



# 2005 Yukon River Chinook Salmon *Ichthyophonus* Update

Presented to Yukon River Panel  
December 7-8, 2005

# Main Concerns

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- Are infected fish successfully spawning?
- Are escapement goals affected?

# Objectives

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1. Investigate a non-lethal highly specific test for *Ichthyophonus* that could potentially be used to assess losses of pre-spawning Chinook.
2. Determine the conservation and management implications of *Ichthyophonus*.
3. Estimate pre-spawning mortality of Chinook from the Tanana River to the Chena and Salcha River tributaries.

4. Correlate environmental factors on pre-spawning mortality of Chinook salmon and on *Ichthyophonus* prevalence.
5. Investigate the presence of *Ichthyophonus* in juvenile salmon.
6. Determine the historic presence of *Ichthyophonus*.

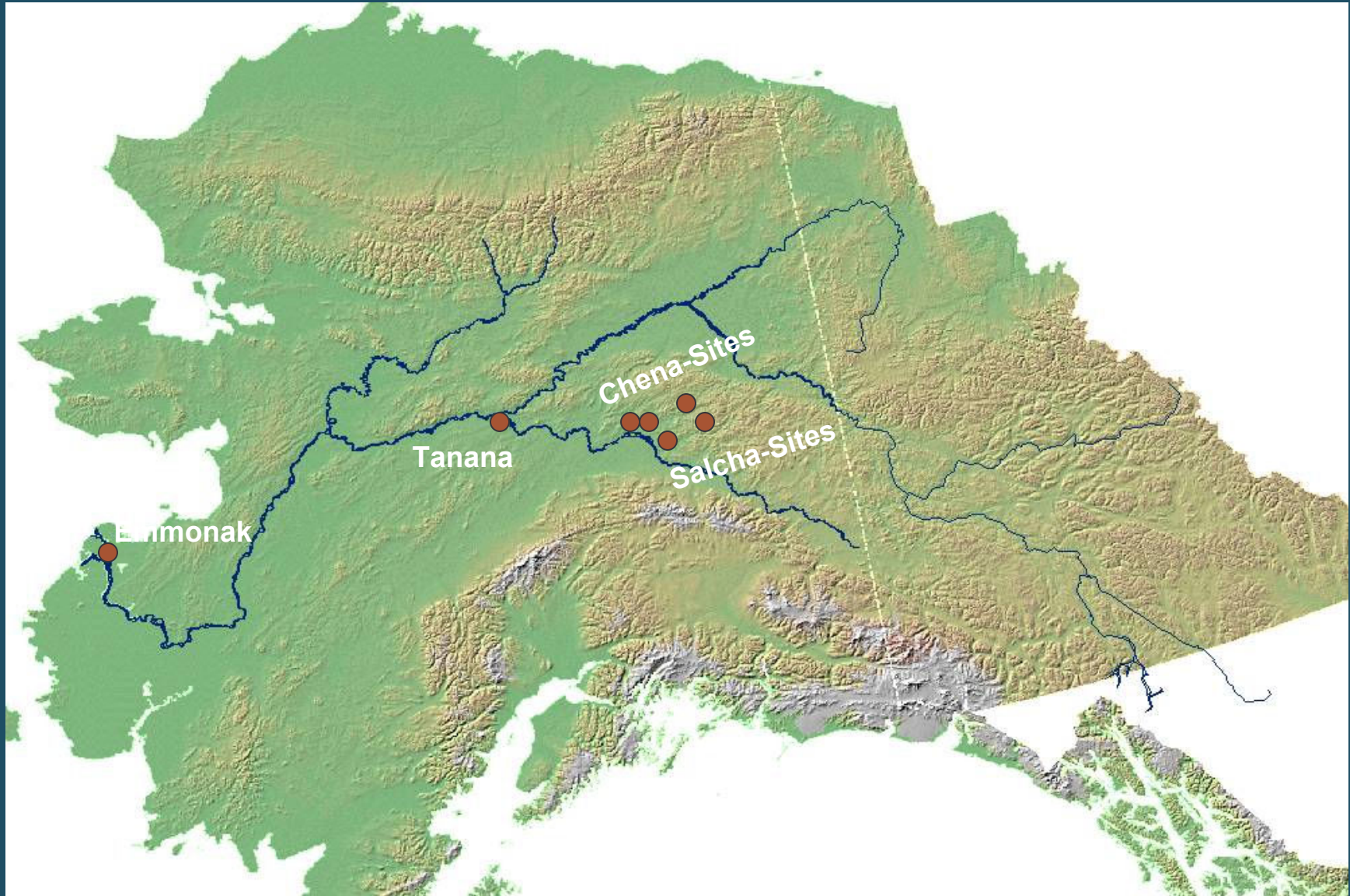
# 2004 Field Work

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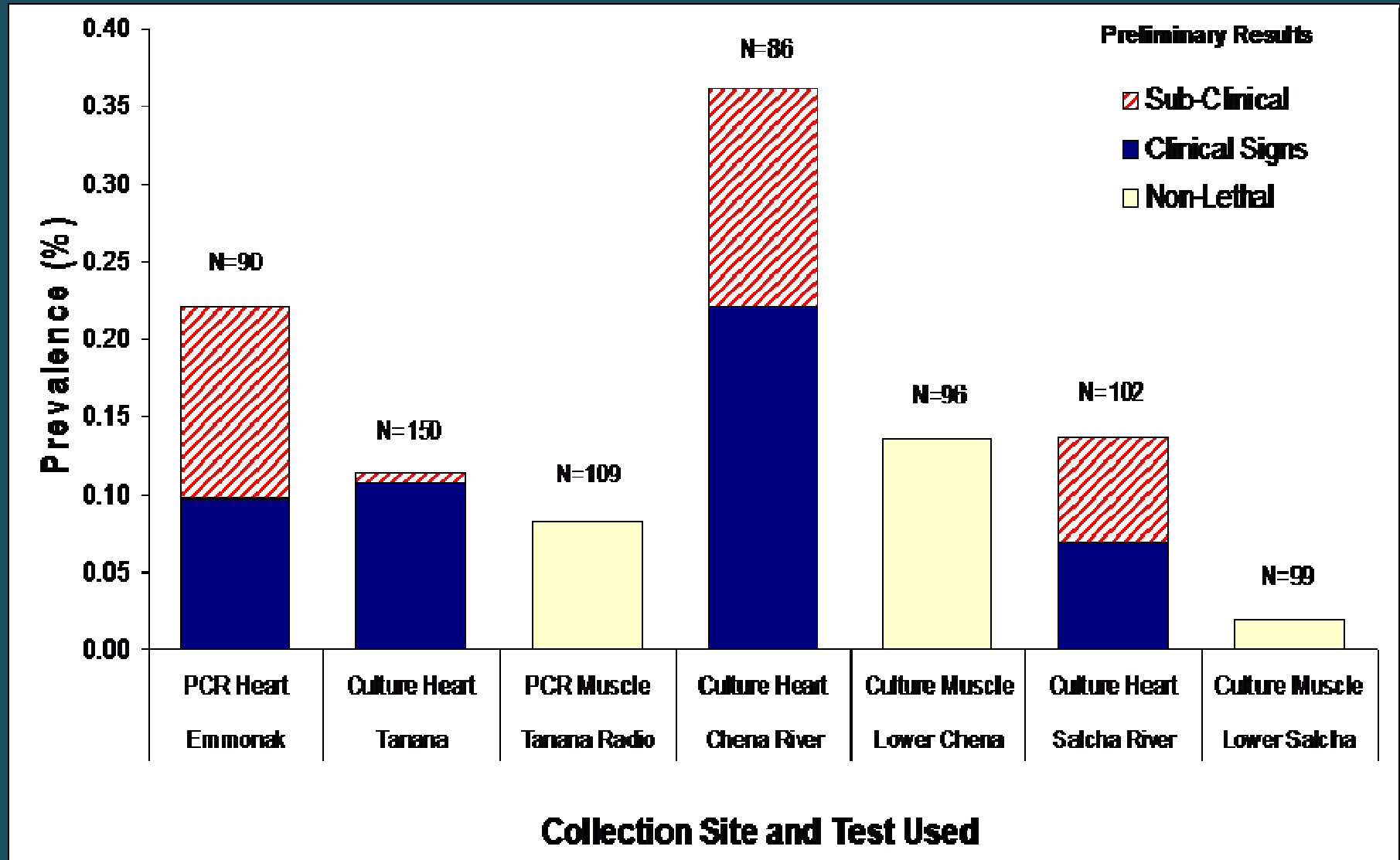
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- Emmonak- Previous study expanded upon to monitor entire Chinook run infection rate.
- Tanana- Studies initiated to assess impact on spawning.
- Tanana - Radio telemetry
- Chena Set Net Site - Non-lethal sampling
- Chena Spawning Grounds - carcass sampling
- Salcha Tower - non-lethal sampling
- Salcha Spawning Grounds - carcass sampling
- Aerial/Boat tracking conducted on both Chena and Salcha Rivers

