Lesser Silver Water Beetle: Guidance Notes for Developers

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Introduction

This leaflet intends to assist developers, planners and conservation practitioners in making decisions on development sites where lesser silver water beetles are present. This includes adhering to the law as well as catering for the species conservation needs in a reasonable manner.

Despite the fact that care has been taken to ensure that all the current information is correct and up-to-date the overall picture of the lesser silver water beetle's ecology is not complete. As such, this document will be kept under review and may be subject to further change in light of new information. In lieu of possible future changes decisions made should be approached on a case-by-case basis.

Legal protection

The lesser silver water beetle (*Hydrochara caraboides*) receives legal protection through its inclusion on Schedule 5 of the Wildlife & Countryside Act. This section of the Act protects the lesser silver water beetle and its places of shelter or protection.

- It is illegal to intentionally kill, injure, capture, handle and disturb lesser silver water beetles.

- It is an offence to intentionally or recklessly damage, destroy or obstruct access to any structure or place which lesser silver water beetles use for shelter or protection.

This is only a simplified description of the legislation. For a fuller understanding of how legislation relates to a specific case, we recommend that you consult the original legislation texts or seek legal advice.

Licences are available from English Nature/Natural England to allow activities that would otherwise be offences

- for scientific or educational purposes,
- for the purpose of ringing or marking,
- for conserving wild animals or introducing them to particular areas.

Similarly the Department for Food and Rural Affairs (Defra) can issue licences for the purpose of

- preserving public health,
- preventing the spread of disease,
- preventing serious damage to any form of property or to fisheries.

There is no provision for licensing the intentional destruction of ponds known to support lesser silver water beetles for development or maintenance operations. This must be covered by the appropriate defence in the Act, which permits otherwise illegal activities if they are the incidental result of a lawful operation and could not reasonably be avoided. See below - The law in practice.

The law in practice

Legal protection requires that due attention is paid to the presence of lesser silver water beetles and appropriate actions are taken to safeguard them and the places they use for shelter or protection.

If it can be demonstrated that any action which would otherwise have been an offence was the incidental result of a lawful operation and could not reasonably have been avoided, this constitutes a defence against prosecution under the Act. This defence thus provides for the carrying out of works that intentionally but unavoidably damage or destroy ponds that support lesser silver water beetles or kill or harm these animals, but implicitly requires that reasonable steps must be taken to avoid any unnecessary damage. Only a court can decide what is 'reasonable' in any set of circumstances, but, clearly, agreement between the appropriate conservation agencies (English Nature/Natural England), planners and developers would be important. There is, therefore, an obligation to ensure that appropriate systems are in place to minimise damage and that all reasonable ways of avoiding that damage are used.

Developers and landowners, who wish to maintain, build on or alter areas used by lesser silver water beetles must also ensure that unnecessary damage is avoided and all reasonable steps are taken to minimise damage to both the lesser silver water beetles themselves and the ponds they inhabit. This can best be achieved by undertaking a survey prior to planning any work and ensuring that appropriate mitigation measures are included in the proposals.

Lesser silver water beetles and planning

The Government planning policy over protected species is contained in Planning Policy Statement (PPS) 9: Biodiversity and Geological Conservation. Joint Government Circular 06/2005 entitled Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System provides administrative guidance of applying the legal provisions in relation to biodiversity through the planning process in England.

As a protected species, the presence of the lesser silver water beetle is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult English Nature before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned.

Where they consider their presence is likely planning authorities should, therefore, take appropriate steps to ensure developers have carried out surveys for the presence of protected

species and ensure that lesser silver water beetle habitats are protected through the planning process.

An ecological appraisal, which in some cases may be required as part of a statutory Environmental Impact Assessment, is recommended for all cases where protected species may be affected. This provides an appropriate mechanism for the gathering of data about the presence of lesser silver water beetles and the development of appropriate mitigation. In general, such an appraisal would need to include:

- a description of the development
- an ecological survey, particularly of protected species (see Annex 1 for guidelines)
- an assessment of the likely significant effects of the development on fauna and flora
- proposals to avoid, reduce or remedy the impacts of adverse effects.

Planning the development to avoid lesser silver water beetles habitats

Government, with English Nature, has published good practice guidance on planning for biodiversity. This sets out good practice for meeting the principles set out in PPS9. The preferred course of action would be for developers to have the information at hand to avoid harm to species such as the lesser silver water beetle. Good practice would be for developers to have carried out surveys for the presence of this species which informs ways for development proposals to avoid, or failing that, mitigate for any likely harm or, as a last resort, to provide for suitable off-site compensation.

