Juvenile Salmonid Passage and Survival During TSW Tests at McNary Dam, 2007

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Acknowledgements

US Army Corps of Engineers
Walla Walla District

Washington Department of FISH AND WILDLIFE

Nick Swyers
Tyson Hatton
Ken Cash
Rachel Reagan
Matt Sholtis
Ted Jones
John Plumb
Jill Hardiman
Sarah Lampson
Adam St. Saviour
Tim Counihan
Scott Evans
Lisa Wright
Daniel Kranda
Matt Pachla
Darin Etherington
Lisa Brtek
Ellen Hamman
Bryan Crisp
Lynne Casal
Jeff Hayes
Mike Smallmon
Ken Haack
Laura Read
Shawna Meehan
David Trachtenbarg
Jason Ontjes
David Ford
Gary Rutz
Ann Grote
Marshall Bock
Kyong Hassel
Scott Brown
Emma Wilson
Noah Hubbard
David Griffith
Chris Walker
Adranne Zuckerman
Jeanne Brady
Travis Taylor
Dennis Rondorf
Conrad Frost
Glen Holmberg
Stephany Orlaineta
Chris Holbrook

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Presentation Outline

Passage and survival at McNary Dam during TSW tests

- Study Area
- Monitoring system
- Results

Spring	Summer
Treatments	Treatments
Fish releases	Fish releases
Passage	Passage
Survival	Survival
Behavior	Behavior

- Summary

What I will NOT show

- Pre-passage history at Snake River Dams
- Survival of fish released at Mid-Columbia Dams

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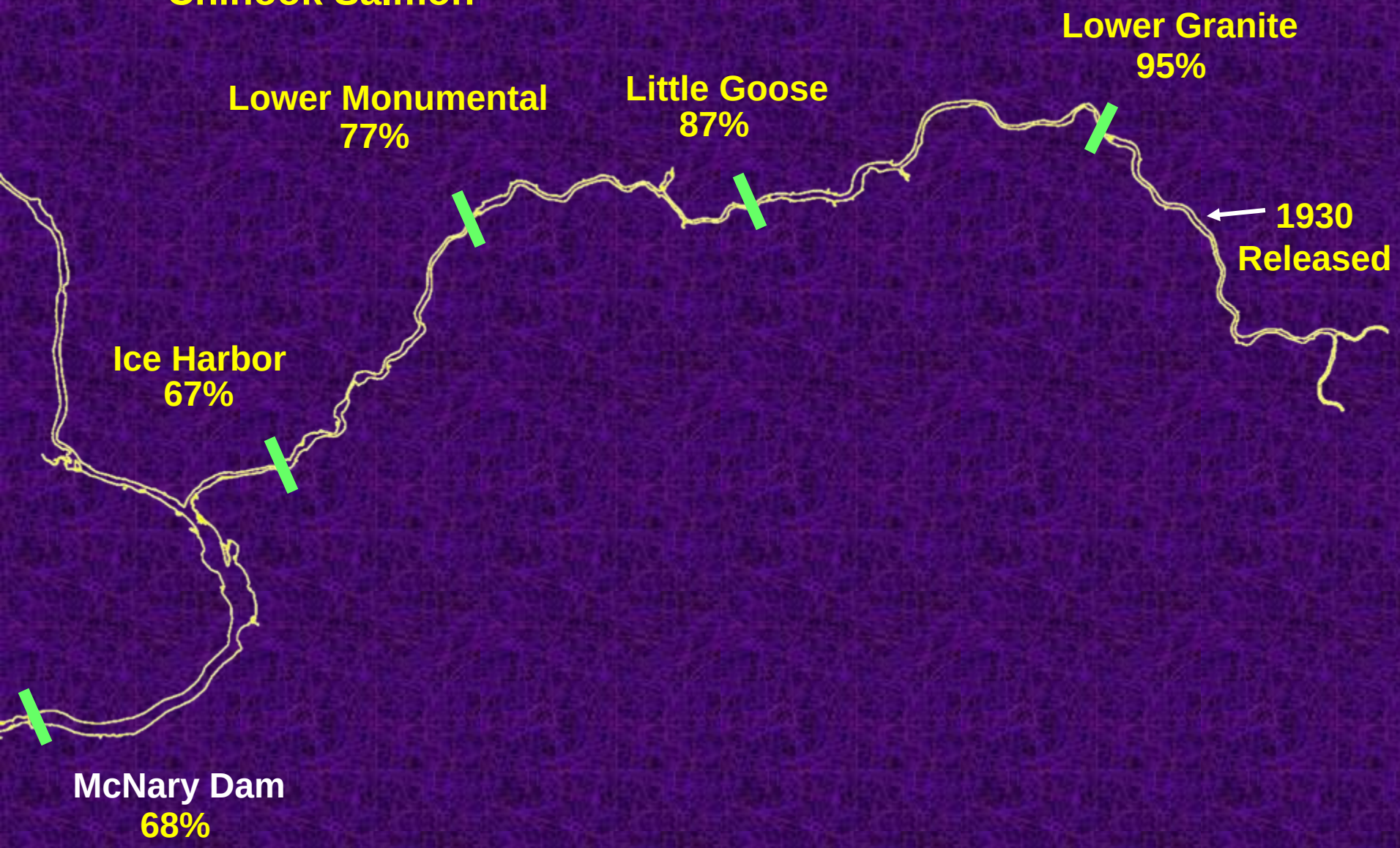
Snake River Releases

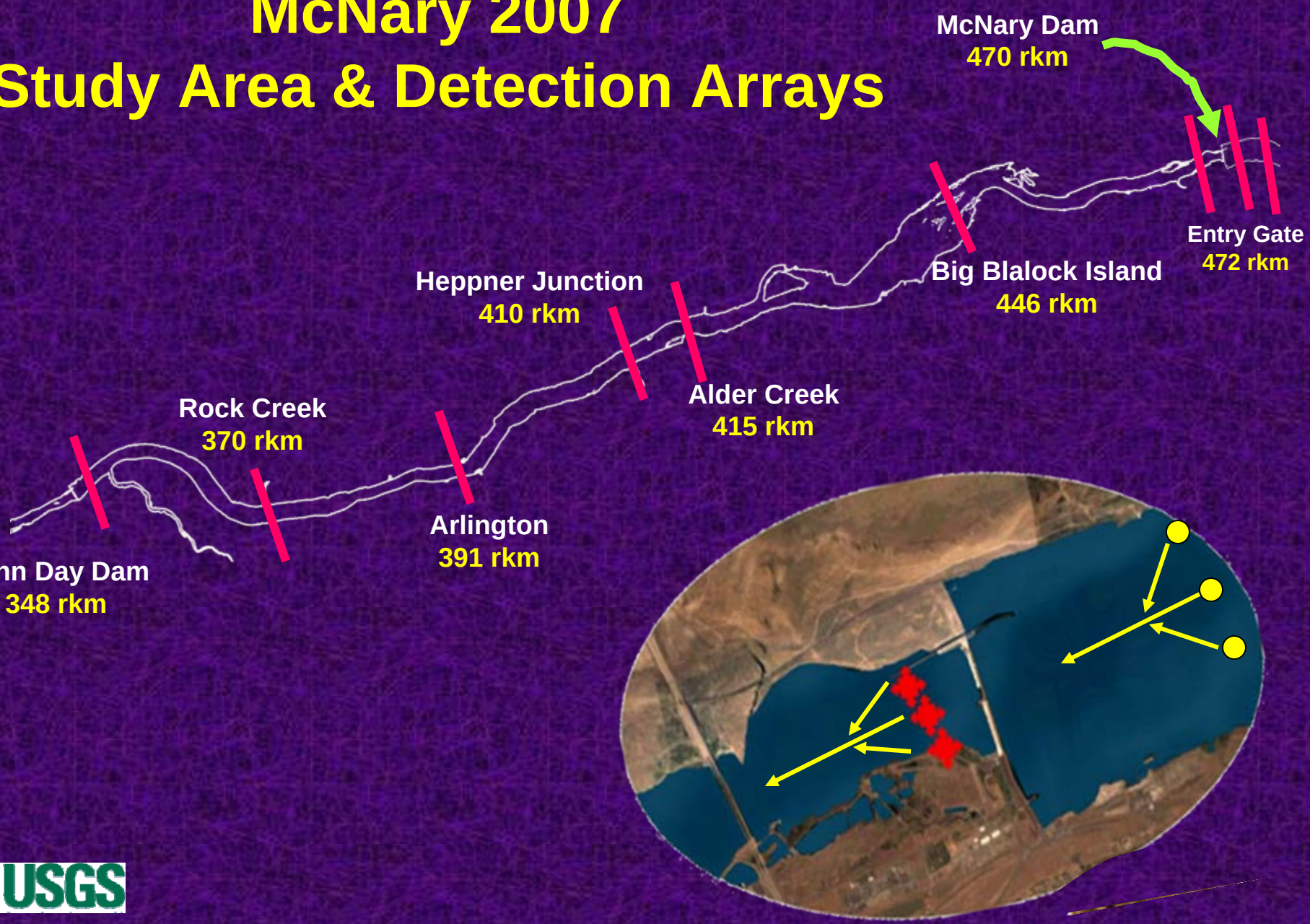
Chinook Salmon



Analysis of Fish Released at Mid-Columbia Dams

	2006	2007
Yearling Chinook	710	2,001
Juvenile steelhead	4,195	1,404
Sockeye salmon	3,493	2,502
	8,398	5,907
		14,305

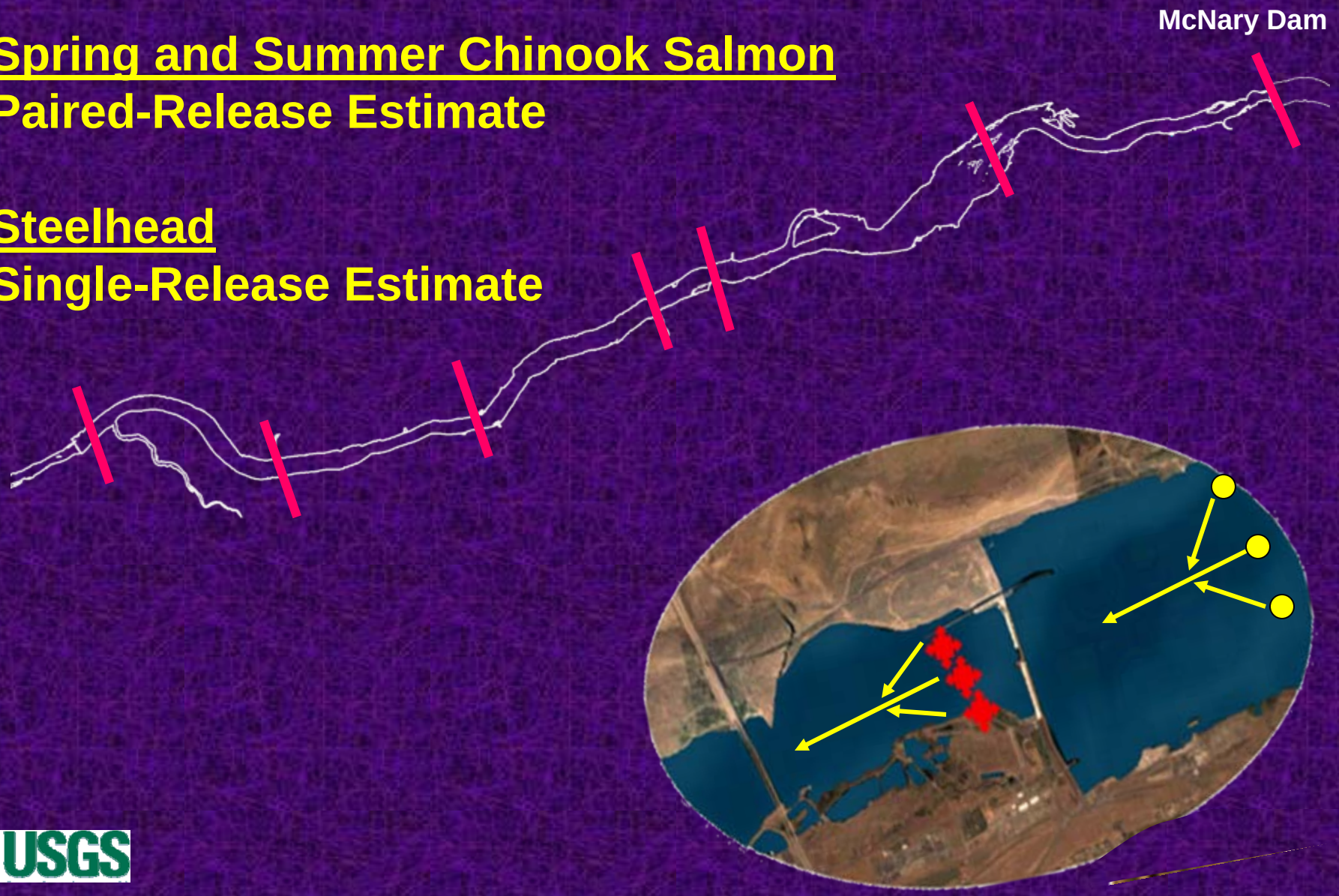
McNary 2007
Study Area & Detection Arrays



