HERPETOFAUNA GROUPS OF BRITAIN AND IRELAND
EVALUATING LOCAL MITIGATION/TRANSLOCATION PROGRAMMES: MAINTAINING BEST PRACTICE AND LAWFUL STANDARDS.
HGBI ADVISORY NOTES FOR AMPHIBIAN AND REPTILE GROUPS (ARGS)

1. Background

One of the growing areas of need in county/district conservation is to ensure that projects aimed at mitigating site and species disturbance are carried out in a proper and lawful way. These advisory notes aim to give guidance on reasonable and sufficient minimum standards and also to what might be considered Best Practice.

The ARG role to monitor such projects and review progress from time to time may require good communication with those carrying out the work and sometimes access to inspect sites. Maintaining an independent yet close working relationship with the relevant organisations is important and it is vital that understandable and clear views are made, preferably in writing as well as verbally, in order that better conditions are provided for animals in managed or newly prepared habitats and during the process of capture, release and in future monitoring.

These guidelines concern protected species of amphibians and reptiles (and those less protected species that might be caught alongside them) during projects to exclude them from areas and transfer them to new areas. Section 6 extends this advice to cover Best Practice.

The following protected species are covered:

- great crested newt *Triturus cristatus*
- smooth snake *Coronella austriaca*
- grass snake *Natrix natrix*
- adder *Vipera berus*
- sand lizard *Lacerta agilis*
- slow-worm *Anguis fragilis*
- common lizard *Lacerta vivipara*

[Note: information concerning the natterjack toad *Bufo calamita* is not included in this version]

It is important to note that this document does not *define* reasonable effort precisely. Whether a given act constitutes reasonable effort could only be tested in a court of law. However, these notes present a series of agreed guidelines for use by those assessing mitigation and translocation schemes. In other words, although this document is not a definitive statement of the effort required by law, it provides a standard by which such schemes may be evaluated.

2. Great crested newt

2.1 General

Catching great crested newts and other amphibians requires locating them both in their terrestrial and aquatic habitats. Newts are usually overwintering on land during December and January, often from October to March. As soon as warm weather begins in February and March, a proportion of the adults begin to move towards the breeding pond. From then on until the peak courtship period (usually around mid-April) a growing proportion of adults occur in the pond. Distribution fluctuates, but at any one time, however, less than one third of adult newts might be expected to be in the water. Newts also move between ponds and do not always stay in the water all spring. Young newts may enter the water only occasionally, and normally occur up to around 500 metres away from the pond. Some ponds may dry up during the summer or never fill with water in a given year. Because of these conditions, the strategy to allocate suitable methods and resources to capture a population or remove all animals from an area needs to closely follow an evaluation of the likely distribution and numbers of newts at the site (based on known habitat preference and use) and adapt to meet the prevailing factors. The following section summarises techniques and Best Practice in their implementation.

2.3 Pond habitats

Newts can be removed by a) netting, b) bottle trapping, c) draining down with hand and net searching and d) by ring-fencing with pit fall traps. Remember that only a third or less of all adult newts present on site may be in a pond at any one time. Ponds to be infilled should be ring fenced, drained down and thoroughly searched by experienced, licenced and supervised fieldworkers over a suitable period, taking care due to the hazardous nature of pond bases and wet sediment.

2.3.1 Netting

Netting is probably not very efficient other than in quite small ponds, as newts are hard to find especially during the day and have plenty of escape routes and hiding places. It is perhaps best as an additional technique to the main method used.

2.3.2 Bottle trapping

This method can be quite effective, catching overnight in peak conditions up to ten per cent of adult newts in a pond at any one time. It can be a risky method for newt larvae, which may predate each other in traps or be eaten by adult newts. In hot weather, adults can also be at risk (see English Nature guidance notes). Traps may remove most of the breeding adults in a population given 90 days trapping March-May with trap density of 1 trap per 2m shoreline. Note however that a proportion of adult newts do not enter a pond in a given year and this may be a substantial proportion in some ponds.

2.3.3 Draining down

Draining down by pumping or syphoning water out of a pond must only be done through a screen (1mm gap geotextile or similar) in order to prevent death or injury to newts and other pond life. Adults can be caught as they 'walk away' out of a draining pond and by thorough hand searching of collapsing pond plants and silt. Given enough labour for a thorough search it is possible to catch almost all the newts in a pond. In addition, ring-fencing with pitfall traps will help to catch adults and young of year leaving a draining or drained pond overnight.

