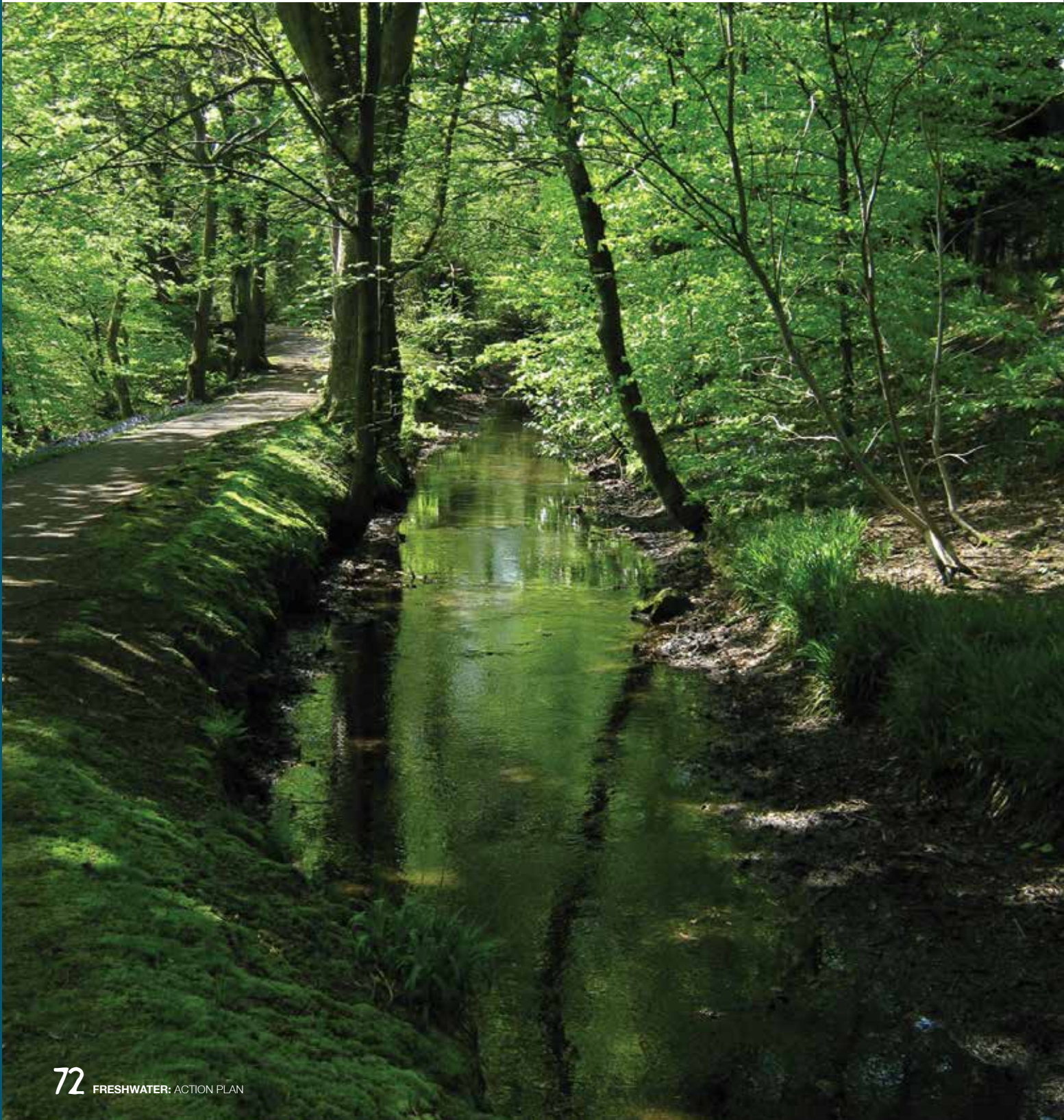

Freshwater

ACTION PLAN





Freshwater landscape

INTRODUCTION

A Landscape Perspective

Freshwater is vital to all life on earth. Although only covering 3% of UK's land surface, it supports 10% of species in the UK.ⁱ Freshwater habitats consist of flowing water and standing water. Ponds, lochs, canals, rivers and burns are just some of freshwater habitats present within North Lanarkshire. Freshwater ecosystems affect nearly all aspects of the natural environment and human culture. The intrinsic value of freshwater habitats is recognised at a national level. The 2020 Challenge for Scotland's Biodiversity identifies the need for a more integrated approach to land and freshwater use and management. Pressures on the natural environment from habitat loss, nutrient enrichment and climate change require concerted action at a landscape scale.ⁱⁱ

"Freshwater and associated habitats define and shape our landscape. Rivers and burns flow and curve through the land while ponds and wetlands create stepping stones across the landscape. These habitats support an extremely large and varied amount of life. It is therefore vitally important that they are afforded the highest level of protection" – **Kirsty Mooney, North Lanarkshire Council, Assistant Biodiversity officer**

Why are they important?

The habitats associated with, and around freshwater not only support a wealth of biodiversity but also provide vital ecological corridors for wildlife. This is particularly important for a local authority where many large urban conurbations exist. Clean watercourses can provide important dispersal routes around towns for species such as Otter. Marginal and bankside areas also support a variety of wild flowers and animals such as Water voles and Water shrews. One of the most important sites in North Lanarkshire containing freshwater habitat is Gartcosh Local Nature Reserve. The pond clusters are not only home to an exceptional assemblage of amphibians, but also the largest known population of Great crested newt in Scotland.

Freshwater habitats are not only important for biodiversity. They provide a host of ecological services which are important to our day to day lives. They regulate flooding, and with climate change predicting warmer, wetter summers, good quality wetland habitats will be of huge importance in helping to reduce flooding. They also provide us with clean drinking water, as well as water for domestic, agricultural and industrial activities. Freshwater habitats are of huge recreational value. For example Strathclyde Loch regularly hosts international events, such as the Triathlon at the Glasgow 2014 Commonwealth Games. An excess of 6 million people visit Strathclyde Country Park each year, many of which make use of the water sport facilities present.



Freshwater Under Threat

On a global scale freshwater ecosystems have lost a greater proportion of their species and habitats than that on land or in the sea. The loss and degradation of these ecosystems has been caused by a wide range of pressures. Given North Lanarkshire's rich industrial heritage, historically many water courses were in a polluted state. However, the state of many watercourses and water bodies have much improved. But our freshwater habitats continue to face threats such as waste run off from agricultural practices and can cause eutrophication. Phosphate in sewage effluent and agricultural run off can cause high levels of nutrients in freshwater habitats. This can lead to significant changes in the aquatic vegetation as an influx of nutrients may result in algal blooms.

Through river basin management planning, information about the current ecological status of Scotland's freshwater systems and pressures on water bodies can be identified. Actions to resolve issues and targets for improvements can then be taken forward.

