



Warwickshire Amphibian & Reptile Team

Helping Native Amphibians and Reptiles
in Warwickshire, Coventry and Solihull



**Atlas of the Amphibians & Reptiles
of Warwickshire - Vice County 38
Records up to 2018**



Contents

The Warwickshire Amphibian and Reptile Team (WART)	3
Surveying and Recording	4
Species Legislation	6
Species Descriptions and Distribution Maps	7
· Adder	8
· Grass Snake	10
· Slow-worm	12
· Common Lizard	14
· Common Frog	16
· Common Toad	18
· Great Crested Newt	20
· Smooth Newt and Palmate Newt	22
· Exotic Species	24
Conservation Action	26
· Amphibian and Reptile Habitat Creation	26
· The Road Drains Problem	29
Further Reading	32

Acknowledgements

A big thank you to all recorders for making this publication possible by collecting records and sharing them with us. Their commitment to biological recording is remarkable and it is only a result of their record keeping that we have such an up-to-date insight of amphibian and reptile distributions across Warwickshire, Coventry and Solihull.

Our grateful thanks to the Warwickshire Biological Records Centre (WBRC) at Warwickshire County Council for providing computer and printing facilities and the mapping and biological recording software, so we could carry out the data collection, mapping and analysis. Many thanks to the WBRC volunteers who helped with entering records and initiating the mapping work including Eloise Arif, Melody Stokes and Michaeljohn Cullen.

Special thanks to EcoRecord for sharing the records that are located within the historical area of the Warwickshire Vice County 38 which now lies within the administrative area of Birmingham.

Finally, many thanks to Jim Foster (Amphibian and Reptile Conservation) for providing the text about species legislation and to all Warwickshire Amphibian and Reptile Team (WART) members who contributed in writing up this atlas, Jan Clemons who provided the species descriptions, Tim Jenkins for providing outstanding photographs, Masha Tarnavska who created the final maps and Louise Sherwell for reviewing the final draft.

Reptiles and amphibians are one of the most ancient species groups on our planet.

Let us care for such amazing species and continue doing our bit for their conservation.

Every record goes a long way towards this.

Best wishes to all recorders and readers of this atlas,

Agni Arampoglou

Vice County 38 WART Recorder

e-mail: recordswart@gmail.com

March 2019



Subadult female great crested newt

© Agni Arampoglou

Data sources: WART, ARG UK and ARC Record Pool, WBRC and EcoRecord

Photographs: Tim Jenkins, Chris Dresh, Jane O'Dell, Derek Colley, Jan Clemons, Ben Wood, Catherine Coton, Masha Tarnavska and Agni Arampoglou

Text: Jan Clemons, Jim Foster, Masha Tarnavska, Louise Sherwell and Agni Arampoglou

Maps: Masha Tarnavska

Maps copyright: WBRC, Warwickshire County Council

Printing: Hard copies are available from the WBRC at a cost. To order a hard copy contact the WBRC at wbrc@warwickshire.gov.uk



Adult common lizard

The Warwickshire Amphibian and Reptile Team (WART)



WART is a voluntary group that works in partnership with the Warwickshire Wildlife Trust (WWT) and is affiliated to the Amphibian and Reptile Groups of the UK (ARG UK).

Records of amphibians and reptiles are mainly collected throughout Warwickshire, Coventry and Solihull and shared with the Warwickshire Biological Records Centre (WBRC) but the aim of WART is to cover the wider Vice County 38, including the surrounding area of Sutton Coldfield which is found within the administrative area of Birmingham.

WART members carry out amphibian and reptile surveys, create and maintain amphibian and reptile habitat including the WART reserve in Kenilworth Common, participate in public events (e.g. Coventry Godiva Festival), rescue amphibians in roads and drains during the breeding and post-breeding seasons and install amphibian ladders in road drains.

Membership and Further Information

WART always welcomes new members.

To get involved please contact the WART Membership Secretary Jan Clemons by e-mail: janclemons2015@gmail.com

For records or other enquiries contact WART by e-mail: recordswart@gmail.com

You may like to visit the WART webpage at groups.arguk.org/wart and find us on Facebook and Twitter by searching for **Warwickshire Amphibian and Reptile Team**



Installing amphibian ladders



Creating a pond in allotments



Reptile heathland habitat management



Field trip for adder spotting

Surveying and Recording

If you are carrying out systematic recording (looking for amphibians or reptiles at the same location on several occasions within a year, or even more through several years) it would be best to enter your records online using the Record Pool form at www.recordpool.org.uk created by Amphibian and Reptile Groups of UK (ARG UK) and Amphibian and Reptile Conservation (ARC).

All the records that you submit to Record Pool are shared with WART.

Alternatively you can request to use the WART excel template spreadsheet and send your records periodically to the WART Recorder at recordswart@gmail.com

Ad hoc, incidental records should be also sent to this e-mail address.

If you are new to amphibian and reptile surveying and you would like to carry out systematic surveys but do not know where to start please contact us on the e-mail address above. Each year WART organises a number of amphibian and reptile surveys that you can take part in and we can also assist you with getting started surveying a site near where you live.

How to make a record

Valid records include the following four “Ws”:

What : the species name

Either the common name e.g. common toad or the scientific name e.g. Bufo bufo is acceptable. Please include a description or photo if you do not know the species.

Where : location or site name with 6-figure, 8-figure or 10-figure grid reference

If you do not know the grid reference you can look it up at www.gridreferencefinder.com or you can provide as much information as possible for the location so we can get an accurate grid reference e.g. road name, town/village, post code.

When : full date when the species was seen

Our preferred format is 23/09/2018 but if you do not remember the exact date, then the month and year will do e.g. September 2018.

Who : full name of recorder(s)

In addition **number of species seen and comments** including sex and growth stage, if known, and the behaviour of the species and habitat where the species was found is always very useful information.

Record Examples

- 2 common frogs (mating pair) in garden, Guy Street, Warwick, SP288653, on 23/06/2018, seen by Ben Wood.
- 1 adult common toad on path, in Kenilworth Common, SP295730, on 27/07/2018, seen by Agni Arampoglou.



Excel spreadsheet example

Species	Location	Grid Reference	Date	Abundance	Comment	Recorder
Common Frog	Guy Street, Warwick	SP288653	23/06/2018	2 adults	In garden, mating pair	Ben Wood
Common Toad	Kenilworth Common	SP295730	27/07/2018	1 adult	On path	Agni Arampoglou

What happens to your records

All records that you submit are entered in the WART database and are imported into the WBRC's biological recording software system (Recorder 6).

Both WART and WBRC comply to the latest data protection legislation (General Data Protection Regulation as adopted in the Data Protection Act 2018) and the name of the recorder is kept in the biological recording software in perpetuity (as it forms part of a valid species record) but kept confidential.

The records are shared with other conservation organisations upon request and are provided in WBRC data searches (without the name of the recorder) and are also used in research projects.



Not knowing the species

If there is any doubt of what the species is, please provide a species description and if possible a clear photograph. In particular for adder and palmate newt records we would like to see clear photographs in order to confirm the species. A species description alone will not be enough information to validate adder and palmate newt records as in the past we have had misidentifications. In particular for amphibians the scale is important and if the photograph is not clear please make sure you place something next to the species for an indication of scale e.g. a coin or a pen.



Adult adder

Species Legislation

All of Warwickshire's amphibians and reptiles are protected by law to a certain extent. Wildlife legislation is very complex and much of it has been devolved to the different countries making up the UK. Much of our legislation derives from international agreements, most notably the Conservation of Habitats and Species Regulations 2017, which transposes the EC Habitats Directive into UK law and confers "European Protected Species" status on animals at particular risk.

Great crested newt

The only species in Warwickshire given status as a European Protected Species is the great crested newt. It is also protected under Section 9 (4) (b and c) of the Wildlife & Countryside Act 1981 (as amended). In summary, these articles of legislation afford all the life stages of the great crested newt strict protection from:

- Injury, killing, capture, disturbance and possession
- Damage or destruction of breeding sites and resting places
- Obstruction of access to places of shelter or protection
- Selling, offering for sale or exchanging.

Note that the precise wording of the offences differs between the two main articles of legislation, and in particular some actions must be deliberate, intentional or reckless to be an offence. It is important to refer to the original texts for definitive interpretation.

When considering planning applications local authorities within Warwickshire will ask for amphibian surveys to be carried out to ascertain if great crested newts are present on or near the site, noting their status as a European Protected Species. If they are affected by the proposals, it would be usual for mitigation measures to protect them to be provided under a licence issued by Natural England.

In most cases, the newts are removed from the development area to a 'safe' part of the site or another suitable receptor site. This takes a relatively long time and involves a lot of effort, adding considerable costs to the price of the development. These translocations are controversial and their ecological benefit has yet to be confirmed in terms of the sustainability of these translocated great crested newt populations, as monitoring of the population post-translocation is rarely carried out.

A licence from Natural England is required for great crested newt survey work, if handling the animals (netting) or disturbing them (torch survey).

Other amphibians

Common frog, common toad, smooth and palmate newt (and any part thereof) are protected against sale, barter, exchange, transport or offering for sale under the Wildlife and Countryside Act 1981 (as amended).

Reptiles

Grass snake, common lizard and slow-worm are protected against intentional killing, injury and trade in the animals (and any part thereof) under the Wildlife and Countryside Act 1981 (as amended).

Habitat Protection

If amphibians and/or reptiles are found on Sites of Special Scientific Interest (SSSIs) they are technically afforded protection from potentially damaging operations. However most SSSIs are designated according to other interests, for example their botanical, entomological or ornithological status. There are some SSSIs designated for their amphibian or reptile status but not in Warwickshire. Conversely, there are some SSSIs in the county that are inhabited by amphibians or reptiles even though they are not the main reason for selection of the site.

This article is only a guideline on legal protection as it stands at the time of publication.

Species Descriptions and Distribution Maps

Species to look for in Warwickshire - Vice County 38

In Warwickshire you will find four of Britain's six native amphibian species, the common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and the great crested newt *Triturus cristatus* and three of Britain's six reptile species, the slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* (formerly taxonomically known as *Natrix natrix*) and the common lizard *Zootoca vivipara*.

