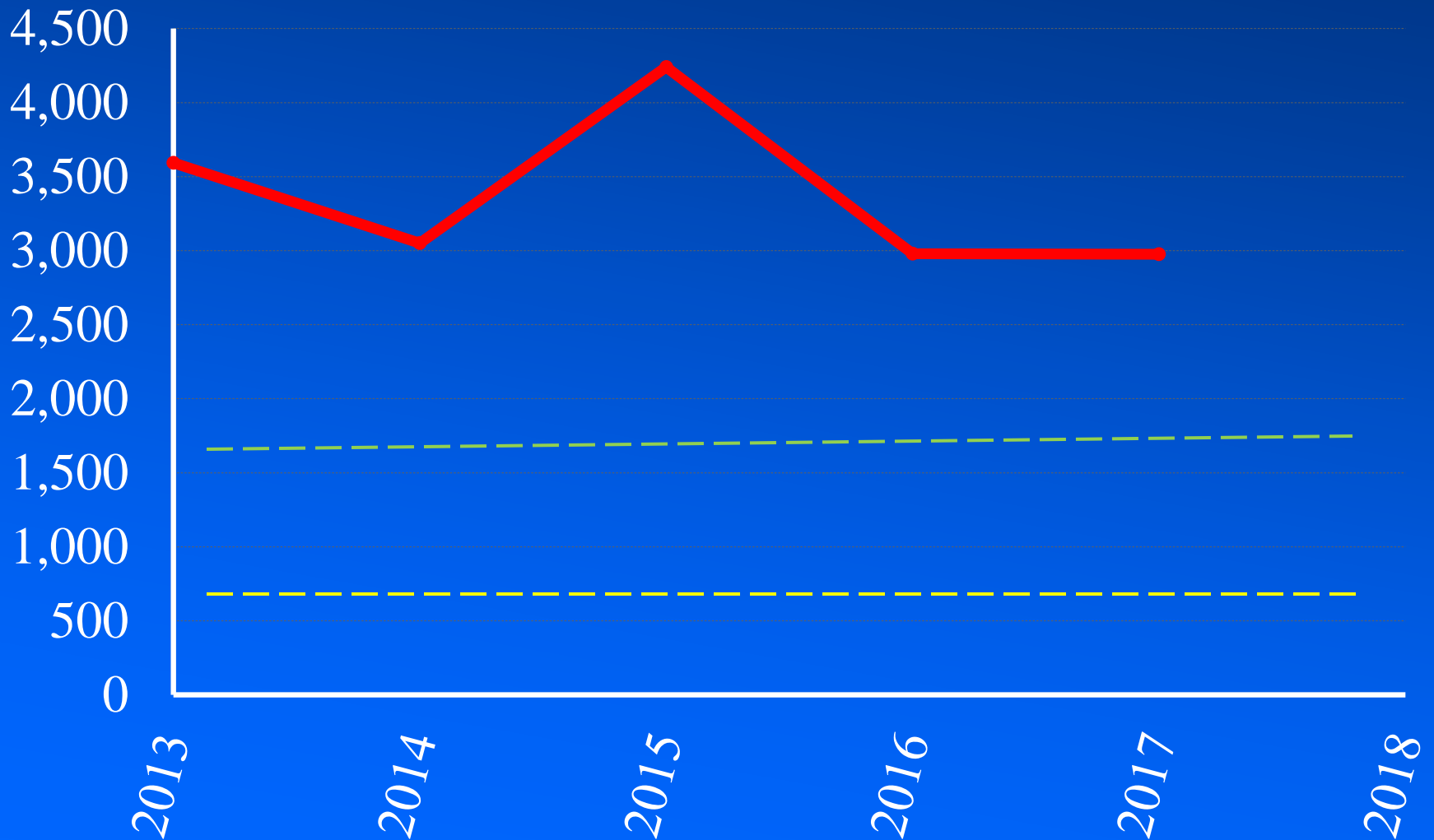
Production

1,100,000
2,400,000

Smolts-Integrated and
Smolts-Segregated

(5-year average)

