

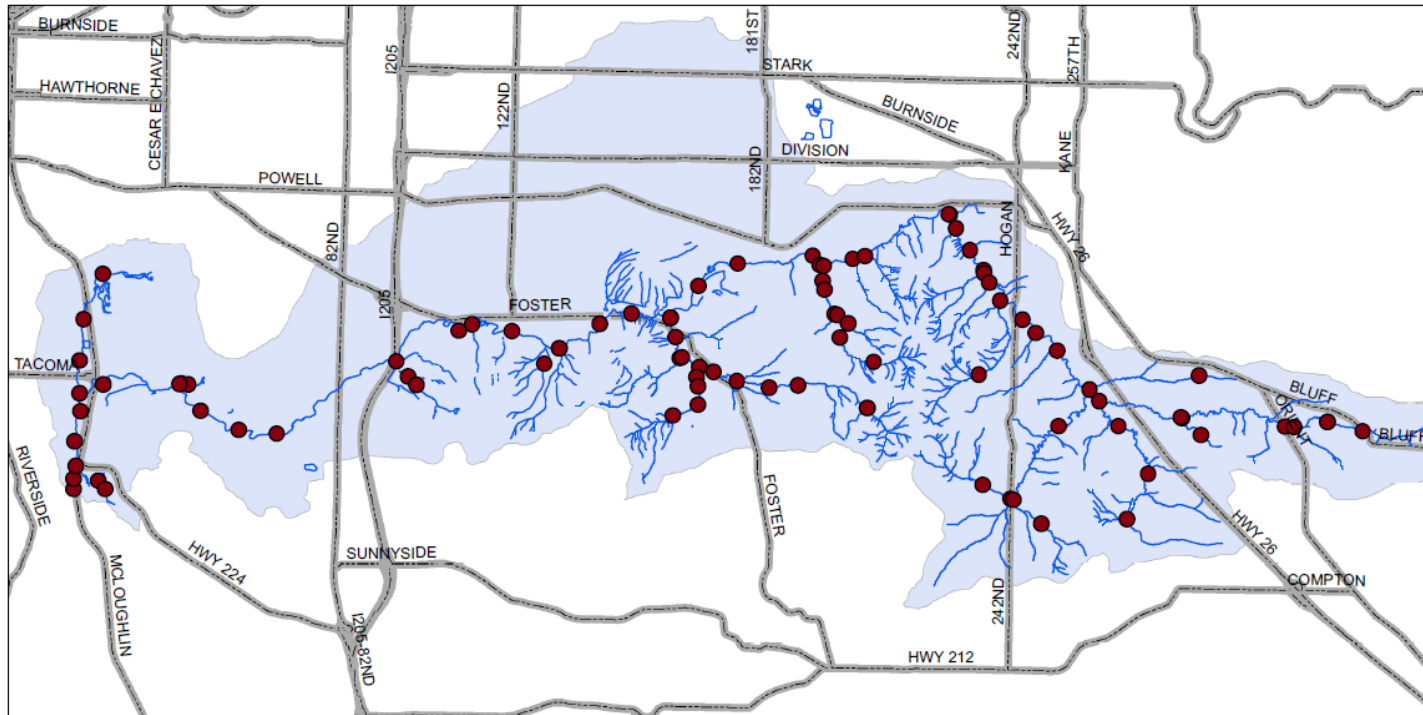
Temperature and Macroinvertebrates in Johnson Creek

Johnson Creek Science Symposium
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Temperature Monitoring

