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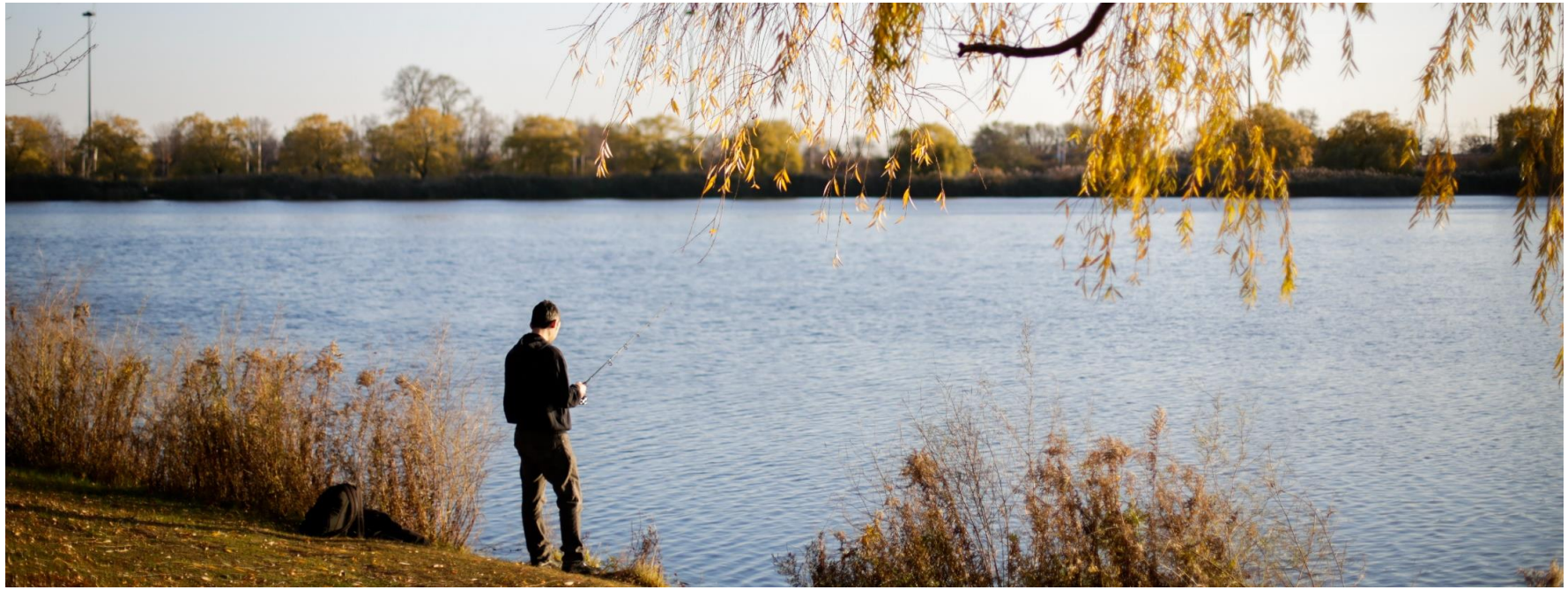

Lake Dalrymple Broadscale Monitoring Summary

Adam Challice, Regional Aquatic Ecosystem Science Specialist, Southern Region

Kawartha Conservation Lake Dalrymple Management Plan Open Houses, May 2022

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Outline

What is Broadscale Monitoring?

Lake Dalrymple BsM Results Relative to

  FMZ 17 and Southern Ontario

Fisheries Management Considerations

Stewardship Actions

Questions and Discussion

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What is Broadscale Monitoring (BsM)?

Standardized gillnetting assessments using large and small mesh nets

Each assessment also includes water chemistry, water quality, fish contaminants sampling, stomache contents, fish ageing, genetic samples, invasive species, and aerial angling activity estimates

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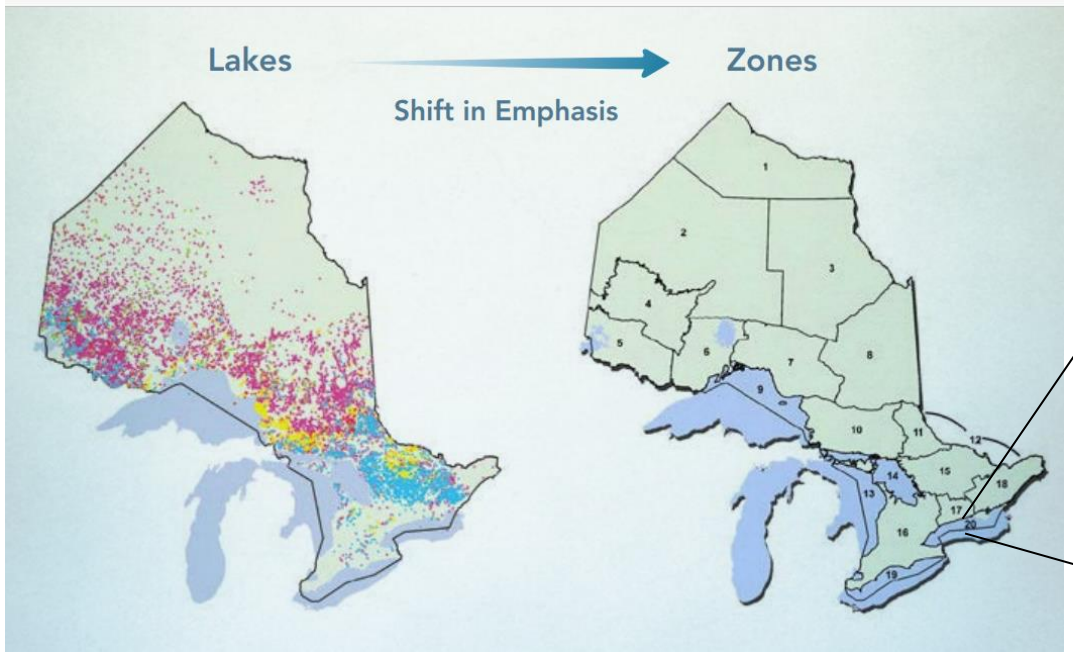
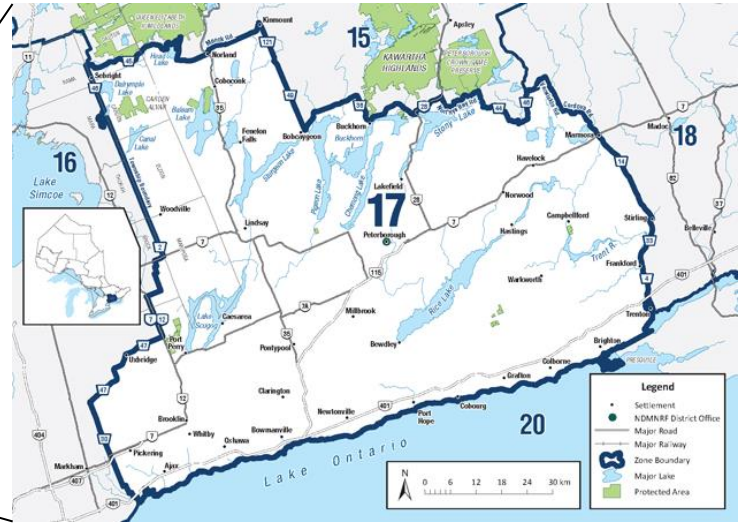
‘How is My Lake Doing Relative to Other Lakes in My Zone?’

