

# Warming alters reproductive investment in Northeast Atlantic sole (*Solea solea*) populations: small fish thrive, large fish compromise



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Karen Bekaert<sup>2</sup>, Klaas Sys<sup>2</sup>, Laura Lemey<sup>2</sup>, Marleen De Troch<sup>1</sup>

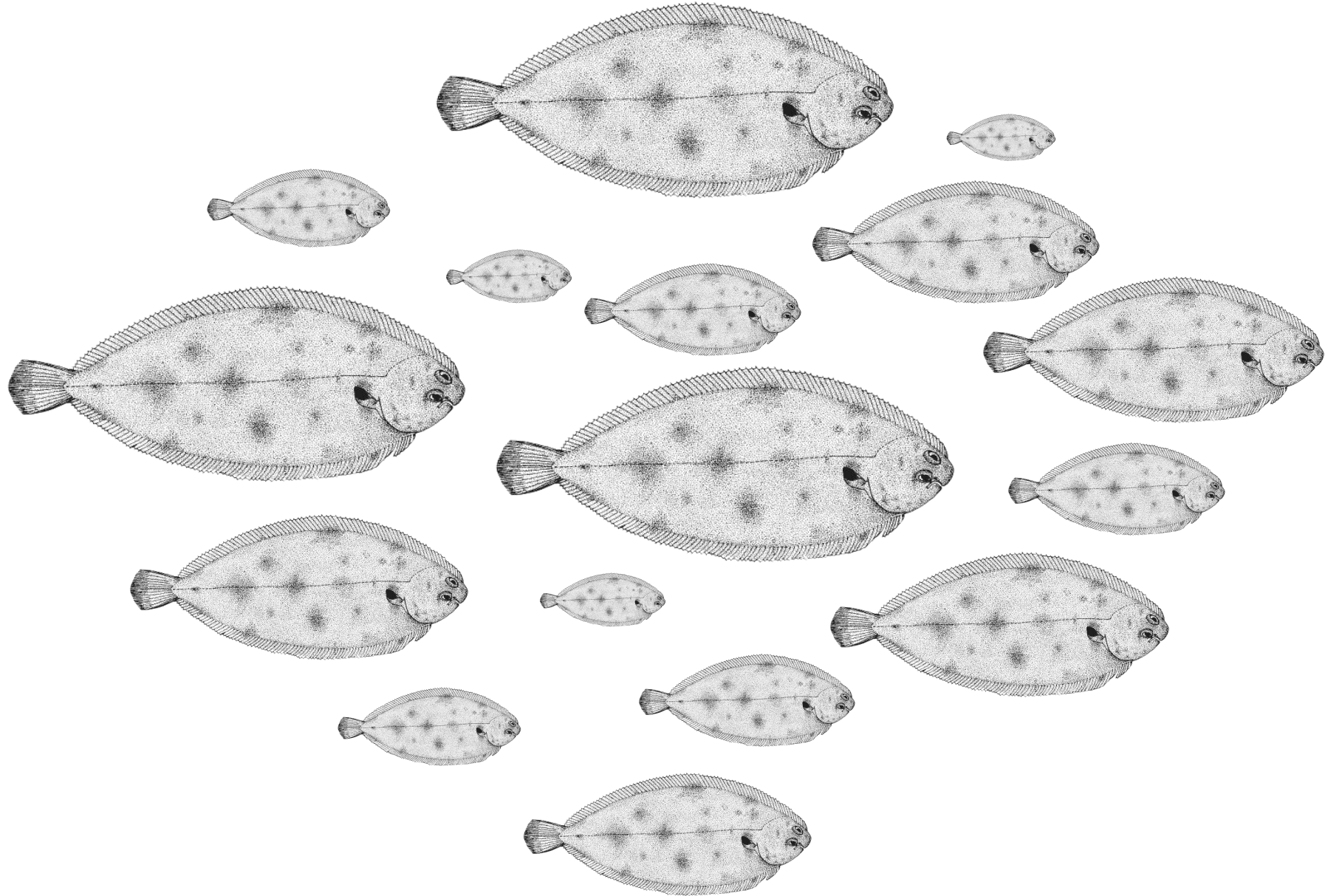
<sup>1</sup>Ghent University

<sup>2</sup>Flanders Research Institute for Agriculture, Fisheries and Food (ILVO)

<sup>3</sup>Wageningen University and Research (WUR)

# Introduction

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# Introduction

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## Climate change



# Introduction



Climate change

**Reproduction**

Eggs

Larvae

**Growth**

Juveniles

Adults

# Introduction



Climate change

Reproduction

Eggs

Larvae

Adults

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Growth

Bui et al., 2025  
Estuarine, Coastal and Shelf Science  
312:109041



# Introduction



Climate change

**Reproduction**

Eggs

Larvae

**Reproductive investment**

Adults

Bui et al., 2025 under review

**Growth**

Juveniles

Bui et al., 2025  
Estuarine, Coastal and Shelf Science  
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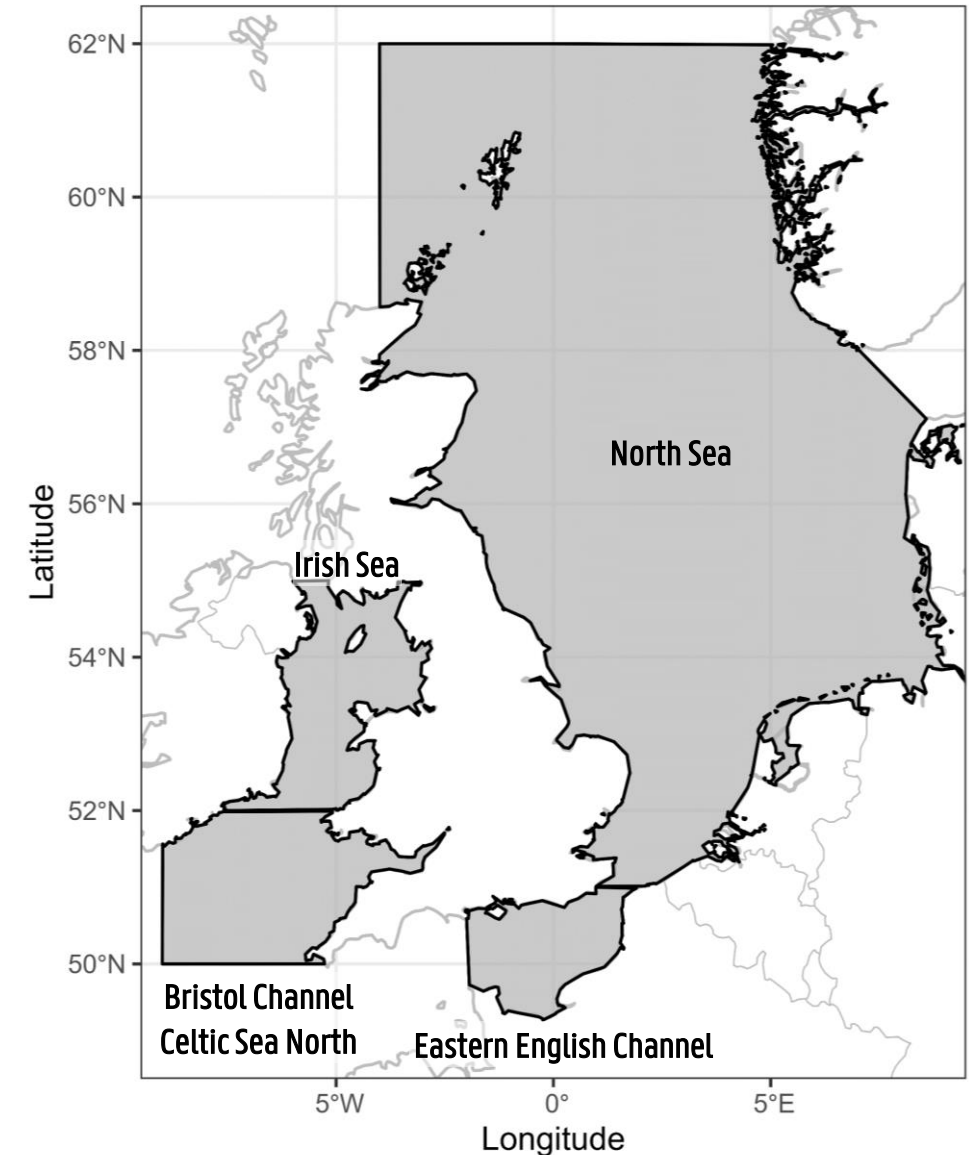
**Q: How does warming temperature affect fish's reproductive investment?**



