Individual Behavioural Variation and Trapping Success in Sea Lamprey

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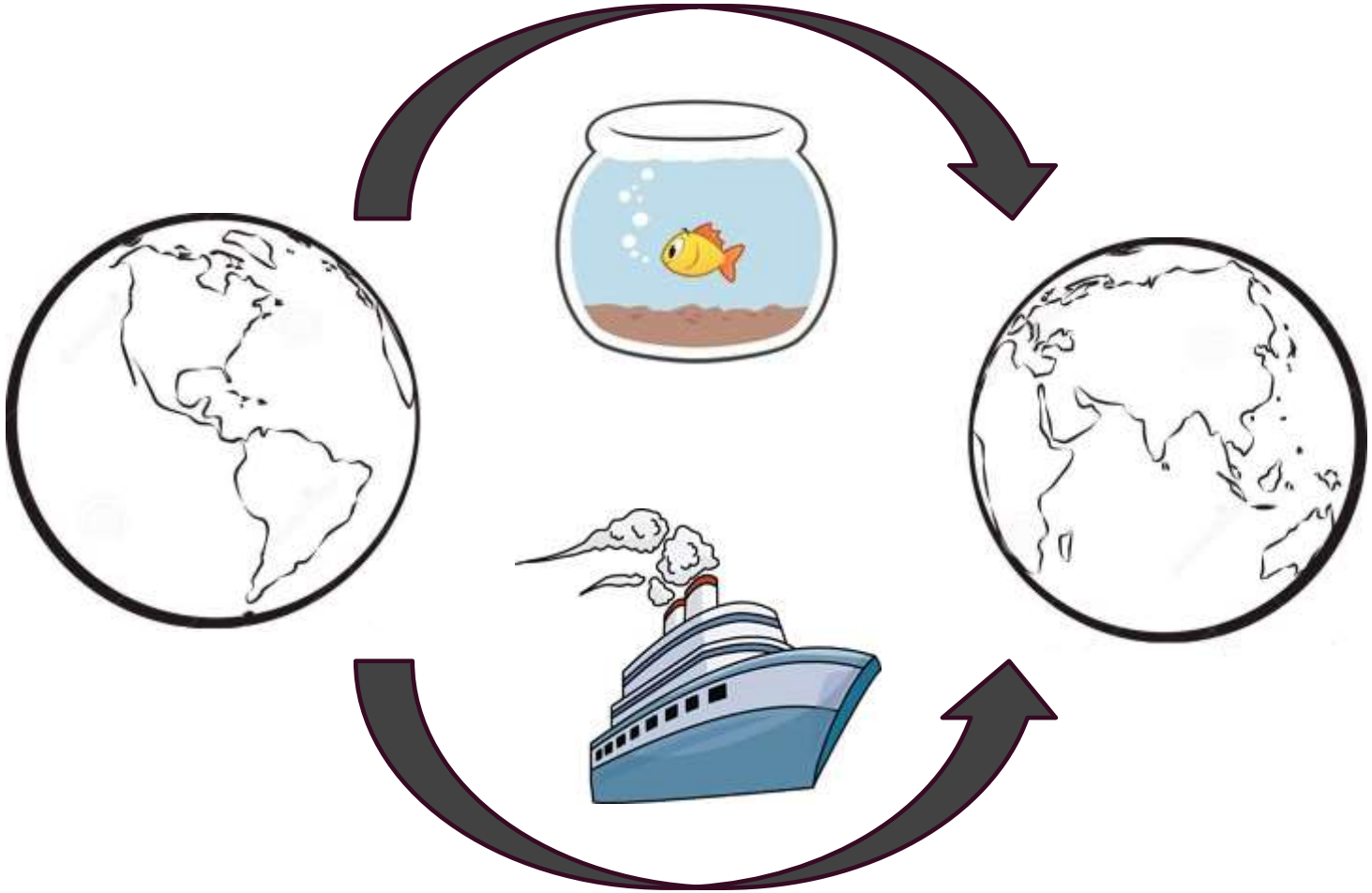
Invasive Species Management