2.3.4 Ring-fencing

Ring-fencing a pond (early February to mid May) may catch approaching 100% of adults trying to enter a pond over the spring immigration period. Adults often enter the pond in large nightly batches at the start of the year, with later individuals arriving up to around twelve weeks after the first. Ring-fencing will not catch many terrestrial juveniles, which may be away from a pond for up to 4 years after leaving the pond as metamorphs. Ring fences will catch adults and young of the year newts leaving ponds in the summer and autumn (early June-late October).

2.4 Land habitats

Newts have been shown to disperse up to 500 metres away from the breeding pond, sometimes further, but studies at a few sites suggest that most live within 250 metres of it. The distribution of newts on land depends largely on population size and habitat availability. Trapping animals on land requires drift fencing and pitfall trapping. This is often to remove animals from a building plot or road route using an exclusion fence, with trapping within that area. Other methods are simple searching of terrestrial habitat and night catching by hand. For trap densities see Table 1.

2.4.1 Terrestrial searching and night catching

It is often very difficult to find newts on land, even by looking in crevices etc., because they can squeeze into rock and soil gaps to a depth of 500mm or more. It is especially difficult during dry weather, when newts tend to be more secretive. Moveable logs, rocks, rubble and other refugia such as wood, metal, plastic, rubber and cloth materials on the surface may provide searchable shelters. Terrestrial searching and night catching are best used only as an additional technique to the main capture method employed. On rock, clay and other hard soils a destructive search is not

Table 1: Pitfall trap effort for great crested newt projects.

Known or estimated population size	Number of pitfall traps per ha	Minimum number of trapping nights in good weather
High population (over 100 torch count, or 1000 estimated)	100 (each with 5 - 10m drift fence)	90 days Spring or Autumn or / 45 days Spring and 45 days Autumn
Medium population (over 30 torch count, or 300 adults estimated)	80 (each with 10m drift fence)	60 days Spring or Autumn or / 30 days Spring and 30 days Autumn
Small population (under 30 torch count, or 300 adults estimated)	50 (each with 10m drift fence)	30 days Spring or / 15 days Spring and 15 days Autumn

usually practicable and one can be misled into thinking that only few animals are present. Using this method, a few individuals may be caught but are likely to be a small percentage of the population. In loose soils or a deep fibrous litter layer a hand search might enable the location of some animals. At night during wet conditions adults can be found by searching with a powerful torch, but even with considerable effort it is unlikely that more than a small proportion of adults would be found.

2.4.2 Pitfall trapping

Great crested newts may occur on land at densities of around 250 adults per hectare, depending on the quality of the habitat. Pitfall traps should be placed at the appropriate density (see table) and operated for a number of "trap nights" during appropriate conditions. A trap night is determined by when at least one newt is caught per night during the first two thirds of the total trapping period during spring (Feb-June) or autumn (July-October), and according to the specifications given in the Table 1. A no catch night in the first two thirds of the trapping period disqualifies it as a trapping night.

The reasonable end point may be reached when newt trapping in warm (5°C or more night [2400 hours] temp) and rainy weather (or within 14 days of last 5mm or more rain), is producing no more than one newt per ha per day. In general the aim should be to catch at least 95% of the known or estimated numbers of adults and juveniles. Note that in some cases juvenile cohorts may be absent or low due to non-breeding or low recruitment years.

3. Reptiles

3.1 "Common" or widespread species

The adder, grass snake, common lizard and slow-worm are all protected species, but their habitat is not protected in the way that is the case for the rarer protected species (sand lizard and smooth snake). However, disturbing or destroying their habitat while they are present may lead to an offence, although the death (by way of a body) or presumed death (evidence to prove their presence immediately before site destruction) may be necessary to prove an offence. A destructive search (careful lifting of topsoil and debris by hand or with the aid of machine) may also kill or injure a small percentage of animals (perhaps 0-5%) and the lawfulness of this method requires careful interpretation. Destructive search is likely to be lawful if it can locate otherwise unlocatable individuals after using other methods. The main methods include hand catching, tinning/refugia trapping and destructive searching.

