

Non-lethal blood sampling from Rainbow trout in the laboratory and in situ

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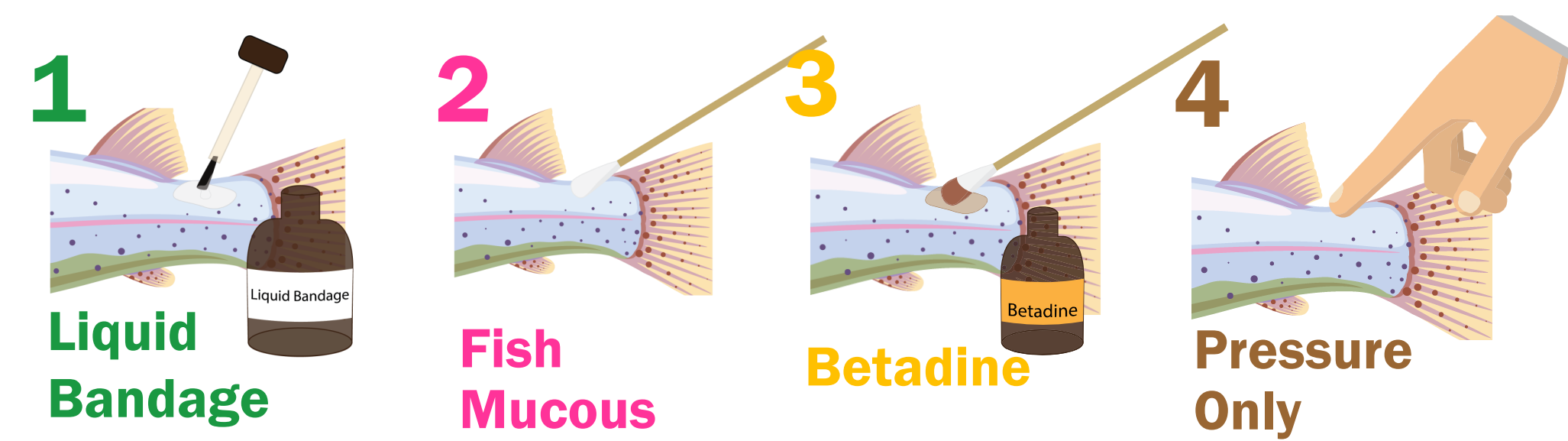
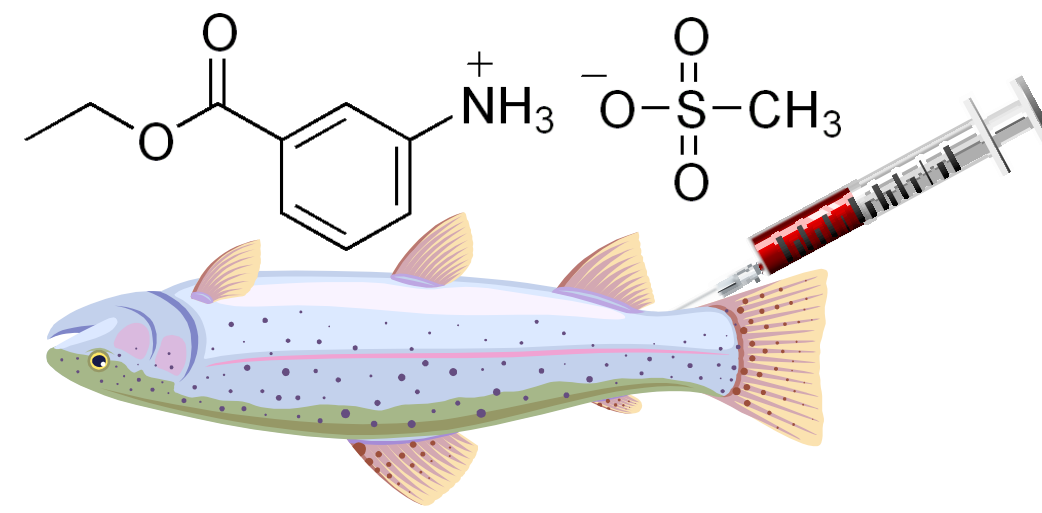