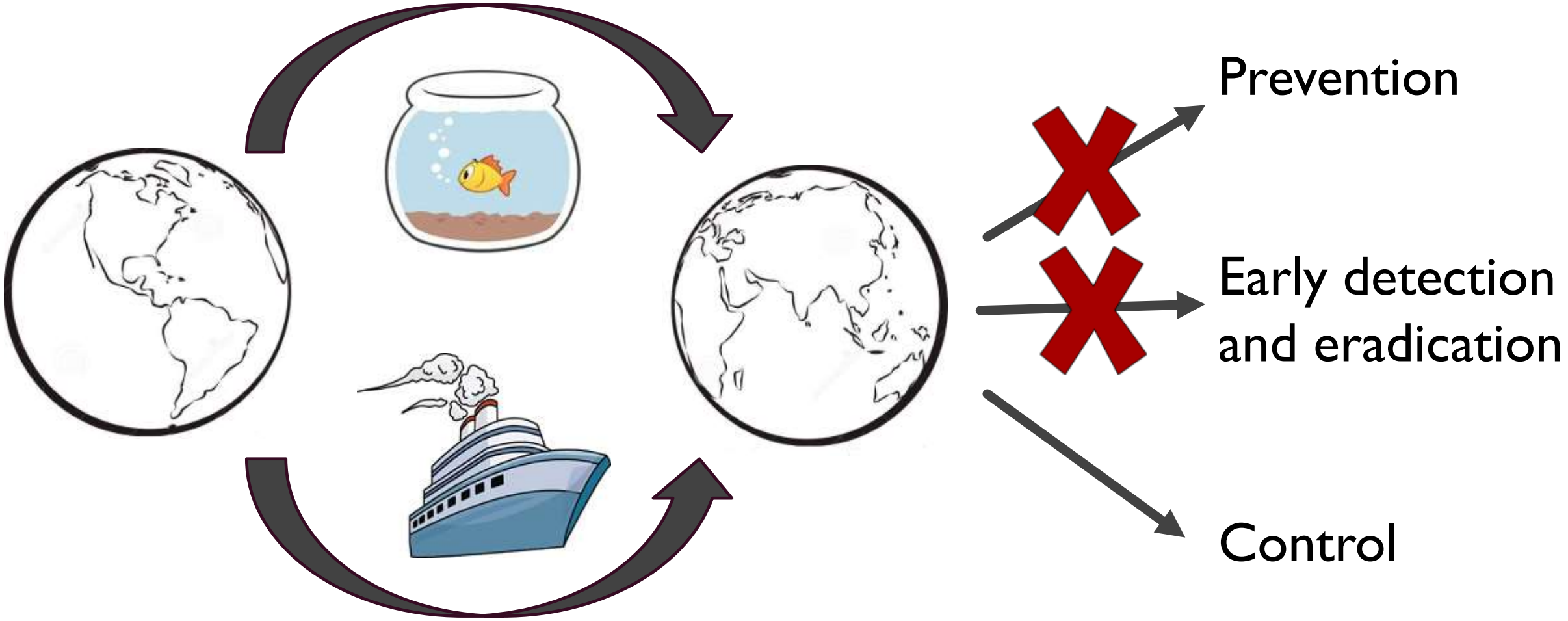


Prevention

Early detection and eradication

Control

Invasive Species Management



Variation in Behaviour and Trapping

Sea Lamprey

Ammocete

Juvenile

Adult

Sea Lamprey Management

Objectives

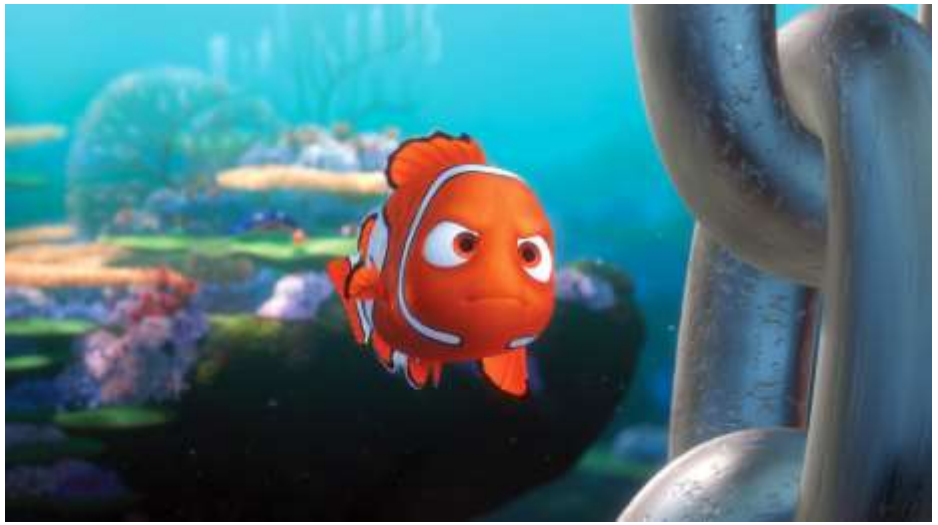
To test whether adult migrating Sea Lamprey:

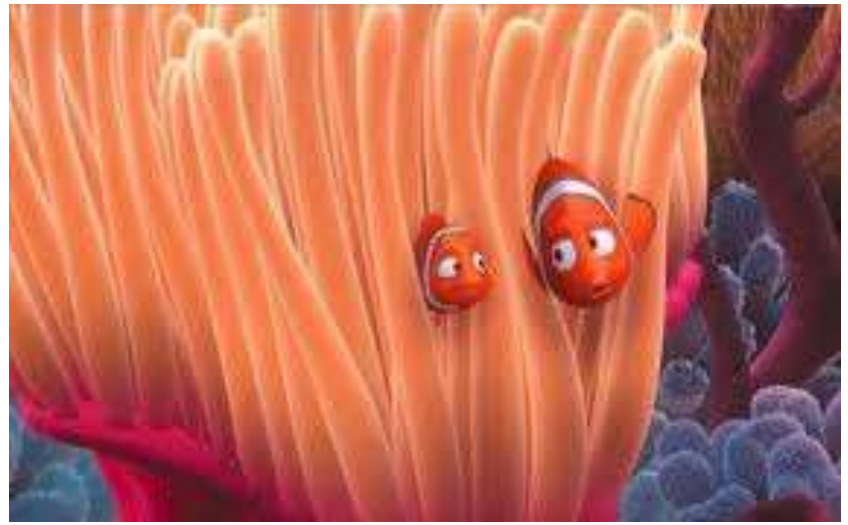
1. differ consistently in their behaviour

2. if these behavioural differences are correlated with collection method (trapped and at large)

