

Klickitat Spring Chinook and Steelhead Monitoring: Updates and New Projects



Joe Zendt

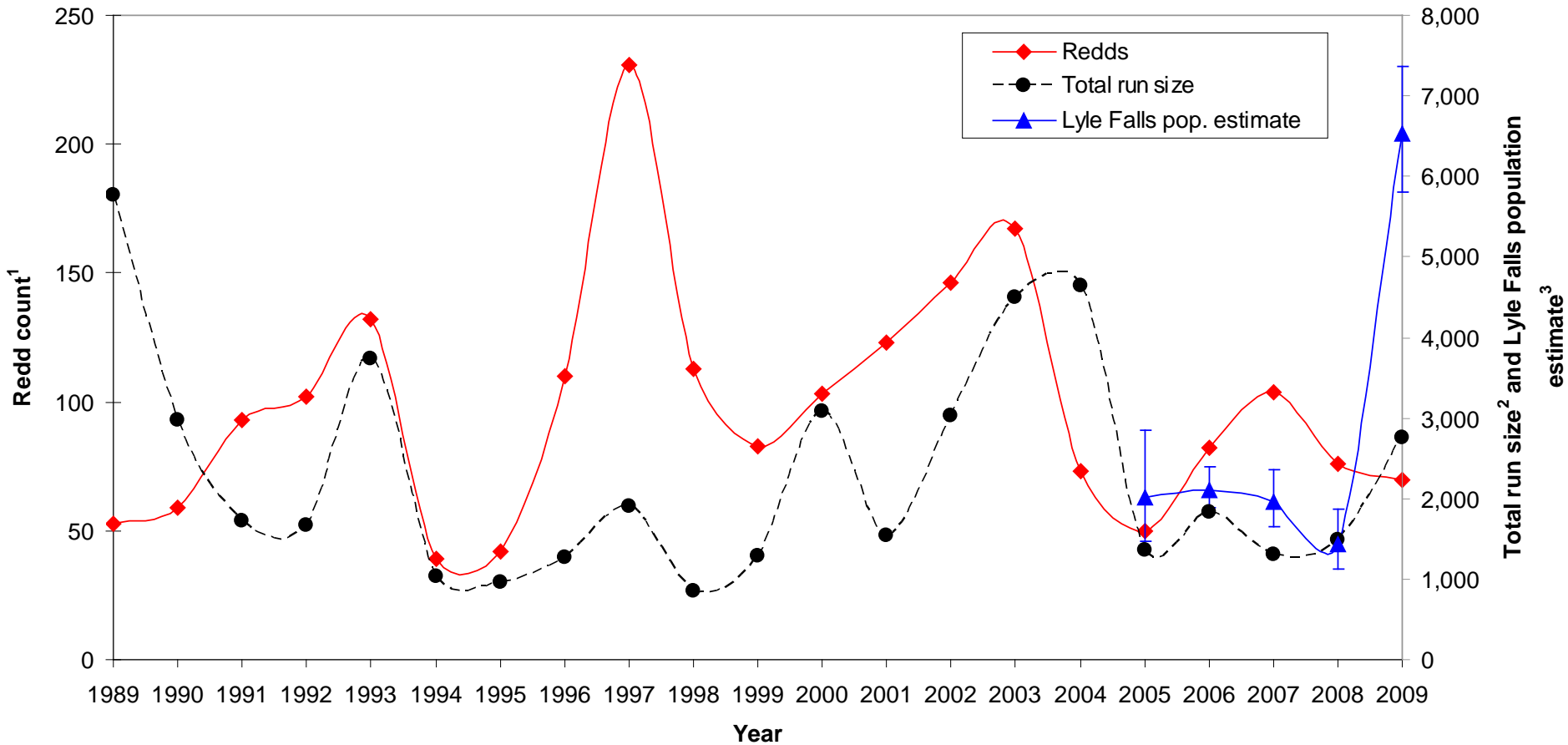
Yakama Nation Fisheries Program



Spring Chinook Adult Monitoring in the Klickitat subbasin

- Redd counts (spawner surveys)
 - Rafting and wading surveys
 - Cover entire spawning range (~62 mi.)
 - GPS locations recorded for redds
 - Biological data collected from carcasses
- Run Reconstruction (Harvest + Escapement)
- Mark-recapture population estimates
 - Floy-tagged at Lyle Falls adult trap
 - Recaptured at Klickitat Hatchery
 - Peterson estimate

