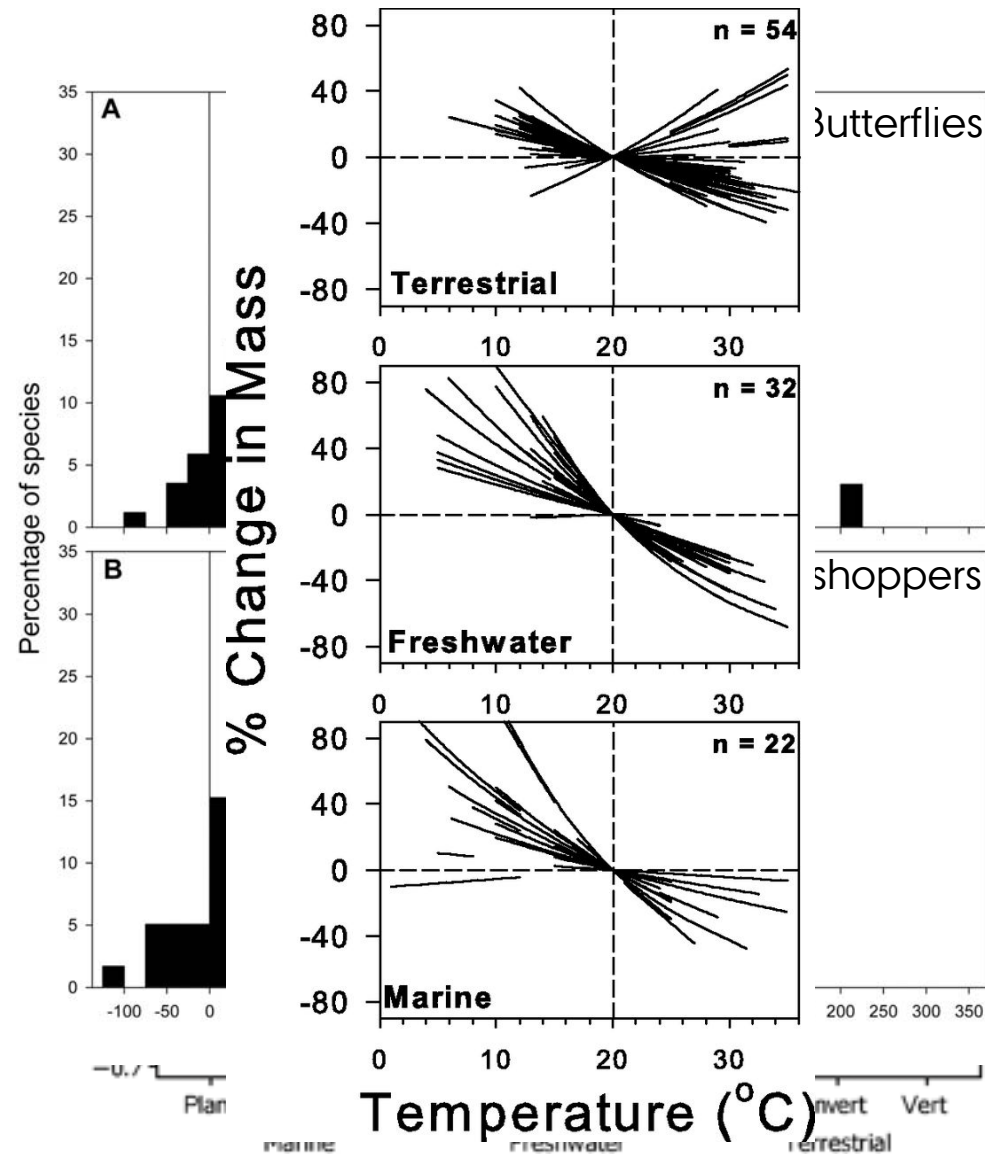



SPECIES RESPONSES TO ARCTIC CLIMATE CHANGE

LESSONS FROM SPIDERS AND INSECTS

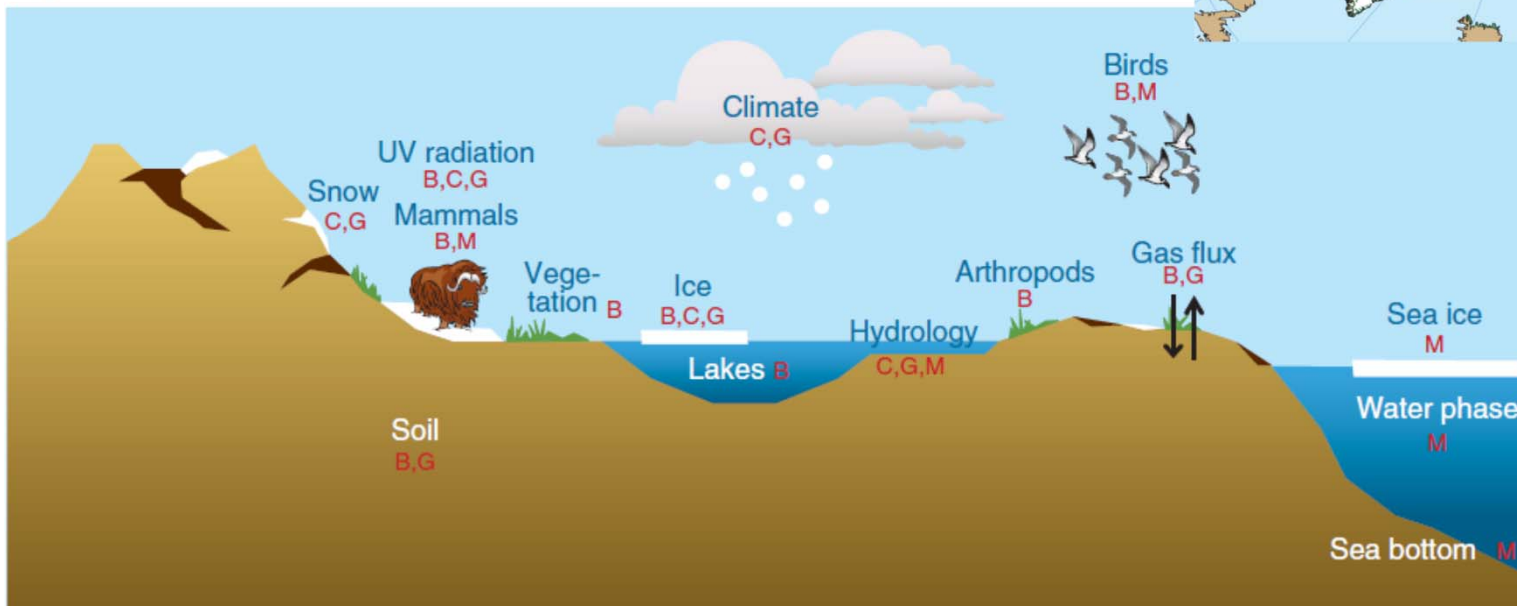
UNIVERSAL RESPONSES TO CLIMATE CHANGE

- ▶ North- and upward range shifts
- ▶ Body size changes
- ▶ Earlier timing of life history events