Standardized methods allow inferences about:

- ‘how is my zone doing relative to other zones?’
- ‘how is my lake doing relative to other lakes in my zone?’



Fisheries Management Zone 17



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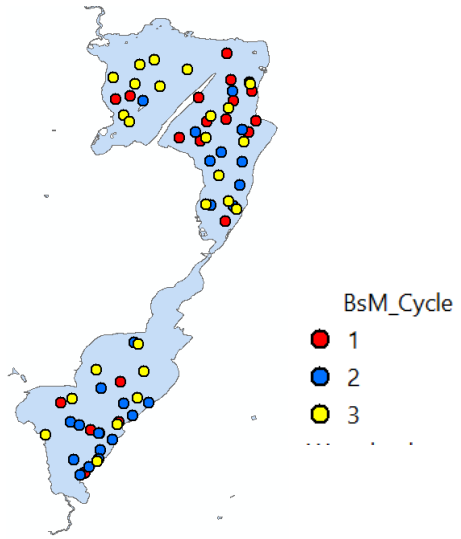
Lake Dalrymple BsM Results – Cycles 1-3

Netting Dates:

Cycle 1: June 16 – 20th, 2008

Cycle 2: Sept 16 – 20th, 2013

Cycle 3: Sept 10 -14th, 2018



Cycle	Depth_Strata (m)	Number of Large mesh (NA1) Gangs	Number of small mesh (ON2) gangs
1	1-3	10	6
1	3-6	8	8
1	6+	10	0
2	1-3	12	8
2	3-6	10	8
2	6+	6	4
3	1-3	12	8
3	3-6	10	8
3	6+	6	6

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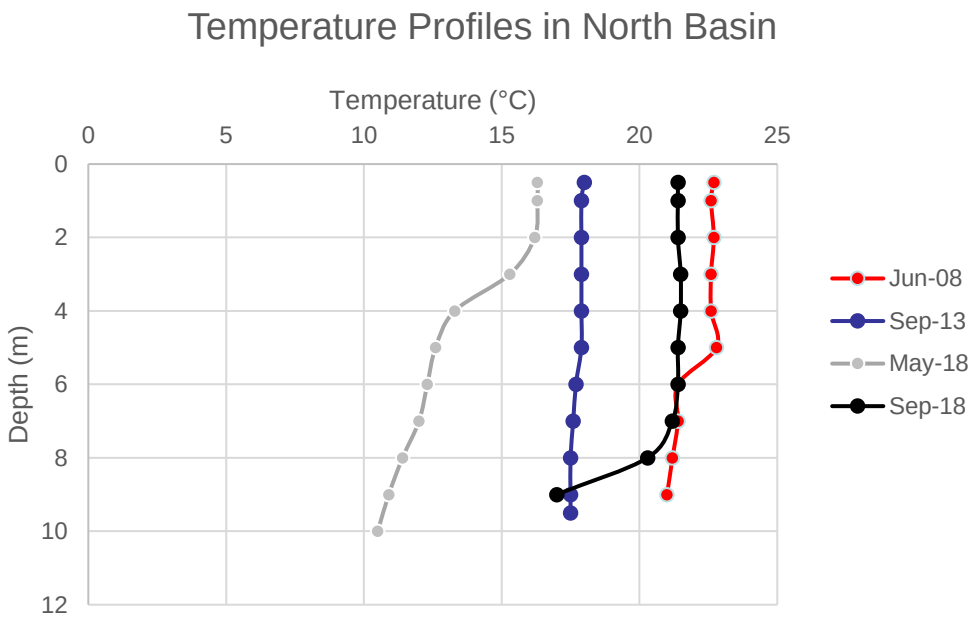
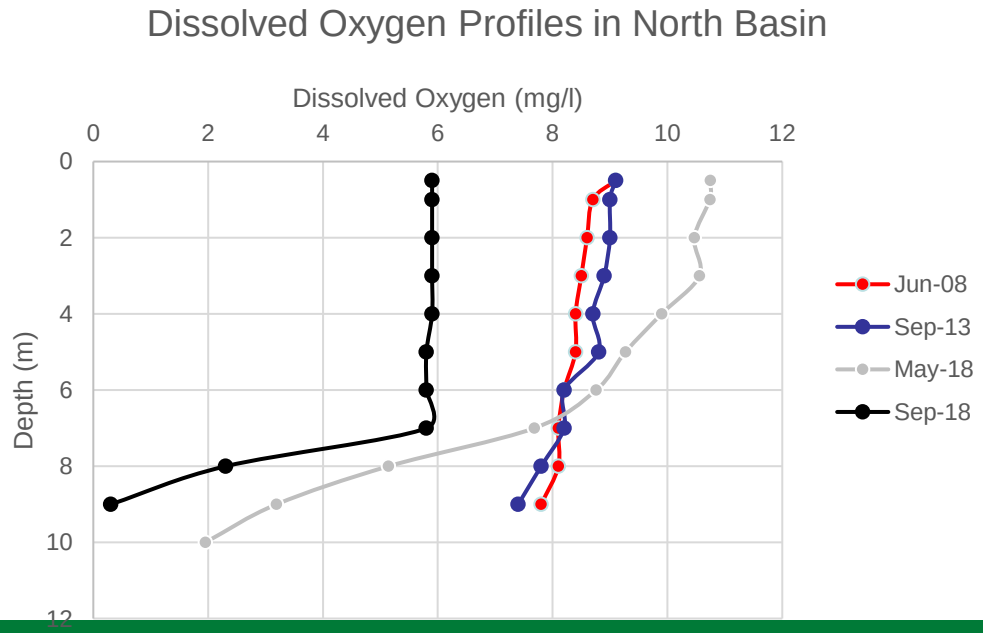
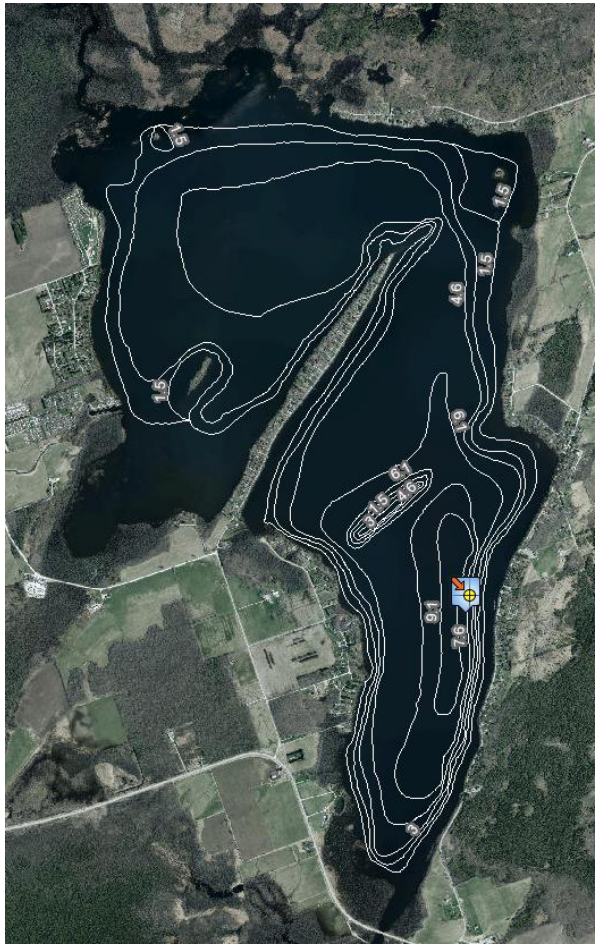
Habitat

