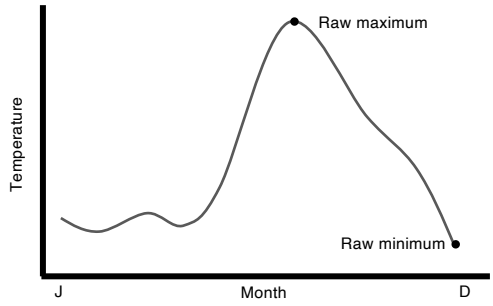
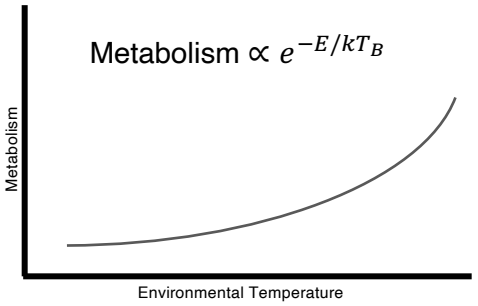
Metabolic hypothesis

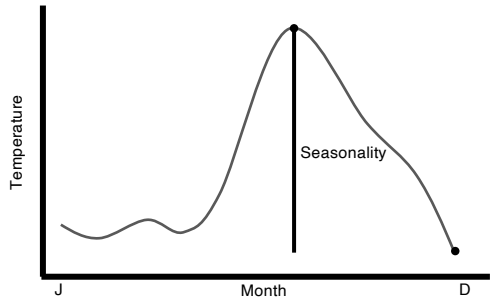
Metabolism scales exponentially with temperature, therefore we expect more arrivals and departures in years with warmer temperature extremes

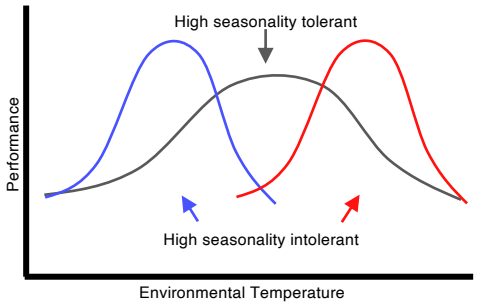




Seasonality hypothesis

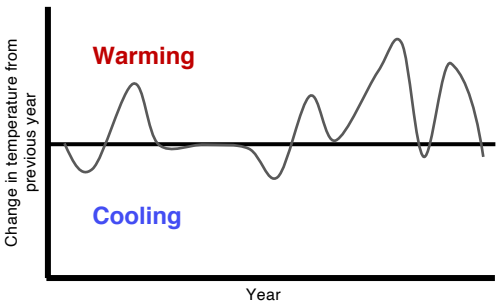
Species that live in highly seasonal environments have unique adaptations that widen their thermal performance curve, therefore we expect few arrivals and departures in years with high seasonality

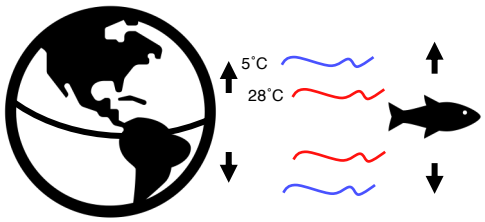




Tropicalization hypothesis

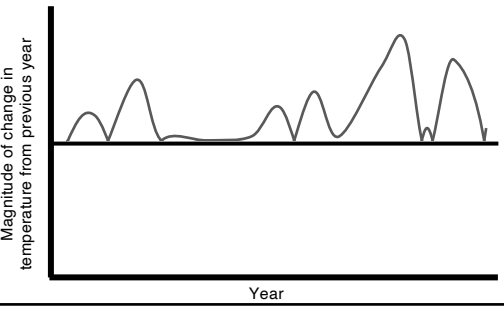
Arrivals and departures correspond with the magnitude and direction of temperature change as species track temperature isotherms poleward

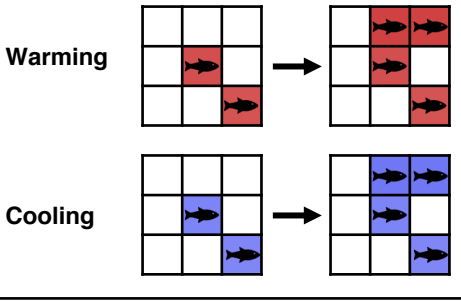




Opportunistic hypothesis

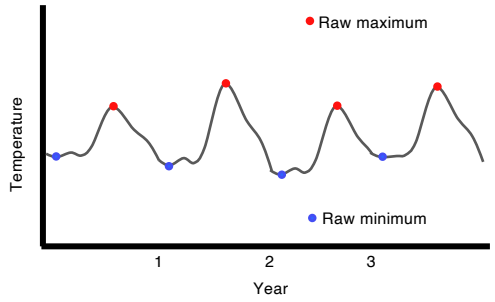
Arrivals and departures correspond with the magnitude of temperature change regardless of whether a region has experienced warming or cooling as species move through space to track preferred temperature conditions

