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A swallowtail population at Shapwick Heath? Preliminary study on the feasibility by comparing host plant properties in Norfolk and Somerset

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Introduction

The swallowtail butterfly is one of the rarest butterflies in the United Kingdom, and is now restricted to the Norfolk Broads. It is thought that the species was once far more widespread, and also occurred in the Somerset Levels, one of the long-standing main centres of distribution of the butterfly's host plant milk parsley. The swallowtail is listed as a species of Conservation Concern in the UK Biodiversity Action Plan. Its habitat is at risk from factors such as a lowering water table, invasion of scrub, pollution of surface and ground water by nitrates and phosphates, prolonged winter flooding and increasing salinity of water as a result of sea level rise. With this in mind, it is useful to investigate the potential for re-establishment of populations of this 'flagship' species in the Somerset Levels as a means of risk spreading aimed at conserving this unique subspecies.

What was done

The aims of this study were

1. To study the properties of milk parsley plants that were selected by female swallowtail butterflies for egg-laying in three areas in the Norfolk Broads,
2. To compare these suitable host plants with the milk parsley plants present on Shapwick Heath NNR in the Somerset Levels, and to conclude whether plants with similar properties occur on Shapwick Heath,
3. To conclude whether more extensive research into the re-establishment possibilities of the species in the Somerset Levels is desirable.

Results and conclusions

Host plant selection

No positive relationship could be detected between the abundance of flowering milk parsley plants and the number of larvae recorded. The concealment factor was found to be significantly lower for plants bearing larvae, which means that the butterfly selects for plants that protrude above the surrounding vegetation and/or plants of which the immediate surrounding vegetation is relatively low or open.

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Suitability of milk parsley plants on Shapwick Heath NNR as host plants

The Milk Parsley plants encountered on Shapwick Heath were as large, if not larger than those encountered in the Norfolk Broads. The abundance of flowering milk parsley plants is lower on Shapwick than in the Broads. However, the Shapwick habitat has only been created recently, and the distribution and abundance of milk parsley probably hasn't reached its maximum potential in the area. Furthermore, the Shapwick habitat is not managed in a way that encourages the recruitment and performance of milk parsley. Most of the available flowering milk parsley plants (62%) on Shapwick are suitable as host plant in terms of Concealment factor. It is thought that if an appropriate management regime would be implemented in the reed beds on Shapwick Heath where milk parsley can be found, the amount of 'suitable' host plants would be enhanced significantly.

Although this study was carried out on small scale and only to certain aspects of the ecology of the swallowtail, the results indicate that suitable habitat in terms of these aspects is present and/or could be created on Shapwick Heath NNR. However, before any conclusions can be drawn, further research is needed. There are gaps in the knowledge about the ecology of the butterfly, especially its landscape-scale requirements, and about optimal management of its habitat.

English Nature's viewpoint

Further research is needed to investigate the swallowtail's landscape-scale requirements. This study would yield valuable knowledge on the ecology and requirements of the swallowtail butterfly. This knowledge could be applied to the conservation of the swallowtail in the Norfolk Broads, and to assess the feasibility of a re-establishment of the species in the Somerset Levels.

Selected references

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