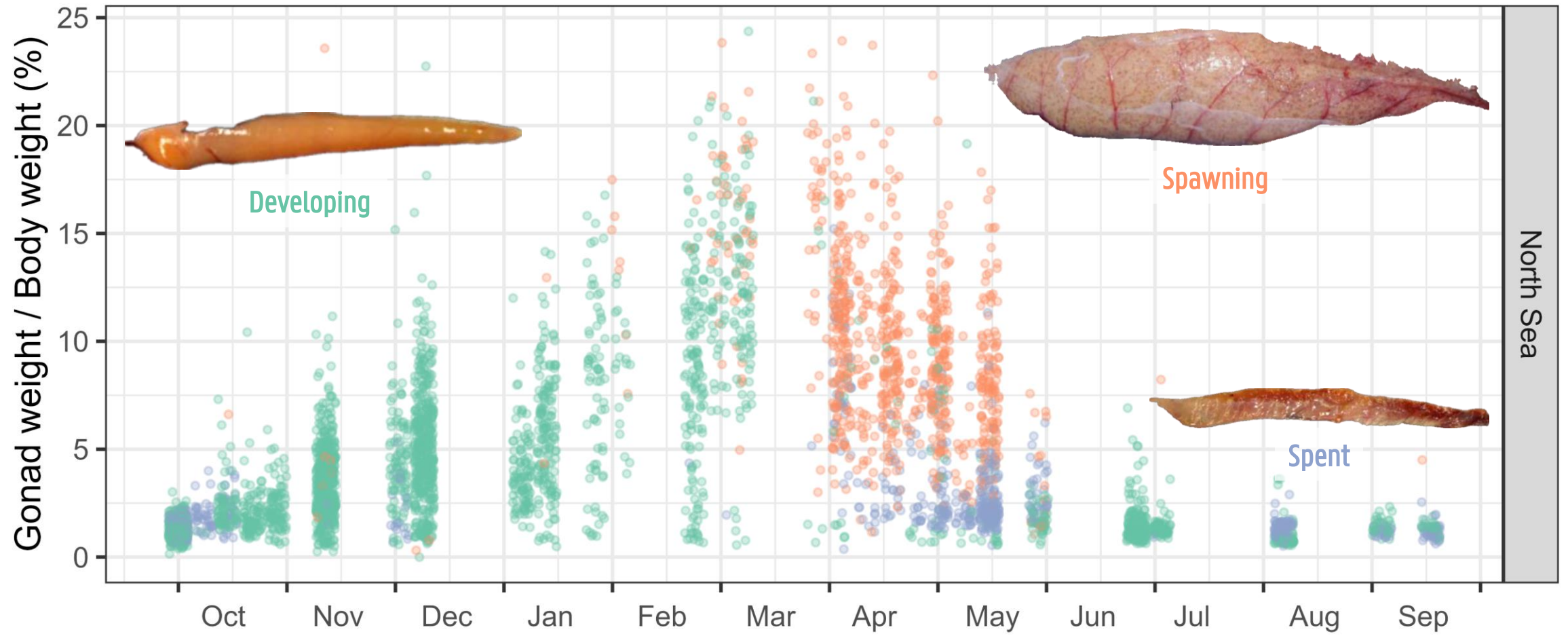
# Methods

## Gonad weight as a proxy of reproductive investment

- 19 years (2004-2022)
- Female
- 4 populations



