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Population dynamics and distribution of Tench (*Tinca tinca)* in the St. Lawrence River: managing a problematic invader.

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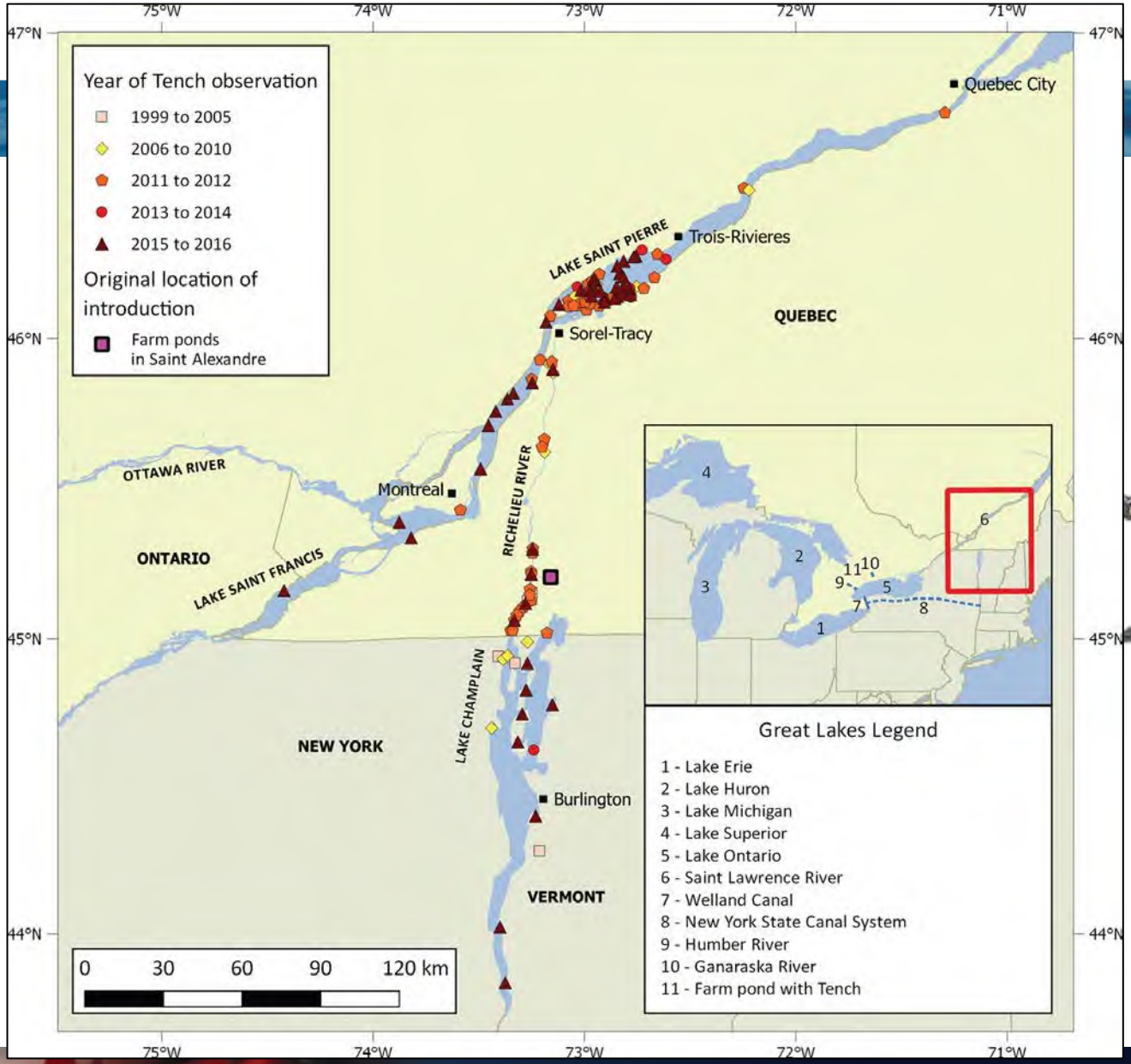
Invasive Eurasian cyprinid

- Investigate population dynamics of Tench (age, size, weight, sex, maturity etc…) in the St. Lawrence and Richelieu rivers.

- Identify life history characteristics of populations such as longevity, natural mortality, growth rate, probability of maturity, strength of compensatory density dependence in recruitment.

- Evaluate behaviour and movement patterns in the St. Lawrence and Richelieu rivers, using acoustic telemetry tags and a network of receivers already installed in the River.

- Results on both population characteristics and movement via telemetry will be considered for the development of exploitation models to provoke a fishery-induced collapse of Tench in the St. Lawrence and Richelieu rivers.