Survival Models

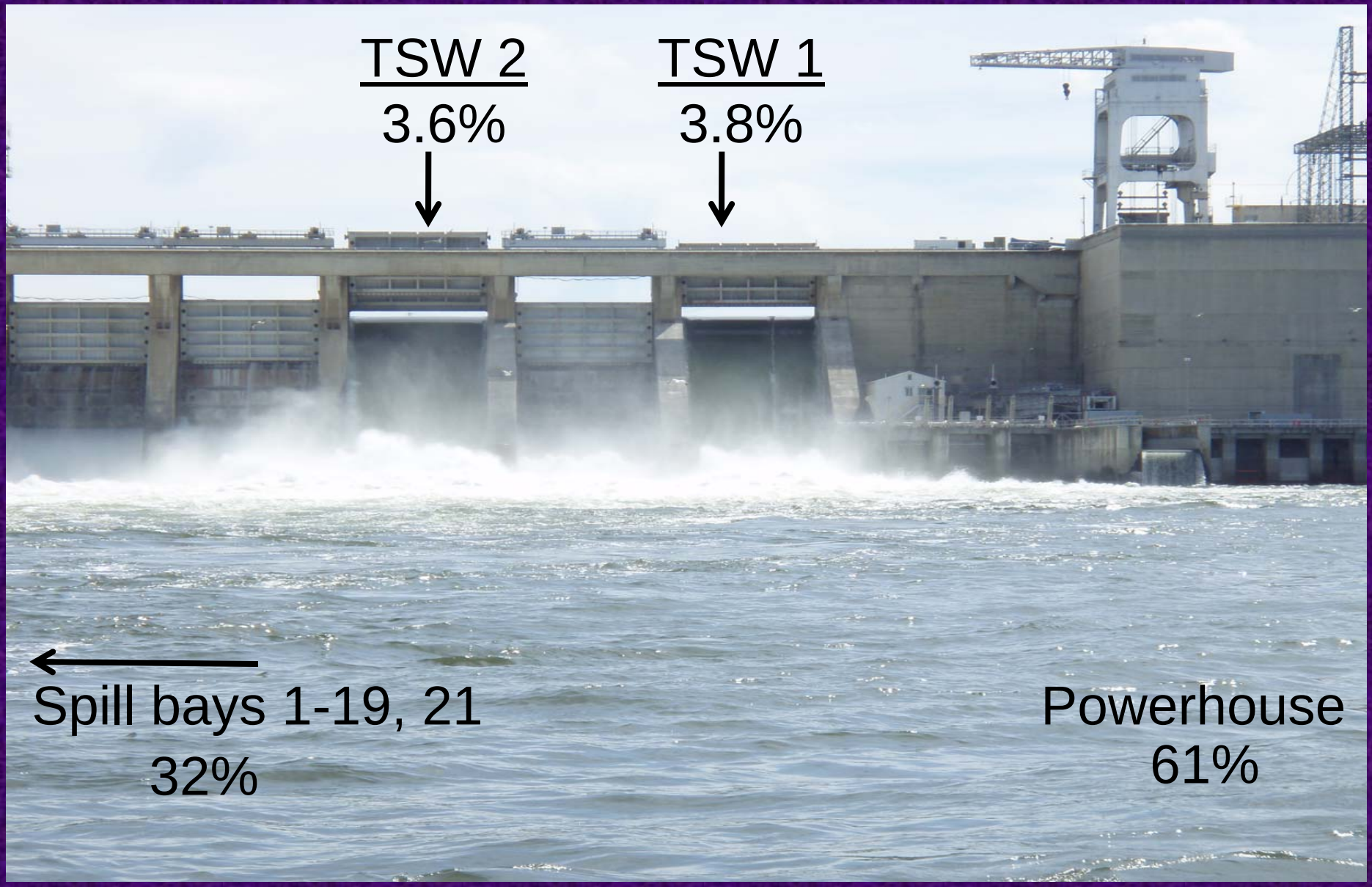
<u>Spring and Summer Chinook Salmon</u>
Paired-Release Estimate