# Methods

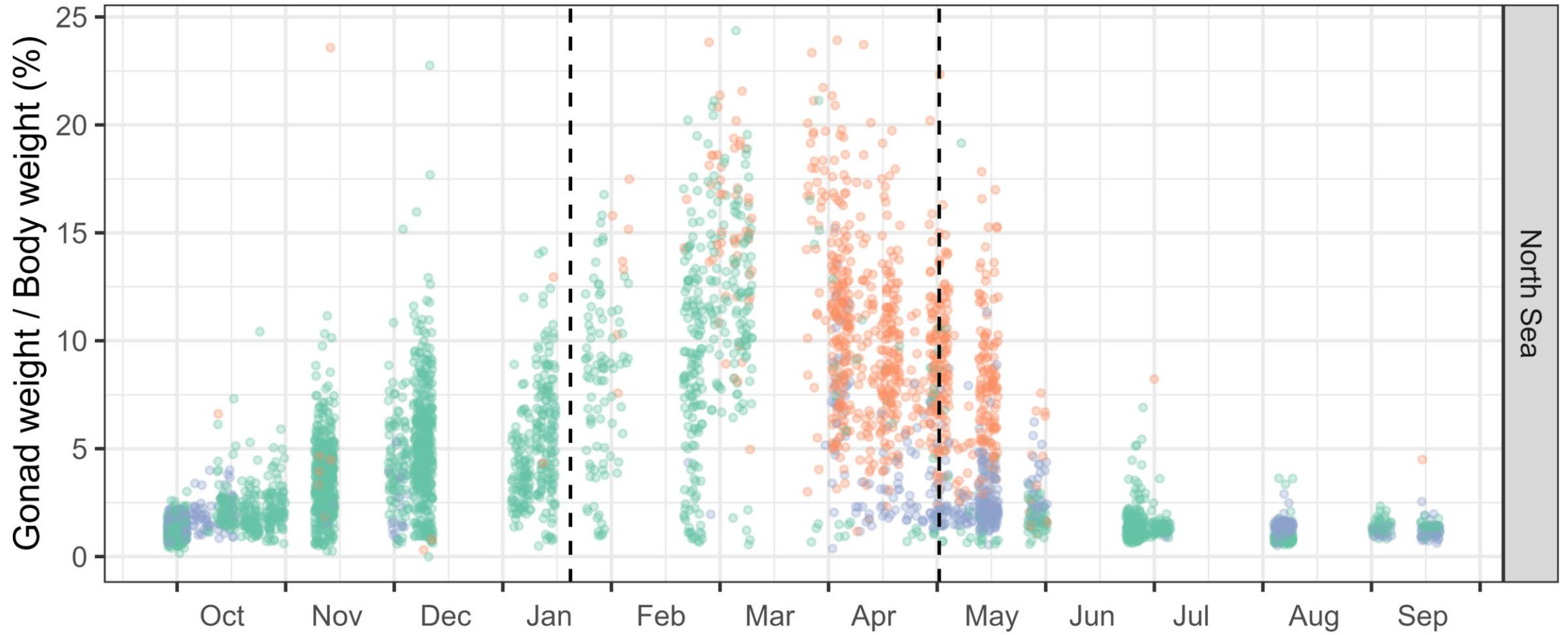




# Methods

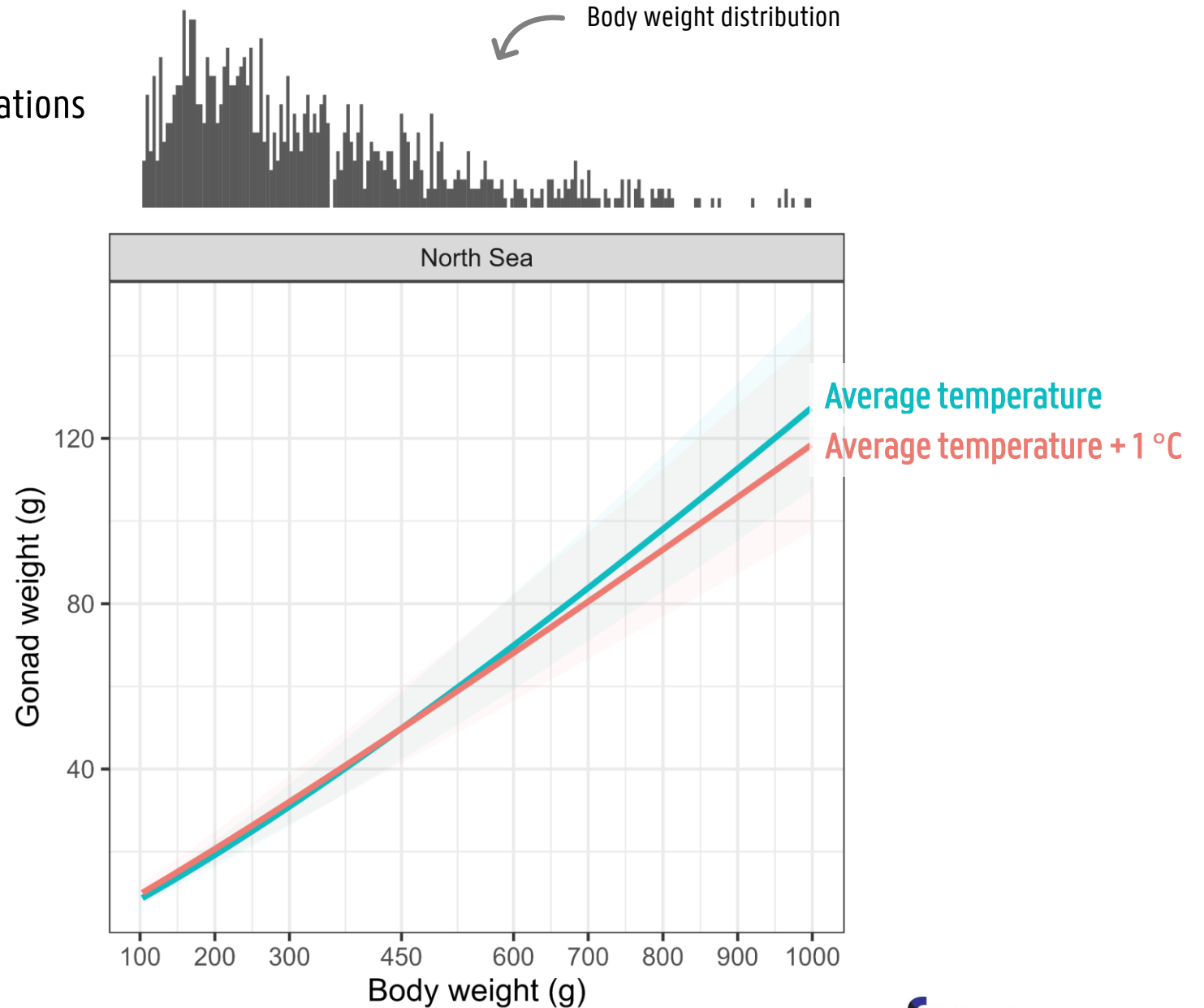
*Gonad weight ~ temperature + control variables*

