Scotland Rural Development Programme

A guide to Agri-Environment Climate Scheme (AECS) options for **natterjack toads**

Use this leaflet to select options to benefit Scotland's rarest amphibian

amphibian and reptile conservation

Why do natterjack toads matter?

The natterjack toad is Scotland's rarest native amphibian. It is highly protected under national and European legislation. It is a European Protected Species (EPS) and is on the Scottish Biodiversity List, which means it is a priority species for action by the Scottish Government. Populations in Scotland have declined significantly since the 1970s, when thousands of adult toads could be found at several sites (Bridson 1976). Since 2006, the maximum adult count at a single site in Scotland has not exceeded 100 (Buckley and Beebee 2012). This species is at risk of local extinction in Scotland.

Where do natterjack toads occur in Scotland?

In Scotland, natterjacks are only found along a short stretch of the Solway coast, from Mersehead RSPB reserve to Hoddam Quarry, near Annan. They are mainly found along the upper 'merse' or saltmarsh and in coastal fields and reedbeds. All of the known breeding sites in Scotland are within a few hundred metres of the sea. Spawn is laid in flooded fields, upper saltmarsh pools, shallow water in coastal reedbeds and temporary pools created by quarrying. Natterjack toads also use coastal farmland to forage and hibernate. They have been found hibernating in or around buildings up to 1.5km inland during winter. Natterjacks are rarely seen in woodlands or arable fields.

Natterjack toad distribution in Scotland (McInerny and Minting 2016)

What do natterjack toads need?

Natterjack toads have specific requirements, in terms of the aquatic and terrestrial habitat that they need in order to breed and survive.

Aquatic habitat

Natterjack toads breed most successfully in ponds with the following characteristics:

- Shallow depth (less than 40cm deep)
- Gently sloping, shallow margins
- Minimal (or no) vegetation (with the exception of reedbeds)
- Unshaded from any direction
- Less than 10% seawater by volume
- A tendency to dry out in late summer, or be inundated by very high tides
- An absence of other amphibians, large fish and predatory invertebrates

Natterjack toad ponds should not permanently hold fresh water, or full-strength seawater. In permanent freshwater ponds, aquatic insects such as diving beetle and dragonfly larvae are often abundant and eat the tadpoles. If ponds dry out in late summer, this kills the aquatic insects (and other predators such as leeches and fish). Inundation by the sea can have a similar effect on predators but unfortunately, undiluted seawater kills natterjack spawn and tadpoles. Consequently, a significant input of fresh water (via rain or surface drainage) is needed into tidal ponds for breeding to succeed. The most successful natterjack ponds in Scotland are flooded by the highest tides (usually in winter) but contain less than 10% seawater during the breeding season.

Saltmarsh pond with well-grazed margin

Terrestrial habitat

The following terrestrial habitat will help natterjack toads to thrive:

- Open, unshaded land
- Large areas of short turf or bare ground
- Loose substrate for burrowing
- Logs or driftwood (to provide refuge and invertebrate prey)
- Organic land management (pesticides reduce prey abundance)
- Hibernation sites (e.g. old buildings, rubble heaps, sand dunes, rabbit warrens)

