NORFOLK BIODIVERSITY ACTION PLAN

Ref 1/S14	Tranche 1	Species Action Plan 14
Plan Author:		English Nature
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Plan Leader:		Waterbodies Group
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DEPRESSED RIVER MUSSEL
(Pseudanodonta complanata)

Like all mussels this animal has two 'mirror image' shells, hinged on one edge. At up to 80mm (3 inches) it is somewhat smaller than swan and duck mussels, and is distinguished by a 'compressed' shell. It lives inconspicuously in the bottom sediments of slow rivers.

1. CURRENT STATUS

National Status

- This mussel is seriously threatened throughout its European range. In the UK since 1950 it has been recorded from 63 ten km squares in England and Wales. However the species is easily overlooked, and may be more common than thought. The UK probably has the healthiest population in Europe, with the possible exception of Finland.

Norfolk Status

- Found within the Yare, Wensum and Waveney valleys, in the Broads and East Anglian Plain Natural Areas and watercourses in the west of the county, within the Fens Natural Area.

2. CURRENT FACTORS IN NORFOLK CAUSING LOSS OR DECLINE

The threats to the species are not fully known but are likely to include:

- Water pollution.
- Physical disturbance of river banks and channels.
- Drought.
- Collection of individuals for garden ponds and aquaria.

3. CURRENT ACTION IN NORFOLK

- A survey of all likely habitat in Norfolk has been undertaken by the Ted Ellis Trust, commissioned by English Nature. A detailed Species Action Plan has been produced, including a thorough literature review. In the Broads, the Broads Authority and the Environment Agency temporarily remove mussels before undertaking river dredging works. Further surveys are currently being undertaken by the Environment Agency.

4. ACTION PLAN OBJECTIVES AND TARGETS

National

- Identify and maintain key populations by the year 2000.
- Research the ecology and habitat preferences of this species.

Norfolk

- Undertake surveys of the River Waveney.

- Encourage appropriate habitat management for this species.

Depressed River Mussel - Norfolk Action Plan

NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.1	**Policy and Legislation**			
5.1.1	Identify water quality requirements and maintain favourable water quality at key sites.	Study PhD outputs to see if there are indications of appropriate water quality.	BA	
5.1.2	Ensure that Flood Defence activities and Water Level Management Plans take account of species.	Ensure that Flood Defence activities, navigation activities and Water Level Management Plans take account of species.	EA, BA, IDBs	
5.2	**Site Safeguard and Management**	Achieve compliance with water quality standards once these are determined for the species.	EA, BA	
		Ensure that watercourse management and flood defence activity take account of the need to protect the species' habitat.	EA, IDBs, BA	
5.3	**Species Management and Protection**	Ensure that routine watercourse management takes account of the needs of the species, and that key sites are targetted for conservation management.	EA, BA, IDBs	
5.4	**Advisory**			
5.4.1	Provide advice to river managers in areas where mussel occurs.	Provide advice to river managers in areas where mussel occurs.	EN, EA, BA, NWT, IDBs	
5.5	**Future Research and Monitoring**			
5.5.1	Identify water quality, flow and habitat requirements of species.	Monitor water quality of rivers where mussels are present.	EA, EN, BA	

Depressed River Mussel - Norfolk Action Plan

NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.5.2	Carry out surveys to establish distribution and locations of key population by 2000.	Undertake surveys on River Waveney, Yare and associated Broads, Thurne, Ant, Bure, Great Ouse, Nar and Wissey. Collate existing distribution data.	EA, EN, BA EN, EA, NBRC	
5.5.3	Encourage regular monitoring of known populations - identify threats to species.	Continue monitoring of known populations on River Waveney. Support research into possible adverse impacts of the Asiatic clam (*Corbicula fluminea*).	EN, EA, BA	
5.5.4	Pass survey results to Joint Nature Conservation Committee so that it can be incorporated in National database.	Pass survey results to Norfolk Biological Records Centre and Joint Nature Conservation Committee so that they can be incorporated in National and local databases.	EN, EA, NBRC	

NORFOLK DISTRIBUTION

Norfolk holds one of the three key populations in Britain, and probably the world, in the River Waveney (estimated population of over 1 million individuals). Muller (1999) has produced a detailed survey of this population. It is restricted to a zone between Geldeston Marshes and Somerleyton Marshes. Other sites include the River Yare catchment at Fleet Dyke, Strumpshaw and Postwick, and the River Wensum in Norwich.

MANAGEMENT GUIDANCE

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

Biggest threat is dredging (eg one dredging event wiped out an entire population of international importance in the Somerset Levels in 1999). Weed cutting can remove significant numbers. *Corbicula* is a likely threat in the Waveney. Reductions in fish populations will also impact heavily. Management plans are currently being produced for the Somerset Levels and River Arun by Cambridge University. The distribution in the Waveney is patchy, suggesting that a single localised event could have a massive impact on the population.

A degree of nutrient enrichment seems to be important, including relatively high abundances of algae.

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PROGRESS ON PLAN ACTIONS (as at 27/02/01)

	Norfolk Action	**Comments**
5.1.1	Study PhD outputs to see if there are indications of appropriate water quality.	
5.1.2	Ensure that Flood Defence activities, navigation activities and Water Level Management Plans take account of species.	KLCIDB's Standard Maintenance Operations etc, apply.
5.2	Achieve compliance with water quality standards once these are determined for the species. Ensure that watercourse management and flood defence activity take account of the need to protect the species' habitat.	Reference to ongoing control of nutrients (BA, EA, AW) and independent research into other toxic substances, eg anti-fouling paint. (BA). Implementation of EA's Minimum Environmental Standards for flood defence maintenance works and KLCIDB's Standard Maintenance Operations will help minimise impacts on populations of depressed river mussel.
5.3	Ensure that routine watercourse management takes account of the needs of the species, and that key sites are targetted for conservation management.	EA's Minimum Environmental Standards and KLCIDB's Standard Maintenance Operations will help minimise impacts on the species.
5.4.1	Provide advice to river managers in areas where mussel occurs.	BA rivers engineer made aware of existence of species in River Wensum.
5.5.1	Monitor water quality of rivers where mussels are present.	Ongoing monitoring of rivers by EA and BA.
5.5.2	Undertake surveys on River Waveney, Yare and associated Broads, Thurne, Ant, Bure, Great Ouse, Nar and Wissey. Collate existing distribution data.	Broads survey carried out during 2000. Surveys of Waveney, Yare, Waveney Cut-Off, Rockland Broad, Wissey, Nar and Great Ouse have been carried out as part of national survey. (EA)
5.5.3	Continue monitoring of known populations on River Waveney. Support research into possible adverse impacts of the Asiatic clam (*Corbicula fluminea*).	Research began in 2000, jointly part-funded by EA and BA. Ongoing for three years.

	Norfolk Action	Comments
5.5.4	Pass survey results to Norfolk Biological Records Centre and Joint Nature Conservation Committee so that they can be incorporated in National and local databases.	

PROGRESS ON PLAN OBJECTIVES AND TARGETS