Peak gonad weight



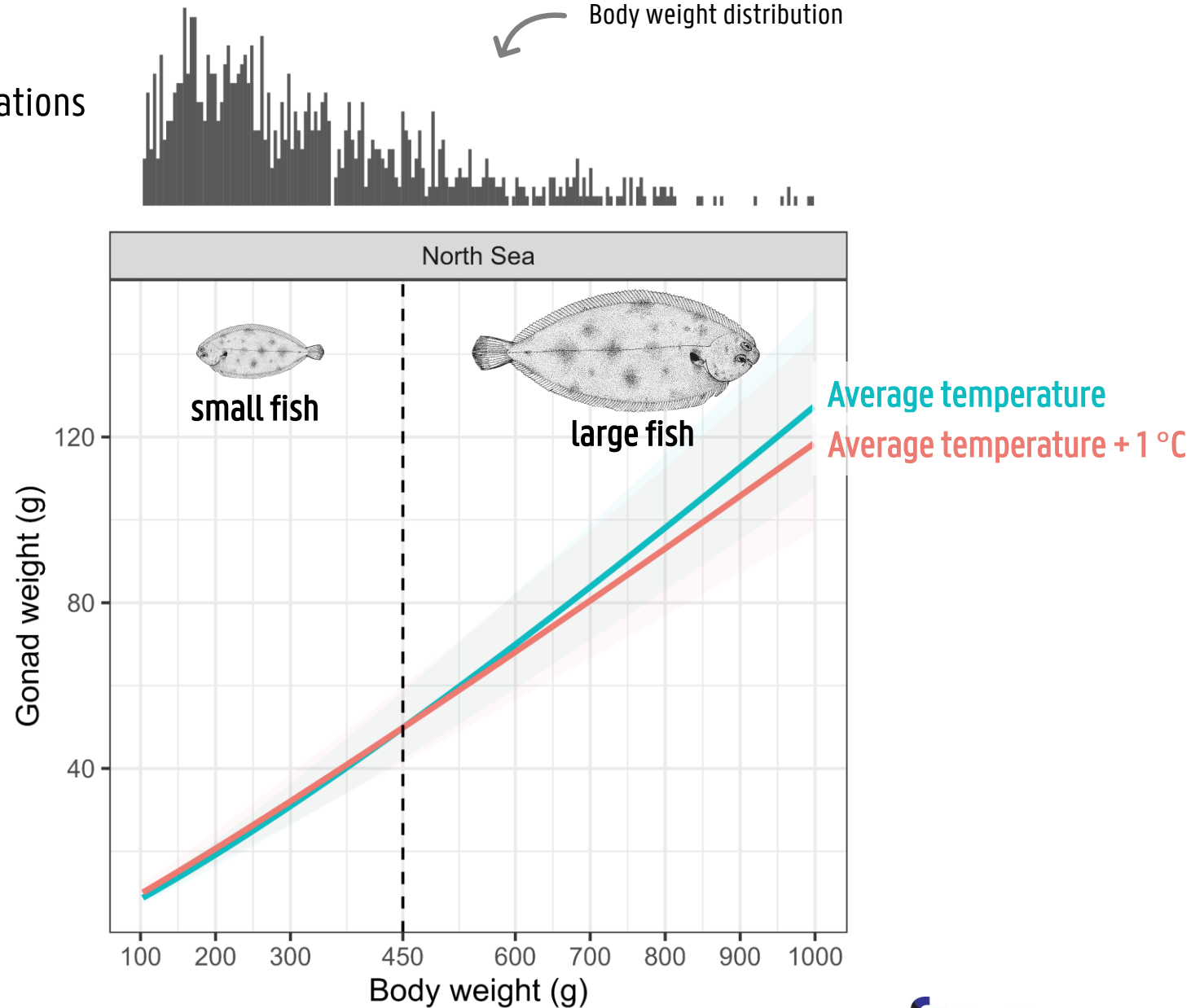
# Results

Temperature effect was the same across populations



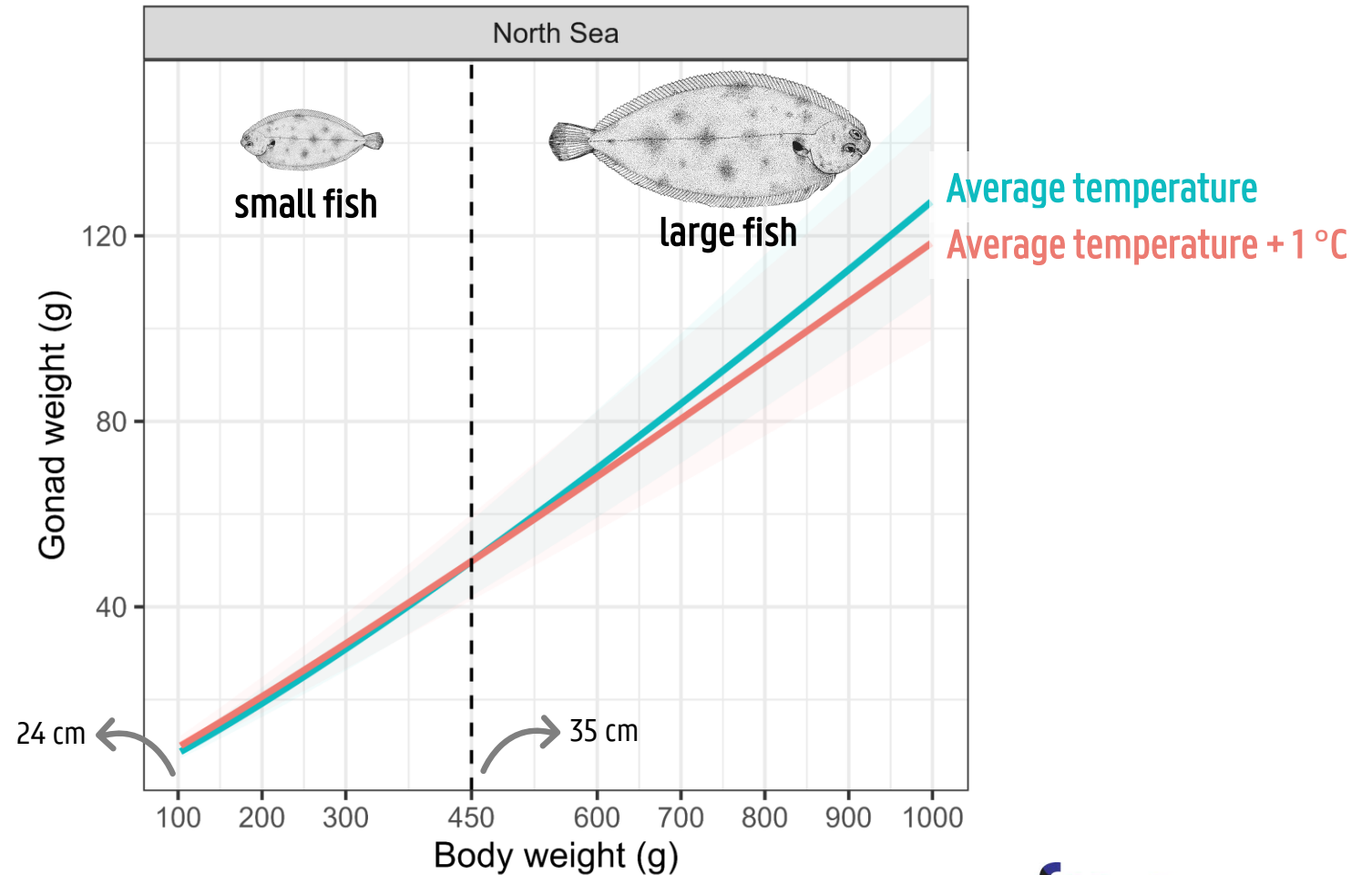
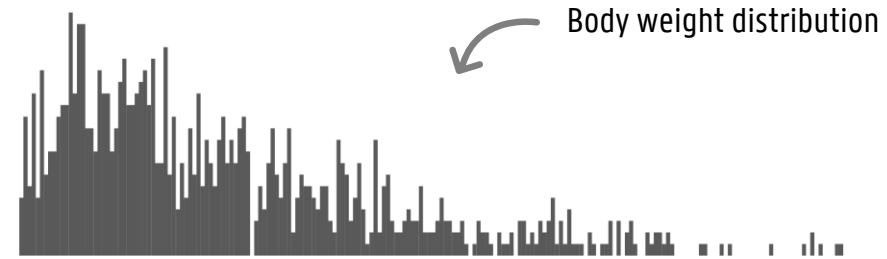
