

Monitoring and Evaluation of Anadromous Salmonids in the Klickitat Subbasin



Joe Zendt

Yakama Nation Fisheries Program



Klickitat Monitoring and Evaluation (M&E) Project

- Part of BPA-funded Yakima/Klickitat Fisheries Project (YKFP)
- Monitors status and trends in abundance, distribution, demographics, life history, and habitat of anadromous salmonids
- Methods of evaluating and monitoring effectiveness of hatchery and habitat actions are also being developed

Anadromous Salmonids in Klickitat Subbasin

- Spring Chinook*
- Mid-Columbia Steelhead* (ESA threatened)
- Fall Chinook
- Coho

*Focal species from Klickitat Subbasin Plan

Primary Monitoring Activities

- Spawner surveys (redd counts)
- Adult monitoring at Lyle Falls Fishway
- Juvenile outmigration monitoring (rotary screw traps)
- Juvenile and resident salmonid population surveys
- Biological/Demographic sampling:
 - Scale sampling
 - Genetic sampling
 - Pathogen sampling
- Sediment monitoring
- Habitat surveys
- Temperature and water quality monitoring
- PIT tagging of Spring Chinook juveniles at Klickitat Hatchery

Spawner Surveys (Redd counts)

- Rafting and wading surveys
- Attempt to survey entire spawning range
- Covering up to 150 stream miles
- GPS locations recorded for redds
- Biological data collected from carcasses
 - Sex
 - Percent spawned
 - Scale samples
 - Marks/tags

