

Chinook Salmon Habitat Development on a Northern Regulated River

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Chinook Salmon Habitat Development

- Outline
 - Background
 - Mandate
 - Approach to chinook habitat development
 - Design concepts
 - Construction
 - Monitoring results



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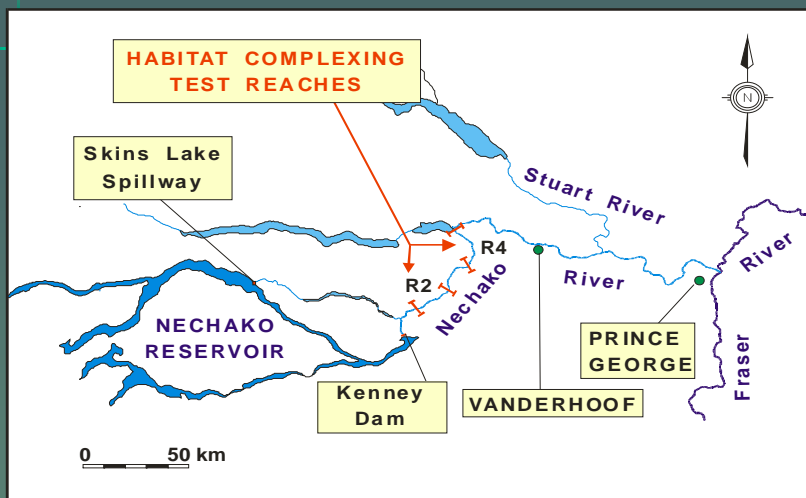


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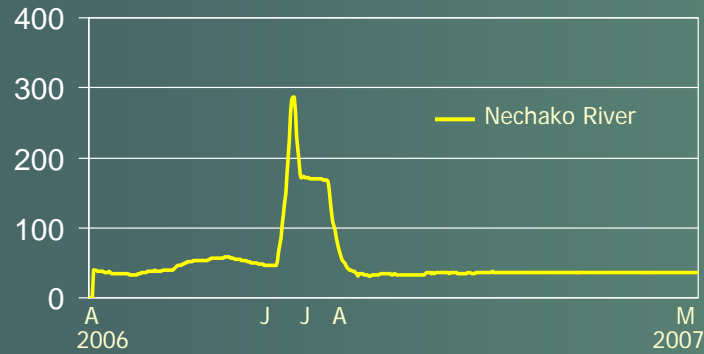


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Typical Hydrograph



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Mandate

- Undertake feasibility assessment and prototype testing of habitat structures

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- Approach

1. Literature Review
2. Field examination of natural complex habitat in upper 150 km of river
3. Use fish habitat observations to set physical criteria (depth, approach velocity, habitat area) to site first structures



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- Initial efforts guided by
 - Literature
 - Experience in smaller streams



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- Limited success
 - “scaling up” is an issue
 - Chinook quickly occupied structures
 - By the second spring >90% of structure occupied by non-target species



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- Second year
 - Modified initial designs to favor target species
 - Designed and installed several types of anchored debris catchers



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- Improved success
- Chinook utilization of most of complex area
- Field examination of natural complexes indicated an optimum size of 15 m²
- Demonstrated cost-effective construction techniques



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- Third Year
 - Expanded habitat structures over 40 of upper 85km of river
 - Included several design alternatives for installation in remote river locations
- Fourth year and beyond
 - Some modification of selected structures and monitoring of durability



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■ Durability

- 53 structures remained in 1997 which have been reduced ~ 32 today
- Ice is a significant factor in longer term structure durability
- Ice also a factor in limiting life span of sweepers and brush bundles (loss of branches)



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- Biological Sampling Results
 - Fish utilization – 40% to 88% assoc. with structures
 - More fish associated with all habitats at night
 - No significant difference in density between debris catchers and bundles
 - Species composition similar in natural and artificial sites



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■ Conclusions

- Can construct complex habitats for Chinook
- Debris catchers most successful
- Near shore habitats most successful
- Key on approach velocities (>0.15 m/s)
- Positive anchoring needed
 - Debris loads
 - Ice loading



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■ Conclusions (con't)

- Chinook do colonize new structures
- Non-salmonids displace chinook if velocities are sub-optimum



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For more information and reports:

www.nfcp.org



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