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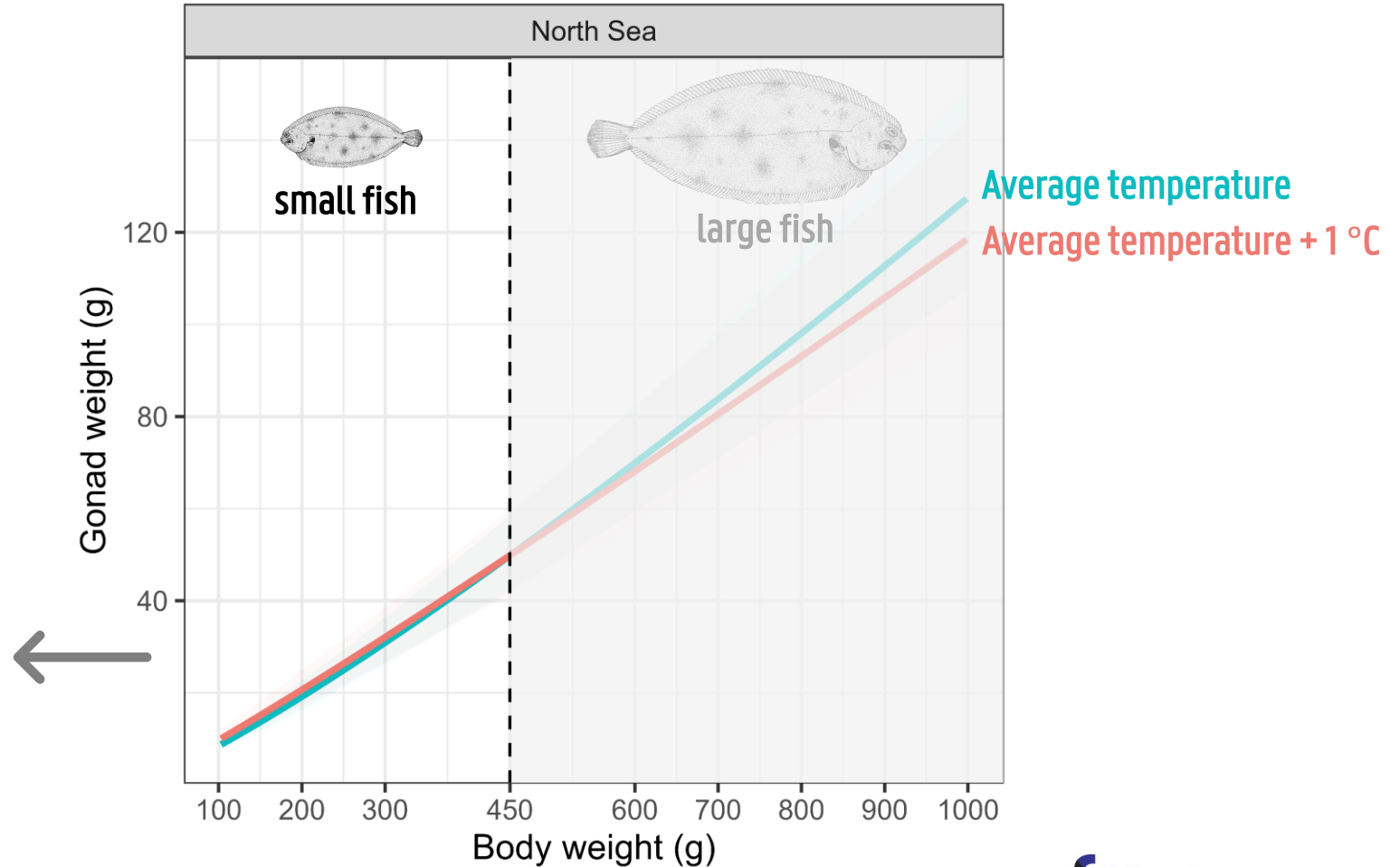
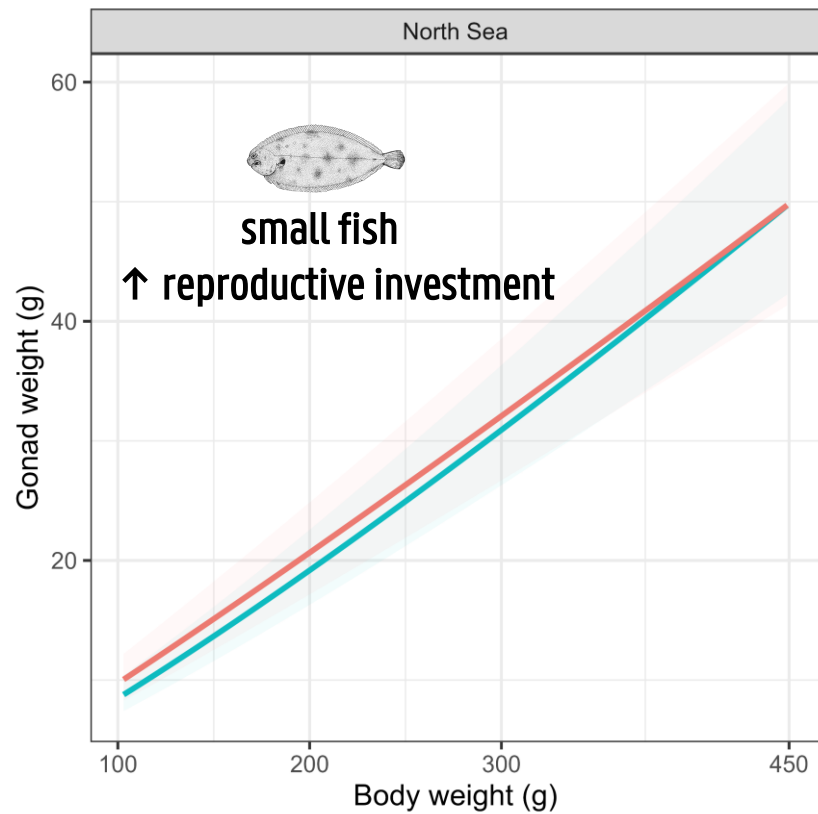
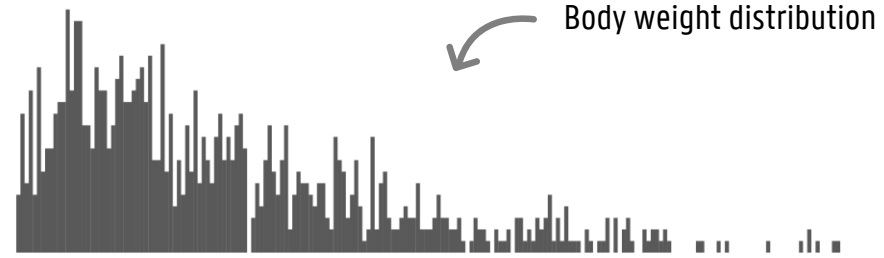