Lower Cowlitz Fall Chinook





Cowlitz Coho Decision Rules

Decision Rules for Lower Cowlitz Coho

For NOR less than

990

Minimum
Production

1,203,231
978,000

Smolts-Segregated and
Smolt-Integrated

For NOR greater
than

1,535

Maximum
Production

2,404,009
978,000

Smolts-Segregated and
Smolts-Integrated

NOR prediction

4,505

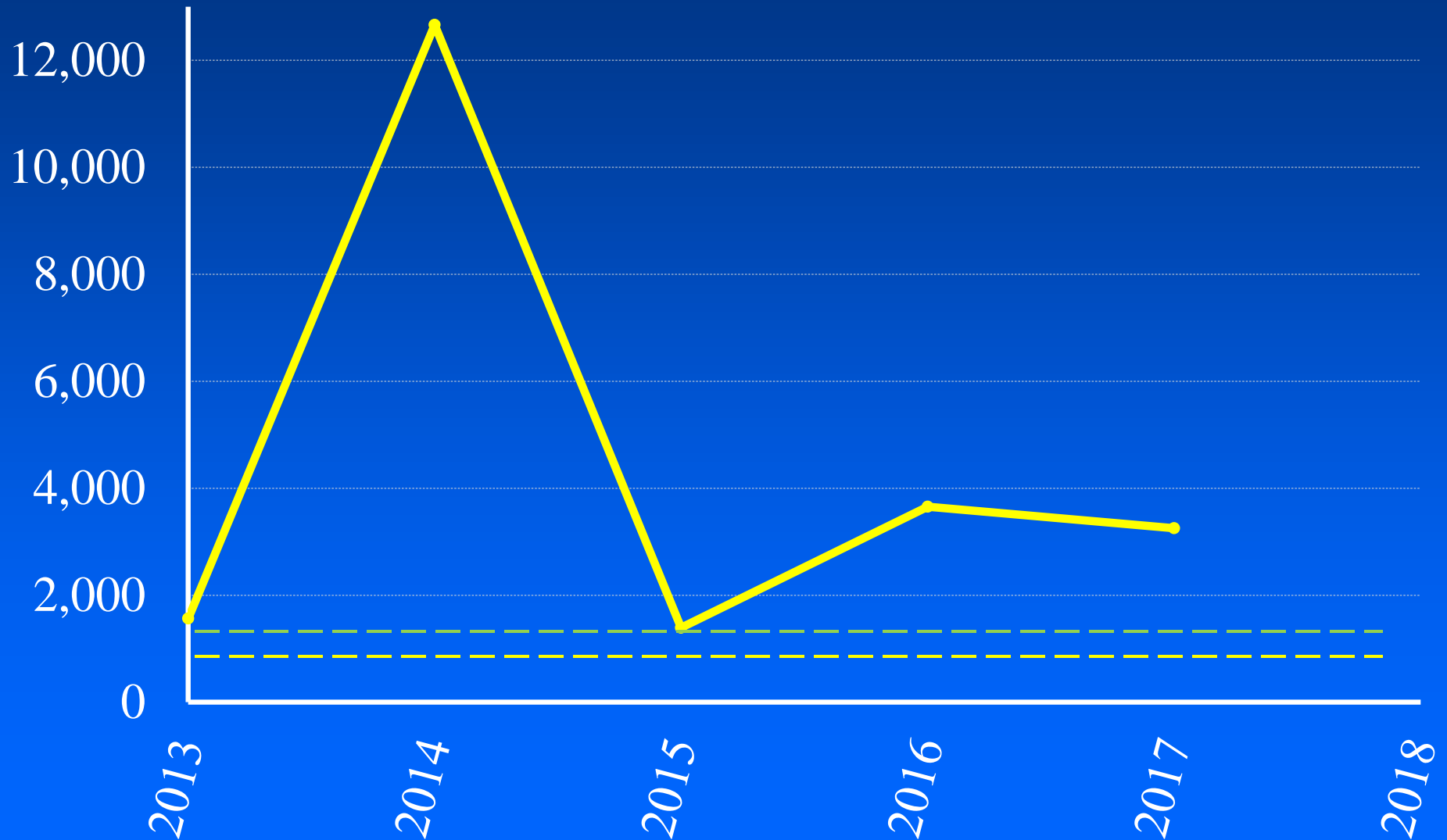
Production

2,404,009
978,000

Smolts-Integrated and
Smolts-Segregated

(5 year average)

Lower Cowlitz Coho



Upper Cowlitz Coho

- Fish Passage Survival (FPS) Based
- Recolonization Phase (<60% FPS)
 - Produce 978,000 integrated smolts
 - Transport up to 25,000 HOR adults
- Local Adaptation Phase (>60% FPS)
 - Produce 978,000 integrated smolts
 - Limit HOR transportation to 30% effective pHOS



Tilton Coho

- Transport up to 6,000 HOR (segregated) Coho
- Transport all NOR coho (unmarked)
- *Utilize habitat, nutrients, harvest*