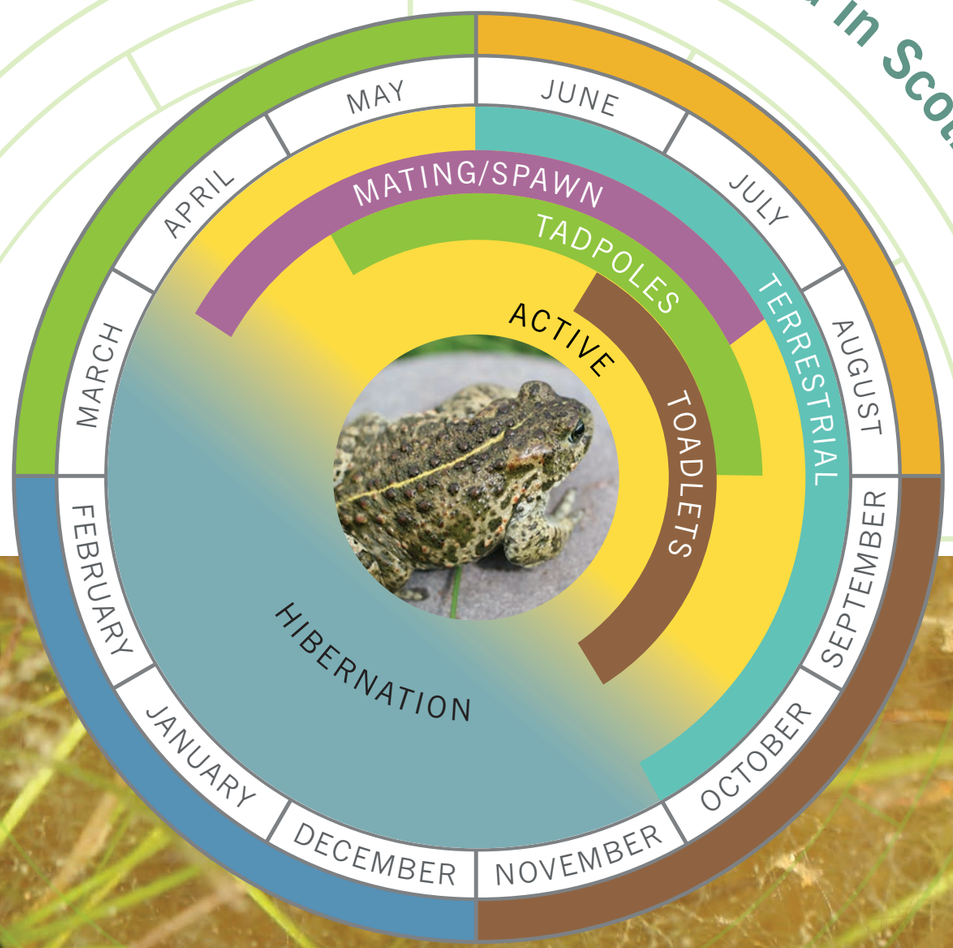
Natterjack toads need open areas with minimal vegetation, in order to hunt down their prey. Suitable foraging habitat for natterjacks can be created by grazing land intensively with livestock. A variety of grazing animals can be used, including cattle, sheep and horses. Cattle are often useful for removing long, tough vegetation but sheep are good for maintaining a short sward without poaching the ground, once the bulk of the vegetation has been removed. Natterjack populations are more likely to increase in size at sites which are grazed (Buckley *et al*, 2013).

Sheep grazing saltmarsh without poaching ground

Highland cow removing tall grass

Coastal pond with tidal flow control at far left

Annual life cycle of the natterjack toad in Scotland



Natterjack toad spawn string

Natterjack toadlet

How to identify natterjack toads

The most obvious feature of the natterjack toad is its bright yellow dorsal stripe. This is first visible in late-stage tadpoles. This stripe distinguishes the natterjack from the common toad, the only other species of toad native to Scotland, which also has a dry warty skin and looks superficially similar.

During the breeding season, male natterjack toads call very loudly on mild, still nights (much louder than any other Scottish amphibian). Their calls can reveal the existence of a natterjack population but they can be heard from over a kilometre away, so may not necessarily be nearby. If you are uncertain whether natterjack toads are present on your land, please contact ARC for information.

Adult male natterjack toad calling

Mating pair of natterjack toads

Support for natterjack habitat management

A number of land management options are available to help improve habitat for natterjack toads in Scotland. The natterjack is not currently listed as a Vulnerable Priority Species (VPS) under the Agri-Environment Climate Scheme (AECS) but well-designed applications featuring this species will be considered, as the natterjack is a priority species on the Scottish Biodiversity List. Several sites where natterjacks were previously abundant are not in favourable condition for this species.

Key options include pond creation for wildlife and wetland creation by field drain breakage, ditch blocking and installation of pipe sluices. Along with grazing throughout the summer, these options can be used to create the habitat conditions described above. If vegetation control cannot be achieved by grazing, cutting by machine may be permitted by Scottish Natural Heritage (SNH) but this is not usually allowed when toadlets are emerging from ponds (typically in July and August).

Field drain breakage and ditch blocking can be used to create more breeding ponds in coastal fields and on the upper saltmarsh. Pipe sluices can be used to alternate which areas flood from year to year and control tidal inundation. If temporarily flooded from April to August, well-grazed coastal fields can provide excellent breeding opportunities for natterjacks. The creation of very shallow ponds, including 'wader scrapes' for birds can also be beneficial if a water depth of 20–40cm is achieved during spring. If a chain of such ponds (ideally less than 500m apart) is created, this gives natterjacks a choice of breeding sites, at least one of which may be successful in a given year.