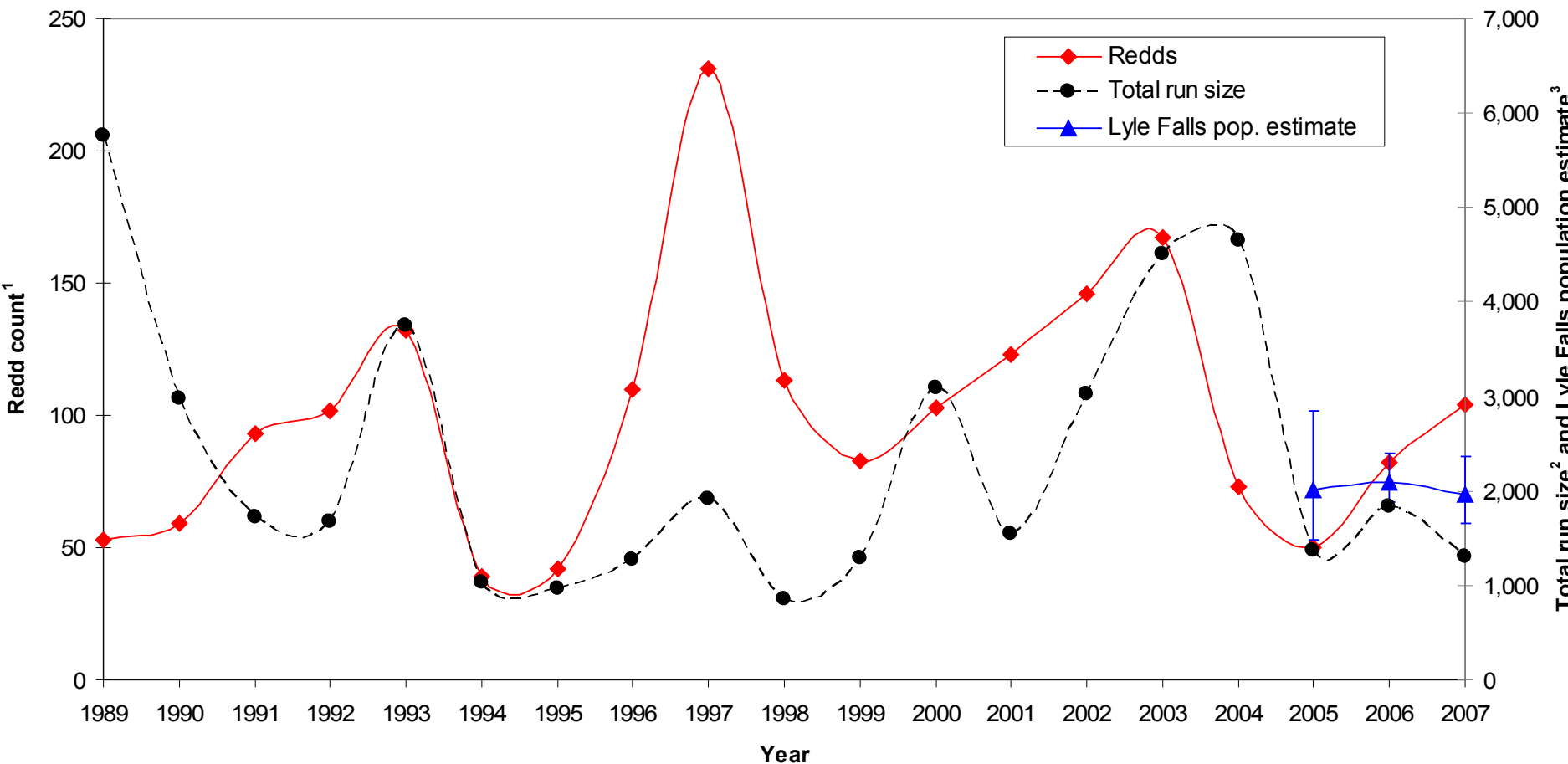


Adult Salmonid Monitoring at Lyle Falls Fishway

- Began in 2004 under WDFW & YN joint project
- Adult trap located in fishway upstream end
- Biological data collected
 - Sex
 - Scale samples
 - Marks/tags
 - Genetic samples
- Floy tags implanted for mark-recapture population estimates