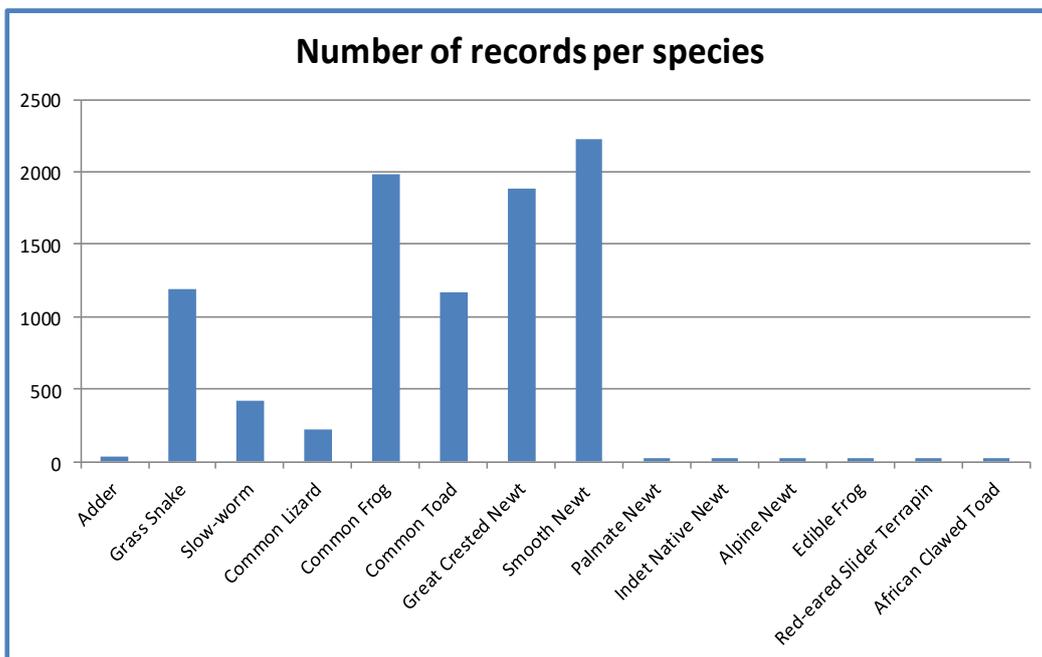
WART's survey work is ongoing for finding the presumably extinct reptile in Warwickshire, the adder *Vipera berus*, which has not been seen since 2003 and the mysterious amphibian species the palmate newt *Lissotriton helveticus* of which some recent records exist in the northwest of the vice county (Sutton area) but only one recent record exists within the current administrative boundary of Warwickshire.

Currently there are over 9,170 records of herpetofauna in the WART database including some records of non-native species such as of edible frog *Pelophylax esculentus* (formerly taxonomically known as *Rana esculenta*), alpine newt *Mesotriton alpestris* (formerly taxonomically known as *Triturus alpestris*), red-eared slider terrapin *Trachemys scripta elegans* (including the form yellow-bellied slider *Trachemys scripta scripta*) and African clawed toad *Xenopus laevis*. These non-native species are as equally important to record so distributions are kept up to date because they can threaten the native herpetofauna (red-eared slider terrapins can prey on great crested newts among other amphibians and non-native species may spread disease to the native ones).

This atlas is a complete summary of all records in the database from the first records submitted from the 1960s up to the recent records of the 2000s (up to 2018). The earliest record in the database is of a common lizard dated in 1963.

The following chart shows the volume of records per species with the records of palmate newt and of non-native species being very limited.

The following distribution maps illustrate records at a 1km grid square resolution. The records have been split to historical (prior to 2000) and recent (post 2000). The administrative Warwickshire boundary is illustrated in grey and the boundary of the vice county 38 is illustrated in black.



Adder *Vipera Berus*

Local status and distribution

In Victorian times the adder was described as not abundant in the county, being absent from alluvial areas and mainly found in sandy or stony places. Up to the year 2003 there were only records from a few known sites in the county making up only 2% of the total reptile records. At the time of writing we believe that the adder is now extinct from the county after monitoring key sites for the last 15 years however we are still on the lookout if it is reported at sites that we have not visited before.

Description

The adder is a small, stout snake with a distinctive continuous zigzag on the back. It has a well defined head compared to the grass snake and rarely grows longer than 65cm. Body colour is variable, males are usually grey or buff with a black zigzag whereas females are brown with a dark brown zigzag. The adder is the only native snake having elliptical, as opposed to round pupils. Occasionally black (melanistic) adders are found but none have been reported in Warwickshire.

Ecology

The adder is typically found in heathland and moorland but in Warwickshire was associated with railway embankments, rough grassland and scrub. Male snakes are the first to come out of hibernation, females emerging a couple of weeks later. Mating takes place in April and early May and is often preceded by a ritualistic behaviour pattern by the males, who 'dance' with each other in a trial of strength to gain access to the female who is often in the near vicinity. Female adders do not breed every year because they need at least one intervening year to feed up and regain breeding condition. Once pregnant they cease to feed for the 3-4 month gestation period whilst the embryos develop inside the body. Six to twenty young are born alive, usually by the beginning of September.

The adder is Britain's only venomous snake and uses venom for catching prey, usually small mammals and lizards. They are very timid animals and usually move away quickly when disturbed, but will bite in defence if trodden upon or handled. If bitten, medical assistance should be sought, but statistically one stands more chance of dying from a bee or wasp sting than an adder bite.



Male adder

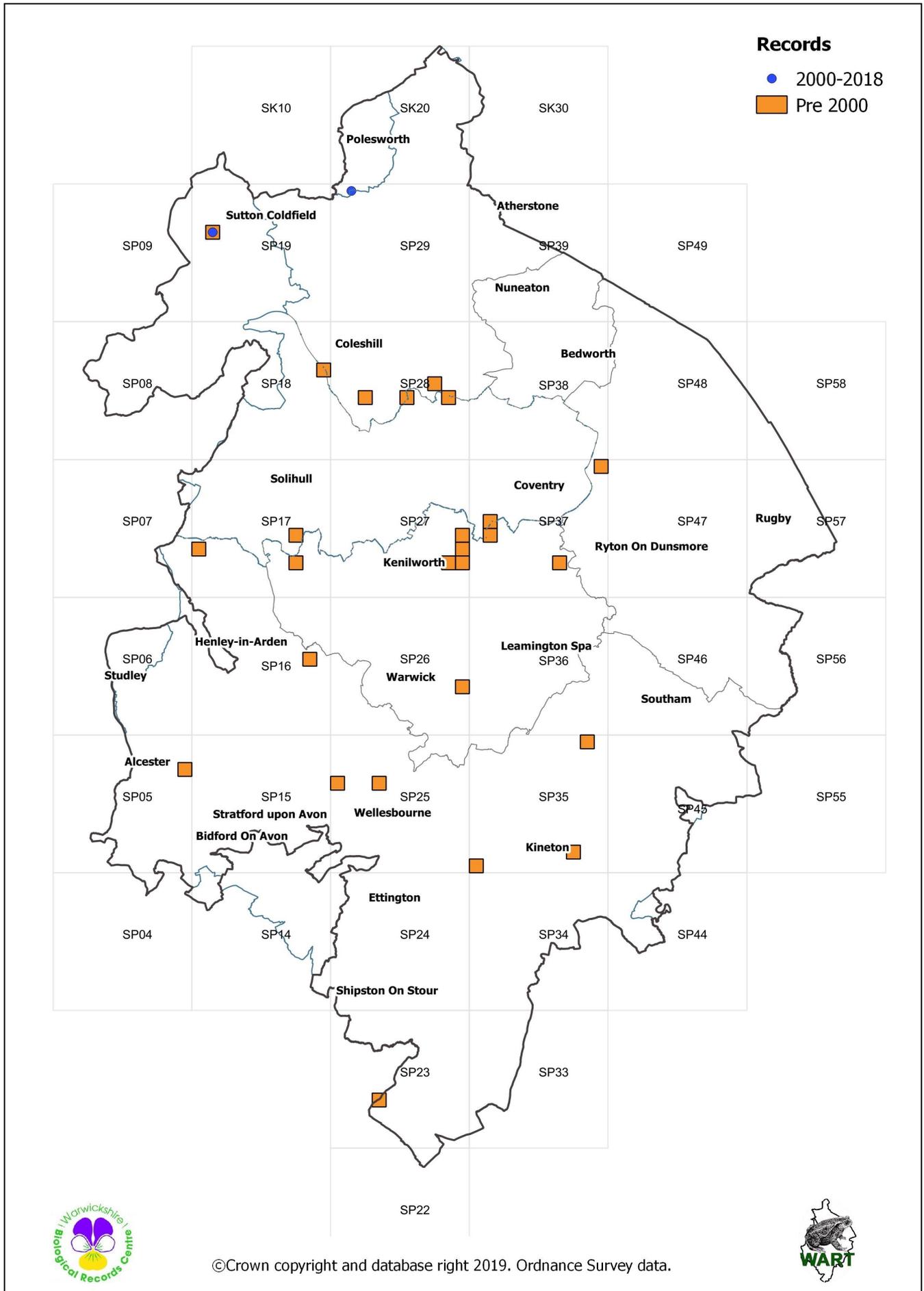


Female adder



Juvenile adder

Adder Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Grass Snake *Natrix helvetica*

Local status and distribution

The grass snake is widespread throughout the county, with the exception of north-west Warwickshire. It is the most common reptile species in the county constituting 63% of the total reptile records for the county.

Many of these grass snake records are chance encounters with fewer records of breeding sites and it is the only snake found in urban populated areas. In Victorian times it was described as being a common and generally widely-distributed species.

Description

The grass snake is the largest native snake, the males reaching up to 90cm in size. Mature females can be up to 150cm long, but it is rare for females to reach this size. They can live up to 15 years in the wild. Colouration is variable and grass snakes are usually a shade of olive green, but brown and grey snakes are not uncommon. Their bodies bear fine black vertical bars and/or spots running along their sides. The most distinctive feature is a characteristic orange, yellow or white and black collar round the neck.

Ecology

Grass snakes are found in a variety of habitats throughout the county but they tend to prefer habitats associated with water where they feed on amphibians and fish. Grass snakes start to emerge from hibernation in March and April and mating soon occurs. The grass snake is the only native snake to lay eggs. This takes place in June/July in piles of vegetation, manure and compost heaps where the warmth from decomposition helps to incubate the 10 - 40 eggs laid. Often several females can share the same egg-laying site and the young snakes hatch in August/September. Grass snakes are completely harmless to humans, but if disturbed or handled can bite and exude a nasty-smelling secretion from their anal gland.