Exclusion fencing will be required in most cases to prevent animals returning or entering the search area from nearby areas. A security fence (eg chain-link) may be required around sites subject to high public pressure. Habitat

manipulation is usually advised to enhance capture methods. This involves reducing the amount of suitable vegetation cover, thus rendering the reptiles easier to catch. Strimming or brush-cutting brambles and rough grass, and removal of scrub, may help. Reducing the height of the grass sward may also be appropriate in some cases. "Islands" of rank vegetation can be left, and it is around here that the remaining reptiles will probably be concentrated.

A survey of the distribution and numbers of reptiles on the development site is required before a suitable mitigation scheme can be developed. This may take several weeks to undertake.

3.1.1 Hand catching

This is time consuming and will normally only locate a proportion of individuals: probably less than 50%, even with a full time effort. The process of searching and swift 'grabbing' may be good for catching basking slow-worms and snakes, but it may damage or even kill legged lizards if undertaken without due care. The legged lizards can be noosed. Hand catching is best used as a complementary technique to tinning/refugia trapping.

3.1.2 Tinning/refugia/traps

This is the most effective method and involves the placing of cut up corrugated iron sheeting, wood, plastic or other flat materials that snakes and lizards hide under. Tins are best placed in locations which will be attractive to reptiles (eg. 'sun-traps'). Strimming to create a variety of moisture conditions and a variable gap between the tin and the surface of the ground may increase the effectiveness of tins. Pitfall trapping can be used, with similar specifications as for newt trapping, for capturing reptiles. Special care needs to be taken to protect the welfare of trapped reptiles. Pitfall trapping is best used as an additional technique to tinning/refugia trapping. The most profitable time for capturing reptiles is generally between late April and late June, and again between late August and late September. For guidance on suitable weather conditions, see papers in "Reptile survey methods" (Foster and Gent (eds), 1996). The suggested number of days required to catch reptiles for a reasonable effort to remove the population is given in Table 2.

3.1.3 Destructive search

Since it could take up to several years to entirely trap out an area of reptiles by hand catching and tinning, the capture of reptiles by digging up their habitat has been carried out on development sites in parts of south England since 1990. The technique is a last resort and requires very careful specialist attention as it is not always possible to prevent the occasional death or injury of a proportion of animals dug up through cutting or crushing. There are only a few consultancies with experience in this and advice should be sought according to individual circumstances and soil conditions. Due to the close proximity of heavy machinery and fieldworkers, a special health and safety procedure is required for the potentially hazardous working conditions. Normal destructive search rates are between 0.1 and 1.0 ha per day depending on machine size and habitat type.

A destructive search should begin by dismantling rubble piles and other debris by hand. Reptiles may be found sheltering in these structures. Following this, the vegetation can be stripped using an excavator with a toothed bucket. Firstly, the top few centimetres of the ground or first layer of rubble should be removed, to expose reptiles sheltering in crevices just below the surface. At least one, and preferably two, experienced reptile handlers should be positioned to catch reptiles as they are disturbed. Following this, larger and deeper excavations can be made, concentrating on areas which afford shelter to reptiles, such as tree stumps and buried rubble. Particular care should be taken when emptying the bucket in case any reptiles are dug up with the spoil.

Table 2: Minimum capture effort for common reptile projects

Species	Population size (adult density)	Tin density (number of tins/ha)	Minimum number of trapping days in good weather
Slow-worm	High population (> 100 / ha)	100	All suitable days between March & September or a full year (min. 90 suitable days)
	Medium population (> 50 / ha)	100	All suitable days between March & September or a full year (min. 70 suitable days)
	Low population (< 50 / ha)	50	60 suitable days
Common lizard	High population (> 80 / ha)	100	All suitable days between March & September or a full year (min. 90 suitable days)
	Medium population (> 40 / ha)	100	All suitable days between March & September or a full year (min. 70 suitable days)
	Low population (< 20 / ha)	50	60 suitable days
Adder	High population (> 4 / ha)	100	All suitable days between March & September or for two years (min. 120 suitable days)
	Medium population (2 - 4 / ha)	100	All suitable days between March & september or for two years (min. 100 suitable days)
	Low population (< 2 / ha)	50	60 suitable days
Grass snake	High population (> 4 / ha)	100	All suitable days between March & September or for two years (min. 90 suitable days)
	Medium population (2 - 4 / ha)	100	All suitable days between March & September or two years (min. 70 suitable days)
	Low population (< 2 / ha)	50	60 suitable days