<u>Steelhead</u>
Single-Release Estimate

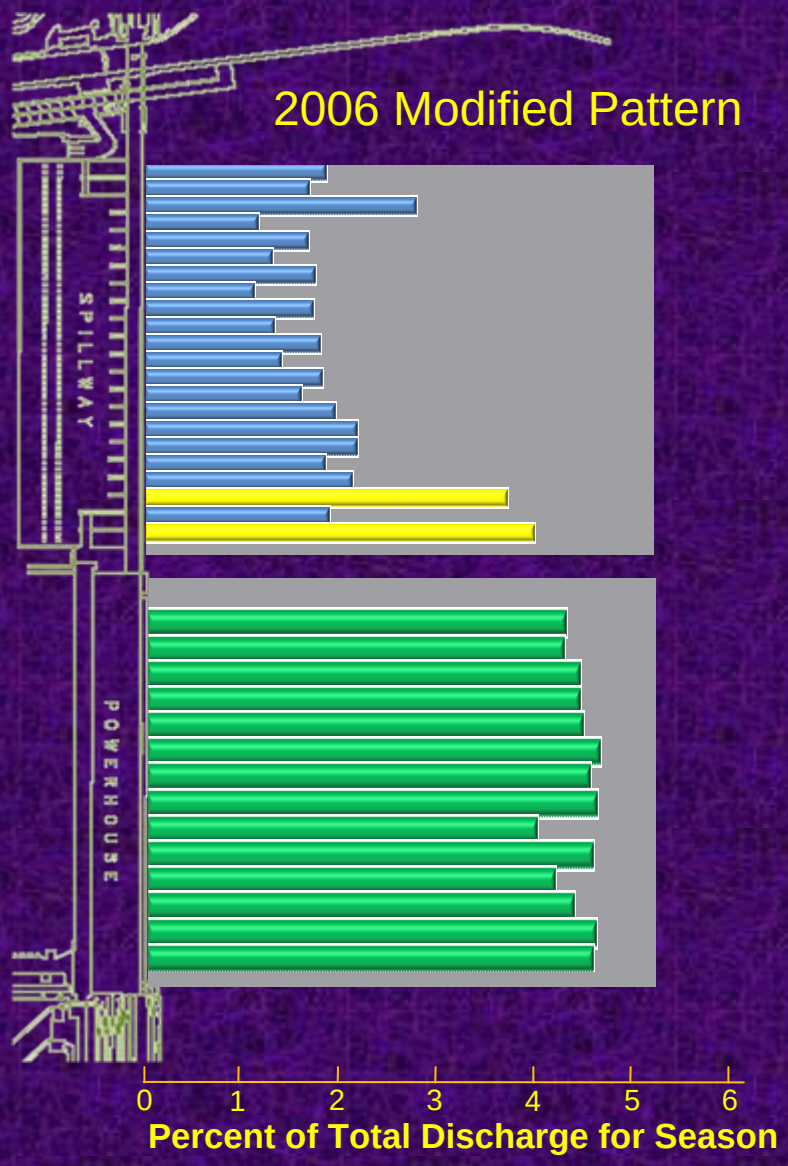


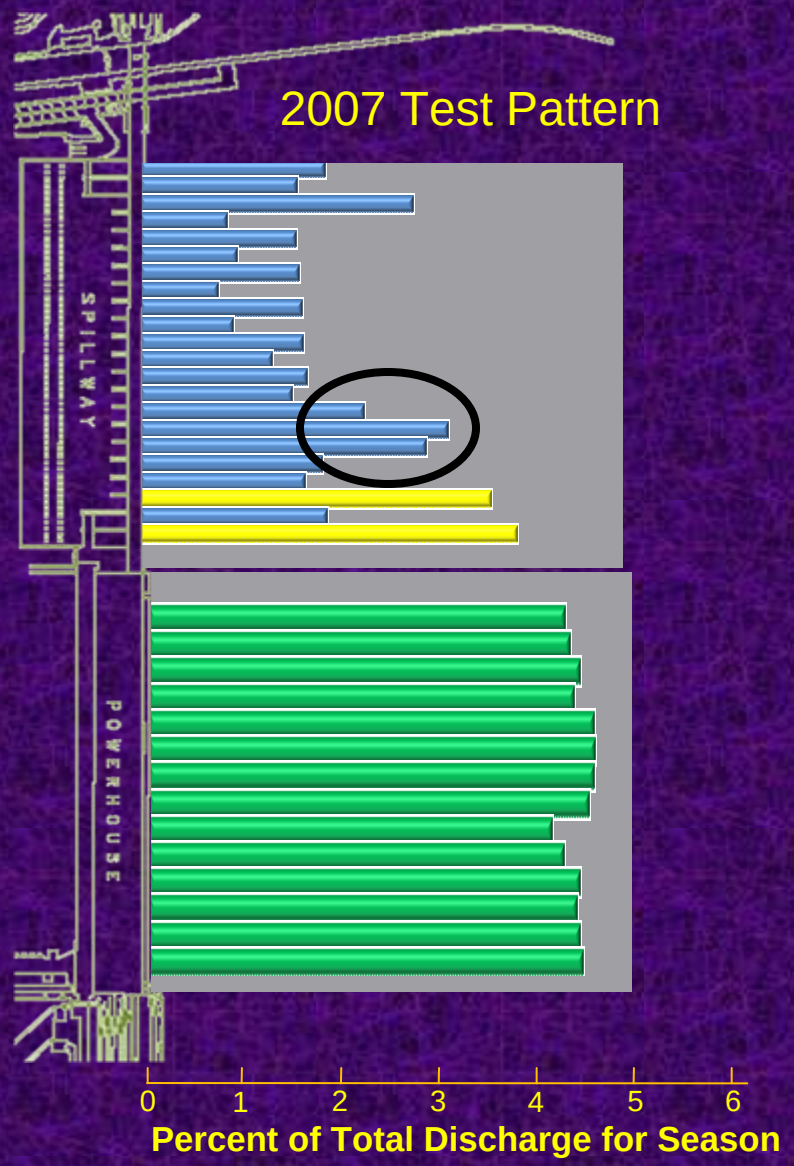
2007 McNary Hydrophone Array

TSW Location & Discharge

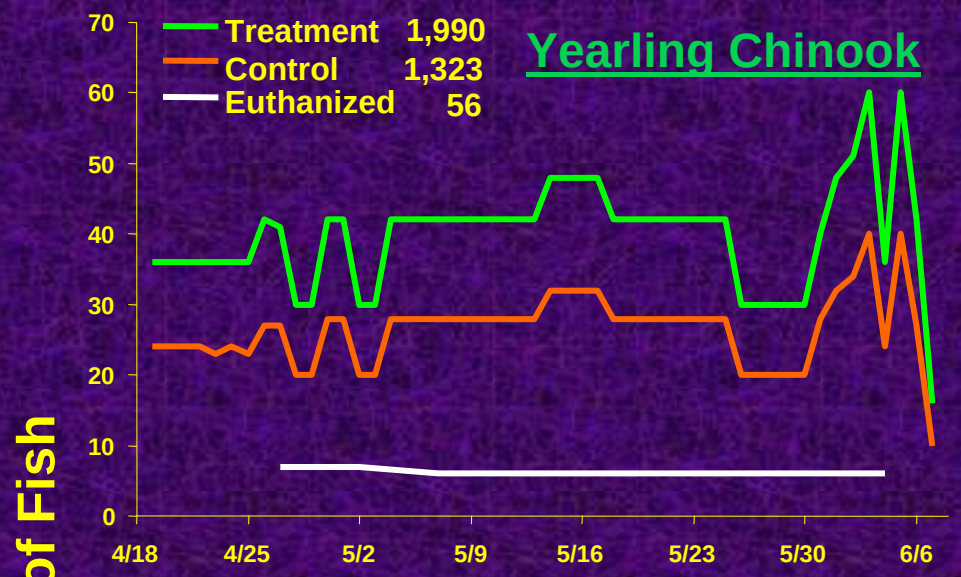


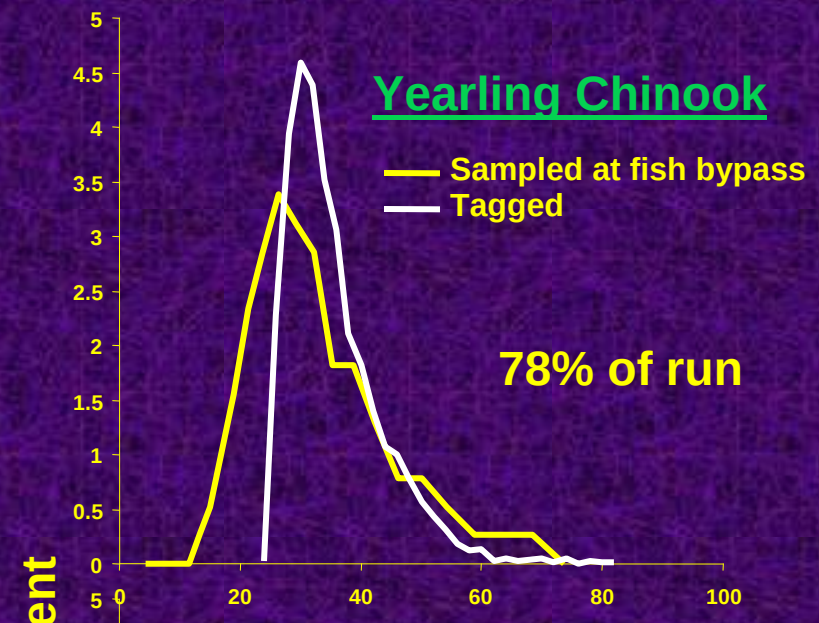
Spring Spill Patterns

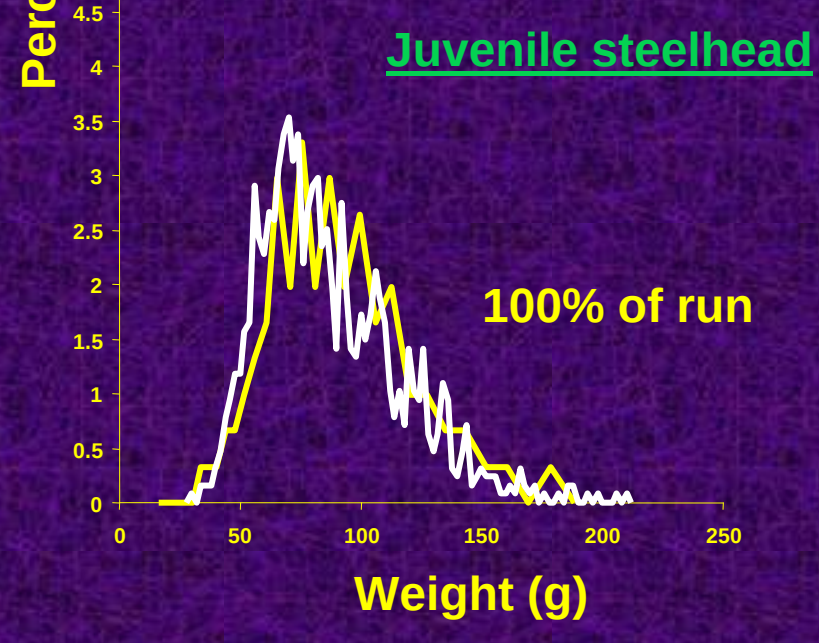




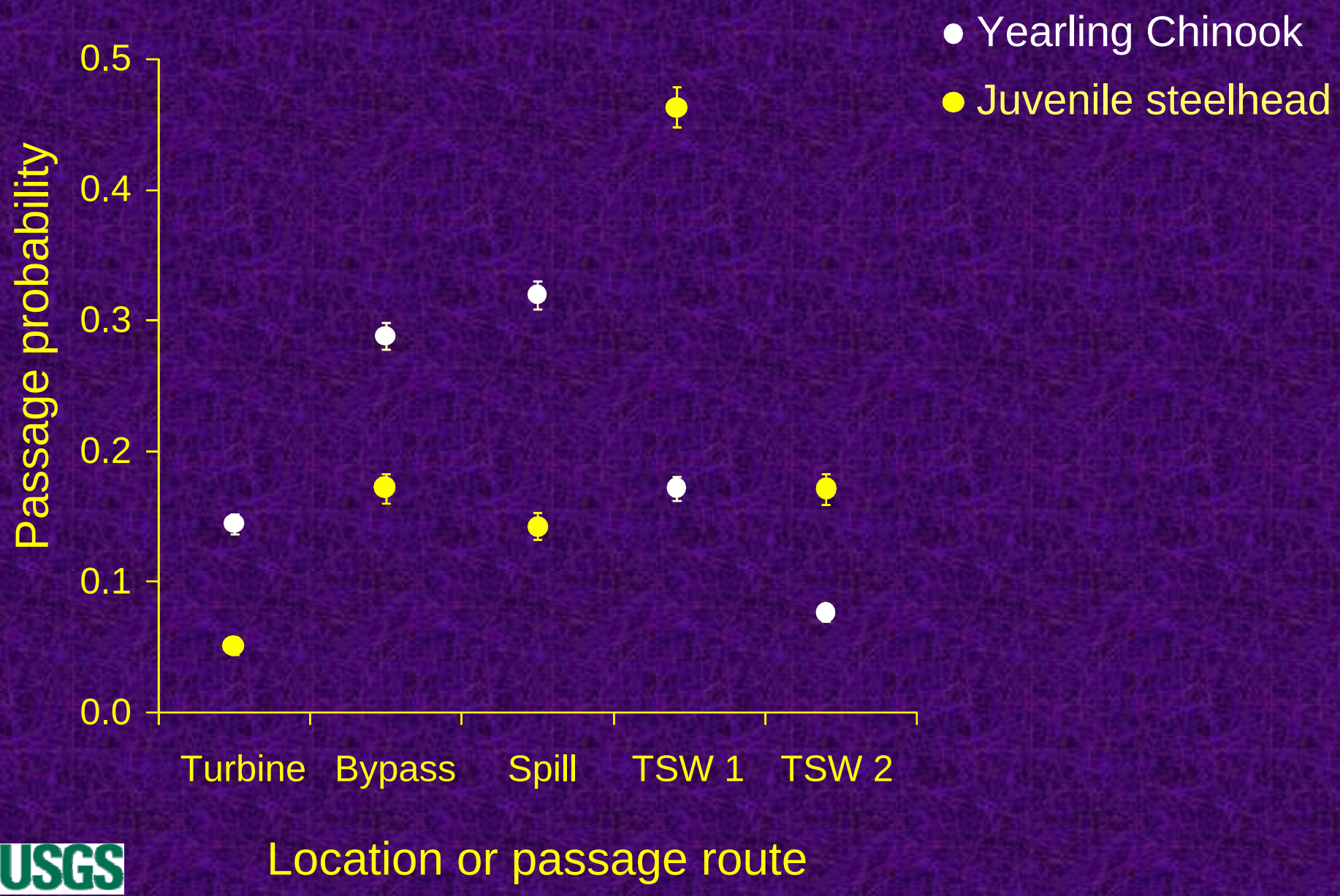
Spring Releases