Study Goals

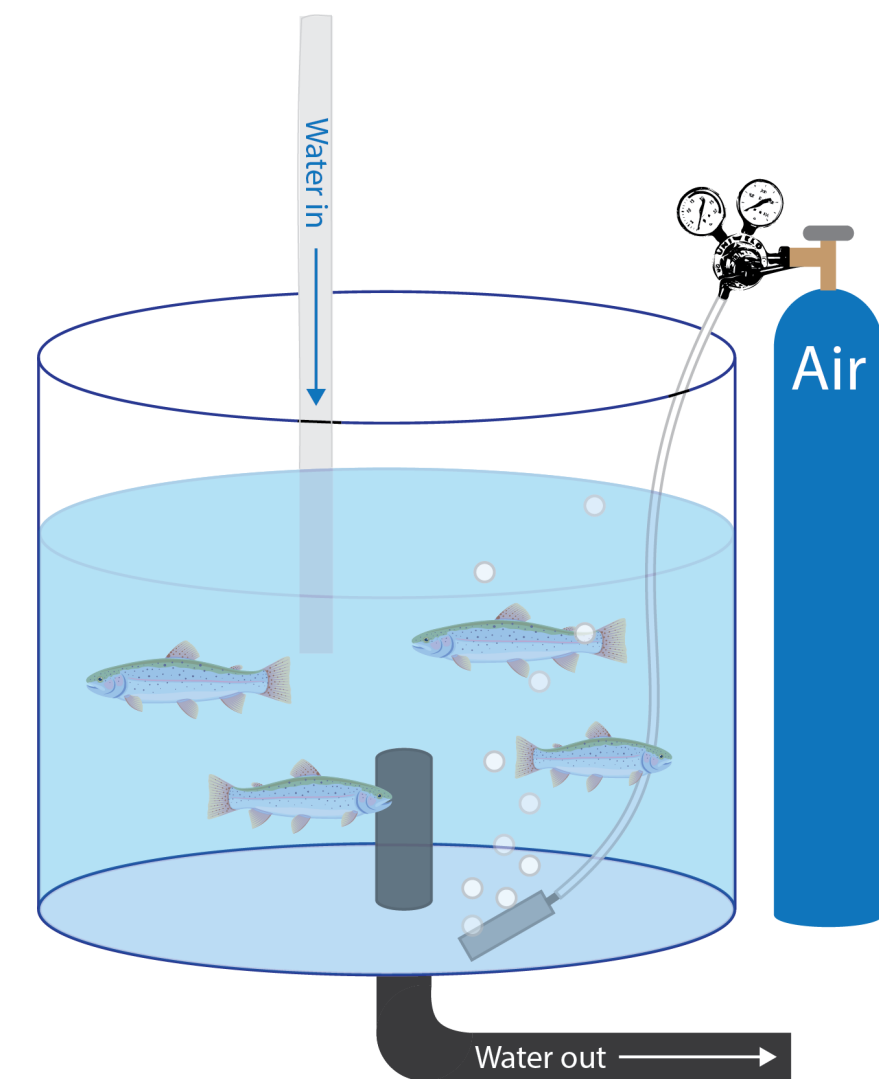
1. To determine if currently available non-lethal blood sampling protocols are in fact non-lethal
2. To determine if refinements could be made to reduce infection and improve healing rates