- Minimal thermal stratification
- Dissolved oxygen concentration remain well within desirable limits for fish
- 2018 low oxygen in deep water







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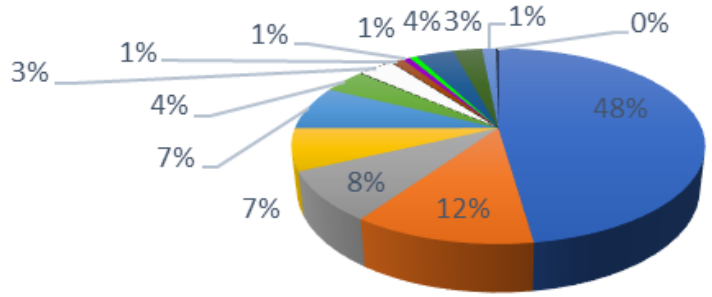
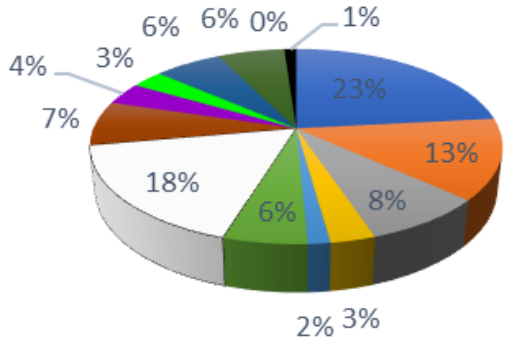
Fish Community

- 14 fish species detected cycle 1 and 2, 18 detected cycle 3
- Yellow perch consistently in high abundance
- Many species are variable across cycles
- Bluegill are first detected in 2018
- Large-mesh gillnets not effective at catching Muskellunge which is why they aren't detected but we know they are present

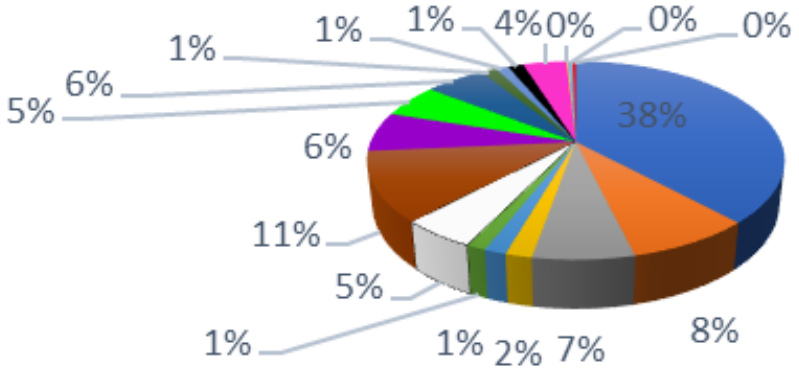
2008



2013



2018



Yellow Perch | Pumpkinseed | Northern Pike | Walleye
Black Crappie | Rock Bass | White Sucker | Brown Bullhead
Smallmouth Bass | Largemouth Bass | Spottail Shiner | Golden Shiner
Blackchin Shiner | Bluntnose Minnow | Bluegill | Common Carp
Common Shiner | Emerald Shiner