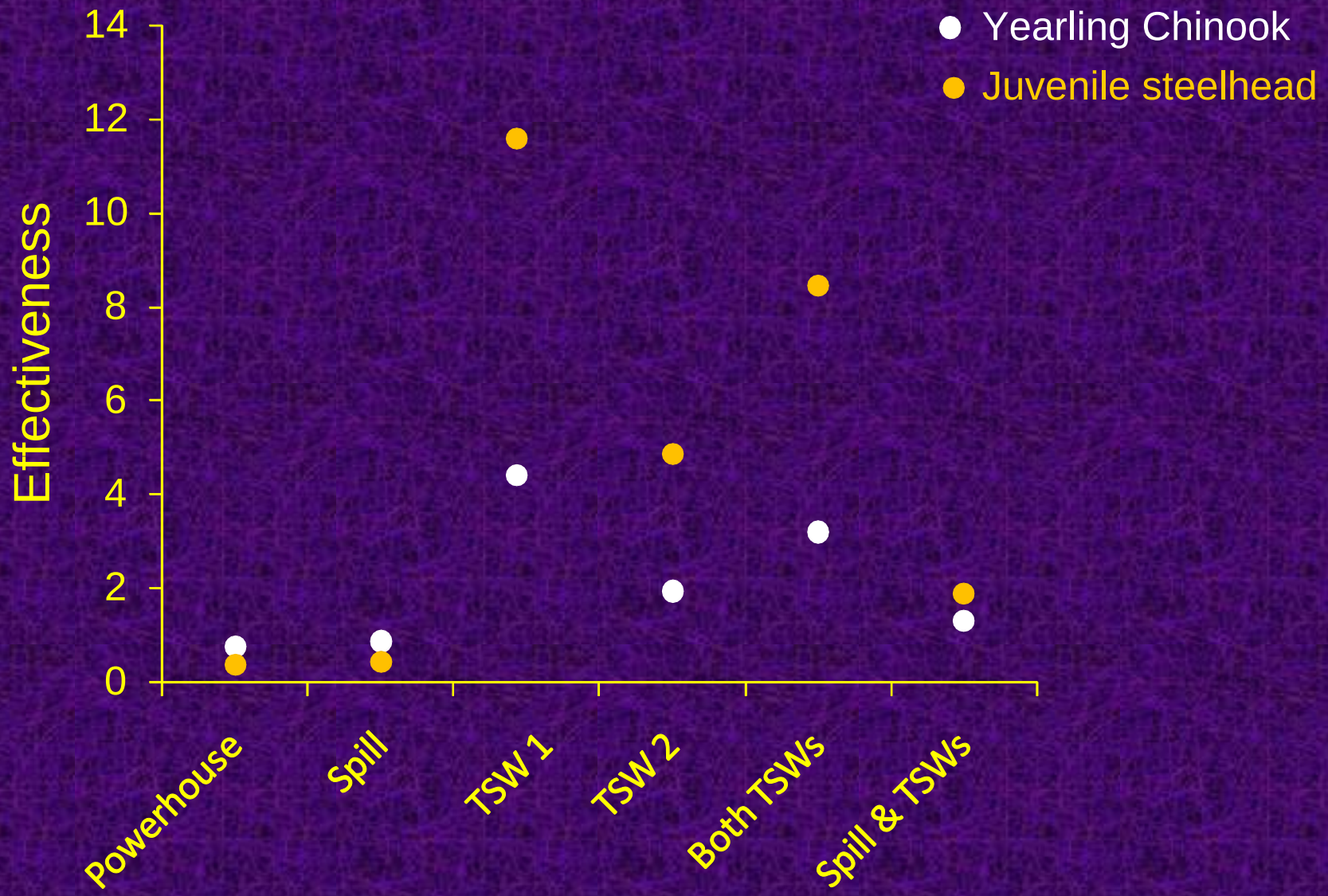




Spring Passage Probabilities



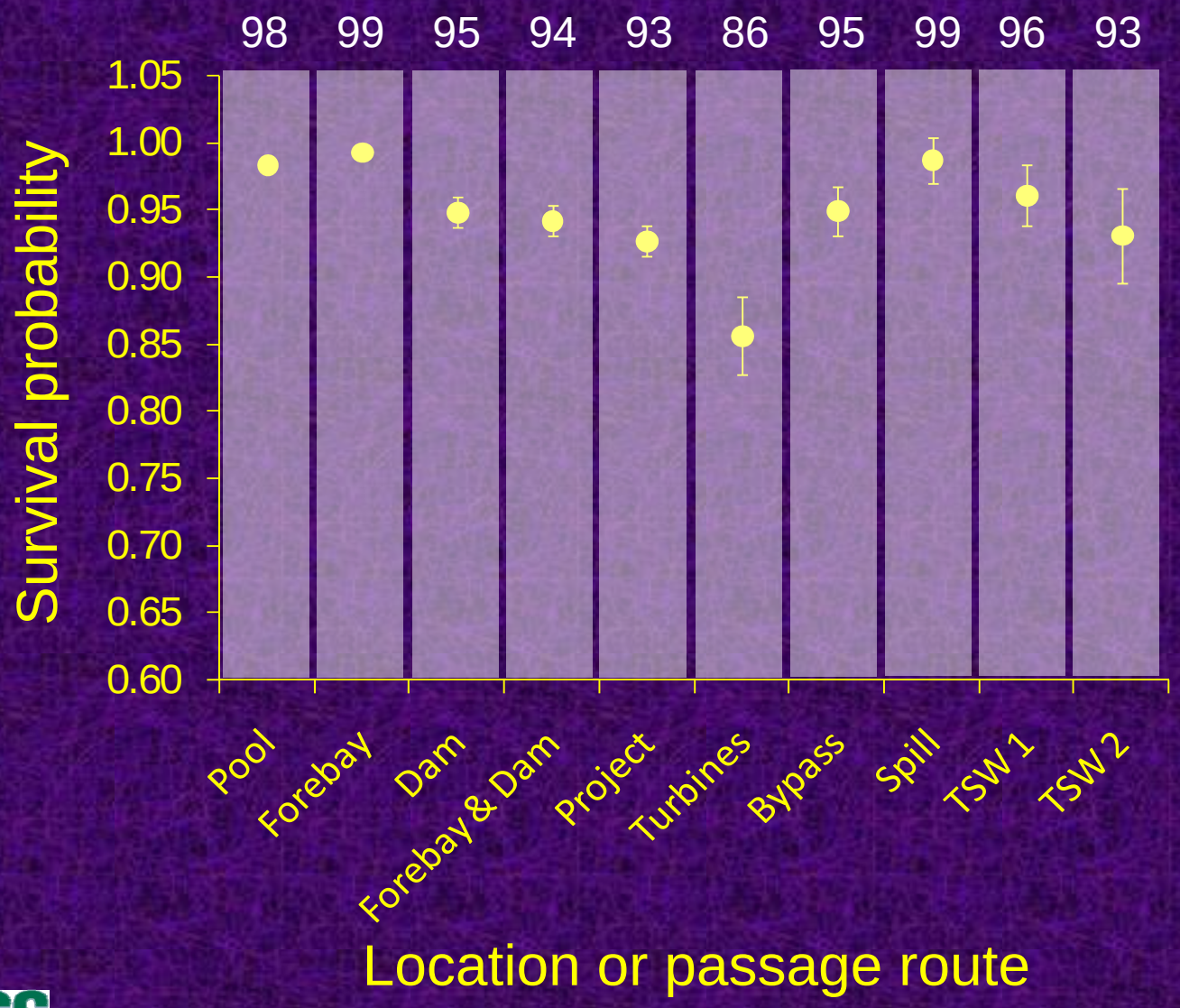
Spring Passage Effectiveness



Location or passage route

Spring Survival by Location

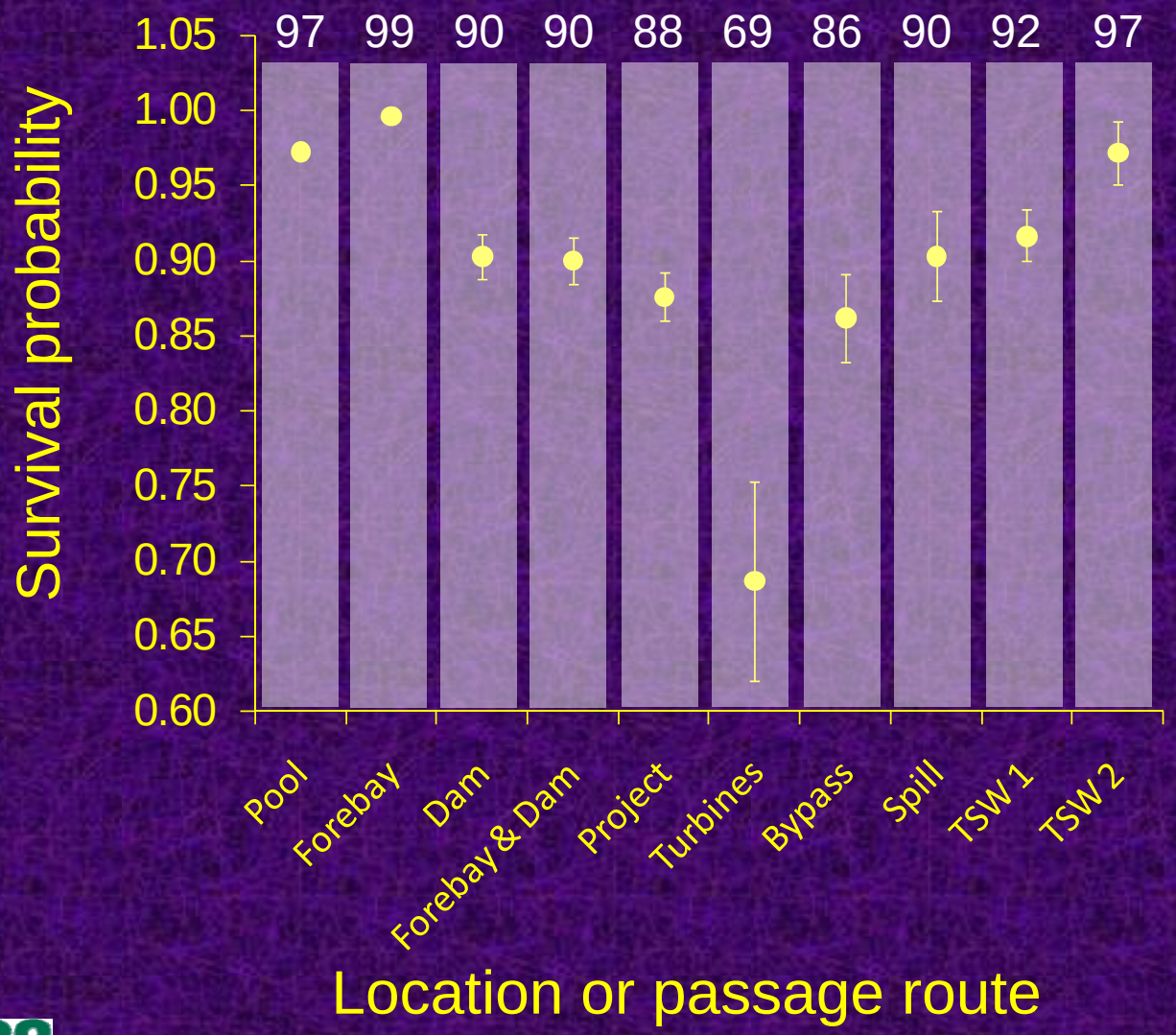
Yearling Chinook



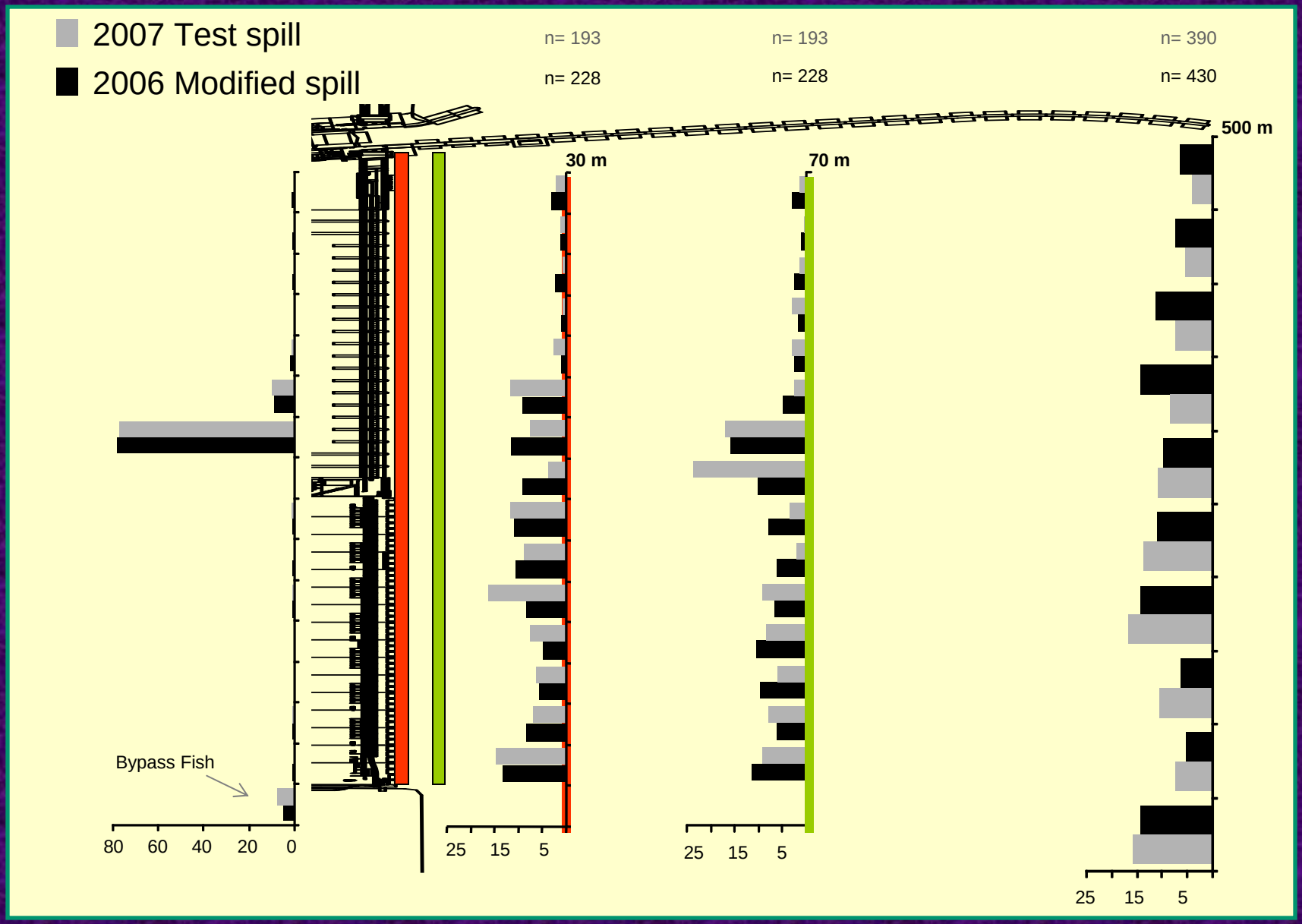
Spring Survival by Location

Juvenile steelhead

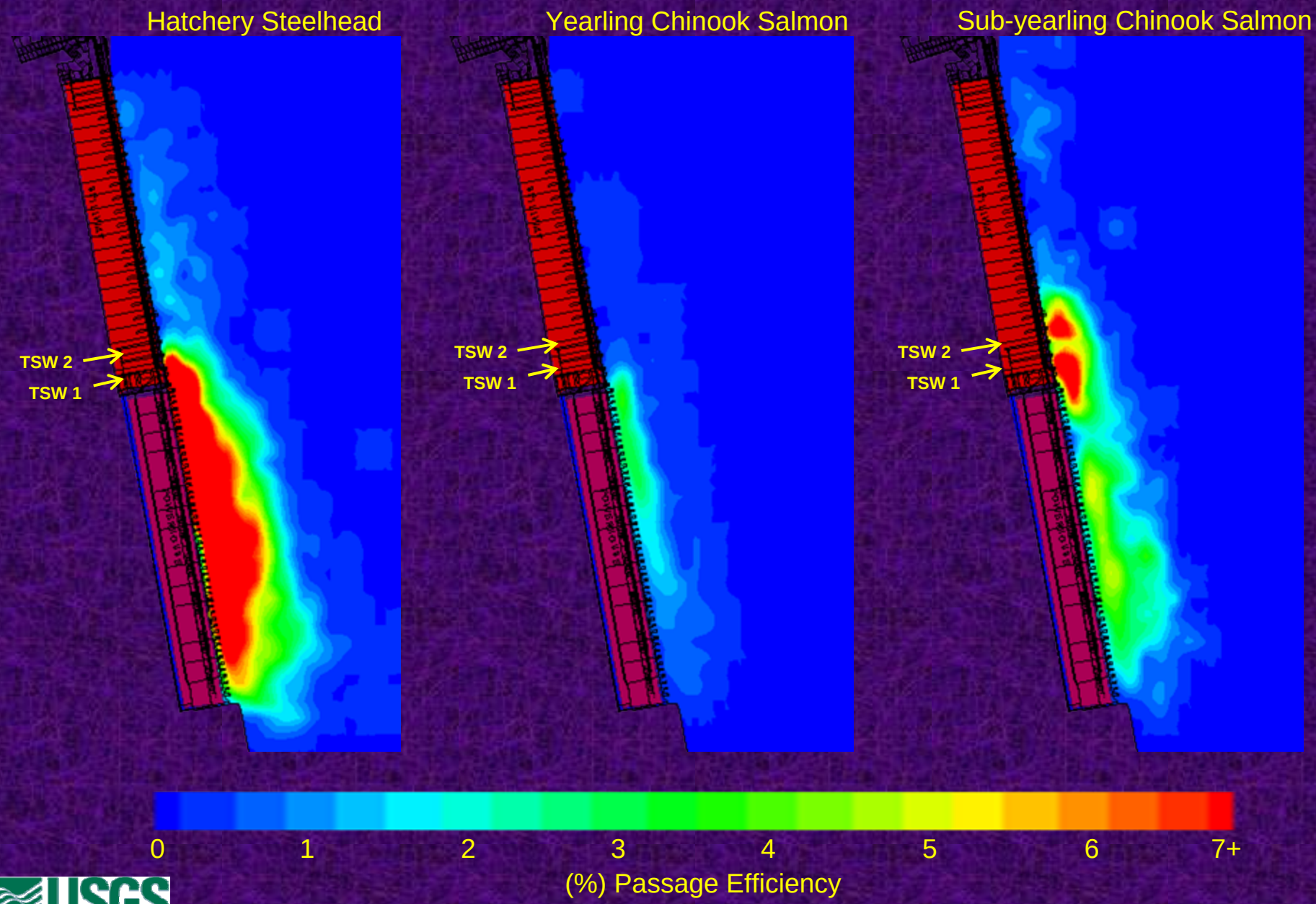
(single- release estimates)