Methods

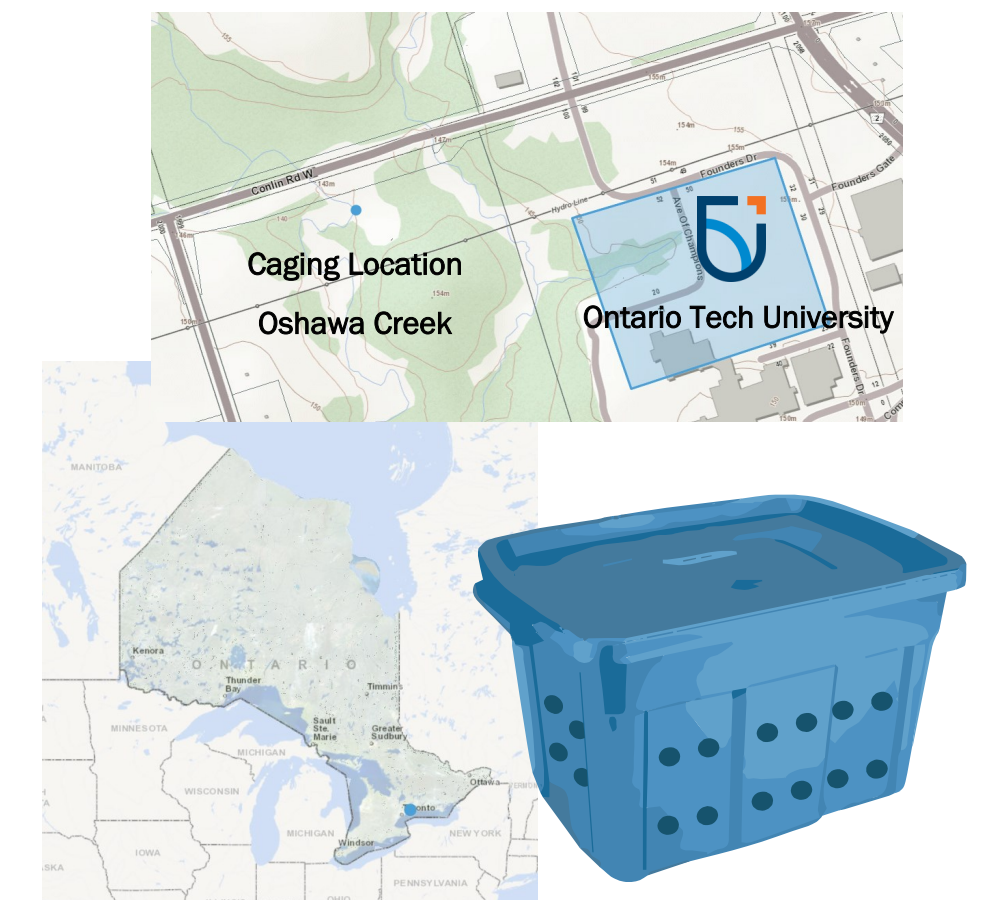
100-200 g Rainbow trout were mildly sedated using Tricaine mesylate