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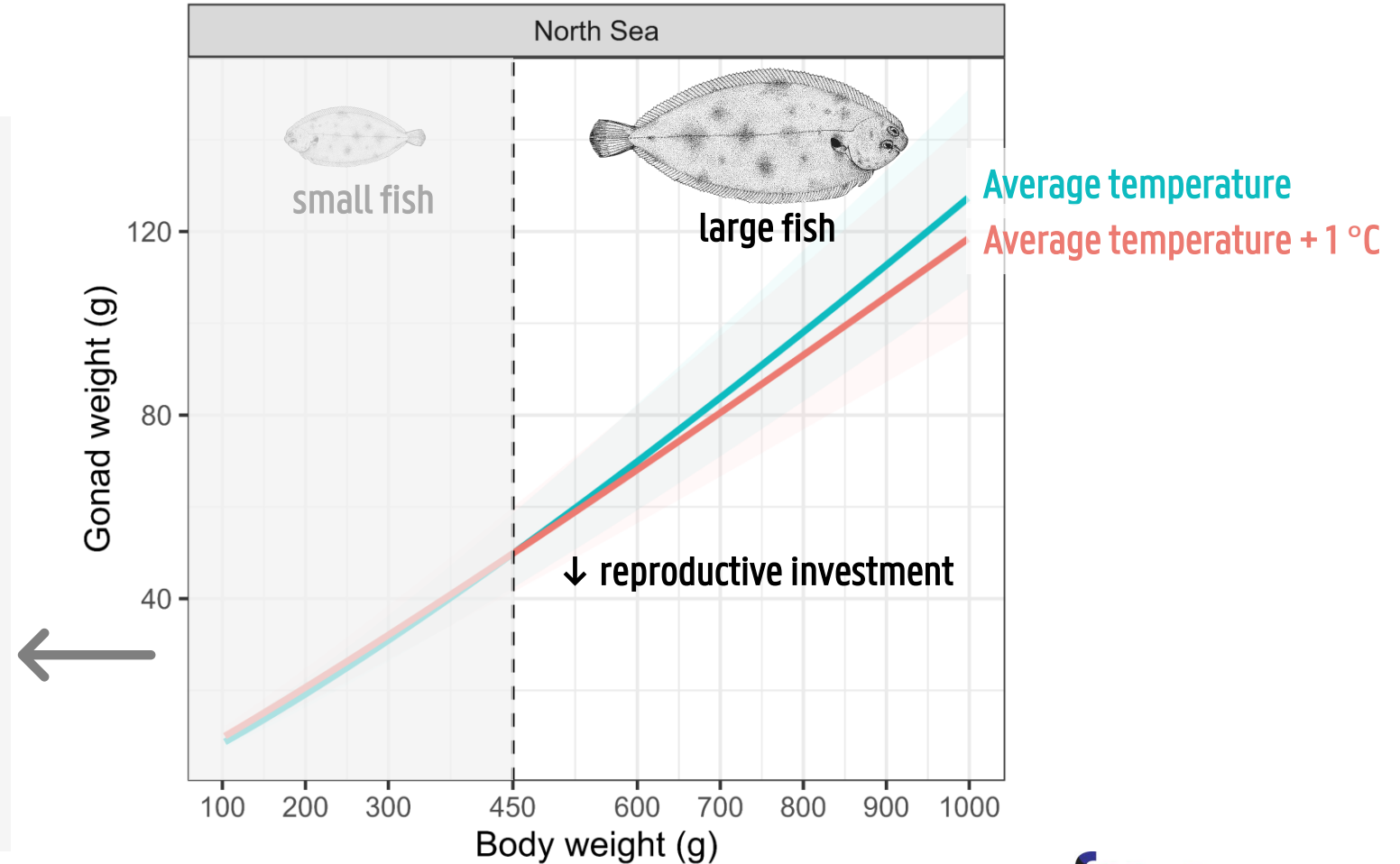
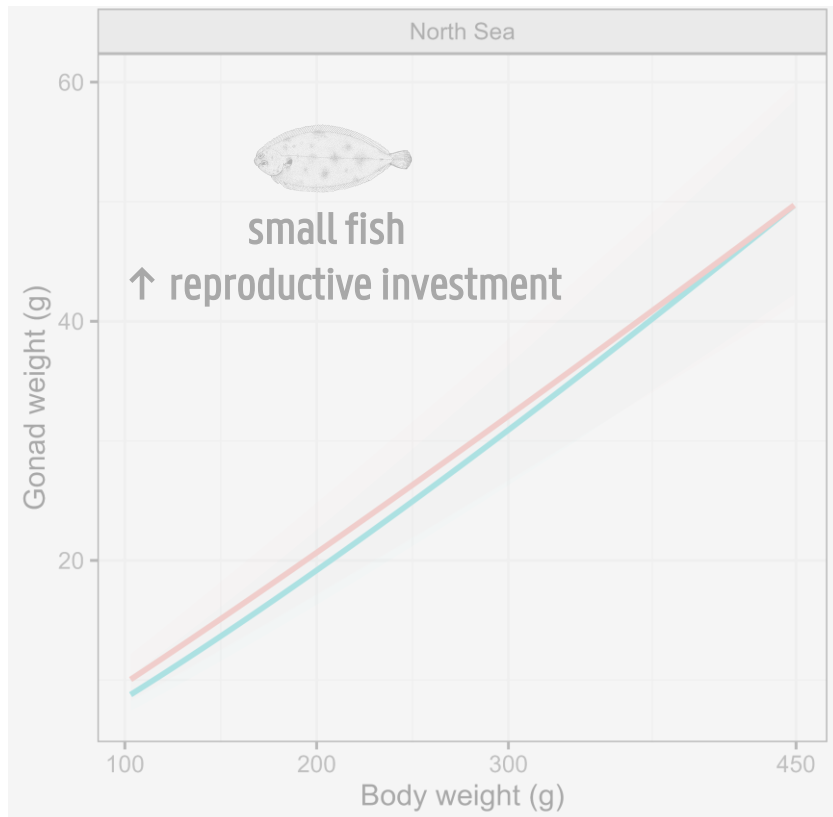
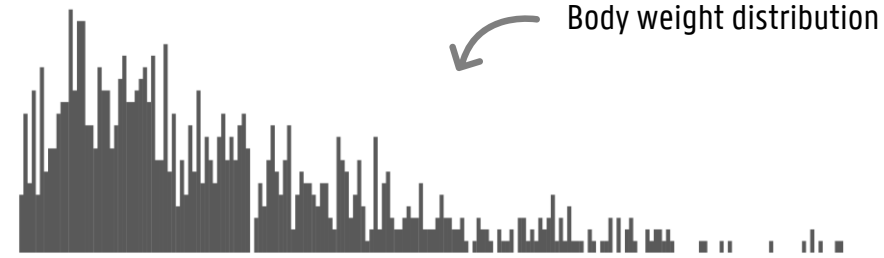
Temperature effect was the same across populations





