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Nechako White Sturgeon: Conservation Fish Culture As a tool to rebuild an Endangered Population



Freshwater Fisheries
Society of BC

Cory Williamson
Freshwater Fisheries Society of BC
Chair- NWSRI- Technical Working Group



RECOVERY INITIATIVE

www.nechakowhitesturgeon.org

White Sturgeon- Largest Freshwater Fish In Canada



Stuff of Legend / Urban Legend



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Why Are they important?

- Sport Fishing
- Food Fishery
- Cultural
- Indicator of ecosystem health



- Globally- Sturgeon populations are endangered.
- Habitat alterations (dams)
- Over-fishing



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Overview: Nechako White Sturgeon

- **Geography**
- **Biology**
- **Conservation Status**
- **Nechako Recovery Actions**
- **Nechako Conservation Centre**
 - **Conservation Fish Culture**



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Nechako Population:

Northern Extent of Range.



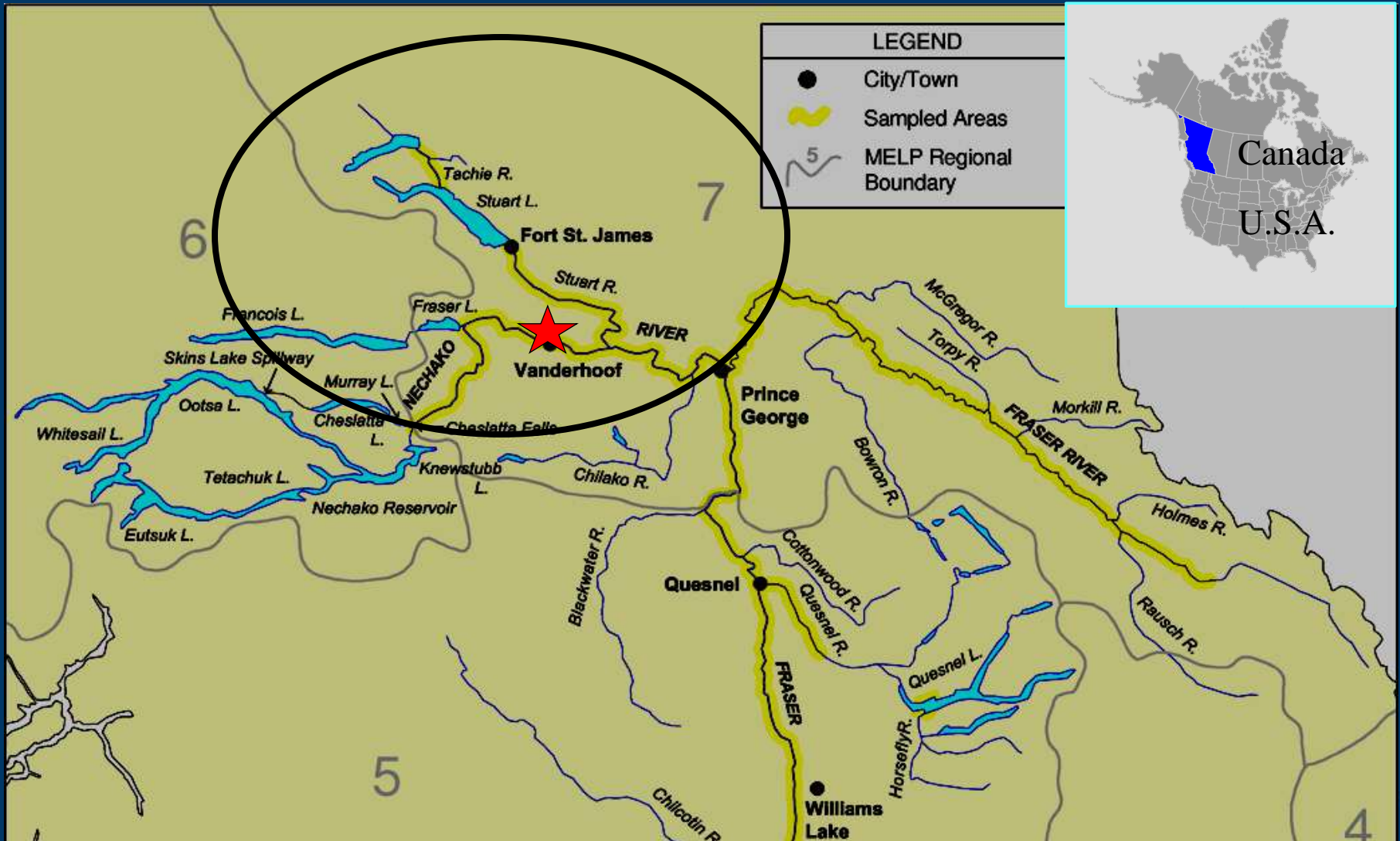
~80-90 year Nechako Female – April 2011



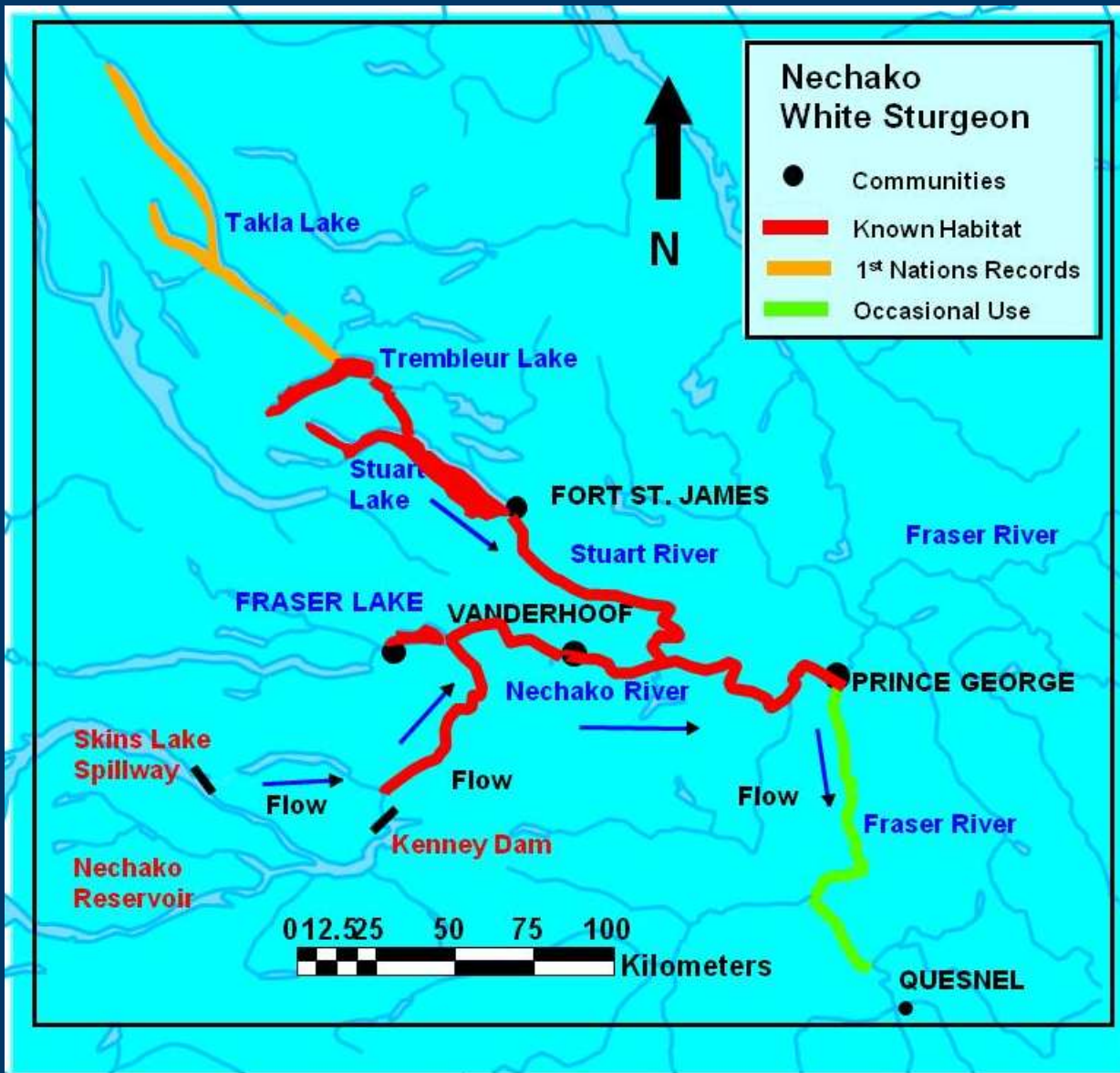
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Central British Columbia