4 treatments
n = 20 fish
per treatment

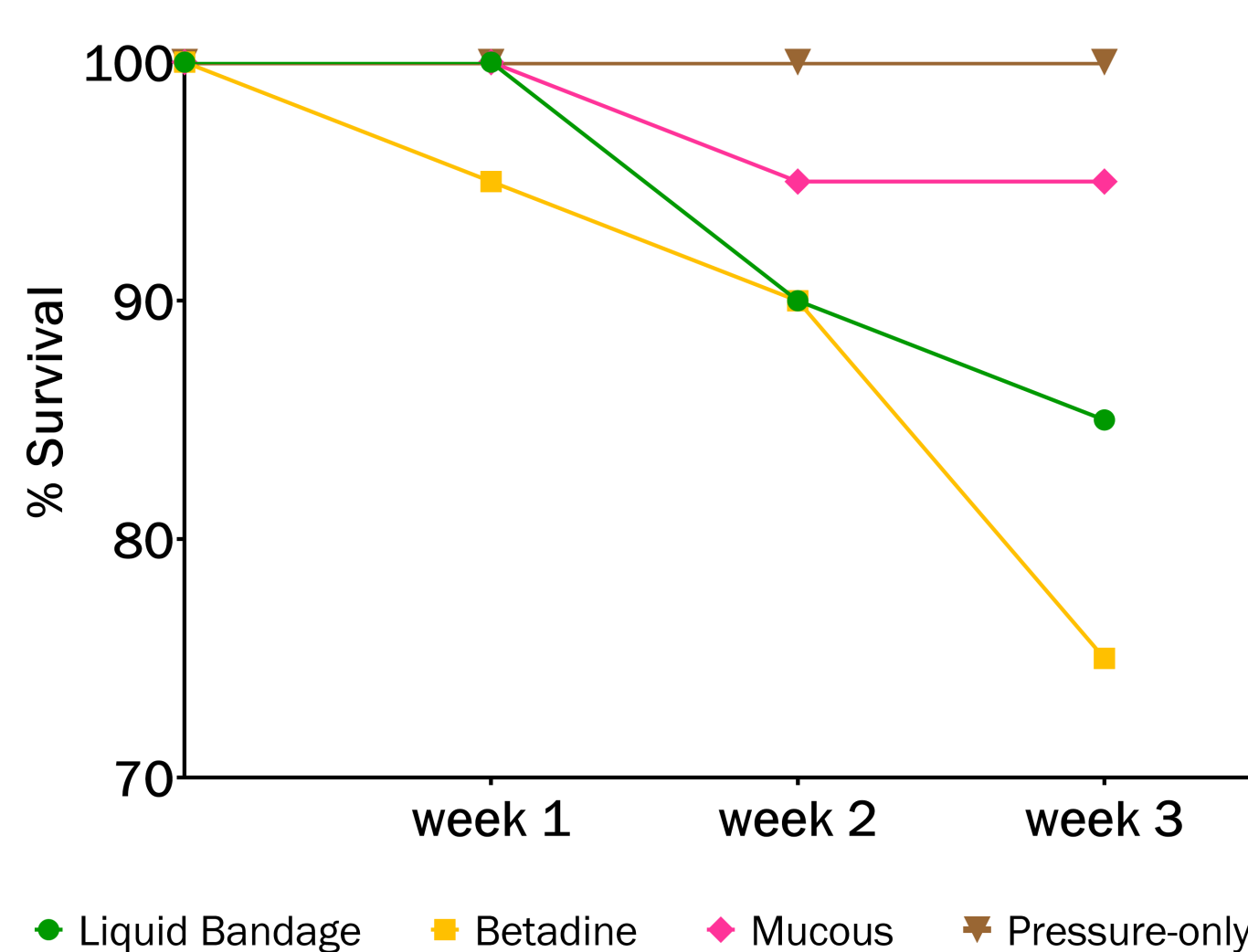


- Blood was sampled from caudal vein (1µL/g) with a 22 Gauge needle & syringe
- Fish were returned to 1000-L fiber-glass tanks (n=20 per tank) to recover
- Each tank contained 5 fish from each treatment
- Fish were monitored daily for swimming behavior and signs of distress.
- Fish were lightly sedated and physically examined weekly for three weeks post-sampling.
- We followed up with a three-week caging study in August 2019
- There were 5 fish per cage and 8 cages total.
- After 1 week acclimation, blood was sampled with pressure to half of the fish (N=20).
- Cages were monitored daily and fish were examined weekly for two weeks.