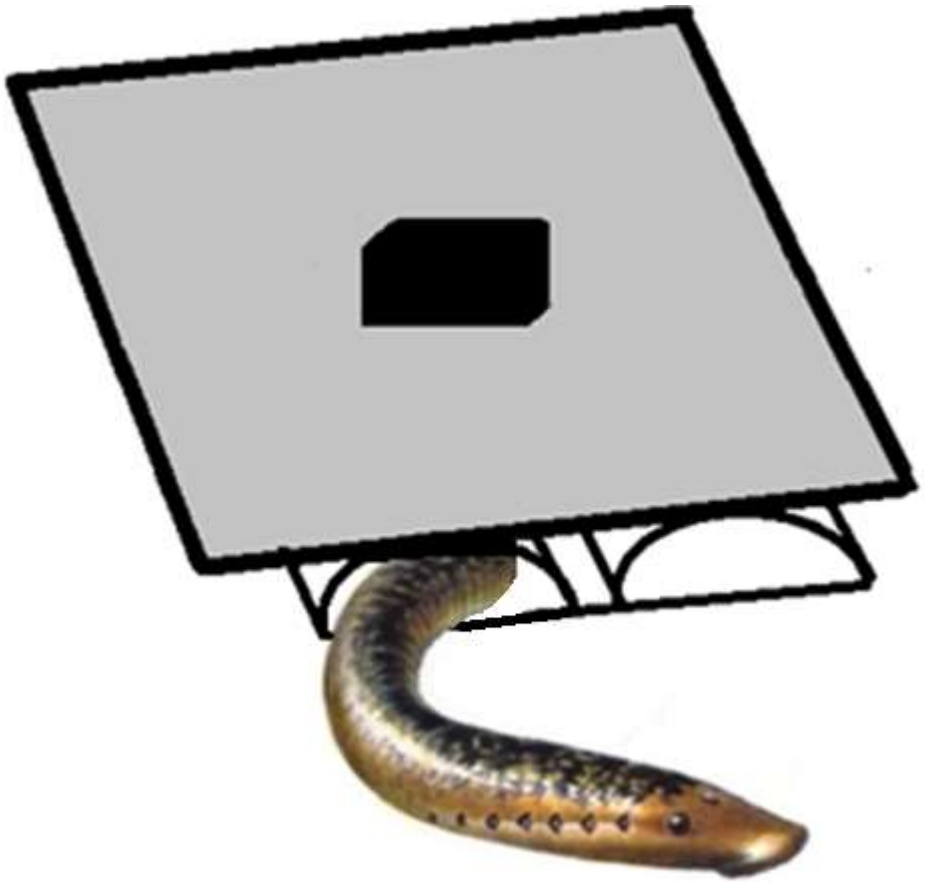
Sea Lamprey Collection

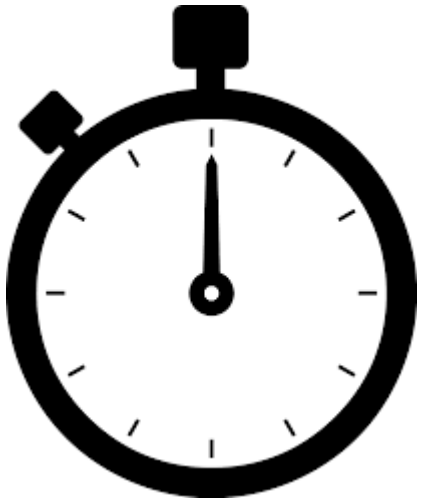
Exploration - Avoidance





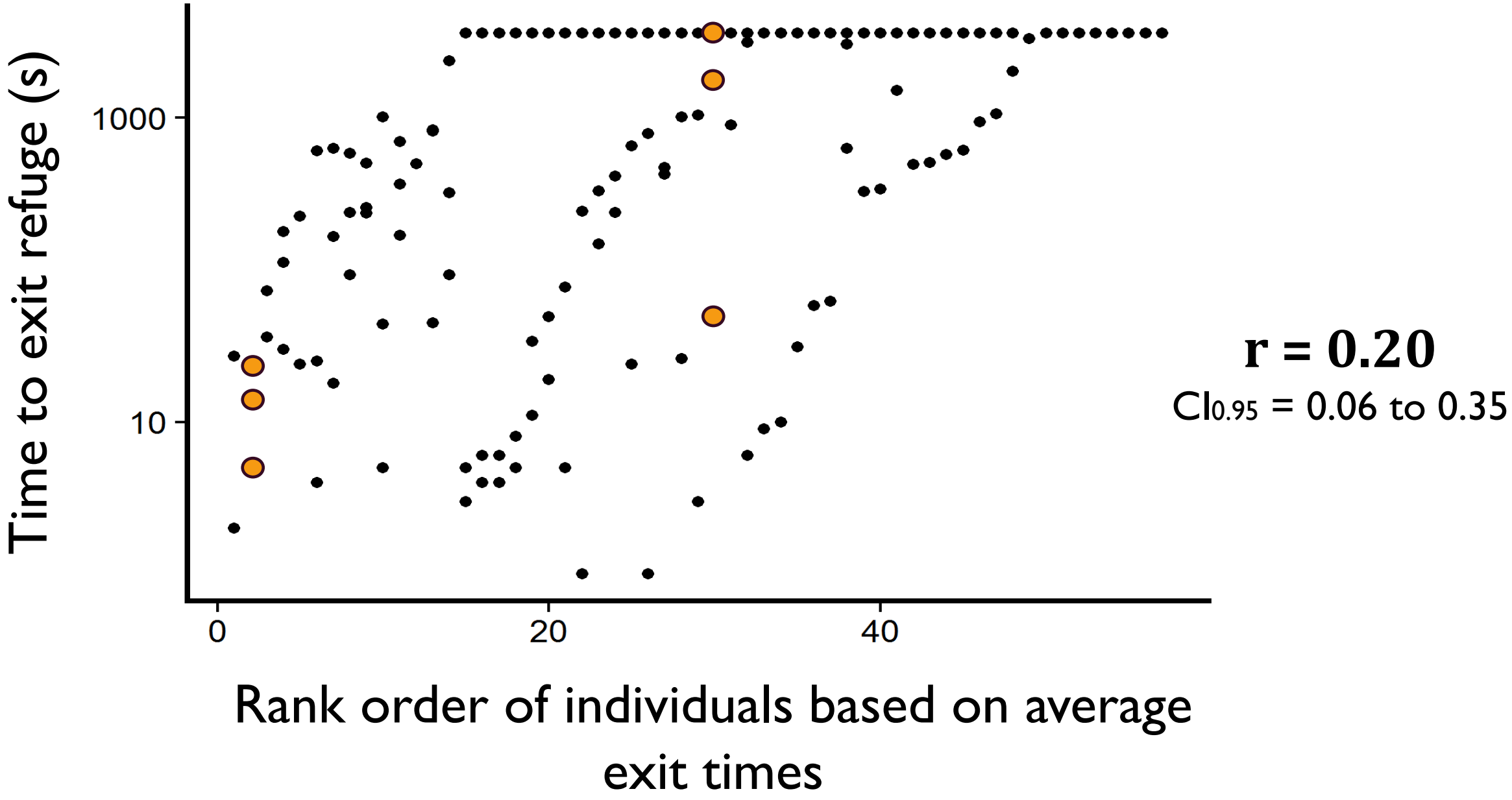
Time to Emerge

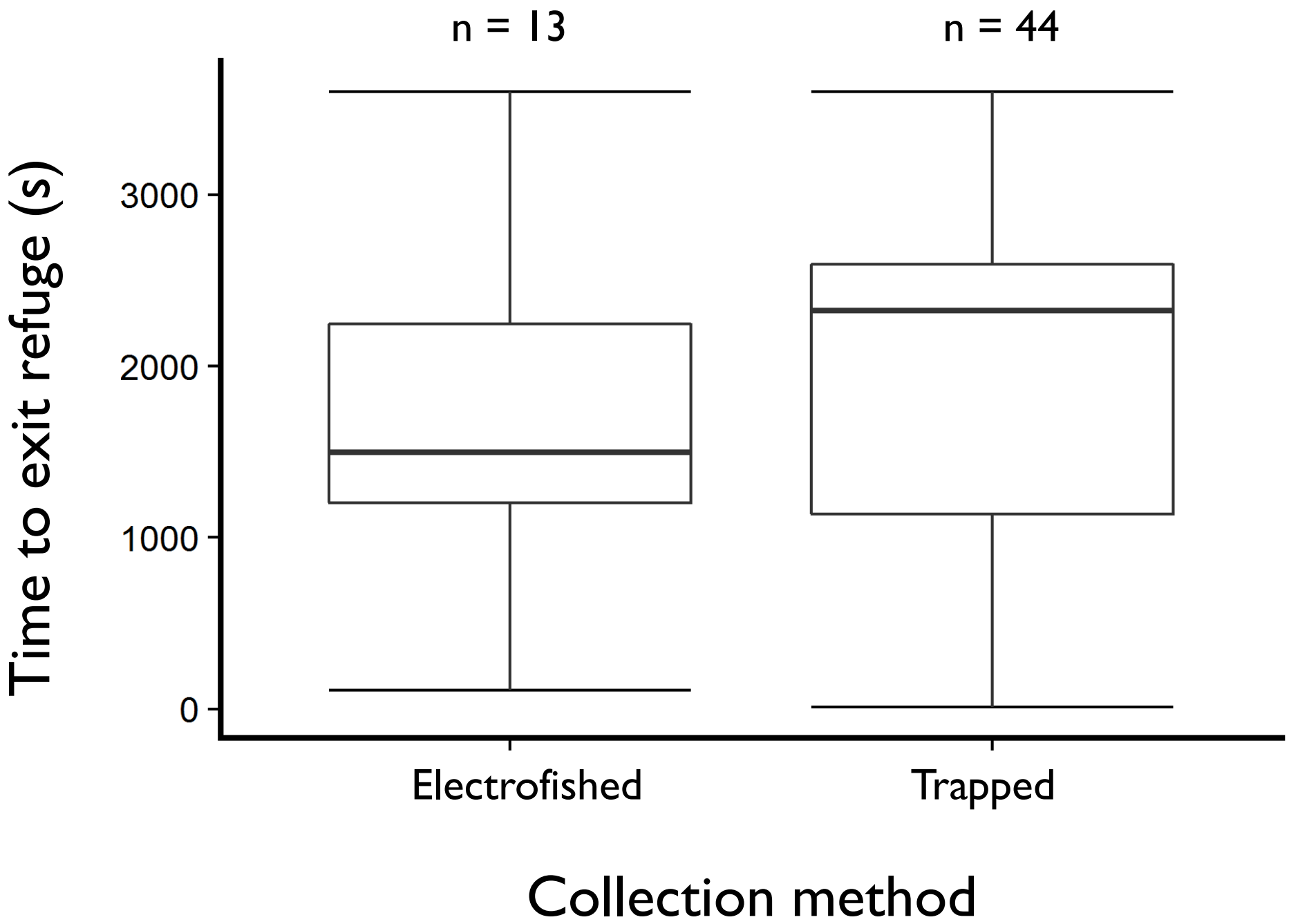




X 3

> 3 days apart


Time to exit refuge (s)
1000
10
0
20
40
Rank order of individuals based on average exit times
r = 0.20
CI0.95 = 0.06 to 0.35


n = 13
n = 44
Time to exit refuge (s)
3000
2000
1000
0
Electrofished
Trapped
Collection method