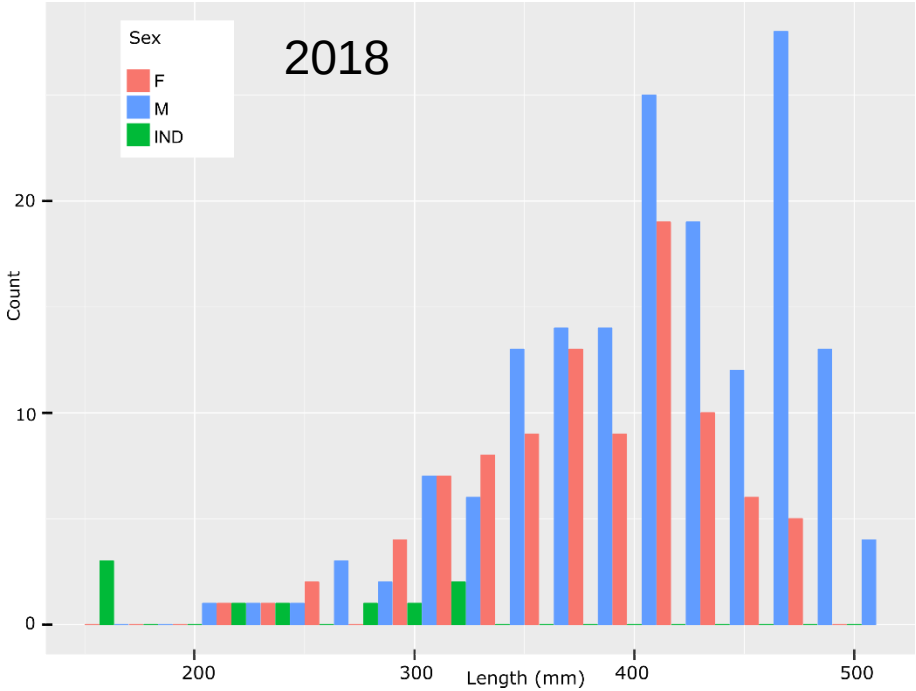


Aviljas et al. 2017

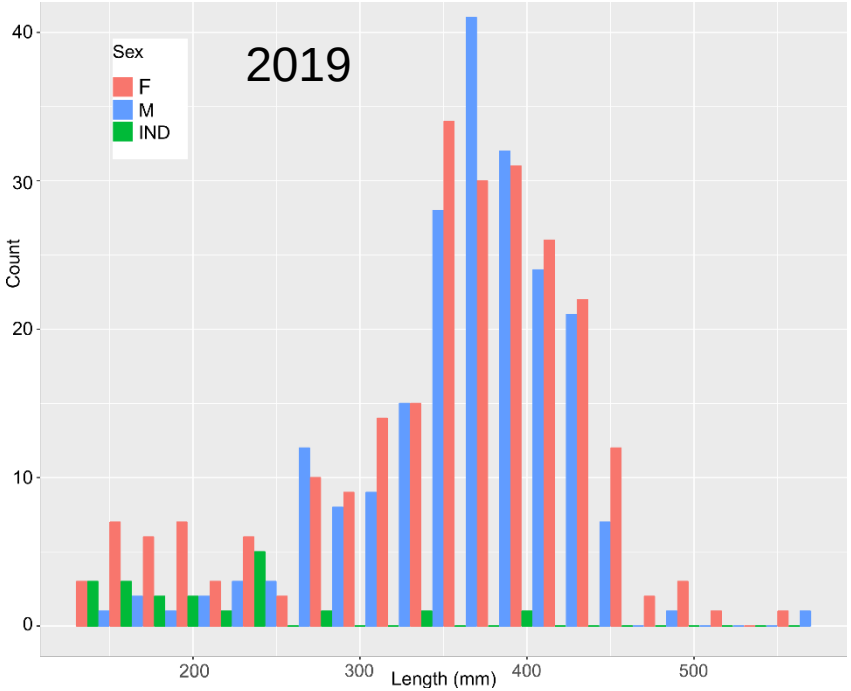
Canada

Population Dynamics 2018 - 2019

Population Dynamics 2018 - 2019



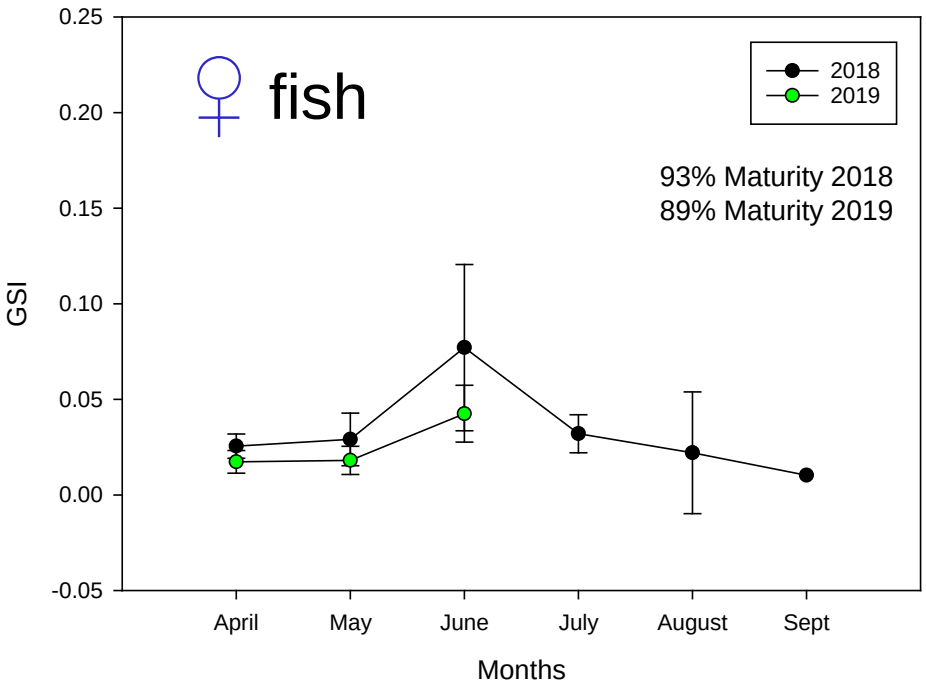
Sex	N	%
F	94.00	0.35
M	163.00	0.61
IND	9.00	0.03



