NORFOLK BIODIVERSITY ACTION PLAN

Ref 1/S1	Tranche 1	Species Action Plan 1
Plan Author:		Norfolk Wildlife Trust
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Plan Leader:		Waterbodies Group
Date:		Stage:
31 December 1998		Final Draft
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WATER VOLE
(*Arvicola terrestris)*

In some areas the water vole is colloquially known as the *water rat*. It has the characteristic rounded body, blunt muzzle and short ears typifying the vole family, but is larger and longer tailed than other species, and some confusion with brown rat occurs. Water voles are herbivorous, inhabiting a wide range of permanent watercourses, favouring sites with rushes, sedges and reeds. They are colonial and breeding occurs between March and September. Water voles do not hibernate but during winter a large proportion of time is spent below ground within a series of burrows.

1. CURRENT STATUS

Legislation

- It has limited legal protection in Britain through its inclusion on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of Section 9(4) only. This makes it an offence to intentionally damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection, or to disturb water voles while they are using such a place.

National Status

- Declining, both in number of sites occupied and number of individuals per colony.

- The Vincent Wildlife Trust national survey in 1989-90 showed that populations were lost from 75% of sites occupied in 1939. A further survey in 1996-98 showed that there had been a 67.5% loss of occupied sites since 1989-90. The rate of loss appears to have accelerated since the 1980s. The estimated British population in 1989-90 was 7 294 000 reduced to 875 000 in 1996-98; an overall loss of 88% (Strachan *et al*. 2000).

- Current strongholds are southern and eastern England. The Anglian Region as a whole supports one-fifth (20.5%) of Britain's and over one-third (36.9%) of England's remaining water voles (Strachan *et al*. 2000).

Norfolk Status

- A county survey in 1997 (Yaxley 1997a&b) showed that water voles were distributed patchily in the county, the main stronghold being the Broads area. Highest rates of occupancy were found on the River Ant (67%) and in Broadland dykes. Other areas of high site occupancy include the north Norfolk coast, north-west Norfolk coastal marshes and parts of the River Wensum. Large gaps in distribution were found in the south and west where there were many records twenty years previously; these gaps may represent local extinctions.

- Other populations outside the sites selected for survey are known, and data is currently being compiled to provide a mapped register of known Norfolk sites.

2. CURRENT FACTORS CAUSING LOSS OR DECLINE IN NORFOLK

- Decline is due to population fragmentation and isolation.

Causal factors:

- Habitat loss and degradation due to development and inappropriate management.

- Insensitive watercourse engineering and maintenance works; inappropriate water level management.

- The American mink is considered to be the main agent of the recent acceleration in the rate of national decline and is likely to be a significant factor in localised areas in Norfolk *eg* Waveney Valley.

- Poisoning by rodenticides used for the control of rats.

3. CURRENT ACTION IN NORFOLK

- A county survey was completed in 1997 and reports (divided by Environment Agency area (*ie* Central & Eastern Areas)) published (Yaxley 1997a&b). These reports outline how actions in the national species action plan for water vole can be applied at county level.

4. ACTION PLAN OBJECTIVES AND TARGETS

National

- To arrest the decline and maintain the current distribution and status of the water vole.

- To restore water voles to their pre 1970 range by 2010.

- To ensure management of watercourses and wetlands in order to maintain the restored population.

Norfolk

- To maintain the current distribution and abundance of the water vole in Norfolk.

- To restore water vole populations throughout Norfolk by 2010.

- To ensure the appropriate management of watercourses and wetlands which will facilitate the above.

Water Vole - Norfolk Action Plan

NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.1	**Policy and Legislation**			
5.1.1	Set Water Quality Objectives appropriate for voles.	Ensure Norfolk Local Environment Agency Plans incorporate appropriate Water Quality Objectives, and that steps are taken to achieve them.	EA	
5.1.2	Promote favourable management of riparian habitat.	Ensure management needs incorporated in relevant agri-environment schemes, Water Level Management Plans, Local Environment Agency Plans at consultation.	EA, NWT, FWAG, EN, DEFRA (RDS), IDB	
		Enforce Schedule 5 of Wildlife and Countryside Act.	EN	
5.2	**Site Safeguard and Management**			
5.2.1	Include management needs in Sites of Special Scientific Interest and wildlife sites.	Obtain guidance and disseminate to owners and managers of Sites of Special Scientific Interest and County Wildlife Sites.	EA, NWT, IDB	Farmers, Landowners and Managers
		Review appropriate management plans.	EN, NWT, DEFRA (RDS), LAs	
		Incorporate water voles in an otters and rivers project for Norfolk.	NWT, EA	
5.2.2	Avoid use of rodenticides in riparian habitats.	Ascertain use of rodenticides in riparian habitats in Norfolk.	DEFRA (RDS)	
		Raise awareness among riparian owners of the damaging effects of rat control measures on vole populations.		