Habitats



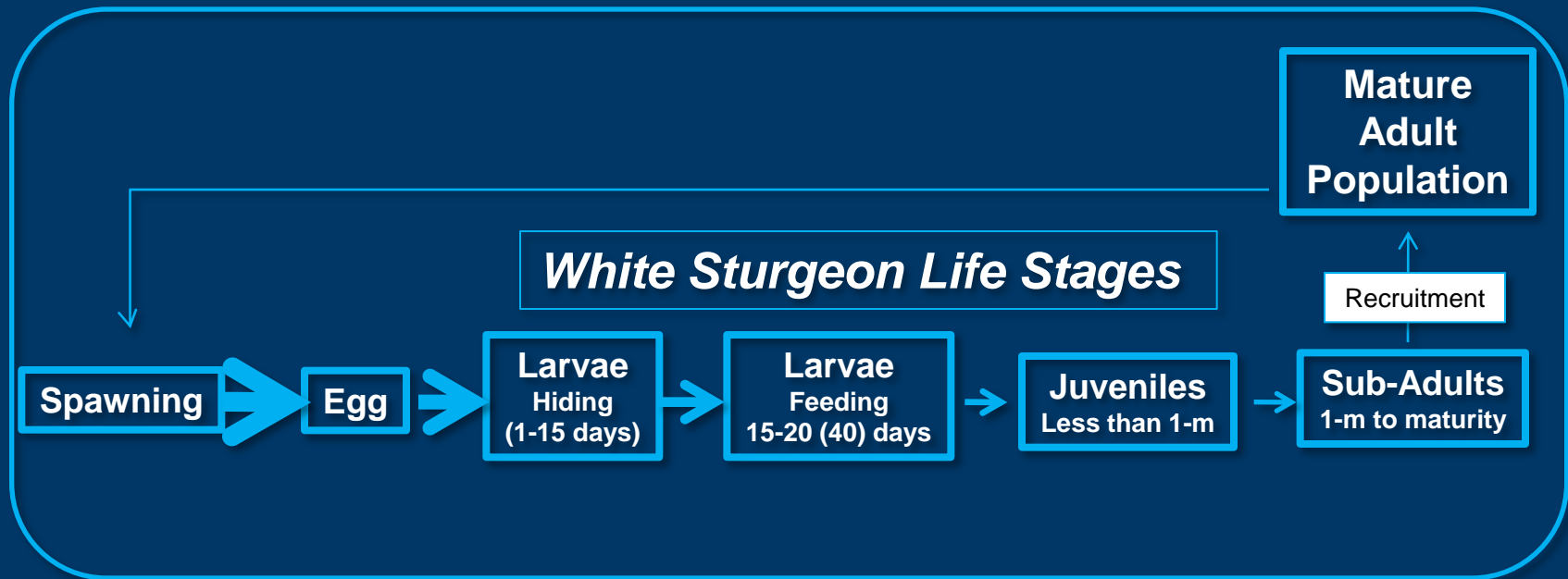
- Lake headed
- Northern extent of range



