Contribution to Bates Effect Size MS: Marina fish community use 2019 vs 2020

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Acoustic Telemetry data:

N= 577,242 detections from 95 individuals of 10 fish species at 6 acoustic receivers located in the Harbour West Marina in Hamilton Harbour, Lake Ontario.

Boating was open May 1 in 2019 and delayed to May 16 2020. Additionally, the Harbour master stated the marina became exceptionally busy in early June 2020 due to a rebound effect of COVID-19

REI = Receiver Efficiency Index. An index of relative space use and biodiversity

REI was compared between discrete time periods in 2019 and 2020:

- late April

- early May

- late May

- early June

A screenshot of a cell phone

Description automatically generated

Data were fit with a linear mixed effects model:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model: log10(REI+1) ~ period, random = ~ Julian Day | Station.Name | | | |  |  |
| Comparison | Value | Std.Error | DF | t-value | p-value |
| Late April closed 2019, closed 2020 | -0.0599302 | 0.05224599 | 731 | -1.147078 | 0.2517 |
| Early May open 2019, closed 2020 | -0.0882785 | 0.05395507 | 731 | -1.636148 | 0.1022 |
| Late May open 2019, open 2020 | -0.1308418 | 0.05224599 | 731 | -2.504342 | 0.0125 |
| Early June open 2019, open 2020 | -0.2850311 | 0.05395507 | 731 | -5.282749 | <0.001 |

No difference in marina use when boating was closed in 2020 and open in 2019 (early May). Potential rebound effect in late May/early June, with significantly lower use in 2020