Klickitat Spring Chinook Redd Counts and Total Run Size, 1989-2009

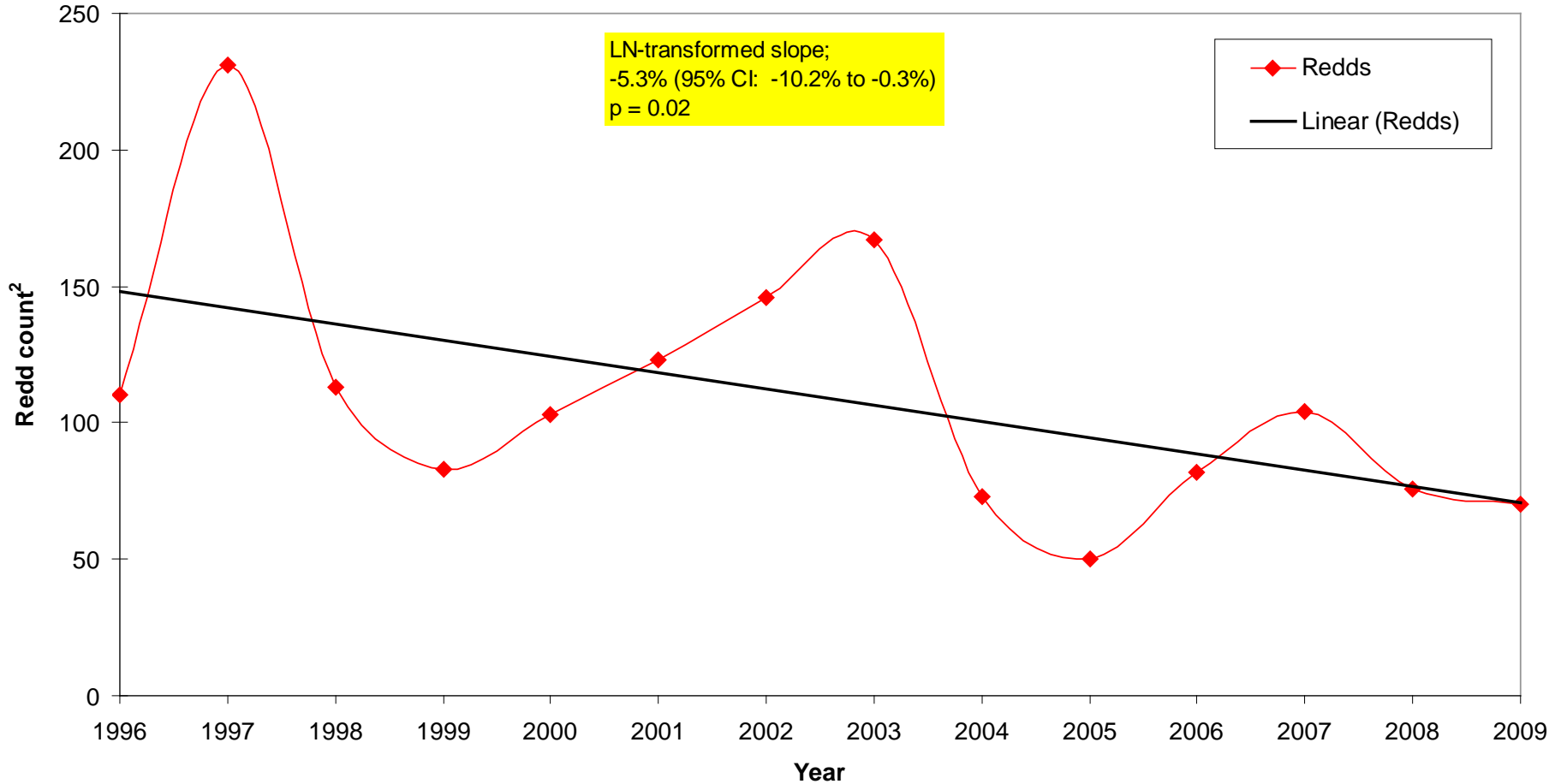


1 - Total redd counts minus hatchery adult releases above Castile

2 - Total run size of age-3 to age-6 fish estimated from natural spawner and hatchery escapement plus harvest (from YN and WDFW databases)