ZACKENBERG RESEARCH STATION

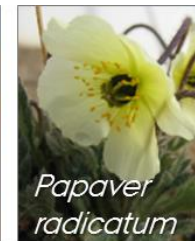
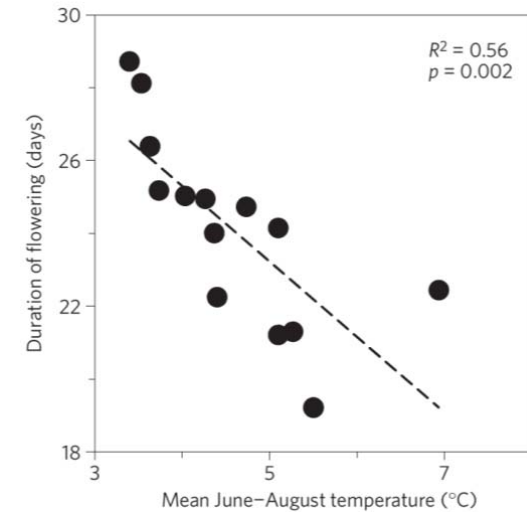
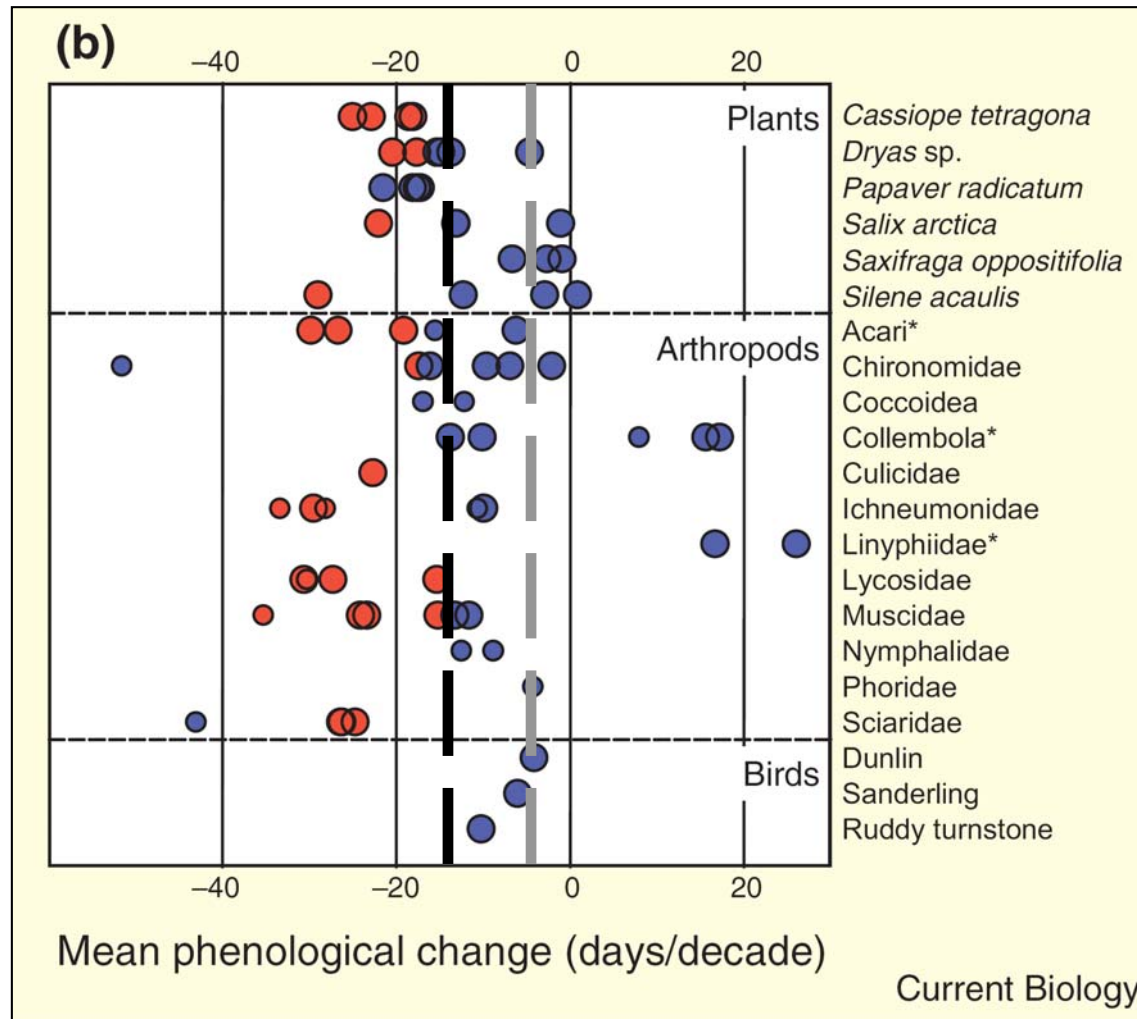
- ▶ 20 years of monitoring the high-arctic environment (1996-2015)
- ▶ Detailed protocols for components of the biological and physical environment
- ▶ On site weather stations