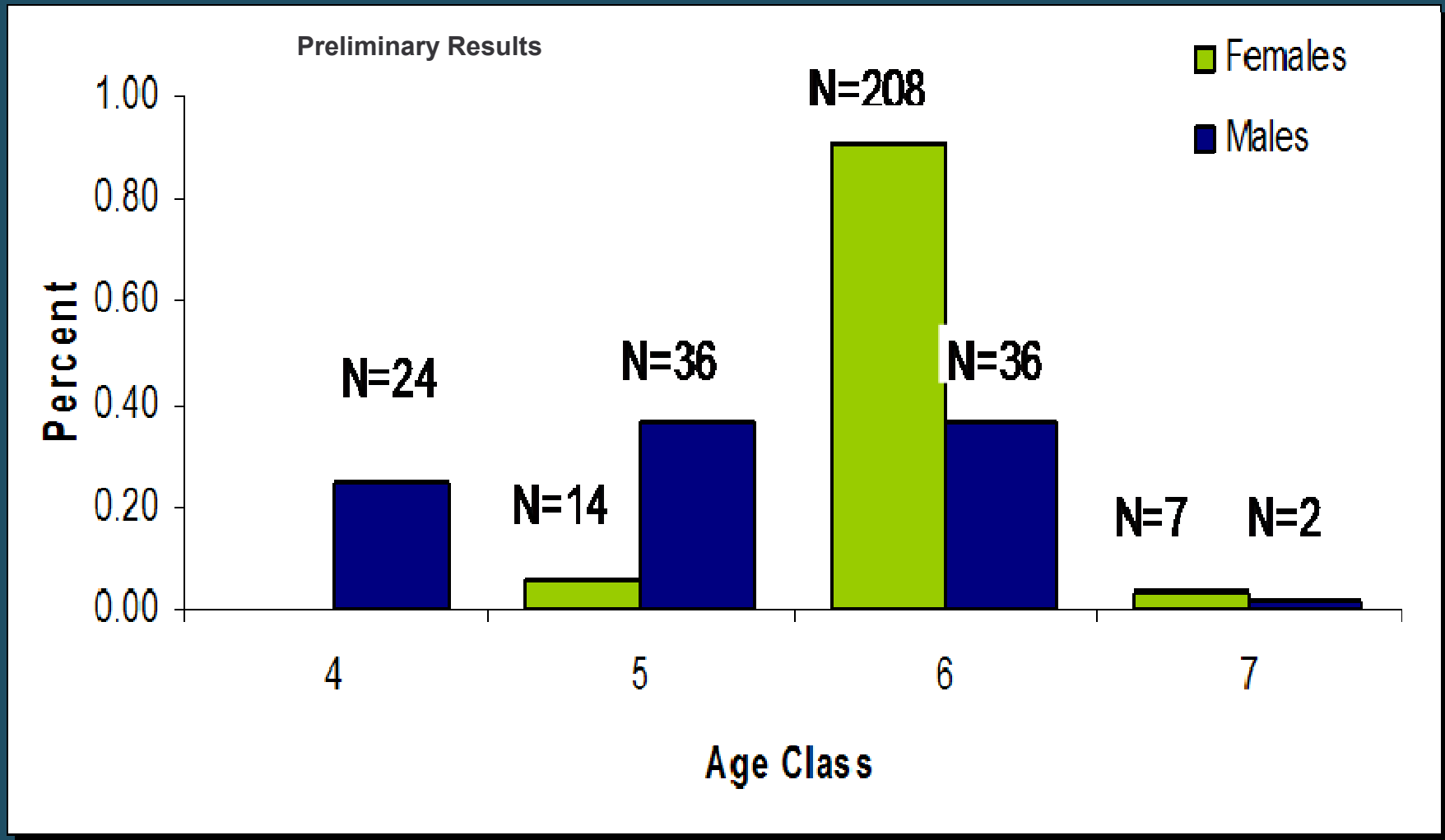
# 2004 *Ichthyophonus* Sampling Sites



# 2004 Infection Rates



# 2004 Chinook Age Data





# 2004 Radio Telemetry Data

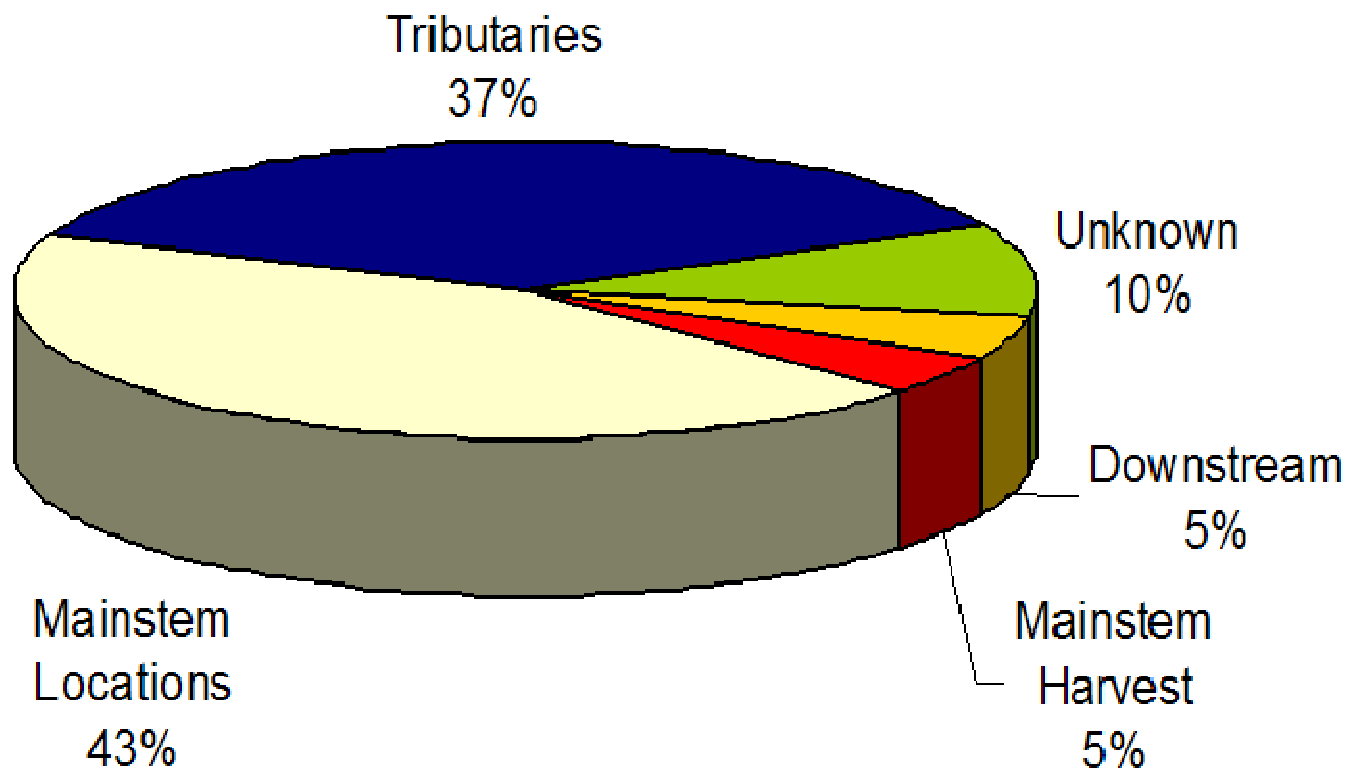
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- Telemetry objective was to radio tag and biopsy Chinook at Tanana and track them to the spawning grounds.
  - Chena River (N=6)
    - 5 recovered, 3 sampled, 0 positives
  - Salcha River (N=10)
    - All recovered, 1 sampled, not positive
  - Other Tributaries
    - 24 tracked, 1 recovered, not sampled

# Radio Tag Locations

Preliminary Results



# 2005 Field Work

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- Samples were limited to heart tissue for both Explant Cultures and PCR.
- Emmonak baseline study maintained.
- Chena and Salcha River Spawning Grounds carcass sampling continued.