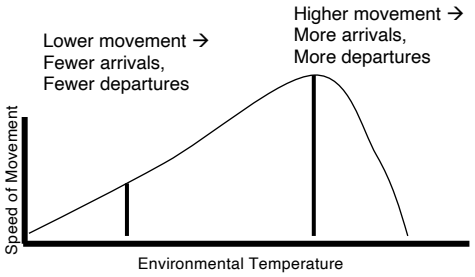




Metabolic hypothesis

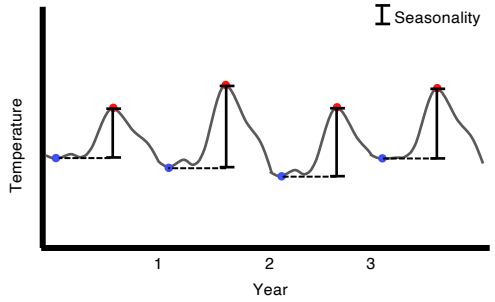
Smith et al. 1998
Claireaux et al. 2006
Dillon et al. 2012

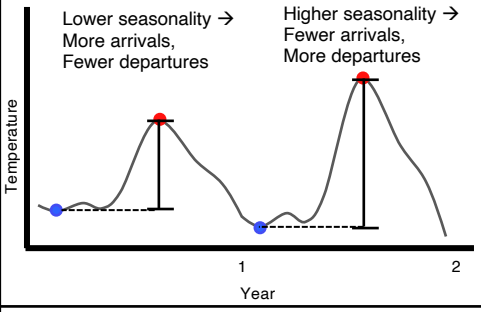




Seasonality hypothesis

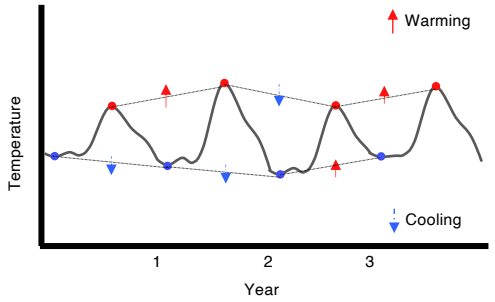
Conover 1992
Yamahira and Conover 2002
Beaukhof et al. 2019

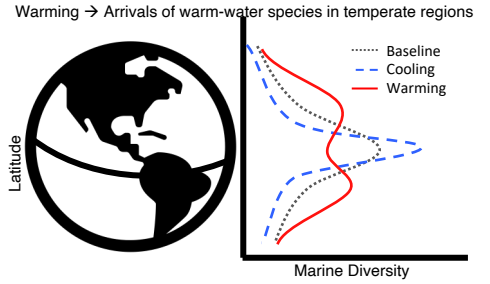




Tropicalization hypothesis

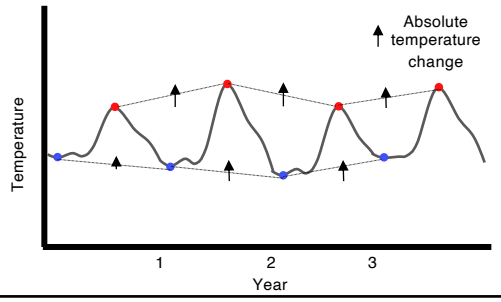
Jablonski et al. 2013
Brown 2014
Vergés et al. 2016

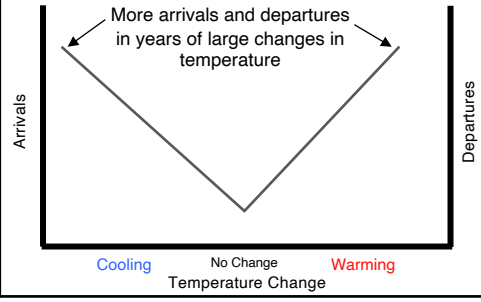




Opportunistic hypothesis

Godínez-Domínguez et al. 2000
Funes-Rodríguez et al. 2006
Day et al. 2018





Metabolic hypothesis

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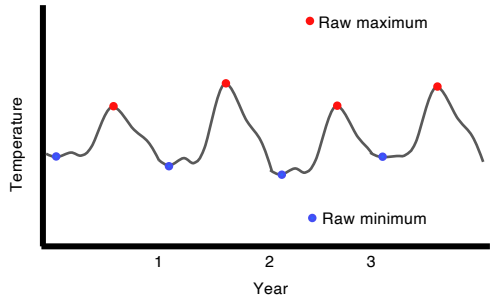