Sex	N	%
F	268.00	0.51
M	221.00	0.42
IND	37.00	0.07

MFFP fish surveys, seines, fyke nets, hoop nets, electrofishing

Population Dynamics 2018 - 2019



Annual mortality: 58.5-90.0 %

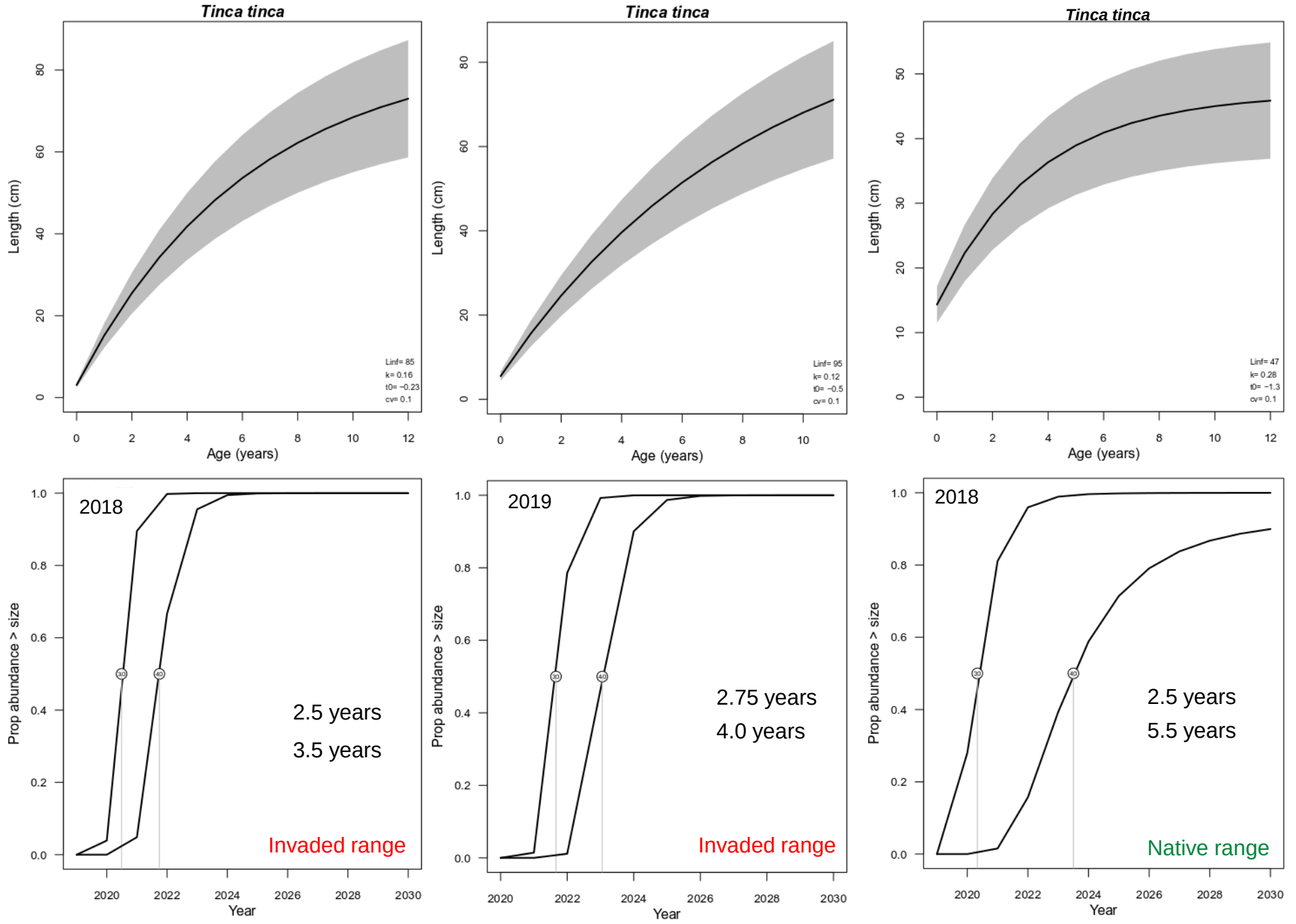
Growth: higher in 2018

Mean maximum length was higher in 2019

Analysis	Variable	Value	Lower CI (2.5%)	Upper CI (95%)	SE
2018					