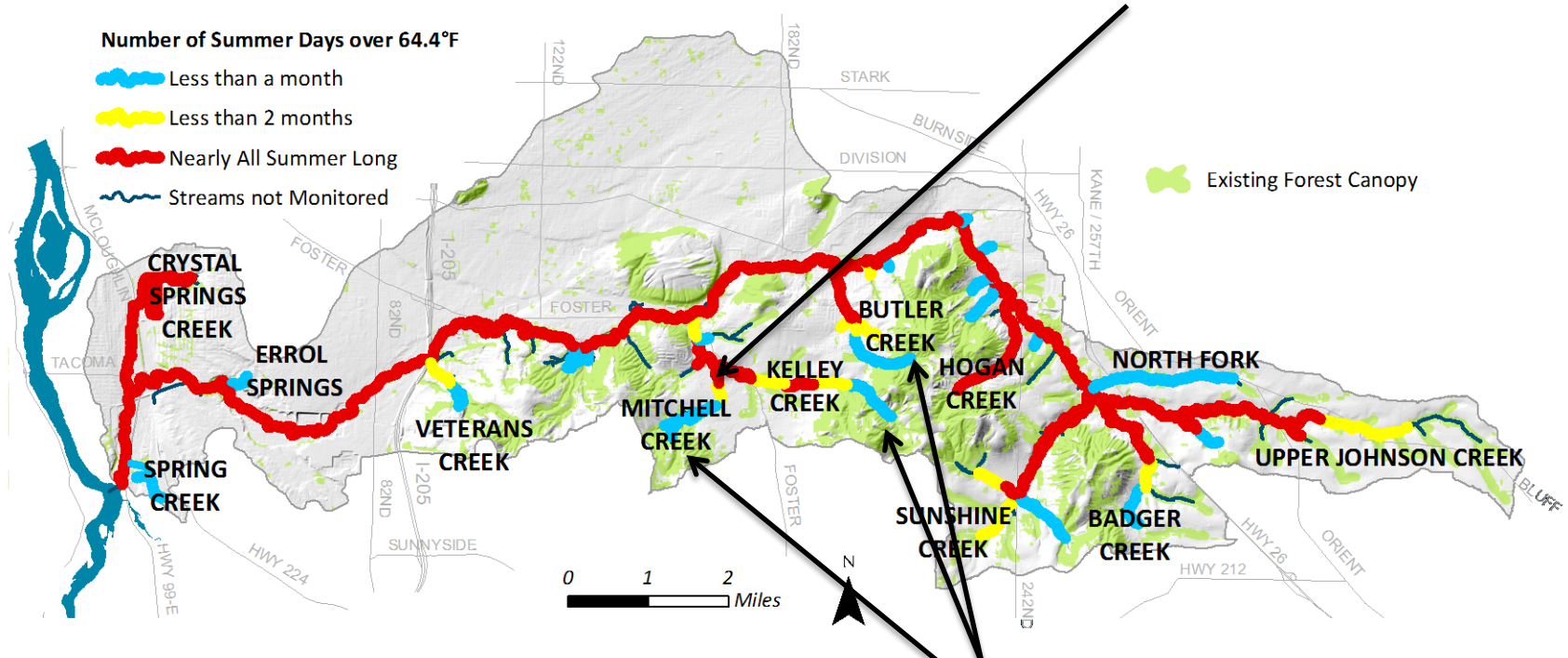


- 91 sites measured
- Typically June ☐ October
- Standard = 18°C (64.4°F) for 7DADM

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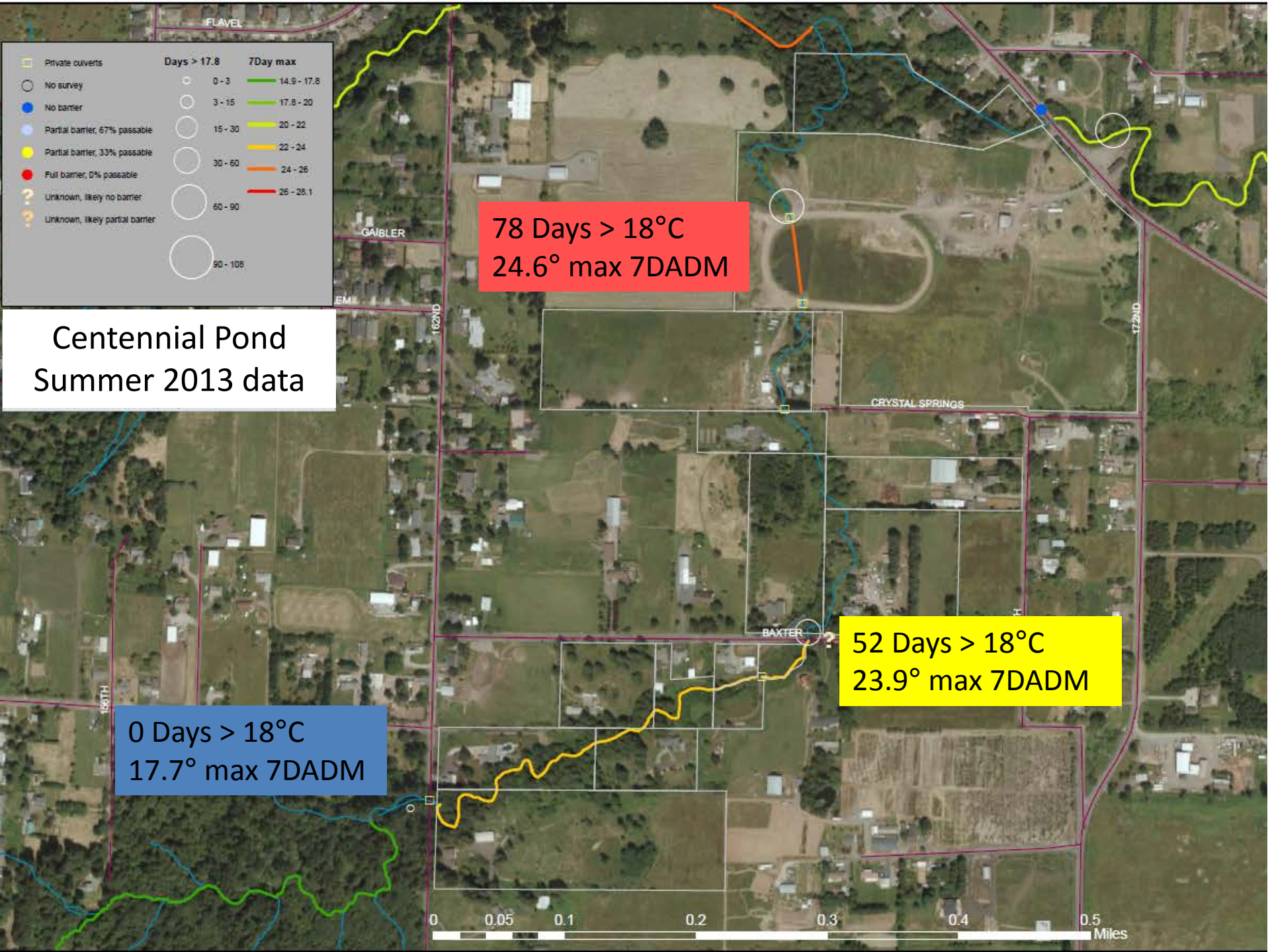
Temperature Summary

