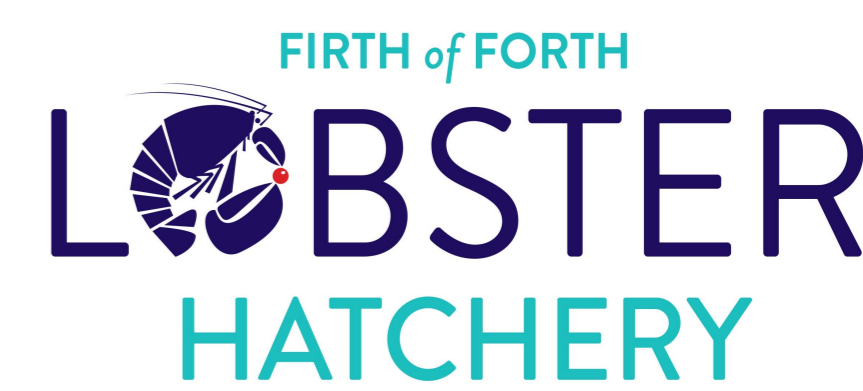


# The effect of temperature on juvenile European lobsters (*Homarus gammarus*).



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## European lobster range and importance

European lobsters currently inhabit a range from Norway to the Mediterranean. In the southern most habitat of European lobsters, sea temperatures may reach 18°C or higher (NOAA, 2022). Current climate change predictions indicate warming of +1.83°C and +8.49°C in the Mediterranean region, causing temperatures of up to 26 °C (Iturbide, et al., 2020). The European lobster has key economic value and supports many fisheries in Europe.

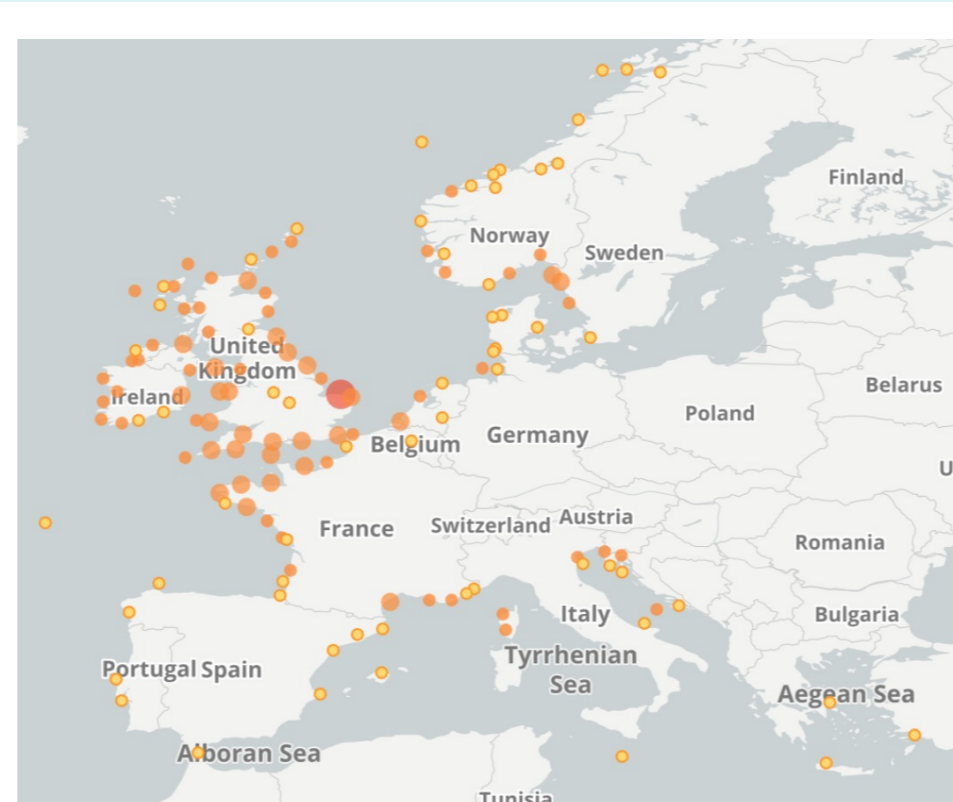


Fig 1. Distribution of European lobster (GBIF, 2022).

## Aims of study

- To measure how temperature affects the growth of juvenile European lobsters by measuring length and mass changes.
- To record the occurrence of molt death syndrome (MDS) as a cause of mortality at increased temperatures.