Klickitat Spring Chinook Redd Counts and Total Run Size, 1989-2007

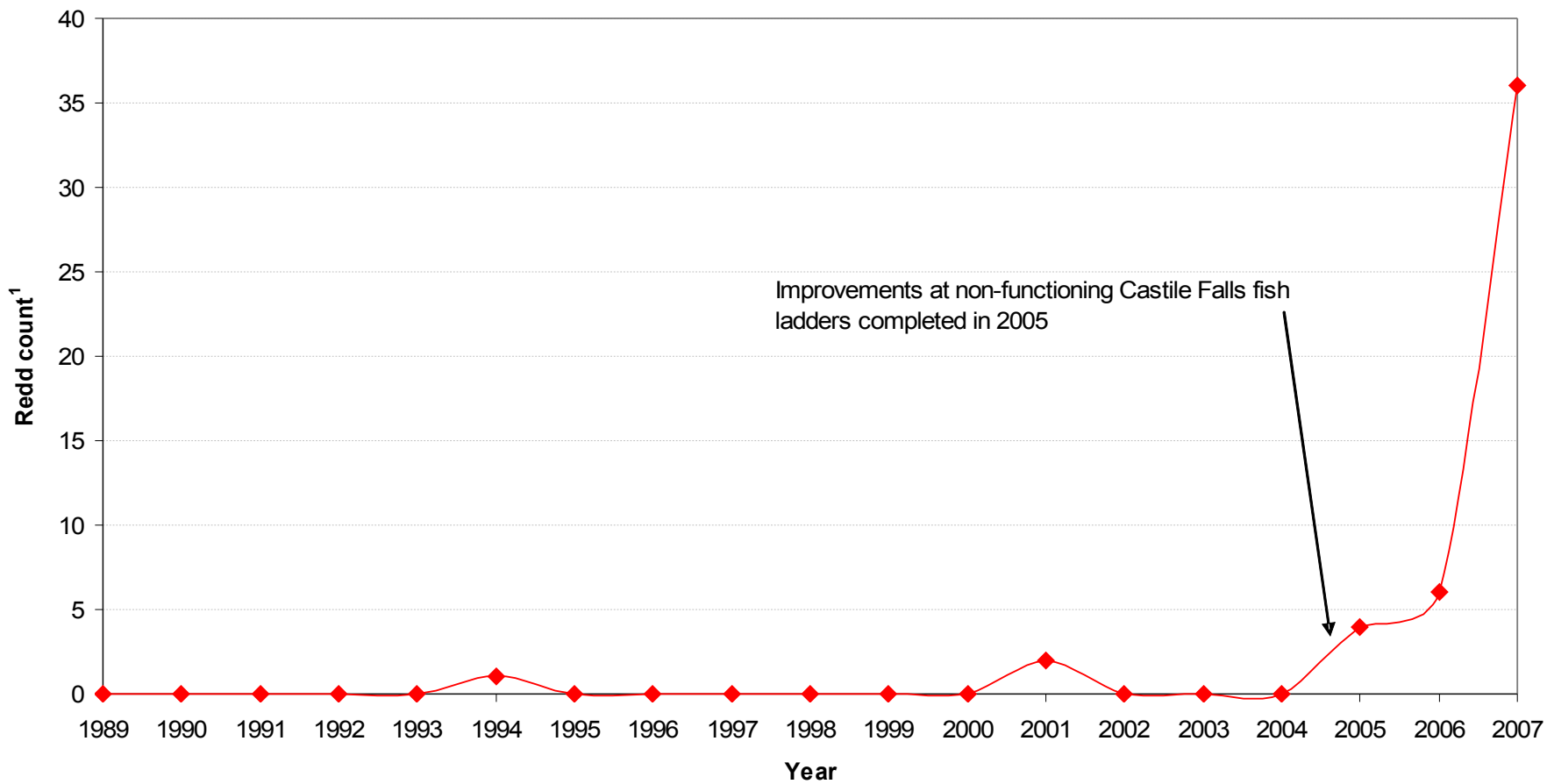


1 - Total redd counts minus hatchery adult releases above Castile