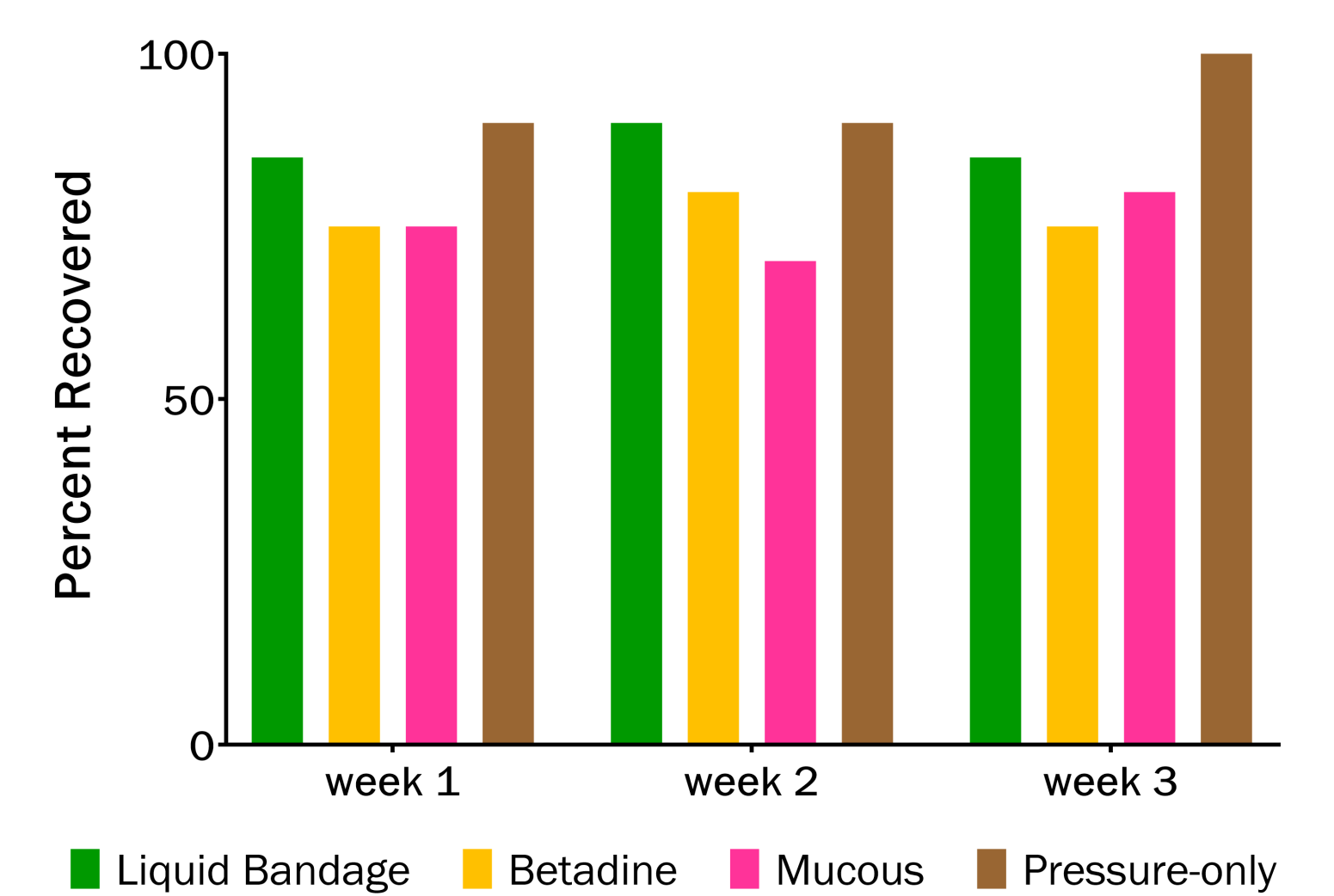