Freshwater in North Lanarkshire

North Lanarkshire has approximately 89 rivers and burns, two main canals and 35 lochs and reservoirs. These environments are integral to landscape ecology as they form corridors and prevent habitat isolation. There are also hundreds of ponds and standing water bodies which are distributed throughout North Lanarkshire.

These watercourses and bodies provide a resource and habitat for the wildlife in North Lanarkshire but have also helped to shape its cultural history through industrial activities and the locations of settlements.

The Freshwater Plan aims to protect and safeguard existing freshwater sites and help to enhance and encourage future projects that will increase wetland sites and stop fragmentation between habitats.

The freshwater landscape contains two habitat plans: Rivers & Burns and Ponds and also includes three species plans: Otter, Great crested newt and Water vole.



i RSPB. State of Nature, 2013

ii The Scottish Government, 2020 Challenge for Scotland's Biodiversity, 2013

Ponds

ACTION PLAN

SCOTTISH BIODIVERSITY LIST HABITAT:

YES

UK BIODIVERSITY LIST OF PRIORITY HABITATS:

YES

Summary

Ponds come in all shapes and sizes, occurring in a variety of habitats, with varying species assemblages. They support an immense number of plants and animals, with more than 100 UK Biodiversity Action Plan (BAP) species associated with ponds. In particular, they are beneficial for invertebrates such as dragonflies, and amphibians such as toads, frogs and the European protected Great crested newt. They also provide suitable habitat for Otters and Water voles, and foraging habitat for Daubenton's bats. Ponds often act as habitat corridors, linking species populations and protected/designated areas.

Habitat Profile

Whether man made, or natural, ponds remain an important habitat. The structural diversity of ponds, through aquatic and bankside vegetation, provides a wide range of species with food, shelter and breeding habitat.

Ponds, for the purpose of UK BAP priority habitat classification, are defined as permanent and seasonal standing water bodies up to 2 ha in extent, which meet one or more of the following criteria:

- Habitats of international importance: Ponds that meet criteria under Annex I of the Habitats Directive.
- Species of high conservation importance: Ponds supporting Red Data Book species, UK BAP species, and species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.
- Exceptional assemblages of key biotic groups: Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in guidelines for the selection of biological Sites of Special Scientific Interest (SSSI)

(currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥ 30 wetland plant species or ≥ 50 aquatic macroinvertebrate species)

- Other important ponds: Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context e.g. duneslack ponds, machair ponds.



For this Local Biodiversity Action Plan, ponds are defined as permanent and seasonal standing water bodies up to 2 ha in size. They are valuable habitats on a local level, playing an important role in wetland creation but also providing stepping stones for aquatic species associated with ponds to disperse and colonise new areas. The historical decline of pond habitats, not only in the UK but also in Europe, has led to the decline of associated species, in particular amphibians. Ponds provide habitat for UK and North Lanarkshire Biodiversity Action species, Great crested newt (*Triturus Cristatus*), Otter (*Lutra Lutra*) and Water vole (*Arvicola Amphibious*).

Sustainable Urban Drainage Systems (SUDS) are used as an alternative to conventional urban drainage systems and are designed to reduce pollution and flood risk in watercourse and water bodies. They are man-made structures and receive water run-off. Detention basins, retention ponds and swales are a few examples of SUDS. The primary function of SUDS is to deal with water quality and flood prevention but they can be designed to enhance biodiversity without detriment to their primary function. To maximise SUDS ponds, a key consideration should be the landscape context which within they sit. SUDS ponds have the potential to be very valuable habitats in themselves or as part of a network of habitats and wildlife corridors.

Current Status

It is estimated that there are 198,000 ponds in Scotland (Countryside Survey 2007). Ponds may be isolated, occur as part of pond complexes, or form important parts of wetland ecosystems. Ponds have been lost through intensive agriculture, infilling as a result of development and urbanisation as well as through natural processes. Many ponds are also in a degraded state as a result of pollution caused by factors such as agricultural run-off and roads. Ponds are particularly vulnerable to pollution because of their small size and the small volumes of water available to dilute pollutants. Poor management of ponds is also a contributing factor to the loss of habitat. At times, clearing out practices or preventing ponds from drying out, may adversely affect aquatic flora and fauna. Creation of new ponds alongside ponds undergoing natural succession is an effective method of ensuring no adverse effects on pond wildlife.

Recent research shows that 80% of wildlife ponds in the UK are in a “poor” or “very poor” state, with almost 500, 000 ponds lost in the last century, Ponds are continuously lost to urban development and land use change as well as poor or inappropriate management.

Ponds are a dynamic habitat and, in a landscape context, the loss of this habitat has led to a loss of pond dependant biodiversity as they become isolated in the landscape.

Many ponds were lost or degraded in the UK during the 20th Century, but a 6% increase in pond numbers occurred between 1998 and 2007, with a considerable number of new ponds being noted in lowland areas. Key pond habitats in North Lanarkshire include Gartcosh Local Nature Reserve, home to one of Scotland’s largest known population of Great crested newt (*Triturus Cristatis*) as well as an exceptional assemblage of amphibian species.



Current Factors Affecting This Habitat

- Development and in-filling of ponds
- Agricultural run-off and sewage causing eutrophication
- Succession
- Drainage as a result of agricultural intensification.

Current Action

- From 2011-2013, Froglife undertook a successful project, ‘Living Waters’, in various sites around North Lanarkshire which focused on pond creation and enhancement, as well as community engagement.
- Greenspace Development encourages SUDS be taken forward on developments through planning.
- Garden for Wildlife, produced by North Lanarkshire Council, includes information and guidance on incorporating ponds into gardens

Proposed Objectives, Targets and Actions

Objectives

1. Identify extent and condition of ponds in North Lanarkshire
2. Undertake positive management of ponds

Action	Meets Objective Number	Action by	Target
Site safeguard and management			
1.1 Create new pond habitat through development and partnership projects.	2	NLC, CARG	Identify 20 sites by 2016 to undertake pond creation. Project to be delivered by 2020.
1.2 Restore 10 ponds in poor condition.	2	NLC, CARG	Identify 10 ponds in poor condition by 2016 and restore by 2020.
1.3 Implement bio-control procedures to prevent spread of aquatic invasive non native plant species.	2	NLC	Produce guidance document and implement by 2017.
Monitoring and research			
2.1 Incorporate ponds in all North Lanarkshire Local Nature Reserve management plans	1, 2	NLC	Management plans produced by 2017.
Communication and publicity			
3.1 Encourage and promote the construction of wildlife friendly SUDS ponds as part of any development.	2	NLC	Raise awareness of wildlife friendly SUDS ponds within the planning authority. Aim to deliver 10 high quality wildlife friendly SUDS ponds through planning consultations by 2020.
3.2 Offer advice and promote best practice on pond creation and restoration.	2	NLC	Engage in proactive outreach work with private homeowners and landowners to encourage pond creation.