Male grass snake - typically smaller than female but with a longer tail (melanistic form)

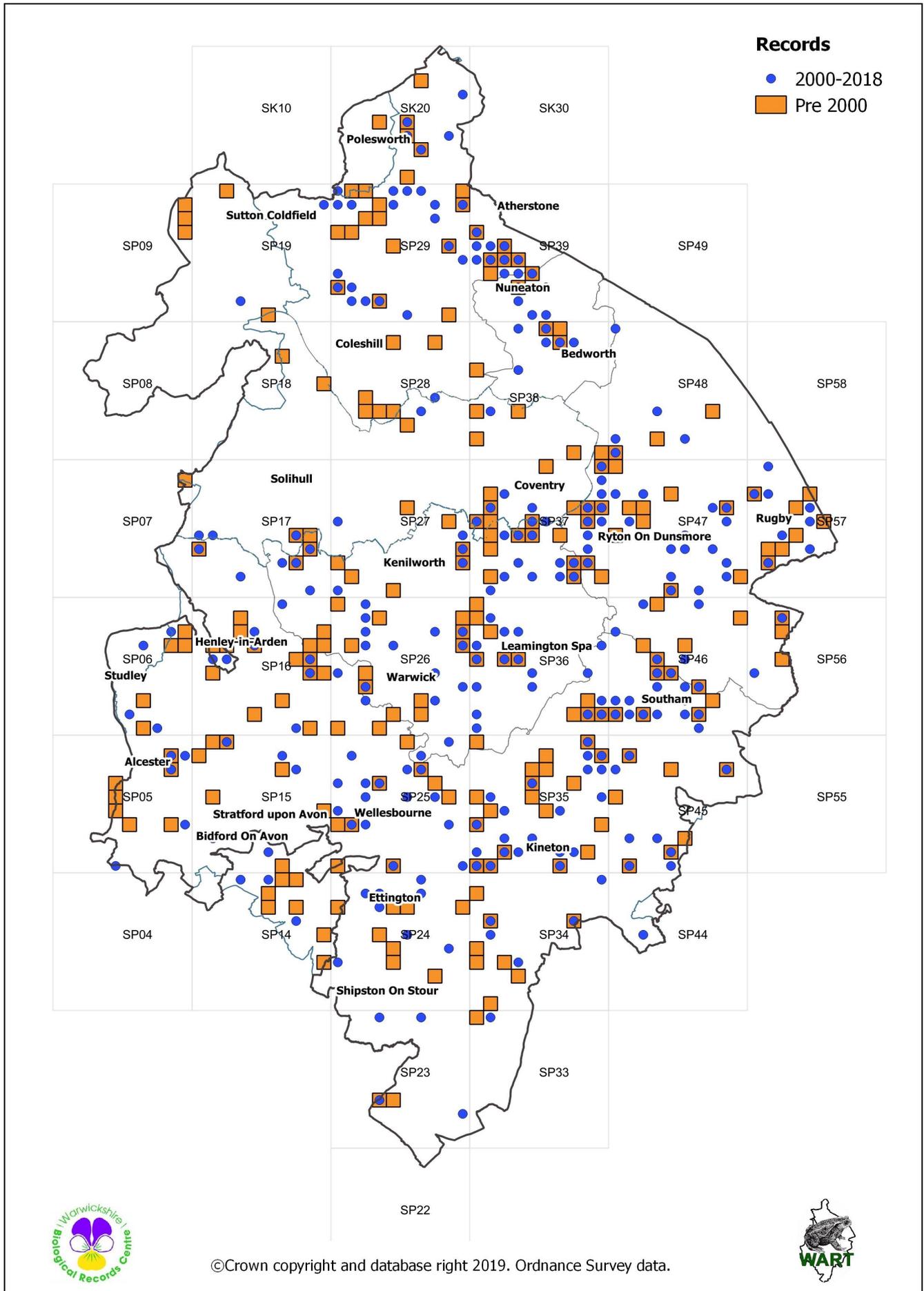


Female grass snake



Characteristic white/yellow and black collar and round eye pupils

Grass Snake Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Slow-worm *Anguis fragilis*

Local status and distribution

The slow-worm has a scattered distribution in Warwickshire and is absent from many 1km squares in the county. Records for this species are limited in recent years and the apparent decline may primarily have to do with loss of suitable habitat and habitat fragmentation. The slow-worm is Warwickshire's second most rare reptile accounting for only 23% of the total reptile records. In Victorian times it was described as occurring in several places in the county but not numerous, being more common in the part of the county joining Oxfordshire.

Description

Often mistaken for a snake, the slow-worm is a legless lizard and has closable eyelids and a notched as opposed to a forked tongue. Like all lizards, slow-worms can shed their tails to escape predators and individuals will often show stumpy tails as they do not regenerate very well. Slow-worms can grow up to 40cm, of which half is the tail if intact. Their bodies are shiny and 'worm' like. Males are usually a uniform grey colour sometimes with spotted flanks and have larger and broader heads than females, which tend to be gold brown with dark flanks and a dark stripe running down the back. Young slow-worms are bright gold, copper or silvery yellow with a stripe down the back. Their flanks and underside are dark. Adult colouration develops in 2-3 years.

Ecology

Slow-worms have been found in woodland, grassland, railway embankments and gardens. Nationally slow-worms are found in a variety of habitats including derelict land and allotments. They have a secretive nature and rarely bask, preferring to stay hidden under the soil or vegetation. Slow-worms feed mainly on slugs, earthworms and caterpillars and are useful animals to have in gardens and allotments. Slow-worms mate in May, the eggs being retained in the body until August/September when 6-12 live young are born.



Male Slow-worm



Female slow-worms

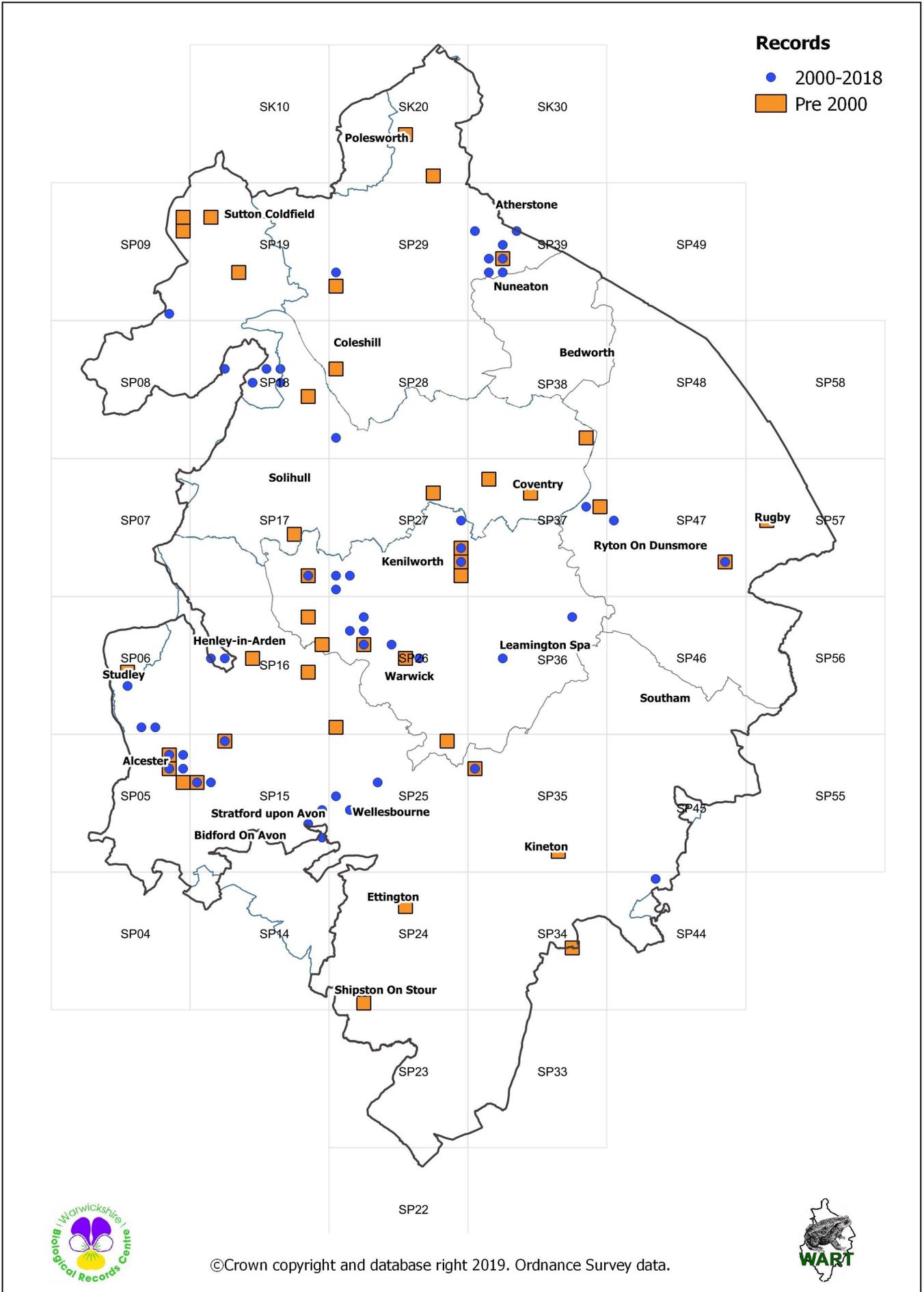


Juvenile slow-worms



Breeding population

Slow-worm Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Common Lizard *Zootoca vivipara*

Local status and distribution

The common lizard has a limited distribution in Warwickshire and is absent from many parts of the county. It is Warwickshire's rarest reptile species accounting for 12% of the total reptile records. The common lizard was not abundant in Victorian times but the existence of several colonies at the foot of Edgehill, a common near Claverdon and the stone walls around the Priory in Warwick had been reported. It is interesting to note that in the 1901 Victoria County History of Warwickshire it is stated that the sand lizard *Lacerta agilis* had been observed at two places on the Ridgeway near Alcester and that it was rare at these localities. Whether these were genuine sightings or that common lizards were mistaken for sand lizards cannot be confirmed but there are no later reports of sand lizards for the county. In recent years the records of common lizard are similar to these of slow-worm, being very limited.

Description

Common lizards can be mistaken for newts but are more alert and quick moving if disturbed. They also have a dry scaly skin. Common lizards can reach a length of 18cm but this is rare and most are much smaller. They are variable in colour ranging from brown or yellow-brown to almost green. These green common lizards should not be confused with sand lizards. Male common lizards often have darker backs with a broken striped pattern and a variable number of pale dots edged with black called ocelli. They have yellow or orange bellies which are spotted with black markings. The females are pale, with a few scattered ocelli and some females have a continuous stripe along the centre of the back. The belly is pale yellow, usually lacking spots. The most reliable method for distinguishing between the sexes is to look for the swelling at the base of the tail in the male. Young common lizards are very dark coloured compared to the adults and have two rows of pale spots down their back.