2 - Total run size estimated from natural spawner and hatchery escapement plus harvest (from YN and WDFW databases)

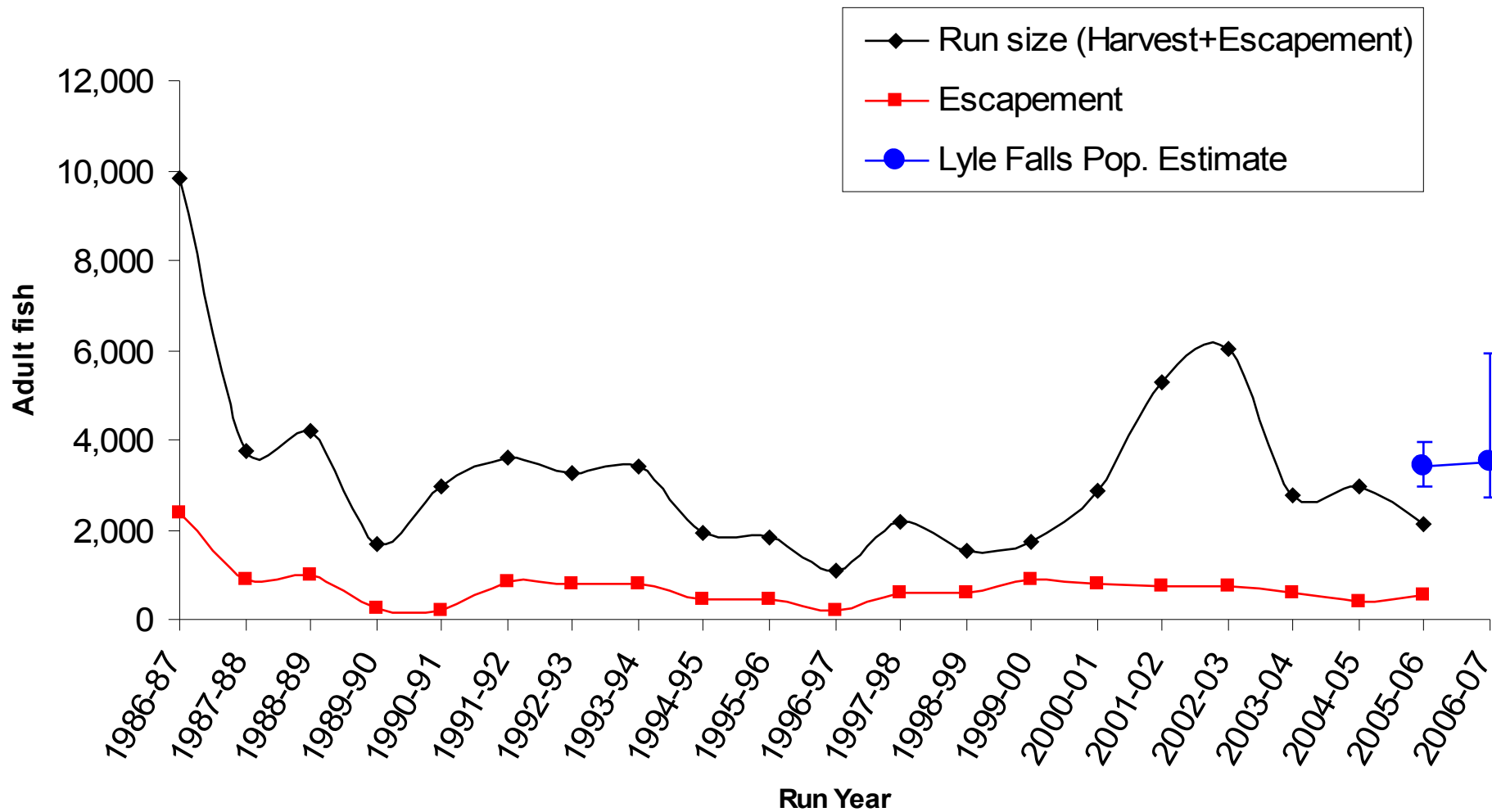
3 - Population estimate at Lyle Falls from mark-recapture methods