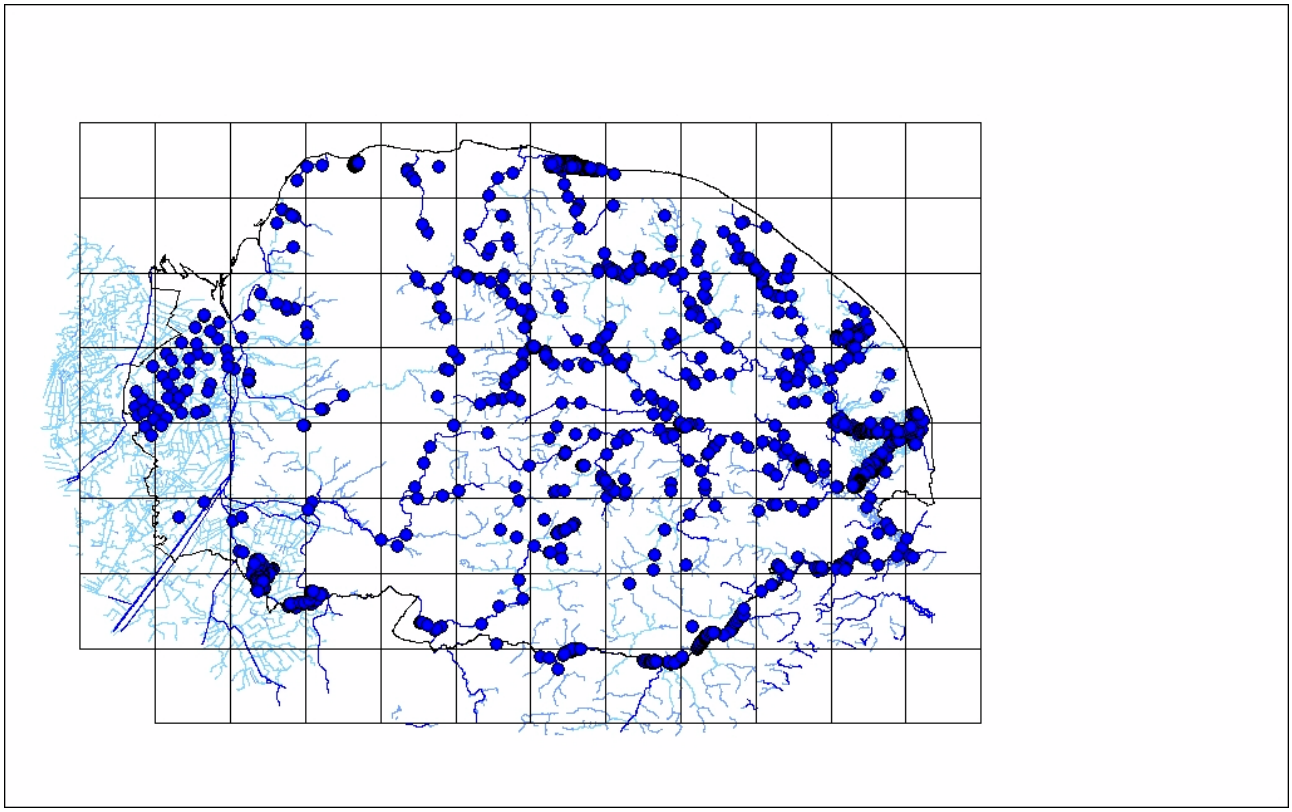
NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.2.3	Implement Local Environment Agency Plans by 2005.	Incorporate appropriate watercourse management requirements in Local Environment Agency Plans.	EA, IDB	
5.3	**Species Management and Protection**			
5.3.1	Discourage illegal use of rodenticides.	Take action where illegal use of rodenticides is identified.	DEFRA (RDS)	
5.3.2	Encourage mink control if necessary.	Advise landowners on reasons for controlling mink, and on appropriate methods, and encourage submission of records of mink trapped.	EA, EN, FWAG, DEFRA (RDS), LAs, BA, NWT	Farmers, Landowners and Managers
5.3.3	Identify potential sites for voles and control mink.	Not appropriate.		
5.4	**Advisory**			
5.4.1	Provide advice to riparian managers.	Implement actions under 5.1.2 and 5.2.1 based on results of Norfolk surveys (see 5.5.4). Ensure that all people involved in river and river bank management are aware of the requirements of water vole conservation.	EA, EN, FWAG, DEFRA (RDS), LAs, BA, NWT IDBs	Farmers, Landowners and Managers including IDB and EA Operational Staff
5.5	**Future Research and Monitoring**			
5.5.1	Research impact of mink on voles and control methods.	Not appropriate.		
5.5.2	Research causes of decline.	Not appropriate, await results of national research.		
5.5.3	Establish national monitoring scheme.	Participate in any national monitoring scheme.	NWT, EA	

