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Quantifying and reducing uncertainty of passive acoustic telemetry data from riverine fish

S. Bruneel, P. Verhelst, J. Reubens, J. M. Baetens, J. Coeck, T. Moens, P. Goethals

LifeWatch BELGIUM

fwo Research Foundation Flanders Opening new horizons

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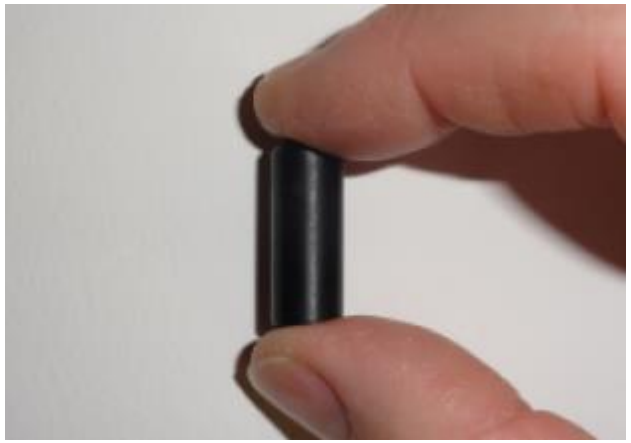
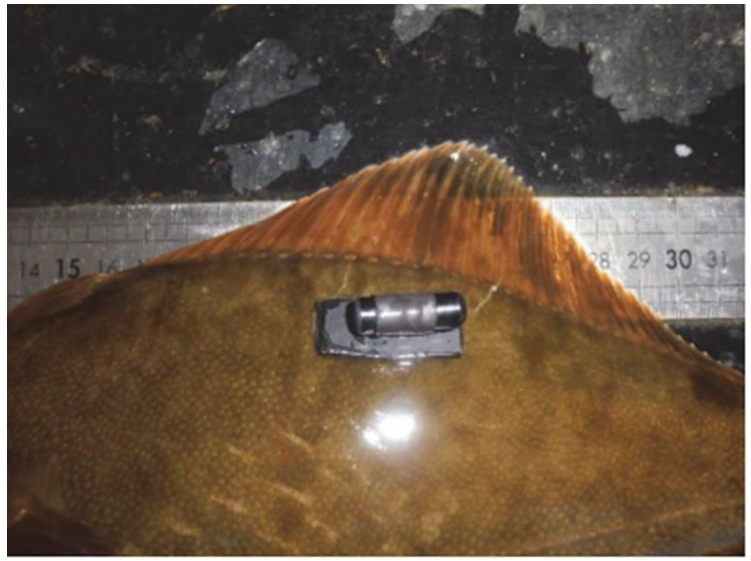
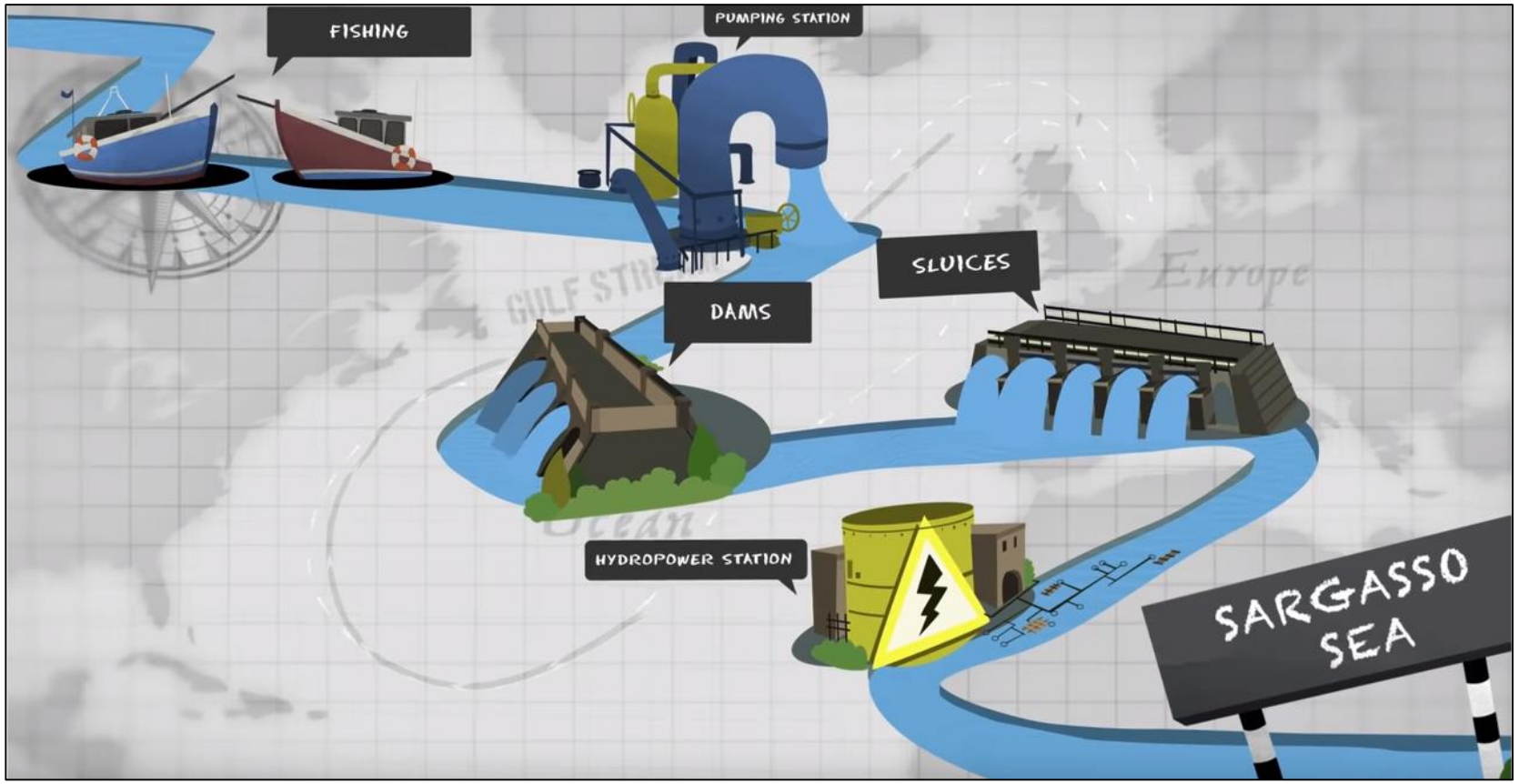
What is telemetry?





