



Colder environments may select for darker paper wasps

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Polistes paper wasps have striking and variable colour patterns. Although these colour patterns are known to function in communication, little is known about how they affect fitness in relation to the abiotic environment. In the present study, we used dried-preserved museum specimens, comprising male and female *Polistes* from all over the world, aiming to test for a correlation between the body luminance (assessed by digital photography) and environmental temperature (assessed by the available online environmental databases). We found that the female thorax and abdomen are darker (low luminance) in colder compared to warmer environments. In males, however, body luminance is not associated with environmental temperature. Theoretical and empirical evidence suggests that darker insects have an advantage in colder environments because they can heat faster than lighter ones (thermal melanism hypothesis). By showing that melanic *Polistes* inhabit cooler areas more than the brighter species, we presume that selection for effective heating may provide an adaptive explanation for the evolution of *Polistes* colour diversity.