Cowlitz Trout Hatchery Steelhead Release Estimates

Scott Gibson/Tacoma Power

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Overview

- Project location
- Production goals
- Past practices
- Challenges
- Current approach
- Results
- What have we learned?
- Questions

Project Location

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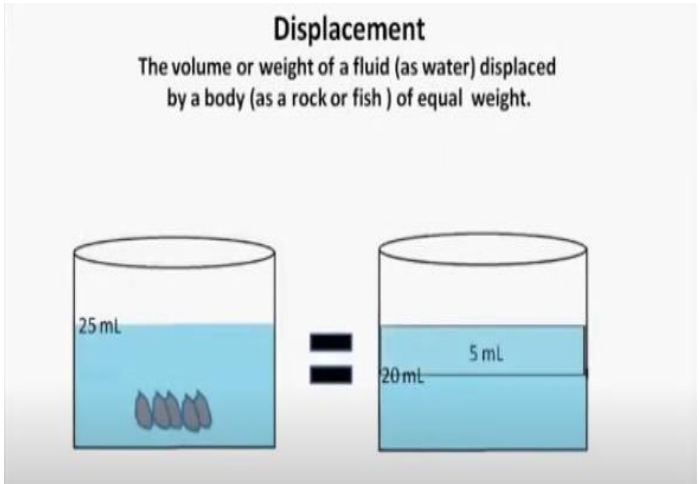
Steelhead Production Goals

- Lower Cowlitz Winter Segregated
  - 308,500
- Tilton River Winter Integrated
  - 100,000
- Upper Cowlitz Winter Integrated
  - 236,000
- Lower Cowlitz Summer Segregated
  - 650,000

Past practices

- Volumetric enumeration
- Populate rearing lakes
- Release
- Conductance counts
- Force out
- Final count