Providing alternative habitats

Lesser silver water beetle requires a mosaic of clean well-vegetated ponds in a relatively open semi-natural landscape. The adults are highly mobile and it is presumed that they move around, utilising ponds when they become favourable and moving when conditions change. Juvenile phases of the lesser silver water beetle are not so catholic and are unable to move between ponds.

If the destruction of lesser silver water beetle habitat cannot be avoided, consideration should be given to the provision of alternatives, preferably located nearby. For example, the construction of a new pond of a required standard may compensate for loss of other ponds. The timetabling of such works will need to be managed carefully, so that the new habitat is ready before the old one is destroyed. However, the characters of ponds used by lesser silver water beetles are often difficult to recreate and there may be need to approach mitigation for this species in a flexible manner. i.e. it may be more feasible to restore old ponds than create new ones (lesser silver water beetle prefers conditions found in later successional water bodies).

It is good practice to work on the principle of ‘no net loss’ of biological diversity, and to aim for a ‘net gain’ in biological resources as a result of the development proposal. Good practice for lesser silver water beetles should aim for at least two ponds created for every one destroyed. These ponds should be reasonably close to other suitable ponds and surrounded by buffer zones open to regular poaching by cattle. Water should come from an unpolluted source.

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In Somerset, a distinction should be made between the creation of adult ponds and larval ponds. There seems to be no such distinction in the Cheshire populations (see Annex 2).

Habitat enhancement

Development can sometimes provide opportunities for habitat enhancement by restoring degraded habitats and encouraging the return of a greater range of wildlife. For lesser silver water beetles, the restoration and creation of ponds suitable for both adults and larvae could help to reverse local population declines or improve the viability of small populations. An ecological appraisal should identify such opportunities for positive works.

Annex 1: Surveying for the Lesser Silver Water Beetle

Site-specific searches should always be undertaken by an appropriately experienced surveyor. Ideally, at least two such searches should be made: one in late April – early and another in mid June. NB a license is required to survey for (and hence disturb) the lesser silver water beetle.

Suggested optimum times to search for the Lesser Silver Water Beetle (using data from Foster 2005) are as follows (although all stages of development can be found between April and August the months in the table below show peak numbers).:

Life Stage	**Somerset**	**Cheshire/Wrexham**
Adults	March-May (although also present through to June and appearing again in August and September)	May-June (although also present through to September)
Cocoons and Larvae	May-June and Late July-August	May - August

Adults and larvae should be searched for in suitable ponds with a standard pond net. Emergent vegetation should be targeted (adults shelter and rest within it), the net being swept through the water / vegetation complex a few times before being emptied into a white tray or other suitable receptacle. Each section of suitable vegetation should be searched this way.

Cocoons are searched for over the surface of the water. Considerable care and attention is required for ponds with plenty of emergent vegetation and surface litter. At least fifteen minutes is required for a small pond. Larger ponds will require more time.

Preferably a full aquatic invertebrate survey should be undertaken because;

1. Further interest may be discovered. This may include further rare and protected species or interesting assemblages of species.

2. In Cheshire, particular invertebrate assemblages suggest lesser silver water beetle presence and recognition of such an assemblage should extend survey time. For example, finding the beetle *Hydaticus seminiger*, the mollusc *Planorbis contortus*, the dragonfly *Sympetrum sanguineum and* the bug *Ilyocoris cimicoides* together would massively increase the probability of lesser silver water beetle presence.

3. In Cheshire, lesser silver water beetle exists at such low densities in some ponds that the rigorous methodology of an exhaustive survey offers a realistic chance of evidence being discovered.

Identification is straight forward: Friday 1988 for Adults, Boyce 2004 for larvae, pupae and cocoons.

Records and Changing Pond Conditions

Where it has been recorded in the last 10 years from such a suitable pond, and these conditions persist, then it is highly likely that the pond will still be utilised by lesser silver water beetles.

Where records for the species are older than 10 years and it has been appropriately searched for at least twice in the intervening time then it is unlikely that lesser silver water beetle will be using the site as a place of shelter.

Where pond conditions have changed substantially then it is unlikely that lesser silver water beetle will be using the site as a place of shelter.

Annex 2: Ecological requirements of Lesser Silver Water Beetle

Somerset
Adults are found in a much wider range of pools than larvae and eggs. Information suggests that they readily fly and it is highly likely that they are quite mobile, utilising a number of different pools and moving between them. However, it is important to note that pools that are not inhabited all of the time still provide shelter for the adults and may play an important role for feeding and mating.