Abbreviations: CARG – Clyde Amphibian and Reptile Group





References

Countryside Survey, 2007. <http://www.countryside-survey.org.uk>

Graham, A., Day, J., Bray, B., Mackenzie, S., 2012. Sustainable Drainage Systems-Maximising the potential for people and wildlife, RSPB, WWT

The Wildlife Trust, Ponds. <http://www.wildlifetrusts.org/wildlife/habitats/ponds>

Author:

Pardeep Chand, Biodiversity Projects Officer (2014)

Rivers and Burns

ACTION PLAN

SCOTTISH BIODIVERSITY LIST HABITAT:

YES

UK BIODIVERSITY LIST OF PRIORITY HABITATS:

YES

Summary

Rivers and burns are frequently the sole remaining semi natural feature in a landscape, and as such they are invariably of great value for wildlife, and our own enjoyment. On the whole our river and burns represent the most unmodified natural habitat after our bogs to be found in North Lanarkshire. Their importance is increased by the fact that much of our ancient woodland is found along their banks. Their value as “wildlife corridors” is increasing as development covers more and more land.

The quality of our rivers and burns has improved greatly since the closure of most of the heavy industry, however there is a great deal of scope for further improvement.

There is a UK Biodiversity Broad Habitat Statement for Rivers and Streams.

Habitat Profile

In their natural state watercourses are dynamic environments, creating a range of physical habitats which will be determined by factors such as slope, discharge, water velocity, and substratum (hard/soft geology etc.). The habitats created by these factors will support characteristic animal and plant assemblages. In general the more diverse the range of physical habitats, the more biological diversity there will be. Engineered rivers (in urban areas and industrial or intensively agricultural landscapes) generally have a simplified range of habitats and a reduced biodiversity.

Rivers and burns are impacted by reductions in water quality, quantity, changes to their flow regime, and degradation of the physical structure of their banks and channels. Two aspects of rivers should be considered: the watercourse itself - the ‘wetted channel’, and the complete corridor of channel and riparian zone (bank and associated land). The linear nature of streams and rivers gives them value beyond their immediate provision of living space for wildlife: they also provide wildlife corridors enabling animals to move to new areas safely to find food, mates or new habitat. Culverts, bridges, weirs, hard engineering of channels, as well as poor water quality and low flows, threaten this continuity, isolating populations which can lead to their extinction.



Water quality is of some significance to truly aquatic species, although river corridors may retain considerable value to wildlife even where water quality is severely impaired. This is related to their retention of some semi-natural features, for example their riparian vegetation or their production of flying stages of aquatic insects, which are utilised as food. Therefore, poor water quality should not lead to pressures for culverting, as this leads to total loss of the habitat and compounds any water quality problems.

There is a growing recognition of the importance of river habitats both as the supporting physical structures for wildlife, and as key components conferring resilience of the system as a whole, for example enabling polluting materials to be processed and rendered harmless. These latter areas of activity are not covered by current legislation and therefore demand a co-operative approach from all interested parties to achieve effective management.

Current Status

Rivers and burns form linear corridors of varying conservation value across North Lanarkshire. There is only one river catchment contained completely within the boundaries of North Lanarkshire, the South Calder Water. Other catchments lying partly within North Lanarkshire include the North Calder Water, the River Kelvin, the River Almond and a short stretch of the River Clyde

Prior to the industrial revolution all of our waterways would have been clean, clear and teeming with life. The quality of the South Calder Water has improved dramatically with the closure of the Ravenscraig steelworks. Also water quality in the Kelvin catchment has improved with the diversion of sewage treatment works discharges to the Kelvin Valley Sewer.

However much of the rivers in North Lanarkshire are still classed as poor.

Legal Status

The Water Framework Directive establishes a legal framework for the protection, improvement and sustainable use of all water bodies in the environment across Europe. That is, all rivers, canals, lochs, estuaries, wetlands and coastal waters as well as water under the ground.

The Directive became law in Scotland during 2003 through the Water Environment and Water Services (Scotland) Act 2003 (the WEWS Act) which sets out the new arrangements for the protection of the water environment in Scotland.

The main environmental objectives are to protect and improve Scotland's water environment. This will include preventing deterioration of aquatic ecosystems and, where possible, restoring surface waters and groundwater damaged by pollution, water abstraction, dams and engineering activities to 'good status' by 2015.

The Act provides for new controls over activities such as abstraction, impoundment, engineering, point and diffuse source pollution which directly affect the water environment. These controls will be implemented by the Controlled Activities Regulations. The Act also states that SEPA will be the operator of these regulatory regimes.





Current Factors Affecting This Habitat

- **Physical habitat destruction and simplification** – Works such as culverting, dredging, inappropriate hard engineering, and land take for development. Rivers are also affected by agricultural practices (e.g. overgrazing of stream banks).
- **Poor water quality** – This falls within the statutory remit of SEPA. Most problems can be rectified given adequate resources, both for identification of the problem and cost of rectification. Urban areas are traditionally difficult to deal with due to complexity of drainage network, multiple sources of pollutants, diffuse pollutants, etc.
- **Non-native species and species without an affinity for rivers** – May be self colonising such as Giant Hogweed, Himalayan Balsam (a major problem on the Clyde, North Calder and Luggie Water), Japanese Knotweed, or may be planted as an environmental ‘improvement’, e.g. cultivated grass species mown right to the river bank, non-native ornamental species planted for amenity.
- **Public attitudes to river corridors** – These may be seen as ‘waste ground’ if not maintained as parkland or amenity open space. Hence they are frequently used as dumping grounds; fly tipping is a major problem locally.

Current and Past Action

- North Lanarkshire Councils Fantastic Freshwater education and awareness scheme
- Scottish Environmental Protection Agency's monitoring of water quality at selected sites locally.
- Native planting along rivers and burns in any Council landscape projects.
- Continued enforcement of pollution control legislation.
- The promotion of SUDS and Green Roofs by Greenspace Development to planners and developers.
- The Council's Biodiversity Team commenting on all relevant planning applications concerning development near rivers and burns.
- Many parts of North Lanarkshire's watercourses are designated as a Site of Importance for Nature Conservation (SINC).
- SEPA water quality targets.
- Generally no development or works are recommended within 6m of a river, unless these will have a positive effect on the habitat.

Actions

Objectives

1. To protect and enhance the river and burn habitat, associated riparian features and water quality.
2. To increase public awareness of the wildlife and amenity value of rivers and burns.