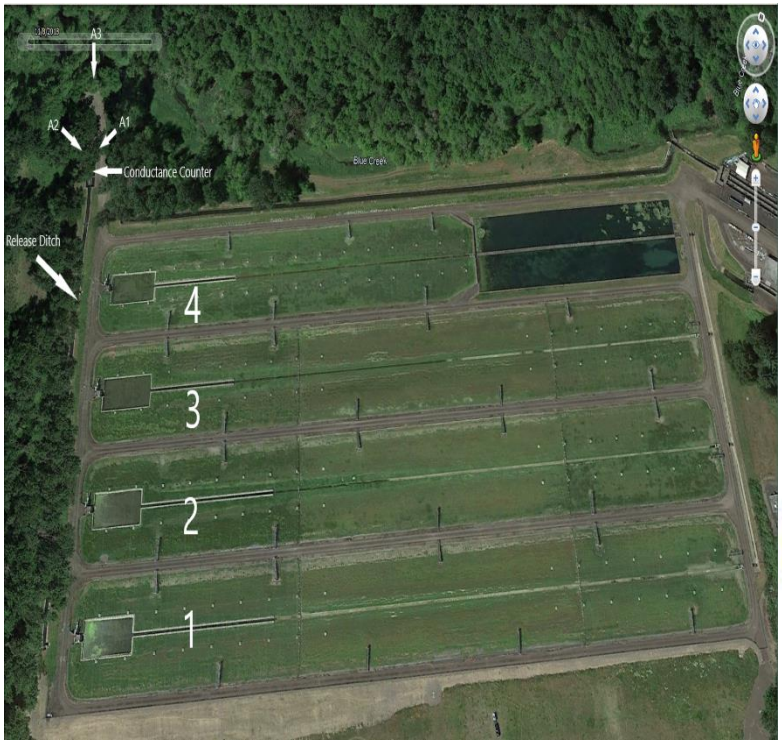
Challenges

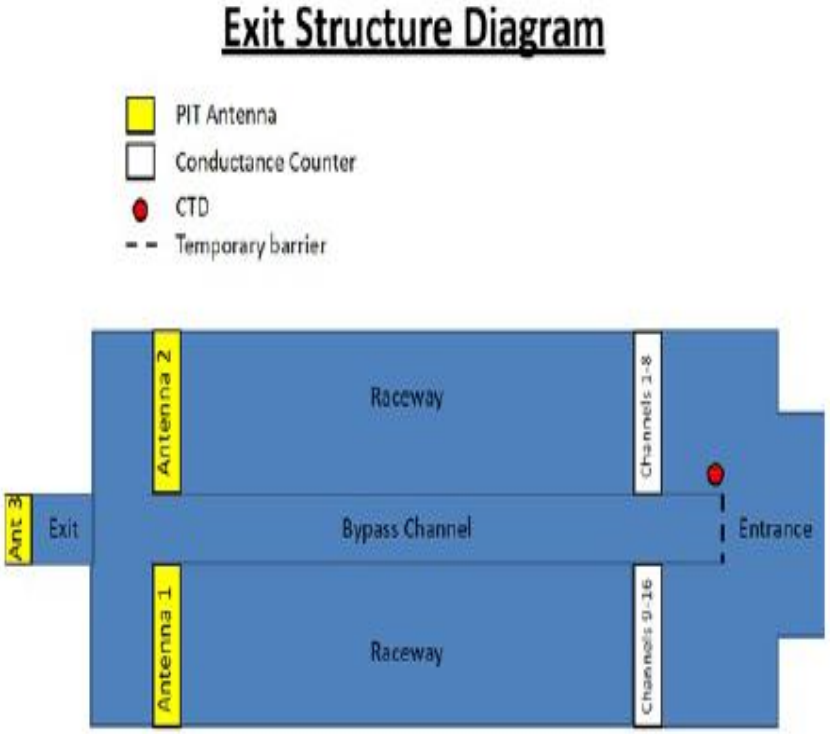
- Predation
- Mortality tracking
- Partition of stocks
- Precision of release estimates

Current approach

- Developed CJS mark-recapture model
- Installed PIT array
- PIT tag summer and winter steelhead
- Separate rearing lakes by population
- Conduct weekly calibration checks
- Spread out releases to minimize overlap of populations
- Compartmentalizing stocks
- Increased bird hazing effort