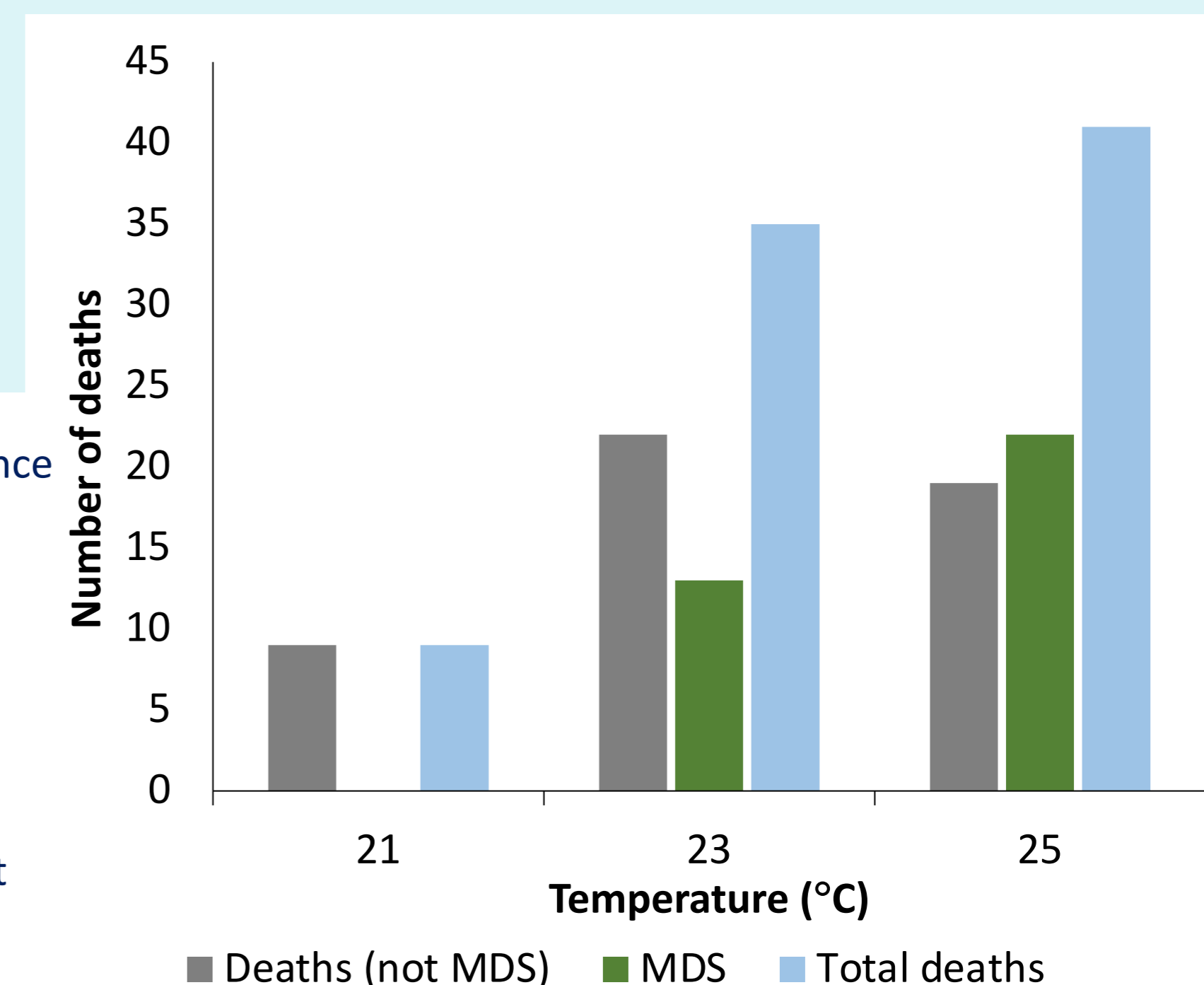
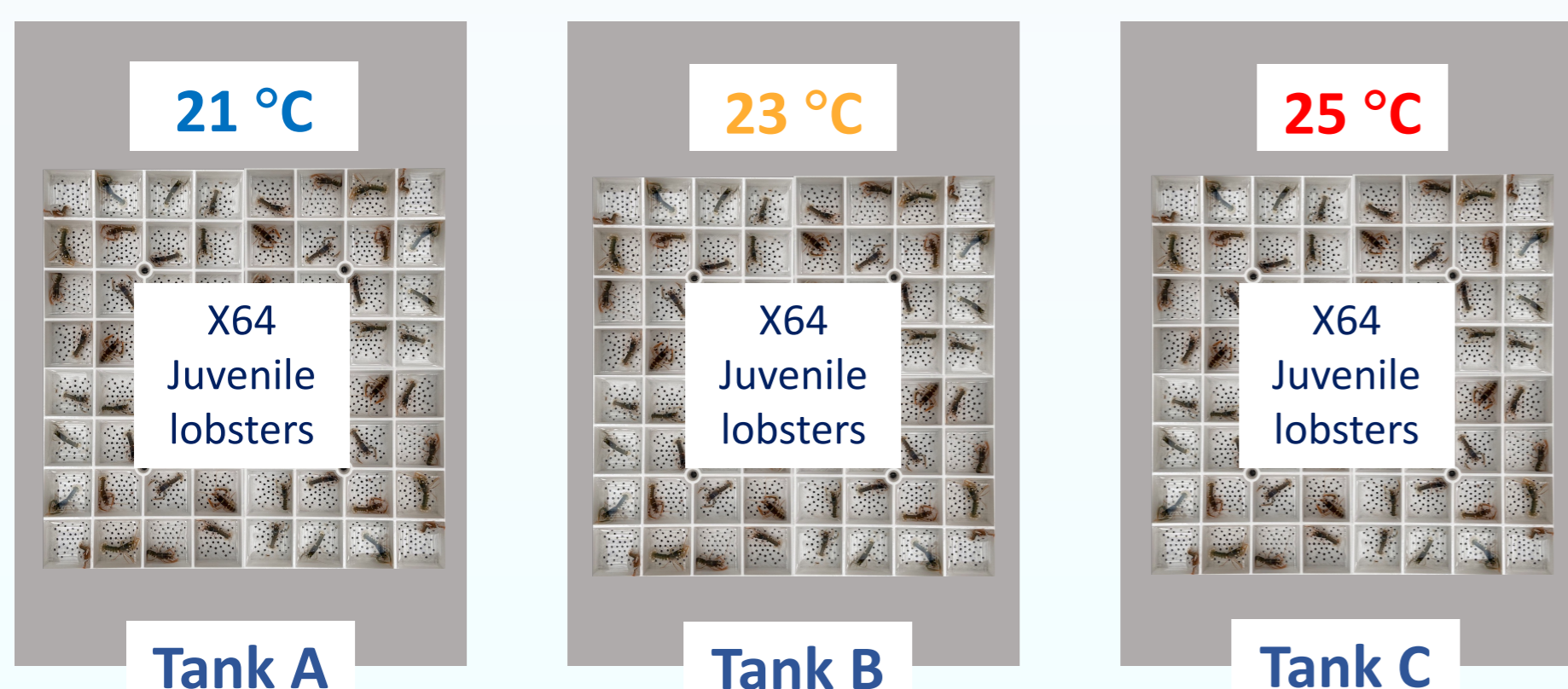