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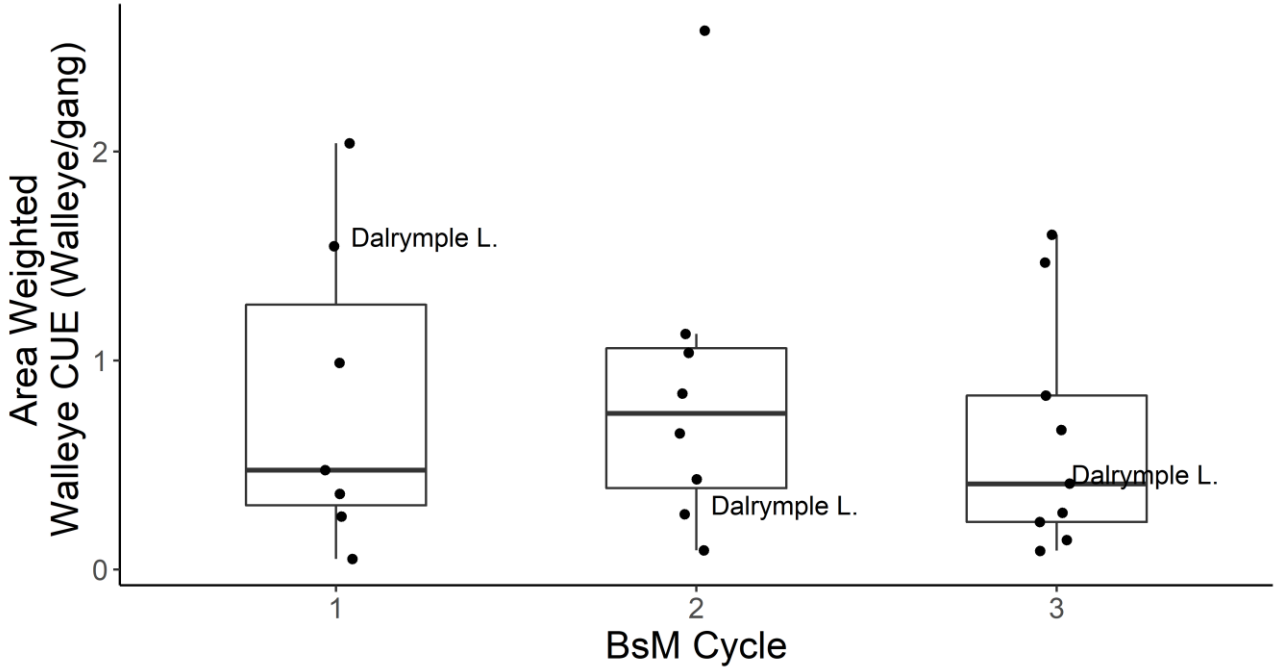
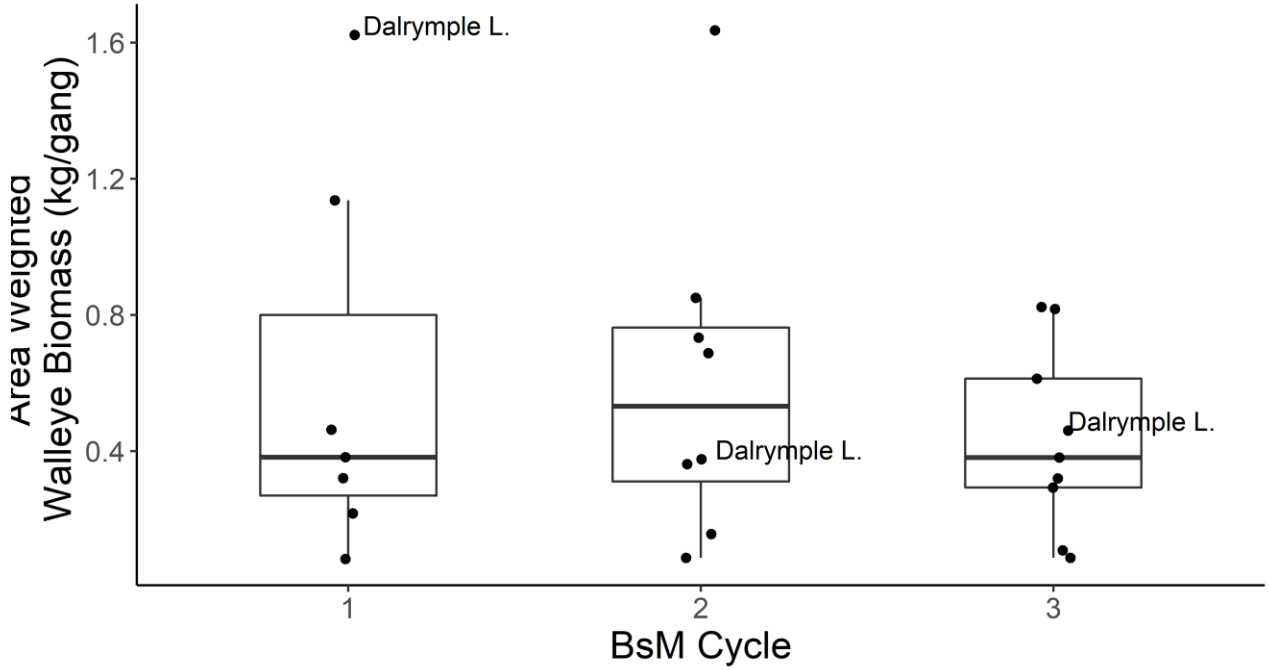
Walleye Relative Abundance and Biomass Trends

Relative Abundance



Relative Biomass



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Additional Walleye Indicators

Indicator	Cycle 1			Cycle 2			Cycle 3		
	Lake Dalrymple	Medium-Sized Walleye Lakes (AW Mean)	All Walleye Lakes (AW Mean)	Lake Dalrymple*	Medium-Sized Walleye Lakes (AW Mean)	All Walleye Lakes (AW Mean)	Lake Dalrymple*	Medium-Sized Walleye Lakes (AW Mean)*	All Walleye Lakes (AW Mean)*
All Walleye Indicators									
Age_max	13	11	12.22	12	13.17	12.91	18	12.67	11.89
Age_mean	6.39	5.07	4.29	6.88	5.75	6.13	7.73	6.85	5.64
Age_ncohort	7	5.33	6.83	8	8.67	8.44	9	5.00	8.15
Age_Range	10	8.83	10.64	10	11.67	10.68	17	9.67	10.03
Walleye Recruit Indicators (≥ 350 mm total length)									
Recruit_Age_Min (Estimated age when total length = 350 mm)	1.42	2.35	2.91	0.82	2.31	2.63	0.30	0.53	2.00
Recruit_Age_mean (Mean age of walleye ≥ 350 mm)	6.88	6.89	6.86	7.57	8.49	7.65	8.40	8.80	6.64
Recruit_Total length_mean (mm)	471	468	445	523	468	486	495	490	471
Recruit_h (pre-recruit growth rate mm/yr)	246.19	160	123	428.34	124	126	N/A	N/A	140