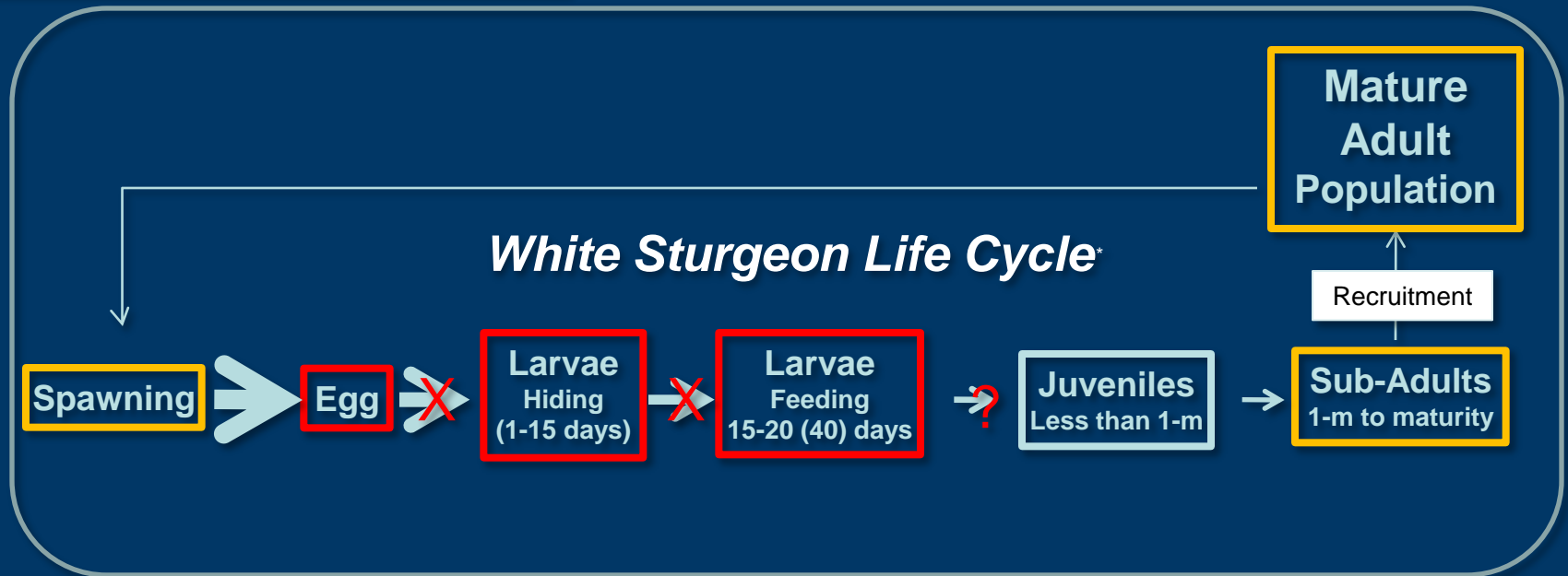
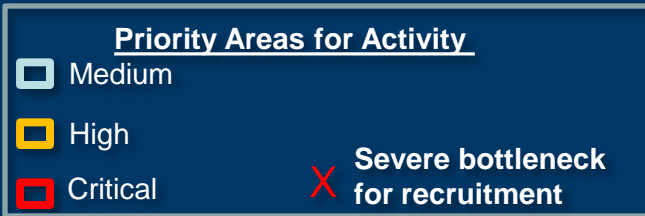
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Sturgeon Biology