Why telemetry?



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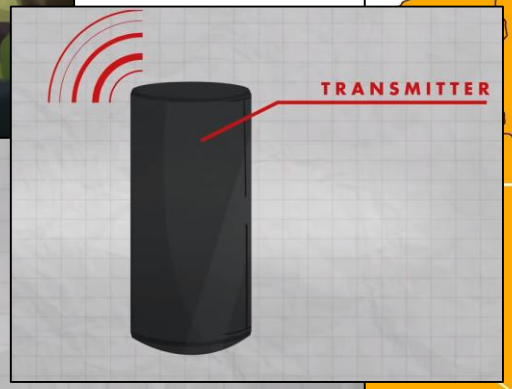
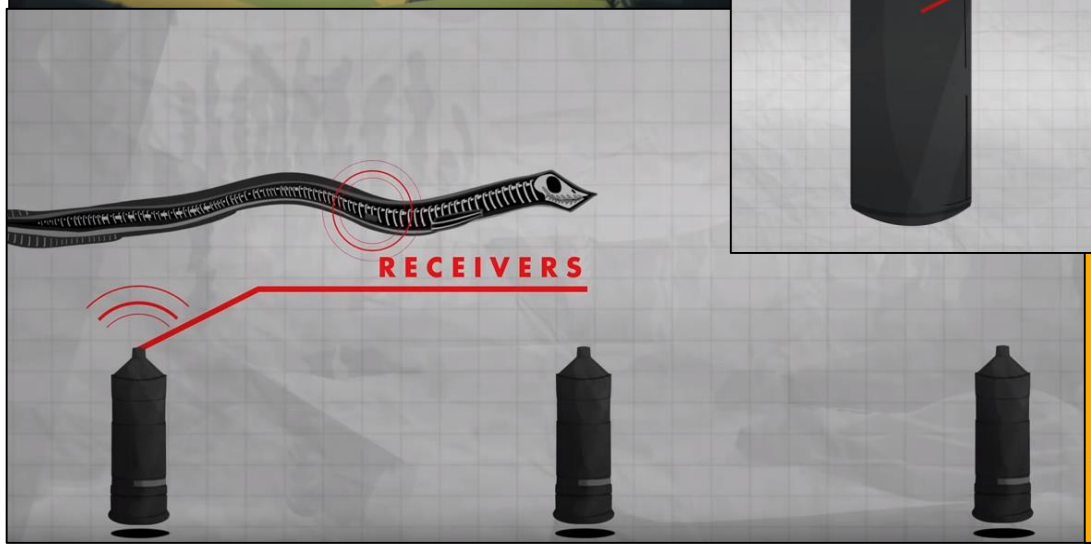
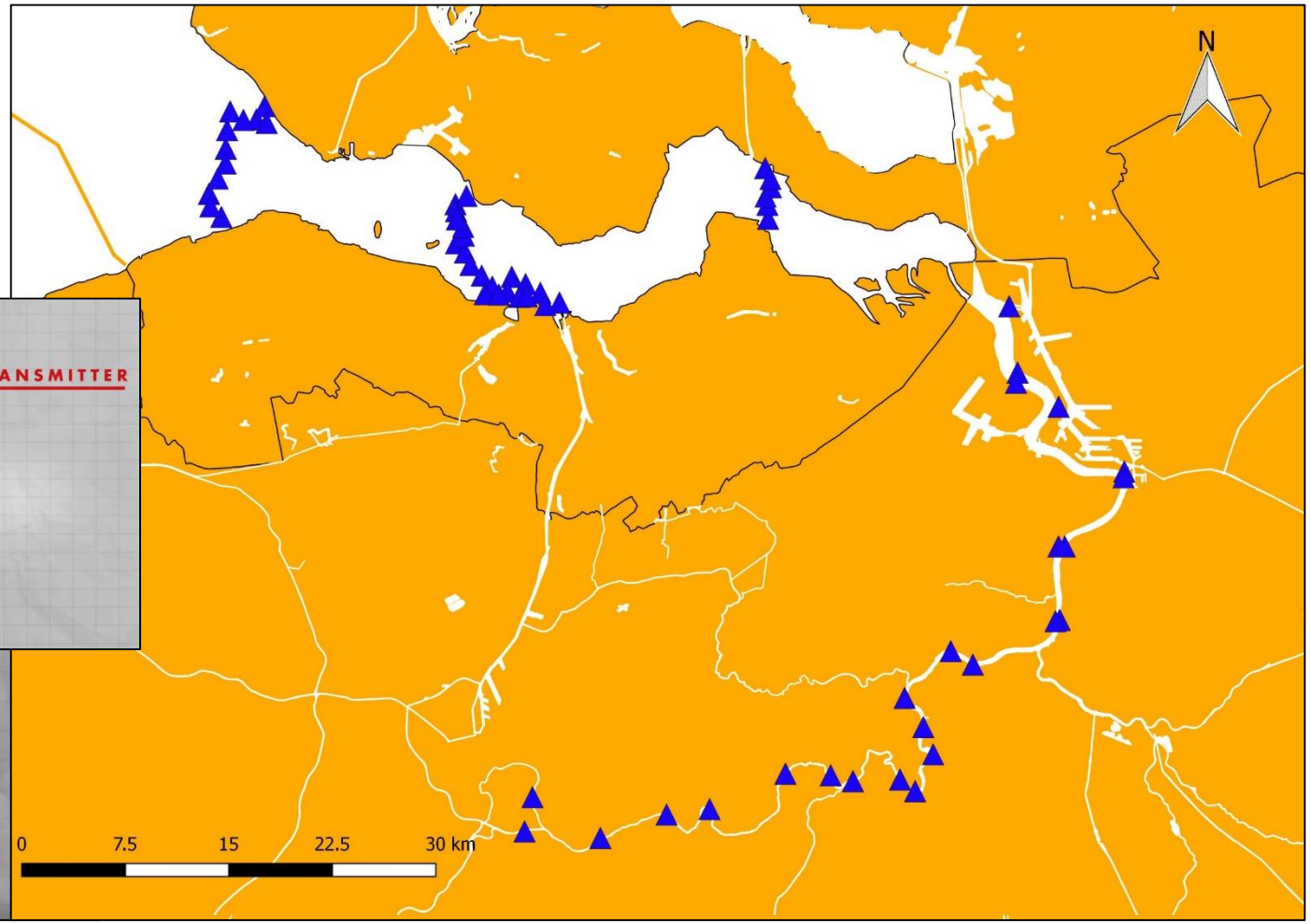
Study Area