Steelhead First Approach & Passage - Daytime

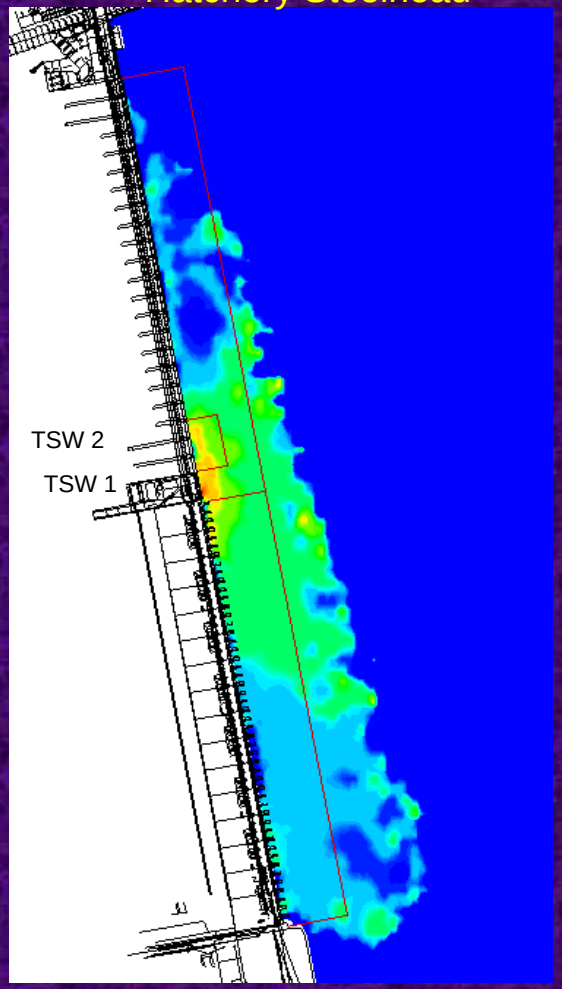


Passage Efficiencies for Both TSW Structures Combined

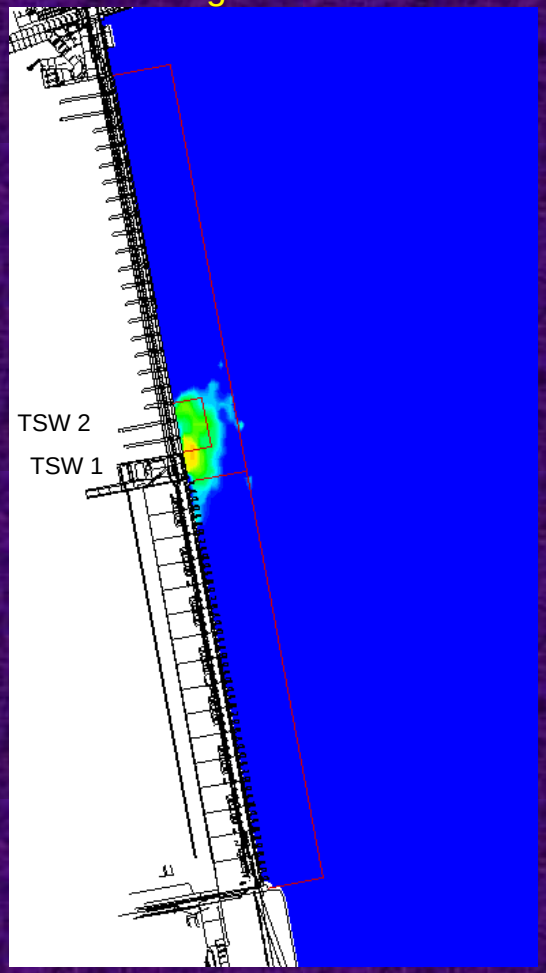


Passage Efficiencies for Both TSW Structures Combined

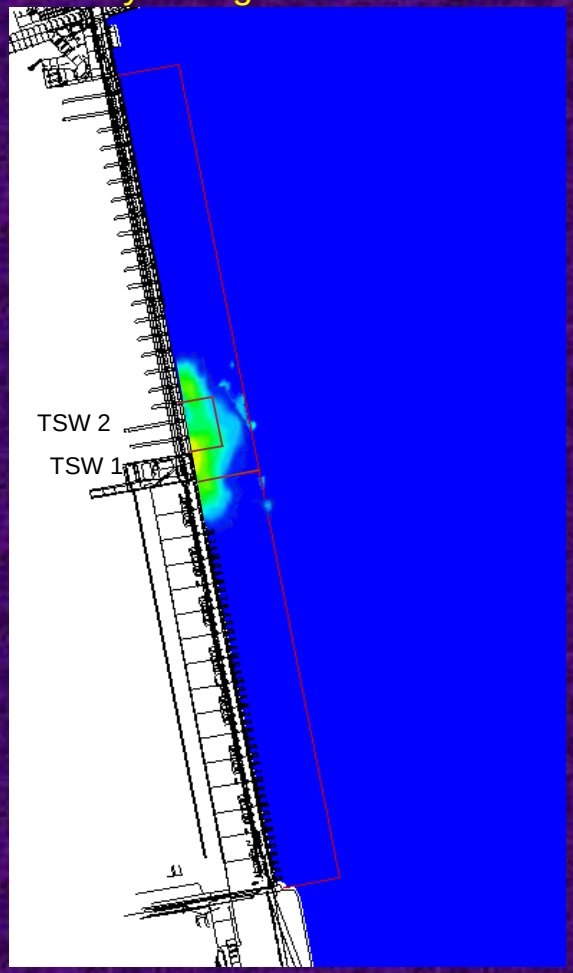
Hatchery Steelhead



Yearling Chinook Salmon

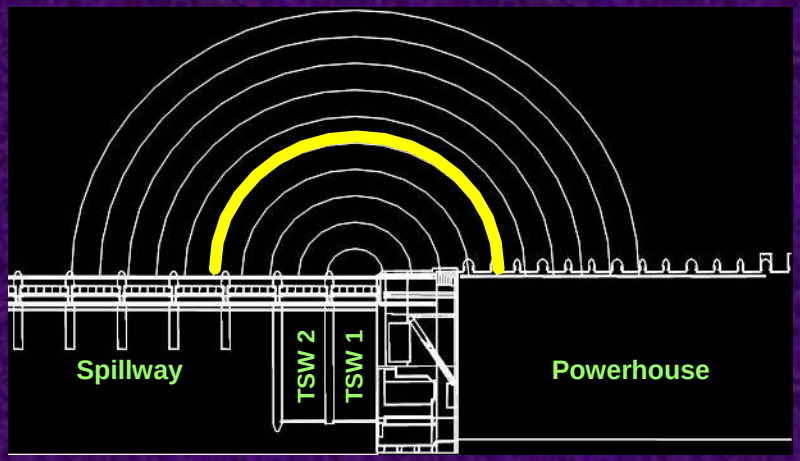


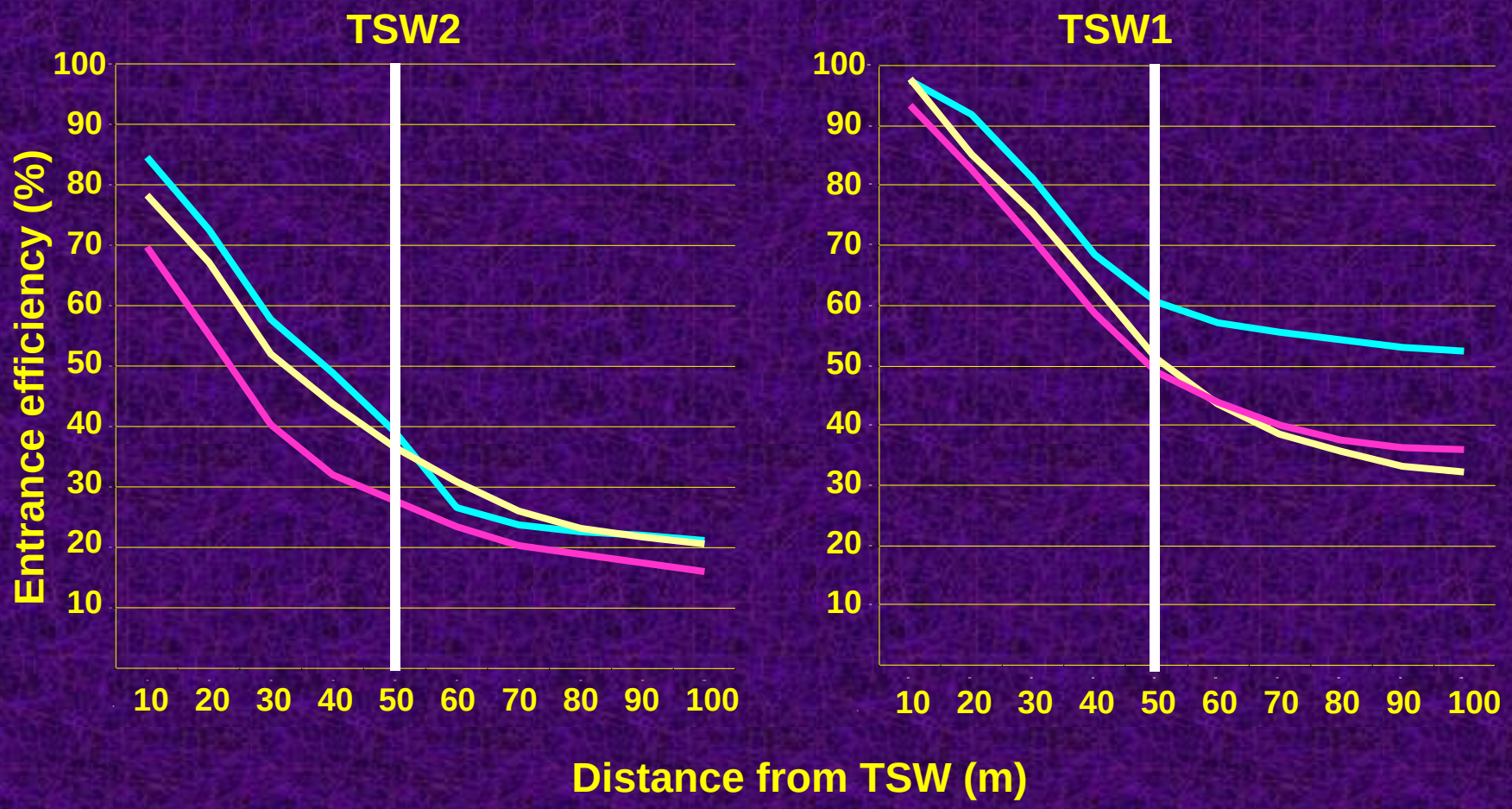
Sub-yearling Chinook Salmon



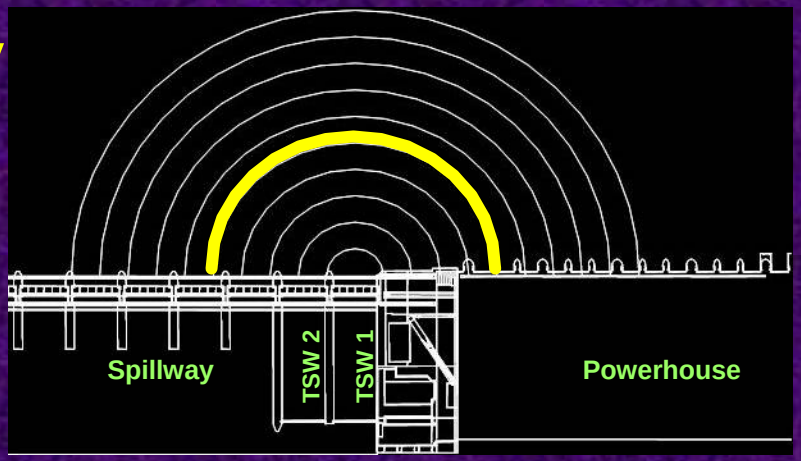
(%) TSW Entrainment

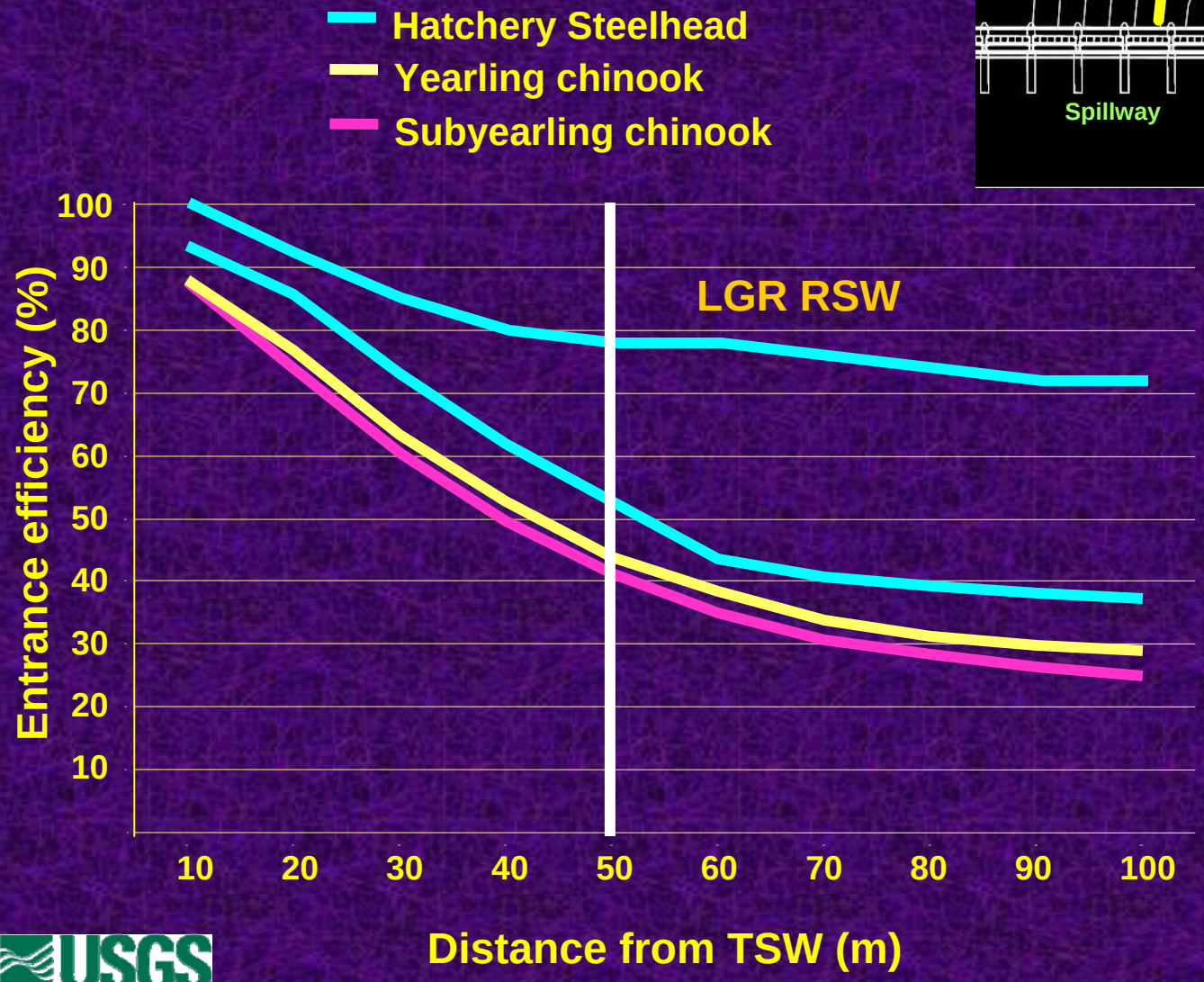
TSW entrance efficiency by distance for all species