Centennial Pond on Mitchell Creek



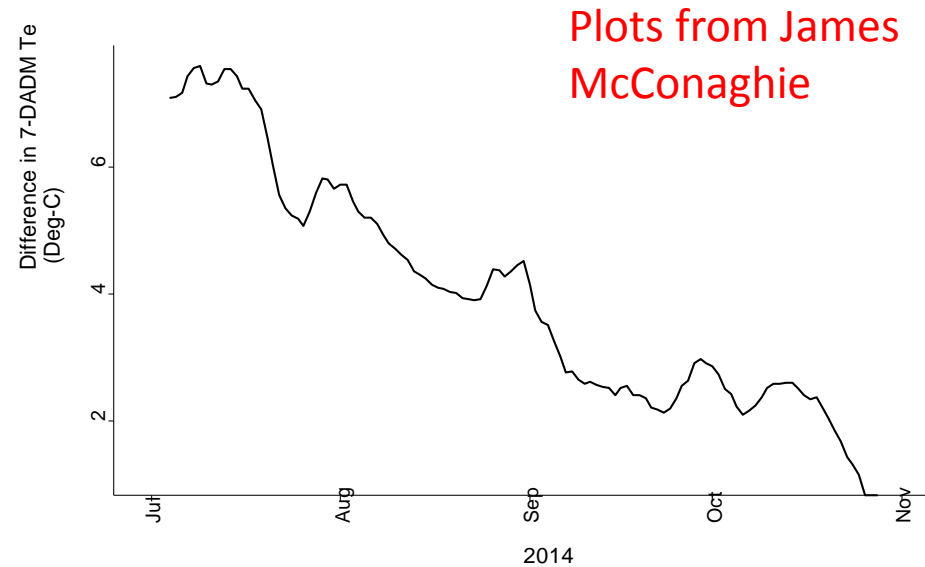
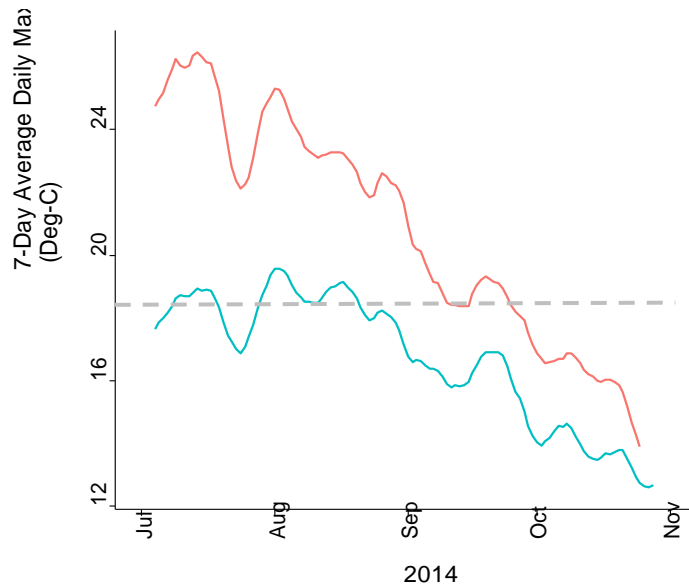
Protected greenspaces on upper Mitchell, Kelley and Butler Creeks