Nechako Population



Priority Areas for Activity

Medium

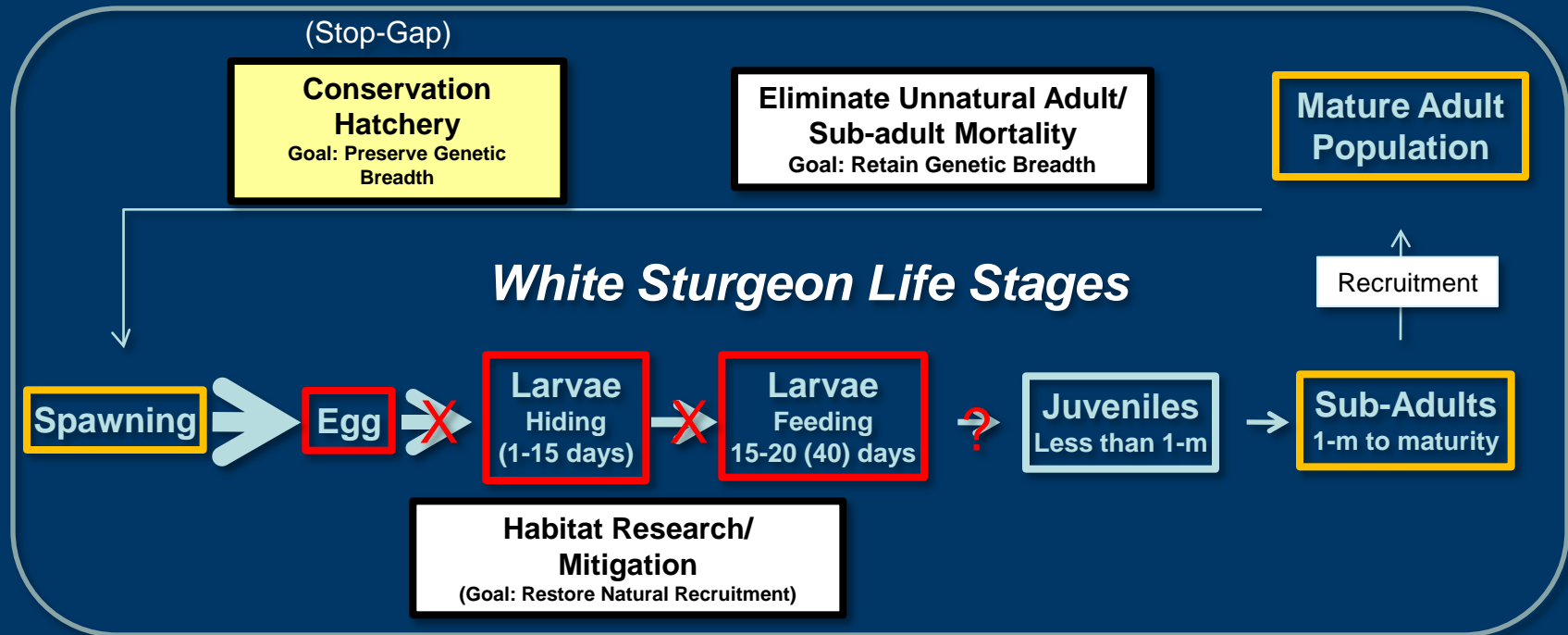
High

Critical

Recovery Actions

Severe bottleneck
for recruitment

Recovery Actions



Recovery Goal:
A naturally self-sustaining population



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Conservation Fish Culture: Objectives

- Capture remaining genetic breadth in founder population
- Produce eggs and larvae for habitat research



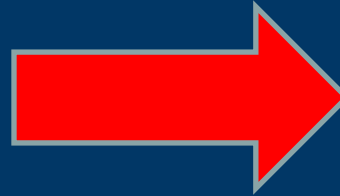
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Pilot Hatchery to Recovery Centre:



Pilot Facility 2006-2010
15,000 40-g juveniles
300,000 1-15 day larvae



Recovery Centre- 2013
NEW FACILITY!



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Nechako Conservation Centre: Operating Principals

- Breeding Plan (2006)
 - Pre-cautionary-flexible
 - Wild brood
 - Limit outputs
 - Front-end loading
 - Factorial mating-schemes
 - Avoid genetic selection
- Adaptive Management
 - Track releases (PIT tags, marking, release location and timing)
 - Assess post release S
 - Assess genetic contribution



Nechako Conservation Centre: **Outputs**

- Target founder population: $N_m=2500$
- Up to 12 Maternal families annually
- Spring Releases: 12,000; 120 g juveniles at age-1
- All fish tagged and marked and tracked to maternal family.
- Eggs & Larvae for habitat research.



Nechako Conservation Centre:

Design Considerations: New Facility

- Recovery Team Requirements
 - Use river water (larval imprinting)
 - Substrate rearing larvae
 - Improved growth; development; swimming performance
 - Use of all potential breeders (maximize genetic breadth)
 - Large fish
 - Ability to hold brood 1-2 years
 - Temperature manipulation/acclimation for brood



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Nechako Conservation Centre: Technologies

- Water supply (River water)
 - Infiltration gallery
 - De-chlorinated municipal as backup
- Recirculation, re-use of water supply
 - Energy efficiency
- Automatic systems – feeding; water quality monitoring
- Alarmed, back-up generator water



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Nechako Conservation Centre: Status

- Detailed Design
 - RFP in place for fish culture plant
 - Detailed architecture
- Begin construction June 2012
- Facility in Operation Spring 2013