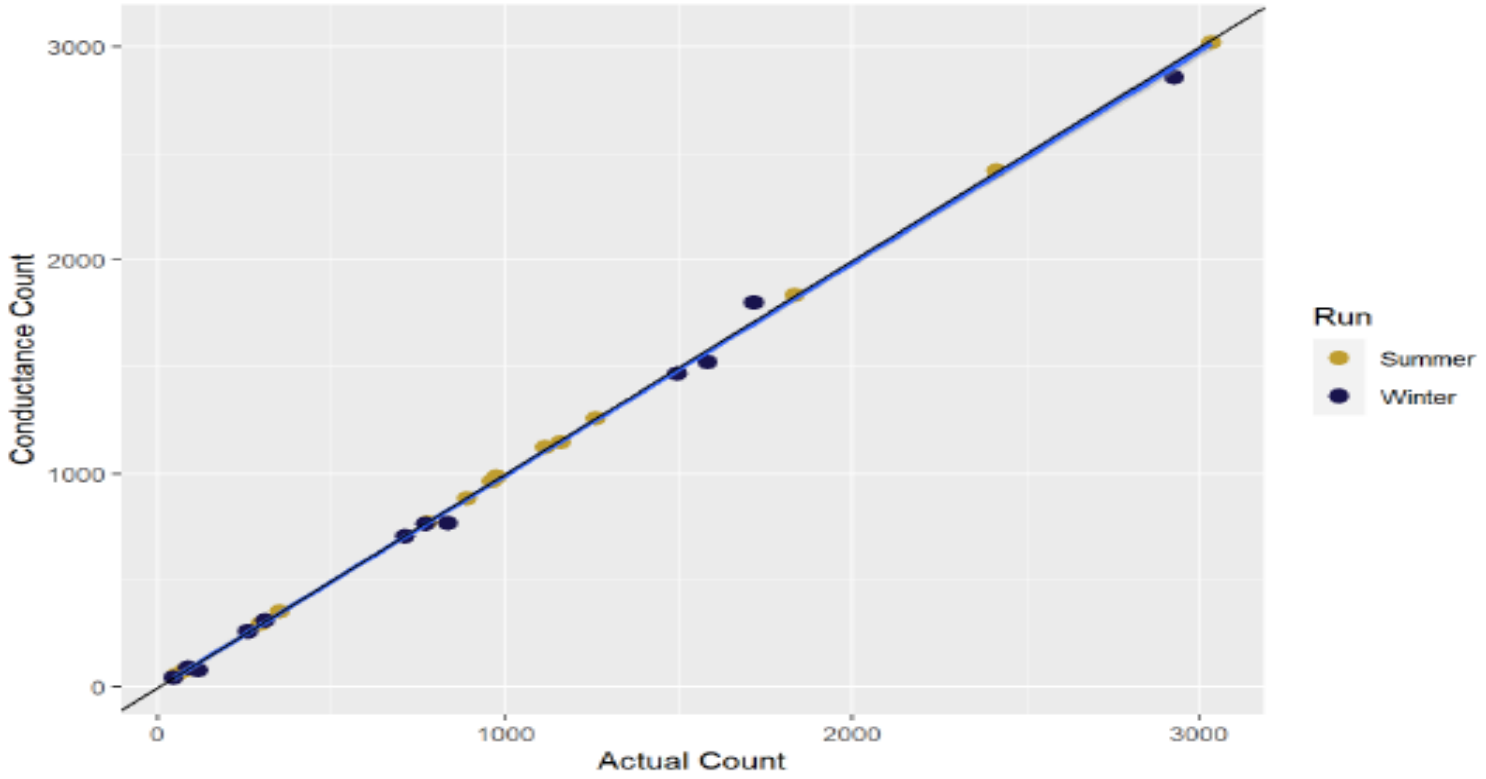
Current approach





Current approach

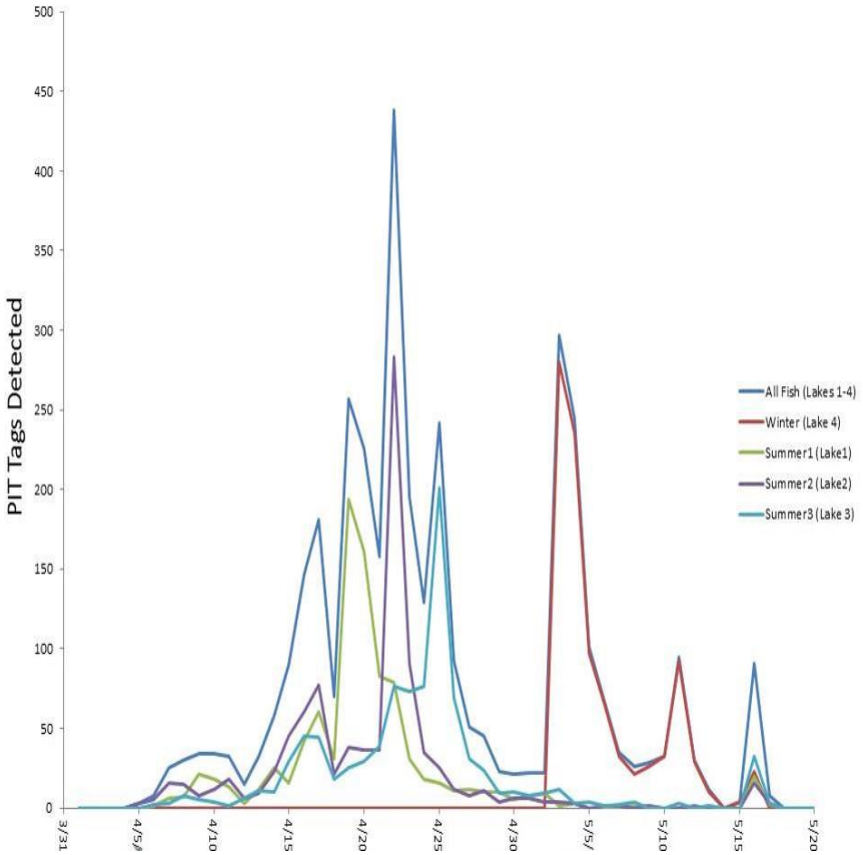
Conductance counter results



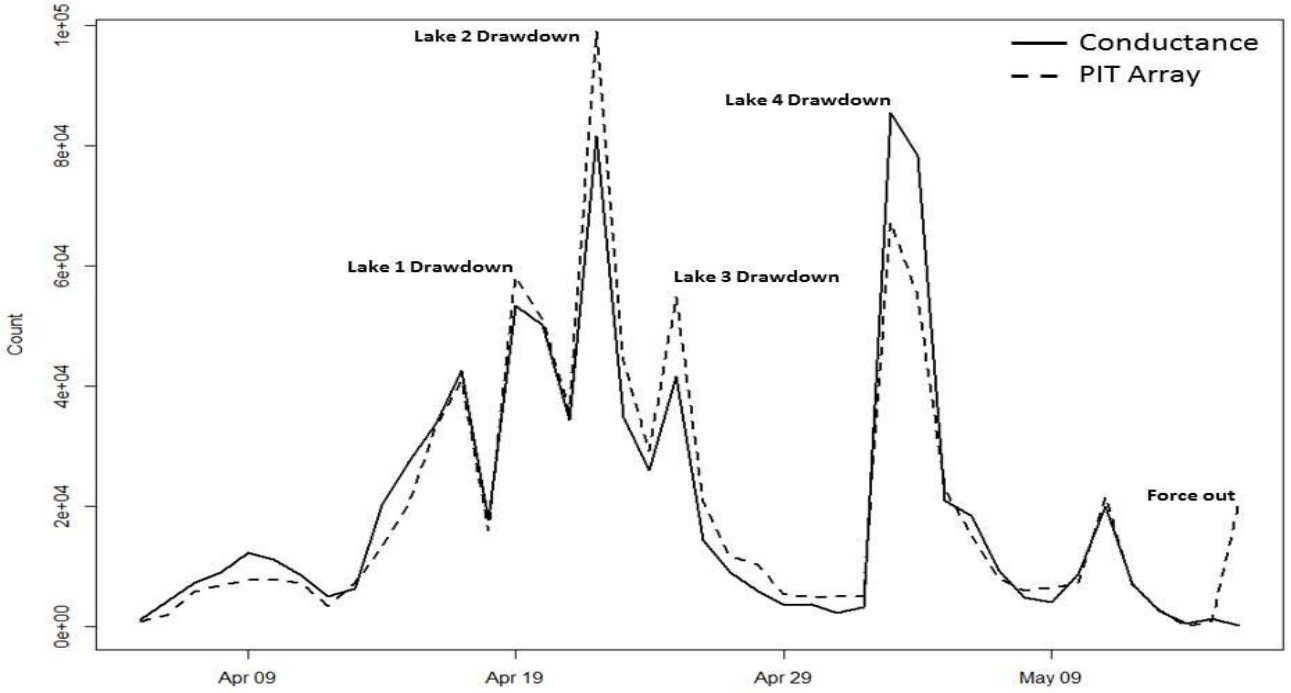
Run	Conductance Count	Correction Factor	Forced Out	Estimated Release Abundance
Summer Steelhead	558,970	1.0047	4,000	565,597
Winter Steelhead	524,782	1.0047	6,000	533,248

PIT array results

Run	Initial Volumetric Estimate	Hold over Survival	Estimated Release Abundance
Summer Steelhead	624,460	0.9529	595,048
Winter Steelhead	294,637	0.9536	280,966
Tilton	81,968	0.9603	78,714
Upper Cowlitz	171,155	0.9427	161,348



Final release estimate



Run	Volumetric/Survival	Conductance Count	Final Release Estimate
Summer Steelhead	595,048	565,597	580,322
Winter Steelhead	520,482	533,248	526,865

What have we learned?

- High and similar rates of survival across ponds and runs
- Changes in practices have led to an improved ability to estimate fish exiting the facility
- PIT array has high detection efficiency and both methodologies yielded similar results

Acknowledgements

- Four Peaks

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Questions?