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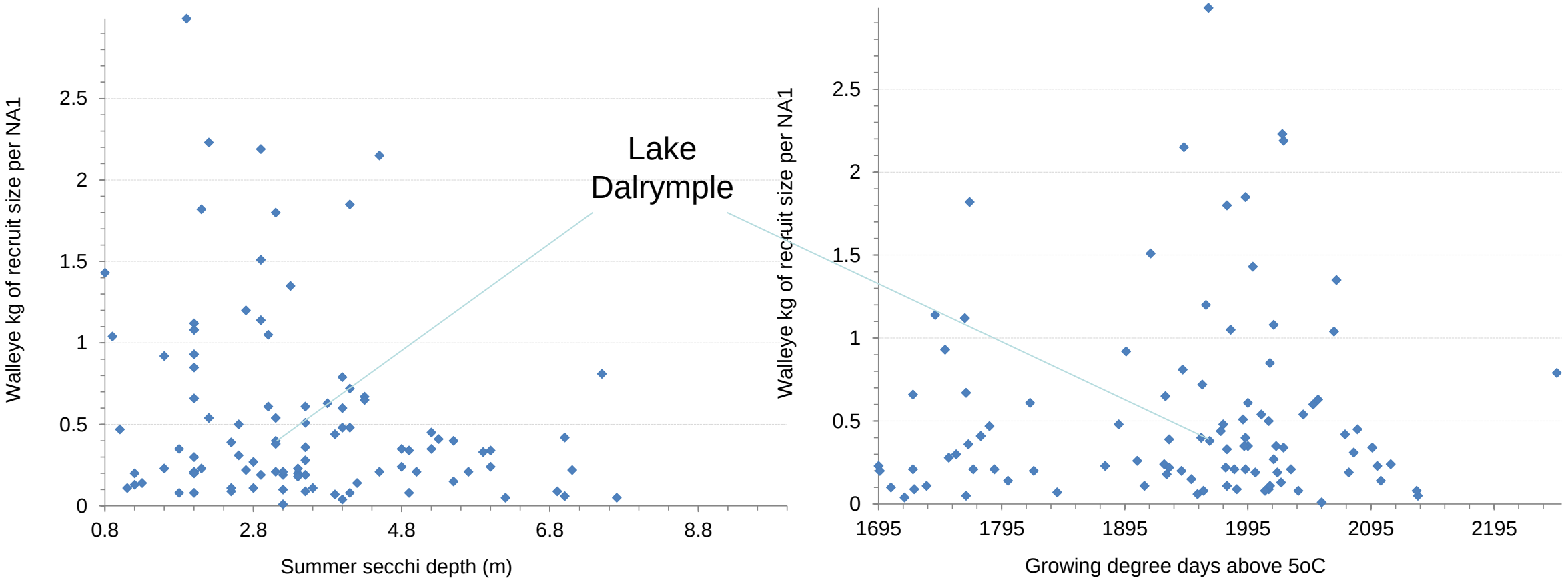
Walleye Productivity Linked to Water Clarity and Climate



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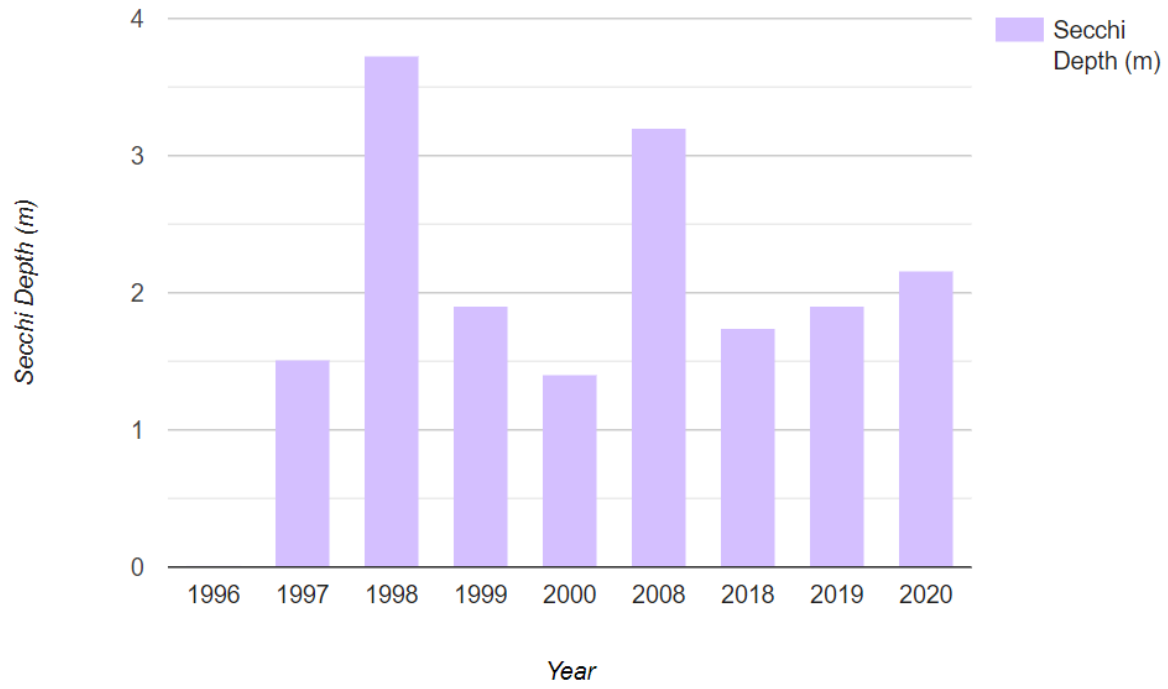
Secchi Trend

Water Transparency (Secchi Depth in meters)



Data from Lake Partner Program, MECP

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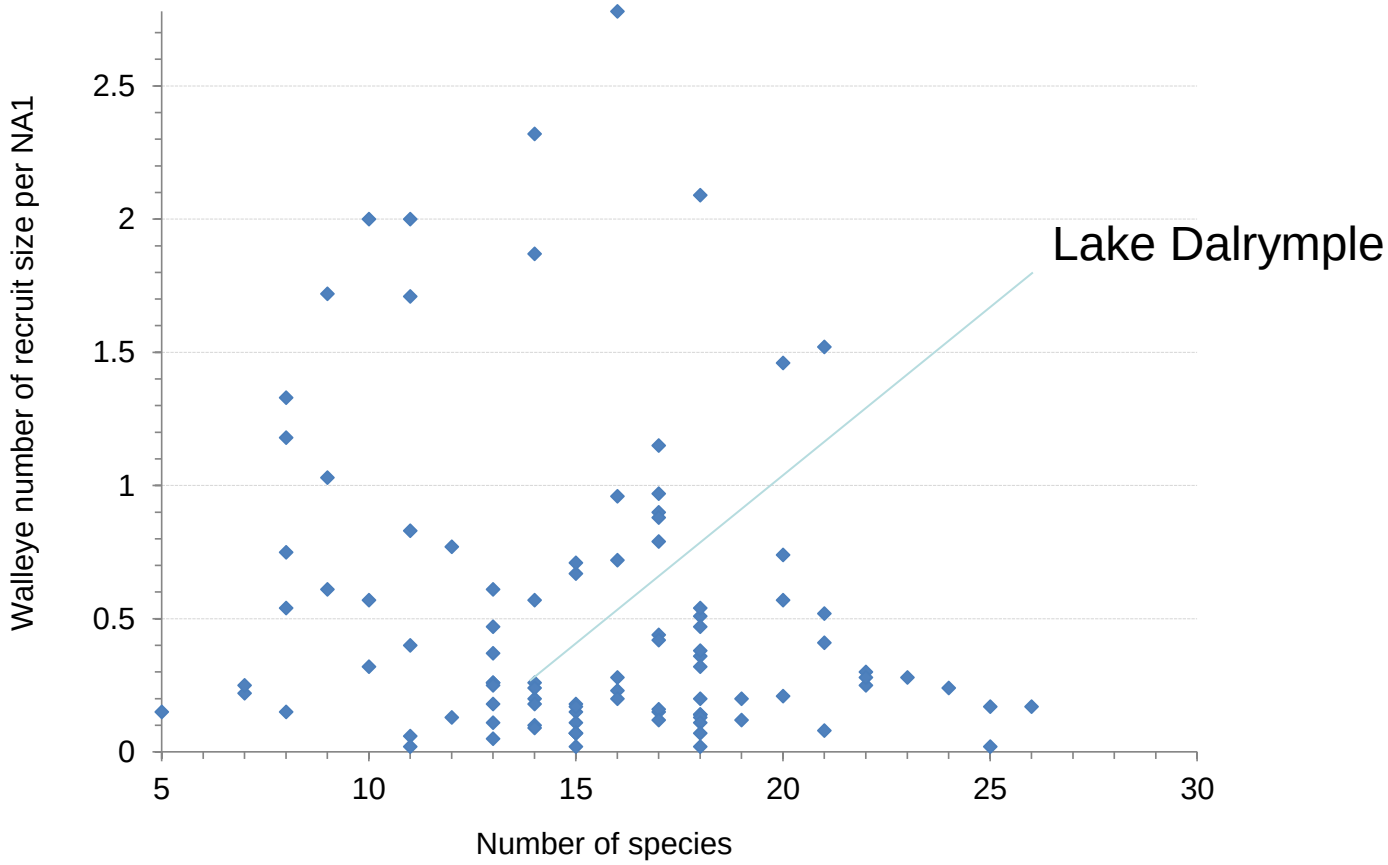
Walleye Productivity Linked to Fish Community Diversity