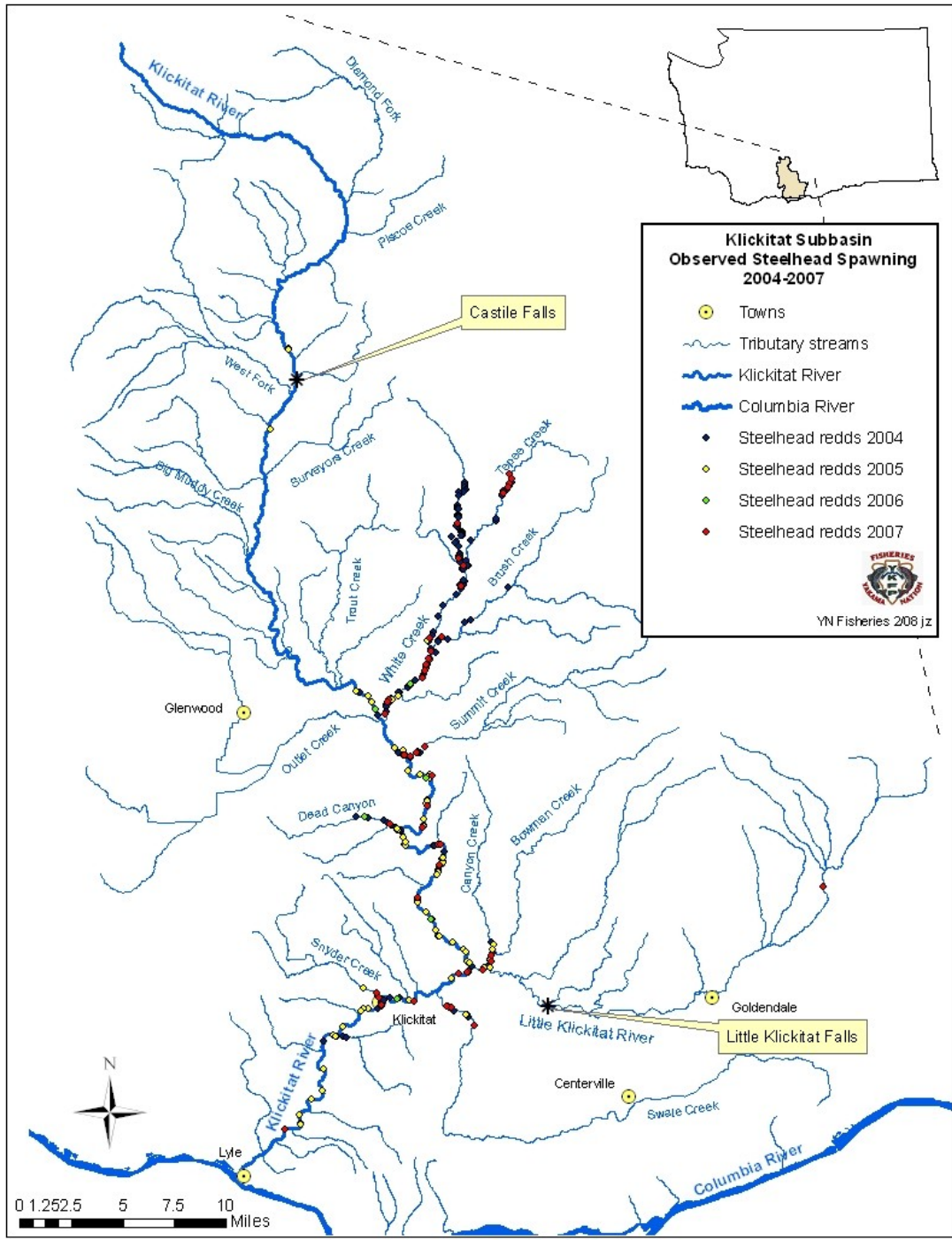
Klickitat Spring Chinook Redd Counts above Castile Falls, 1989-2007