Water Vole - Norfolk Action Plan

NATIONAL ACTION		NORFOLK ACTION	ACTION BY:	PARTNERS:
5.5.4	National survey and identify key populations.	Participate in national survey. Carry out survey of Norfolk and especially Broads.	NWT, EA, BA, EN	
5.5.5	Research use of translocation programmes.	Implement any guidance on translocations as required.	EA, BA, EN, NWT	
5.5.6	Pass data onto Joint Nature Conservation Committee/Biological Records Centre.	Pass data to Joint Nature Conservation Committee /Biological Records Centre and/or Norfolk Biological Records Centre. Encourage reporting of sightings and other evidence of voles.	NWT, EA, BA	Farmers, Landowners and Managers, General Public
5.6	**Communications and Publicity**			
5.6.1	Raise awareness of water vole as an indicator of riparian habitat quality.	Produce co-ordinated publicity programme to link with otters/rivers.	NWT, EA	

NORFOLK DISTRIBUTION

Broad-scale map of water vole distribution in Norfolk, inclusive of all records from 1997-2005.



MANAGEMENT GUIDANCE

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

Sites that support water voles have appropriate tall vegetation offering food and concealment from predators and a suitable bank in which to dig a series of burrows leading to underground nest chambers. Long term stability of water levels is important. Connectivity of habitat and appropriate riparian habitat management along the entirety of watercourses reduce the risk of population isolation and fragmentation.

Waterway channel, bankside, water level and vegetation management and its timing and frequency all have implications for water voles.

Water vole populations during winter (December-February) are at their most stressed and least likely to move. Winter mortality is frequent and colonies during this period support the core of breeding females for the following breeding season. As such, these populations are important and works likely to damage water vole burrows should be avoided at this time (see below); in addition, the winter behaviour of water voles renders standard mitigation techniques involving trapping or ‘scaring’ ineffective. Works affecting burrows should also be avoided during May-August when unweaned young are present within natal burrows.

The optimal months for works likely to affect water vole burrows when mitigation measures will be most appropriate/effective are September, when the population is at its most numerous and most mobile and April, prior to the birth of young.

Management should be sensitive to the requirements of water voles:

- create and maintain appropriate buffer strips of riparian vegetation at the edge of watercourses
- fence the banks of watercourses to facilitate tall marginal vegetation to provide refuges for water voles
- maintain constant water levels
- reduce the frequency of de-silting & vegetation removal/cutting, which should be undertaken on a rotational basis in small patches (see below)
- management operations should scheduled so that there is always suitable habitat remaining adjacent to the working zone
- use 'soft engineering' techniques where bank protection/reinforcement is essential
- prevent excessive shading of watercourses or excessively grazed or mown banks that results in the loss of appropriate tall vegetation (food & concealment from predators)
- Avoid using rodenticides where water voles occur or where their correct identification is in doubt
- If mink are present, safeguard water vole colonies from predation by trapping mink in live cage traps following The Wildlife Trusts guidelines (see key references).