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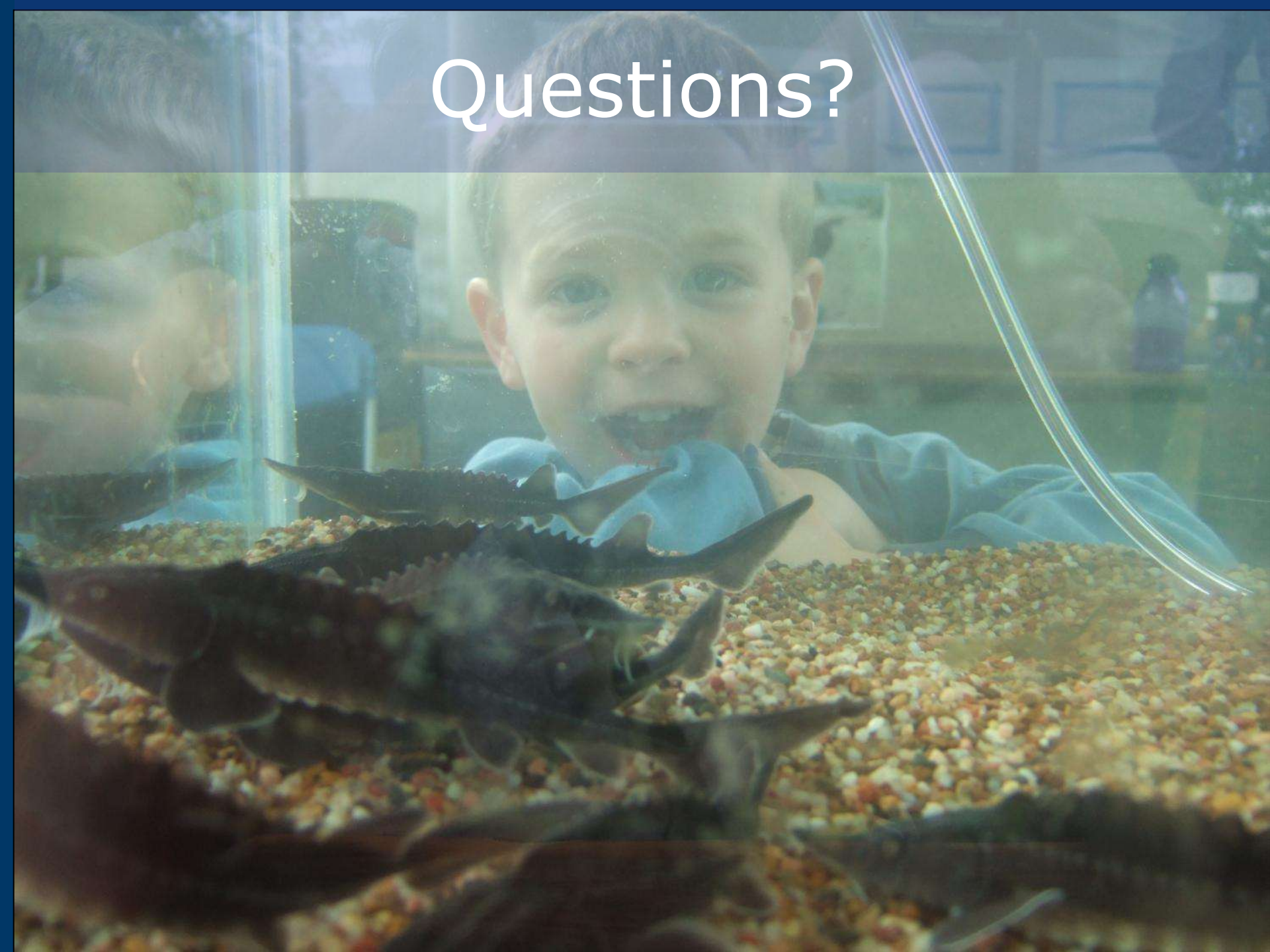
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Acknowledgements

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- **District of Vanderhoof**
- **Fisheries and Oceans Canada**
- **Freshwater Fisheries Society of BC**
- **BC Ministry of Forests, Lands and Natural Resource Operations**
- **BC Ministry of Environment**
- **Rio Tinto Alcan**
- **Aboriginal Affairs and Northern Development Canada**
- **BC Wildlife Federation**
- **City of Prince George**
- **Environmental Dynamics Inc.**
- **Environment Canada**
- **Nature BC**
- **Fraser Basin Council**
- **Fraser Basin Council**
- **Fraser River Sturgeon Conservation Society**
- **Golder Associates Ltd.**
- **Lheidli T'enneh Band**
- **Nechako River Alliance**
- **Nechako Watershed Council**
- **Resources North Association**
- **Saik'uz First Nation**
- **School District 57**
- **Sport Fishers**
- **Spruce City Wildlife Association**
- **Tl'azt'en Fisheries Program**
- **Triton Environmental Consultants**



Questions?





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