Annual mortality	A	0.585	0.298	1.258	0.255
Growth	L_{∞}	85.00	65.27	10.47	10.02
	K	0.16	0.09	0.22	0.03
	t_0	-0.23	-0.58	0.12	0.1778
2019					
Annual mortality	A	0.901	0.68	1.11	0.114
Growth	L_{∞}	96.00	76.12	11.56	10.06
	K	0.13	0.09	0.16	0.02
	t_0	-0.5	-0.67	-0.36	0.09

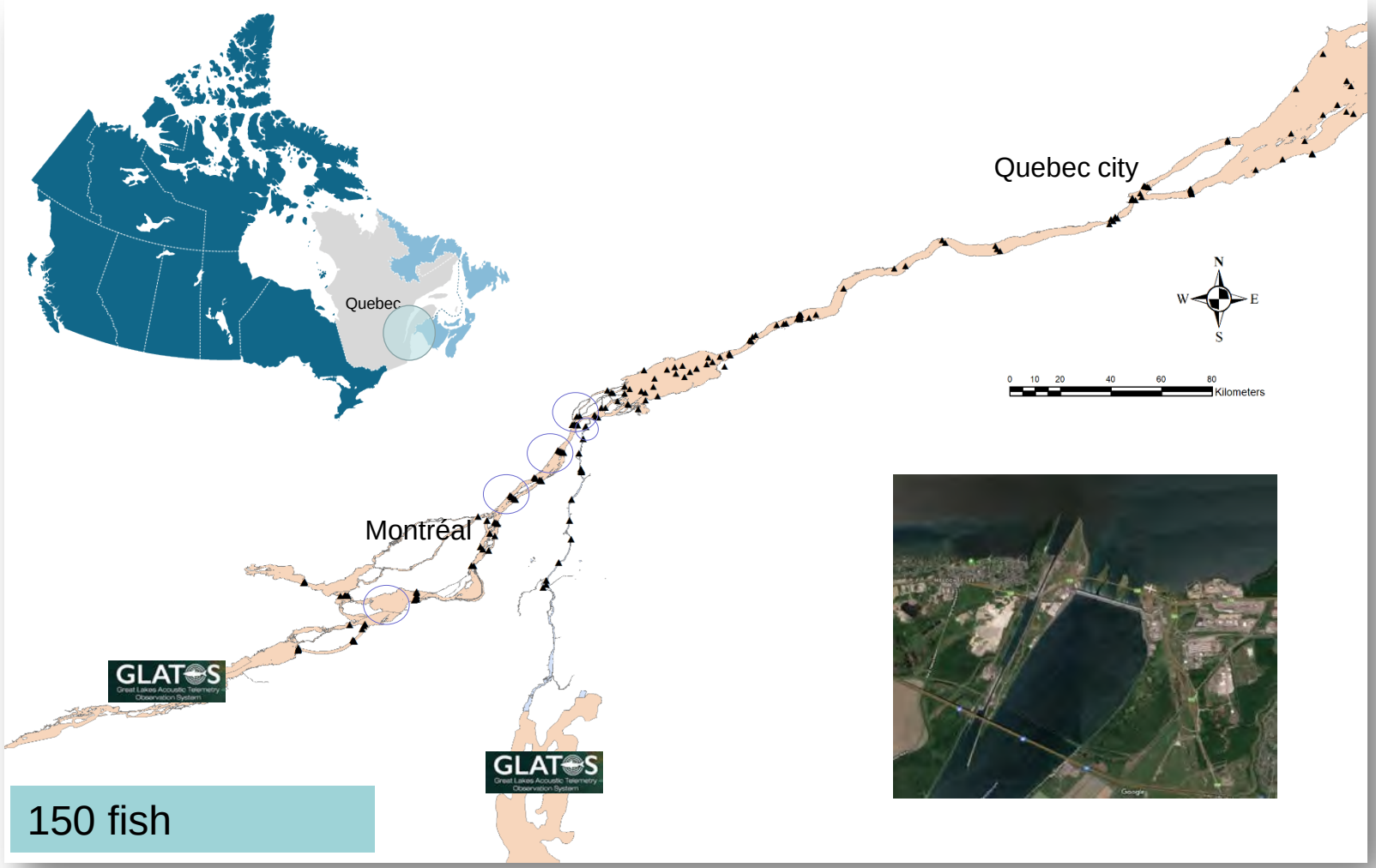
What changed between years (if anything)
?Density dependent recruitment ?

