

Update to Okanagan Region Timing Windows



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Update to Timing Windows

- What are ‘timing windows’?
 - Least risk time to do work in stream or lake
- Why an update?
 - Current windows from 1990’s
 - Removed timing windows designed to protect invasive species



Update to “Least Risk” Work Windows



- Overview of Fish Biology



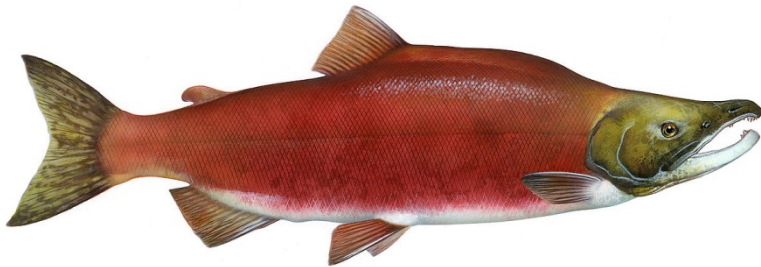
- Trends in Okanagan Region fish species



- Proposed Changes to Work Windows

- Welcome comments & suggestions until **February 28**
- Finalize windows for implementation on **April 1**

Review of Fish Biology: 4 Focal Fish Species in the Okanagan



Kokanee / Sockeye Salmon



Rainbow Trout



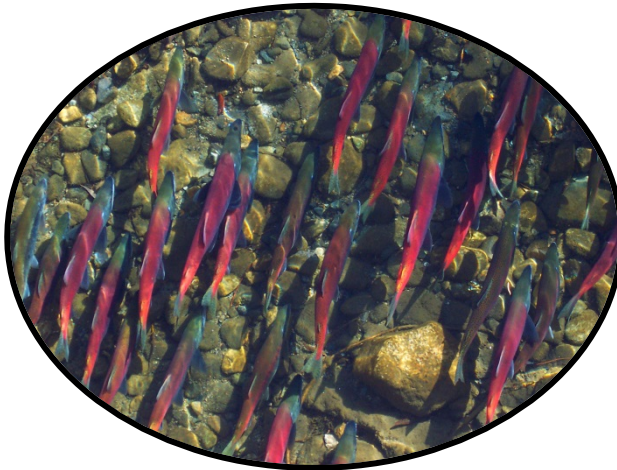
Bull Trout



Mountain Whitefish

Kokanee

- Okanagan Kokanee are unique
- Kokanee exist as two reproductively distinct ecotypes