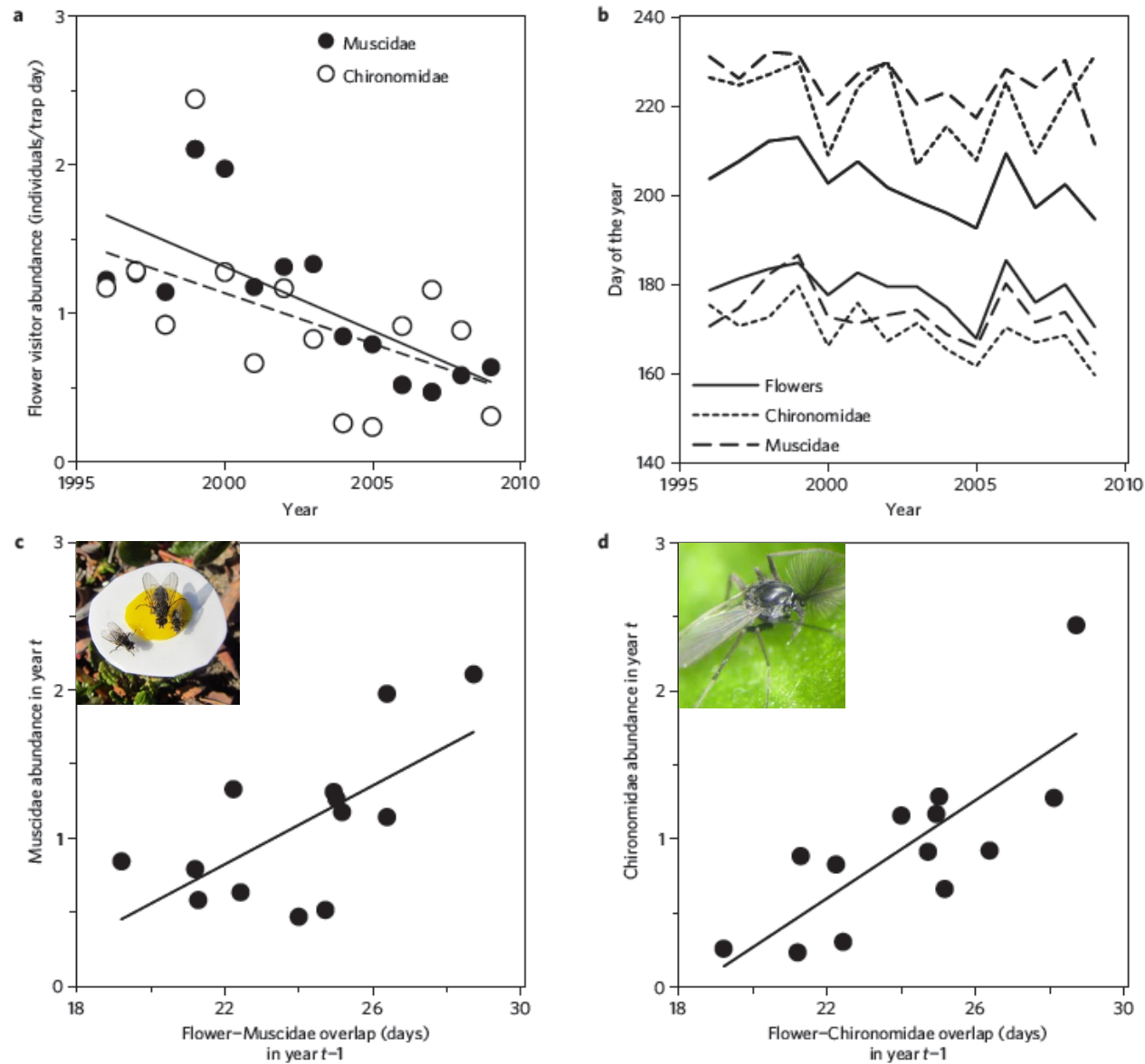


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RAPID ADVANCEMENT OF ARCTIC SPRING PHENOLOGY