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The Pond Effect

- Ponds on small streams can heat up quickly
- JCWC working to remove Centennial culvert on Mitchell Creek



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Macroinvertebrate Monitoring

- Includes mixture of fixed (4), probabilistic (47) and reference (6) locations
- DEQ protocol \approx 8 ft² with identification to genus/species
- Evaluated versus land use at 4 scales:
 1. 10m buffer, 1km
 2. 30m buffer
 3. 100m buffer
 4. Drainage area



Benthic Index of Biological Integrity

Metric	Low (1)	Med (3)	High (5)
Total Taxa	<19	19-35	>35
Mayfly Taxa	<4	4-8	>8
Stonefly Taxa	<3	3-5	>5
Caddis Taxa	<4	4-8	>8
Sensitive Taxa	<2	2-4	>4
Sediment Sensitive Taxa	0	1-2	>2
Hilsenhof Biotic Index	>5.0	4.0-5.0	<4.0
% Tolerant Taxa	>45	15-45	<15
% Sediment Tolerant Taxa	>25	10-25	<10
% Dominance	>40	20-40	<20

Minimum Score = 10
Maximum Score = 50

10-19 = Severe
Impairment

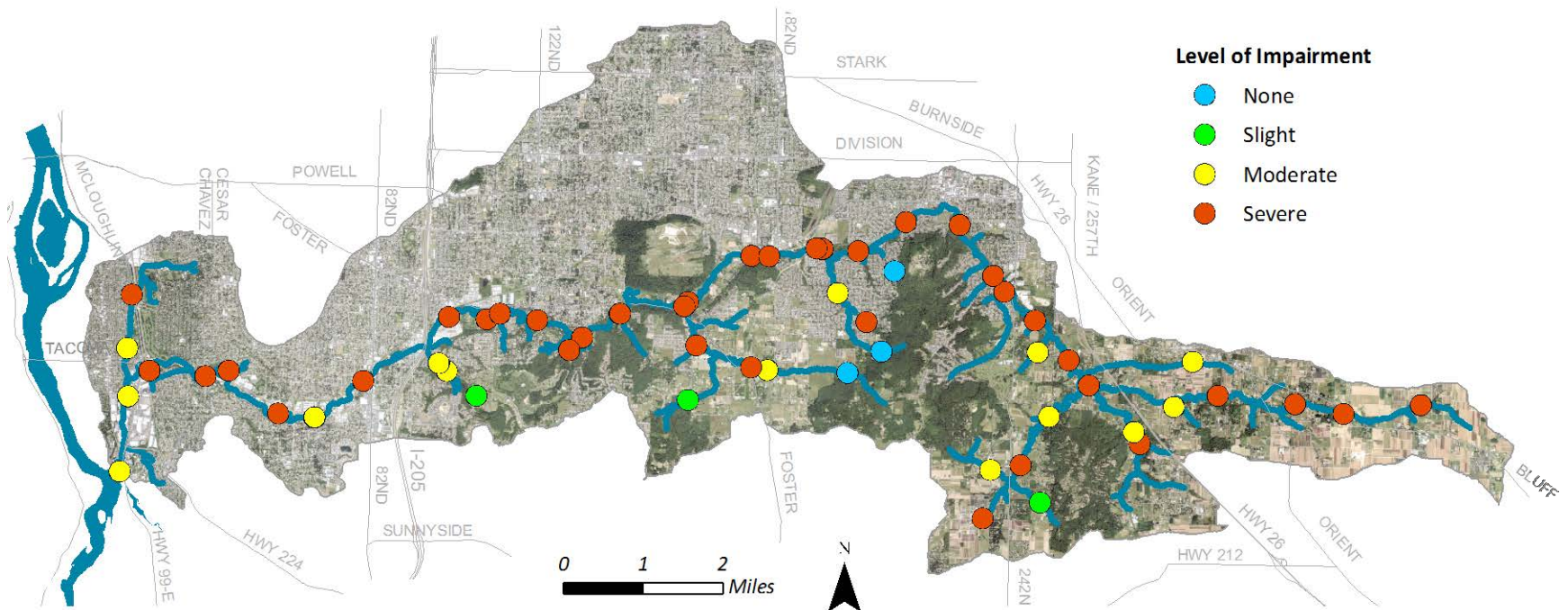
20-29 = Moderate
Impairment

30-39 = Slight
Impairment

40-50 = No Impairment

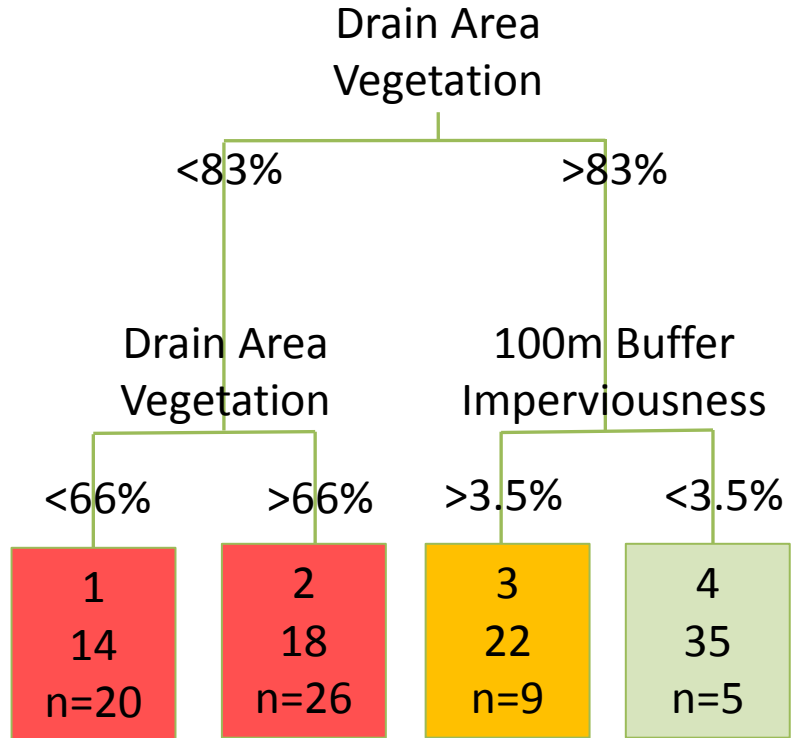
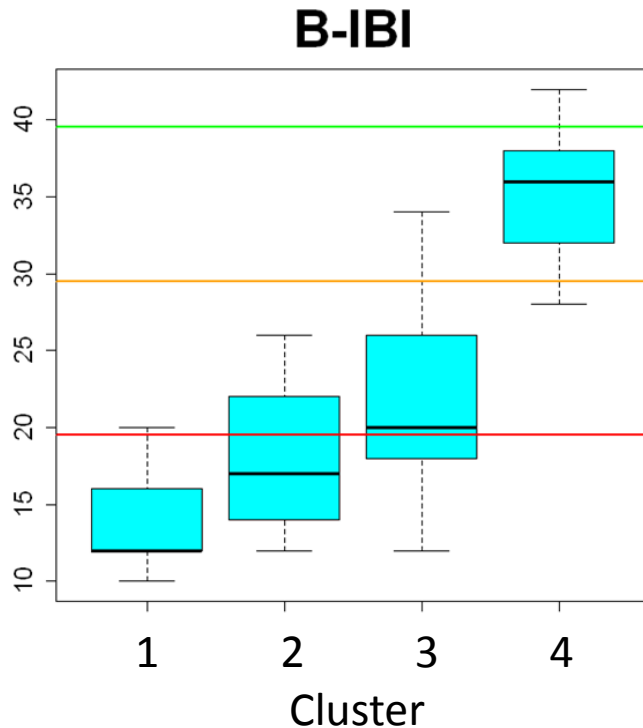
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Macroinvertebrate Summary



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Macroinvertebrate Summary



From analysis performed by Jeff Meacham

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Conclusions

- Ponds can significantly increase temperature
 - Pond/culvert removal
- Vegetation important for cooler streams
 - Preserve existing forest
 - Tree planting. Get from 40% to 80%
- Vegetation/temperature also important for biological community
- Next steps:
 - Temperature impacts of beaver dams
 - Hyporheic flow/thermal refugia

Questions?



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