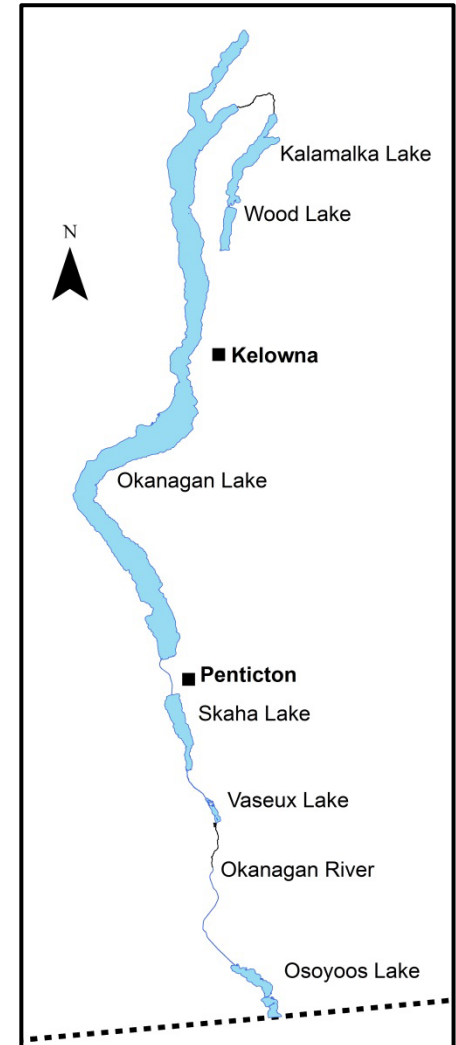
Stream Spawners



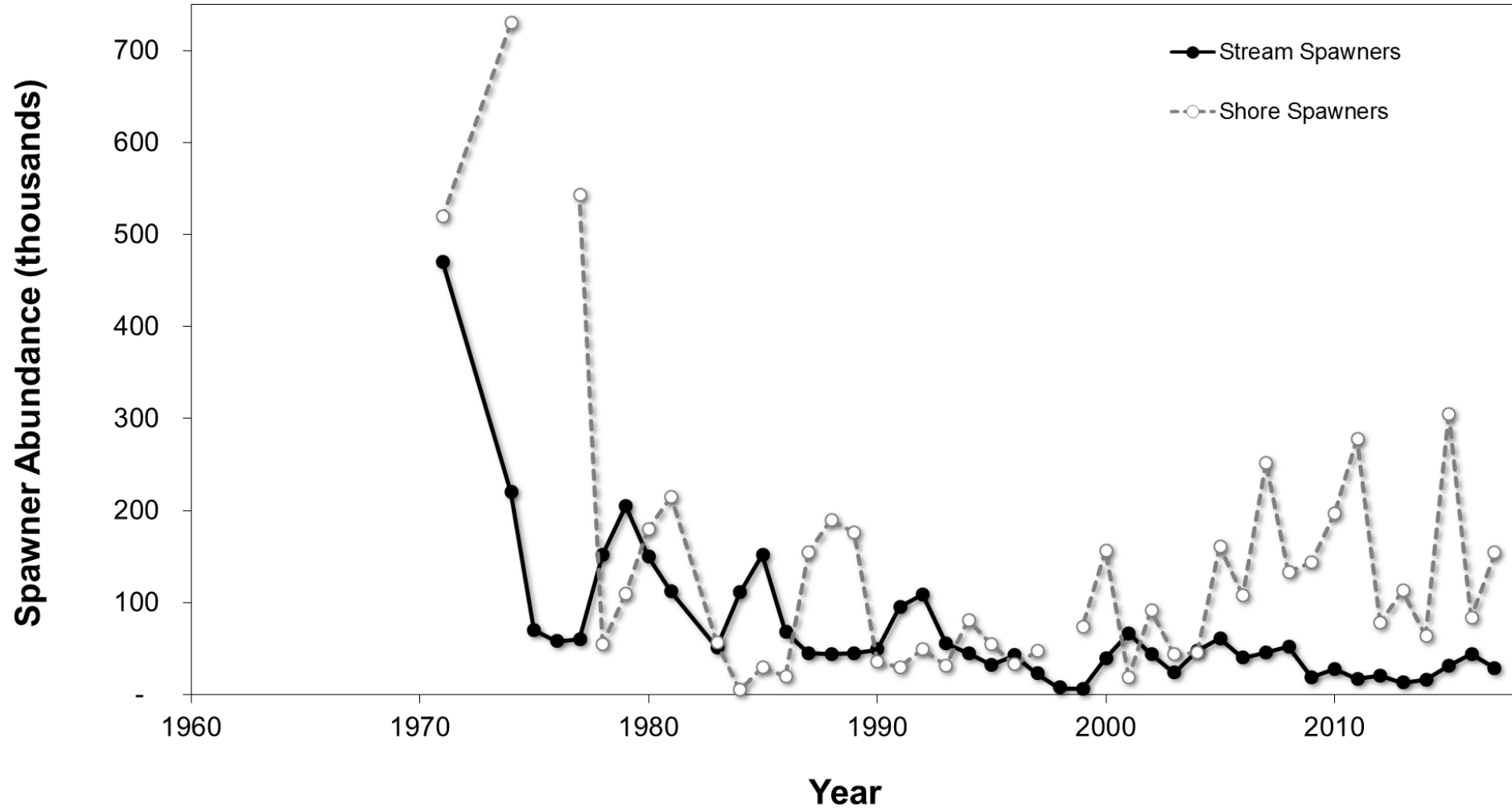
Shore Spawners

Kokanee

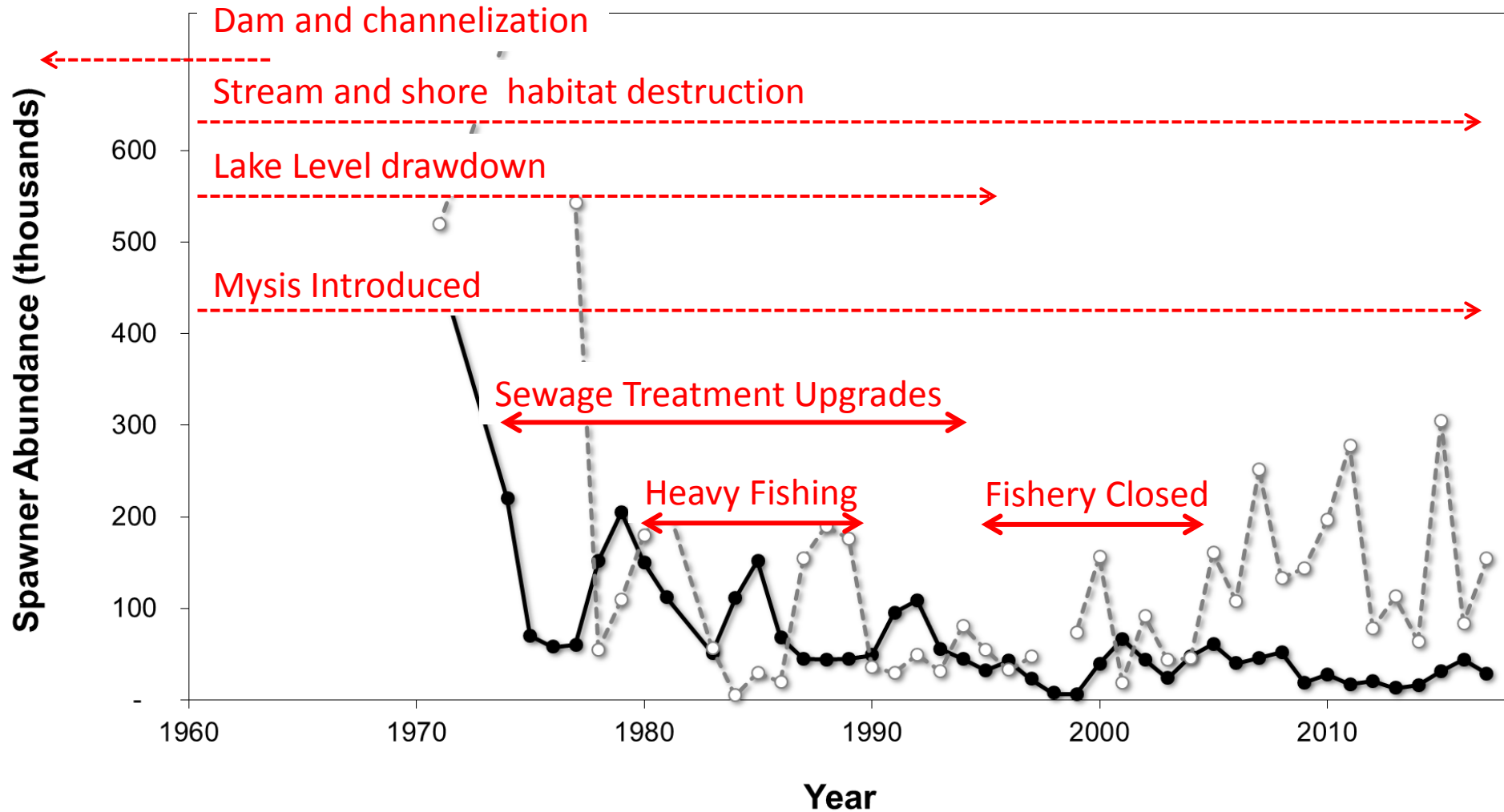
- Kokanee found in 5 Okanagan Lakes:
 - Wood, Kalamalka, Okanagan, Skaha and Osoyoos Lakes
 - No shore spawners in Skaha and Osoyoos
- Sockeye spawn in Osoyoos and Skaha Lakes