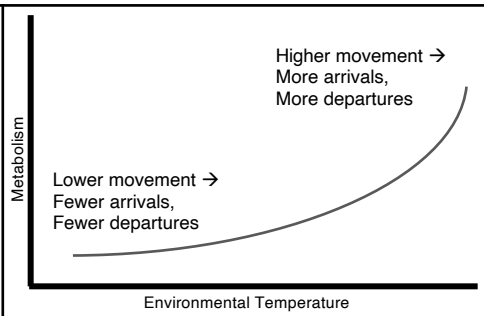

Seasonality hypothesis

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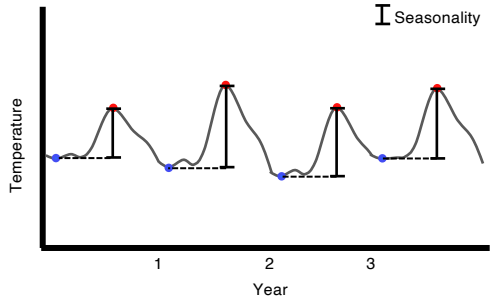
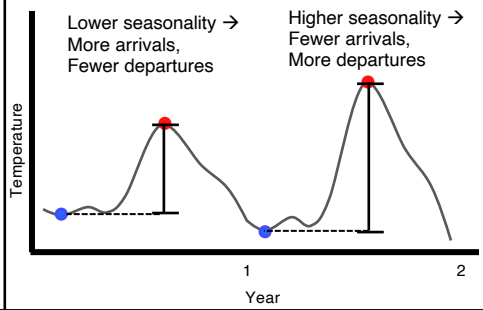
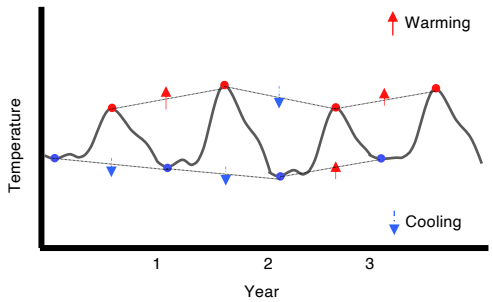
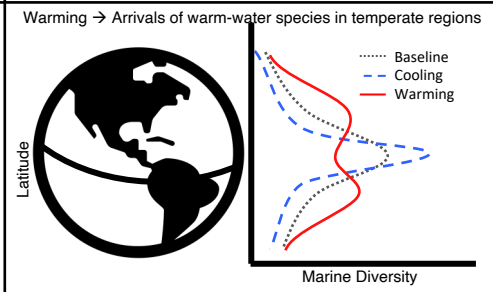




Tropicalization hypothesis

Jablonski et al. 2013
Brown 2014
Vergés et al. 2016
Chaudhary et al. 2021





Opportunistic hypothesis

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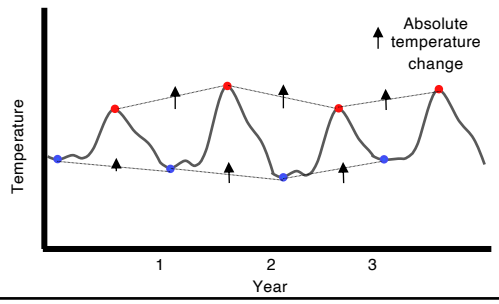
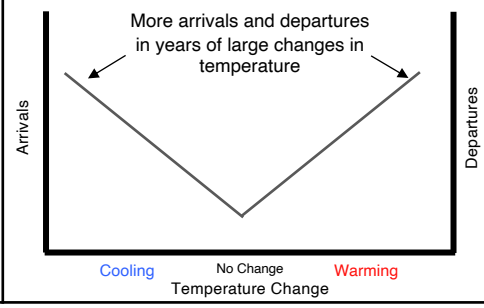
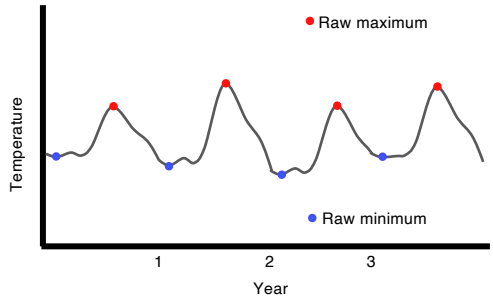
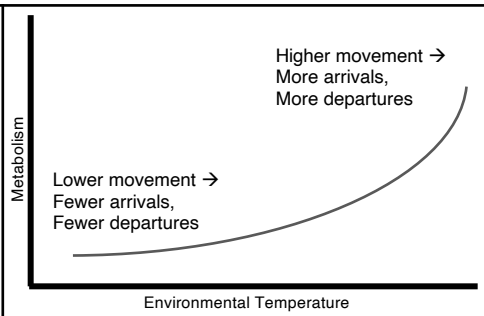
Funes-Rodríguez et al. 2006
Day et al. 2018