Managing ditches/drains:

- in-channel and bankside vegetation maintenance should be undertaken on a rotational basis working in short stretches
- avoid uninterrupted works over large distances and at too frequent intervals
- worked areas should alternate with 20-30m strips left untouched as refuges
- worked areas and refuges should alternate across both sides of the watercourse
- at least one third of a ditch should remain untouched in any year
- operate from one bank only, working from as far back from the water's edge as possible to avoid damage to water vole burrow systems (minimum 3m). This is particularly important during October-March when water voles live predominantly below ground within their burrow system
- take care to avoid damage to any burrows at or below the water line
- dispose of spoil carefully, siting it a minimum of 3m away from the bank. Avoid covering or blocking water vole burrows
- where re-profiling is necessary, a survey to establish presence/absence of water voles should be undertaken. Colonies should be flagged-up and appropriate mitigation measures employed.

There is a distinction between bank re-profiling affecting bank structure which is likely to cause damage to water vole burrows, and de-silting/bankside vegetation cutting which can be undertaken without damage to burrows. There are optimal periods for these operations which minimise any detrimental effects.

These are:

Re-profiling: works likely to result in unavoidable damage to water vole burrows should be undertaken in April or September in conjunction with mitigation measures designed to remove or 'scare' water voles from the zone of work.

- Avoid re-profiling during October-March, when water voles are inactive, living predominantly below ground within their burrow systems and during May-August when unweaned young may be present within burrows.

De-silting: undertake during October-March, provided damage to water vole burrows can be avoided.

Bankside vegetation cutting: cut during October (*i.e.* after the water vole breeding season)-January. If earlier cutting is unavoidable, this should be in early September to allow time for regrowth before winter. Avoid cutting during March-September when water voles are at their most active above ground and in late winter (February) prior to the onset of the new season's activity in March.

KEY REFERENCES

Anglian Otters & Rivers Project (2000) Fact sheet no.2: Water Vole. Anglian Otters & Rivers Project.

The Berks, Bucks and Oxon Wildlife Trust (undated) Water Vole Recovery Project. Guide for landowners. Oxford: The Berks, Bucks and Oxon Wildlife Trust

English Nature (1999) Water Vole: Guidance for Planners & Developers. Peterborough: English Nature.

Henson, S. (2006) Determining the status & pattern of distribution of the Water Vole *Arvicola terrestris* in the Waveney & Little Ouse river valleys 2004-5. Summary report by Norfolk Wildlife Trust to the Transnational Ecological Network project.

Macdonald, D. & Strachan, R. (1999) *The Mink and the Water Vole: analyses for conservation*. Oxford: Wildlife Conservation Research Unit, University of Oxford.

Strachan, C., Strachan, R, & Jefferies, D.J. (2000) Preliminary report on the changes in the Water Vole population of Britain as shown by the national surveys of 1989-1990 and 1996-1998. London: The Vincent Wildlife Trust.

Strachan, R. (1998) *Water Vole Conservation Handbook*. Oxford: Wildlife Conservation Research Unit, University of Oxford.

The Wildlife Trusts (2000) Mink control for Water Vole conservation. The Wildlife Trusts' Position Statement & Guidelines.

Yaxley, R. (1997a) Report of the Norfolk Water Vole Survey 1997: a report by Norfolk Wildlife Trust to the Environment Agency (Anglian Region-Central Area).

Yaxley, R. (1997b) Report of the Norfolk Water Vole Survey 1997: a report by Norfolk Wildlife Trust to the Environment Agency (Anglian Region-Eastern Area).

Yaxley, R. (1997c) Report of the Norfolk Otter, Mink and Water Vole Survey: a report by Norfolk Wildlife Trust to the Environment Agency (Anglian Region-Central Area).

Yaxley, R. (1997d) Report of the Norfolk Otter, Mink and Water Vole Survey: a report by Norfolk Wildlife Trust to the Environment Agency (Anglian Region-Eastern Area).

FURTHER READING AND BIBLIOGRAPHY

Anglian Otters & Rivers Project (2000b) Fact sheet no.5: Bays, backwaters & ponds. Anglian Otters & Rivers Project.

Anglian Otters & Rivers Project (2000c) Fact sheet no.6: Buffer zones & margins. Anglian Otters & Rivers Project.

Anglian Otters & Rivers Project (2001) Fact sheet no.7: Mink. Anglian Otters & Rivers Project.