Okanagan Lake Kokanee



Okanagan Lake Kokanee Crash

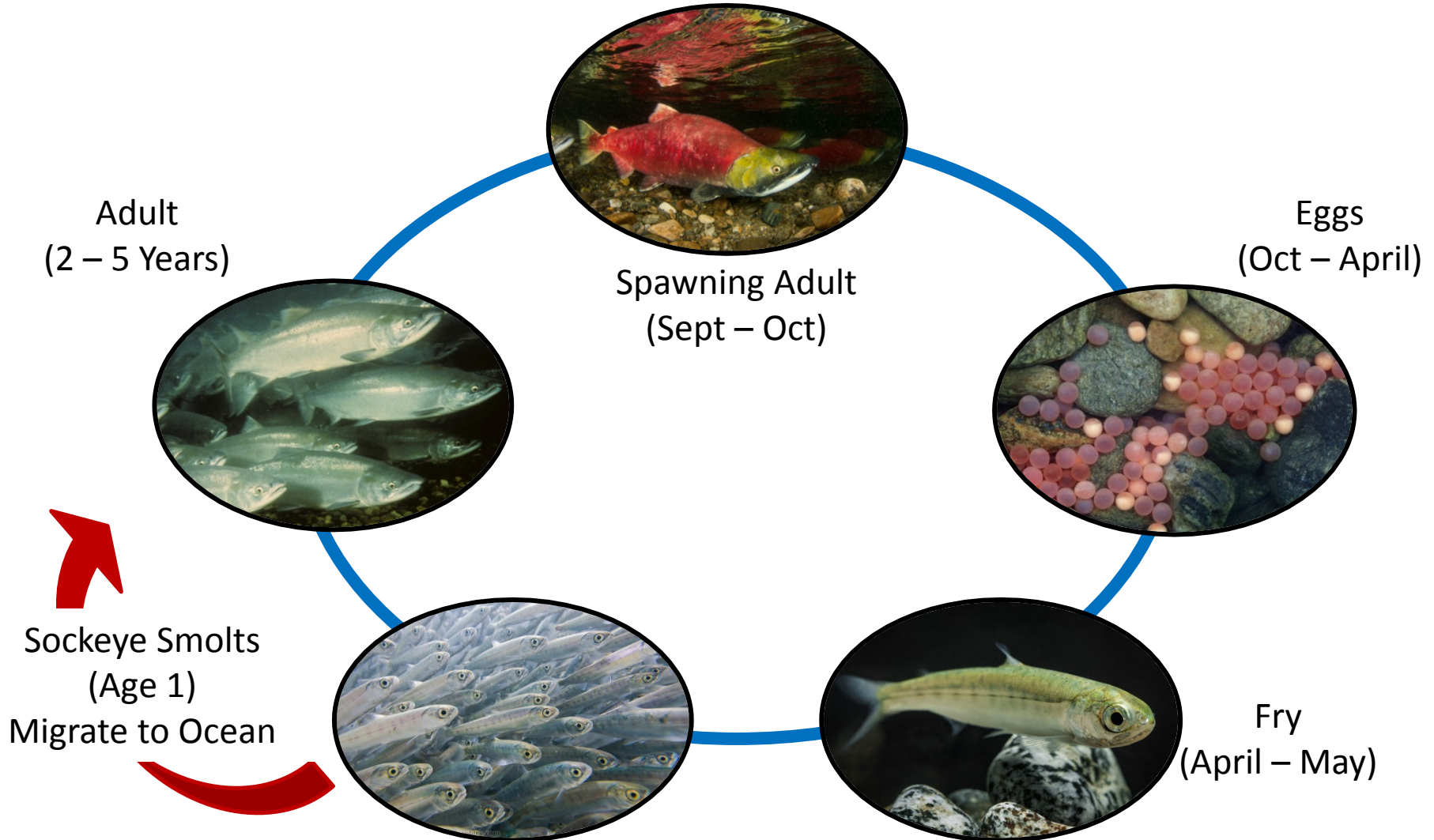


Kokanee Recovery Actions in Okanagan Lake

- Fish-friendly Water Management Decisions
 - Water Use & Stream-Flow Protection Plans
 - Fish-Water Management Tools
- Mysis harvest
- Habitat Restoration
- Work Windows
- Foreshore Protocol



Kokanee and Sockeye Life-Cycle



Work Window Considerations

Optimal Time for Works

Adult
(2 – 5 Years)



Spawning Adult
(Sept – Oct)

Eggs
(Oct – April)



Sockeye Smolts
(Age 1)
Migrate to Ocean



Fry
(April – May)