Male common lizard

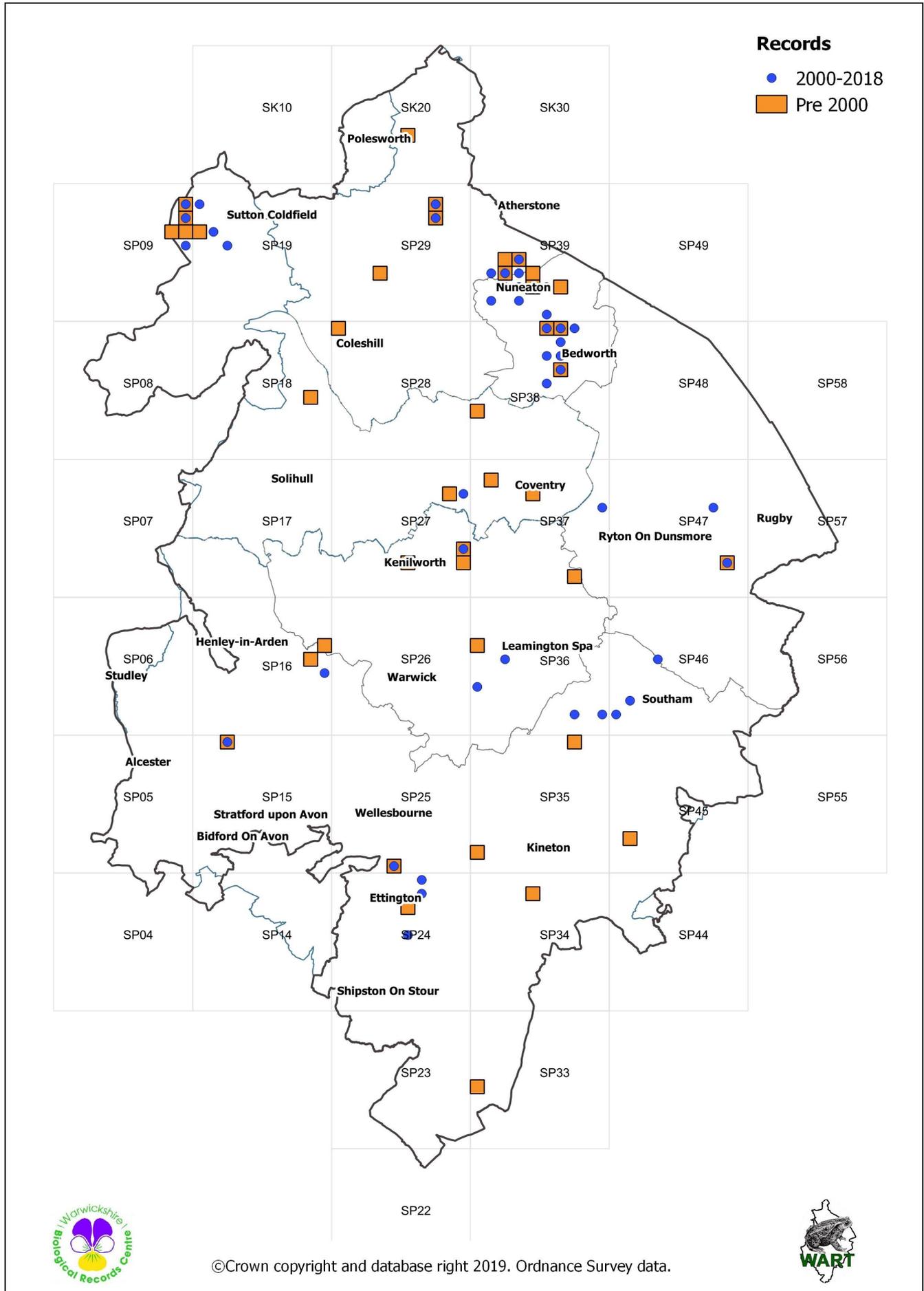


Female common lizard - shedding
Characteristic black stripe in the back

Ecology

The majority of sightings have been within grassland, hedgerows, woodland edges, road and railway embankments. Common lizards emerge from hibernation sometimes as early as mid-February if the weather is mild. Initially they will spend long periods basking and they start to mate in April and May. The males are territorial and compete for the females, fights being commonplace. The eggs are retained in the body and 4-10 live young are born under cover, in late July or August in a membranous sac. The young lizard ruptures the membrane with a special egg-tooth and is independent of the mother. Common lizards eat a variety of insect and other invertebrate species.

Common Lizard Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Common Frog *Rana temporaria*

Local status and distribution

This well-known species, despite habitat loss is present in nearly every 10km square in the county. In Victorian times the common frog was common and generally distributed throughout Warwickshire. Over the last twenty years it has greatly benefited from the construction of garden ponds and is doing well in the urban and suburban environment. It is the most widespread amphibian in the county and constitutes 27% of the total amphibian records.

Description

The common frog is Warwickshire's most frequently encountered amphibian and can reach a length of 10cm, males being smaller than females. They are variable in colour, their upper surface ranging from yellow, through dark brown to red. The last variety is relatively common in the county and should not be confused with the rare albino with yellow skin and red eyes. Frogs have moist, smooth skins compared to the drier, warty skin of toads. Frogs have longer hind legs and leap whereas toads have shorter hind legs and hop and have parotid glands behind the eyes. The common frog has a distinctive triangular dark patch covering the ear region. Males can be distinguished by their thicker arms and their ability to quietly croak, particularly during the breeding season. Males also have nuptial pads on their thumbs which are used in amplexus, the mating 'embrace'.



Male and female common frogs in amplexus

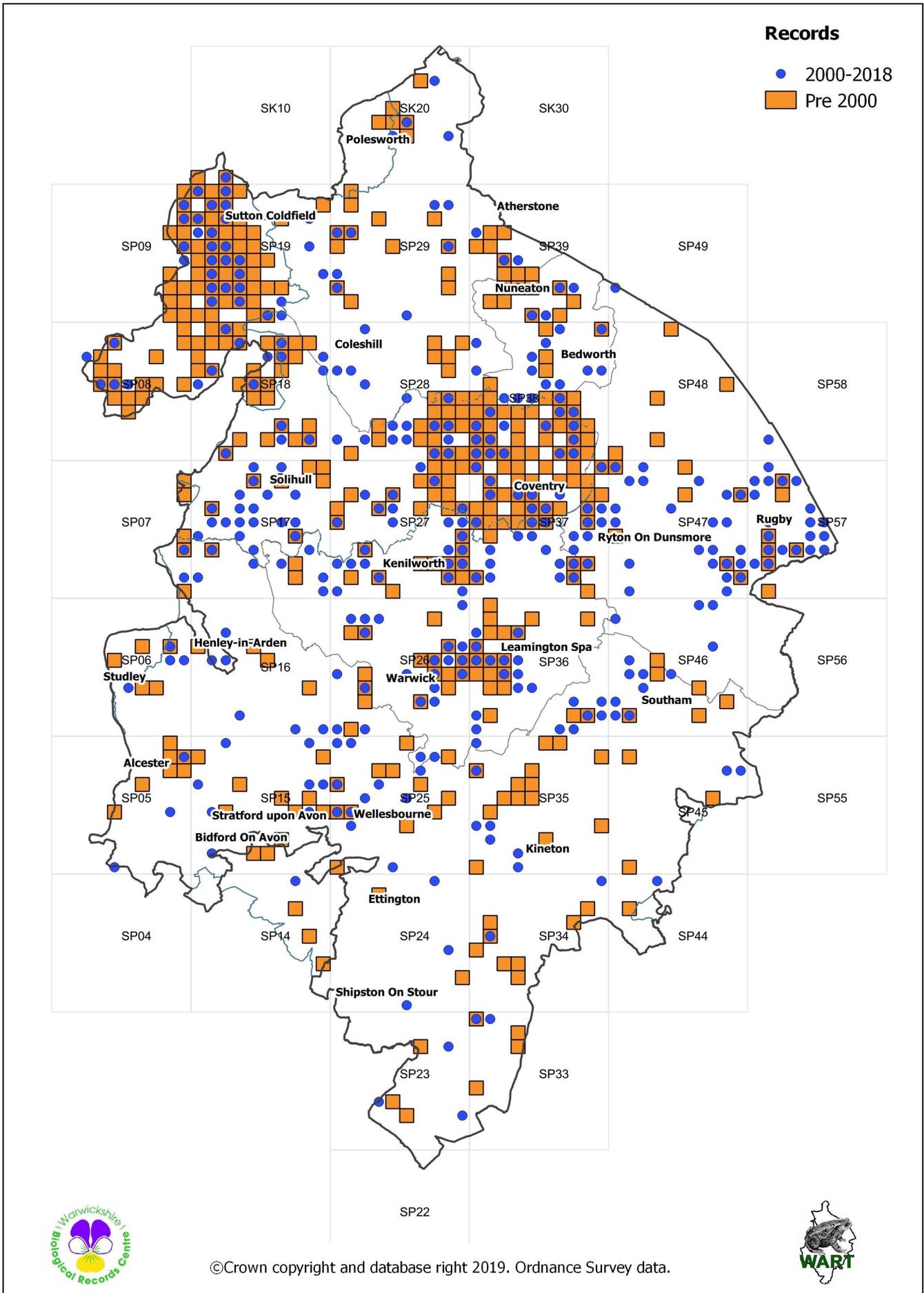
Ecology

The majority of sightings are in waterbodies but frogs have also been found in woodlands, gardens and quarries. Breeding usually begins in late February/early March, frogs arriving at smaller garden ponds up to a fortnight before their more rural counterparts. The males tend to arrive first and wait in large numbers for the females to arrive. They compete with each other for the arriving females and remain in amplexus until the females release up to 2000 eggs which are then fertilised externally by the male. The eggs are black and round and surrounded by a transparent jelly which absorbs water and increases in size fourfold to minimize predation. Frogs are explosive breeders with all spawn being laid over a ten day period at any one site. However cold spells may extend this period. Research suggests that large numbers of spawn clumps are essential to maintain genetic viability and therefore clumps should not be removed from a pond. The number of clumps indicates the number of breeding females which can provide a useful metric when monitoring frog population size at a breeding site over time. Frog tadpoles tend to spend their time at the bottom of ponds and have a speckled olive brown appearance, compared to toad tadpoles which are jet black and tend to form shoals. Unlike toad tadpoles, frog tadpoles do not have a toxic skin and are predated upon by many other species including newts, fish, dragonfly nymphs and water beetles. Young frogs leave their ponds in June and hide in surrounding vegetation to avoid predation and before the autumn frosts will go into hibernation, however a few adult males may overwinter at the bottom of ponds. Frogs reach sexual maturity at 2 or 3 years and return to the same ponds to breed every year.