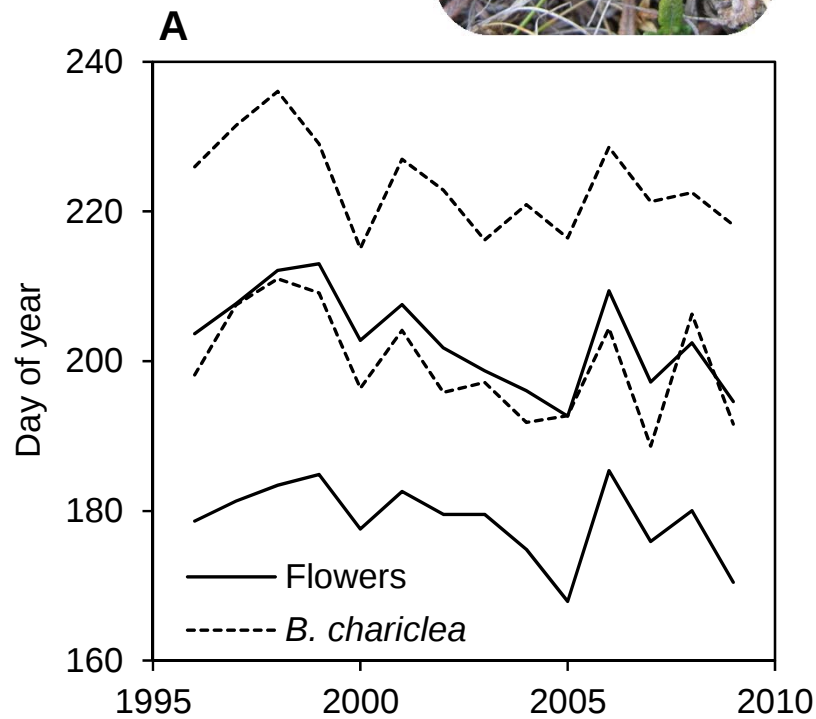


IMPLICATIONS FOR FLOWER VISITORS

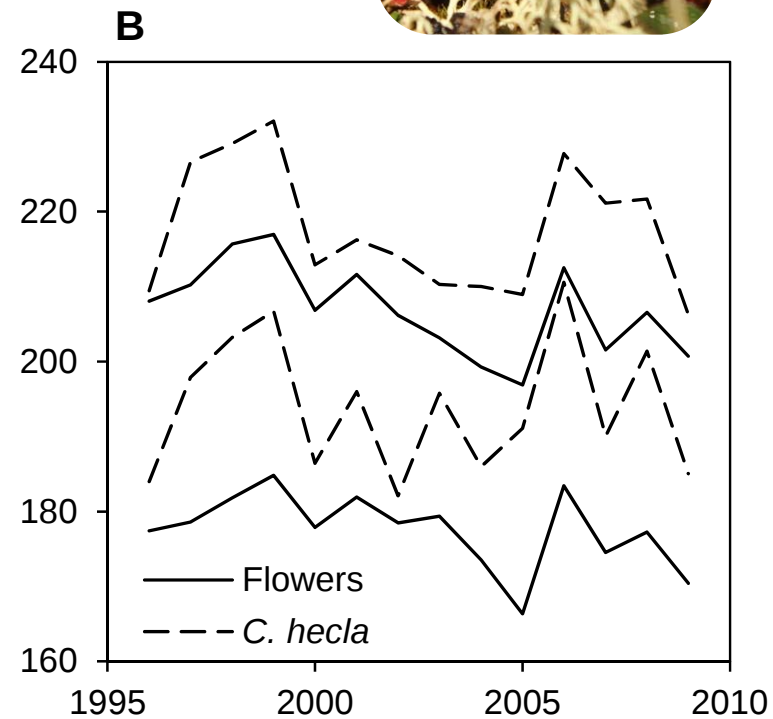