Action	Meets objective number	Action by	Target
Policy and Legislation			
1.1 Develop policies to control alien plant species and favour establishment of appropriate native species adjacent to rivers and especially on Council owned land.	1	SEPA, NLC, CSGNT	By end of 2016.
Site safeguard and management			
2.1 Promote soft engineering of rivers and presumption against culverting.	1	SEPA, NLC	Provide information through supplementary design guidance by end of 2016.
2.2 Ensure that, where appropriate, locally sourced native plant species are used for council planting operations and new developments where it is necessary to impinge on river banks.	1	NLC	Provide specific guidance by 2016.
2.3 Promote adoption of Sustainable Urban Drainage Systems (SUDs) in new developments.	1	SEPA, NLC	Organise SUDs update training for NLC planning staff by end of 2018.
2.4 Identify opportunities to de culvert key sections of river corridors to allow better species movement.	1	NLC, SEPA	Identify 2 key sites and agree implementation with SEPA, to be completed by 2020.
2.5 Develop fish passages/ ladders to facilitate movement of fish through obstructions.	1	NLC, SEPA,	Identify 2 key sites and agree implementation with SEPA to be complete by 2020
2.6 Develop a strategy and identify funding opportunities to deal with the spread of invasives through water courses.	1	NLC, SEPA, CSGNT,	Identify a catchment scale project with SEPA and agree implementation by 2020.
Monitoring and research			
3.1 Continue to monitor the quality of streams and burns in North Lanarkshire.	1	SEPA	Annual monitoring of streams and burns, report provided to Biodiversity Officer.
Communications and publicity			
4.1 Promote clean-up campaigns to educate local communities on the effects of general litter, fly tipping and sewerage debris on their local environment and wildlife.	1, 2	NLC	2 clean up events annually. Strategic promotion of NLC Freshwater habitats and species at events.
4.2 Establish links with LBAP topic groups from other council areas to ensure an integrated approach to habitat improvements in catchments crossing local authority boundaries.	1, 2	SEPA, NLC	Annual meeting organised by 2016.

Author:

Sally Donaldson SEPA. Updated by Jonathan Willet, Biodiversity Officer (2004). Updated by Laura Whyte, Biodiversity Officer (2008), Updated by Laura McCrorie, Senior Biodiversity Officer (2014).

Otter

ACTION PLAN *Lutra lutra*

UK LIST OF PRIORITY SPECIES:	YES
SCOTTISH BIODIVERSITY LIST:	YES
EUROPEAN PROTECTED SPECIES:	YES

Summary

The Otter is widespread in North Lanarkshire and is found in nearly all suitable waterways. With continuing efforts to improve water quality the population of Otters should increase further, as all suitable habitat is occupied.

Species Profile

Otters require clean rivers with a plentiful supply of food and bankside vegetation. They are shy, semi-aquatic, mostly nocturnal creatures, although they can be seen during the day in undisturbed locations. Their fur is generally medium to dark brown in colour with a pale underbelly. Adults vary from 1-1.2 metres in length, and 6-8kg in weight. Females are generally smaller than males. They are found in almost all wetland habitats including lochs, rivers, burns, ditches, reedbeds, marshes, estuaries and the coast.

An Otter's average home range size is 20km of watercourse for a female and 32km for a male. This includes separate river and pond systems. They can cover large distances of 16km or more in one night

They often have up to 30 holts (dens) or lying up sites in their home range. Large cavities in bankside tree roots, dense impenetrable scrub, rock cavities, peat burrows and old culverts are all examples of typical holt sites. One of the best ways to identify a possible holt is to look for their droppings known as spraints which are black and spiky and have fish bones in them. Footprints and runs are also good indicators of an Otter's presence.

Their main diet is fish, with eels being a favourite. However, they will eat amphibians (frogs are an important food source in spring), small mammals and some birds. An adult Otter requires about 1kg of food a day. This high value is due to the amount of energy used hunting their aquatic prey.

Otters can breed at any time of the year. The female gives birth to one to four cubs in the safest holt in her home range. The cubs remain there for about 2 months and then begin exploring their territory with their mother. They will stay with their mothers for 12 to 18 months before finding their own territory (the father plays no role in rearing the cubs). They are sexually mature at two years but life expectancy is short, at an average of three years, although their potential life expectancy extends to fifteen years. Late sexual maturity, small litter size and a short life expectancy make breeding success critical.



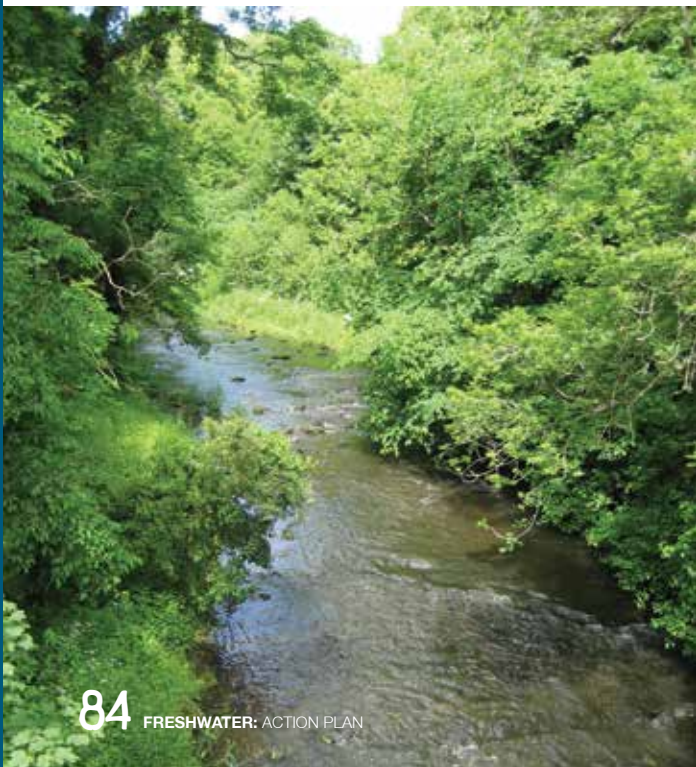
Current Status

The Eurasian Otter has the widest distribution of all otter species. Its range covers parts of three continents: Europe, Asia (as far south as Java) and North Africa. Originally the species was widespread throughout Europe, however after the population crashes in the 1960-70's it declined in Central and Northern Europe and is probably extinct in the Netherlands and Switzerland. The population crash was largely due to pollution from farm pesticides and habitat loss. By the late 1970s, the Otter was almost extinct in the UK, apart from a few strongholds in Scotland such as Dumfries and Galloway and the Highlands and Islands. However, by the 1980s otter populations had begun to recover due to the phasing out and banning of some hydrocarbon pesticides.

There are populations in Portugal, Ireland, Greece, Scotland and the northern taiga of Russia. However, over its whole range the Otter is estimated to have declined by at least 20%.

The Scottish population is one of the largest populations in Europe and, as the inland populations expand, this population is being further bolstered. This makes our population significant in Europe, and globally.

During 2003, a total of 24 10km squares were surveyed for Otters within Strathclyde and Ayrshire. 59 out of 71 (83.10%) survey sites from within these squares were positive. This compares with only 23.94% positive in 1978-79, 29.58% positive in 1985-86 and 48.19% positive in 1991-94, representing a substantial improvement over the last decade. No comparable surveys have been carried out to date but the results of the fifth national Otter survey are soon to be published. Otters are now found in nearly all lochs, rivers and burns in the area.



Legal Status

The Otter is listed on Appendix I of CITES, Appendix II of the Bern Convention and Annexes II & IV of the Habitats Directive. It is also protected under Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994, and the Nature Conservation (Scotland) Act 2004.