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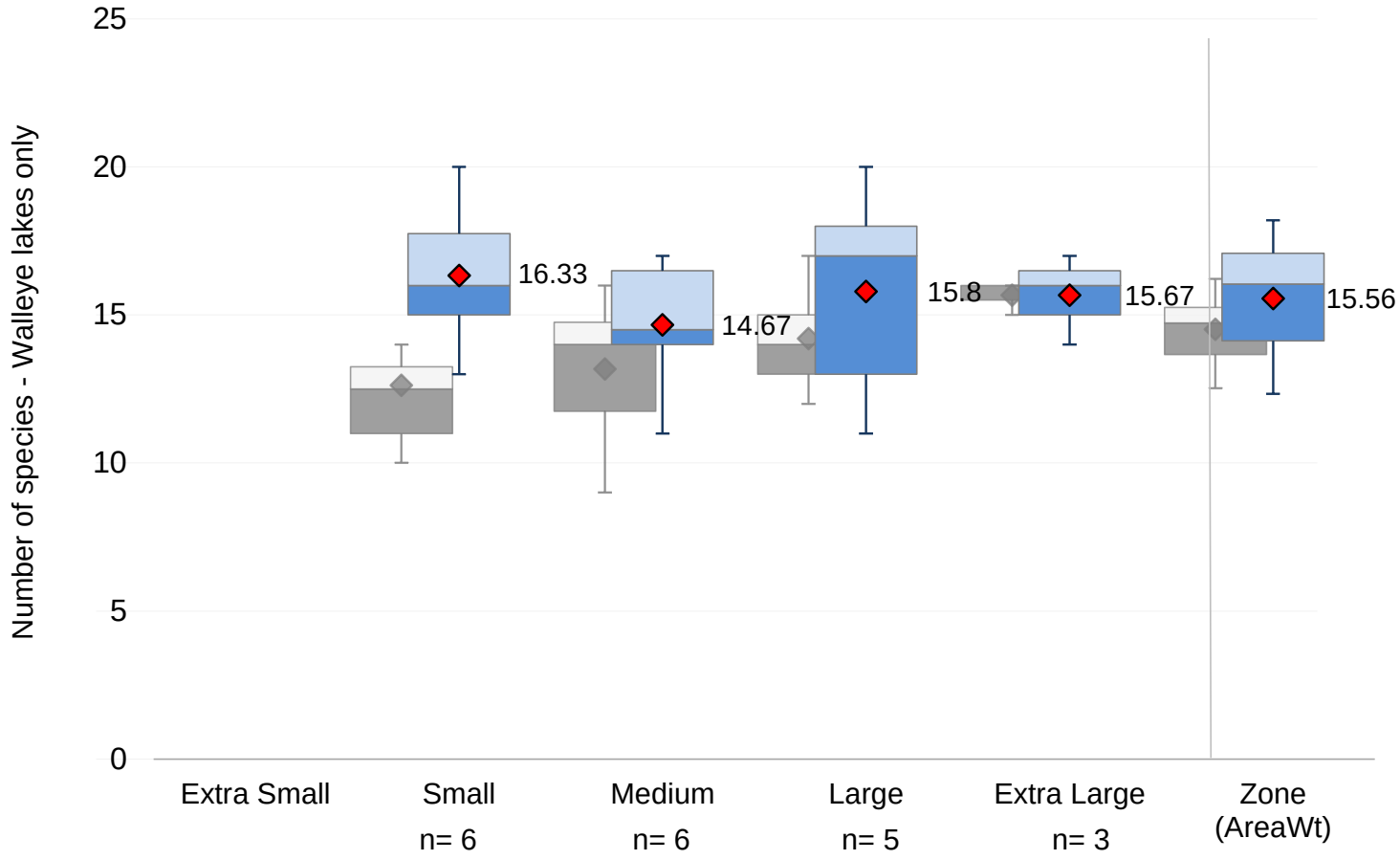
Trend in Fish Community Diversity in FMZ 17