3 - Population estimate at Lyle Falls from mark-recapture methods

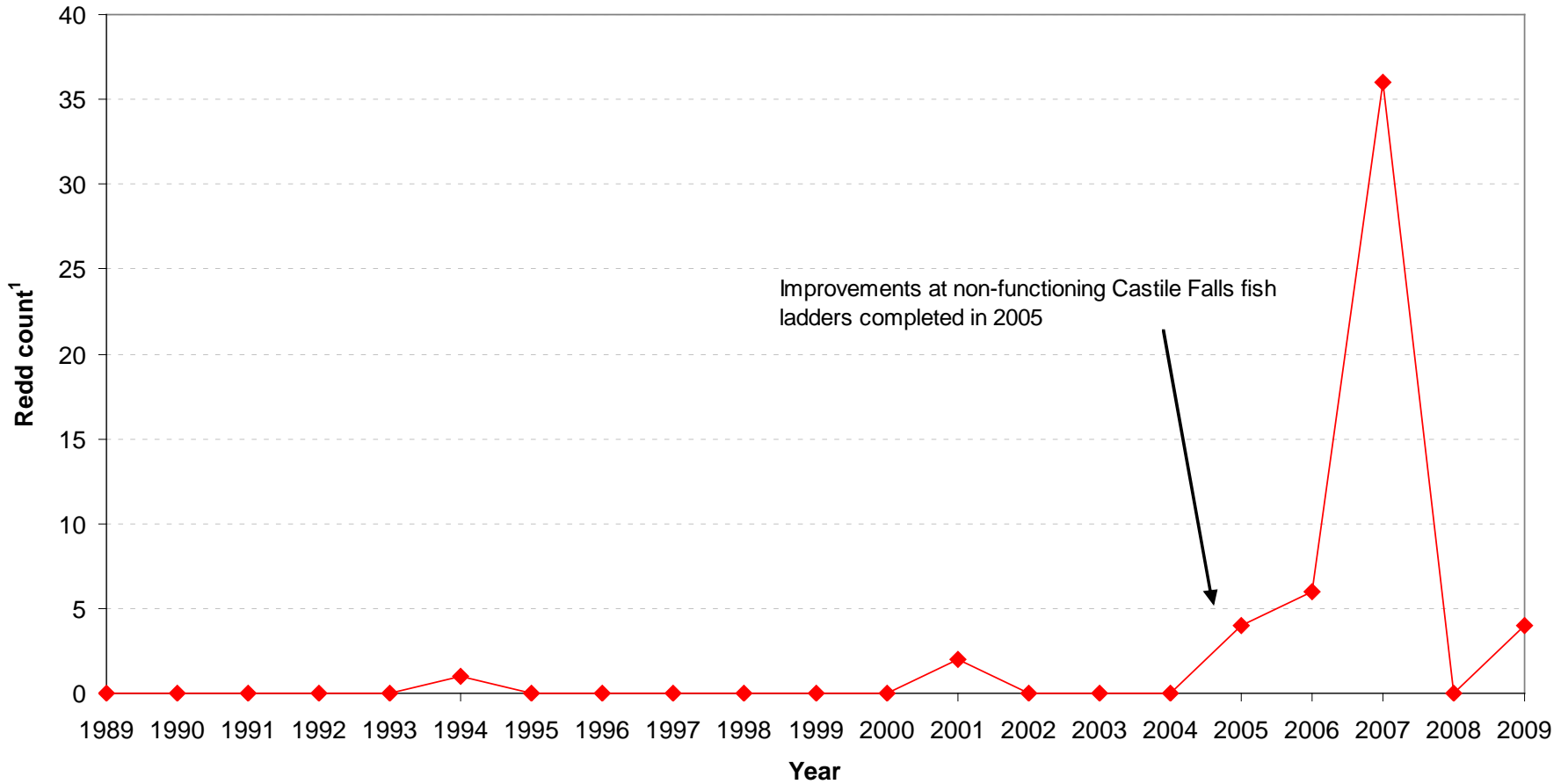
Klickitat Spring Chinook Redd Counts 1996-2009¹



1 - 1996-2009 time period selected for consistency in geographic area coverage during redd surveys

2 - Total redd counts minus hatchery adult releases above Castile

Klickitat Spring Chinook Redd Counts above Castile Falls, 1989-2009



1 - Total redd counts minus hatchery adult releases above Castile

Discrepancies between methods 1: Large Hatchery Run

- Run Reconstruction estimate
 - ~3000 total
 - ~1500 adults
 - 85% hatchery
- Mark-recapture estimate
 - ~6500 total (95% CI: 5800 to 7360)
 - 3500 to 5100 adults
 - 90% hatchery-origin