This protection means that it is an offence to deliberately: kill or injure otters, capture or keep Otters, destroy, damage or obstruct their den, disturb them while in the den, sell or advertise for sale, otters and anything derived from them, import or export Otters, whether dead or alive

The above actions can only be carried out with a specially granted licence, issued by SNH.



Current Factors Affecting This Species

- Pollution of watercourses from industrial, residential and agricultural sources. Industrial and residential pollution of watercourses is a major issue in the Coatbridge and Airdrie area.
- Existing developments without Sustainable Urban Drainage Systems (SUDs) increasing the run-off going into drains, overloading the sewage system so that they use the emergency overflows to discharge directly into water courses.
- Habitat loss due to development.
- Acidification of watercourses caused by acid rain and exacerbated by leachate from conifer plantations.
- Disturbance is still a major factor as waterways are increasingly used for recreation; people and dogs can cause major problems in some places.
- Road kill – many Otters are killed on roads in North Lanarkshire and several deaths have been recorded in the last 2 years.

Current and Past Action

- Scottish Water’s upgrading of the sewage infrastructure, leading to improved water quality.
- North Lanarkshire Council’s Fantastic Freshwater education and awareness scheme
- Scottish Environmental Protection Agency’s monitoring of water quality at selected sites locally.
- Ongoing collation of Otter roadkill records.
- All developments affecting Otter habitat are recommended to have an Otter survey undertaken prior to development.
- Open water SUDs ponds to create extra habitat for otter and cleaner water environment.
- Provision / enhancement of bufferstrips between developments and watercourses – for new developments this is undertaken during the planning stage.
- In 2012, a project was undertaken which involved the creation of several artificial holts with thermal cameras inside. Night vision cameras were placed near to the site to record movement to the holts. The artificial holts were designed and built by the Countryside Rangers. Two sites were identified with hope of expansion to other sites in the future. Local school were were taught about Otter behaviour, biology and ecology. Pupils also had the chance of a site visit to look for signs of Otter at the artificial holt. Video footage of the Otters was also shown in the schools.

Proposed Objectives, Targets and Actions

1. Conserve and enhance Otter habitat.
2. Maintain and where possible expand the Otter population in North Lanarkshire.

Action	Meets objective number	Action by	Target
Site and Species Safeguard and Management			
1.1 Attempt to limit accidental deaths by providing guidance on road underpasses, dyke net guards etc.	2	NLC	Produce Supplementary Design Guidance for Roads and Planning by end of 2016.
1.2 Enhancement to riverbank vegetation, by fencing off to allow regeneration of riverbank habitat.	1, 2	NLC, SEPA, Local land owner’s	Potential funding through SRDP and SEPA to be done in conjunction with Water vole enhancement. 3 sites identified and work undertaken by 2020.
Advisory			
2.1 Advise owners and seek to secure appropriate management of Otter sites.	1	NLC, SNH, SEPA, SWT	1 Otter related project by 2018
Research and Monitoring			
3.1 Continue to monitor Otter populations in key areas.	1, 2	SWT, NLC	Annual survey of 3 sites.
Communications and Publicity			
4.1 Continue to use this popular species to highlight the importance of water quality	1, 2	NLC	One themed talk, walk, leaflet or article annually.





Authors:

Plan written by Heather Dunsmore and Andrew Jones (Scottish Wildlife Trust). Updated by Jonathan Willet (Biodiversity Officer) 2004. Reviewed and updated by Laura Whyte (Biodiversity Officer) 2008, Updated by Kirsty Mooney, Assistant Biodiversity Officer (2014)

Abbreviations

SG – Scottish Government

SWT – Scottish Wildlife Trust

SEPA – Scottish Environmental Protection Agency

References

Scottish Natural Heritage. Otters and Development, <http://www.snh.org.uk/publications/on-line/wildlife/otters/default.asp>

Scottish Natural Heritage, Otters and Development, <http://www.snh.org.uk/publications/on-line/wildlife/otters/biology.asp>

Water vole

ACTION PLAN *Arvicola terrestris*

UK LIST OF PRIORITY SPECIES:

YES

SCOTTISH BIODIVERSITY LIST:

YES

Summary

The Water vole was formerly common along the banks of rivers, streams, canals, ditches, dykes, lakes, lochs and ponds throughout mainland Britain.

Despite being listed as a species of least concern by the International Union for Conservation of Nature (IUCN) the UK population has undergone a long term decline since 1900 and the Water vole is regarded as one of the UK's most threatened native mammal species.

This trend is reflected in North Lanarkshire. Mink predation seems to be a major factor in their decline locally. However, Water voles have not been extensively surveyed in North Lanarkshire; this makes it difficult to assess the true nature and extent of their decline, and therefore limits our ability to protect the species.

Species Profile

The Water vole is the largest of the British voles, weighing between 200g and 350g, and is frequently mistaken for a rat. They are predominantly herbivorous, primarily feeding on lush waterside vegetation composed of grasses, sedges, rushes and reeds. In the winter months, roots and bark of shrubs and trees form an important part of the diet together with rhizomes, bulbs and roots of herbaceous species. They need to consume up to 80% of their body weight daily.

Water voles are found in most freshwater habitats in Scotland, ranging from slow flowing lowland ditches and static burns, to canals and headstreams up to 620m altitude. They typically inhabit watercourses that are less than 3m wide and 1m deep, and prefer sites with steep or stepped profiles that they can burrow into and create nesting chambers, away from the water. The bankside and emergent vegetation density is very important, with Water voles preferring a swathe of tall and rich, riparian plants. Ideal habitat consists of layered bankside vegetation with tall grasses and stands of: Willowherb; Purple Loosestrife; Meadowsweet and Nettles. It should also be fringed with thick stands of rushes, sedges or reeds. Sites excessively shaded by shrubs or trees (>20% bankside tree cover) are less favourable. Recent work has shown Water voles to be more numerous in upland and peatland habitats than formerly thought.



In waterside populations, each vole utilises a series of burrows dug into the riverbank, preferably where the soil is soft and easily excavated. The burrows comprise of nest chambers, inter-connected tunnels with many entrances and bolt holes consisting of short tunnels ending in a single chamber. Nest chambers occur at various levels in the steepest part of the bank and the nest consists of shredded grass. Occasionally, Water voles will weave a nest into the bases of sedges and reeds. Water voles typically inhabit water courses that don't exhibit extreme water level fluctuations. Sites that suffer total submersion during protracted periods of winter flooding are untenable but populations may migrate seasonally to avoid flooding of burrow systems.

Water voles can be detected by the presence of burrows, runways up to 9cm wide at the edge of densely vegetated banks, and latrines containing cylindrical faeces with blunt ends, which are typically found at prominent points along the watercourse. At low population densities, these signs may be difficult to find and Water voles can be difficult to detect due to their secretive nature.