FSA:Fisheries Stock Analysis; Ogle et al. 2019 (https://github.com/droglenc/FSA)



Vbrecruit; Dupleisea 2019 (https://github.com/duplisea/vbrecruit)

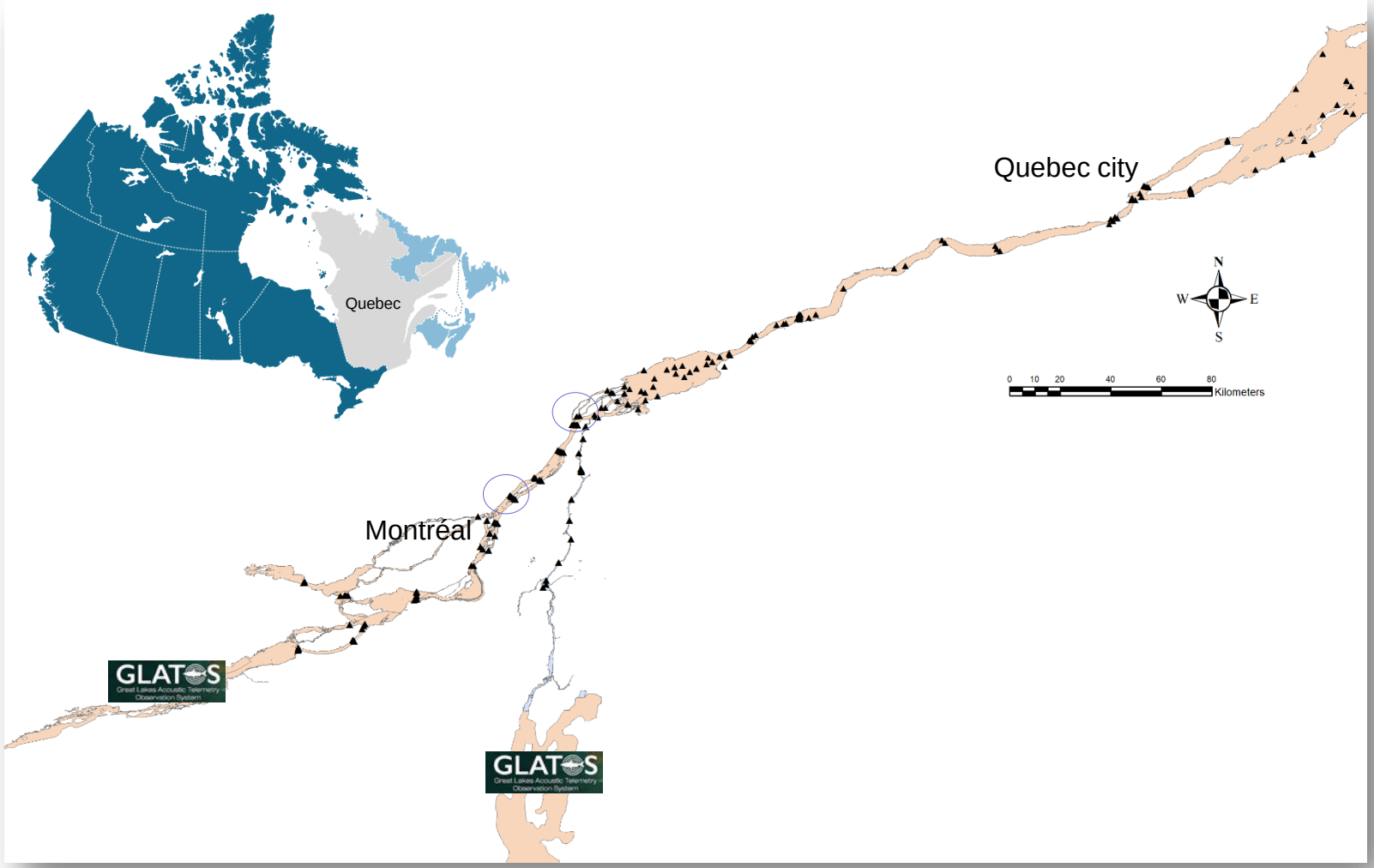
Reciever network in the St. Lawrence (MFFP)