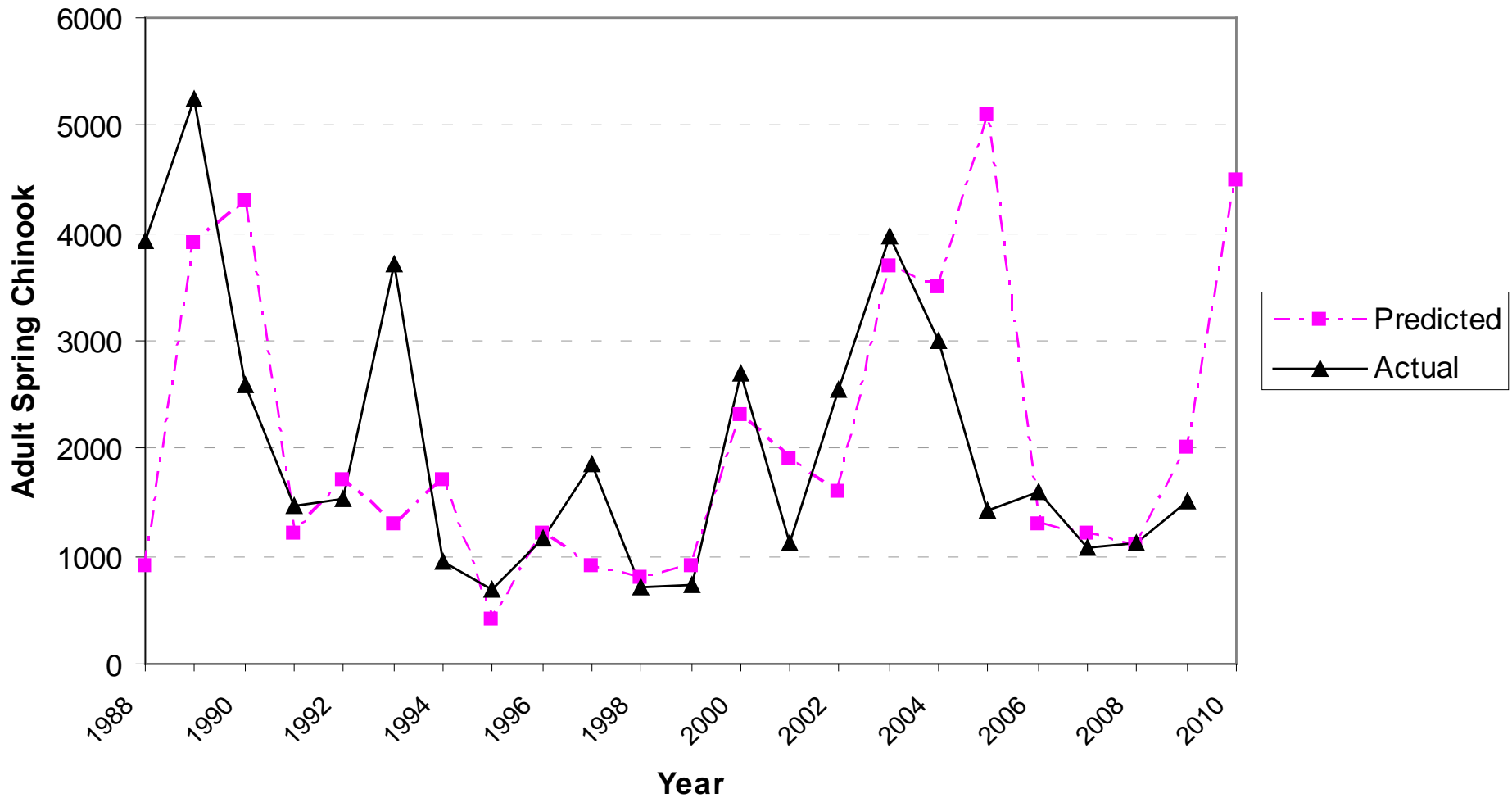
Discrepancies between methods 2: Where the Wild Fish Are?

