



Cowichan River



Steelhead

FISH SUSTAINABILITY TARGET UPDATE FOR COWICHAN
WATERSHED BOARD

DECEMBER 2013

Steelhead sustainability target update for Cowichan Watershed Board

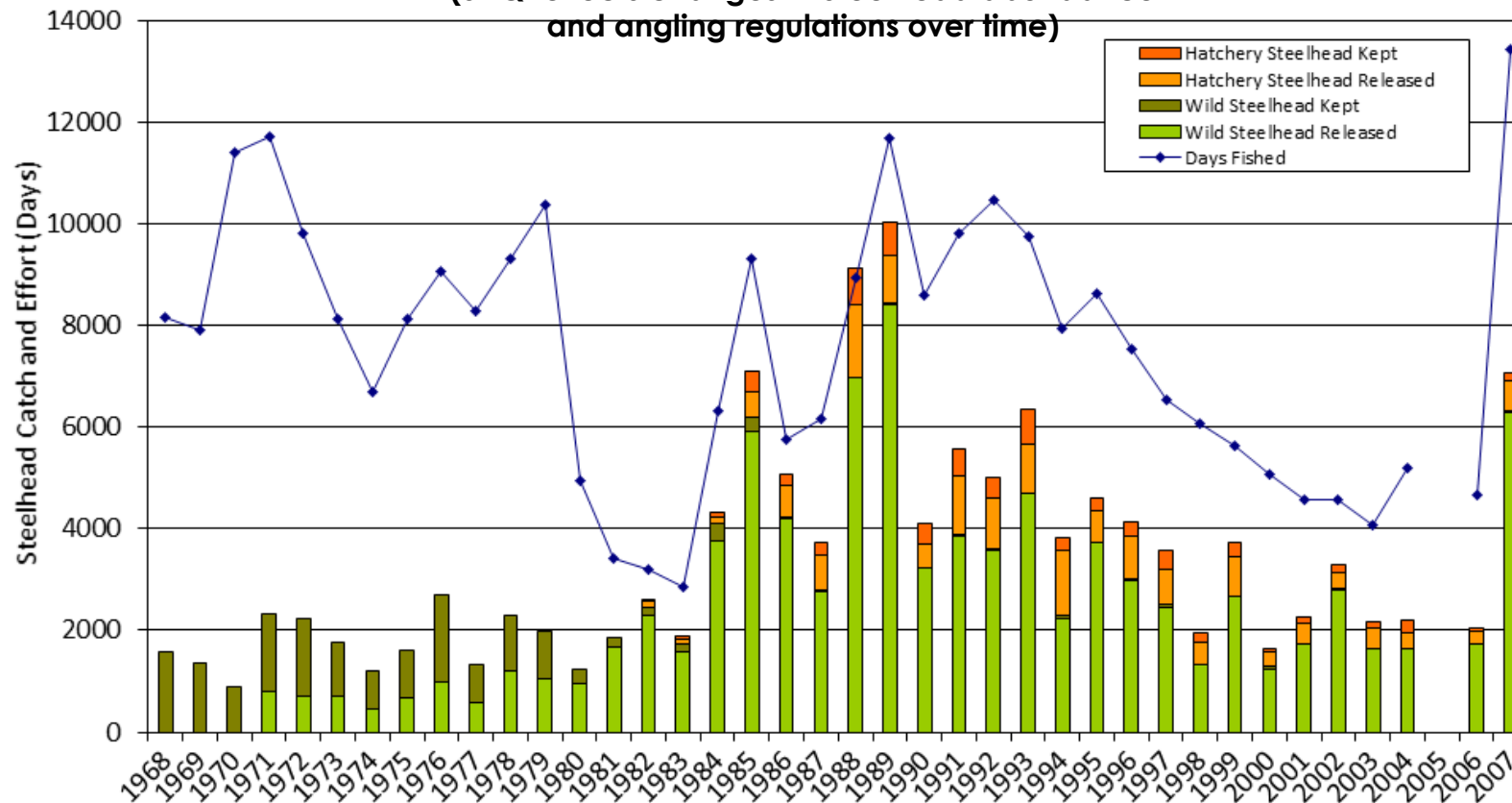
- ▶ Cowichan winter Steelhead are extremely dependent on freshwater rearing as juveniles (> 80% spend 2 full years in the river before smolting – ocean entry);
- ▶ Wild Cowichan Steelhead are not subject to commercial, sport or FN fisheries in tidal waters, and are managed on a “catch & release” basis in the river;
- ▶ Cowichan Steelhead have exhibited cyclical abundance in relation to ocean and freshwater survival conditions – so are a good environmental “indicator” species