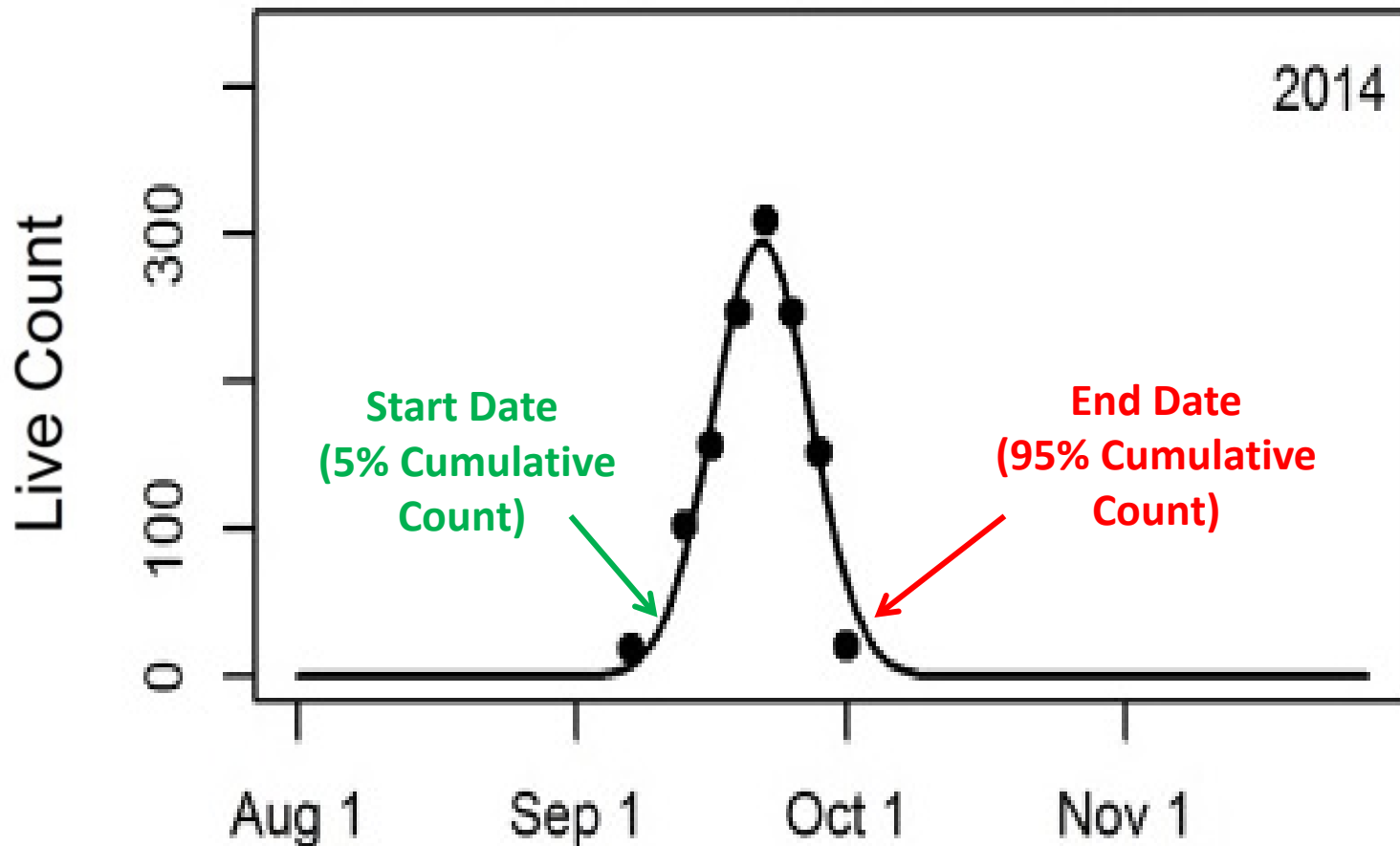


Kokanee Data

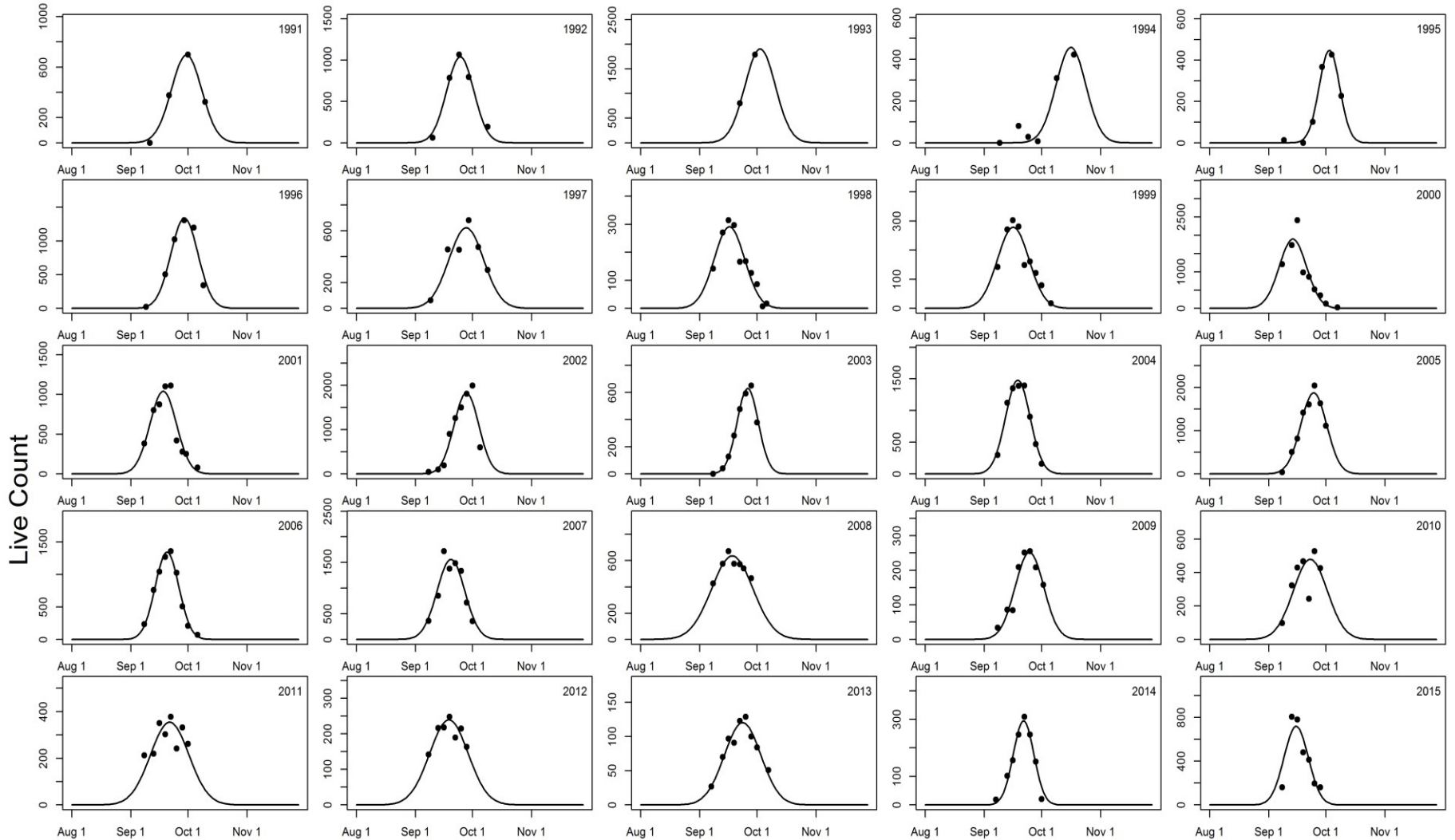
- Intensive monitoring of spawning run since early 1990's
- Start date of the spawning run is the key data for Work Windows