- Low 2009 Redd count
 - 70 redds X 3 fish/redd = 210 wild(?) fish
 - 460 (probably low) to 675 wild fish from other estimates
- 2009 DIDSON monitoring above Castile Falls
 - 24 (4) estimated fish 4 redds observed = 6 fish/redd?
 - 70 redds X 6 fish/redd = 420 fish
- Pre-spawn mortality? Missed redds?
- Wild run still depressed

Ongoing Genetic Analysis

- Klickitat Spring Chinook showing introgression of stream-type (Spring Chk) and ocean-type (Fall Chk)
 - Effects on fitness?
- Could be historical genotype or a result of recent mixing
- Past (1980s) samples being analyzed to determine if a trend is present in this introgression

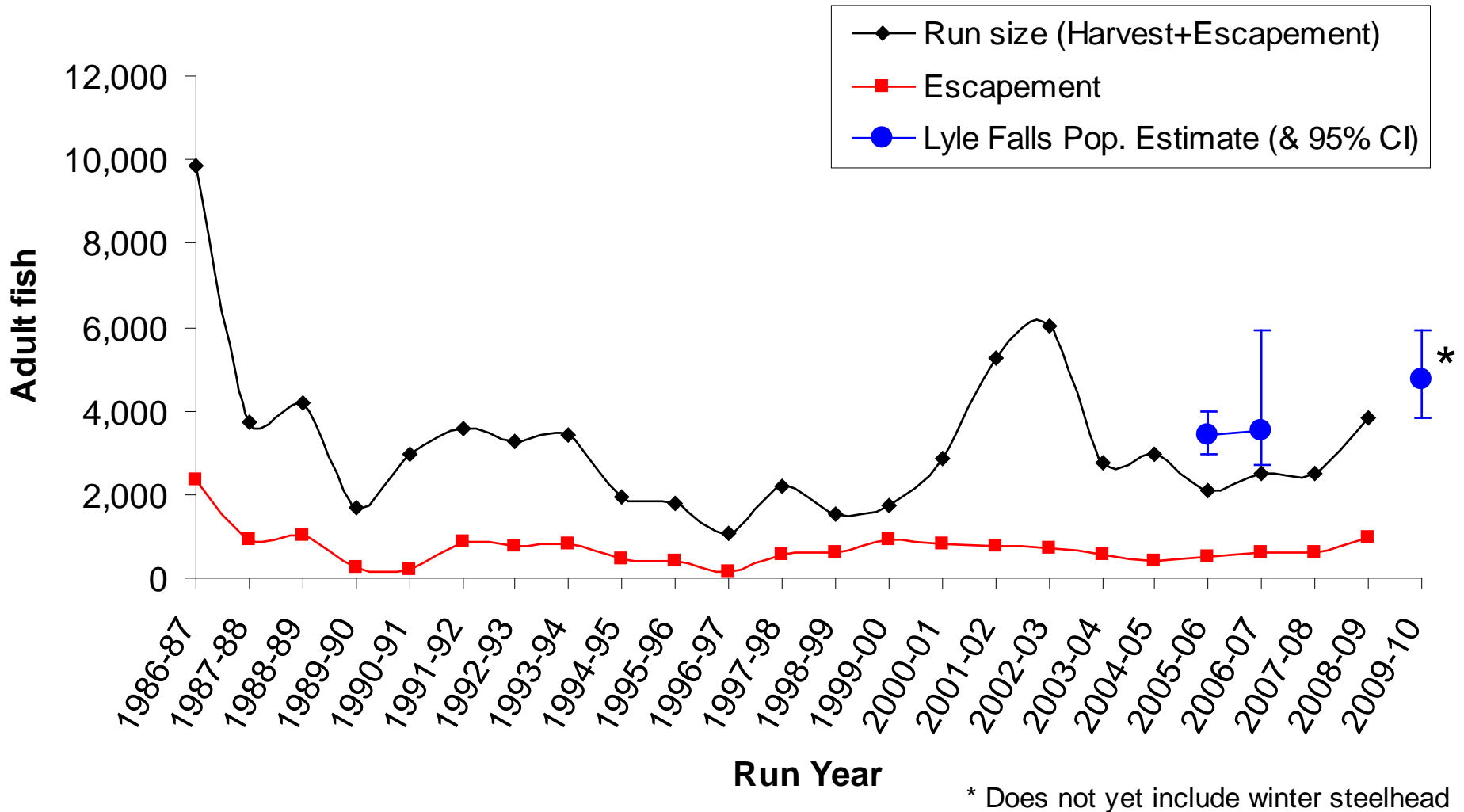
Spring Chinook Forecasts and Actual Adult Returns (Run Reconstruction method)