Breeding pond - adults and frogspawn

Common Frog Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Common Toad *Bufo bufo*

Local status and distribution

The common toad is a widespread species and is present in nearly every 10km square in the county, but is recorded less frequently than the common frog and represents 16% of the total amphibian records. In Victorian times the common toad was described as common almost everywhere but less abundant than the frog.

Description

Female toads can reach a length of 9cm compared to the smaller males which can grow to be 6cm. Their skin is not slippery like the common frog and is warty, being more warty in females. Toads are more colourful in the breeding season, especially the males with a dorsal colouration ranging from yellow or green to brown with a few darker markings. Toads' eyes are a distinctive copper colour with a horizontal pupil and a parotid gland behind each eye. These glands produce bufotoxins which protect them from predation. After breeding toads return to their neutral dark earth colour. Compared to frogs, toads have squatter bodies and a rounder snout. Only males will croak and can squeak when picked up. Toads are good climbers and seek darkness during the day, often in unusual places. Toads have been reported in Warwickshire cellars, hollows in trees and under flowerpots.

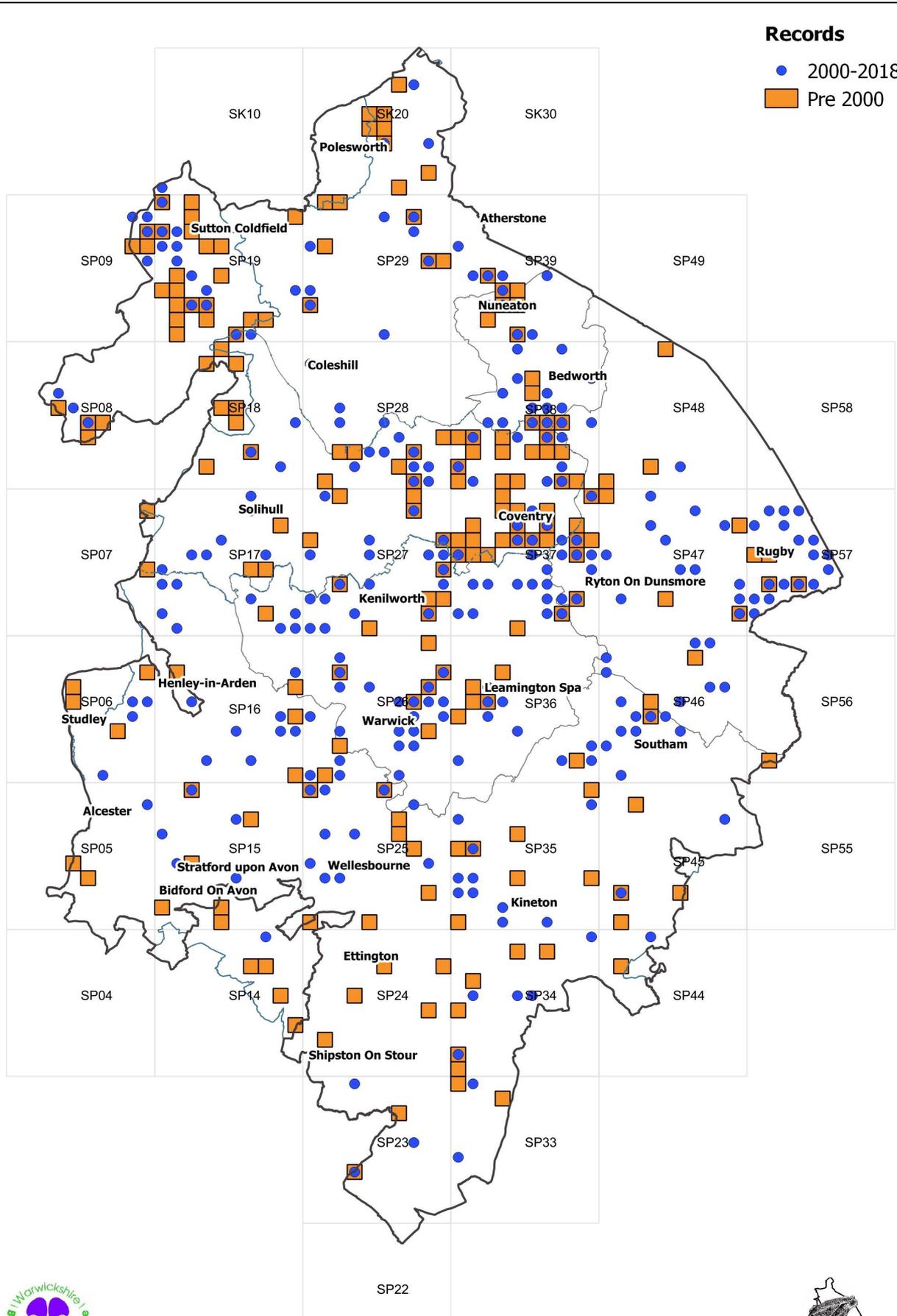


Male and female common toads

Ecology

The majority of sightings are in waterbodies but toads have been found in gardens, woodlands and on roads. The last observation can be explained by the toad's mass nocturnal migration over 3 to 5 nights from their hibernation quarters to their breeding ponds. This migration may last longer and can be up to a month, especially during cold 'spells'. They are fastidious about breeding and will head for a particular water body, passing others on the way. Obstacles encountered during the migration, such as roads and walls are tackled and every year many toads are found squashed on roads. Breeding is usually 2 to 3 weeks after the arrival of frogs in late March. Male toads are highly vocal and have loud high pitched calls which can often be heard some distance away. Like frogs, toads are explosive breeders and each female can lay 2000 eggs in two spawn strings 2-3m long, wrapped round submerged water weed. Male and female toads go into amplexus, often on land due to competition from other males for fewer breeding females. Occasionally mating balls can form with several males surrounding one female. This mating frenzy often results in the death of the female. After spawning females leave the water but males stay so they can find later arriving females to mate with. Toad tadpoles are jet black compared to dark brown frog tadpoles and have rounder tips to their tails. Their toxic skin protects them from predation and they happily co-exist with fish and smooth newts. Great crested newts and insect larvae such as dragonflies seem immune to the bufotoxins and eat them. Toadlets leave the water usually after rainstorms in July/August and immediately seek cover in tall vegetation or under logs prior to hibernation from October onwards. Toads are often found in fishing pools as they prefer larger, deeper waterbodies and are less likely than frogs to colonise and breed in garden ponds. Sexual maturity is reached in males at 2 to 3 years and in females 3 to 4 years.

Common Toad Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Great Crested Newt *Triturus cristatus*

Local status and distribution

The great crested newt is widespread in the county and has been recorded in almost every 10km square apart from some areas in the extreme west and northeast. This species is well recorded in Warwickshire constituting 26% of the total amphibian records for the county. In Victorian times it was described as common. In the 1980s it was thought to be the least common amphibian species however this may have had to do with survey effort. Over the last two decades ponds have been routinely surveyed by ecological consultancies, which has contributed significantly to the plethora of great crested newt records.

Description

The great crested newt is the largest native newt and adults average a length of 17cm which is twice as big as smooth newts. Their colour ranges from dark brown to black with a large number of black blotches over the whole body. The skin is covered in warts and those on their flanks are white tipped, giving them a speckled appearance. Their bellies are vivid orange/yellow with black blotches unique to every individual. This 'newt fingerprint' is a valuable tool in mark and recapture exercises to assess population size. The males in the breeding season develop a high jagged crest that extends from the back of the head to the base of the tail. After a short gap, a smooth crest then extends to the tip of the tail, contrasting with the continuous undulating crest of the male smooth newt. Also during the breeding season male great crested newts develop a striking silvery flash down the sides of the tail which is used to great effect during courting displays. Females are generally larger than males, lack crests and permanent yellow tail flashes. Great crested newt eggs are a white/creamy colour and are much larger than smooth newt eggs being up to 4.5mm across with yellow/white centres. The larvae are also larger (4-9cm) and often swim in open water, which is unusual for smooth newt larvae. As they grow their tails develop a spotted tail fin which tapers to a fine point.