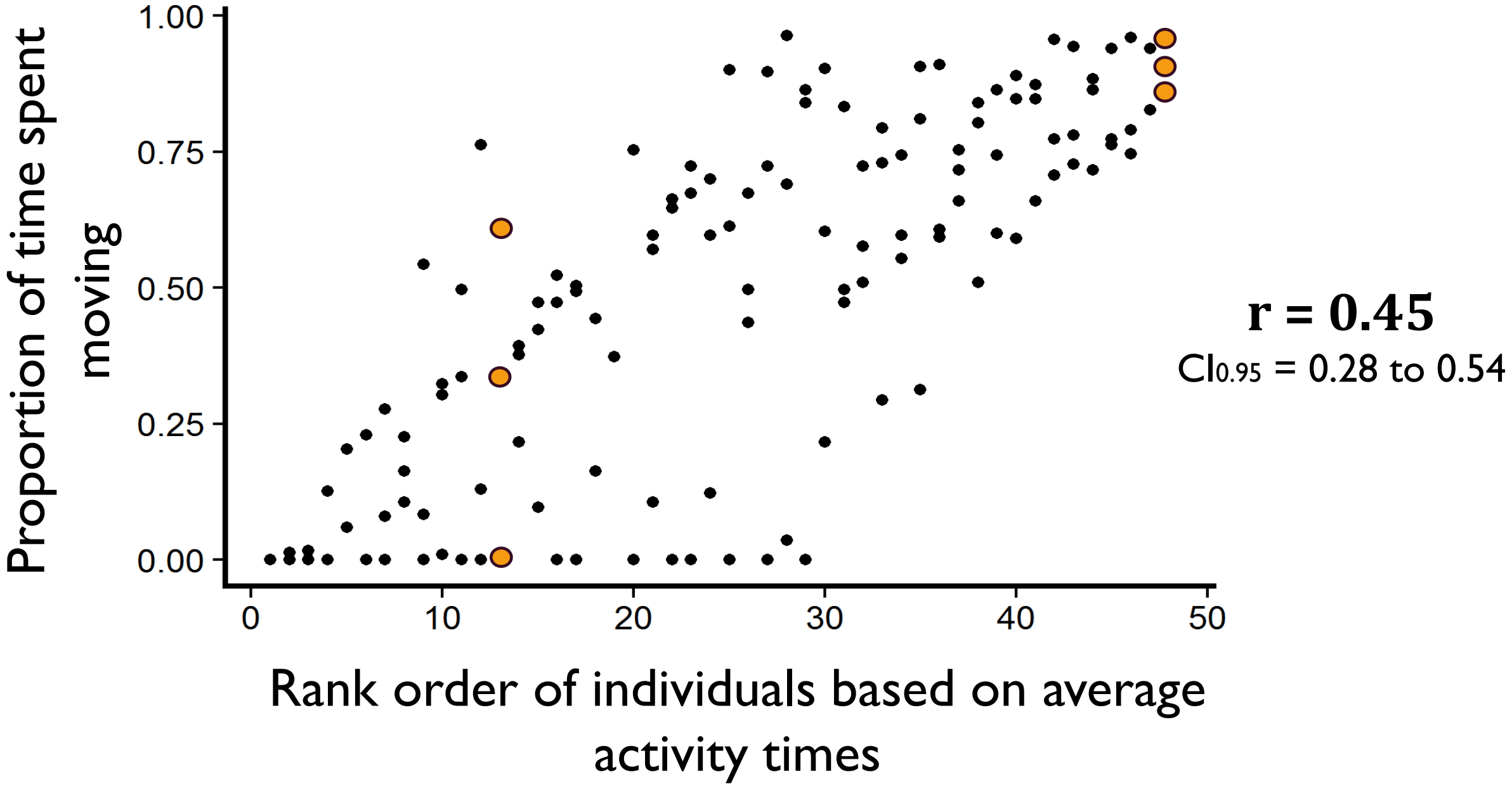
Inactive - Active

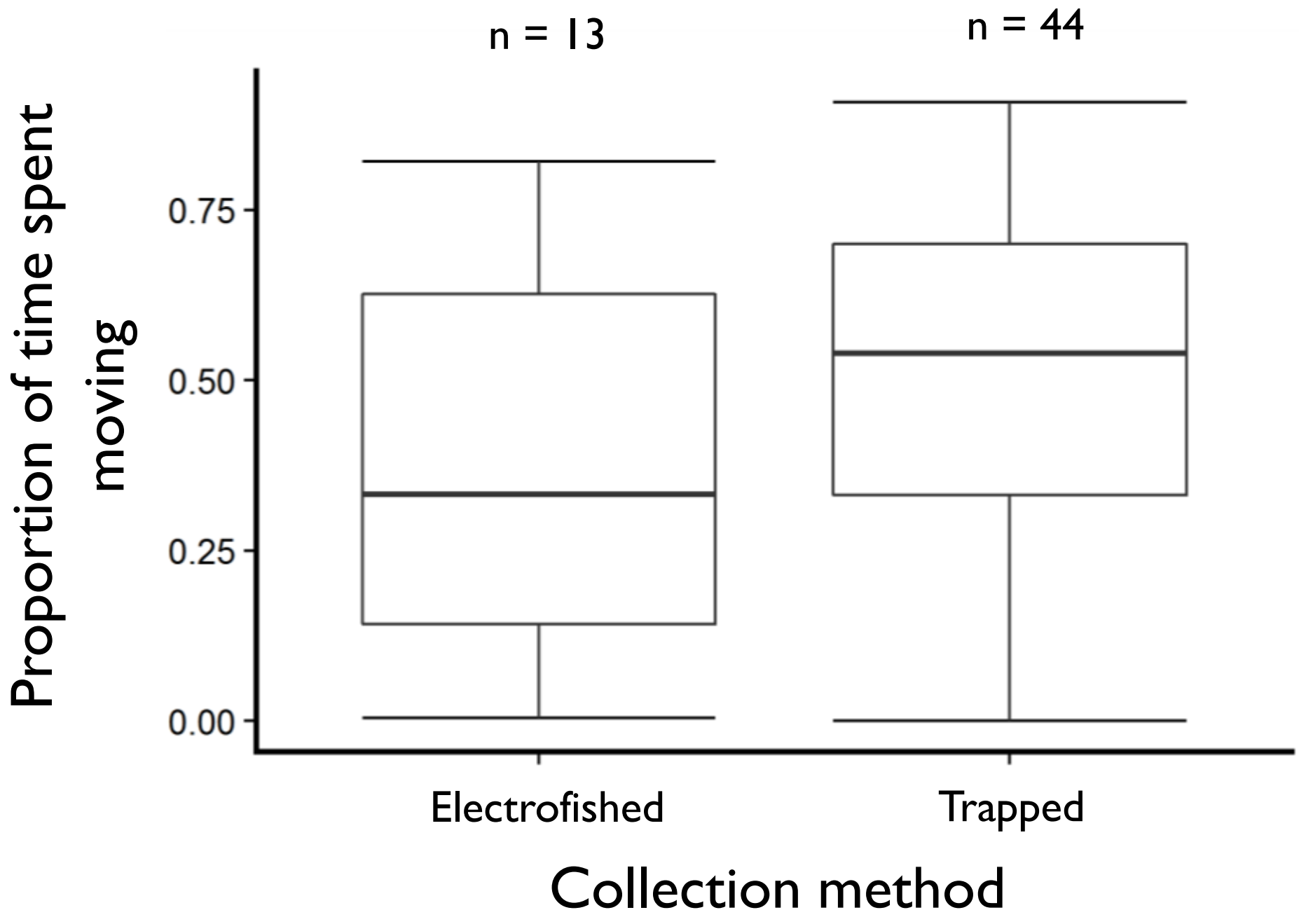
Inactive

Active

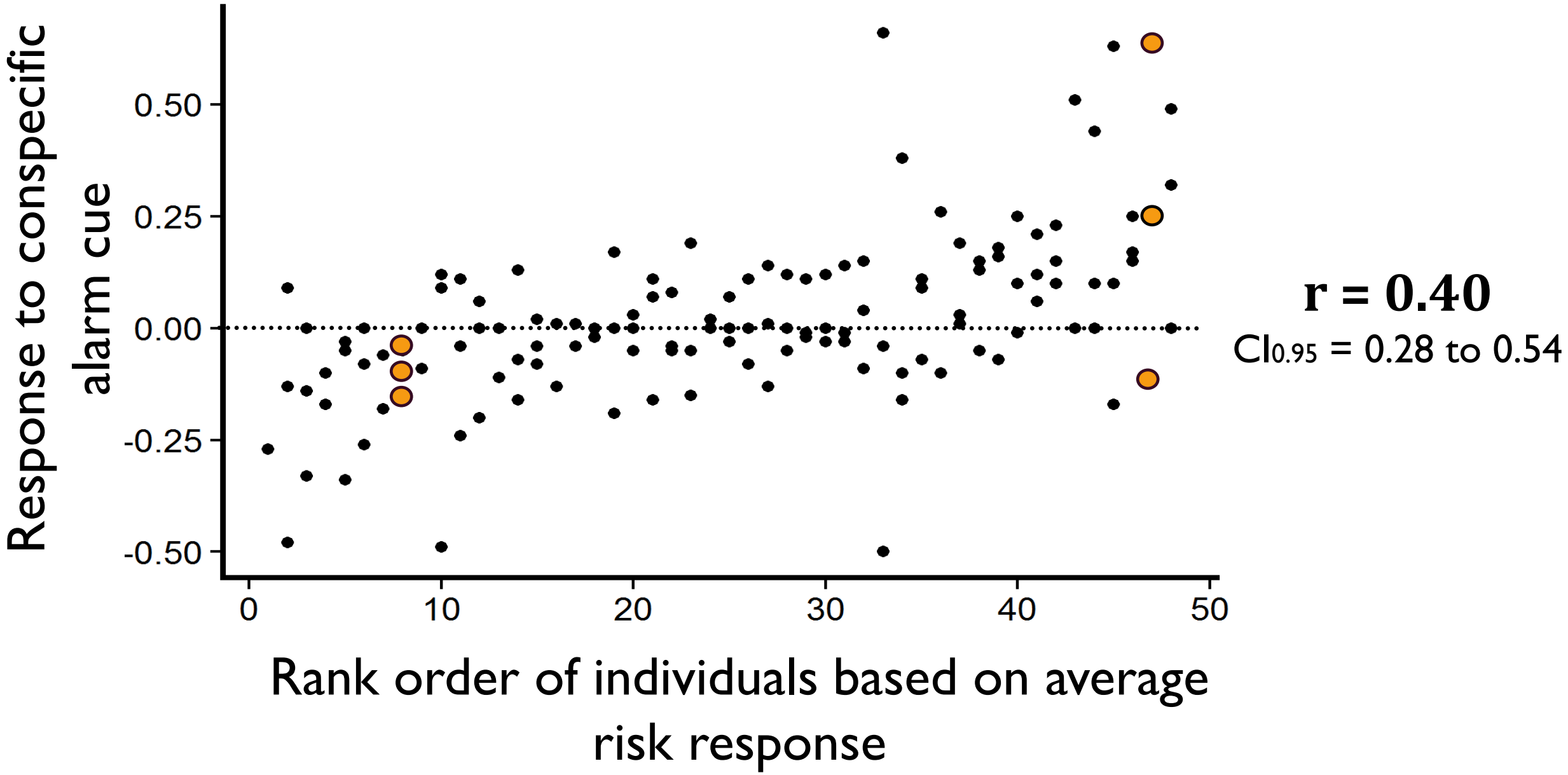
X 3

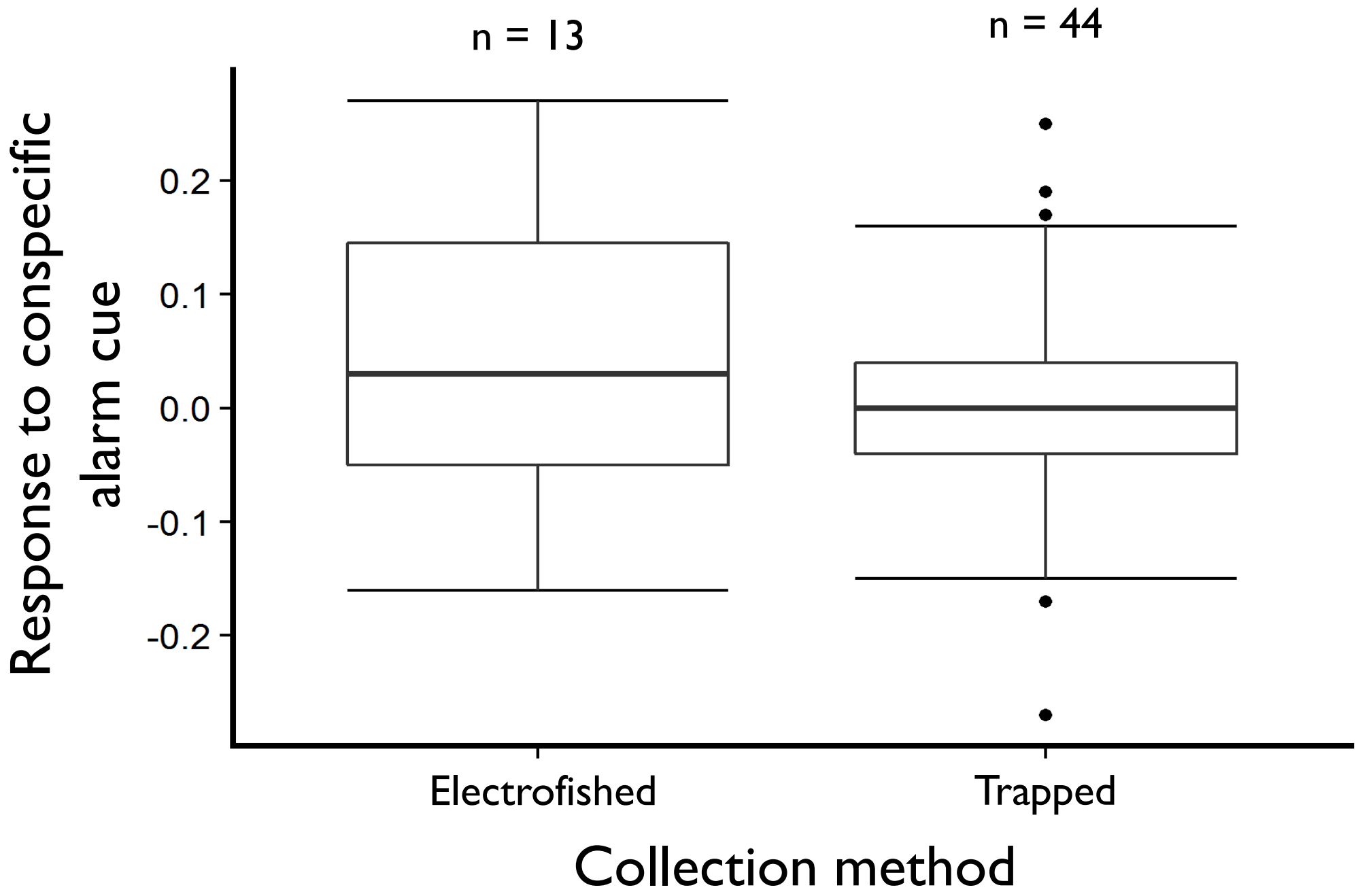
> 3 days apart


Proportion of time spent moving
1.00
0.75
0.50
0.25
0.00
0
10
20
30
40
50
Rank order of individuals based on average activity times