1 - Total redd counts minus hatchery adult releases above Castile

Klickitat Steelhead run size and escapement estimates





Castile Falls

Little Klickitat Falls

Glenwood

Lyle

Centerville

Goldendale

Outlet Creek

Dead Canyon

Snyder Creek

Klickitat

Little Klickitat River

Swale Creek

Trout Creek

White Creek

Summit Creek

Bowman Creek

Sunnyside Creek

Brush Creek

Tapscott Creek

Big Muddy Creek

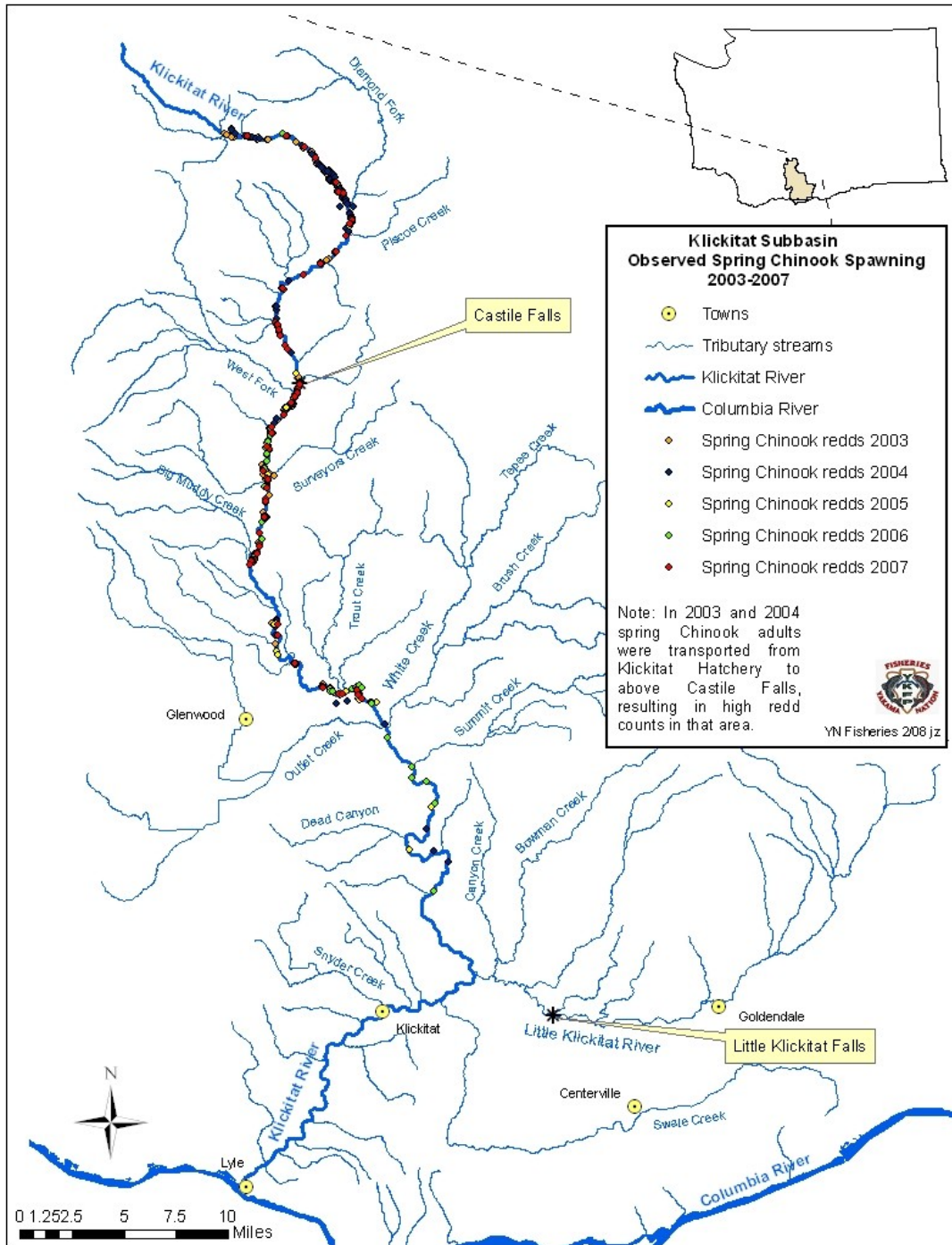
Weel Fork

Deming Fork

Placer Creek

Klickitat River