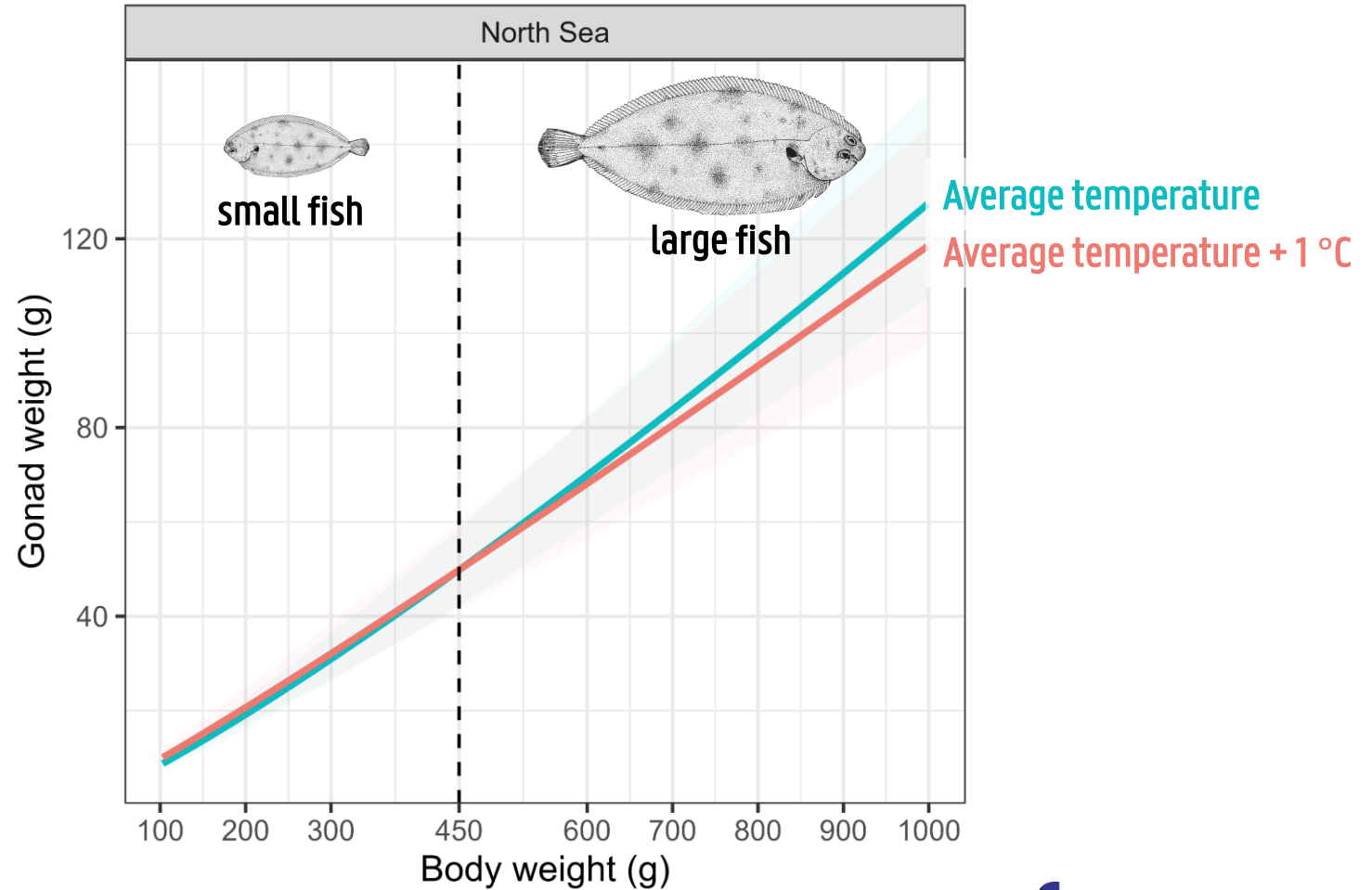
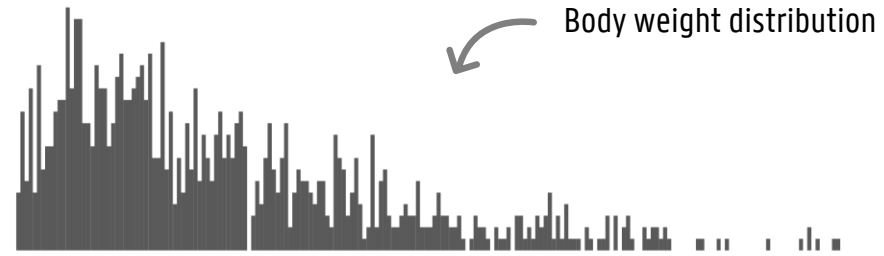
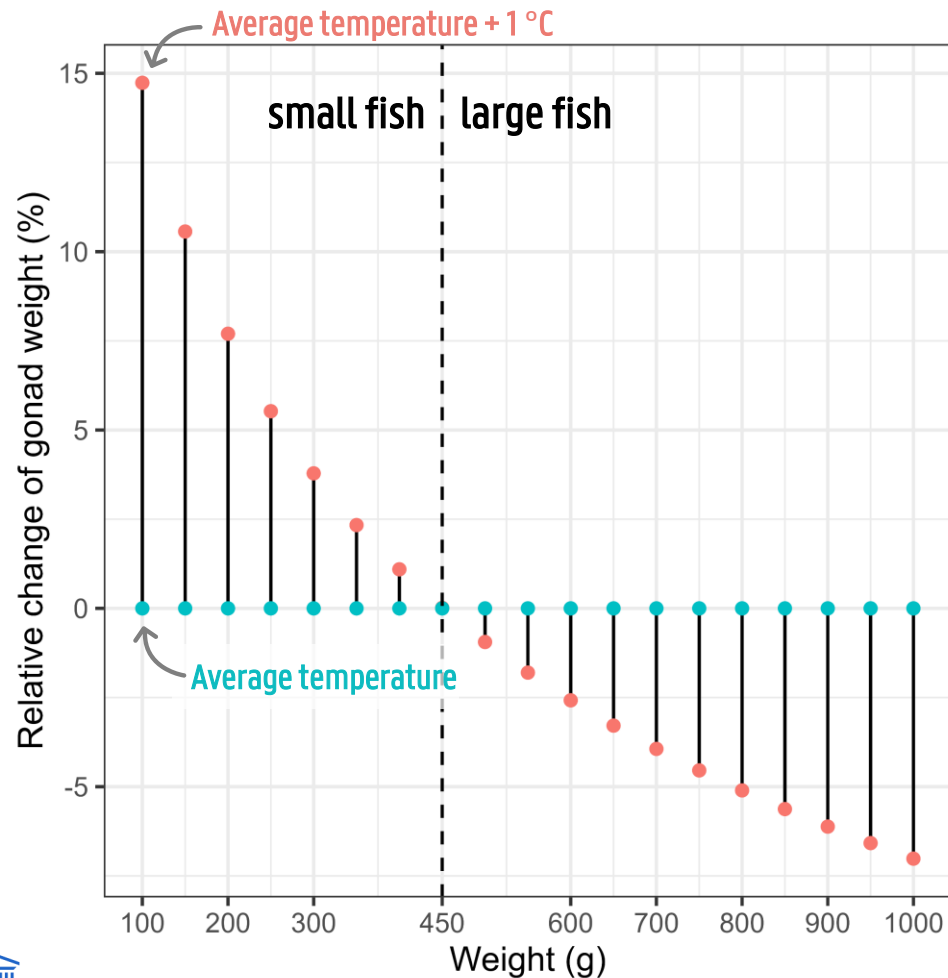
# Results