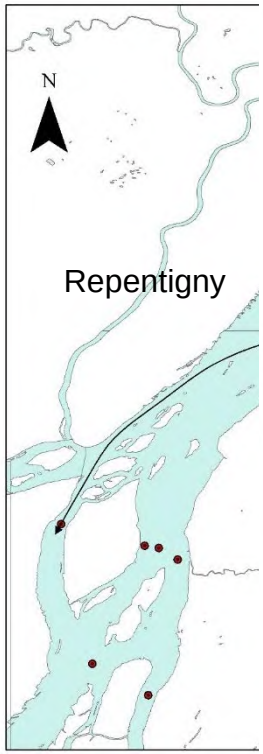
150 fish

Telemetry

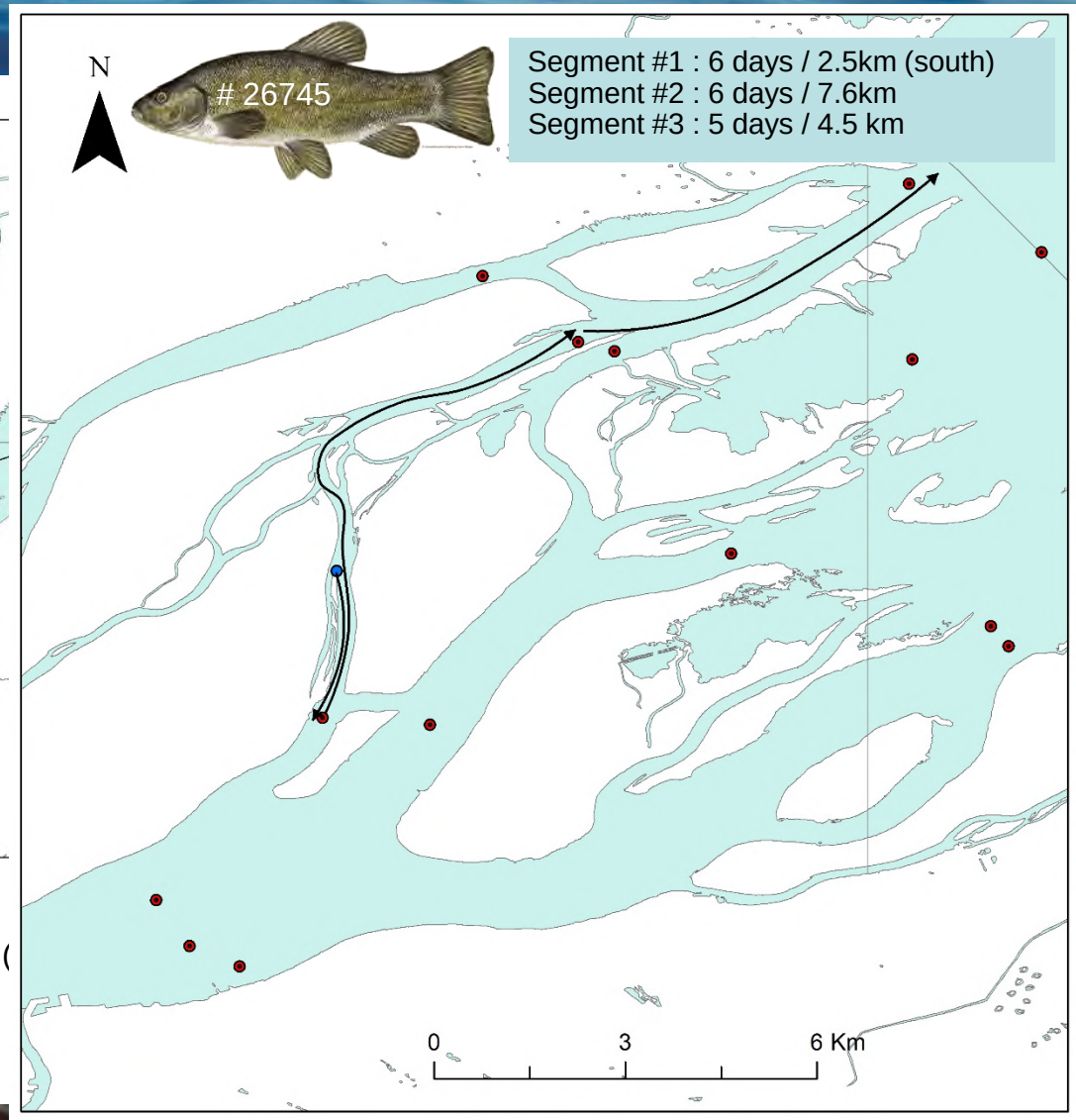
Reciever network in the St. Lawrence (MFFP)