Kokanee Spawner Run Timing

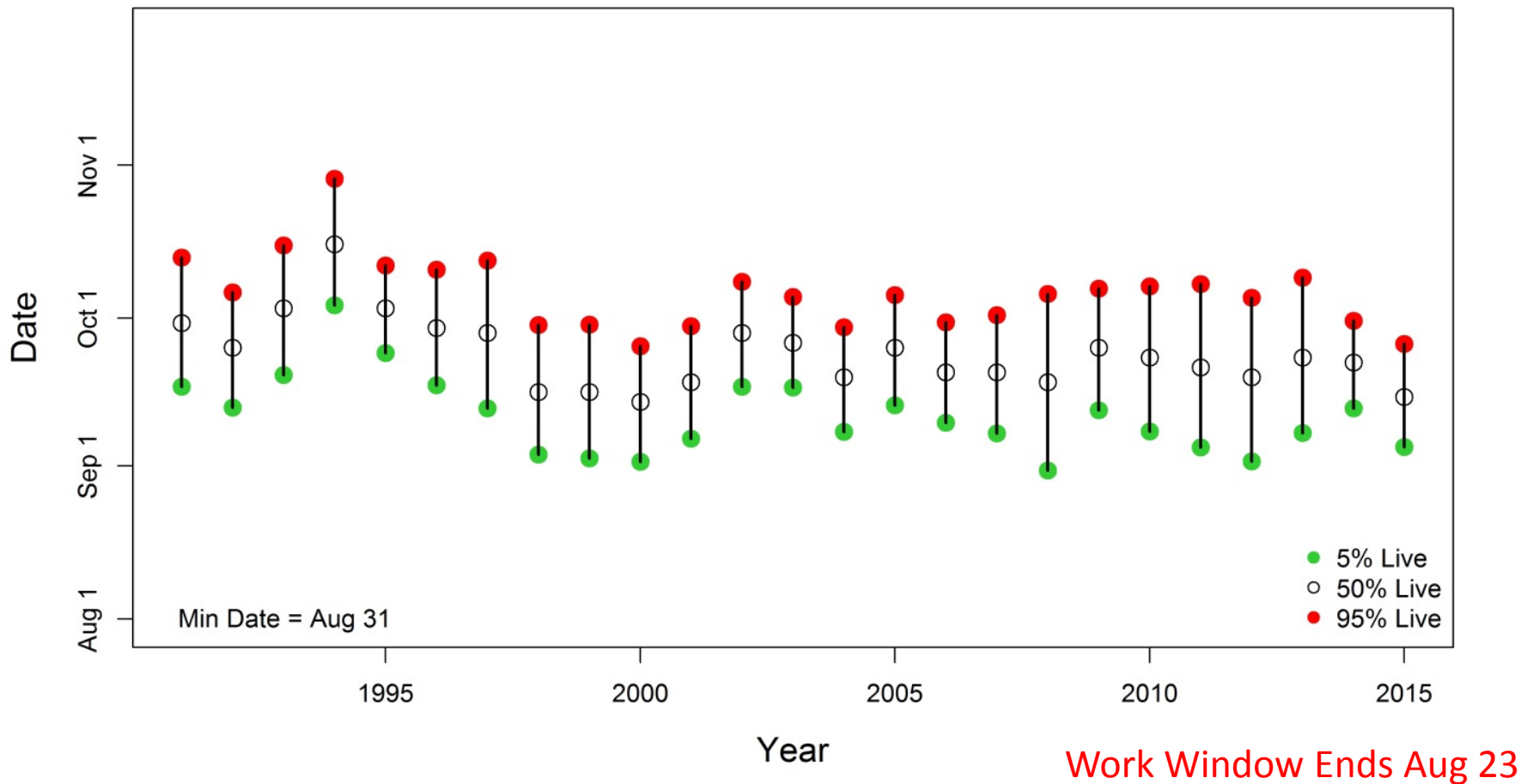


TREPANIER CREEK



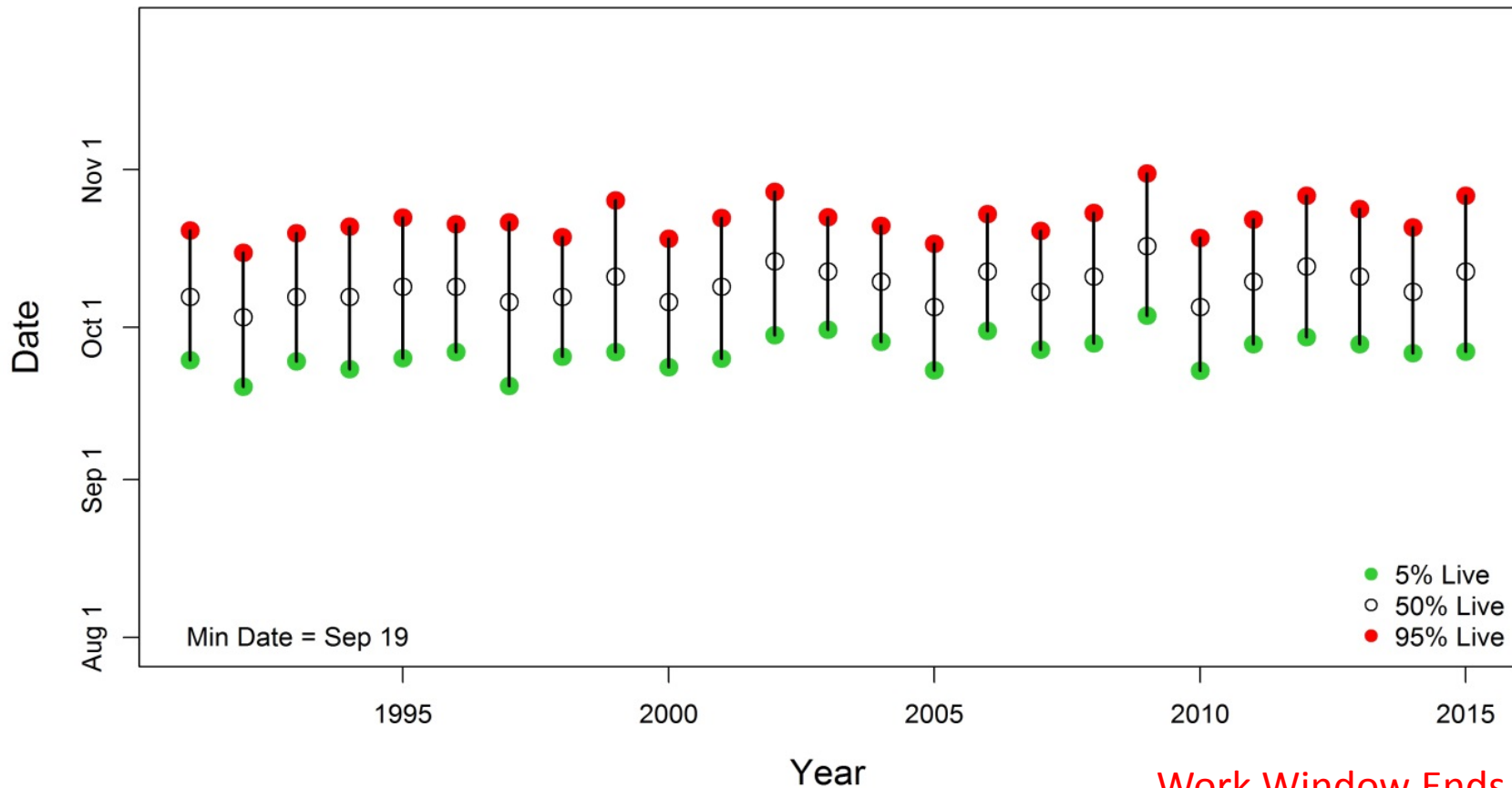
Variation in Run Timing Among Years

TREPANIER CREEK



Variation in Run Timing Among Years

COLDSTREAM CREEK



Rainbow Trout

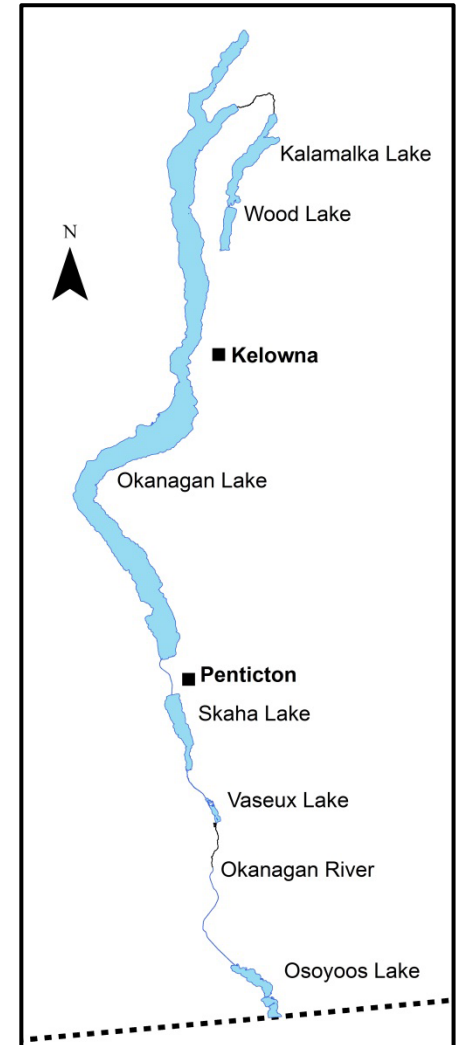
- Two ecotypes: Insectivores and Piscivores



- Up to 30lbs
- Feed on Age 1-2 Kokanee
- Highly valued by anglers

Rainbow Trout Distribution

- Rainbow trout found in 5 Okanagan Lakes:
 - Wood, Kalamalka, Okanagan, Skaha and Osoyoos Lakes
- Piscivorous Rainbow spawn in:
 - Mission, Powers and Trout Creek
 - Okanagan River and Inkaneep Creek (Osoyoos)
 - Okanagan River and McLean Creek (Skaha)



Rainbow Trout Life Cycle

Migrate Back to Lake
(June – July)



Spawning Adult
(April - June)

Eggs
(May - July)



Adult
(2 – 8 Years)



Parr Migrate to Lake
(April - June)



Fry Rear In Stream
(July - April)



Rainbow Trout Work Windows

- Rainbow are most sensitive to in-stream works during:
 - Spawning through fry emergence period
 - Over-wintering
- “Least-Risk” work window begins late summer
 - Fry have emerged and are mobile
 - Work window begins August 7 for most systems
- For streams without Kokanee, work window ends October 15
 - To minimize disturbance during over-wintering