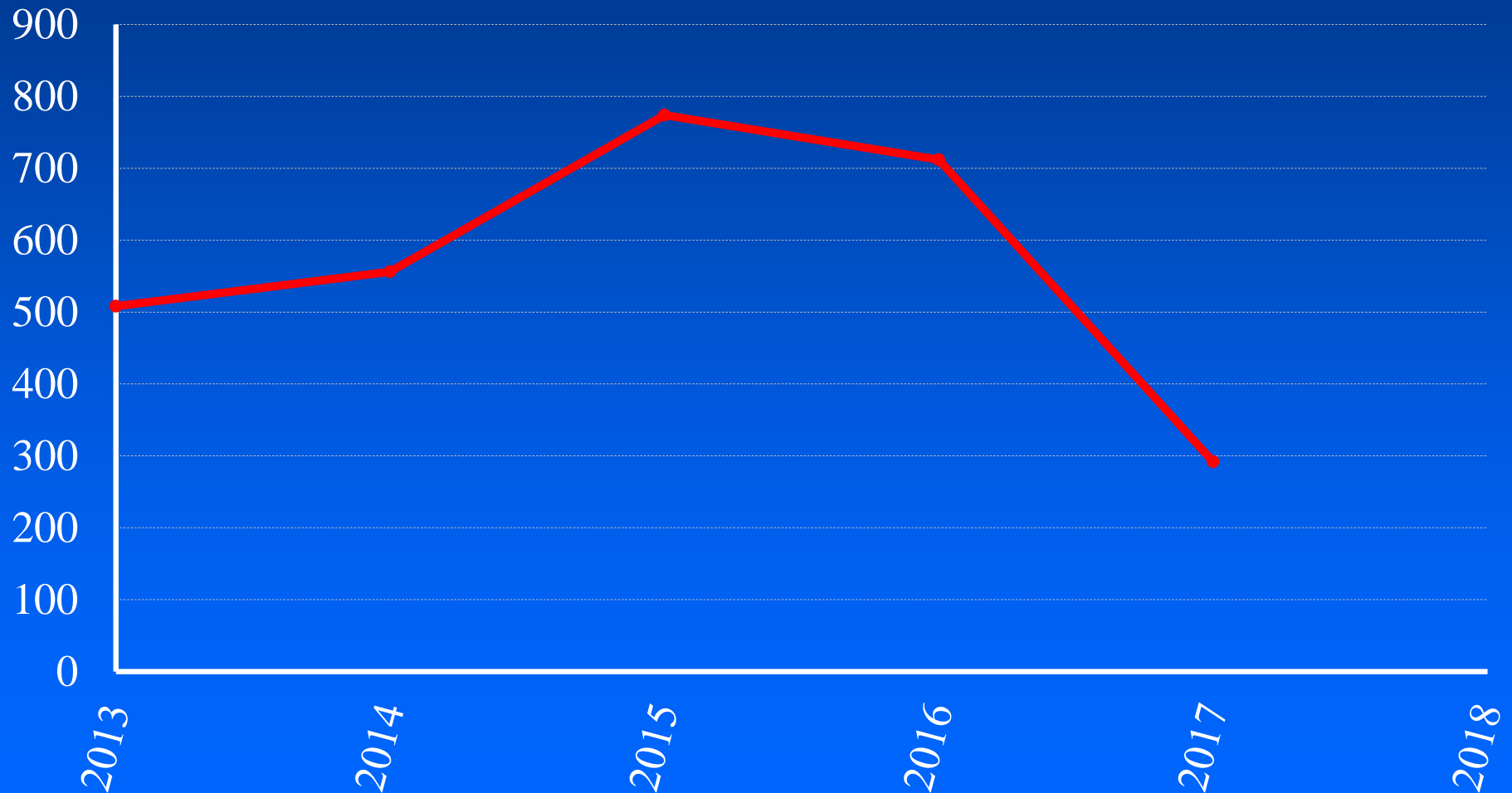


Cowlitz Hatchery Winter Steelhead

	Smolts	pNOB	Mining Limit
LC Winter	481,389	<30%	<10%
UC Winter	118,000	100%	-
Tilton Winter	48,500	100%	-
LC Summer	650,000	-	-

Lower Cowlitz Winter Steelhead

LC NOR Steelhead



Upper Cowlitz Winter Steelhead

- Fish Passage Survival (FPS) Based
- Recolonization Phase (<50% FPS)
 - Produce 118,000 integrated smolts
 - Transport all HOR adults
- Local Adaptation Phase (>50% FPS)
 - Produce 118,000 integrated smolts
 - Limit HOR transportation to 30% effective pHOS

Tilton Winter Steelhead

- Recolonization Phase Identified
 - Produce 48,000 integrated smolts
 - Transport all HOR adults returning
 - Transport NOR adults - broodstock
- Potential Future Change to Local Adaptation Phase