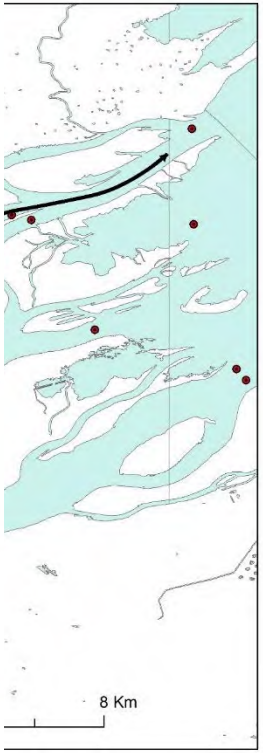


Telemetry



Upstream : 2
Downstream : 11 (





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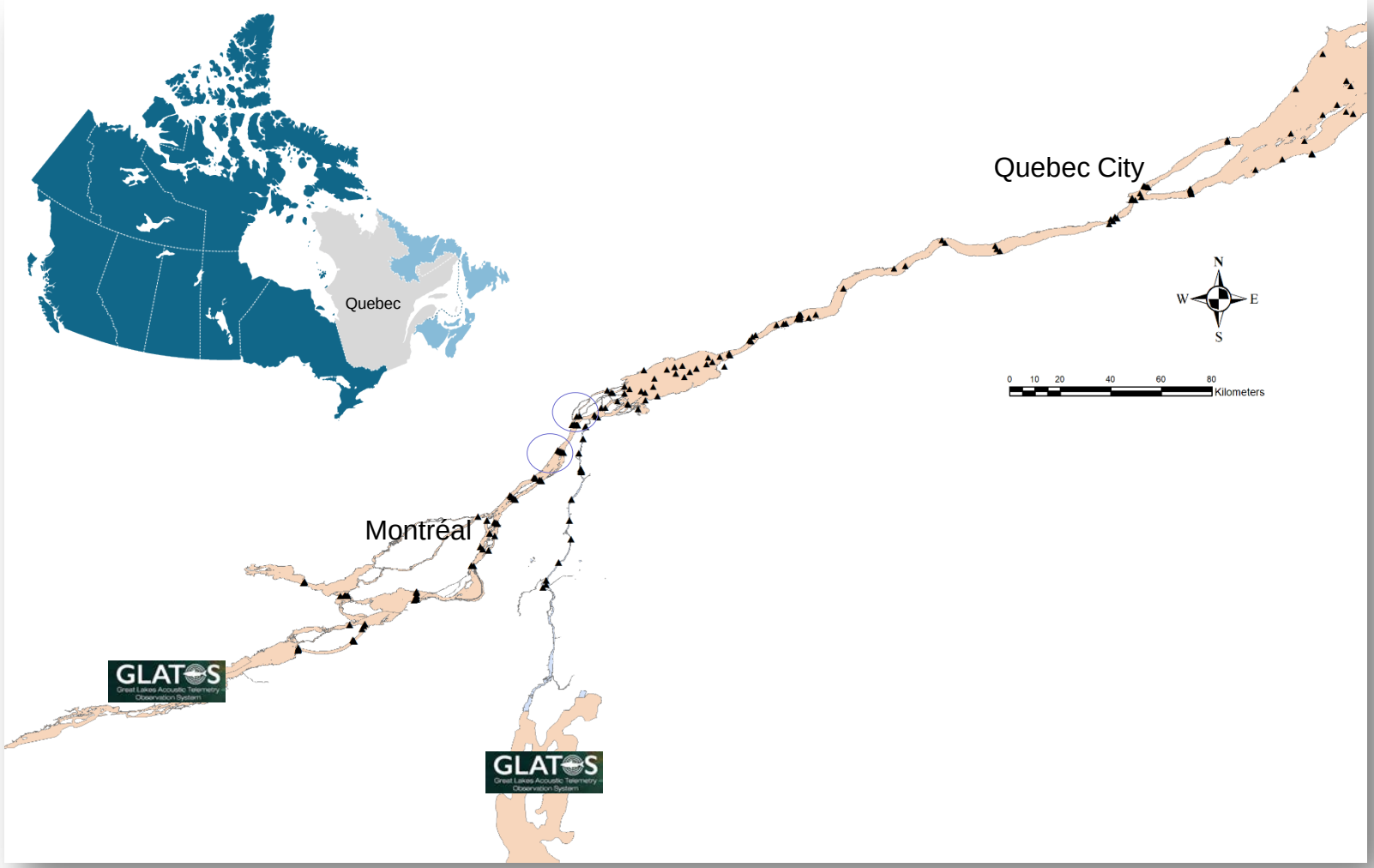
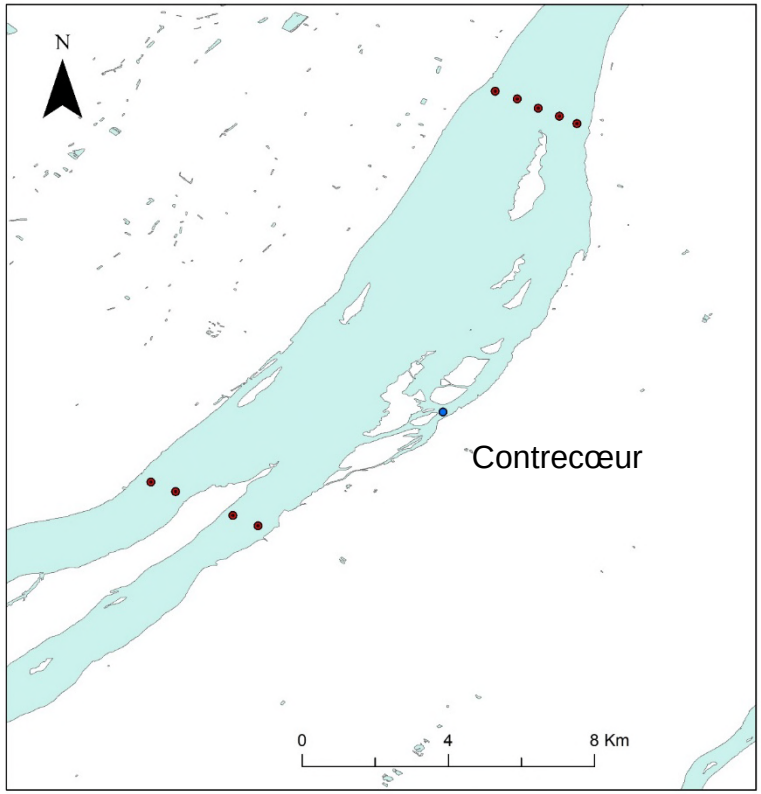
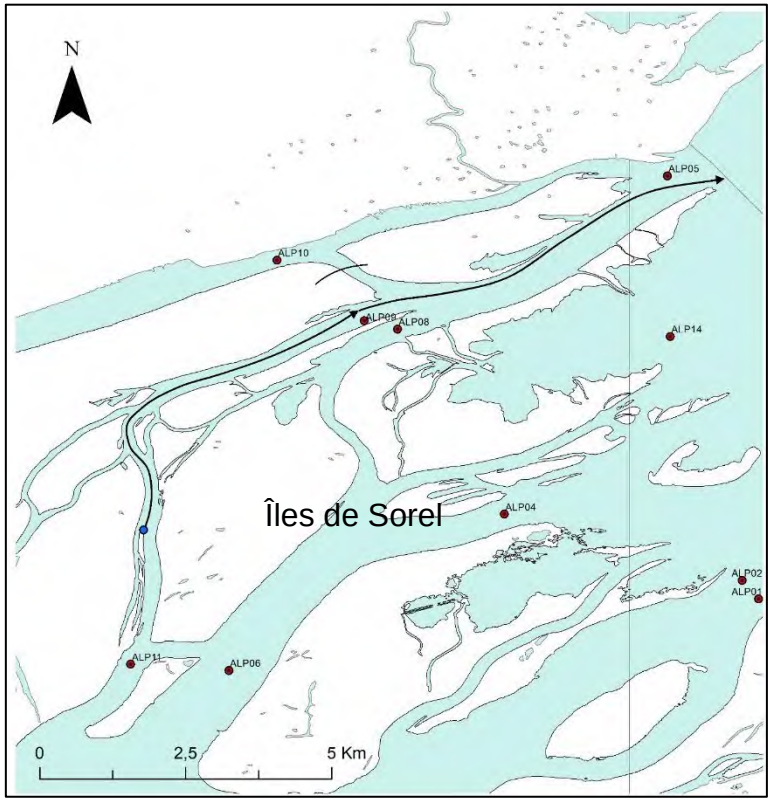


Telemetry

Speedy tench: 4.4km in 90 minutes (2.93 k/hr)





Conclusions

Prelim. population data

- More males than females in 2018, more females in 2019
- GSI highest in June in both years….maybe 2 spawning events?
- Majority of females caught were sexually mature (GSI >1%)
- Fish growing faster in 2018, but larger sizes in 2019.
- Annual mortality is high (and variable)
- Fish in the invaded range grow bigger, faster than in the native range.

Prelim. Telemetry data

- Fish seem to be moving downstream
- Aside from « M. Speedy », tench are not fast
- No info. yet from Contrecœur

Acknowledgements

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