Temperature effect was the same across populations



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Temperature effect was the same across populations



# Conclusion

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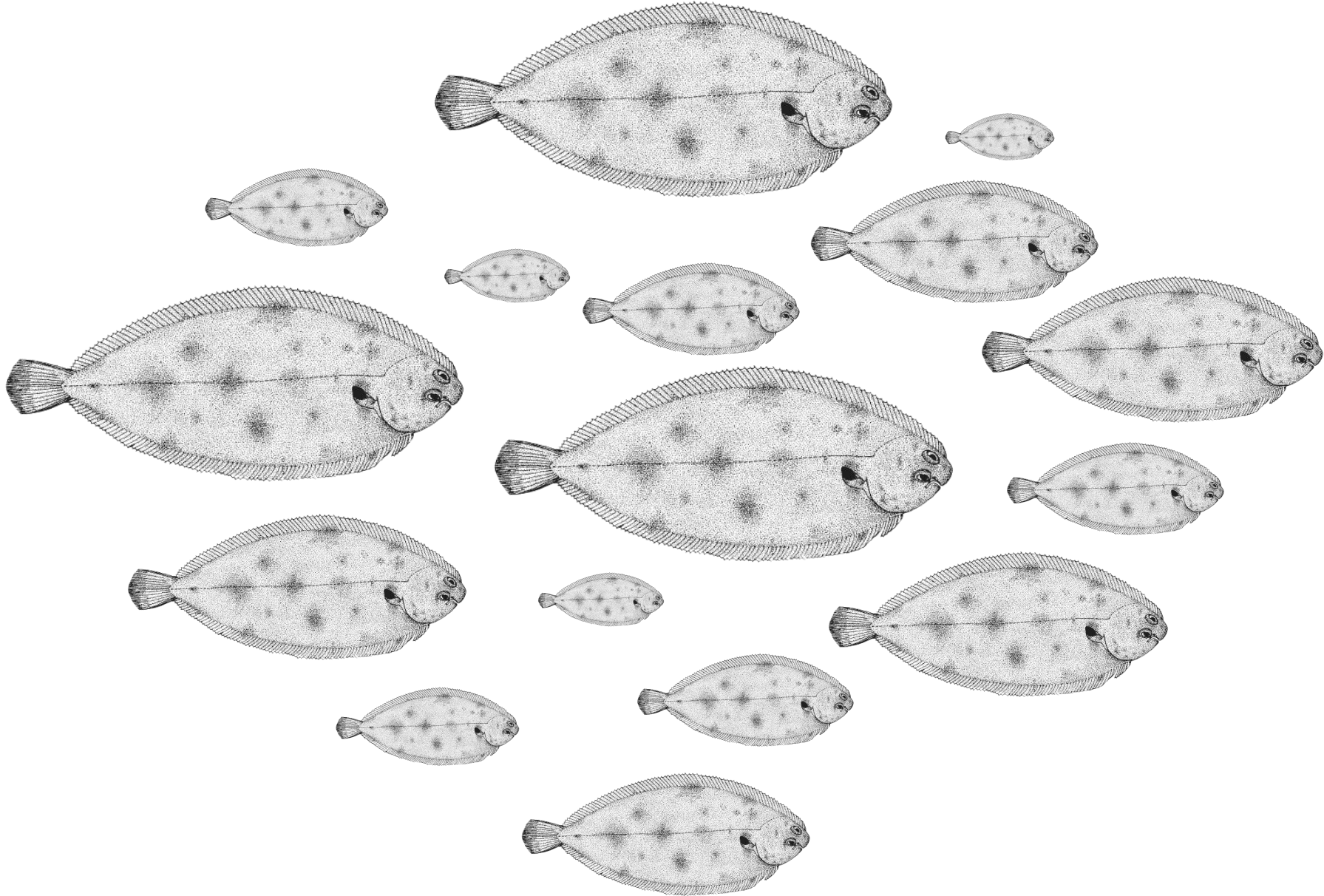
## Climate change

**Q: How does warming temperature affect fish's reproductive investment?**

**A: small fish thrive, large fish compromise**

# Conclusion

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# Conclusion

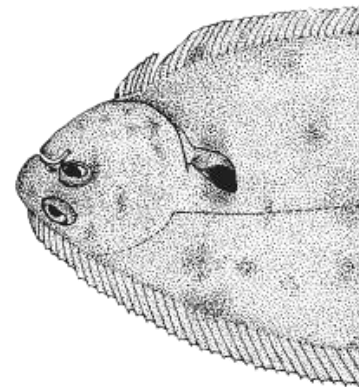
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Climate change



## More but smaller fish?





# Thank you for your attention

Thanks to my supervisors: Marleen De Troch (UGent), Jan Jaap Poos (WUR), Jochen Depestele (ILVO)

Thanks to my ILVO colleagues: Karen Bekaert, Klaas Sys, Laura Lemey, and other



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