Water voles typically live in groups of fewer than ten individuals, known as colonies. Breeding lasts from April to October with a gestation period of 20-30 days. The females may produce 2 to 5 litters annually, with the average litter size 4-6 young. Early-born young may breed that autumn, but most reach sexual maturity after their first winter. Exceptionally, Water voles may survive three winters but mortality is thought to be very high among dispersing juveniles.

Water voles colonies cannot persist in isolation as individuals disperse to form new colonies. Individual colonies may go extinct and, if in close proximity to another colony, recolonisation will take place. If there are no nearby colonies, the species will become locally extinct, leaving surviving populations further isolated. This population structure is known as a metapopulation. Due to this metapopulation structure and the dispersal behaviour of Water voles, management strategies are likely to be more effective if connectivity of colonies is considered.



Legal Status

In Scotland, the Water vole has had limited enhanced statutory protection under Schedule 5, section 9(4) of the Wildlife & Countryside Act 1981 since 1998. This section of the act protects habitat occupied by the species. Under the Nature Conservation (Scotland) Act 2004, the term “recklessly” has been added to the legislation, so the protection now makes it an offence to:

- “Recklessly” or “intentionally” damage, destroy or obstruct structures or places used by Water voles for shelter or protection.
- Disturb Water voles whilst they are using such a place.

This covers only their places of shelter and protection and does not extend to cover the animals themselves. It should be noted that the Water vole has been recommended by statutory authority for full individual protection under the Wildlife and Countryside Act 1981 and that this may be enacted at any time.

Under animal welfare laws, cruelty to Water voles is an offence. Licences are available from Scottish Natural Heritage (SNH) to allow:

- Handling, ringing or marking of the wild animals.

There is no provision for licensing the intentional destruction of occupied Water vole burrows for development or maintenance operations.

Current Status

Members of the Council's Pest Control team in Cumbernauld have linked the Water vole's decline with the appearance of Mink in the area around 20 years ago.

The Water vole has been recorded at over 50 sites in North Lanarkshire since 2000 including: Forth and Clyde Canal; Gartosh Nature Reserve; near Longriggend; Fannyside Loch; Luggie Water; Brownsburn, Airdrie and the Drumpellier to Hogganfield wetland complex. It is likely that the upland populations are small and fragmented but the lack of any survey of this area means that this is still conjecture.

The population in the Drumpellier to Hogganfield wetland complex is known to have a particularly large population. Results from Glasgow show that the largest populations of Water voles are found in wetland areas, not linear water courses; these areas seem to provide better cover to evade predatory Mink.

Populations of Water voles in the Glasgow area are known to live away from water, almost entirely underground in dry, grassland habitats. It is possible these 'fossorial' Water voles, as they are known, are already in North Lanarkshire but have not yet been recorded. If not, the fossorial Water voles could expand to North Lanarkshire in the future.



Current Factors Affecting This Species

- Insensitive river engineering, bank protection, land drainage programmes and maintenance works (e.g. de-silting operations) can damage habitats.
- Urbanisation of floodplains has led to direct habitat loss and containment of the river channel.
- Pollution of watercourses reducing breeding success.
- Heavy grazing pressure from domestic livestock denudes riparian vegetation and may make sites unsuitable for Water voles by trampling the banks.
- A substantial fringe of waterside vegetation is essential for Water voles and this can be dramatically reduced through inappropriate management.
- Bank mowing and vegetation clearance may increase the risk of predation.
- A lack of, or inappropriate, river management can lead to habitats becoming over shaded, silted up or dried out.
- Population fragmentation resulting from isolated habitats or local extinction may accelerate the rate of decline. This is due to the decreased genetic variability and increased vulnerability of small populations to disease and external parasites.
- Increasing fluctuations in water levels affecting food, cover and burrows. Fluctuations arise from changing weather patterns and an ever increasing area of development with no Sustainable Urban Drainage Systems, which can lead to large amounts of run-off.
- Predation by American mink is likely accelerated by poor riparian habitat. The impact of Mink appears to be less where there is dense cover such as expansive wetlands or interconnecting waterways and ponds, or amongst reedbeds.
- Locally, domestic/feral cats are also known to be predators of Water voles.
- Where Water voles are found in urban areas, they appear to be very tolerant of disturbance and may even occupy degraded habitats. This is because there are fewer predators in these areas, increasing their chances of survival.
- Poisoning by rodenticides, either directly or indirectly, when used for Brown rat control may be responsible for some localised extinctions, as may control operations for rabbits or moles in floodplains.
- Rats can pose a risk by acting as competitors to Water vole, as well as predators of the young voles.

Current and Ongoing Action

- Ongoing recording of Water vole sightings by Greenspace Development, NLC, from organisations, individuals and developer's environmental surveys in North Lanarkshire.
- All developments affecting potential Water vole habitat must undertake a survey for this species prior to development (Many new records for Water voles come from these surveys).
- Training of Pest Control staff in North Lanarkshire in the identification of Water voles and their field signs.
- Distribution of copies of the Water vole handbook to Pest Control staff
- Habitat creation and enhancement work as part of the Greenspace for Communities Project.
- Improvements were made at three known Water vole sites: Brownsburn, Central Park and an additional park north of Central Park.
- Leaflets were also produced to educate local communities about Water voles.
- Ditches and ponds were created at Mosswater Local Nature Reserve, creating 8000m² of suitable Water vole habitat with the potential for natural colonisation.
- De-culverting of the river that runs through Stane Gardens to improve habitat connectivity and encourage Water vole colonisation from The Voe.
- Two ponds suitable for Water voles, as well as surrounding suitable habitat, were created as mitigation for development at Frankfield Loch.
- Development is increasingly taking forward mitigation. For example Portcullis fishery utilised Water vole habitat creation as part of mitigation works.



Proposed Objectives, Targets and Actions

Objectives

1. To arrest the decline of Water vole populations
2. To encourage the Water vole population of North Lanarkshire, and Central Scotland, to increase by enhancing riparian habitats, watercourses and wetlands
3. Increase knowledge of North Lanarkshire's Water vole population and its associated freshwater habitat and ecology

Action	Meets Objective Number	Action by	Target
Policy and legislation			
1.1 Work with Scottish Canals to prevent destruction and disruption of habitats by canal dredging and to provide suitable banks or artificial burrow holes	1, 2	NLC, Scottish Canals, SNH	Apply to relevant projects from 2015-2020
Site safeguard and management			
2.1 Target existing key areas and potential habitat corridors for river and wetland habitat restoration and creation to benefit Water voles	1, 2	NLC, SEPA,	Identify key sites and corridors by end 2016. Two restoration projects by 2020.
2.2 Provide additional information on sympathetic bankside management (e.g. fencing away buffer strips to protect from excessive grazing) to landowners	1, 2	NLC, private owners	Provide advice to at least 3 landowners per annum, including any available funding options
Species protection and management			
3.1 Maintain abundant herbaceous riparian vegetation and management of bankside trees to avoid excess shading at key sites	1, 2	NLC	All known key sites in positive management for Water voles by 2020
Monitoring and research			
4.1 Monitor Water voles in key areas, including possible fossorial Water vole sites	1	NLC, SNH, Forestry Commission	Identify key sites by end of 2015 and develop a survey programme until 2020
Communications and publicity			
5.1 Encourage Scottish Natural Heritage (SNH) to hold a central Scotland Water vole conference to identify clear targets and actions for the conservation and enhancement of this species	1, 3	SNH, NLC	Discussions with SNH by 2016
5.2 Use this popular species to highlight the importance of freshwater habitats	1, 3	NLC, Countryside Rangers	As appropriate at community events and through promotional activities