Columbia River



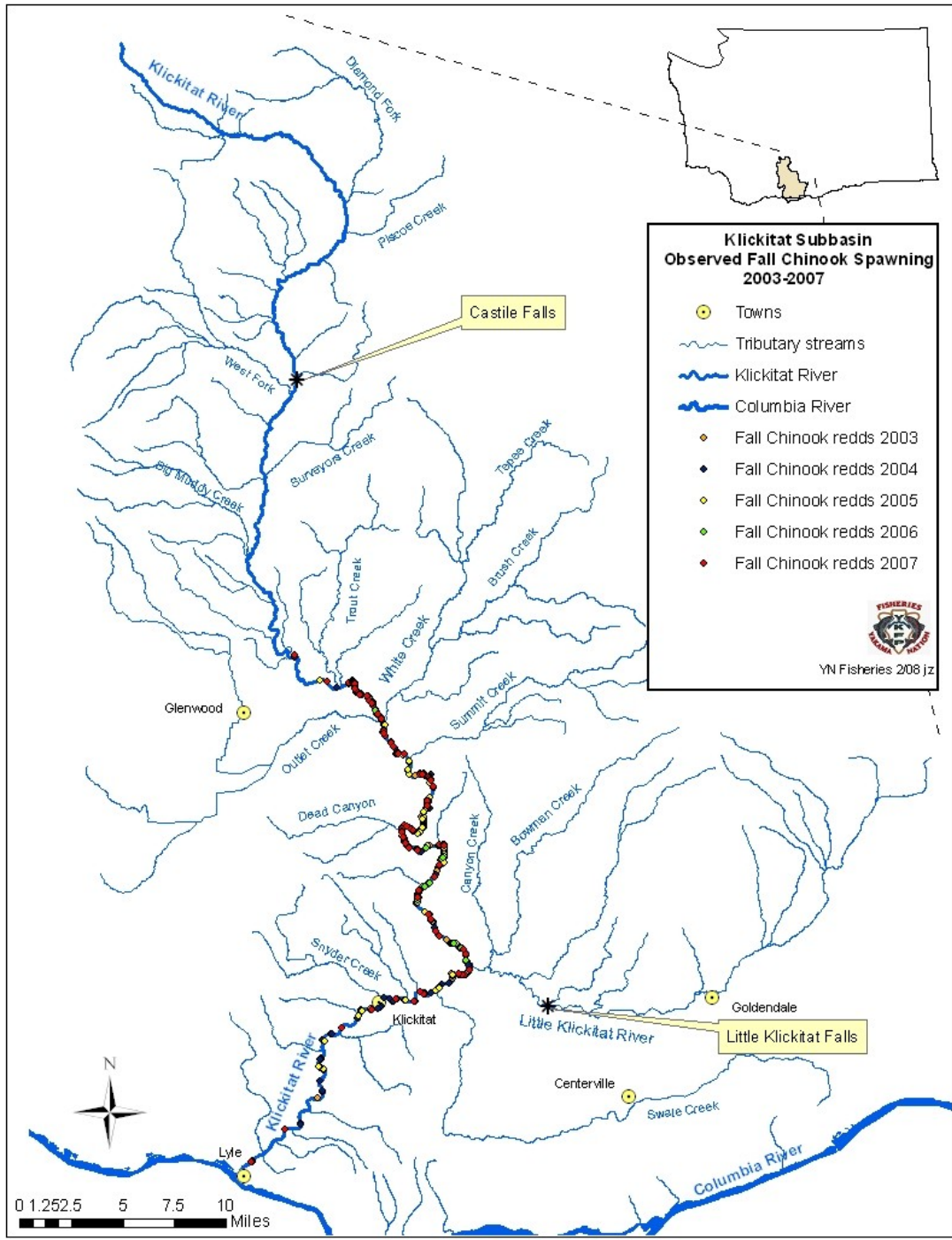
**Klickitat Subbasin
Observed Spring Chinook Spawning
2003-2007**

- Towns
- ~ Tributary streams
- ~ Klickitat River
- ~ Columbia River
- ◆ Spring Chinook redds 2003
- ◆ Spring Chinook redds 2004
- ◆ Spring Chinook redds 2005
- ◆ Spring Chinook redds 2006
- ◆ Spring Chinook redds 2007

Note: In 2003 and 2004 spring Chinook adults were transported from Klickitat Hatchery to above Castile Falls, resulting in high redd counts in that area.