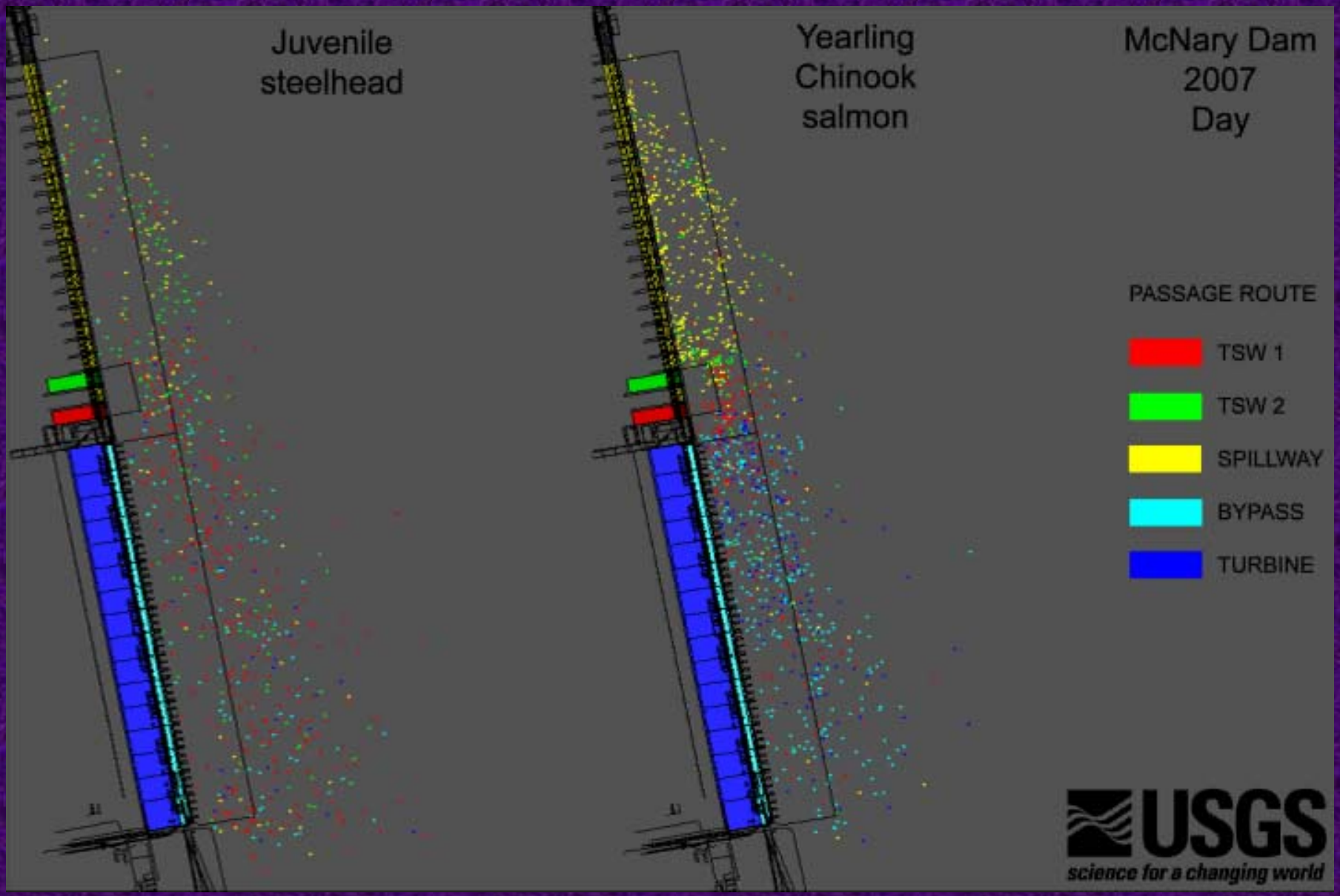


Combined Entrance Efficiency for all species

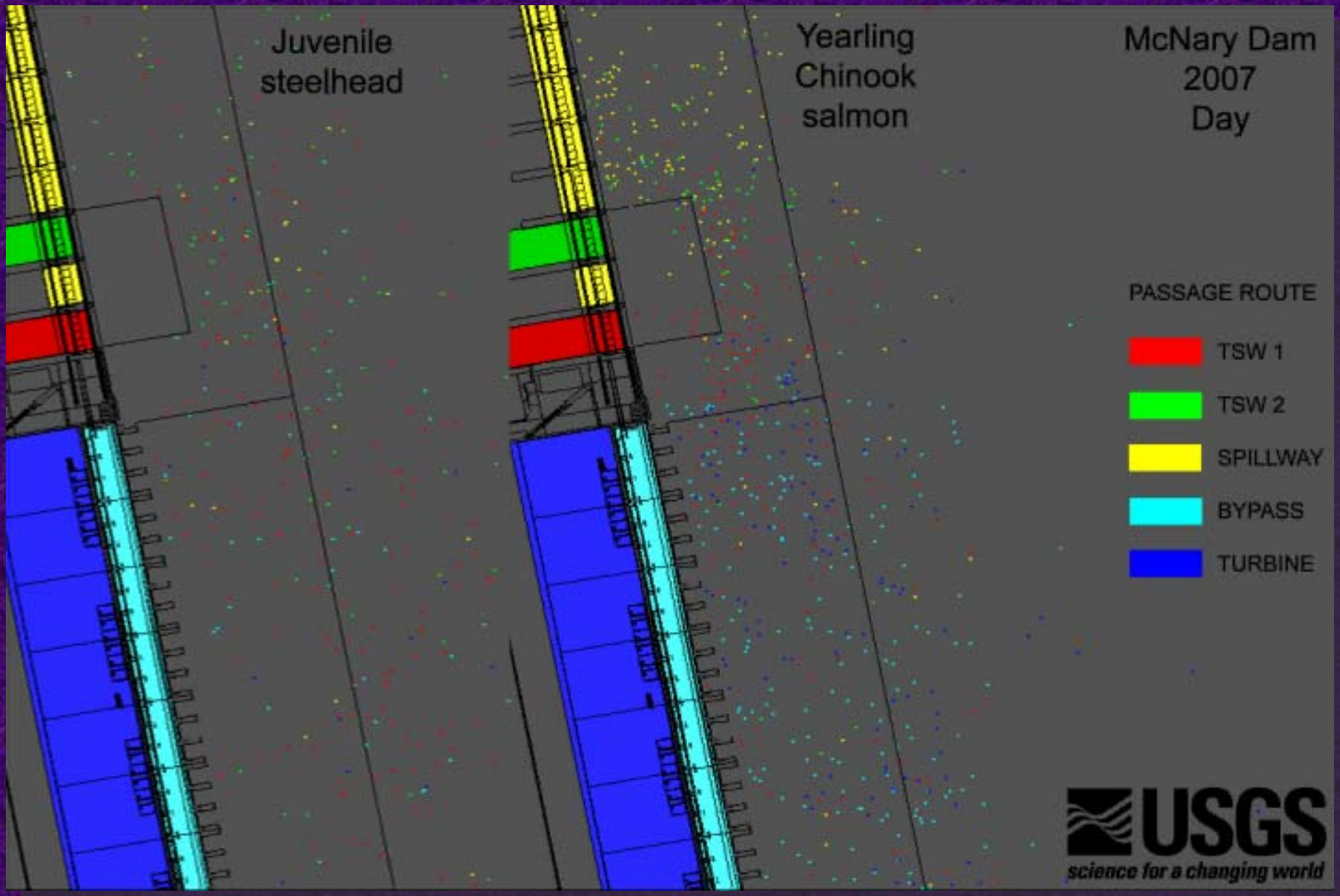




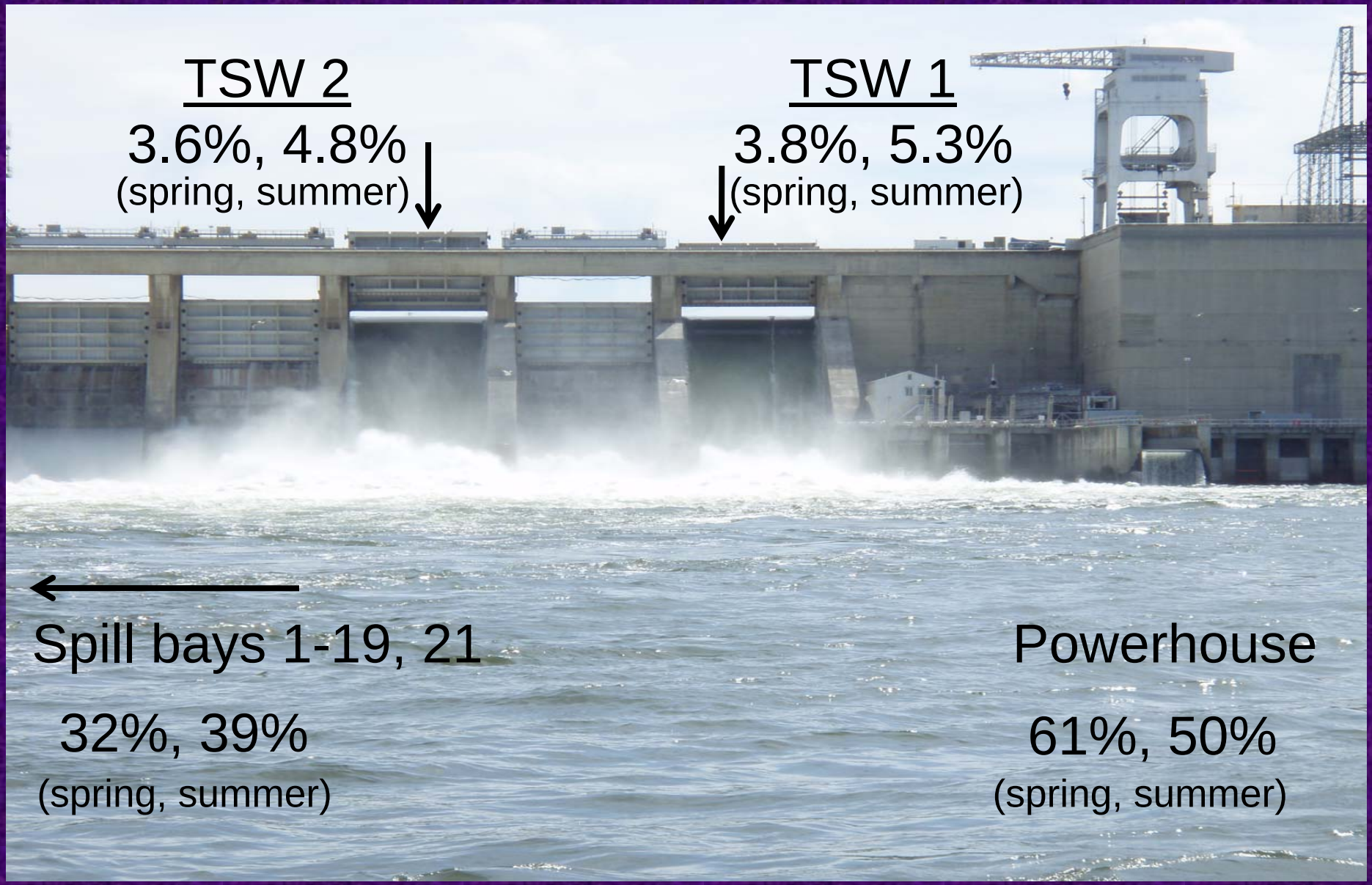
McNary Dam 2007 Spring Fish Tracks



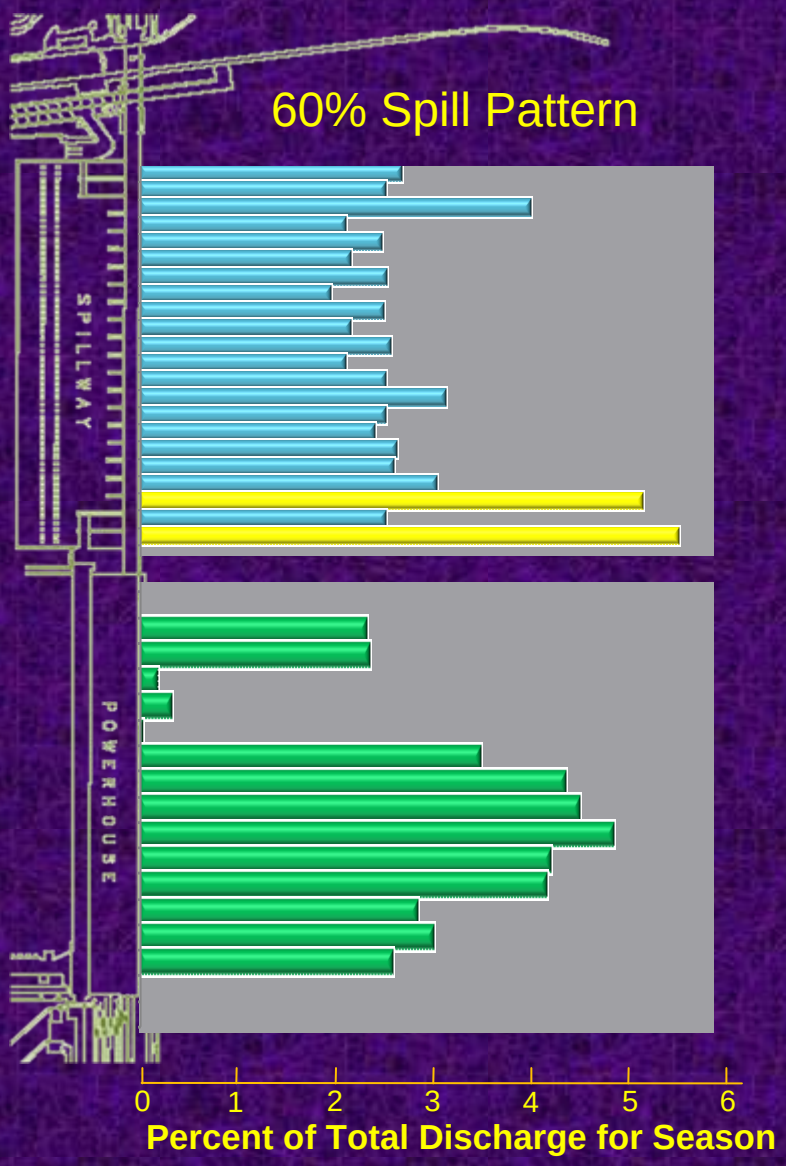
McNary Dam 2007 Spring Fish Tracks

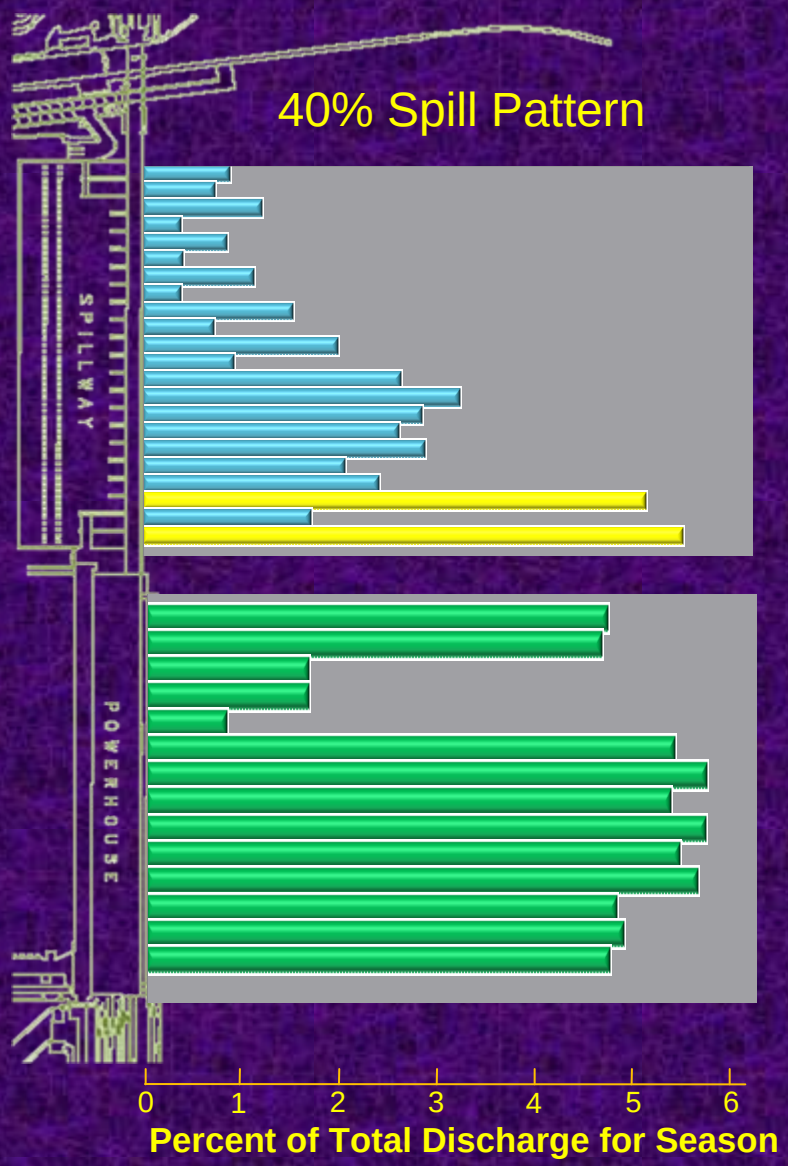


TSW Location & Discharge



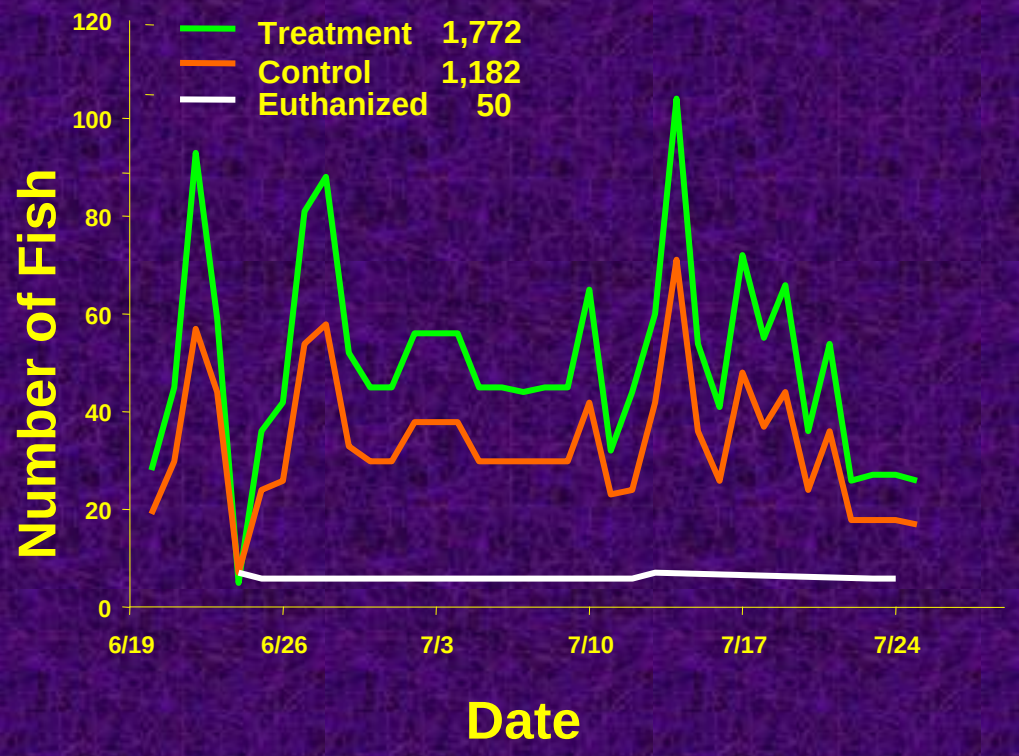
Summer Spill Patterns

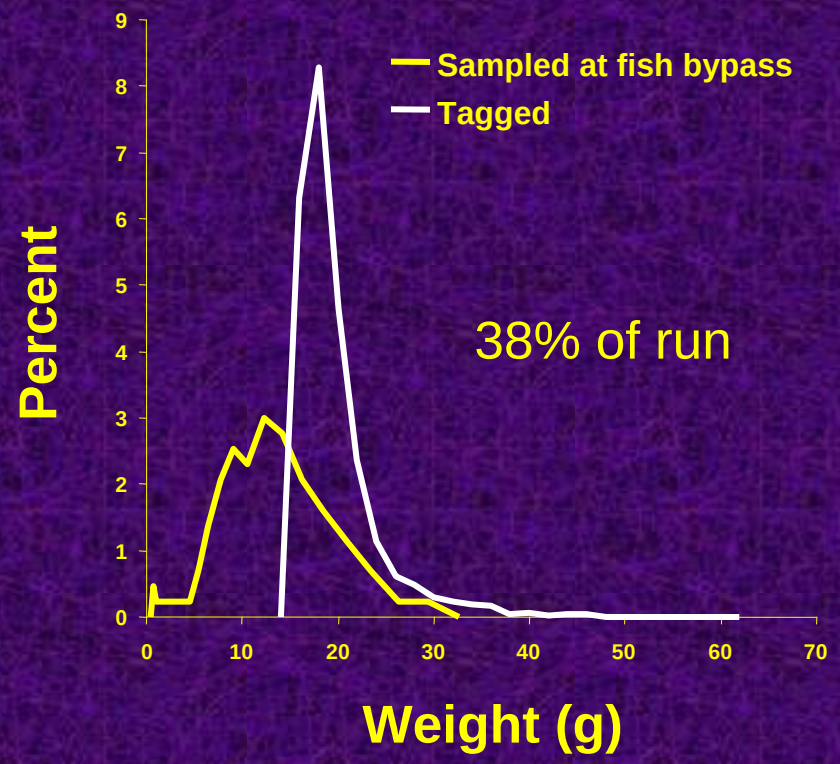




Summer Releases

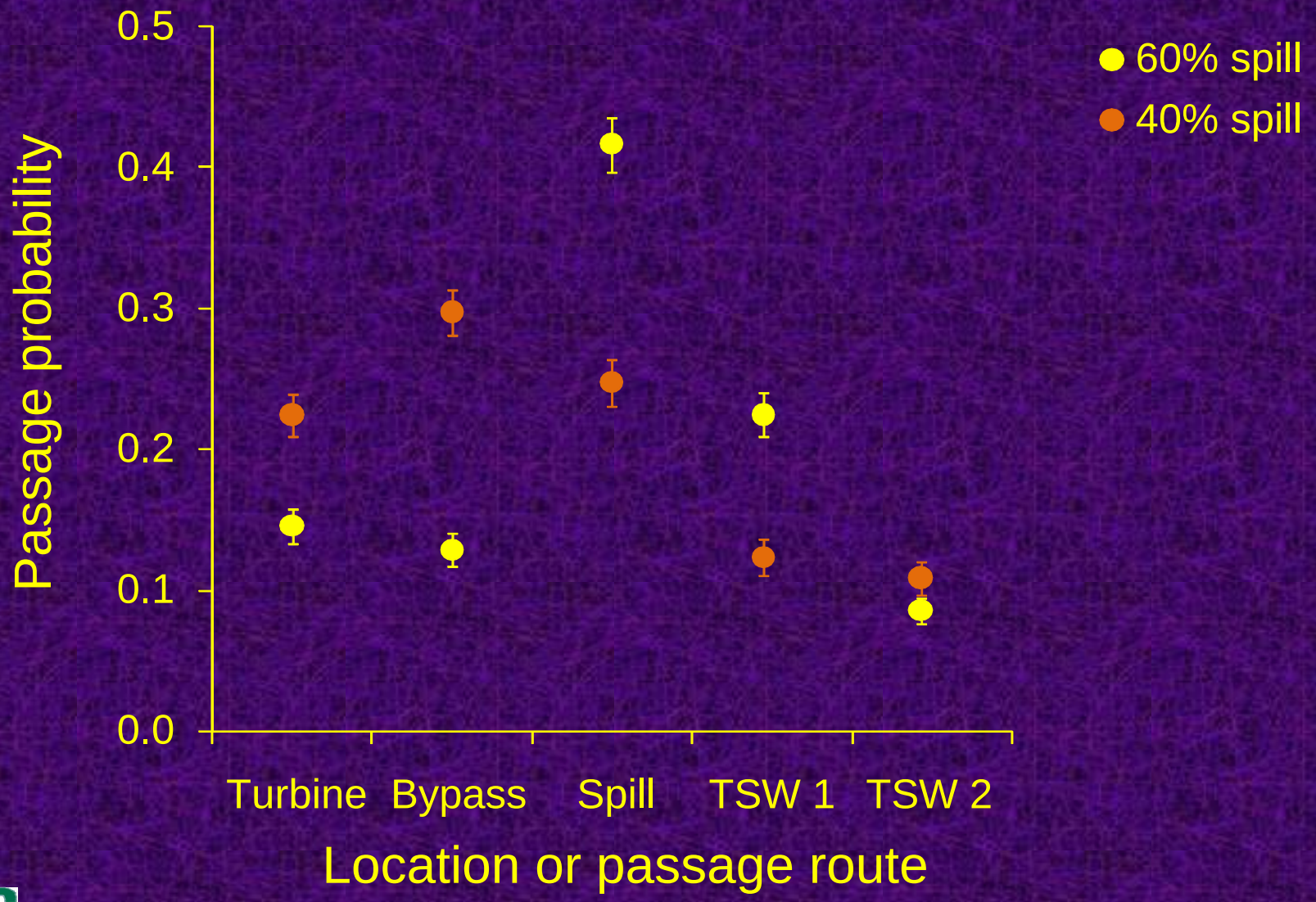
Subyearling Chinook





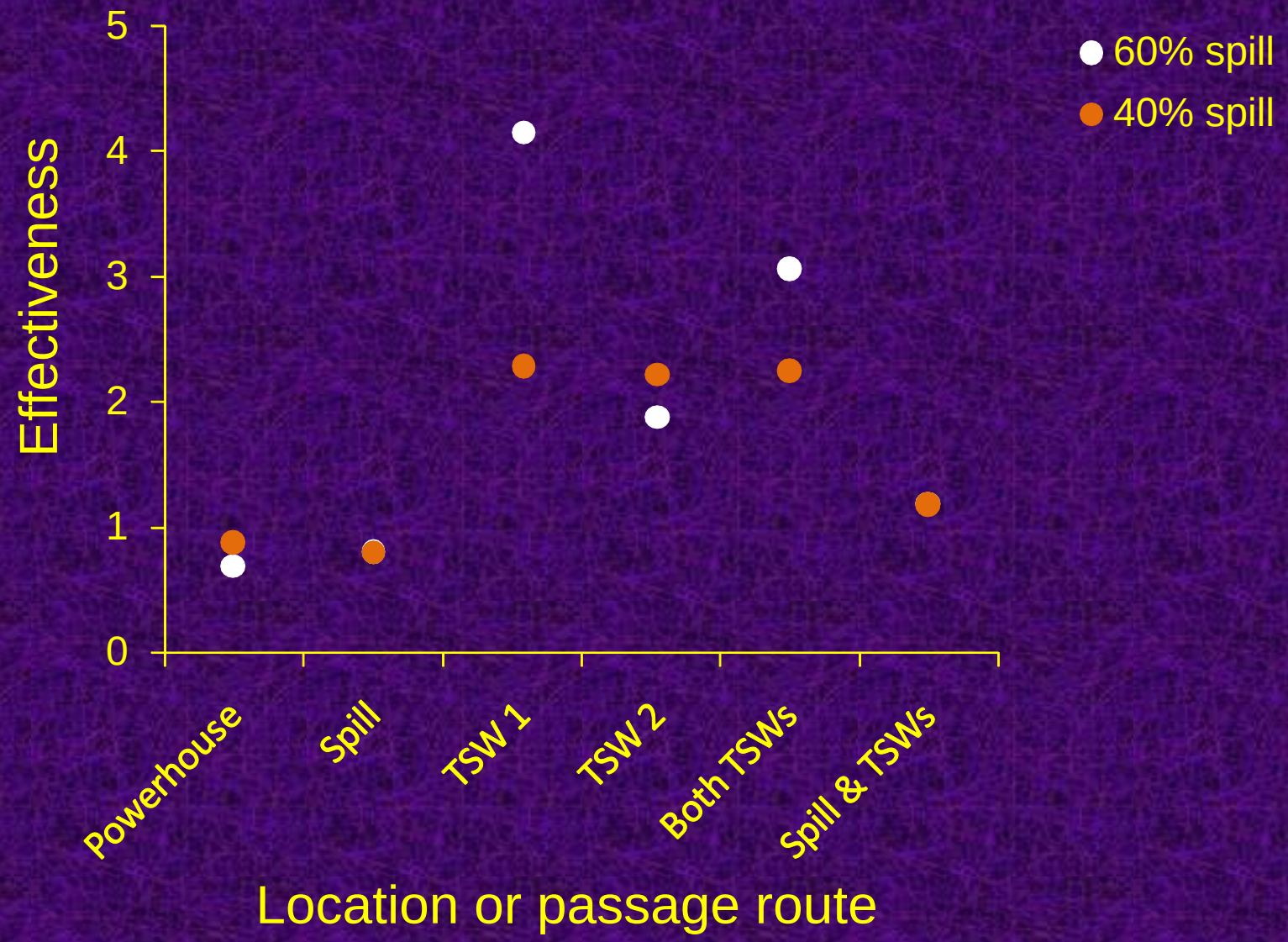
Summer Passage Probabilities

Subyearling Chinook