Summary of Stream Work Window Revisions

- Some places we've made favourable changes
 - Ex: Bellevue Creek and Thompson Brook
 - Historically: July 22 – Aug 24
 - Now: Aug 7 – Oct 15

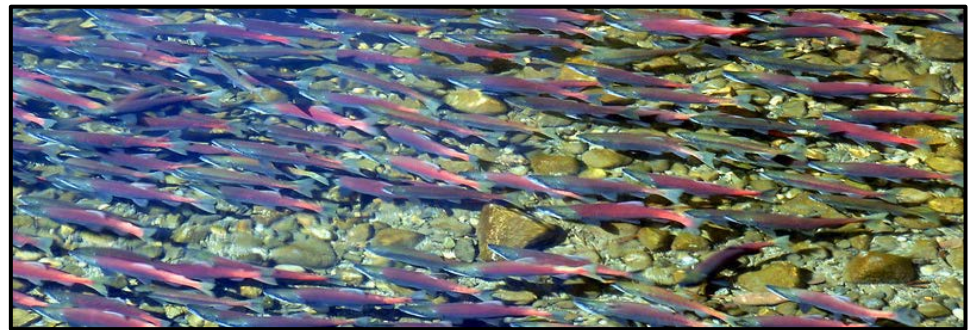


Summary of Stream Work Window Revisions

- In some cases, we've reduced the work window substantially
 - Ex: Peachland Creek (July 22 – Aug 24 → Aug 1 – Aug 8)
- Removed windows to protect invasive species
 - Eastern Brook Trout in the Kettle River and Eneas Creek
- Improved communication of windows
 - We've added UTM coordinates for locations of referenced falls etc.

Lake “Least-Risk” Work Windows

- Designed to protect Kokanee shore spawners and staging Rainbow and Kokanee spawners



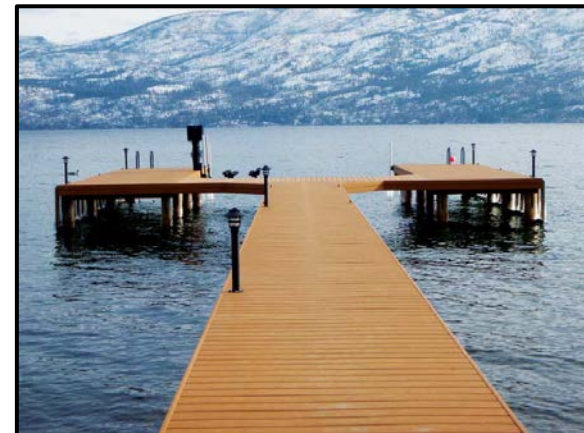
Annual Counts of Shore Spawners

- Visual survey to estimate number and locations of shore spawners



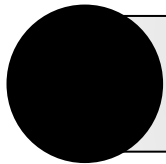
Shore Spawning Habitat

- Kokanee spawn on angular rock (5-20 cm), along specific locations of the shoreline of Okanagan, Wood and Kalamalka Lakes
- Kokanee spawn in water depths between 0.25 and 0.75m

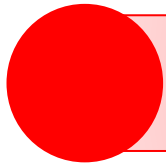


Foreshore Protocol

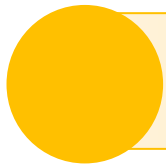
- Shore spawning data used to develop 'Okanagan Region Foreshore Protocol'
- Defined 3 Colour Zones:



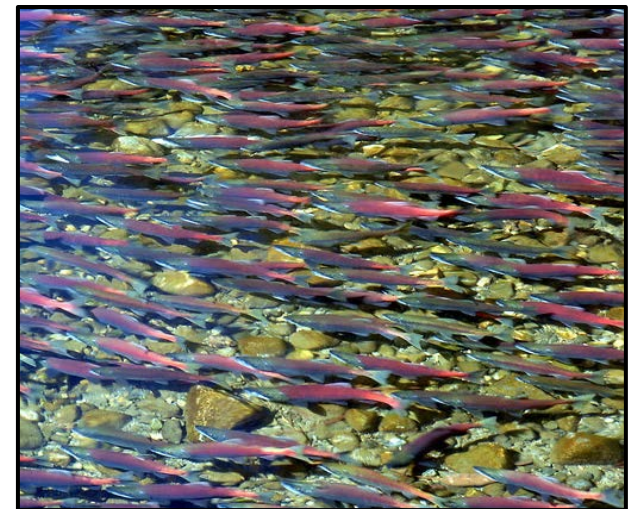
Critical spawning habitat
(areas with >1000 spawning kokanee)



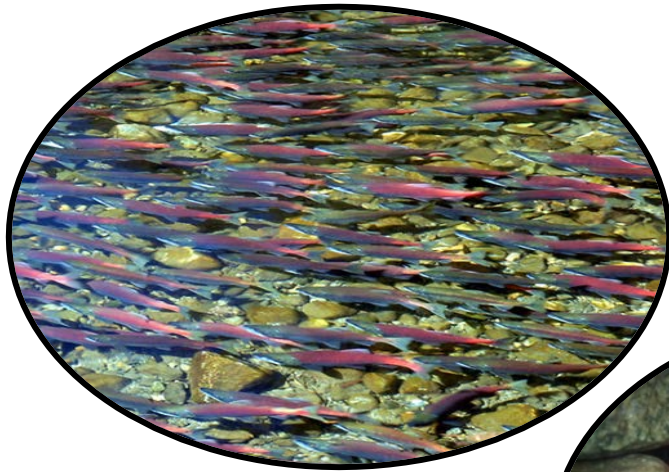
Very important habitat
(areas with >50 spawning kokanee)



High to moderate value habitat
(areas with <50 spawning kokanee)