Steelhead Adult Monitoring in the Klickitat subbasin

- Redd counts (spawner surveys)
 - Rafting and wading surveys
 - Attempt to cover entire spawning range (~150 mi.), but access and survey conditions often limiting
 - Redd counts often biased low
- Run Reconstruction (Harvest + Escapement)
 - Relies on redd counts for natural escapement
- Mark-recapture population estimates
 - Floy-tagged at Lyle Falls adult trap
 - Recaptured by anglers
 - Peterson estimate

Klickitat Steelhead run size and escapement estimates



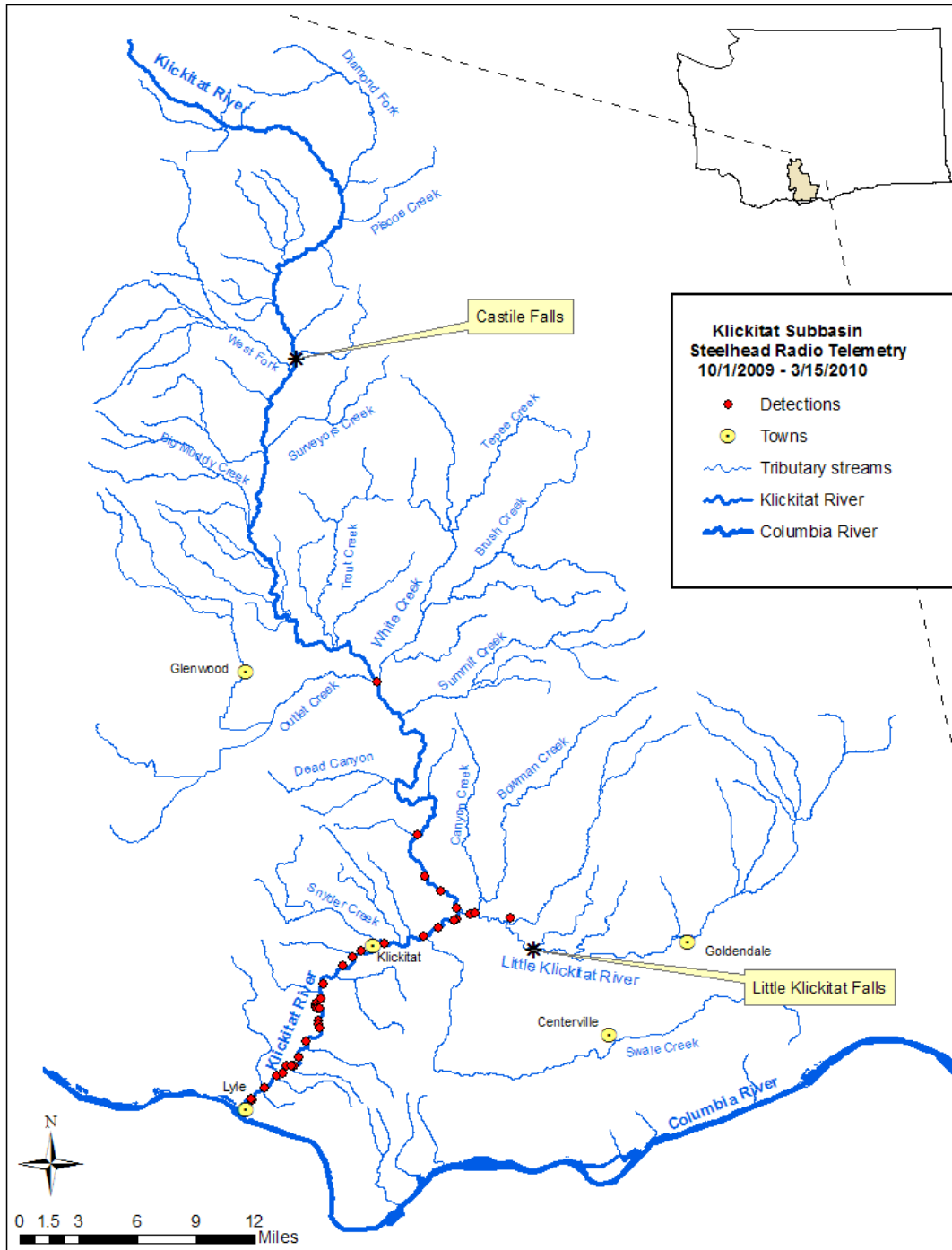
* Does not yet include winter steelhead

2009 results: ~3600 (95% CI: 2920 to 4536) hatchery summer steelhead
~1100 (95% CI: 929 to 1386) wild summer steelhead