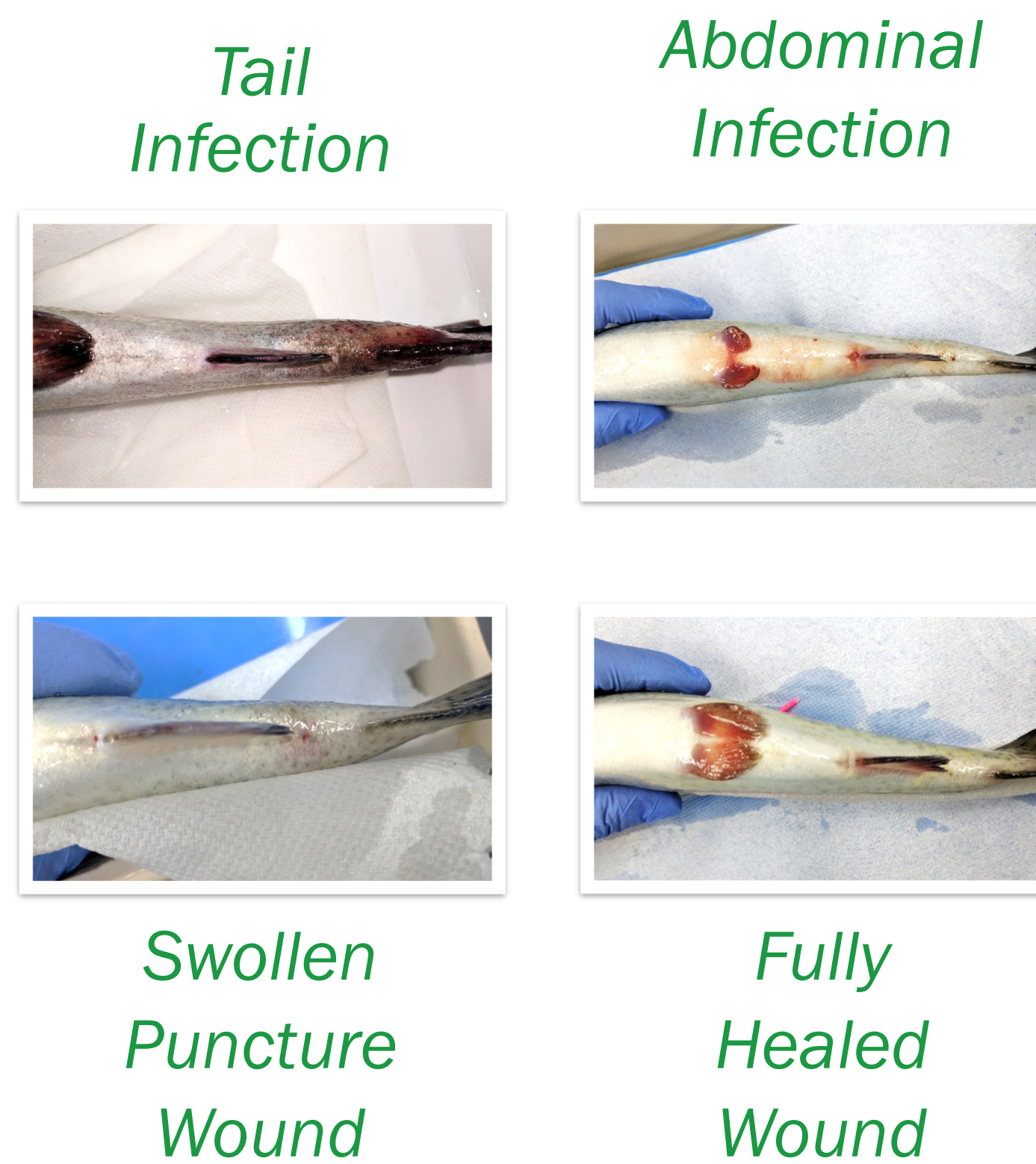