Optimal pond conditions for adults:

- Mats of floating sweet-grass *Glyceria spp.* or other preferably soft emergent vegetation such as pondweeds *Potamogeton spp*., water-crowfoot *Ranunculus spp*. and frogbit *Hydrocharis morsus-ranae,* which the adults rest within and probably feed upon.
- Clean water that does not come from a highly eutrophicated source (which often lead to cloudy conditions caused by algal blooms etc).
- Absence of fish.

The catholic tastes of the adults are not mirrored by the larvae. Pregnant females are very particular about choosing a pool before constructing an egg cocoon.

Optimal pond conditions where egg cocoons are constructed and larvae mature.

- Shallow water, generally less than 20cm deep. This could be as a separate temporary pool that completely dries up in the summer or as a wide, shallow shelf of an otherwise permanent pool. Immature lesser silver water beetles require warm water, found in shallower areas of ponds.
- Clean water that does not come from a highly eutrophic source (which often lead to cloudy conditions caused by algal blooms etc).
- Over 2/3 of the water without excessive growths of duckweed or filamentous algae.
- A thick layer of leafy or other organic detritus that has formed at the bottom of the pond.
- Abundance of invertebrate prey, especially small crustacean such as *Asellus aquaticus*.
- Bands of emergent vegetation, such as sedges, grasses or herbs where later instar larvae hunt and rest.
- Presence of suitable cocoon building material, such as frogbit *Hydrocharis morsus-ranae*, pondweeds *Potamogeton spp.*, Water plantain *Alisma plantago-aquatica*, or overhanging trees such as willow *Salix spp*. and oak *Quercus spp*.
- Muddy shores and/or small floating rafts of vegetation for pupation (light trampling by cattle often create such banks).
- Absence of fish.

NB it is possible that both adults and larval will be found in sub-optimal conditions but the features above give an indication of what habitats these animals prefer as well as a blueprint for habitat enhancement.

Cheshire/Wrexham

Adults, larvae and cocoons seemingly share the same ponds, adults rarely being found alone. For further information see A. Harmer (in prep).

Optimal pond conditions for lesser silver water beetle:

- Mats of floating vegetation (often strong enough to support sallows). Plants more associated with terrestrial habitats can be commonplace on such rafts. A typical community might include cowbane *Cicuta virosa*, Cyperus sedge *Carex pseudocyperus*, common spike-rush *Eleocharis palustris*, marsh bedstraw *Galium palustre*, creeping bent-grass *Agrostis stolonifera*, floating sweet-grass *Glyceria spp*, and Gypsywort *Lycopus europaeus.*
- Clean water that does not come from a highly eutrophicated source (which often lead to cloudy conditions caused by algal blooms etc).
- Shallow water, generally less than 20cm deep. This could be as a separate temporary pool that completely dries up in the summer or as a wide, shallow shelf of an otherwise permanent pool.
- Over 2/3 of the water without excessive growths of duckweed or filamentous algae.
- A thick layer of leafy or other organic detritus that has formed at the bottom of the pond.
- Abundance of invertebrate prey, especially small crustacean such as *Asellus aquaticus*.
- Cattle poached areas away from the raft that usually contain stands of branched bur-reed *Sparganium erectum*, Reed sweet-grass *Glyceria maxima*, soft rush *Juncus effusus* and broad-leaved pondweed *Potamogeton natans*.
- Absence of fish.

In general, alien plants are not present at sites that contain lesser silver water beetle. Species such as Canadian pondweed *Elodea canadensis* and New Zealand pygmyweed *Crassula helmsii* would probably have a serious deleterious impact on the beetle's ability to breed.

Further reading

Boyce, D. 2004. A study of the distribution and ecology of the lesser silver water beetle Hydrochara caraboides on the Somerset Levels. *English Nature Research Report 591.* Peterborough: English Nature

Foster, G. 2005. Update on the Biodiversity Action Plan. *Latissumus* 20: p33

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Guest, J. Survey of the Lesser Silver Water beetle Hydrochara caraboides in Cheshire. *English Nature Research Report 248.* Peterborough: English Nature

Harmer, A. (2006) *The Lesser Silver Water Beetle Hydrochara caraboides in Cheshire*. Chester Zoological Gardens. The Environment Agency and Chester Zoological Gardens.

Planning for Biodiversity and Geological Conservation: A Guide to Good Practice ODPM/Defra/English Nature March 2006. Downloadable from http://www.communities.gov.uk/index.asp?id=1143832