r = 0.45
CI0.95 = 0.28 to 0.54


n = 13
n = 44
Proportion of time spent moving
0.75
0.50
0.25
0.00
Electrofished
Trapped
Collection method

Shy - Bold

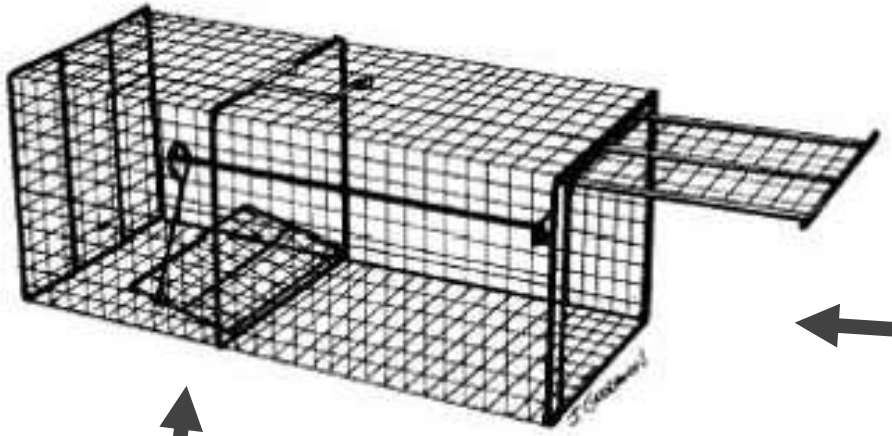

Response to conspecific alarm cue
0.50
0.25
0.00
-0.25
-0.50
0
10
20
30
40
50
Rank order of individuals based on average risk response
r = 0.40
CI0.95 = 0.28 to 0.54

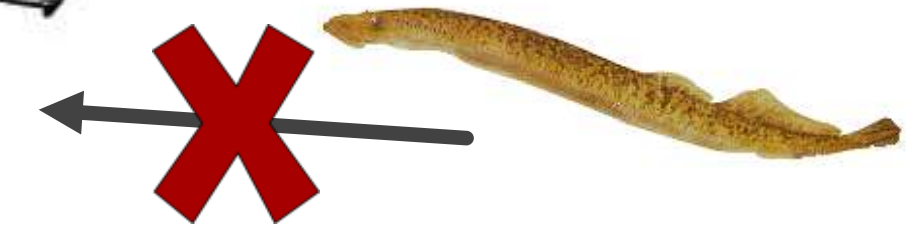

n = 13
n = 44
Response to conspecific alarm cue
0.2
0.1
0.0
-0.1
-0.2
Electrofished
Trapped
Collection method

Summary

	Time to emerge	Activity time	Risk response
Behaviours differed consistently	✓	✓	✓
Difference between collection method	✗	✗	✗

Variation in Behaviour and Trapping





Power?

Behavioural tests?