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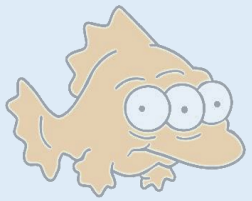
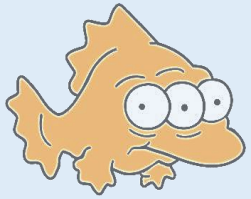
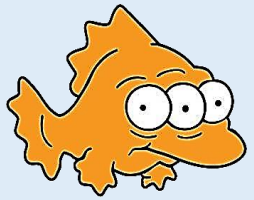
Active telemetry







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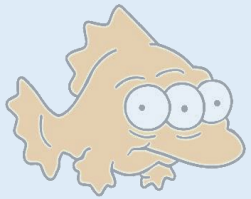
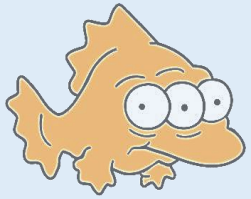
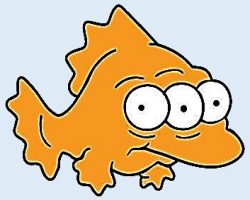
Passive telemetry







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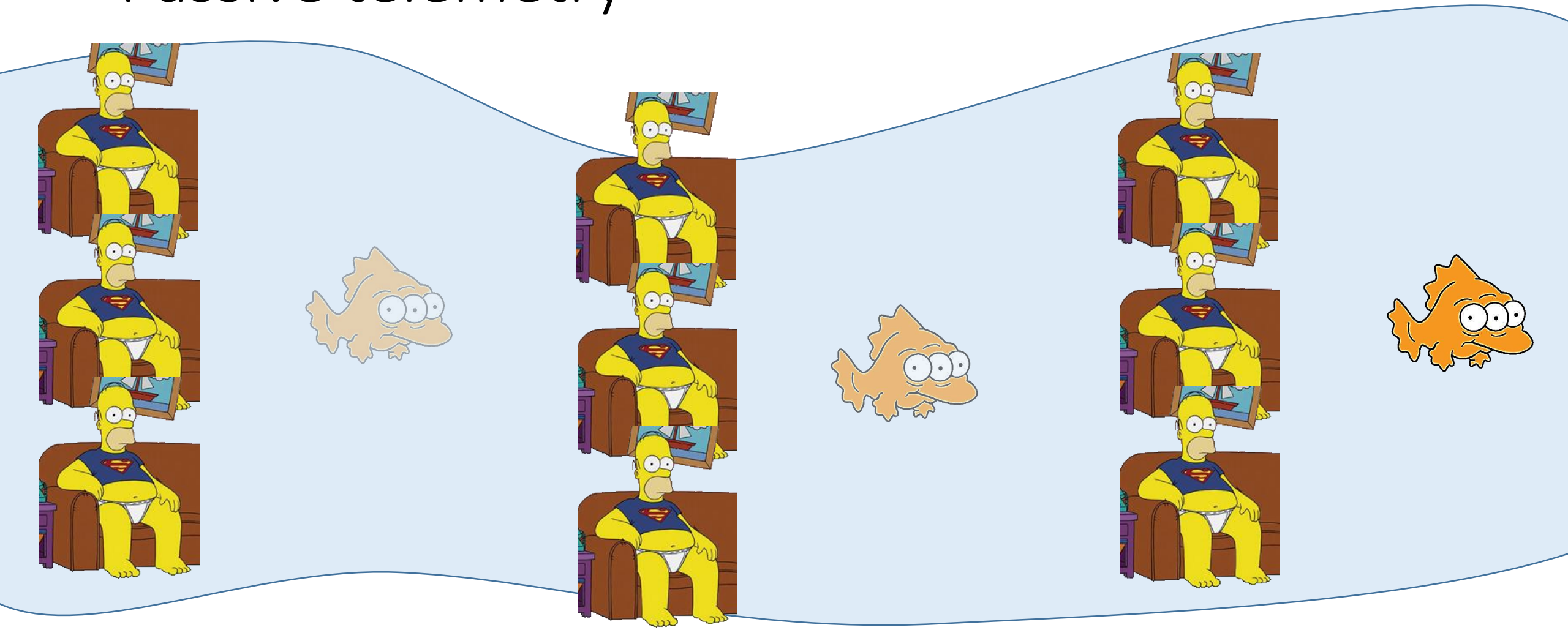
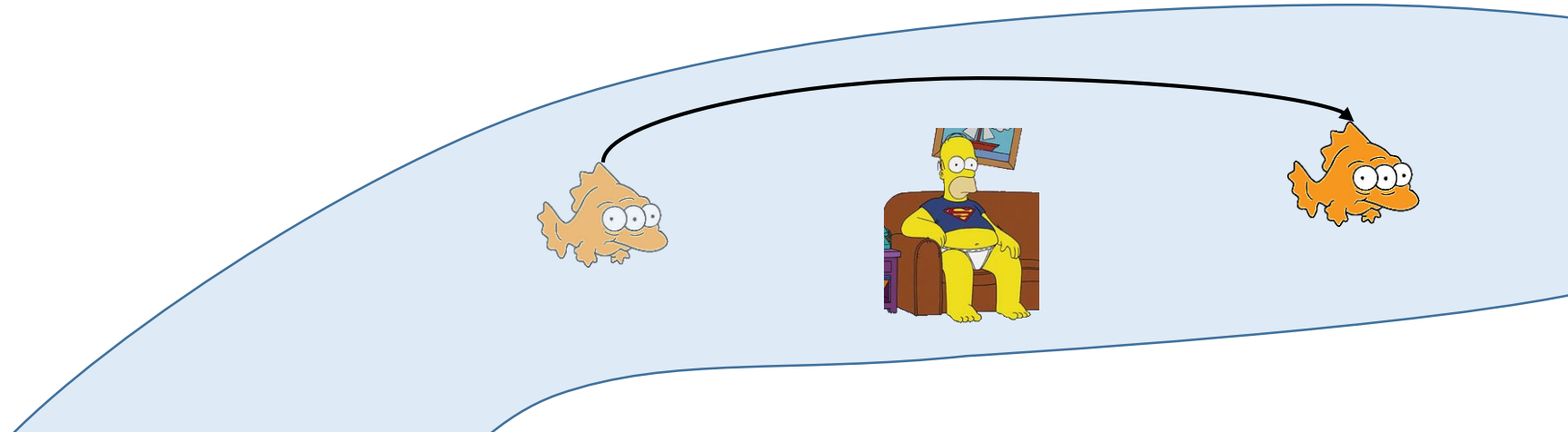
Passive telemetry



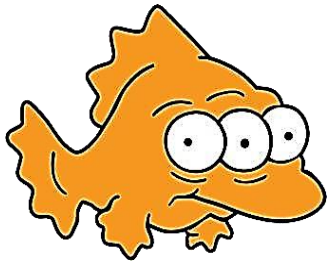
Active telemetry	Passive telemetry
+ Low uncertainty	- High uncertainty
- Labor intensive	+ Not labor intensive
- Small sample size	+ Large sample size