Upper Cowlitz Spring Chinook

- Transport and Release at least 8,000 adults, if available
- Future Integrated Hatchery Program
- Move to Local Adaptation phase when $FPS > 60\%$



Setting Hatchery Production

Stepwise Process – Fish Accounting

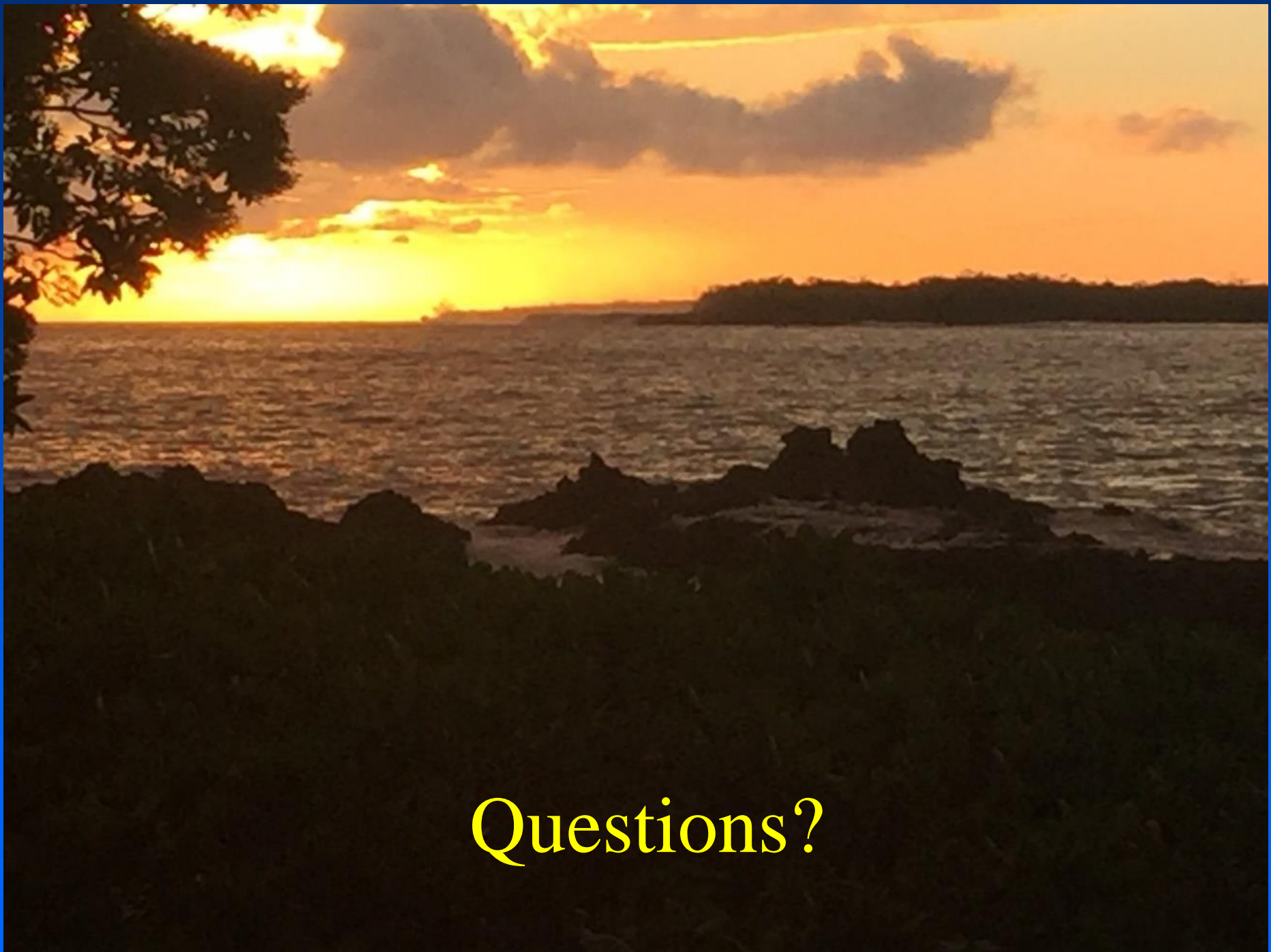
1. Target Releases by Hatchery Population
2. NOR adult population estimates through Decision Rules
3. Deduct for Credits for Natural Smolts
4. Adjust Total Production for 650,000 pound Production Cap

 **FHMP Table 3-17**



Moving Forward

- 2016 (2019) FHMP Update
 - Update Key Assumptions
 - Assess Status and Trends
 - Incorporate New Information
 - Assess Recovery Goal Status
 - **Update Decision Rules**



Questions?