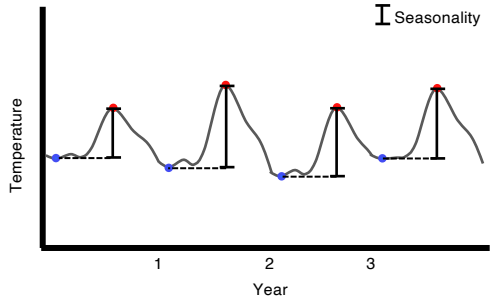


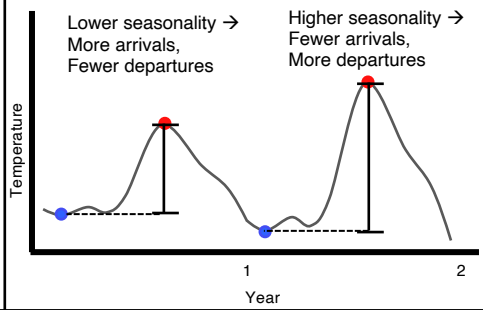
Metabolic hypothesis



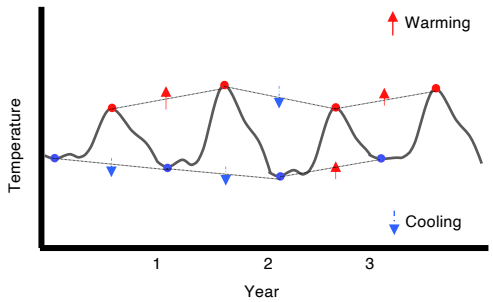


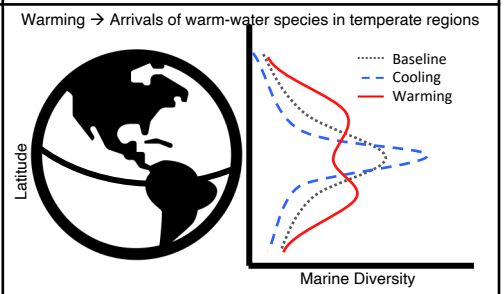
Seasonality hypothesis



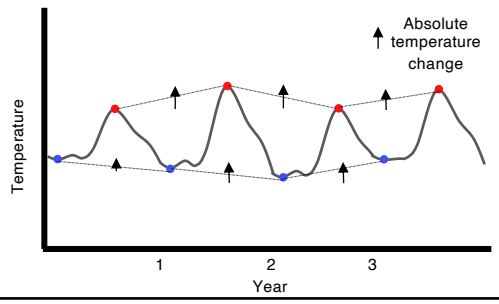


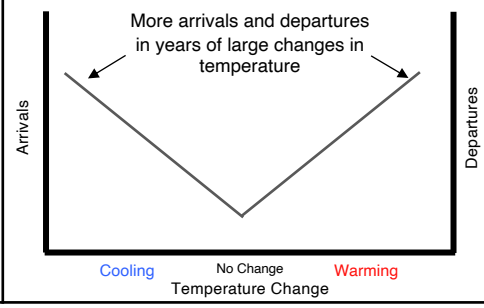
Tropicalization hypothesis

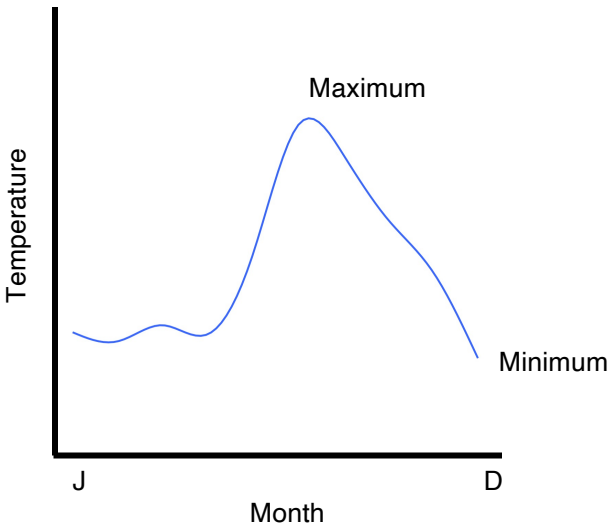




Opportunistic hypothesis







Seasonality