Origin of uncertainty

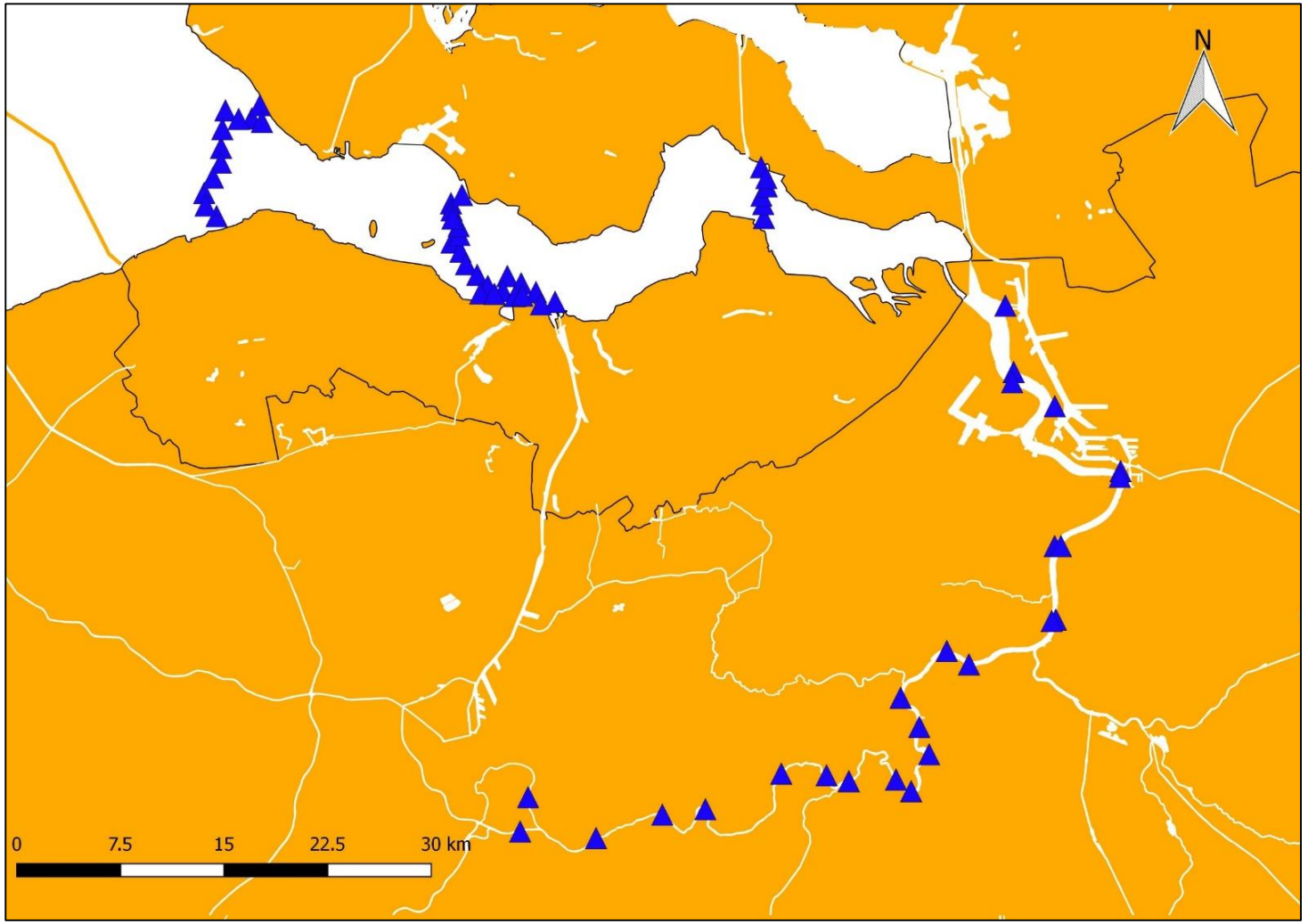
- Detection probability and range affected by environmental conditions
- Too few receivers
- Malfunctioning receivers
- Stochasticity



- Fish: “Route of lowest resistance”



- Scientist: “Route of lowest uncertainty”



Route of lowest uncertainty

- Pathway assessment
- Decision rules

Higher spatial resolution

Less uncertainty

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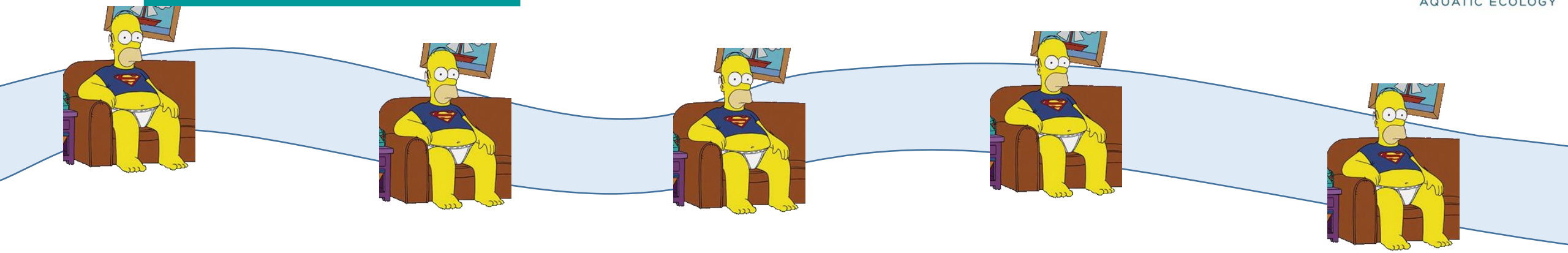