Radio Telemetry Monitoring

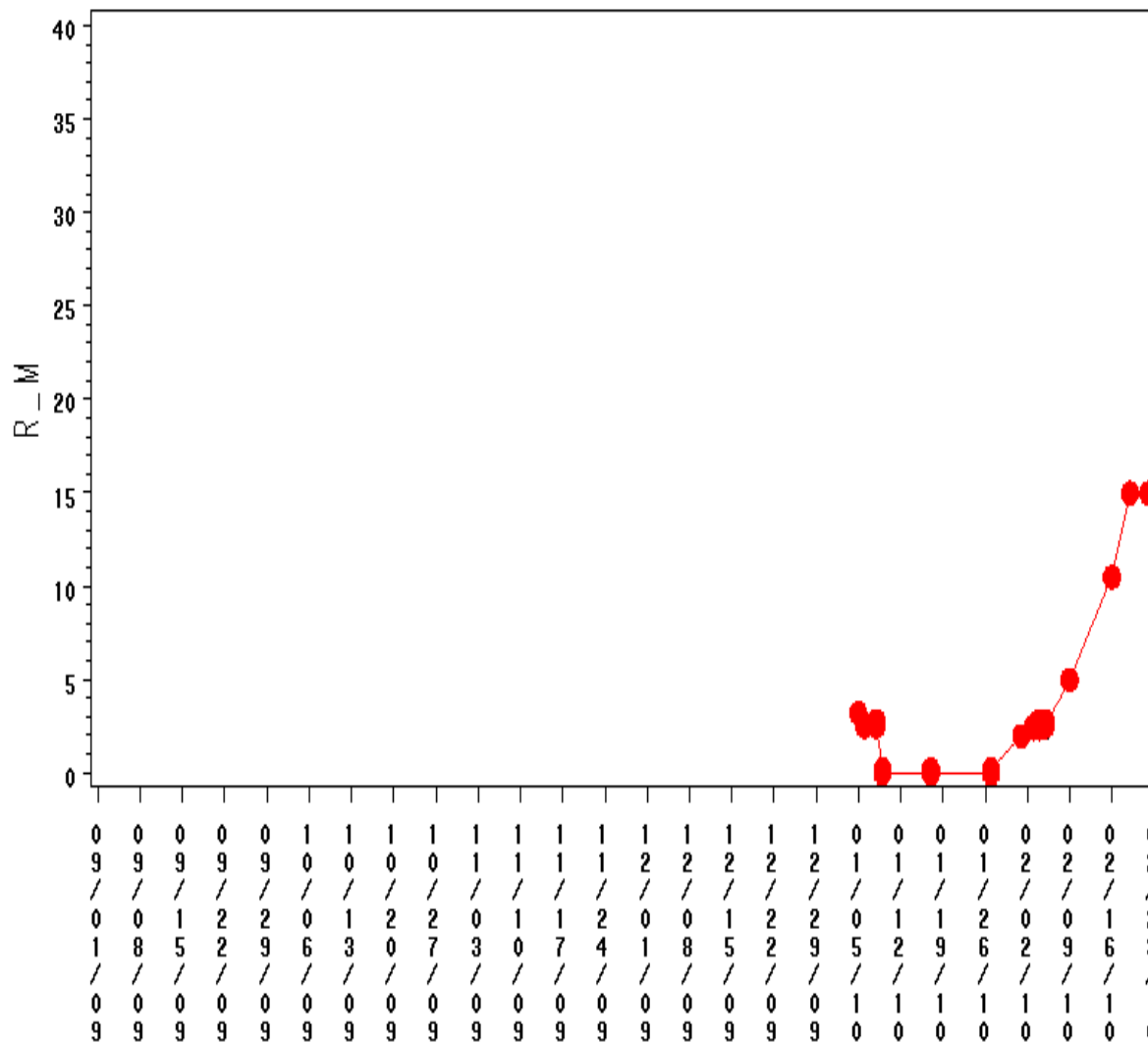
- Spring Chinook & Steelhead
 - Radio tagged at Lyle Falls adult trap
- Spawning areas by stock, passage obstructions
- To date:
 - 38 WSTHD
 - 7 HSTHD
- Preliminary results:
 - ~29% outmigrated