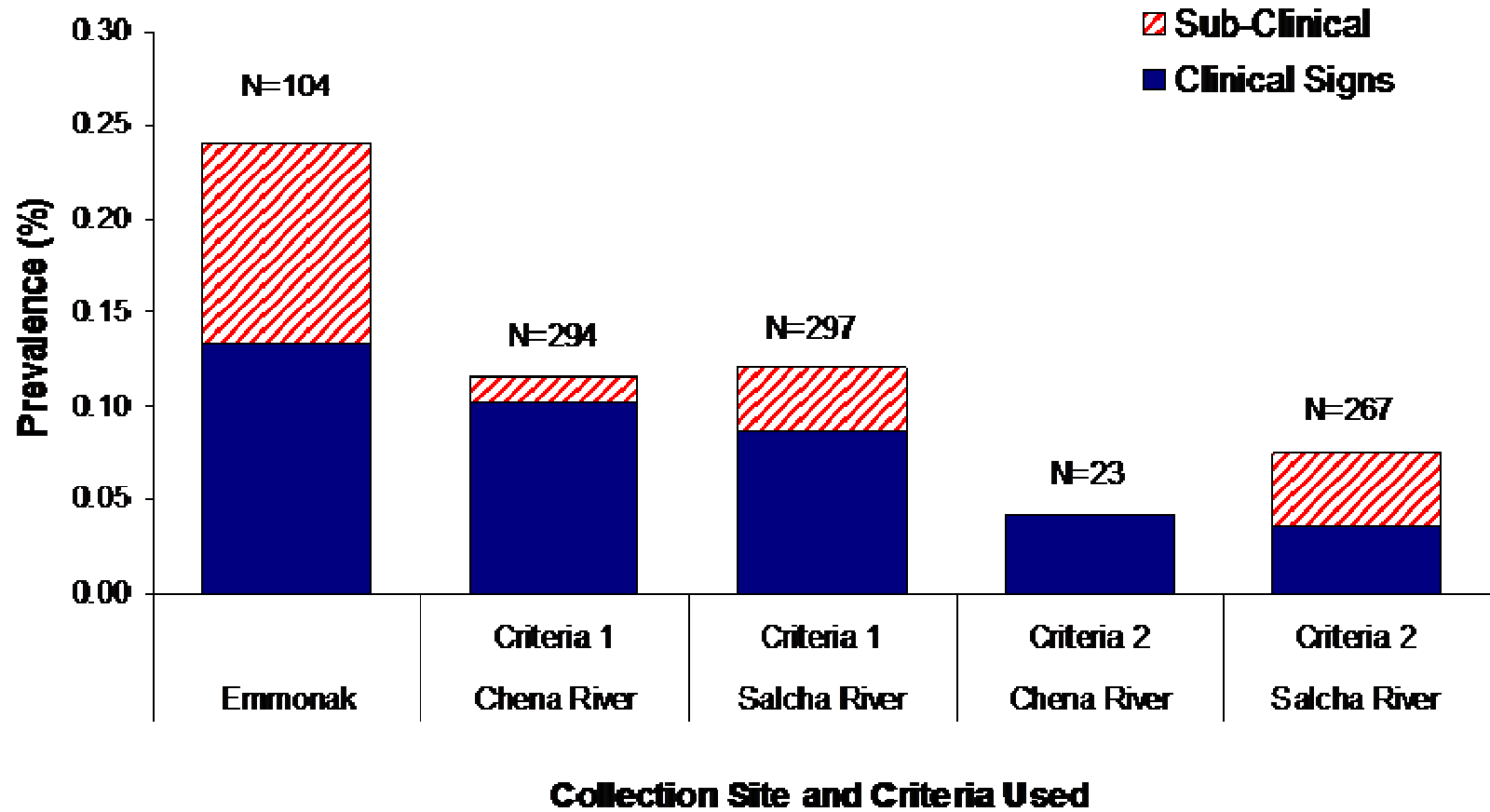
# Carcass Sampling Criteria

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- **Criteria 1**- Chena (2004)
  - Clear eyes
  - Gill color
  