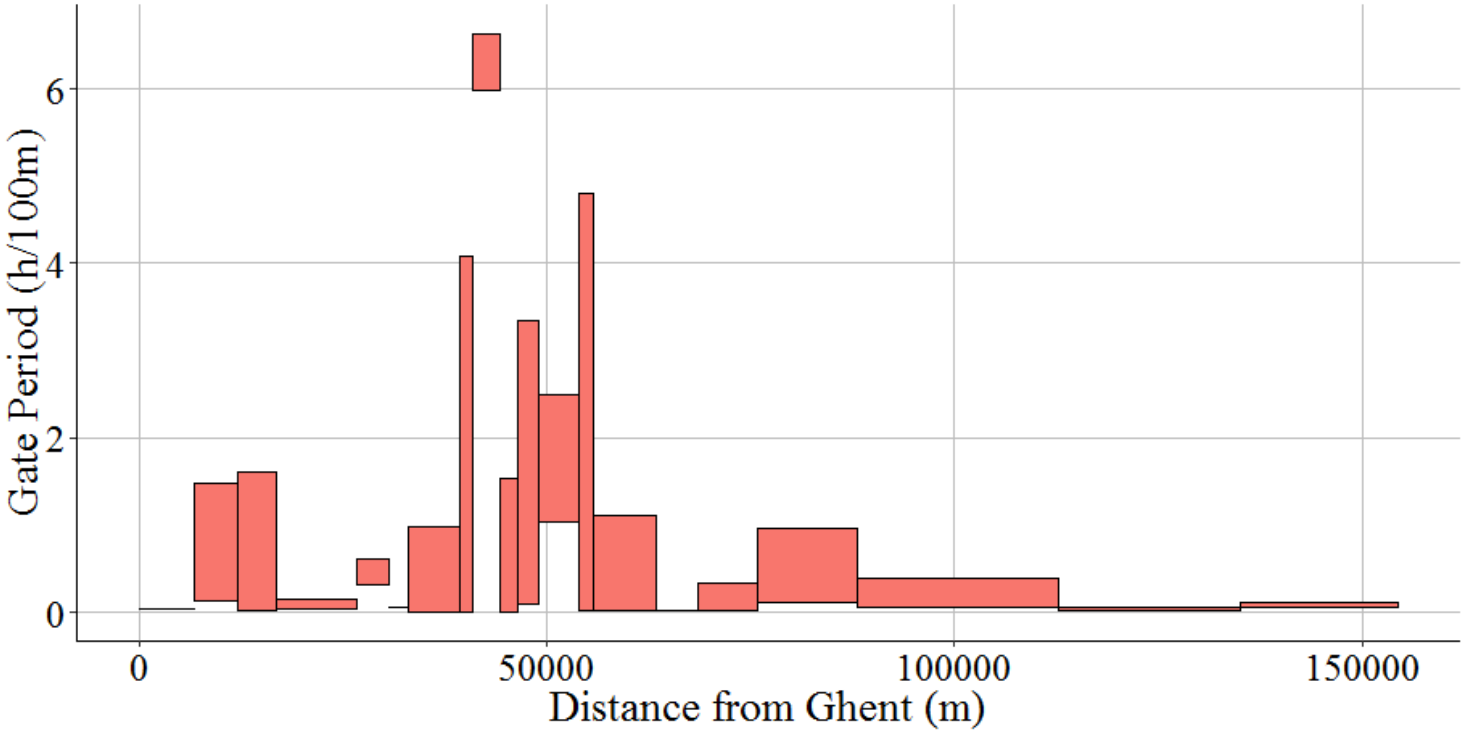

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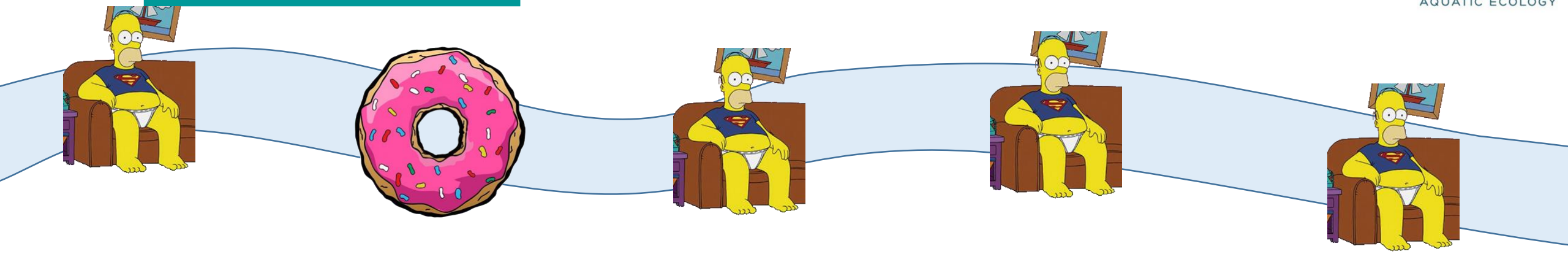