Male great crested newt

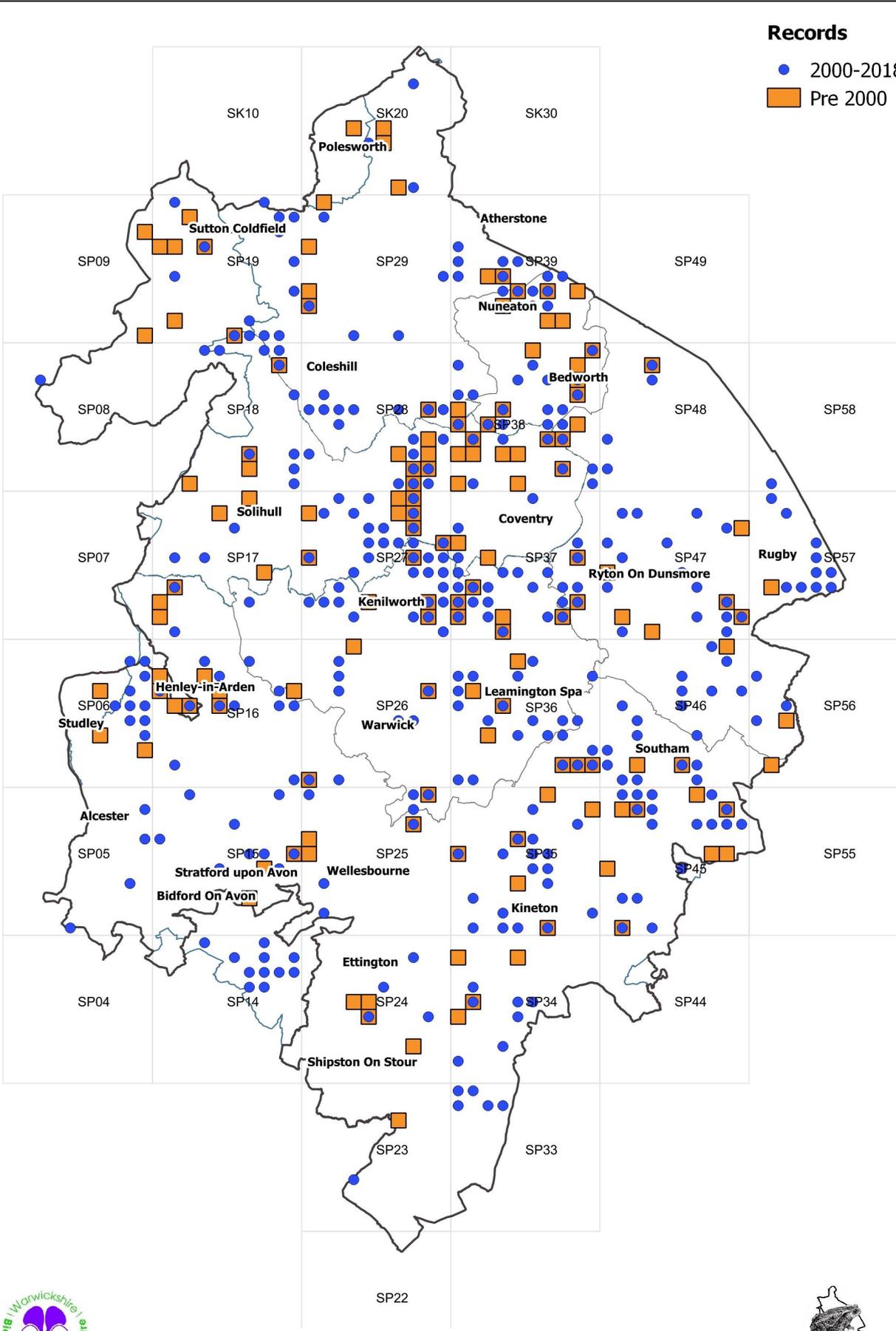


Female great crested newt

Ecology

The majority of sightings are from water bodies but great crested newts have been recorded in gardens, pits and quarries. Breeding can begin as early as mid- February and can continue into June. The courtship of great crested newts is not as frantic as the smooth newt and the larger crested newt eggs are also laid individually, carefully wrapped in the leaves of aquatic plants. The female lays up to 300 eggs but due to a chromosome disorder half fail to develop. The tadpoles feed initially on small aquatic invertebrates but as they grow the prey becomes larger and they can also feed on smaller newts. Great crested newt tadpoles are very sensitive to fish predation and are seldom found in water bodies where fish are present. The tadpoles (also known as 'efts') leave the water by autumn after metamorphosing and move to the surrounding vegetation and hibernate on land. They will not return to the water until they are sexually mature, which takes, on average, three years. Newts are good colonisers and can migrate up to 1km away from their ancestral pond to breed in other ponds including fish free garden ponds. If their pond dries up or undergoes succession they can colonise another pond as long as there are no barriers to dispersal therefore the crested newt's terrestrial habitat is as vitally important as its breeding ponds.

Great Crested Newt Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Smooth Newt *Lissotriton vulgaris* and Palmate Newt *Lissotriton helveticus*

Local status and distribution

Described in Victorian times as common, the smooth newt is still today a common species in the county, but there are a few 10km squares where it has not been recorded. The smooth newt is Warwickshire's most common newt and accounts for the largest proportion of the total amphibian records for the county (31%) which is likely to be a result of the increased effort surveying ponds for great crested newts and at the same time recording the smooth newts.

Description

Smooth newts grow to 6-8cm and have smooth, often velvet-like skins, unlike the warty skins of great crested newts. Their colouration is a range of browns which become more intense during the breeding season. Both sexes have a whitish ventral surface with dark spots including the chin. The female's overall colouration is much duller, usually light brown and darkly freckled, often with two parallel lines down the back. The male's whole body is covered in dark blotches and has prominent stripes on the head, the outer two passing through the eyes. Males also have fringed toes, an orange-yellow belly colour with black spots and an undulating crest running the entire length of the body and tail in the breeding season. Females do not share these features. Apart from a historical record of palmate newt from the 1970s in Sutton Park and another recent record where the individual was examined in the hand there are no other validated records of palmate newt across the county. This species can be confused with the smooth newt, especially the females. Smooth newt females have spotted throats, which are absent in palmate newt females. Male palmate newts have webbed hind feet and a fine filament extending from the tip of the tail. These features are absent in male smooth newts. In the Nuneaton area female smooth newts have been found without spotted throats but no tubercles were found on the hind feet, which are present in the female palmate newt.



Juvenile smooth newts

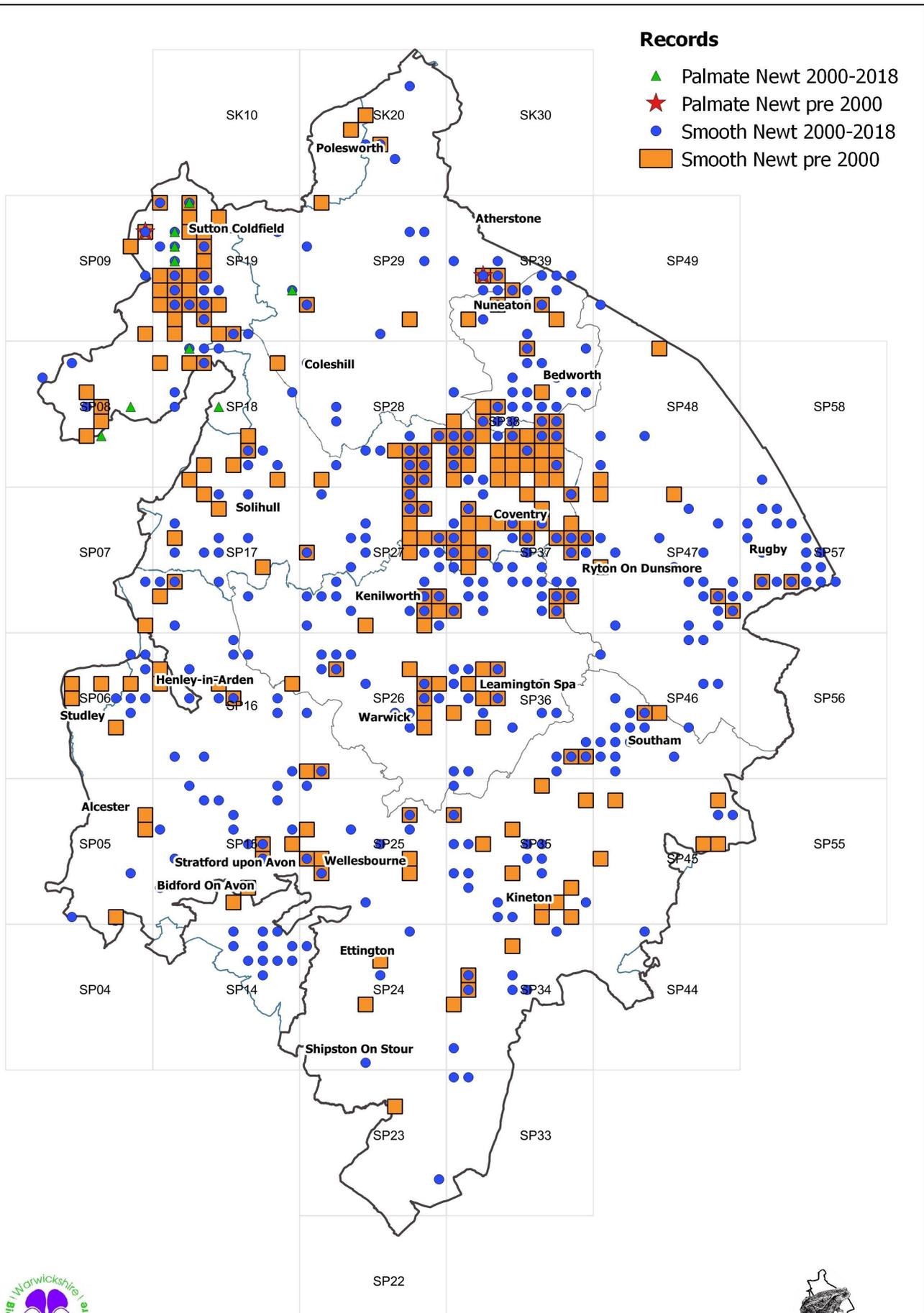


Male and female smooth newts

Ecology

The majority of sightings are from waterbodies but smooth newts have been recorded in gardens, woodland and quarries. Breeding can begin as early as mid- February and can continue into June. An elaborate courtship begins immediately and the male 'dances' emitting pheromones releasing a spermatophore onto the pond floor. He then entices and manoeuvres the female so the spermatophore is taken up by her cloaca so the eggs are fertilized internally. As males usually outnumber females, competition for a mate can be intense, often several males can be 'dancing' around a single female. The eggs are laid individually, carefully wrapped in the leaves of aquatic plants. Each female is capable of laying up to 600 eggs (3mm across), at the rate of 7-12 per day meaning they have a longer breeding season than frogs and toads. The tiny tadpoles (efts) are translucent and creamy brown in colour having small dark spots with a lighter belly. They feed on small aquatic invertebrates such as water fleas and are preyed upon by fish, larger newts and carnivorous insect larvae. At the end of summer more newts will have lost their gills (metamorphosis) and left the pond. However it is not uncommon for newt tadpoles to overwinter in ponds. On land, newts like tall damp vegetation and can be found under rocks and stones, often in large groups, emerging at dusk to feed on small terrestrial invertebrates. Sexual maturity is between 2 and 3 years.

Smooth Newt and Palmate Newt Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Exotic Species

Edible Frog *Pelophylax esculentus*

The edible frog interbreeds with the other exotic frog species the marsh frog *Pelophylax ridibundus* as well as with the native pool frog *Pelophylax lassungae* that does not exist in Warwickshire. There is only one record of edible frog in the county from 1986. Its colouration looks very similar to common frog but generally the edible frog is much larger than the common frog. It breeds late spring/early summer and males are very vocal at this time and the calls can be used for determining the species.

African Clawed Toad *Xenopus laevis*

This species also known as African clawed frog is a frog species and it is rather easy to distinguish it from the native common frog and toad as it has a flattened body and head with small eyes positioned on top. It has brown-grey spots with white belly and webbed clawed feet.

African clawed toads were first introduced in Kent in 1955 and in Warwickshire the first one was found in 2012 and photographed. They are known to be vectors of the fungal amphibian disease chytridiomycosis which may be a threat to some native amphibians.

