NORFOLK BIODIVERSITY ACTION PLAN

BRUSH-THIGHED SEED-EATER BEETLE
(Harpalus froelichii)

Harpalus froelichii is a black ground beetle that feeds predominantly on the seeds of the arable weed, fat hen (*Chenopodium album*).

Ref 2/S23	Tranche 2	Species Action Plan 23
Plan Author:		NCC (H. Thompson)
Plan Co-ordinator:		Heathland BAP Topic Group
Plan Leader:		Natural England
Date: Feb 2007		Stage: Final draft

1. CURRENT STATUS

National Status

- *Harpalus froelichii* is found on sandy soils at the margins of agricultural fields and on coastal sand dunes. It requires dry, bare ground with partial plant cover. Its life history is unknown and it has either an annual or, possibly, biennial life cycle. Larvae, and possibly also adults, feed largely on seeds of herbaceous weeds. The adults fly readily and have been caught at light traps. It is active only at dusk and after dark and is readily caught in pitfall traps.

- Although at one time found in the vicinity of the Dorset heaths and in east Suffolk and Norfolk, *Harpalus froelichii* has not been recorded from Dorset since the 1920s nor the East Anglian coast since the 1930s. All of the more recent records are from the Norfolk and Suffolk Brecks. It is often abundant where found. In Europe, it has an eastern distribution within a rather narrow latitudinal range: Britain and northern France are the western limit of its distribution.

- In Great Britain, this species is classified as Vulnerable.

Norfolk Status

- In Norfolk, *Harpalus froelichii* is confined to the Brecks, with records from Cranwich Camp, Barnhamcross Common, Santon Downham and Brettenham Heath. In addition, the species has twice been caught in a light trap in a private garden in Thetford.

- *Harpalus froelichii* is a seed-eating beetle feeding predominantly on fat hen (*Chenopodium album*). This plant is a common species of sandy disturbed ground. Given how abundant and widespread this species is in Norfolk, it is a mystery why *Harpalus froelichii* only occurs in a tiny proportion of the dry sandy fields and Breck grasslands within its geographical range. The beetle flies readily and has been taken in light traps. Indeed, moth traps are recommended as a survey technique in July and August, so distribution would not seem to be a problem.

- Conservation action for this species should benefit an assemblage of invertebrates, which includes many of the Breckland specialities.

2. CURRENT FACTORS CAUSING LOSS OR DECLINE IN NORFOLK

- Loss of ruderal communities on disturbed sand, including field margins.

- Modern treatment of arable weeds through herbicide and seed cleaning.

3. CURRENT ACTION IN NORFOLK

- The limited records would not seem to be for want of looking. Mark Telfer's report "Action for *Harpalus froelichii* in 2001/2 and 2002/3" published 2003, gives an extensive review of the literature on this species, and collates all the most recent records from the author's considerable survey efforts, and those of the Norfolk coleopterist Martin Collier. With the exception of the private address in Thetford, all the sites in Norfolk where this species has been recorded are protected by conservation designations, as follows:

Site	**Designation**	**Date of Record**
Cranwich Camp	SSSI, SAC	1987
Brettenham Heath	SSSI, SAC, NNR	1961
Barnham Cross Common	SSSI, SAC, LNR	2001

The Barnham Cross Common record is from a moth trap only and diurnal searches have failed to find any beetles. Telfer considers the habitat unsuitable for this species.

4. ACTION PLAN OBJECTIVES AND TARGETS

The following targets are the current targets following the 2001 targets review.

National

- Maintain populations at all known sites.
- Enhance populations at all known sites by 2010.
- Ensure the maintenance of five viable populations across the historic range by 2010.

Norfolk

- Ensure populations still exist at 2003 levels at Brettenham Heath, Santon Downham and Cranwich Camp by 2010.