Results

Pressure only was the most successful post-treatment method for blood sampling with 100% survival, and the shortest recovery rates. We chose to repeat the pressure only treatment in the field caging.

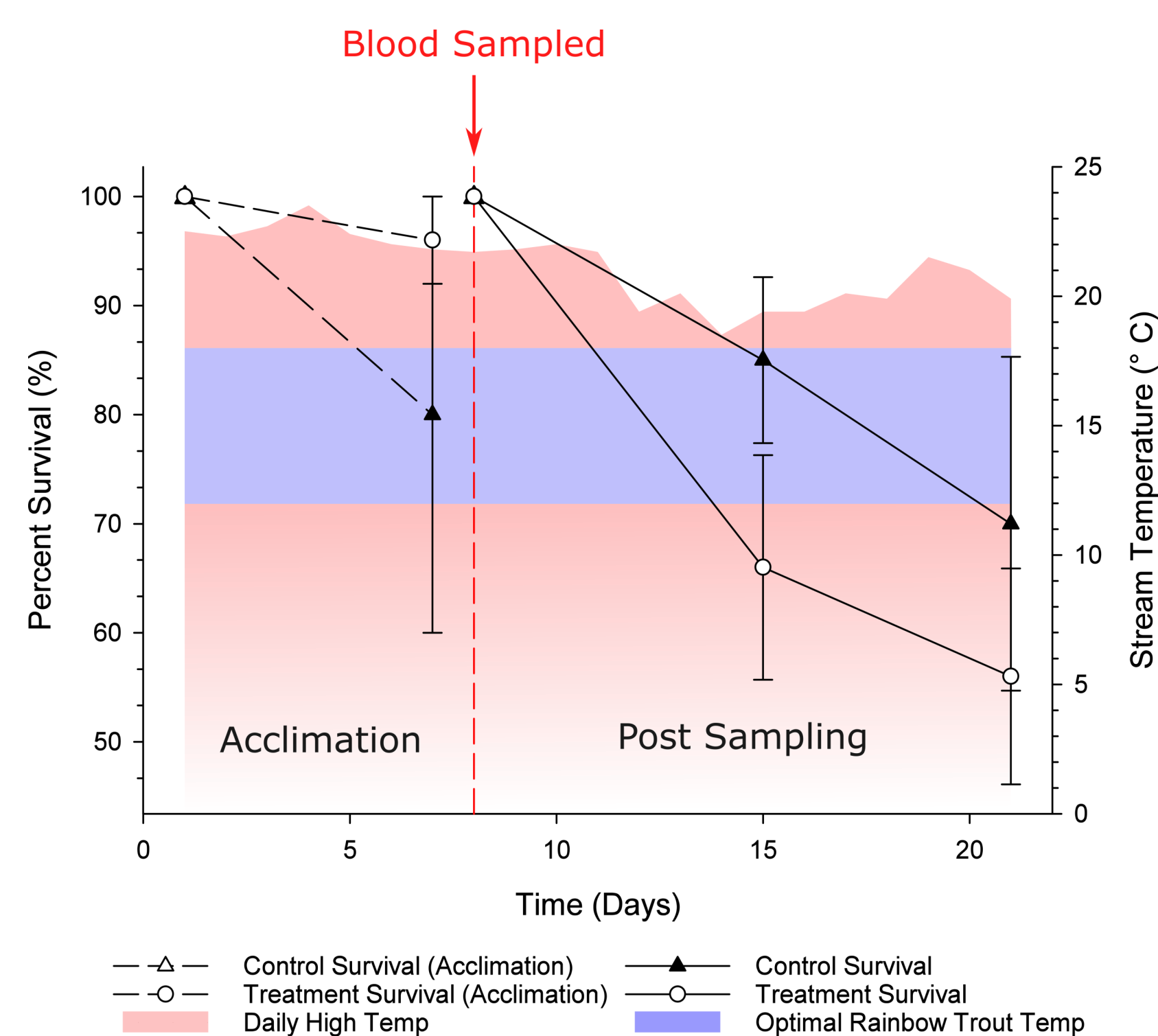


Tail infections often lead to mortality



Betadine caused more tail infections and significantly greater mortality than all other post-treatments (Chi-square p-value = 0.0389)

Fish mucous swab resulted in the second-highest survival, however there was a greater number of abdominal infections with slower recovery rates



In the caging study, there were no significant differences between the control and blood sampled rainbow trout at all time points

Of the blood sampled fish in the cages, 48% demonstrated full recovery

High temperatures likely affected survival



Cages at the Oshawa Creek (Canada) Caging Location

Key Findings:

1. Of the four post-treatment recovery techniques, pressure only resulted in the greatest survival.
2. There were no significant differences between control and sampled fish in the caging experiment. However, survival rates were low in both groups
3. Low survival in the caging experiment may have been due to high stream temperature and/or the cage size

Future plans:

1. We plan to repeat the caging experiment in the spring (or fall?), when the temperatures are cooler
2. We will increase cage size and eliminate any abrasive surfaces

Acknowledgments