- **Criteria 2**- Salcha (2004)
  - Clear eyes
  - Firm heart

# 2005 *Ichthyophonus* Infection Rates

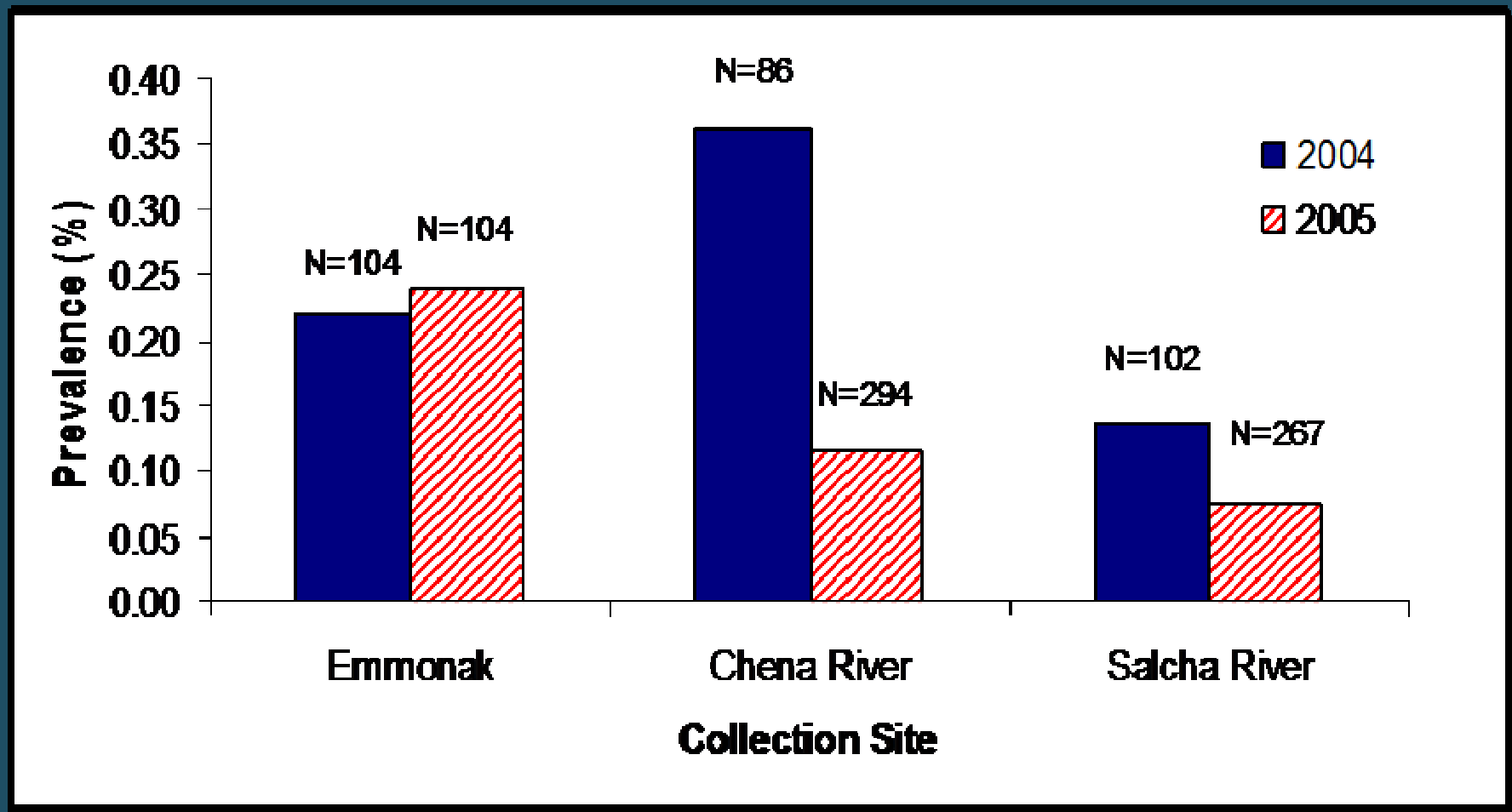
**Preliminary 2005 Data Based on Heart Explant Cultures**