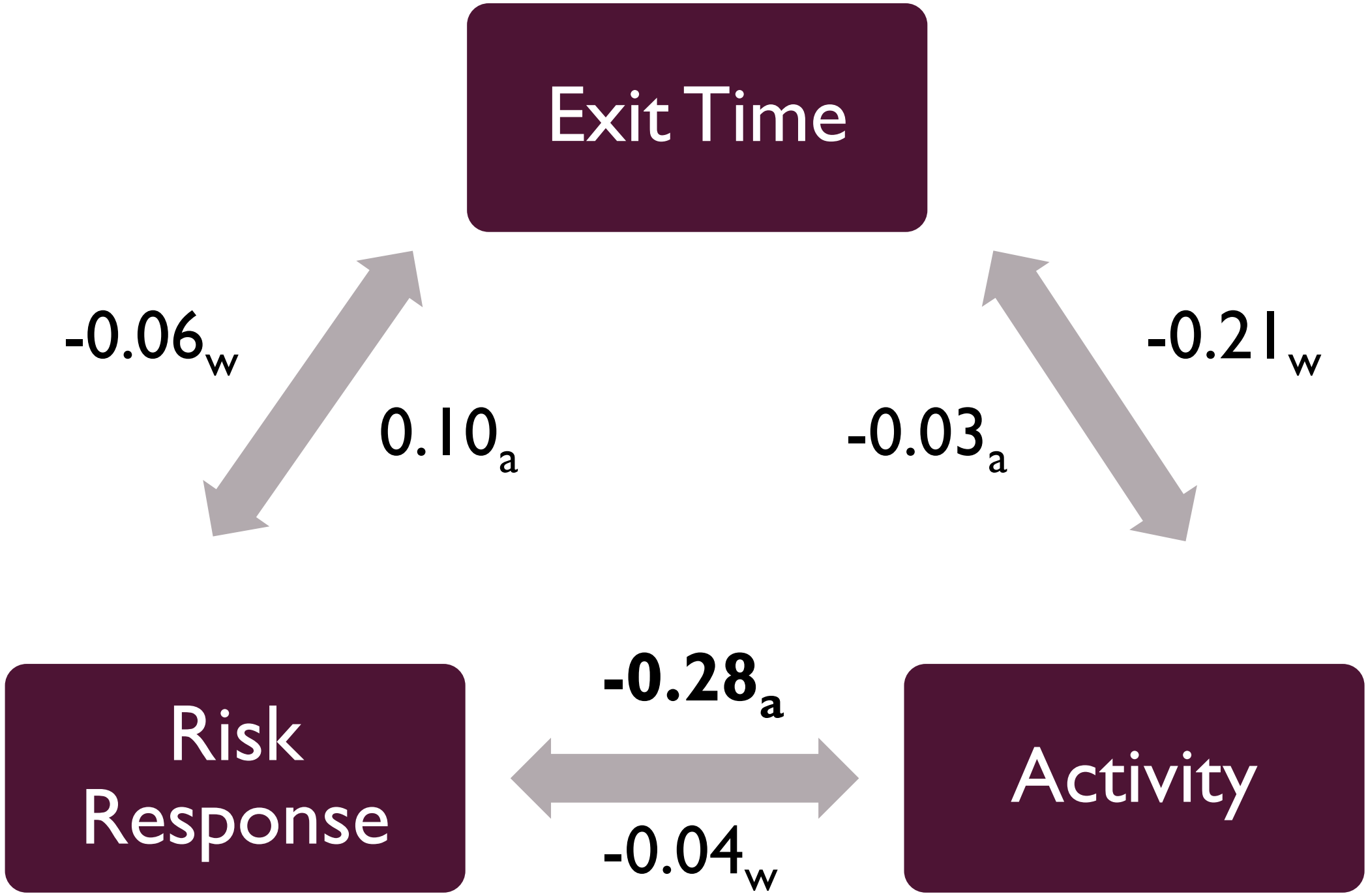
Context?