Steelhead sustainability target update for Cowichan Watershed Board

Cowichan River Steelhead Catch and Effort, 1968 - 2007

(SHQ reflects changes in Steelhead abundance and angling regulations over time)



Steelhead Fry Abundance as a Fish Sustainability Target for the Cowichan River



Steelhead Fry Abundance as a Fish Sustainability Target for the Cowichan River

- ▶ Cowichan Steelhead fry are easily sampled by electro-fishing in early September, each year;
- ▶ The Province has established a conservation target for Steelhead, based on scientific review of stream-specific stock productivity (recruits/spawner);
- ▶ For “routine management” purposes, that target is 30% (or better) of a river’s estimated habitat capacity supporting Steelhead



Steelhead Fry Abundance as a Fish Sustainability Target for the Cowichan River

- ▶ For Cowichan, estimated Steelhead fry capacity is ~300 per 100 m² of suitable habitat*, sampled in late summer;

*One of the most productive stocks on VI

- ▶ So, the conservation target (or 30% of est. capacity) is ~100 fry per 100 m²;

- ▶ If Cowichan Steelhead fry abundance is consistently >30% of est. capacity, the stock is judged to be healthy and capable of supporting a “catch & release” sport fishery with incidental spawner mortality



Ten sites surveyed annually since 1998

#10 Saysell's Riffle

#9 70.2 Trestle

#8 Three Firs

#7 Skutz Falls

#6 Horseshoe Bend

#5 Stoltz

#4 Rip Rap

#3 Sandy Pool

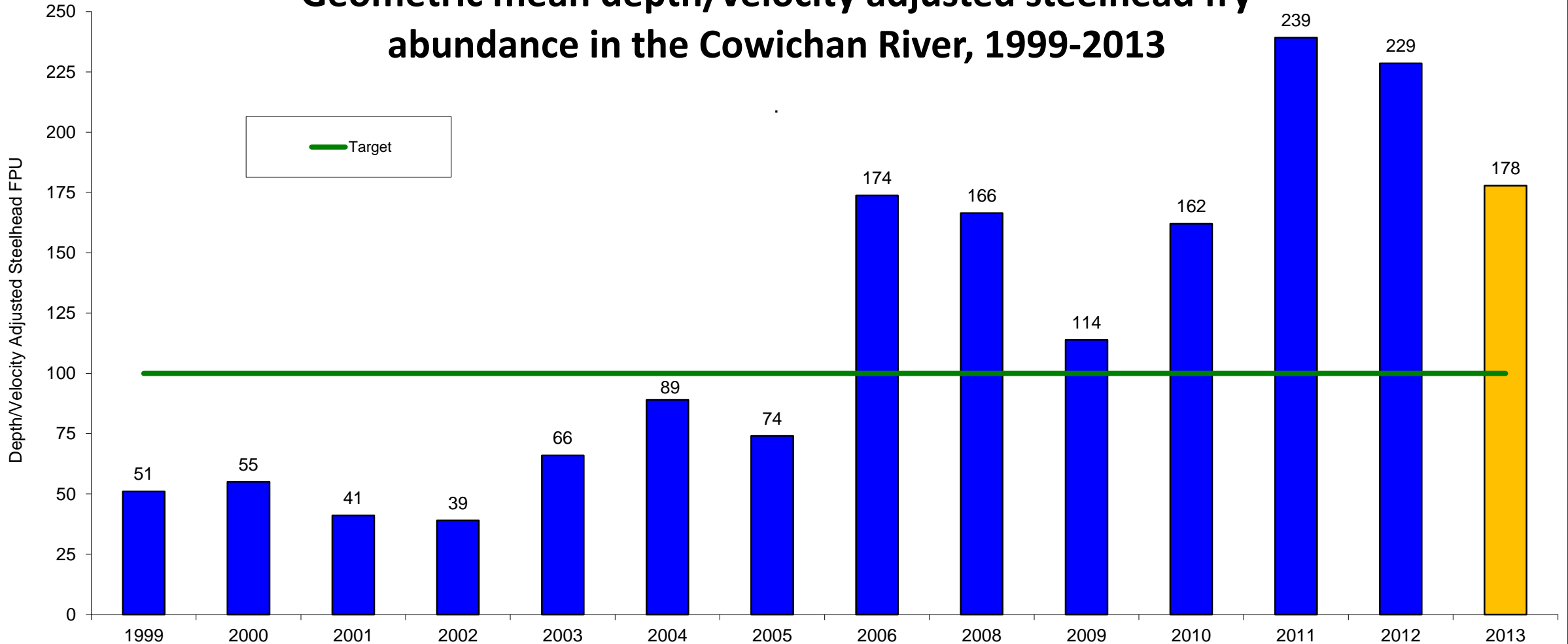
#2 Vimy Road

#1 DFO Fence

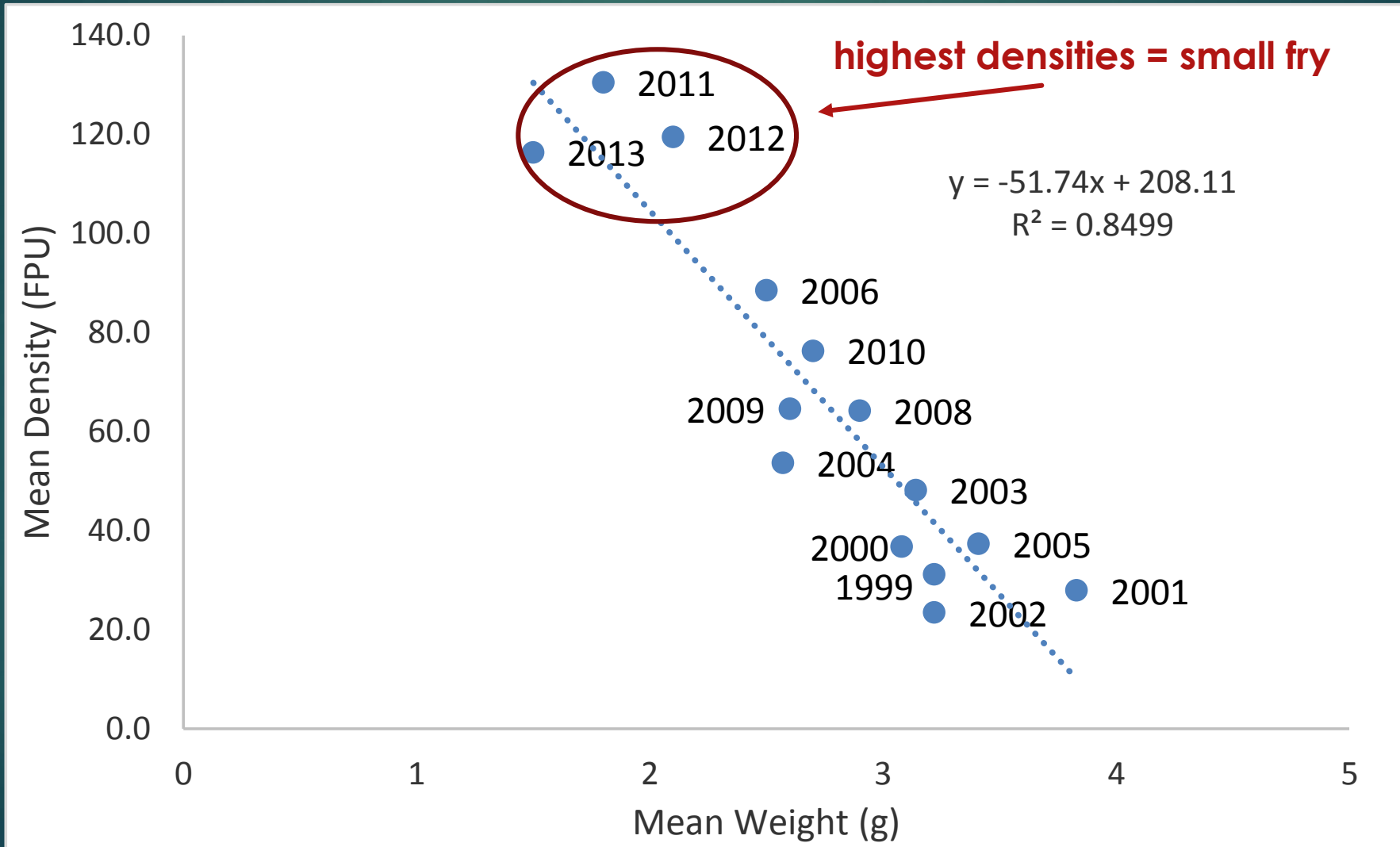


2013 Steelhead fry densities

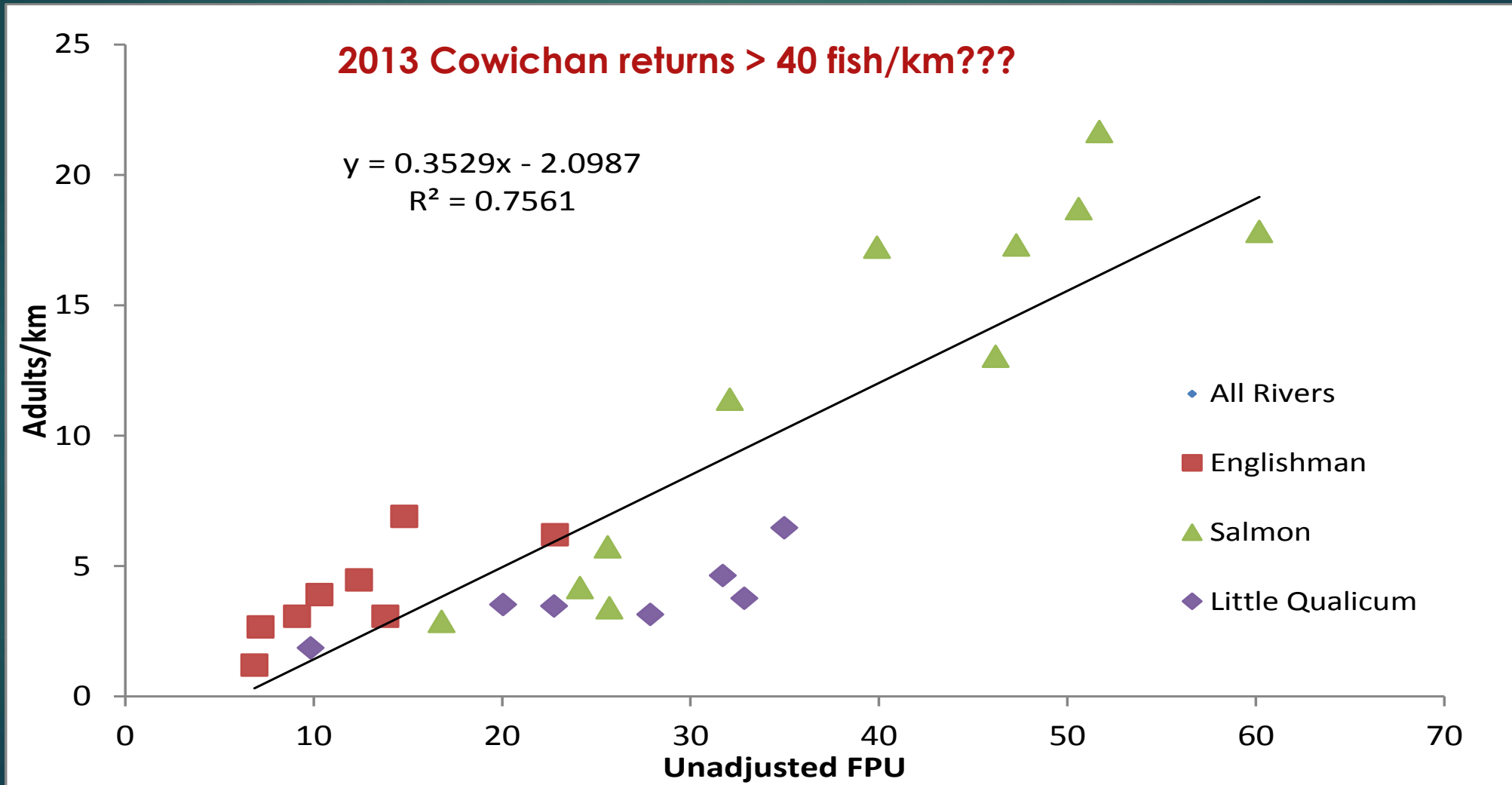
Geometric mean depth/velocity adjusted steelhead fry abundance in the Cowichan River, 1999-2013



Late summer fry density strongly influences size! ("carrying capacity effect")



Adult Steelhead abundance is strongly linked to late summer fry density in other VI watersheds



Steelhead Fry Abundance as a Fish Sustainability Target for the Cowichan River – SUMMARY

- ▶ Sept. 2013 sampling indicated that fry recruitment continues to be very strong, reflecting a very good return of spawning adults in the winter/late spring of 2013;
- ▶ 2013 aggregate fry abundance was well above the conservation target for “routine management”;
- ▶ Some individual sample sites approached estimated habitat capacity for Steelhead within the Cowichan system as a whole



Steelhead Fry Abundance as a Fish Sustainability Target for the Cowichan River – SUMMARY

- ▶ Current population trend suggests freshwater & ocean survivals have markedly improved from late 1990's and 2000 – 2005 periods;
- ▶ Sediment and summer flow augmentation will remain important factors influencing freshwater survival in future;
- ▶ Recently, there's been mixed spring/early summer environmental conditions in PNW marine waters, so there could be more uncertainty in future Steelhead returns to the Cowichan – but probably not too dramatic for the next couple of years or so.