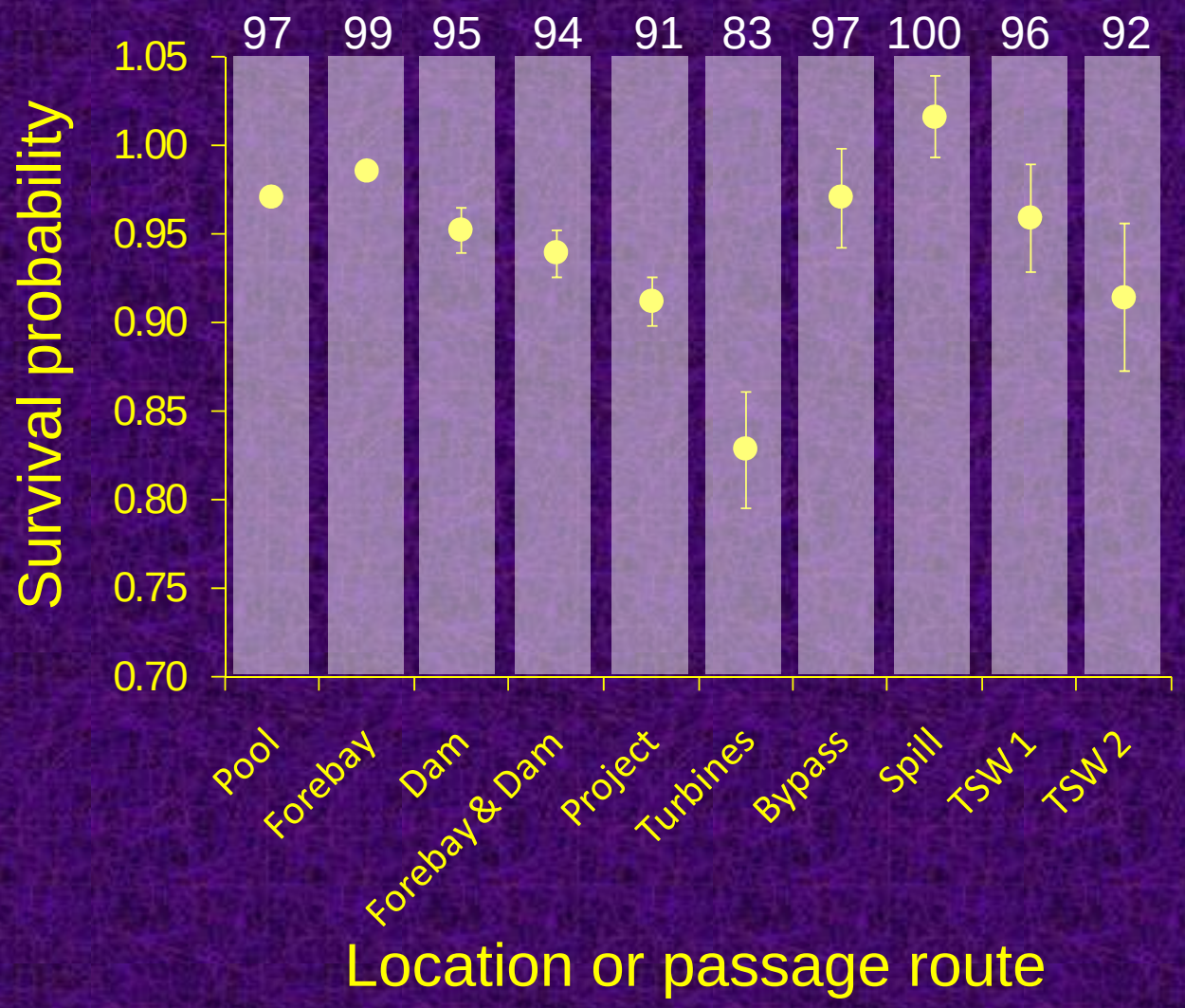
Summer Passage Effectiveness

Subyearling Chinook

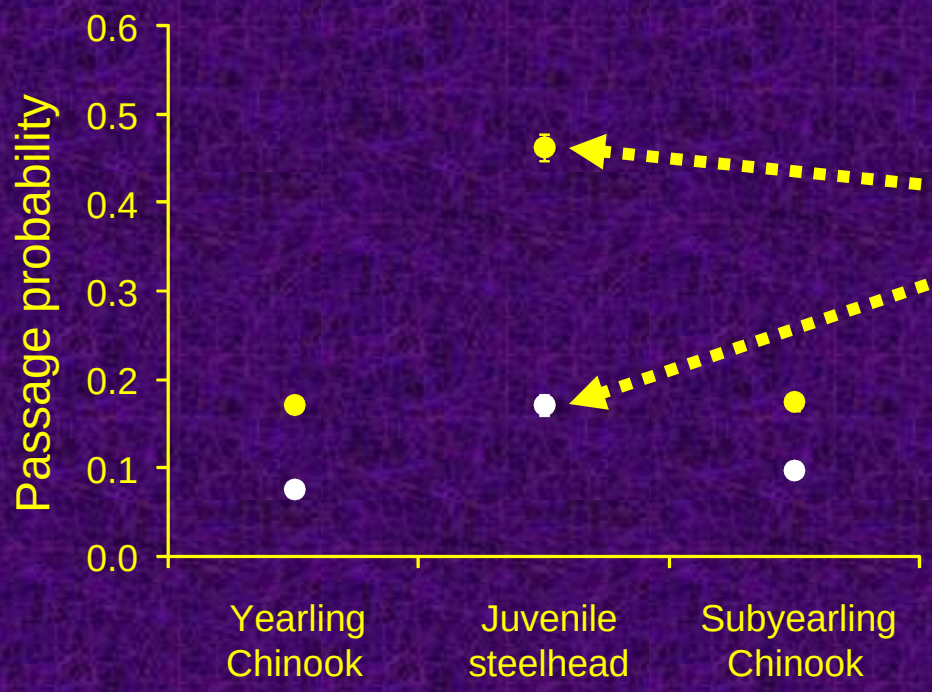


Summer Survival by Location

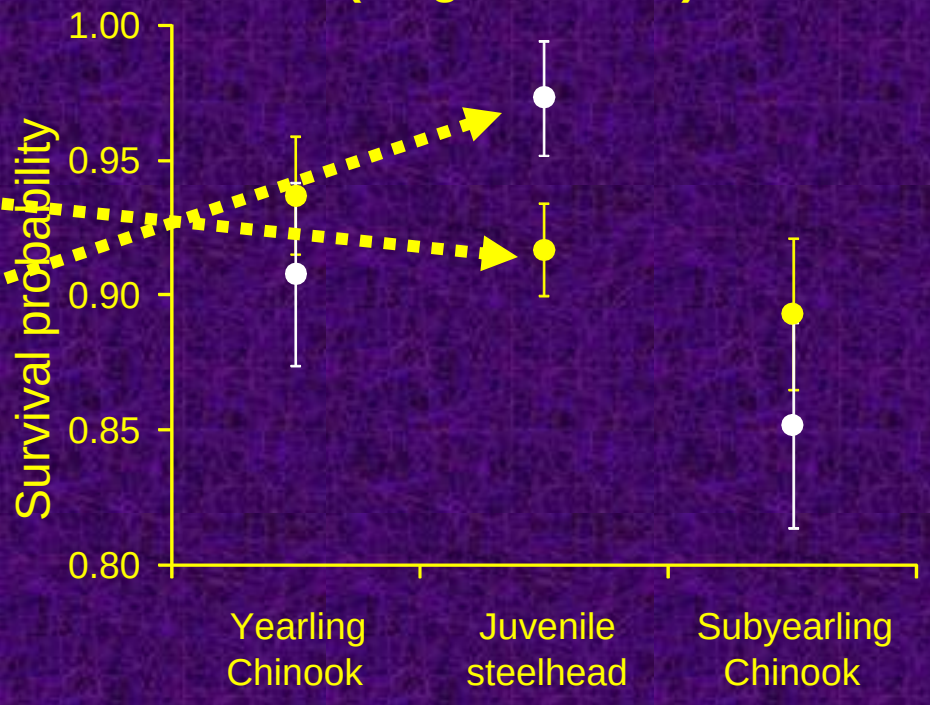
Subyearling Chinook



TSW Passage



TSW Survival
(single-release)



TSW 2 TSW 1

Spring Summary

- Overall the TSW's passed 27% of yearlings, 65% of steelhead
- Greater passage through TSW 22 for Steelhead
- TSW efficiencies were highest for steelhead (5:1 to 14:1)
  - efficiencies lower when spill was included (< 2:1)
- TSW survival comparable to conventional spill
- Treatments had little affect on passage or survival
- Diel periods had a pronounced affect on TSW performance

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Summer Summary

- Overall the TSW's passed 27% of subyearlings
- Greater passage through TSW 22 (7- 8%)
- TSW efficiencies were relatively low (2.6:1)
  - efficiencies lower when spill was included (1.2:1)
- TSW survival comparable to conventional spill
- Treatments had little affect on TSW passage or survival
- Treatments had largest affect on spill & powerhouse passage

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“ We are, I think, in the right road of improvements, for we are making experiments”

- Benjamin Franklin

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