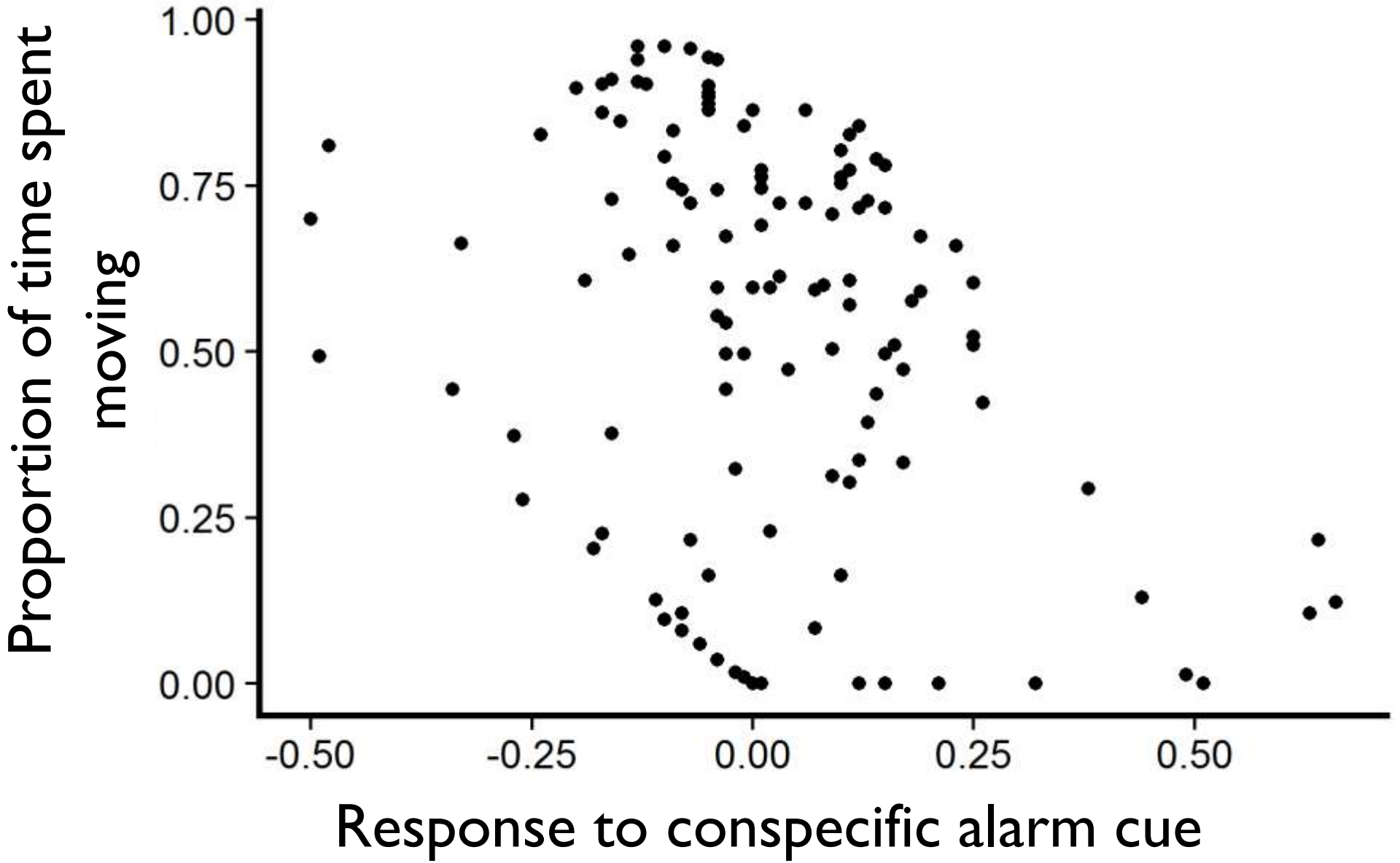
Future Sea Lamprey Management

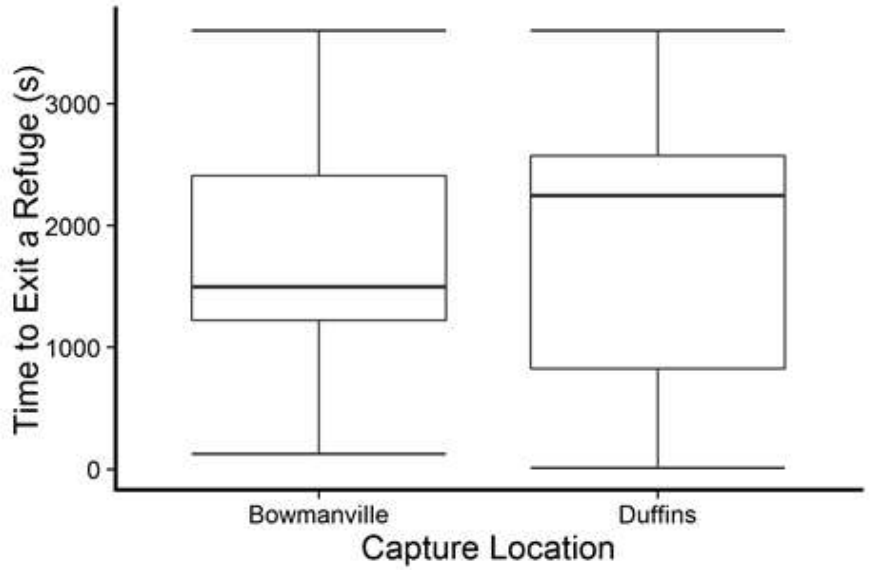
Acknowledgements

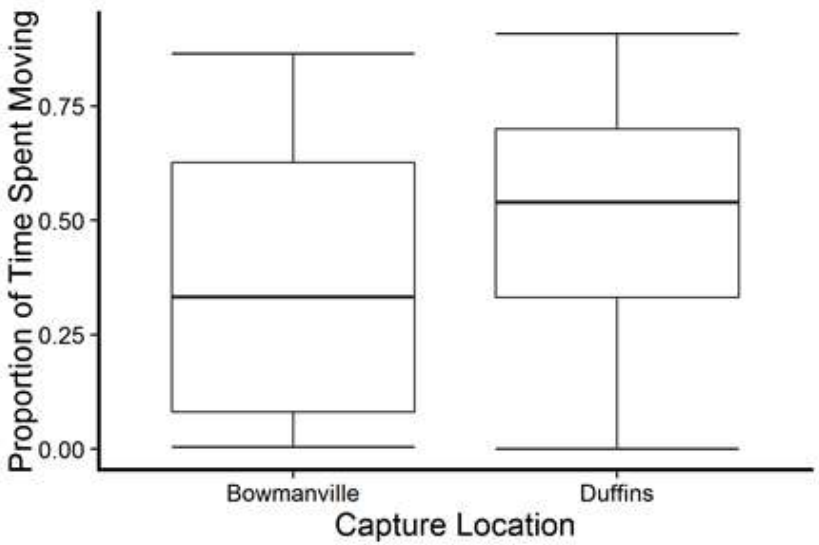
- Dr. Robert McLaughlin and lab members
- Dr. Beren Robinson and lab members
- Paul Bzonek and Jesse Wolf
- Toronto Conservation Authority
- Gale Bravener
- Matt Cornish and Mike Daves from the Hagen Aqualab
- Christina Dale, Paul Fraser and Jeremy Pearson

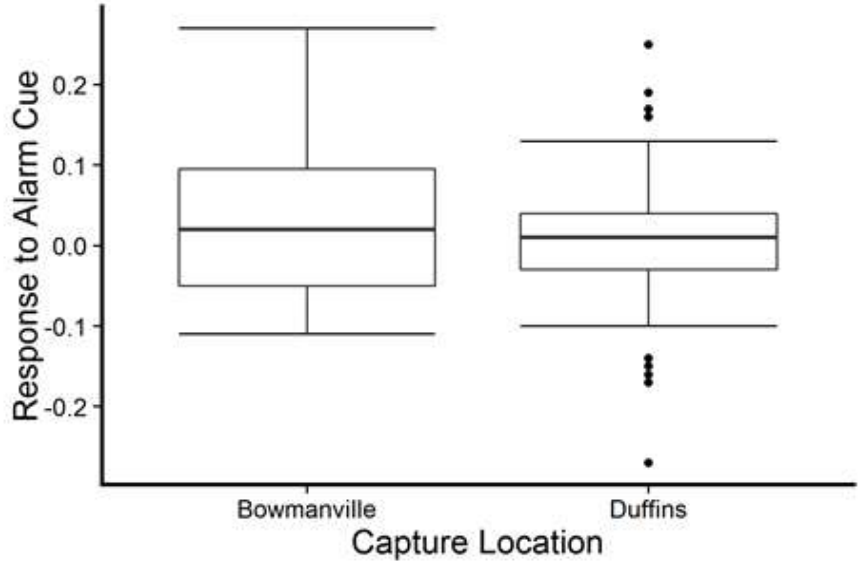
Questions?


Exit Time
-0.06w
0.10a
-0.03a
-0.21w
Risk Response
-0.28a
-0.04w
Activity


Proportion of time spent moving
1.00
0.75
0.50
0.25
0.00
-0.50
-0.25
0.00
0.25
0.50
Response to conspecific alarm cue


Time to Exit a Refuge (s)
3000
2000
1000
0
Bowmanville
Duffins
Capture Location


Proportion of Time Spent Moving
0.75
0.50
0.25
0.00
Bowmanville
Duffins
Capture Location


Response to Alarm Cue
0.2
0.1
0.0
-0.1
-0.2
Bowmanville
Duffins
Capture Location