# Infection Rates

2004 - 2005

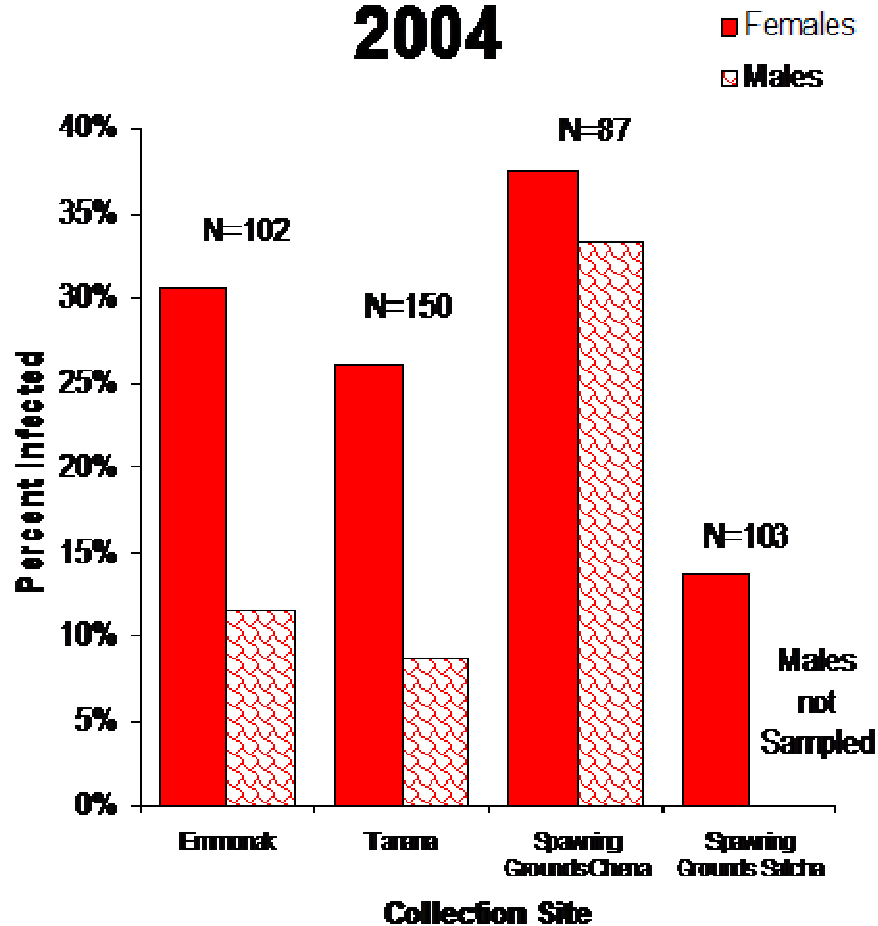
Preliminary Results



# % Infected by Gender

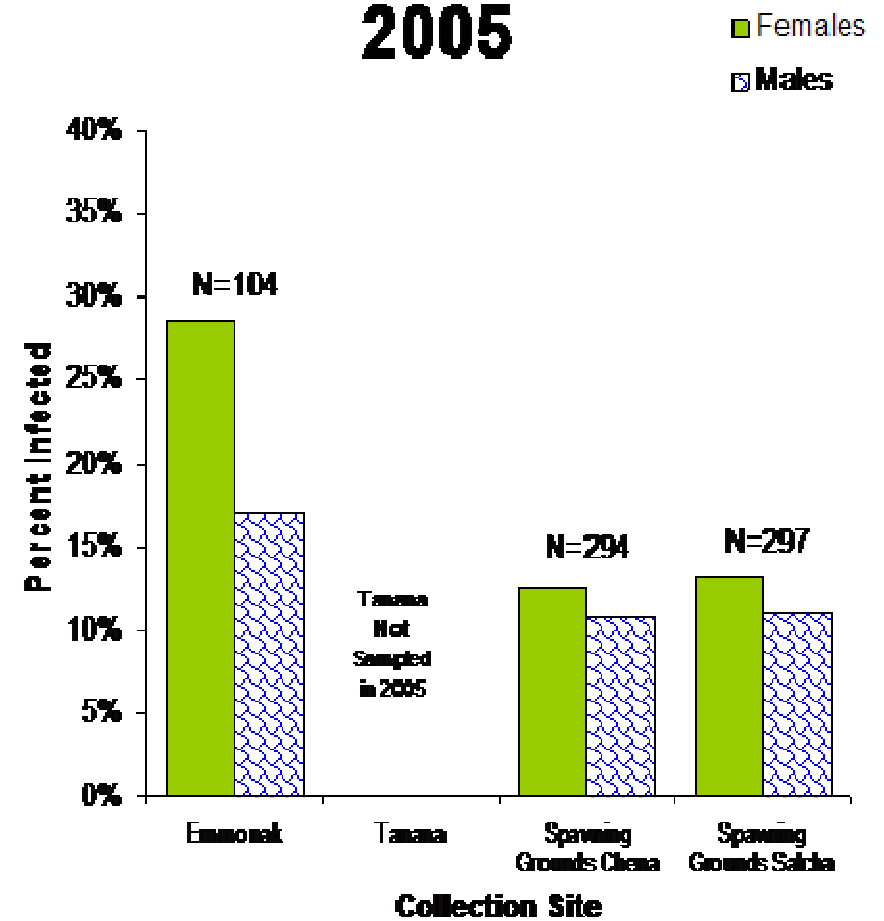
Preliminary Results

## 2004



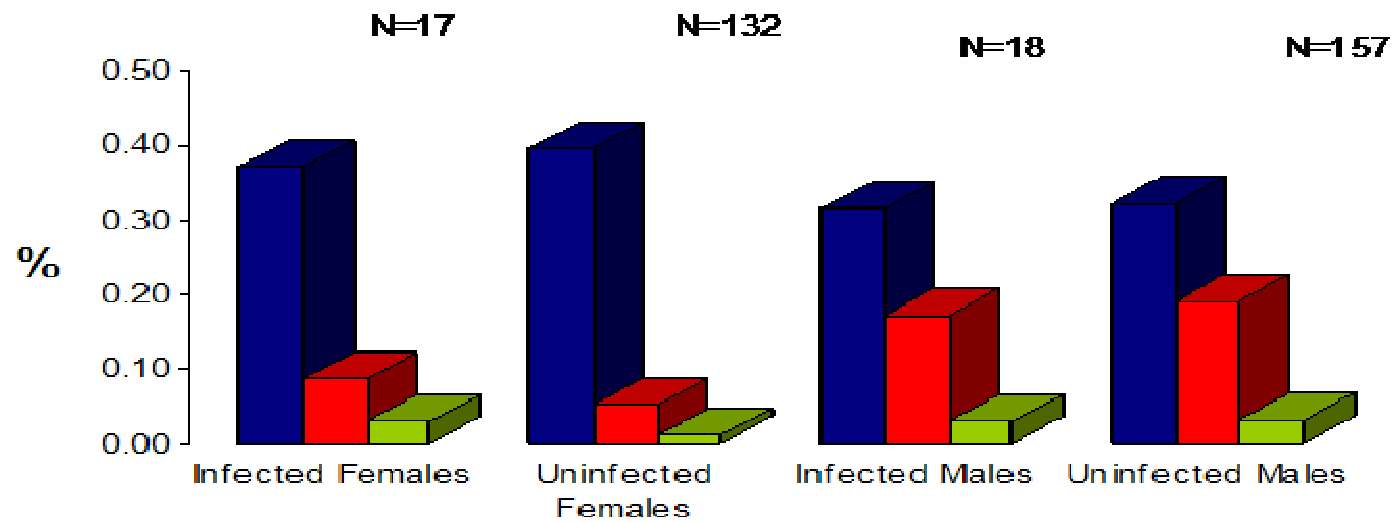
Preliminary Results

## 2005

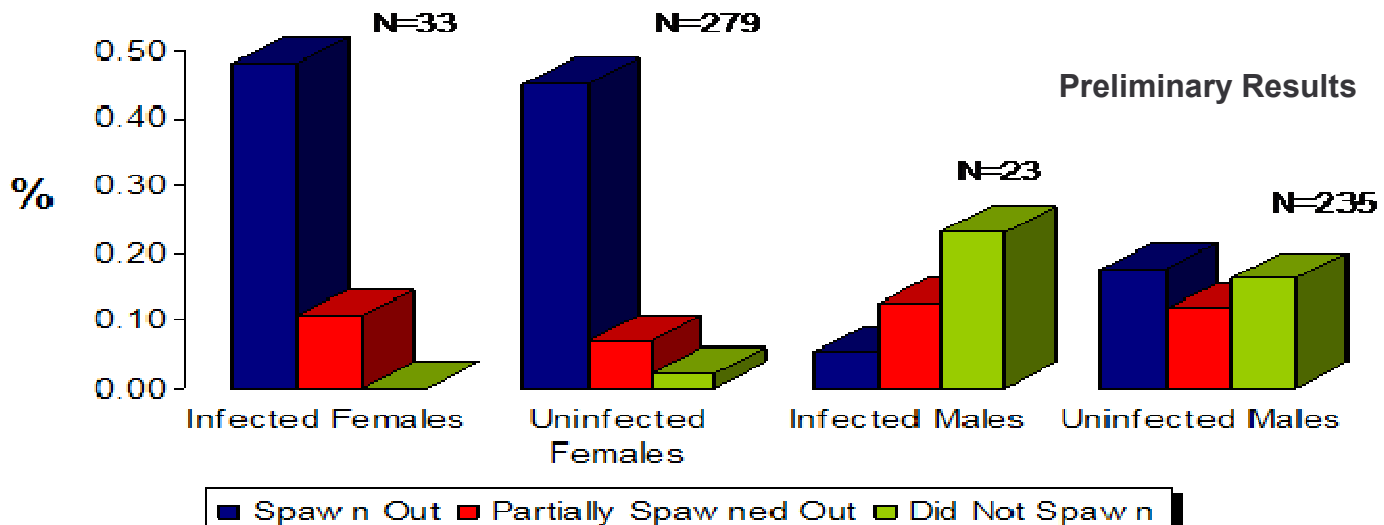


# Spawning Success, 2005

Chena



Salcha



■ Spawn Out ■ Partially Spawned Out ■ Did Not Spawn



# Proposed 2006 Field Work

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- Continue sampling at Emmonak throughout the run.
- Repeat carcass sampling on both the Chena and Salcha rivers.
- Future Monitoring?

# Preliminary Conclusions

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- Non-lethal sampling is not reliable.
- Clinical signs increase as fish migrate upriver.
- Upriver infections rates are similar between gender.
- Infected fish spawn successfully.

# Main Concerns

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- *Are infected fish successfully spawning?*
- Results indicate that infected fish are successfully spawning.
  
- *Are escapement goals affected?*
- Mortality before entering the spawning grounds does not affect the escapement goals.