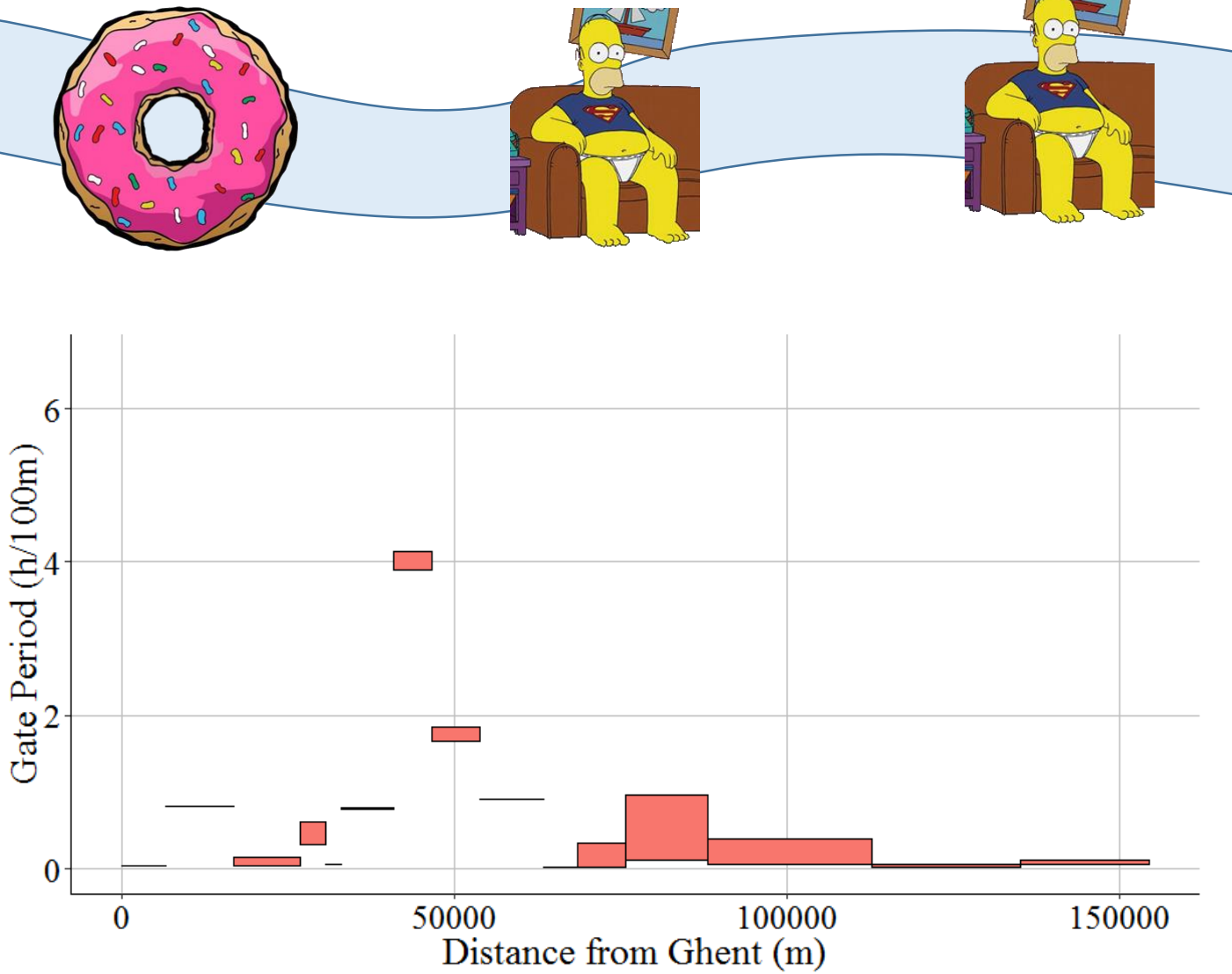

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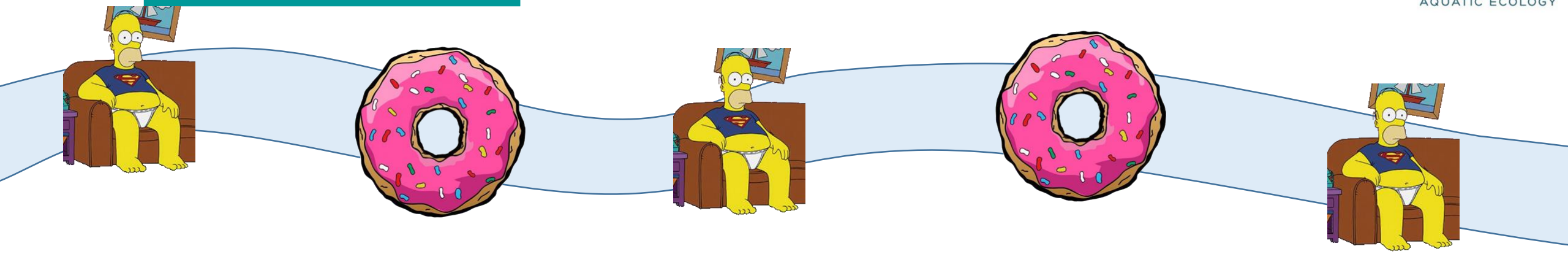