Fig 2. Total occurrence of death and molt death syndrome (MDS) (n=192). Occurrence of MDS >1.5 times higher at 25°C than at 23°C.

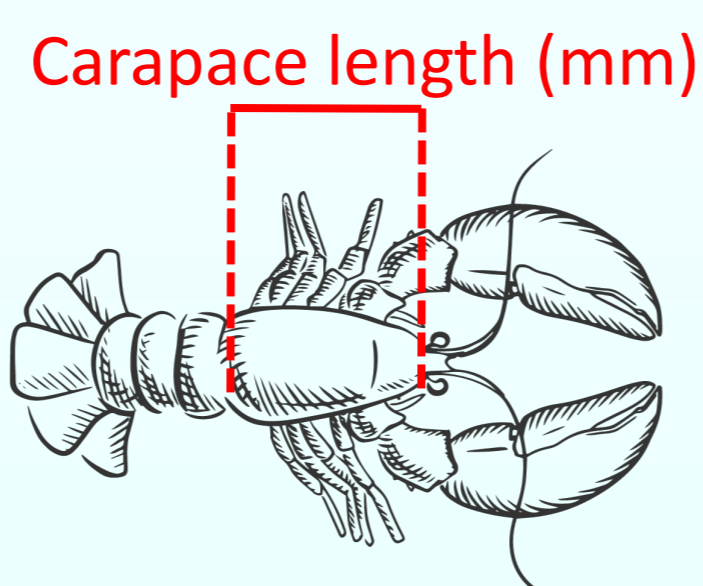
## Methods



x3 replicates, 192 lobsters per treatment, 13 days per replicate

### Measuring:

- Mass changes (g) and carapace length (mm) every 3 days.
- Mortality every day.