Anglian Otters & Rivers Project (2001b) Management of dykes for wildlife. Anglian Otters & Rivers Project.

Anglian Otters & Rivers Project (2001c) Management options for dykes. Anglian Otters & Rivers Project.

Arnott, D.A. (2001) Water Vole mitigation techniques. A questionnaire research project.

Beardall, C. (1996) Sensitive ditching work. *Farming & Conservation* 2(4): 18-21.

Bennett, A., Watson, D. & Hill, D. (2001) Water Voles and development – a case study of mitigation techniques. *British Wildlife* **12**: 167-172.

Dunstone, N. (1993) *The Mink*. London: Poyser.

Environment Agency (1995) Mink. EA information leaflet. Bristol: Environment Agency.

Environment Agency (1996) Understanding buffer strips: an information booklet. Bristol: Environment Agency.

Environment Agency (1998) Understanding riverbank erosion: an information booklet. Bristol: Environment Agency.

FRCA (1998) Mink. MAFF/FRCA fact sheet.

Jefferies, D.J., Morris, P.A. & Mulleneux, J.E. (1989) An enquiry into the changing status of the water vole *Arvicola terrestris* in Britain. *Mammal Review* **19**: 111-131.

Jowitt, A.J.D. (1997) Water Voles and Mink. Norfolk Bird & Mammal Report 1995, *Transactions of the Norfolk & Norwich Naturalists' Society* **30**(6): 742.

Mahon, H. (Ed.) (2000a) King's Lynn Consortium of Internal Drainage Boards: Standard Maintenance Operations. King's Lynn, Norfolk: King's Lynn Consortium of Internal Drainage Boards.

Mahon, H. (2000b) Information Sheet 2: The Habitats Directive – Implications for IDBs. Conservation Committee, King's Lynn Consortium of Internal Drainage Boards.

Lambin, X., Telfer, S., Denny, R., Aars, J., Griffin, C., Dallas, J. & Piertney, S. (undated) The roles of isolation and Mink predation in Water Vole metapopulations. University of Aberdeen final report to the People's Trust for Endangered Species.

Morris, P.A., Morris, M.J., MacPherson, D., Jefferies, D.J., Strachan, R. & Woodroffe, G.L. (1998) Estimating numbers of the water vole *Arvicola terrestris*: a correction to the published method. *Journal of Zoology*, *London* **246**: 61-62.

Painter, D. (2000) As dull as ditch water? Managing ditches for wildlife. *British Wildlife* **11**: 258-262.

People's Trust for Endangered Species (1996) Proceedings of the Water Vole Day: 18 April 1996. Summary report of proceedings by People's Trust for Endangered Species.

RSPB, NRA & RSNC (1994) *The New Rivers and Wildlife Handbook*. Sandy: Royal Society for the Protection of Birds.

Strachan, C. & Jefferies, D.J. (1996) An assessment of the diet of feral American mink *Mustela vison* from scats collected where water voles *Arvicola terrestris* occur. *Naturalist* **121**: 73-81.

Strachan, C., Jefferies, D.J., Barreto, G.R., Macdonald, D.W. & Strachan, R. (1998) The rapid impact of resident American mink on water voles: case studies in lowland England. *Symposia of the Zoological Society of London* **71**: 339-357.

Strachan, R. (1997) *Water Voles*. British Natural History Series. London: Whittet Books.

Strachan, R, & Jefferies, D.J. (1993) The Water Vole *Arvicola terrestris* in Britain 1989-1990: its distribution and changing status. London: The Vincent Wildlife Trust.

The Wildlife Trusts (1999) *Rescuing Ratty: working for the Water Vole*. Newark: The Wildlife Trusts.

Woodroffe, G. (2000) *The Water Vole*. Revised Edition. London: The Mammal Society.

Woodroffe, G.L., Lawton, J.H. & Davidson, W.L. (1990) Patterns in the production of latrines by the water vole (*Arvicola terrestris*) and their use as indices of abundance in population survey. *Journal of Zoology*, *London* **220**: 439-445.

Yaxley, R. (1998) Norfolk Water Vole Survey 1997. Norfolk Bird & Mammal Report 1997, *Transactions of the Norfolk & Norwich Naturalists' Society* **31**(4): 606-610.

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Refer to English Nature Area Office for legislation and licensing advice:

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