SPECIES-LEVEL RESPONSES IN BUTTERFLIES

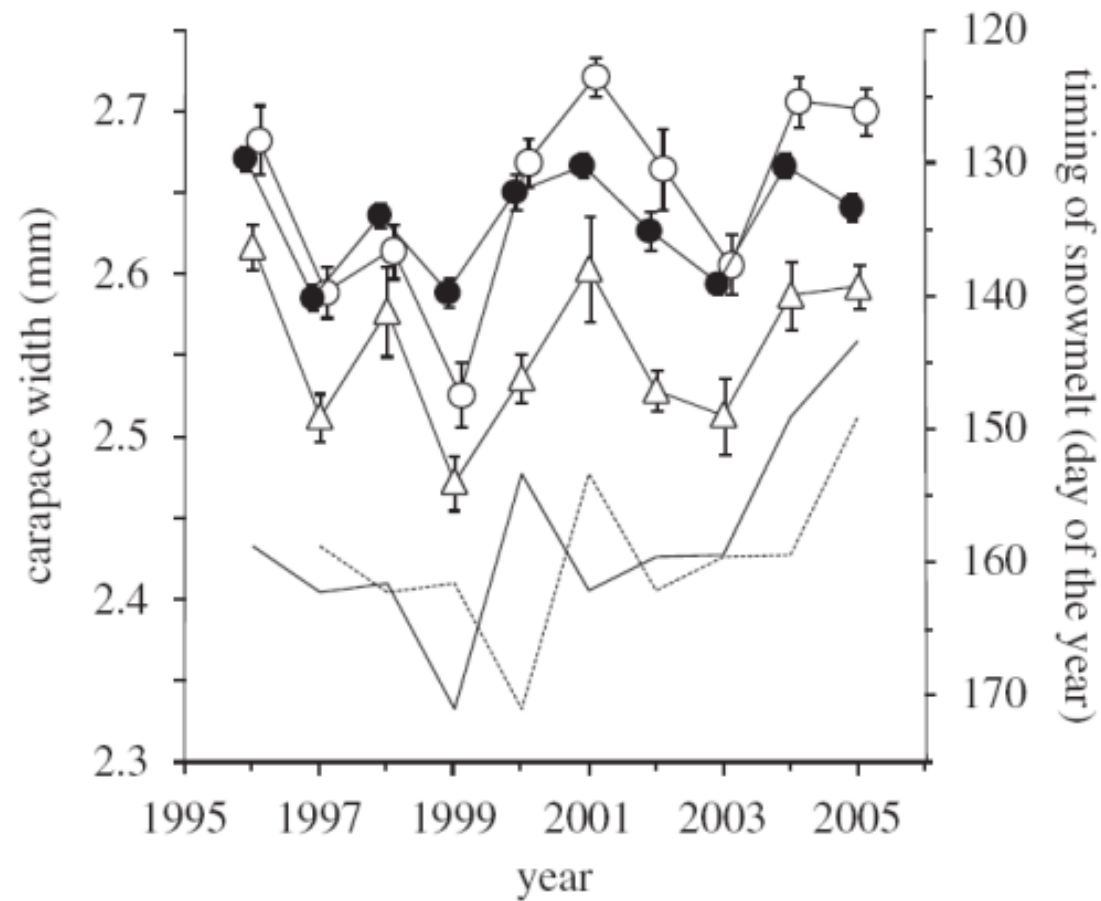
Arctic fritillary
(*Boloria chariclea*)