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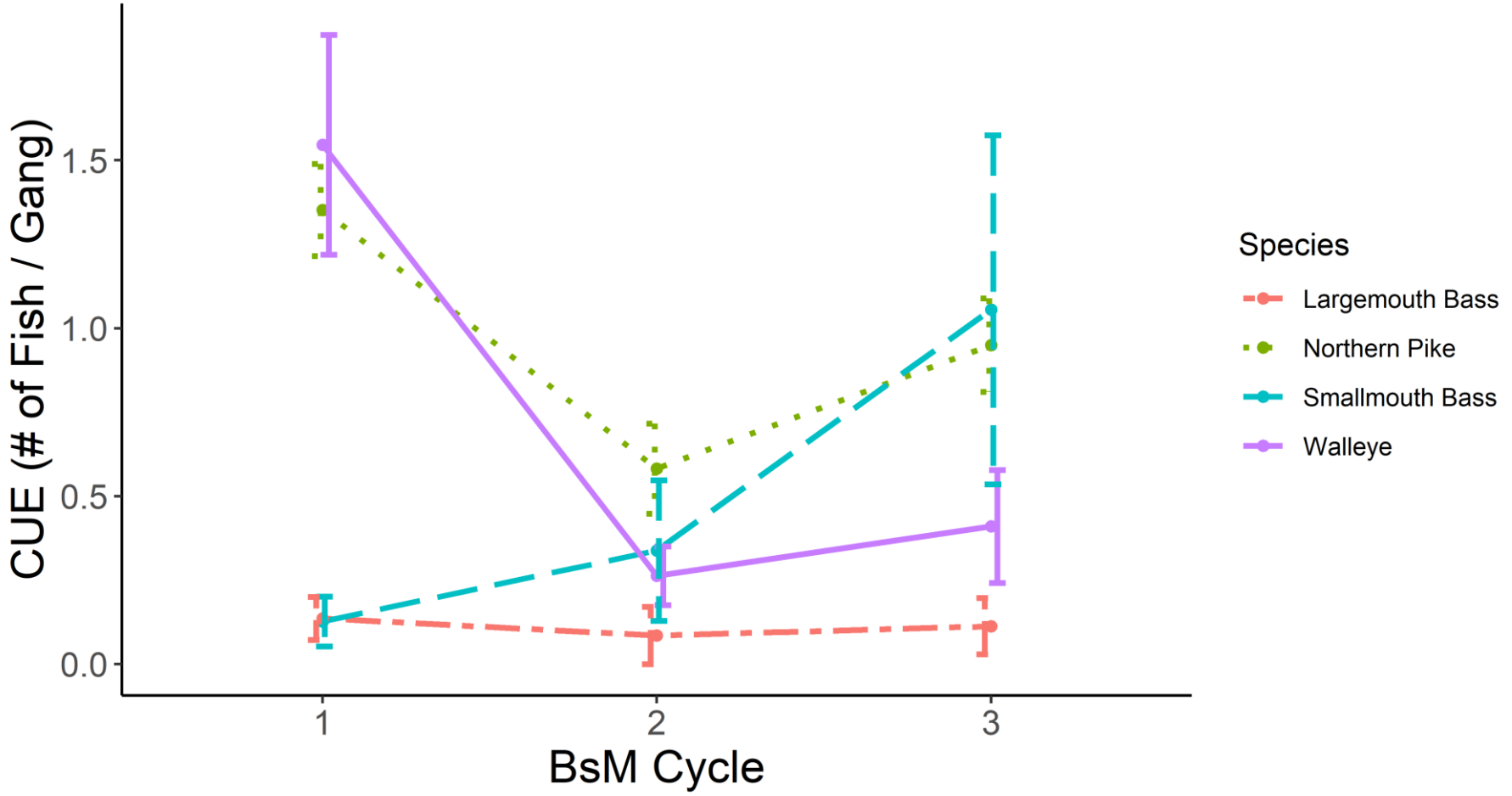
Other Recreational Species Trends in Lake Dalrymple



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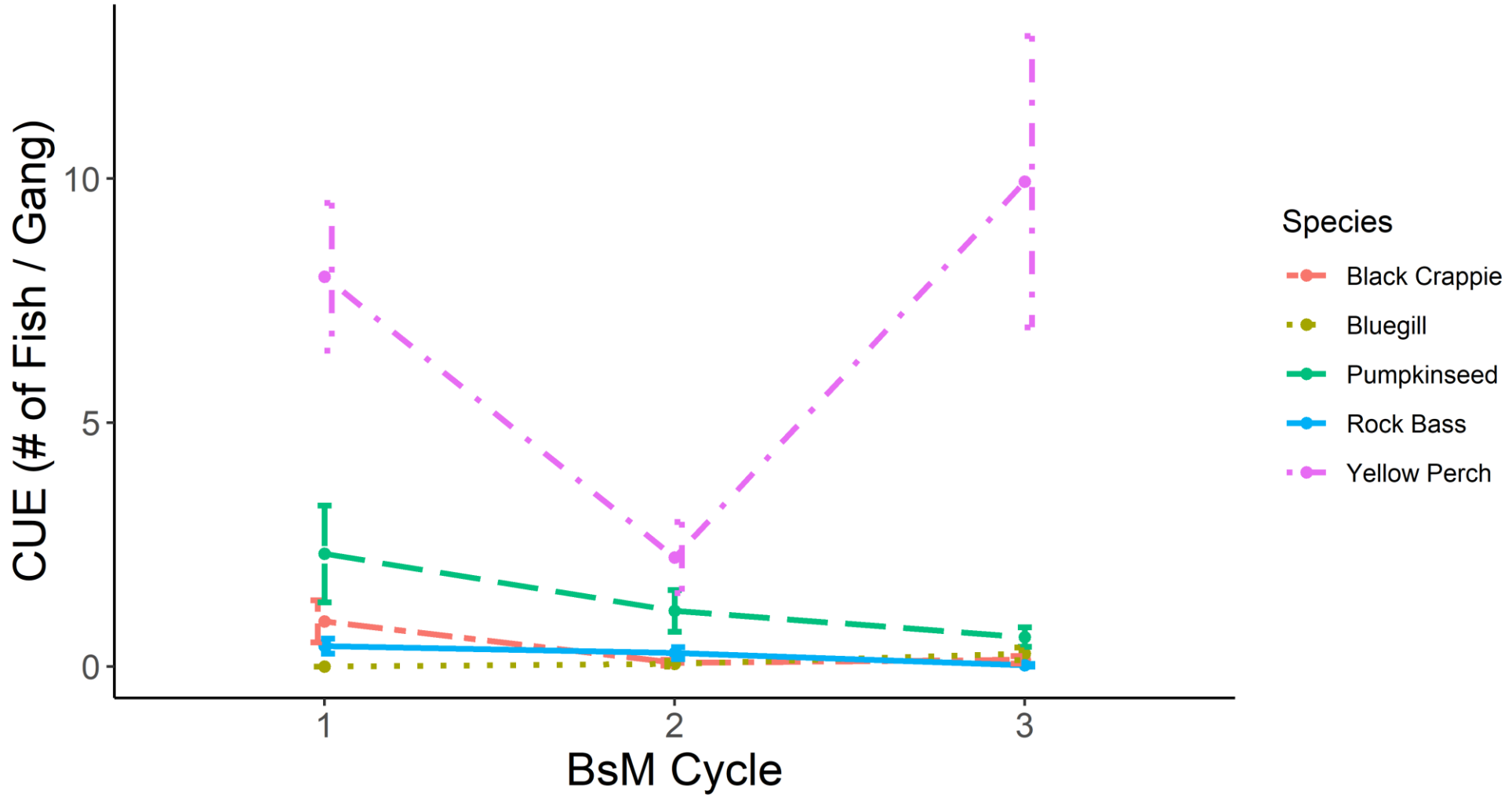
Other Recreational Species Trends in Lake Dalrymple