Red-eared Slider *Trachemys scripta elegans* and Yellow-bellied Slider *Trachemys scripta scripta*

Both these forms of this terrapin species have been recorded in Warwickshire with the red-eared slider being more common. It is thought to be found in other squares especially near urban sites but it seems under recorded. The species used to be a popular pet and as individuals grew large and needed a bigger tank, pet owners deliberately threw them in ponds and lakes. As with the other exotic species a terrapin should be reported to WART and ideally collected from the wild as it is a very opportunistic species and can predate on newts. The species cannot yet breed in the UK as it requires temperatures of around 25 degrees for a duration of 60 days for the eggs to hatch. With climate change nothing is impossible.

Alpine Newt *Mesotriton alpestris*

Similarly to the edible frog this species has not yet spread through Warwickshire and only one record exists, within the very north-west of the vice county. It is unlikely that this species would be mistaken for one of the native newts as it often has a blue tinge along with several dots on its side and an orange/red underbelly which is unspotted. It should be noted that this species has similar orange/yellow ringed toes as great crested newts (smooth and palmate newts do not have the orange/yellow rings in toes). This species should be immediately reported and collected as it is able to breed in the UK and compete with native newts for food resources.



Male alpine newt and male alpine newt still with gills

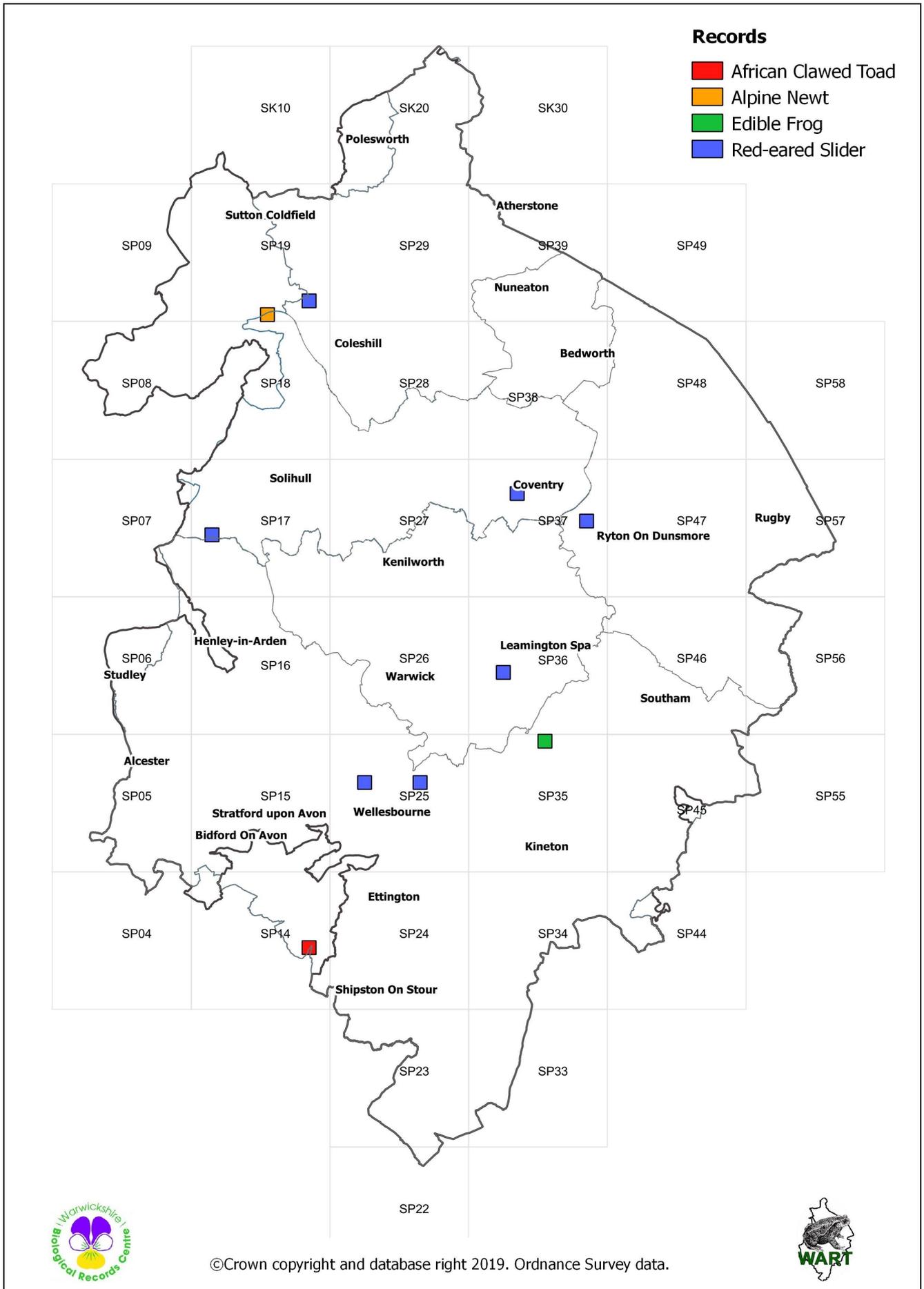


Circular dots at the whole face

Exotic Species Legislation

Edible frog, African clawed toad and alpine newt are listed species in the Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). As such, it is an offence to release or allow the escape of these species into the wild.

Exotic Species Distribution



©Crown copyright and database right 2019. Ordnance Survey data.



Conservation Action

Amphibian and Reptile Habitat Creation

Numbers of reptiles and amphibians continue to decline across the UK and this trend is the same in Warwickshire. The main threats that they face include habitat loss, fragmentation and habitat degradation through urbanisation, intensive agriculture and pollution. In particular focussing on pond habitat, some three quarters (more than a million) of Britain's ponds have been lost over the last hundred years. Annually WART members run workshops to create and maintain reptile and amphibian habitat and manage the WART reserve in Kenilworth Common. If you own land and would like to provide amphibian and/or reptile habitat you can contact WART who can provide advice and assistance for creating this habitat. So far WART has created ponds, reptile and amphibian hibernacula (places that are used for shelter and for hibernating over the winter months) and created and maintained tussocky grassland, bracken habitat and heathland.



Pond within few months of construction



Amphibian hibernaculum near pond



Maintaining optimal reptile habitat



Reptile hibernaculum within the WART reserve

Creating a pond in your garden

Whatever the size of your garden you can help amphibians by creating a pond or providing containers full of rainwater. There is plethora of advice online on how to construct a wildlife pond from nature conservation organisations (see list of websites on page 34 - Further Reading).

You should construct the pond in a way that at least one side of the pond has a gentle slope so amphibians can easily get in and out. Also, do not stock the pond with fish which will predate on any colonising amphibians. It would be best to create your pond between September and December so it can be filled in with rainwater and be ready for February/March when amphibians start reaching their breeding sites. It is best not to fill the pond with tap water as you will be introducing high nutrients and encouraging duckweed which can rapidly cover the surface and it is difficult to remove once established.

Care should be taken when planting your garden pond to avoid invasive plants that can take over your whole pond and suffocate amphibians e.g. Canadian waterweed. Make sure you use native plants and from reliable nurseries. Ideally you would like your pond to be naturally colonised by plants however be prepared to have an empty pond for some time especially if you are not near freshwater habitats so plant dispersal can occur. Frogs do not care about an empty pond and they were witnessed breeding in an empty pond within 2 months of construction when no plants were present.

WART can advise with the construction of your garden pond. If you would like to create a pond and are unsure where to start e-mail: recordswart@gmail.com



Pond in garden at early stage of creation - just lined and with some rainwater



Pond complete, filled in with rainwater and planted with native plants, and now colonised by frogs



Laying a pond



Pond laid and filled in with some rainwater from a water bucket

Native plants to use in your pond

If the new pond is created in an area with good connectivity to other freshwater habitats it is advisable to leave the pond to be naturally colonised. Within 3 years of successful natural colonisation it can contain a rich and abundant flora. However, with isolated ponds in gardens and in urban areas natural colonisation is not always possible or it is a very lengthy process. In case you need to plant the pond you need to make sure to use only native species.

Submerged / Floating Vegetation

Amphibious bistort *Persicaria amphibia*

Arrowhead *Sagittaria latifolia*

Bogbean *Menyanthes trifoliata*

Brooklime *Veronica beccabunga*

Common water-starwort *Callitriche stagnalis*

Curled pondweed *Potamogeton crispus*

Frogbit *Hydrocharis morsus-ranae*

Marsh marigold *Caltha palustris*

Rigid hornwort *Ceratophyllum demersum*

Water crowfoot *Ranunculus aquatilis*

Water plantain *Alisma plantago-aquatica*

Water-soldier *Stratiotes aloides*

Bankside / Marginal Vegetation

Cuckooflower *Cardamine pratensis*

Great spearwort *Ranunculus lingua*

Great willowherb *Epilobium hirsutum*

Gypsywort *Lycopus europaeus*

Lesser spearwort *Ranunculus flammula*

Marsh cinquefoil *Comarum palustre*

Purple loosestrife *Lythrum salicaria*

Ragged Robin *Lychnis flos-cuculi*

Meadowsweet *Filipendula ulmaria*

Soft rush *Juncus effusus*

Water forget-me-not *Myosotis scorpioides*

Water mint *Mentha aquatica*

Yellow iris *Iris pseudacorus*

Keep an eye for these non-native invasive species

Canadian waterweed *Elodea canadensis*

Floating pennywort *Hydrocotyle ranunculoides*

Least duckweed *Lemna minuta*

New Zealand pigmyweed (also known as Australian swamp-stonecrop) *Crassula helmsii*

Parrot's-feather *Myriophyllum aquaticum*

Water primrose *Ludwigia grandiflora*

These species should be ideally eradicated at the moment when they arrive at your pond. It is best to remove these plants between October and January to reduce the chances of harming amphibians.

N.B. Larvae and young amphibians can still be hibernating in the silt at the bottom of your pond.



© Agni Arampoglou

Example of a 'stepping stone' for frogs used for dispersal in a town - a container in a patio filled with rainwater and native plants, visited by adult frogs annually. Wooden 'ladders' help frogs get in and out.