Pictures: Becci Jewell

## Conclusions

- Current climate predictions may put European lobster populations at risk, especially along the trailing edge of the species.
- A range contraction of the species could have negative effects on Mediterranean fisheries and increase pressure on remaining fisheries in the North.
- The increased exportation of lobsters from the North to the South will increase the carbon footprint of the lobster fishing industry.
- Increased growth rates at 25°C may increase potential for hatchery and aquaculture outputs.

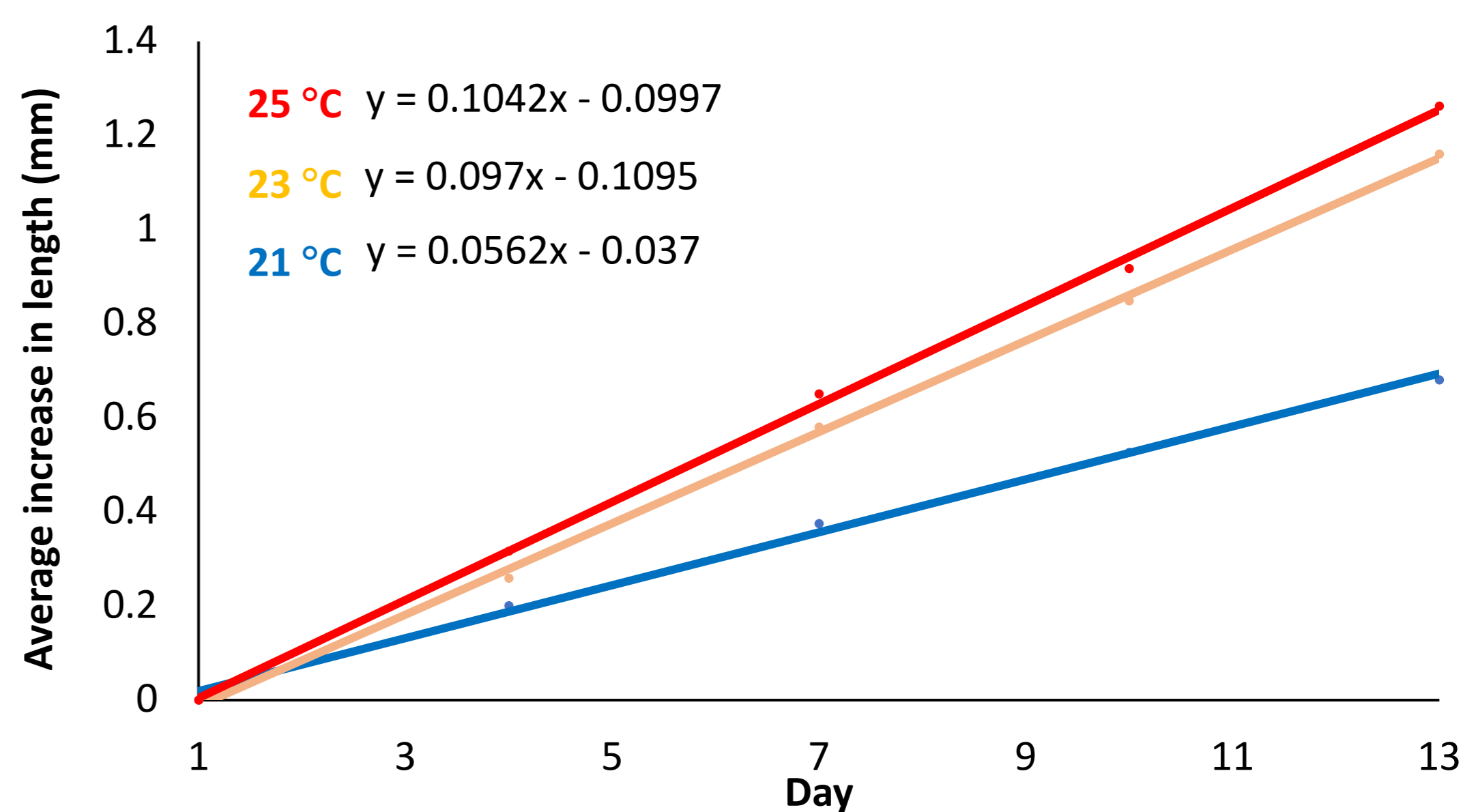


Fig 3. Cumulative changes in average length over time of juvenile lobsters in three temperature treatments.