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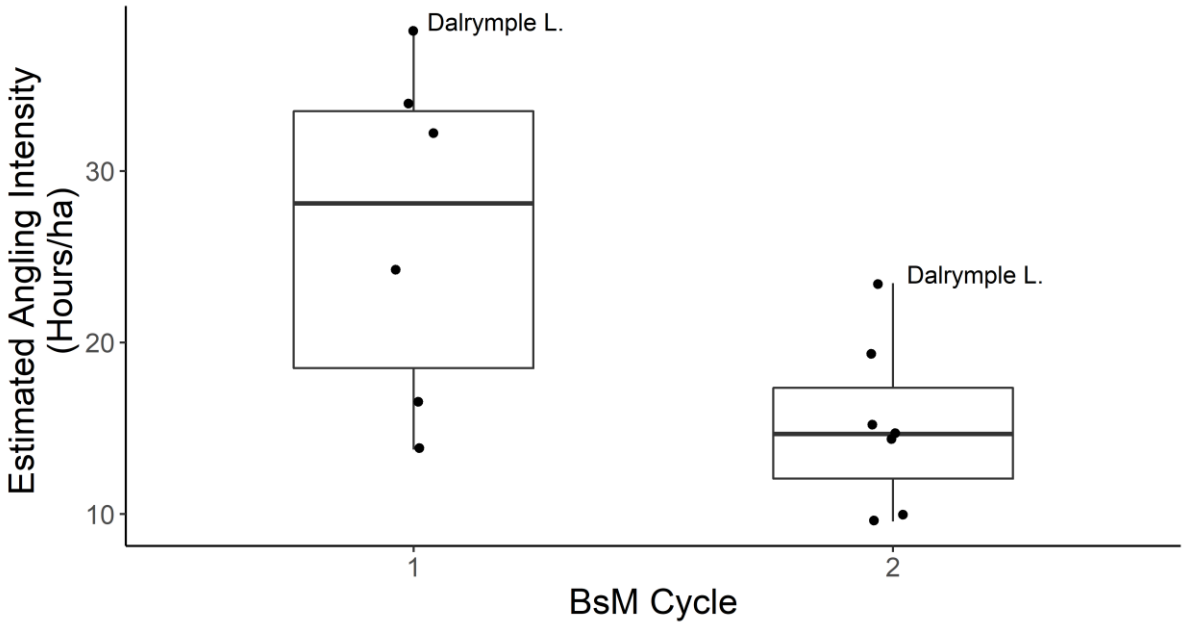
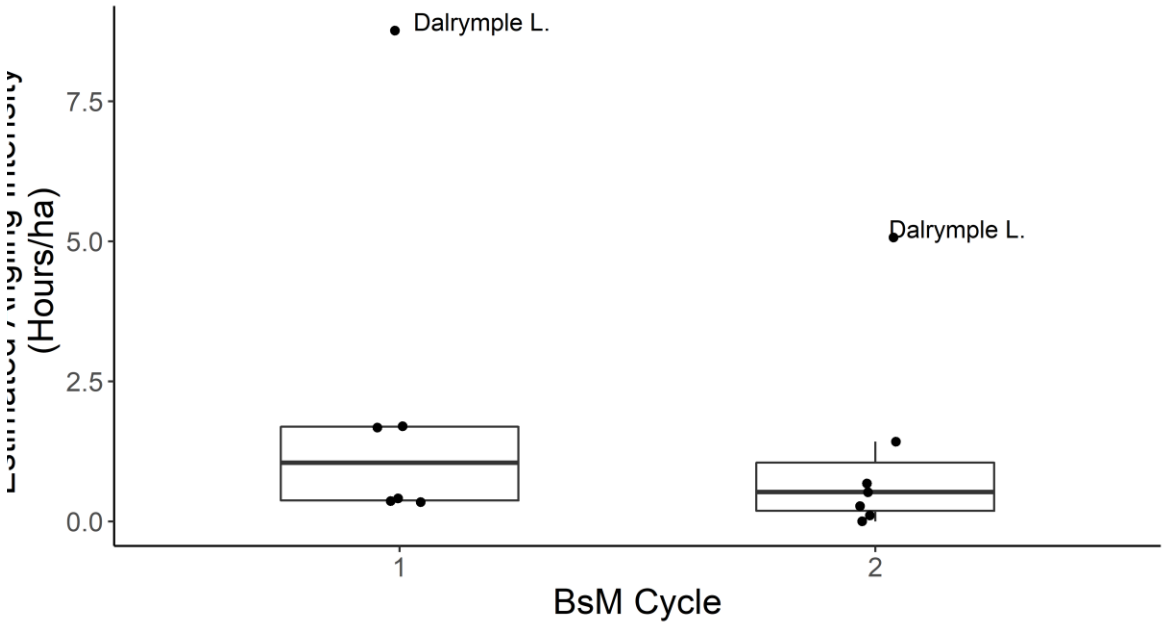
Estimated Fishing Activity

Open water



Winter



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Management Considerations

Lake Dalrymple has a diverse recreational fishery

Changing aquatic community and climate will act as constraints on Walleye

Should we be considering enhanced management of Walleye in Lake Dalrymple such as rehabilitative stocking or more restrictive regulations?

Should we be promoting a shift in angling effort and harvest to alternative fish species?

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Stewardship Actions

How else can we support a sustainable fishery in Lake Dalrymple?

- FMZ 17 Fisheries Management Plan (2009) actions
  - Raise awareness about negative impacts of fish species introductions
  - Consider alternate species for harvest such as Bluegill and Yellow Perch
  - Promote safe and quick handling of fish to be released to minimize post-release mortality
  - Identify spawning habitat and share information with MNDMNRF Bancroft District
- Continue working with Kawartha Conservation on water quality and shoreline stewardship
- Work with OFAH Invasive Species Awareness Program to maintain public education and awareness on avoiding further introductions of invasive species

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Summary

Lake Dalrymple's fish community diversity is characteristic of FMZ 17.

Lake Dalrymple Walleye relative abundance does not follow the trends of FMZ 17 across cycles 1-3. Decline is mitigated by strong age structure foundation and modest improvements shown in cycle 3

Additional indicators suggest Walleye have potential for improvement in the future and FMZ 17 has shown improvements from cycles 1-3.

Ceiling for walleye abundance likely lower with zebra mussels and Bluegill established

Overall angling activity in Lake Dalrymple has been consistently high across cycles and seasons.

Continue to work with Kawartha Conservation, MNDMNRF and OFAH on stewardship actions that support a sustainable fishery

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Questions?

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