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Fuelling conditions at staging sites can mitigate Arctic warming effects in a migratory bird

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Under climate warming, migratory birds should align reproduction dates with advancing plant and arthropod phenology. To arrive on the breeding grounds earlier, migrants may speed up spring migration by curtailing the time spent *en route*, possibly at the cost of decreased survival rates. Based on a decades-long series of observations along an entire flyway, we show that when refuelling time is limited, variation in food abundance in the spring staging area affects fitness. Bar-tailed godwits migrating from West Africa to the Siberian Arctic reduce refuelling time at their European staging site and thus maintain a close match between breeding and tundra phenology. Annual survival probability decreases with shorter refuelling times, but correlates positively with refuelling rate, which in turn is correlated with food abundance in the staging area. This chain of effects implies that conditions in the temperate zone determine the ability of godwits to cope with climate-related changes in the Arctic.

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