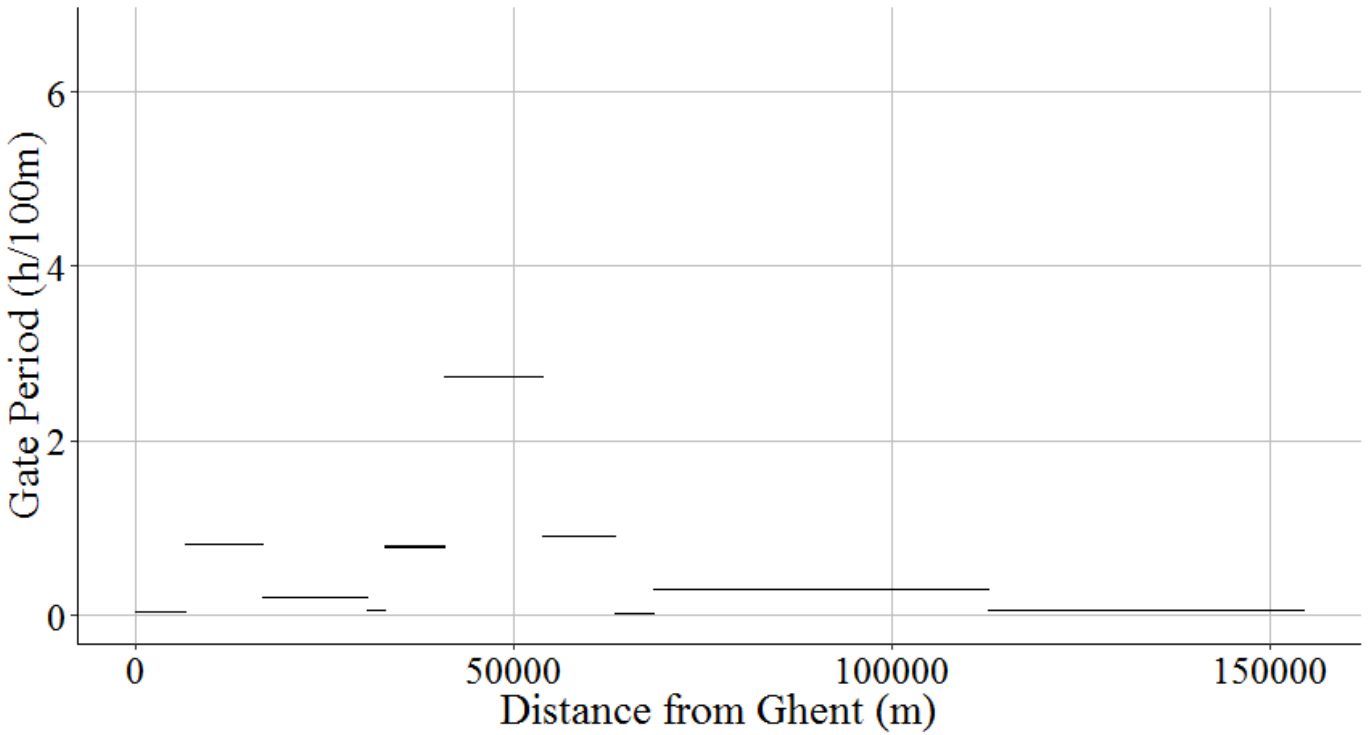

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