References

- MacDonald, D. and Strachan, R. 1999. The Mink and the Water vole. Analyses for conservation. Environment Agency.
- Strachan, R. 1998. Water vole Conservation Handbook. Environment Agency and English Nature.
- Vincent Wildlife Trust. 1993. The Water vole *Arvicola terrestris* in Britain 1989-1990: its Distribution and Changing Status.
- SNH, 2014. Water voles. Available at:< <http://www.snh.gov.uk/about-scotlands-nature/species/mammals/land-mammals/water-voles/>>
- Yvonne Grieve, (2014), Water vole Management Plan, Forestry Commission Scotland
- Gloucester Wildlife Trust, 2009. Managing land for Water voles

Authors:

Plan written by Fiona Stewart (Scottish Wildlife Trust). Updated by Jonathan Willet, Biodiversity Officer (2004). Updated by Laura Whyte, Biodiversity Officer (2008). Updated by Jasmine Caulfield, Graduate Biodiversity Records Officer (2014)

Great crested newt

ACTION PLAN *Triturus cristatus*

UK BIODIVERSITY LIST OF PRIORITY SPECIES:	YES
SCOTTISH BIODIVERSITY LIST:	YES
EUROPEAN PROTECTED SPECIES:	YES

Summary

Of the three native species of newt, the Great crested newt is the UK's most threatened and has suffered declines in the UK and Europe since the 1940's.

The distribution of Great crested newts within North Lanarkshire requires further research, and the size of individual populations at known sites has yet to be determined accurately. The exception to this is at Gartcosh Local Nature Reserve, where a great deal of work has been undertaken to translocate the newts to newly created habitat. The site has at least 527 adult Great crested newts in its ponds, representing one of the largest known populations in Scotland. The populations at Gartcosh are offered protection through the sites designation as a Local Nature Reserve and will hopefully expand locally.

More surveying is required for other populations in North Lanarkshire to determine how many newt individuals and populations there are and to help formulate suitable habitat creation schemes that will allow populations to expand.

Species Profile

The common name for the Great crested newt is derived from the dorsal crests that the males develop in Spring. The skin is rough and granular; hence its other common name of the 'Warty Newt'. Its under belly is a bright orange/yellow colour with black markings, which advertises its toxicity and foul skin, deterring predators.

A suitable pond for Great crested newt has some areas of deeper, clear water exposed to sunlight for at least part of the day. Breeding ponds are typically small to medium (50-250m²), but clusters of small ponds can also be used. These ponds should be absent of fish, to prevent predation of larvae and eggs. There should also be a suitable selection of water plants, as the newts use these to lay their eggs.

Great crested newts exhibit a preference for densely vegetated ponds that are well established, with two thirds of the pond covered with submergent plants and between a quarter to a half covered with emergent/floating vegetation. However, open and less densely vegetated areas within the pond should also be available for the Great crested newts to display.

The surrounding terrestrial habitat should have sufficient ground cover, such as scrub, deciduous trees and long grass, containing moist areas, log piles and rocks for the newts to take refuge in during the day. During the winter months, these can provide underground hibernacula which protect them from frost. Newts will stay there from November until returning to their breeding ponds in Spring. The breeding season begins in February-March (dependent on temperature) and continues until June.



The Great crested newt's eggs are small (0.5cm), white and oval and are laid singly and wrapped carefully in aquatic plant leaves by the female. The adults offer no parental care or protection and the survival rate is often low, with animals such as insects and leeches predated the young.

Predation by fish, and other aquatic animals, is a large threat to the larvae as they hover mid-water and can be an easy target. The larvae typically metamorphose once they reach 8 cm long and leave the water to seek out terrestrial food and shelter. They can return to water each summer to take advantage of available food and begin breeding when they are in their 2nd or 3rd year.

Adult Great crested newts tend to remain in or around the vicinity of their breeding pond, with an average dispersal distance of around 290m and a maximum distance of approximately 1000m. It is vital that suitable habitat exists between ponds to allow movement, expansion and survival of populations.

The diet of Great crested newts is varied and can include earthworms, beetles, slugs and other terrestrial invertebrates. However, in water they will prey on aquatic invertebrates, frog and toad tadpoles, the other two newt species and even smaller members of their own species.

Legal Status

The Great crested newt is one of the UK's most strictly protected amphibians. It is an internationally important species identified on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. In the UK it is protected under Schedule 2, Regulation 38 of the Conservation (Natural Habitats, etc) Regulations 1994 (as amended). It has protection under Section 9 and Schedule 5 of the Wildlife & Countryside Act 1981 (as amended), where it is protected from trade, injury/killing, capture, disturbance and damage/destruction to its habitat or resting place and disturbance or obstruction access to breeding/resting places. It is an offense to take or destroy Great crested newt eggs. A licence is needed to handle them. A conservation licence is required in Scotland, if the intention is to survey them.



Current Status

The Great crested newt is estimated to be in a total of 18,000 ponds, although only 3,000 of these have been recorded. In parts of lowland England, Wales and Scotland it is considered locally abundant.

The majority of newt breeding ponds in the seventeenth to nineteenth centuries were artificial ponds on farmland. It is thought that these artificial ponds were suitable places for the newts to disperse to as their natural wetlands were claimed for farmland.

In recent decades, Great crested newt populations have declined dramatically more than observed for other amphibians. Studies in the UK in the 1960s to 1990s show losses of 0.5% to 4% of the colonies or populations per annum. This gives an estimate of some 40,000 breeding ponds lost during this period in the UK alone.

In the last 26 years, Great crested newts have been recorded in 15 locations in North Lanarkshire.

There is a small population of Great crested newt at Drumcavel and a management strategy to protect the population is currently being developed.

It is thought that Gartcosh Local Nature Reserve has a stable population of approximately 1000 individual adults and is one of the largest colonies in Scotland. The population was translocated to the nature reserve set up adjacent to the Industrial site. With the exception of 2011, monitoring of the population has recorded an increase in numbers steadily since 2006.

Results for 2012 and 2010 are similar which may indicate that the population is stable, if not continuing to increase. This translocated population was the subject of a recent University of Glasgow PhD research project with results indicating the site would benefit from additional pond creation.

The population of newts that were formerly found at Ravenscraig Steel Works area were part of a translocation and habitat creation management plan.

Survey work over 2005-2008 by members of the Countryside Ranger Service discovered a new population in North Lanarkshire. However, in the previous 6 years, 4 colonies appear to have gone extinct.