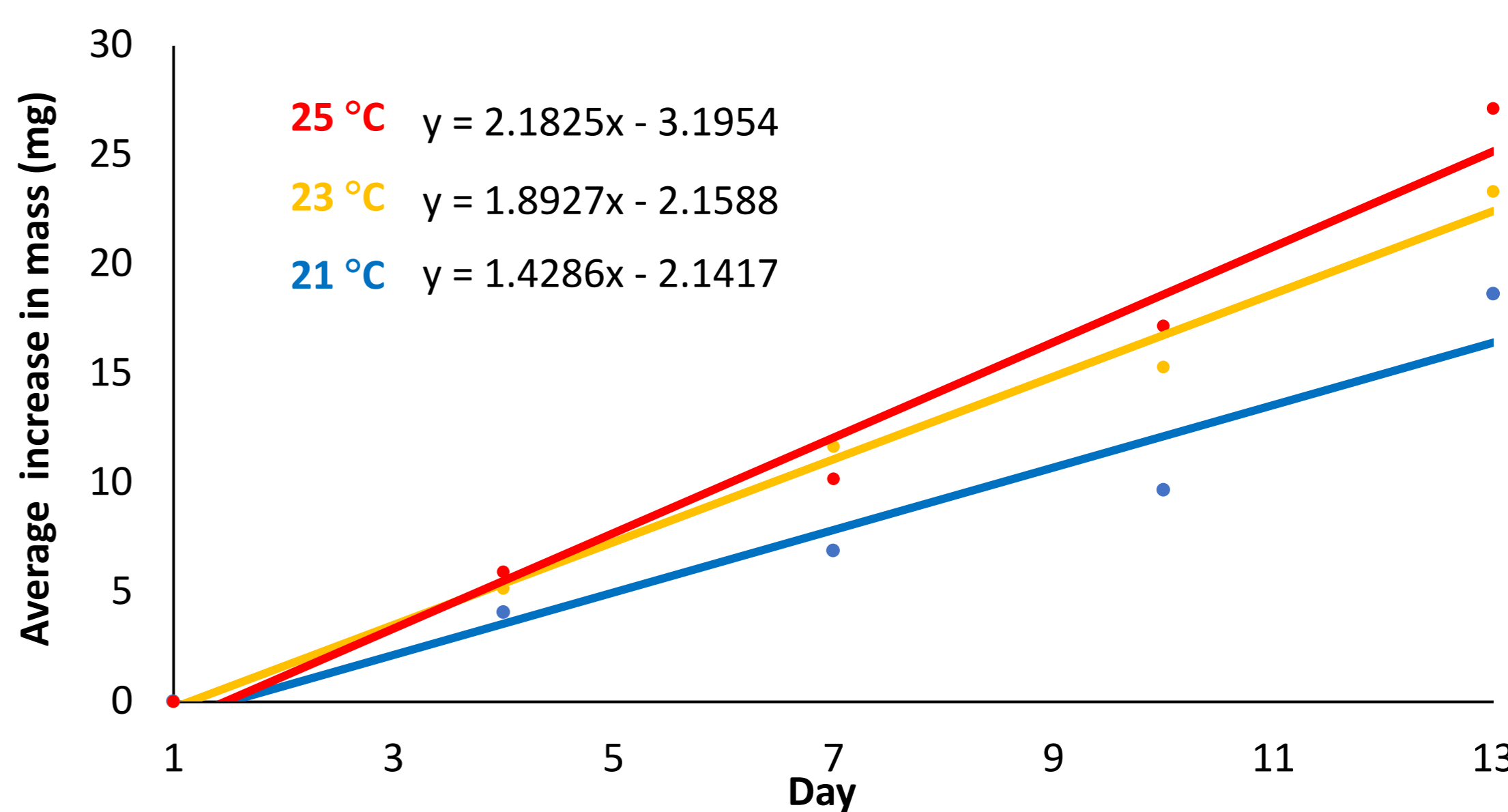


Fig 4. Cumulative changes in average mass over time of juvenile lobsters in three temperature treatments with the highest growth rates occurring at 25°C.