Ground Beetle - *Harpalus froelichii* - Norfolk Action Plan

NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.1	**Policy and Legislation**			
5.1.1	Where appropriate, take account of the requirements of the species when preparing or revising prescriptions for relevant agri-environment schemes.	Ensure Natural England staff are aware of species and conservation requirements.	NE, NCC	
5.2	**Site Safeguard and Management**			
5.2.1	Where possible, ensure that all occupied habitat is appropriately managed by 2008. This may be through SSSI or agri-environment scheme management agreements.	Include management advice for *Harpalus froelichii* in management plans for Brettenham, Cranwich Camp and Barnham Cross Common.	NE	
5.2.2	Ensure that the species is included in site management documents for all relevant SSSIs.	Ensure that the species is included in site management documents for all relevant SSSIs	NE	
5.3	**Species Management and Protection**			
5.3.1	Consider reintroducing *Harpalus froelichii* to a series of sites within the former range if necessary to maintain five viable populations by 2010.	No action proposed.		
5.4	**Advisory**			
5.4.1	Liaise with landowners and managers about the presence of the species and the importance of beneficial management for its conservation.	No action proposed.		
5.5	**Future Research and Monitoring**			
5.5.1	Undertake surveys to determine the status of the species.	Re-survey Brettenham, Santon Downham and Cranwich Camp.	Heathland BAP Topic Group	

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NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.5.2	Conduct targetted autecological research to inform habitat management.	Conduct targetted autecological research to inform habitat management.	NE, local specialists	
5.5.3	Establish a regular monitoring programme for this species.	Establish a regular monitoring programme for this species. Develop an identification card and distribute to moth recorders.	NE Heathland BAP Topic Group	
5.5.4	Pass information gathered during survey and monitoring of this species to a central database for incorporation into national and international databases.	Pass information gathered during survey and monitoring to NBRC and National Ground Beetle Recording Scheme.	NE, NBRC, NGBRS	
5.6 **5.6.1**	**Communications and Publicity** Promote opportunities for the appreciation of this species and the conservation issues associated with sandy ruderal habitats. This should be achieved via articles within appropriate journals as well as by a publicity leaflet.	Pass plan and information on species to Brecks Countryside Project for incorporation into education programme. Prepare articles about the species for the *Natterjack* and other appropriate magazines and journals.	NE, Brecks Project Heathland BAP Topic Group	
5.7 **5.7.1**	**Links with Other Action Plans** No national action.	This action plan should be considered in conjunction with those for the beetles *Psylliodes sophiae* and *Harpalus punctatulus*.	Heathland BAP Topic Group	

Abbreviations

NBRC	Norfolk Biological Records Centre
NCC	Norfolk County Council
NE	Natural England
NGBRS	National Ground Beetle Recording Scheme

MANAGEMENT GUIDANCE

(*This guidance is a general summary; for more detailed information or advice, please consult the references or contacts below.*)

Rotovation

Habitat management or creation for *H. froelichii* will need to create early-successional conditions. Mechanical soil disturbance by rotovation has created highly suitable conditions in the field just south of the Wangford Warren SWT reserve. To ensure the presence of suitable conditions year-in-year-out, different patches should be managed in different years on a rotational basis.

Fence-lines

At both the Wangford Warren SWT reserve and the Wangford roadside verge, fence-lines are (or have been) buried by the accumulation of wind-blown sand. To an extent, fence-lines create dunes, just like marram tussocks do on the coast! Once a ridge of sand has formed, the instability of the slopes will tend to create ideal early-successional habitat for *H. froelichii* and all its associated Breckland invertebrates without human intervention.

Creating scrapes and banks

Because dune-like ridges of sand are such good habitat features for *H. froelichii* and other Breckland invertebrates, it would be worth creating artificial dunes. I would suggest using a blade to shallowly scrape an area, and pile all the soil removed in a ridge along one side of the scraped area. This would be preferable to just rotovating the area as it would create an area of flat disturbed sand as well as a ridge. In 2003, *H. froelichii* was discovered on an artificially created ridge of sand, created incidentally during industrial aggregates extraction work at Cavenham. Deliberately creating such features at other sites should be considered.

Arable margins

Uncropped arable margins have benefited *H. froelichii* in the Wangford and Maidscross Hill areas, particularly where they promote a prolific growth of *Chenopodium*. When choosing where to site such margins, priority should be given to margins next to remaining patches of semi-natural Breckland heath and grassland.

Managing vegetation

The habitats that suit *H. froelichii* should not require any mowing or cutting of vegetation as drought, nutrient-impoverishment, and a low level of grazing by rabbits and occasional deer should be sufficient to keep succession in check. However, parts of the Wangford roadside site are threatened by a planted conifer wind-break which is slowly establishing after being planted in c. 1993.

CONTACTS

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