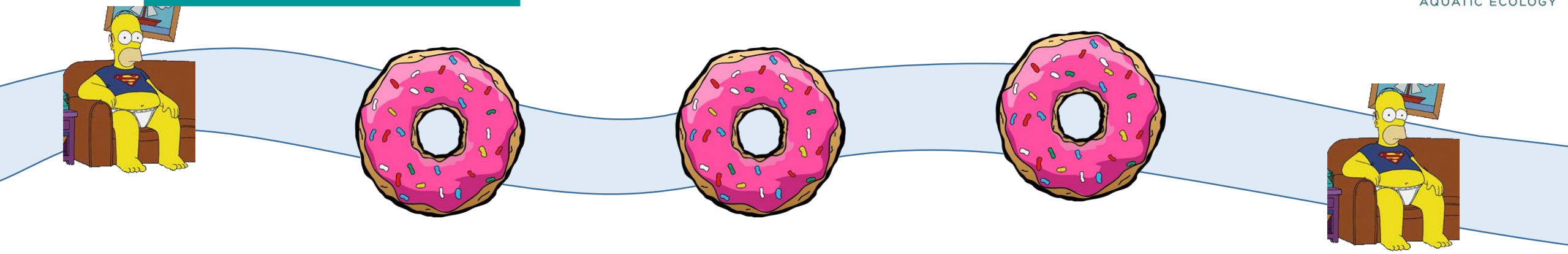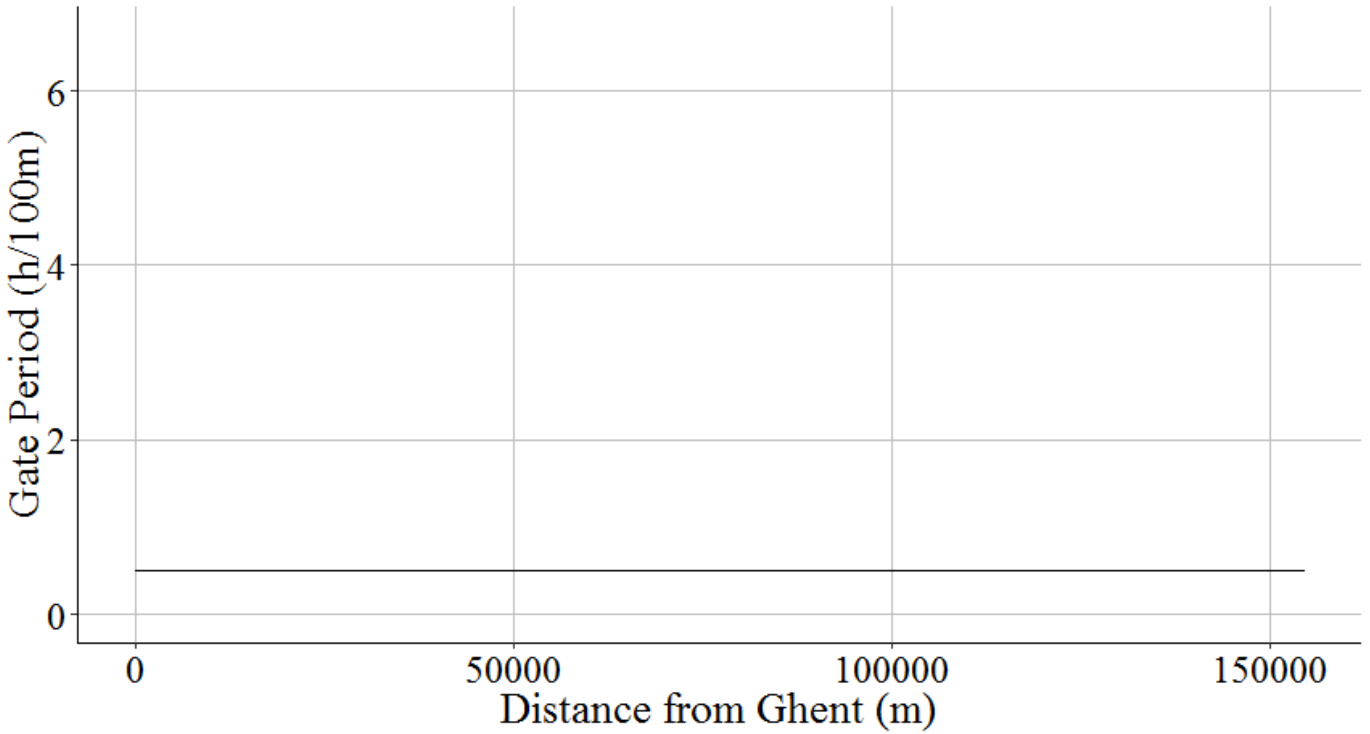
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