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Title:	Global biogeography of warning coloration in the butterfly <i>Danaus chrysippus</i>
Authors:	Raina, Gayatri (/jspui/browse?type=author&value=Raina%2C+Gayatri)
Keywords:	Global biogeography butterfly <i>Danaus chrysippus</i>
Issue Date:	2022
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Citation:	Biology Letters, 18(6), 639.
Abstract:	Warning coloration provides a textbook example of natural selection, but the frequent observation of polymorphism in aposematic species presents an evolutionary puzzle. We investigated biogeography and polymorphism of warning patterns in the widespread butterfly <i>Danaus chrysippus</i> using records from citizen science (n = 5467), museums (n = 8864) and fieldwork (n = 2586). We find that polymorphism in three traits controlled by known mendelian loci is extensive. Broad allele frequency clines, hundreds of kilometres wide, suggest a balance between long-range dispersal and predation of unfamiliar morphs. Mismatched clines for the white hindwing and forewing tip in East Africa are consistent with a previous finding that the black wingtip allele has spread recently in the region through hitchhiking with a heritable endosymbiont. Light/dark background coloration shows more extensive polymorphism. The darker genotype is more common in cooler regions, possibly reflecting a trade-off between thermoregulation and predator warning. Overall, our findings show how studying local adaptation at the global scale provides a more complete picture of the evolutionary forces involved.
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