Ungrazed saltmarsh with field drain and ditch

More grazing here would benefit natterjacks

Reedbeds can become dense and overshaded

Fencing (including temporary electric fencing) and alternative watering facilities can form part of an application to allow grazing of areas where natterjacks are known to occur, or provide livestock with access to those areas. It is important that grazing continues throughout the summer and autumn, including around ponds. It is sometimes appropriate to install temporary fencing to prevent heavy livestock excessively disturbing ponds but sheep do not need to be excluded.

Quarry where scrub removal would be beneficial

Is liver fluke a problem?

Agricultural institutes are advising farmers to drain fields grazed by livestock, to reduce rates of infection by the liver fluke *Fasciola hepatica*. This parasite lives inside snails during part of its lifecycle. Its principal host is the mud snail *Galba truncatula*, which is commonly found in muddy areas with algal growth between clumps of *Juncus* rush (but not in ponds or flowing water). This snail is rarely seen in tidal areas or areas with very short turf. If natterjack habitat is unsuitable for mud snails, the management of farmland for natterjacks, including grazing of saltmarshes, might be a useful way of reducing the risk of liver fluke infection. However, more research on this topic is needed (McInerny & Minting 2016, Scottish Natural Heritage 2015).

To start an AECS application online, register at:
https://www.ruralpayments.org/publicsite/futures/topics

To view the complete list of available options and capital items, see:
https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/agri-environment-climate-scheme/management-options-and-capital-items/

Management options and capital items	**The following options are recommended for applications from holdings where natterjack toads are known to occur:**
Wetland and bog options	Wetland Management
Small unit options	Cattle Management on Small Units
Managing water quality and flood risk options	Converting Arable at Risk of Erosion or Flooding to Low-input Grassland Alternative Watering
Organic options	Organic Farming: Conversion Organic Farming: Maintenance
Capital items	Coastal Embankment Breaching, Lowering or Removal Creation of Wader Scrapes Cutting of Rush Pasture Pond Creation for Wildlife Wetland Creation – Field Drain Breaking Wetland Creation – Pipe Sluices Control of Scrub (any item) Ditch Blocking – Plastic Piling Dams Moving or Realigning Ditches Stock Bridges for Bog, Fen or Wetland Management (Scare and) Temporary Electric Fencing Stock Fence

Other management options and capital items may be beneficial to natterjack toad, if included as part of an application designed to achieve suitable conditions for this species. Please contact ARC and your farm conservation adviser if you would like help with developing an application.

More useful information

For more detailed information on habitat management for natterjack toads, see Chapter 11 (p53–60) of *The Amphibian Habitat Management Handbook* (Baker *et al* 2011). An electronic version can be downloaded from: **www.arc-trust.org/pdf/amphibian-habitat-management-handbook-full.pdf**

If you manage land in the section of Solway coast where natterjack toads occur and would consider undertaking habitat work to help natterjack toads, with funding from the AECS or other schemes, please email ARC's Scottish Project Officer (Dr Pete Minting) at **pete.minting@arc-trust.org**. If you do not already have a farm conservation adviser, we recommend contacting the Scottish Association of Independent Farm Conservation Advisers (SAIFCA) at: **www.saifca.org.uk**.

References

Baker J, Beebee TJC, Buckley J, Gent T and Orchard D (2011) *Amphibian Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth. ISBN: 9780956671714. Free electronic copy available at: www.arc-trust.org/pdf/amphibian-habitat-management-handbook-full.pdf

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Bridson RH (1976) *The Natterjack Toad; its distribution in south-west Scotland in 1976*. Unpublished report to the Nature Conservancy Council (NCC).

Buckley J, Beebee TJC and Schmidt BR (2013) Monitoring amphibian declines: population trends of an endangered species over 20 years in Britain. *Animal Conservation* 17, 27–34.

McInerny CJ and Minting PJ (2016) *The Amphibians and Reptiles of Scotland*. Glasgow Natural History Society. ISBN: 9780956671721

Scottish Natural Heritage (2015) Wetland management and agricultural best practice: Liver fluke and implications for wet habitats. Report by Cecile Smith to Scientific Advisory Committee. http://www.snh.gov.uk/docs/A1548529.pdf

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