The Gartcosh population forms part of a Local Nature Reserve managed by North Lanarkshire Council, this offers some protection. Drumcavel Quarry and Croy Hill, the latter of which is owned by Forestry Commission Scotland, are offered some protection from development.

The key to the continuing existence of healthy, viable Great crested newt populations lies in ensuring that there is suitable breeding, foraging and hibernating habitat available to colonies with the possibility for expansion. Maintenance or creation of habitat networks allowing the movement of newts between suitable areas would ensure their favourable conservation status and survival.



Current Factors Affecting This Species

- Great crested newt aquatic and terrestrial habitat has become increasingly fragmented due to development, including roads and buildings. This creates small, isolated populations that are more susceptible to extinction than larger, well-connected populations.
- The loss of grassland, woodland and scrub habitat reduces opportunities for foraging, dispersal and hibernation.
- Introduced fish, such as Pike and Perch can have a drastic effect on a newt population as many fish will predate Great crested newt larvae and potentially decimate a population in the space of a few years. Some landowners and coarse fishermen commonly introduce fish to new ponds, leaving Great crested newts vulnerable to predation.
- Great crested newts benefit from new ponds being dug over a number of years, as part of a wider pond way, providing ponds in various stages of maturity. Success is more likely in an area with several suitable breeding sites in close proximity.



- Quarry sites have provided good habitat within North Lanarkshire for Great crested newts. However, renewed workings and land refill has reduced the available habitat, severely damaging some populations.
- Great crested newts are vulnerable to pollution of water bodies and dumping of rubbish on sites.
- Due to a lack of comprehensive surveying and knowledge, sites harbouring Great crested newts could be developed and unknown populations lost.
- Great crested newts are vulnerable to indirect disturbance due to unsympathetic management, such as nearby felling or planting, altering the composition of light, humidity and temperature conditions at a pond.
- Mature ponds becoming over shaded, silted up or dried out permanently

Current and Past Action

- Froglife surveyed Great crested newts as part of the Living Water Project in 2012/2013 with surveys at Cumbernauld Community Park, Glencryan Woods, Ravenswood Bog, St.Maurice's Pond and Smithstone Mosswater included in the report, but Great crested newts were only found at Gartcosh Local Nature Reserve
- Surveys of potential habitat conditioned in planning responses and guidance from SNH included
- Continuous management and monitoring of Gartcosh for Great crested newts ensured through Gartcosh Local Nature Reserve management plan
- GIS layer of known Great crested newt sites was created by end of 2009
- There are nine Sites of Importance for Nature Conservation (SINCs) designated in North Lanarkshire that have known Great crested newt populations; One SINC is designated that has a high potential for Great crested newts
- There are a further known 4 sites that are not protected by SINC designation
- A survey of the Croy Hill population commissioned by the Forestry Commission in 2013 found the population has now expanded, with an increase in occupied ponds from 5 to 8
- "Just Add Water" booklet produced by Froglife and "Garden for Wildlife" produced by North Lanarkshire Council provide advice on sympathetic habitat improvements for Great crested newts
- Creation of ponds and enhancement of existing ponds in Hackmoe meadow
- Creation of large pond and adjacent temporary pool at Riccard Johnston
- Creation of 4 new ponds at Broadwood Loch
- Froglife provided a talk to various community and conservation groups. They explained the importance of pond and amphibian and reptile conservation and gave advice on practical actions that could be taken, including wildlife gardening, volunteer surveying and recording.
- Volunteer pond digging sessions with local residents, such as at Cumbernauld Community Park, Greenhead Moss Local Nature Reserve and Glencryan Meadow.
- Froglife gave advice to Kilsyth Primary School, nearby a known Great crested newt population, on restoring their wildlife pond.

Proposed Objectives, Targets and Actions

Objectives

1. To expand the population of Great crested newts within North Lanarkshire
2. To protect the habitats of all known Great crested newt sites in North Lanarkshire and prevent damage to potentially unknown populations

Action	Meets objective number	Action by	Target
Site safeguard and management			
1.1 All known Great crested newt colonies to have their potential colonisation, breeding, foraging and hibernating habitats designated as SINC.	2	NLC	All reported sites to be surveyed and designated as SINC if GCN found by 2020
1.2 Encourage all landowners of Great crested newt breeding sites to take forward positive management, including habitat creation and restoration	1, 2	NLC	Provide advice to landowners when suitable and support in taking forward positive management for GCN
Monitoring and research			
2.1 Identify expansion areas and migration routes beyond the existing core sites, and enhance and protect these sites.	1	NLC	Potential expansion areas identified and mapped by 2017. Three sites enhanced for GCN by 2020.
2.2 Survey all known and suspected Great crested newt sites.	2	NLC	Develop a programme of survey by end of 2016 and survey all known sites by 2020
Communications and publicity			
3.1 Promote pond creation in gardens, community growth areas and public open space focusing on areas that will be of most benefit to GCN populations.	1	NLC, CARG, SWT	Use in educational events as appropriate





Further Information

Beebee, T.J.C. 1975. Changes in the status of the Great crested newt in the British Isles. *British Journal of Herpetology* 5: 481-490.

English Nature, 2001. Great crested newt Mitigation Guidelines

Gibb, R & Foster, J (2000) *Herpetofauna Workers' Guide 2000*. Halesworth: Froglife

Griffiths, RA, Raper, SJ & Brady, LD (1996) Evaluation of a standard method for surveying common frogs *Rana temporaria* and newts *Triturus cristatus*, *T. helveticus* and *T. vulgaris*. JNCC Report No 259. Peterborough: Joint Nature Conservation Committee

Griffiths, RA (1996) *Newts and salamanders of Europe*. Poyser Natural History.

Langton, T, Beckett, C and Foster, J. 2001. Great crested newt conservation handbook. Froglife. Halesworth.

Nicholson, M. & Oldham, R.S. 1986. Status and ecology of the warty newt (*Triturus cristatus*). Contract report to the Nature Conservancy Council.

SNH Survey. 1995; 1996. Froglife survey performed on behalf of SNH. Information obtained from records held at Stirling SNH offices.

Forestry Commission Scotland, 2011. GCN Management Plan

Forestry Commission Scotland, n.d. Forest operations and Great crested newts in Scotland, FCS Guidance Note 35b

Web sites:

www.whose-tadpole.net

www.froglife.org

<http://www.herplit.com/>

<http://www.herpetofauna.co.uk/>

<http://www.ukbap.org.uk/UKPlans.aspx?ID=619>

<http://www.snh.gov.uk/about-scotlands-nature/wildlife-and-you/great-crested-newt/>

Authors:

Mark Bates (Heritage Environmental Ltd). Updated by Colin Dunlop and Jonathan Willet (North Lanarkshire Council). Updated by Laura Whyte (Biodiversity Officer), 2008. Updated by Jasmine Caulfield, Graduate Biodiversity Records Officer (2014).

CARG – Clyde Amphibian and Reptile Group

GCN – Great crested newt