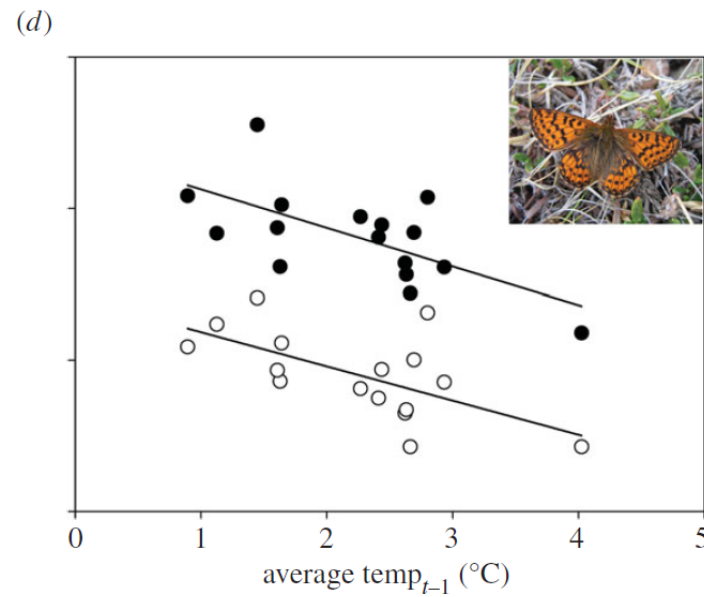
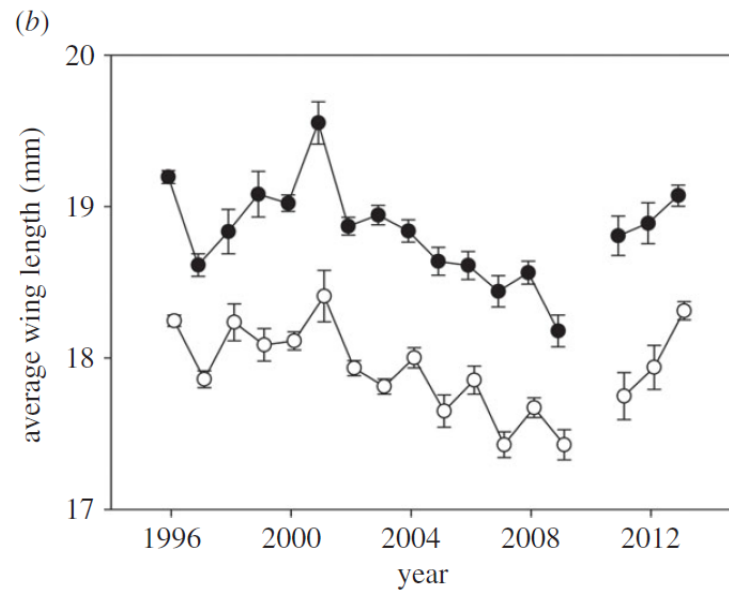
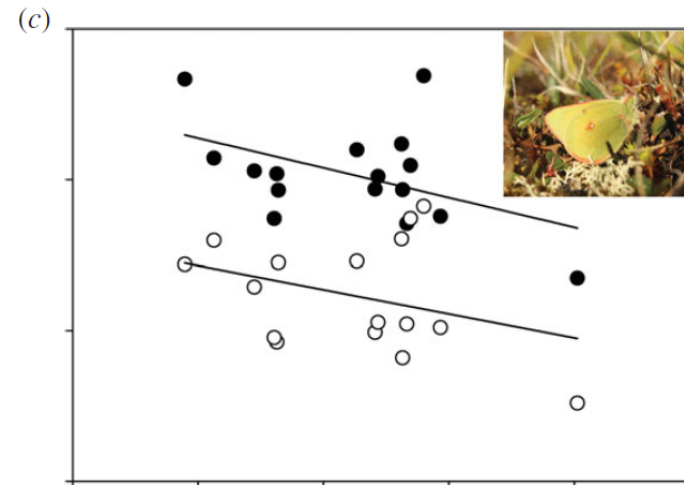
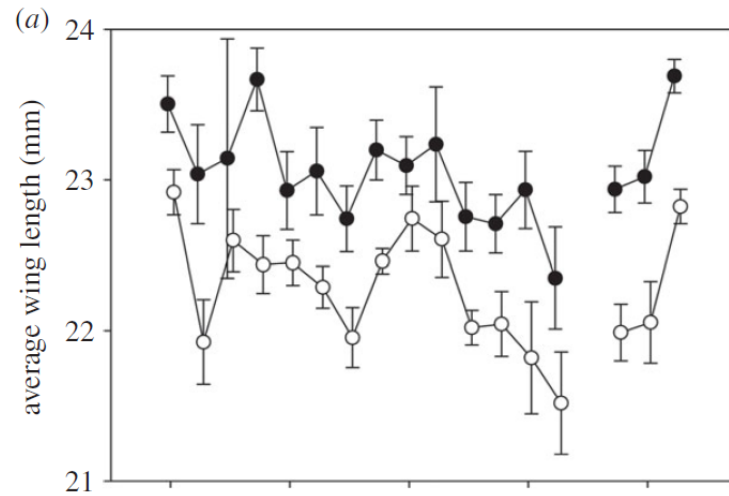
Northern
clouded yellow
(*Colias hecla*)



BODY SIZE CHANGES IN A WOLF SPIDER



BODY SIZE CHANGES IN BUTTERFLIES



TAKE HOME MESSAGES

- ▶ Insects and spiders are particularly sensitive to climatic change
- ▶ Responses in arctic arthropods outpace temperate species responses
- ▶ Shifts in phenology, abundance and body size is reorganising ecological communities
- ▶ Insects and spiders provide compelling models for climate change response studies
- ▶ The relative roles of plasticity vs adaptive change is currently examined

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