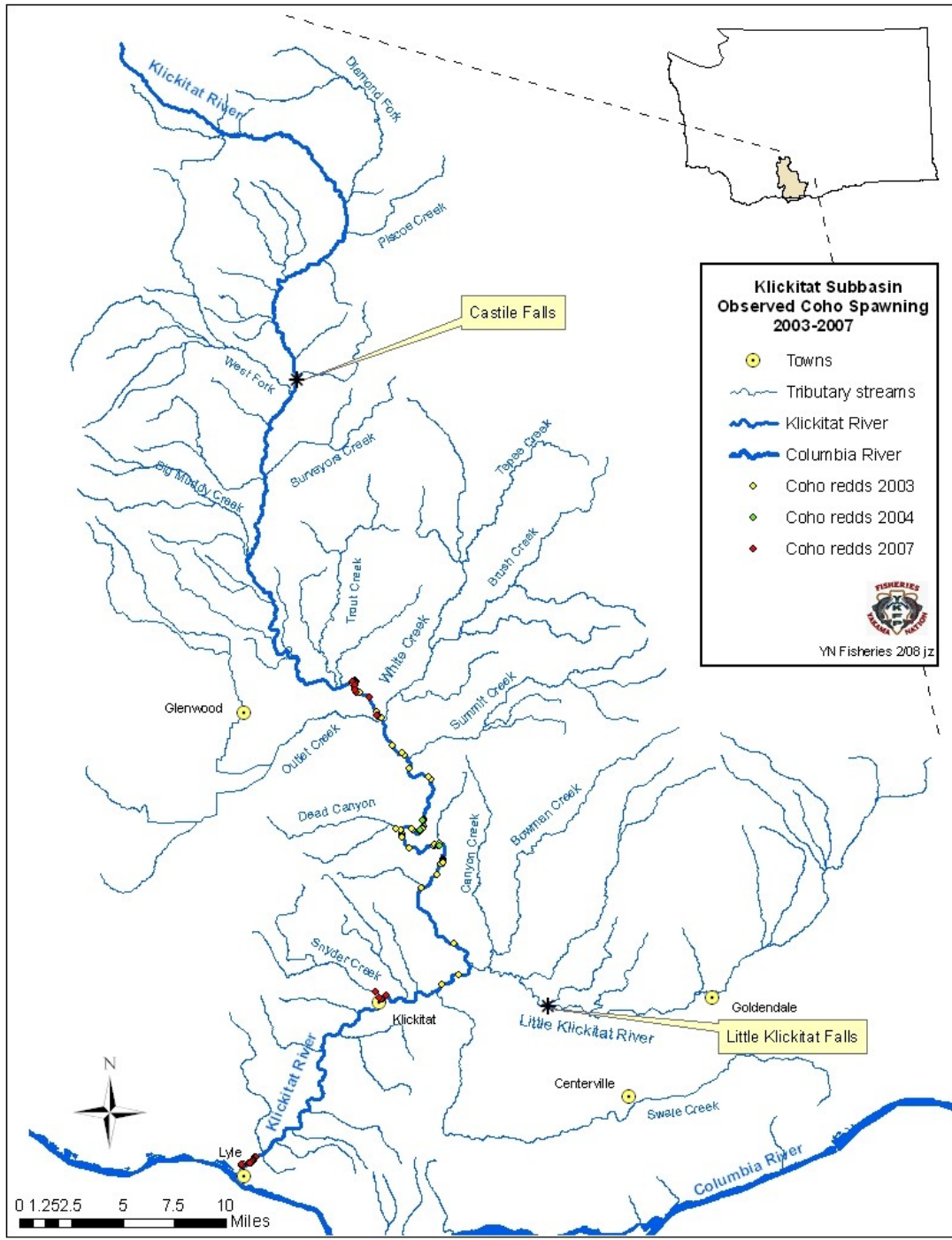
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Castile Falls

Little Klickitat Falls



Klickitat River

Deming Fork

Pleasa Creek

Castile Falls

Weel Fork

Big Moxley Creek

Suneyraa Creek

Tagea Creek

Trout Creek

White Creek

Bush Creek

Glenwood

Outlet Creek

Summit Creek

Dead Canyon

Canyon Creek

Bowman Creek

Snyder Creek

Klickitat

Little Klickitat River

Little Klickitat Falls

Goldendale

Centerville

Swale Creek

Columbia River

Lyle



0 1.25 2.5 5 7.5 10 Miles

Juvenile Outmigration Monitoring

- Floating rotary screw traps
 - Lyle Falls (RM 2.8)
 - Klickitat Hatchery (RM 43)
 - Castile Falls (RM 64.6)
 - seasonal
- Efficiency estimates at various flow levels
- Preliminary juvenile production estimates



Habitat-related monitoring

- Stream temperatures
 - Thermographs at ~36 locations throughout subbasin
 - Some sites began in 1996
- Sediment monitoring
 - McNeil core sampling at 12-13 sites yearly (mostly mainstem Klickitat)
 - Began in 1998, 1999, or 2000
- Stream habitat surveys
 - Timber, Fish, and Wildlife (TFW) methods
 - Reference point, Habitat unit, Large woody debris
 - Over 80 sites on >40 streams surveyed to date
 - Re-survey sites every 5-10 years

For more information:

- <http://www.ykfp.org/klickitat/M&E.htm>
- <http://www.ykfp.org/klickitat/Data.htm>