Setting Work Window Guidelines



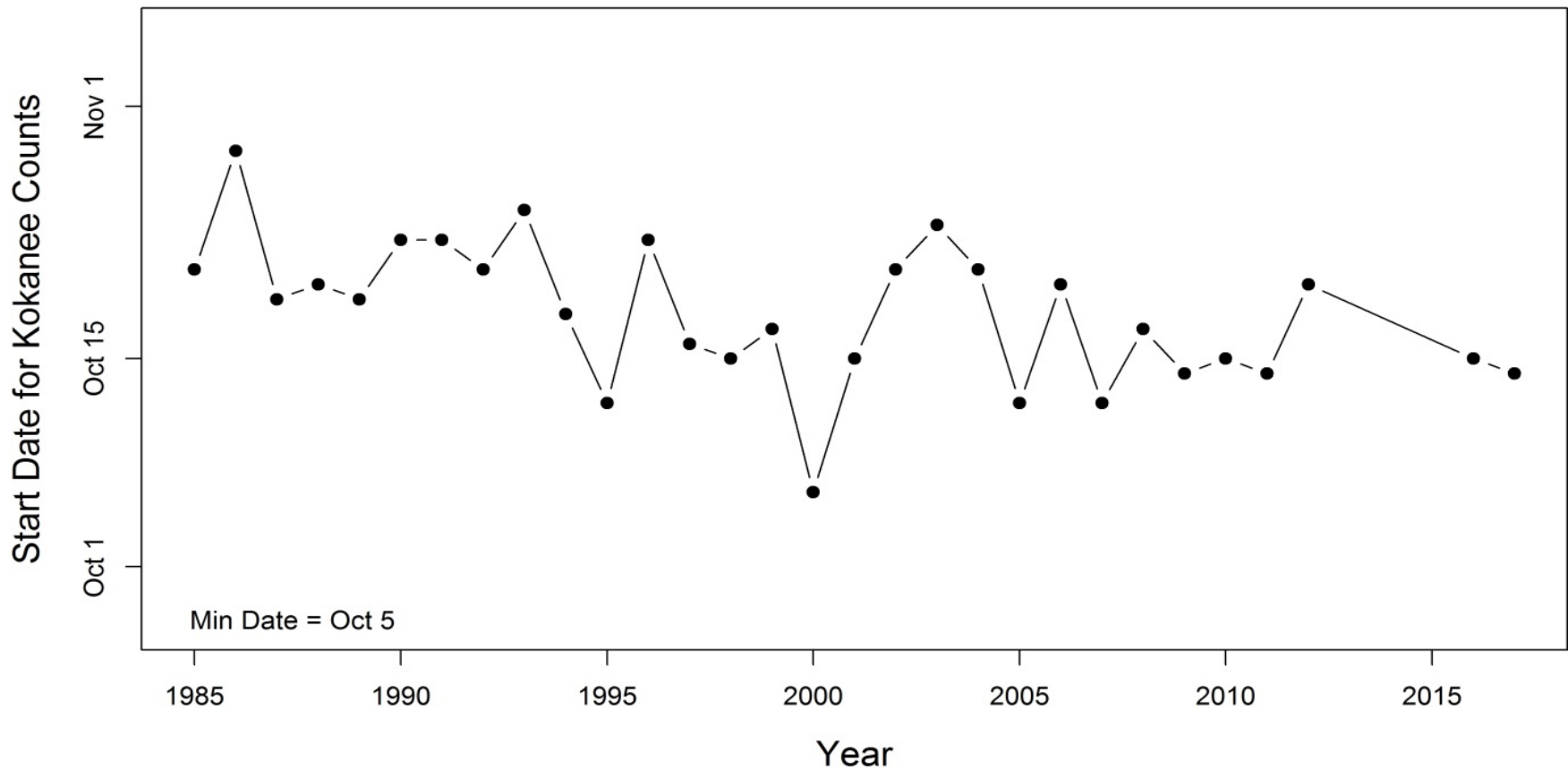
Spawning



Fry Emergence

Start of Shore Spawner Run

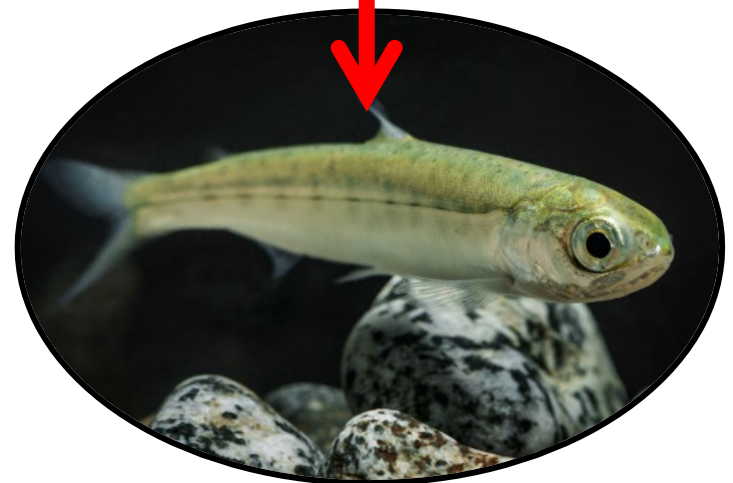
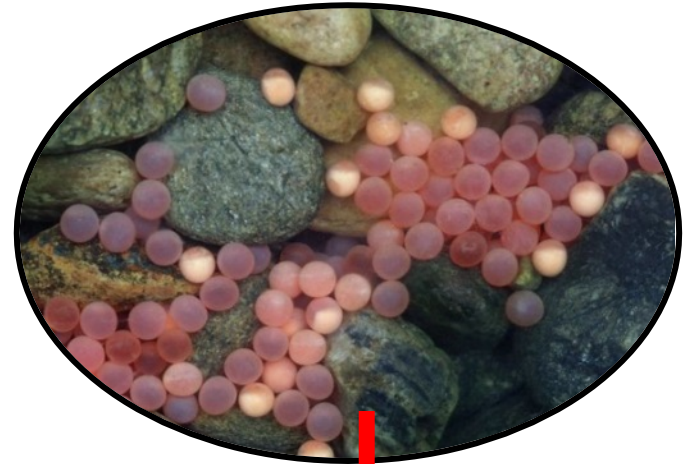
Okanagan Lake



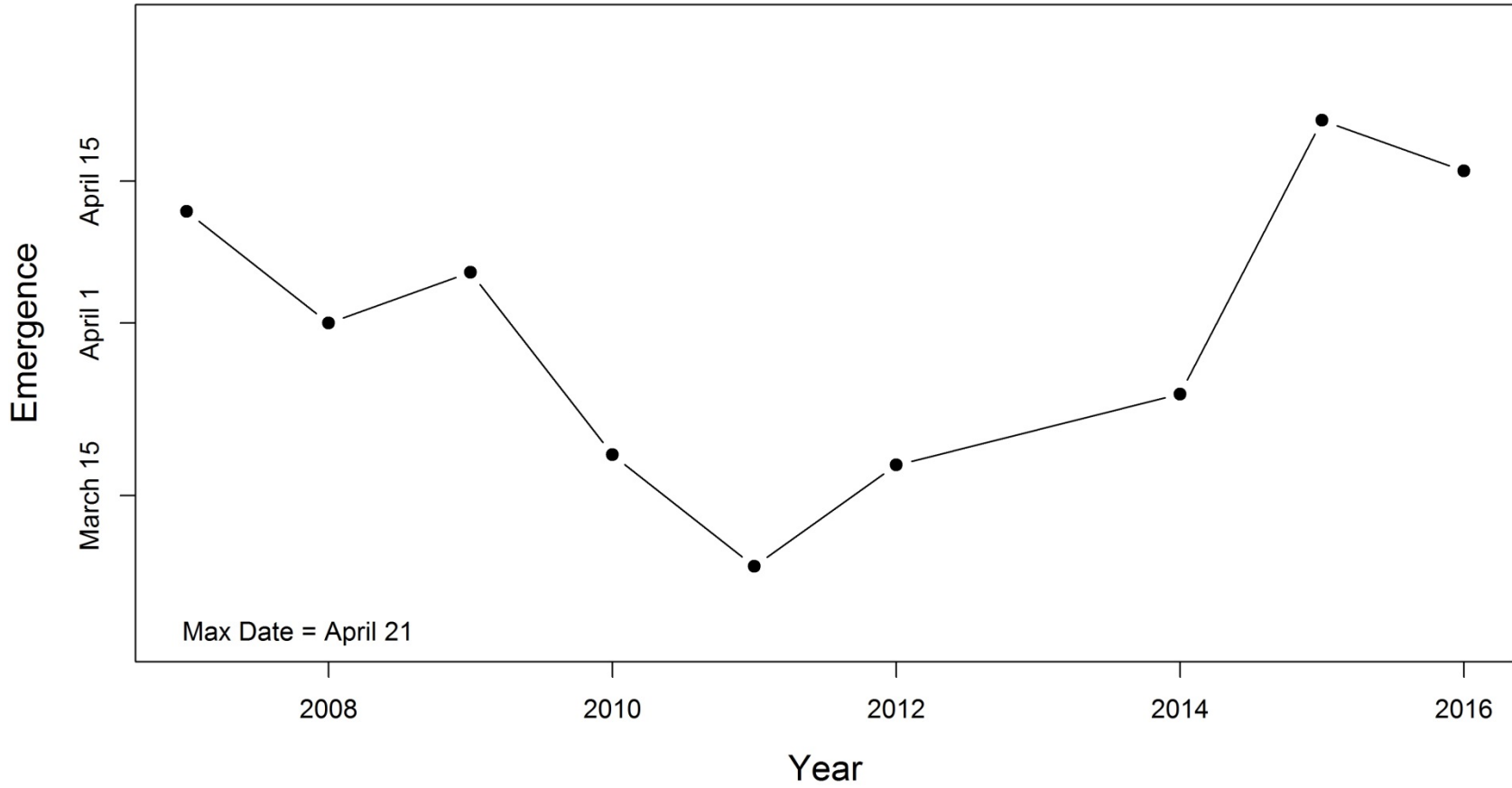
Work Window End Sept 30

Shore Spawner Emergence

- Emergence is predicted annually as part of the Fish Water Management Tools Program
- Emergence is a function of water temperature
 - 950 accumulated thermal units after peak spawn date



Shore Spawner Emergence



Stages of Fry Emergence



Lake Work Window Guidelines

Lake	Area	Dates
Okanagan	<50m of fish-bearing stream	Nov 1 – Apr 1
	Black, Red, or Yellow Zone	June 1 – Sep 30
	All other areas	No restrictions



Osoyoos Lake

Area	Species	Dates
a) Within 0.5km of Okanagan River or Inkaneep Creek	KO SO RB	July 22 – Aug 31
b) Beyond a)	LMB SMB	Nov 1 - Apr 1



Area	Species	Dates
<50 m of Okanagan River or Inkaneep Creek	KO SO RB	Nov 15 - Apr 1
All other areas		No Restrictions

In Summary...



- Updated Work Windows
- Recognize works can't always occur during the least risk time
- Work Windows are general guidelines