location by chcode and river mile

CHCODE=70025



Date

WATERSHED



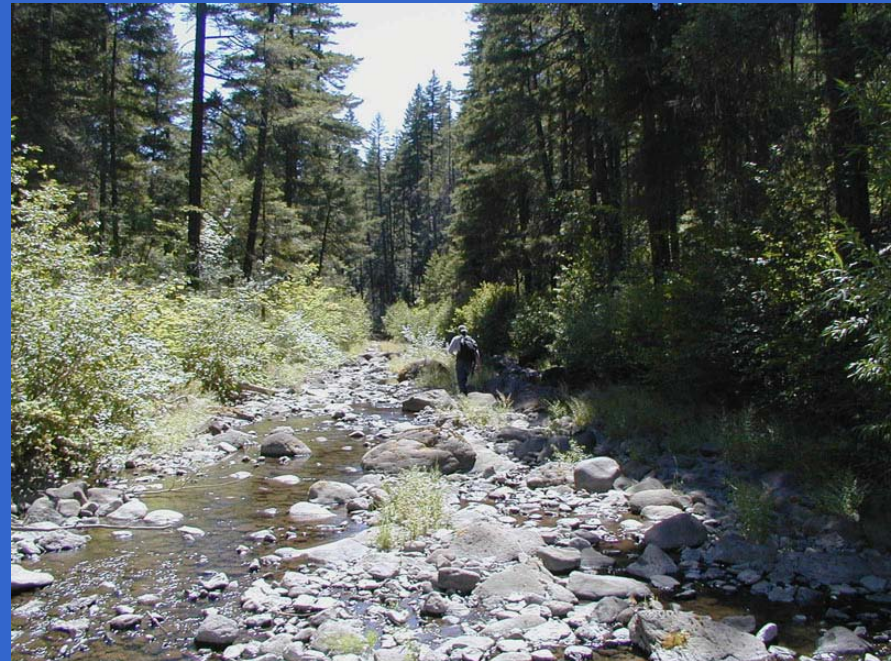
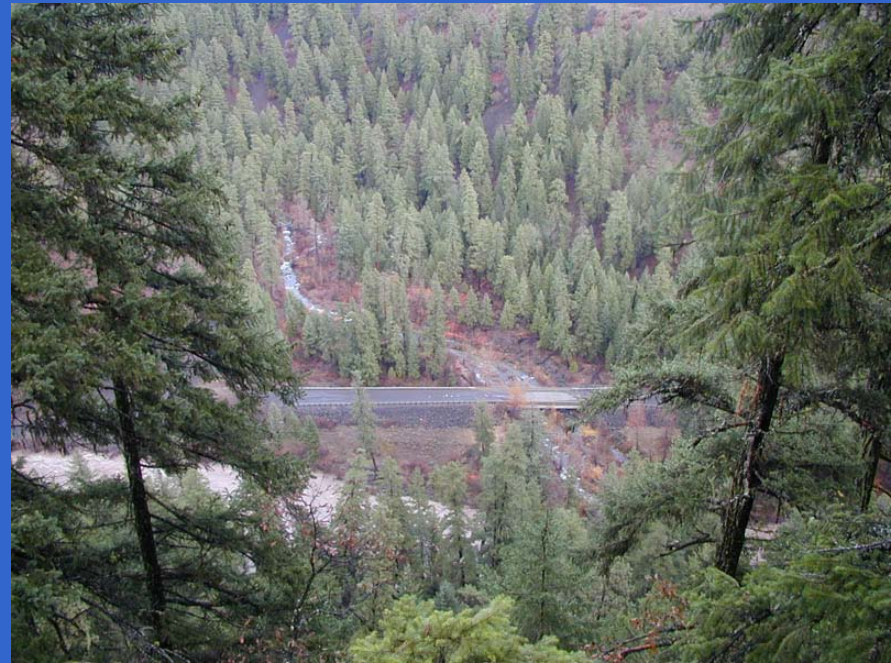
KLIKK

+++ LITTLE KLI

+++ SWALE

White Creek Steelhead monitoring

- PIT tag technology
- Instream tag detector in lower White Cr.
- Migration patterns and survival
- 2009: ~1700 fish tagged at 21 sites in White Creek watershed
- Pre- and post-habitat restoration monitoring
 - Fish abundance, condition
 - Benthic invertebrates
 - Riparian vegetation



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