The Road Drains Problem

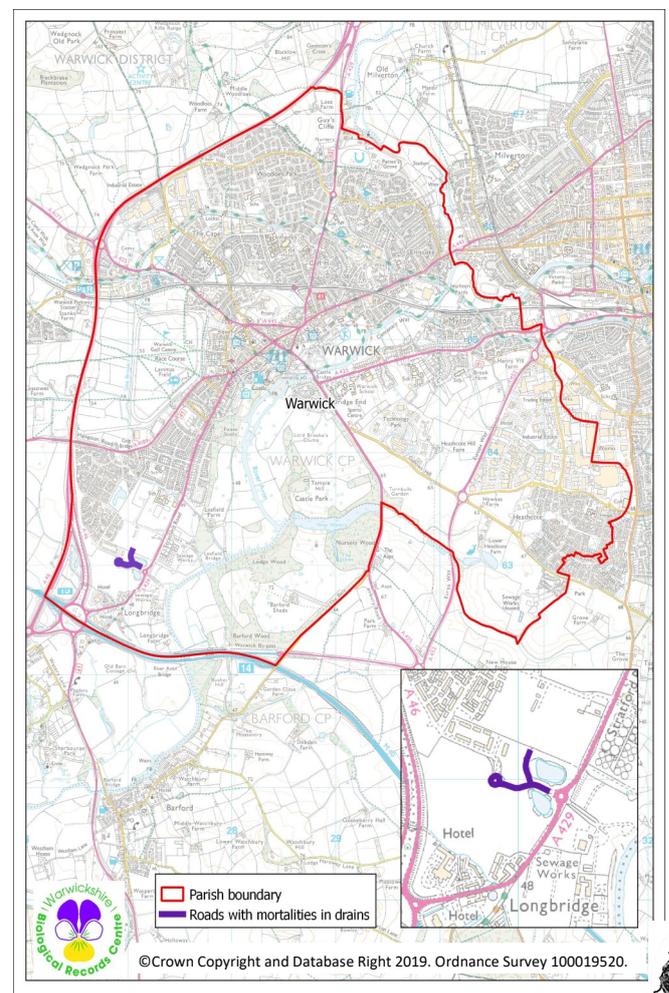
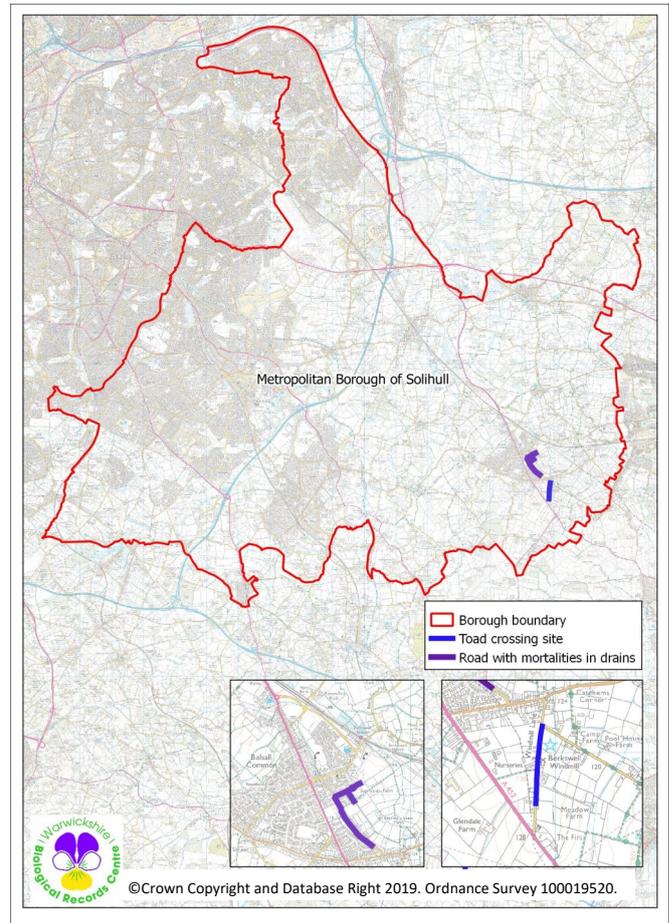
Frogs, toads and newts emerge from their hibernation areas in spring to migrate to their breeding ponds. Unfortunately, not all of them make it to ponds. Animals often have to cross a road and that poses a danger to them. There are many rural areas with large ponds that are well connected via hedgerows, woodlands and ditches. Abundant areas of scrub, woodland, grassland, field margins, hedges and road verges provide animals with plenty of food. When migrating in spring male toads often use open habitats in order to seek passing females, or to hunt for food more easily. In urban areas roads appear to offer suitable open areas but with the consequence that animals can get either trapped within the road system (kerbs forming barriers) or be run over by traffic. Often amphibians follow the kerb edges, fall into the road drains and become trapped within them and drown or starve to death. Over time this reduces those able to breed that year and reduces the local population size.

WART Actions

Hundreds of amphibians in Warwickshire are run over on roads or starve to death in roadside drains. Several visits are made throughout the year by WART members of 6 sites to check the roads and gully pots for trapped amphibians. With thanks to Highways teams at Solihull Metropolitan Borough Council and at Warwickshire County Council, WART members were able to install amphibian ladders (made out of Enkamat material) and British Herpetological Society (BHS) Amphibian Gully Pot Ladders in two locations in Warwickshire.



Female great crested newt trapped in drain



Following installation, visits by WART volunteers showed that only a few animals were found trapped in drains. Common frogs and smooth newts were observed crawling up the Enkamat ladders on four occasions. However, the results are not conclusive as the checks were carried out in different weather conditions.

Members of WART are convinced that there are many more sites in Warwickshire that are dangerous to amphibians that are not known. WART's actions over the next years will include recruiting more volunteers to survey the sites, better data recording, installing BHS Amphibian Gully Pot Ladders in all sites, finding new sites and making the public and councils aware of the problem.



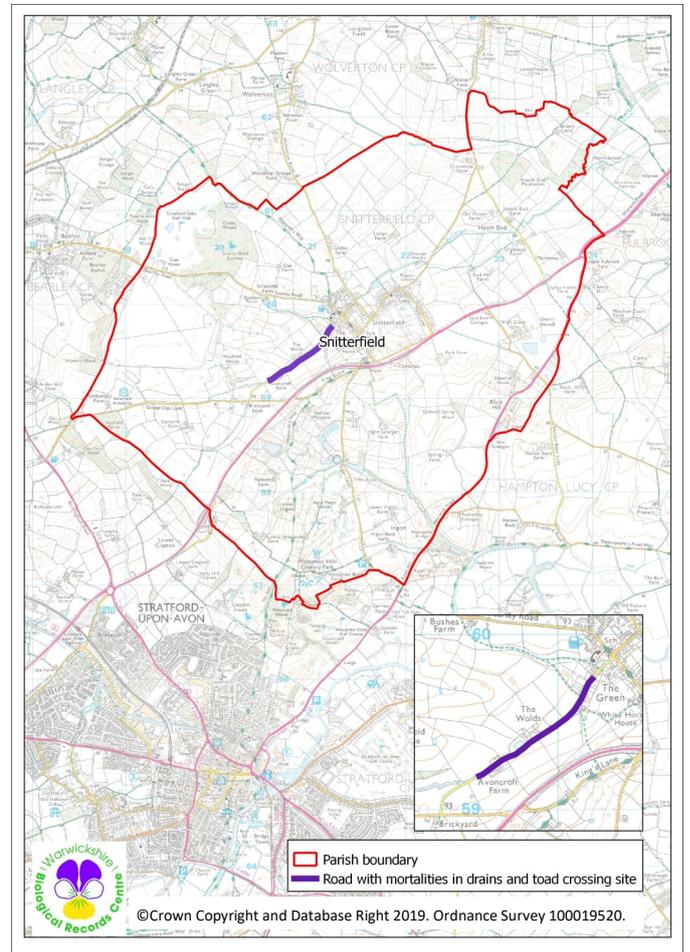
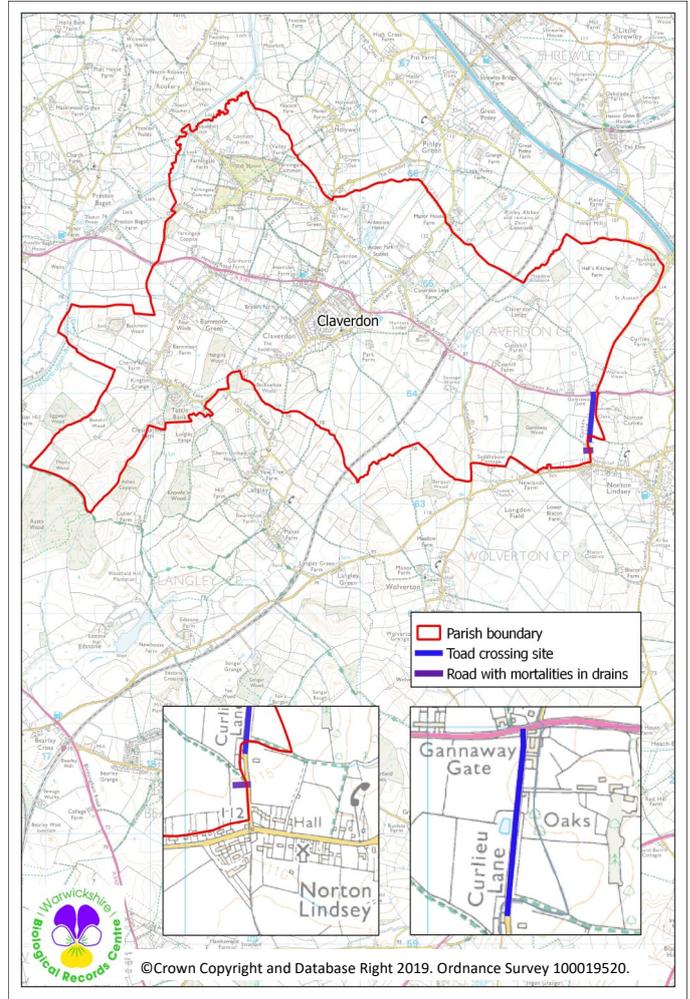
© Agni Arampoglou

Toads found in drains within a small section of road on a single night



© Ben Wood

Ladder from the British Herpetological Society installed in road drain where amphibians are daily trapped



Hopefully in the future drainage designs will be less harmful to amphibians by including built-in means of escape from the roads.

Meanwhile WART welcomes local people to get involved and to help rescuing amphibians from roads and drains.

If you would like to join e-mail WART at recordswart@gmail.com

Visits to sites usually start by end of February or beginning of March and continue until September/October. The visits are carried out in the evenings as amphibians are mostly nocturnal.



Common frog on Enkamat ladder ©Tim Jenkins

Raising awareness of the scale of this problem

leamingtonobserver.co.uk/news/amphibians-get-a-leg-up-in-warwickshire-9204

www.warwickcourier.co.uk/news/trapped-frogs-and-toads-near-warwick-given-helping-hand-thanks-to-special-ladders-1-8658376

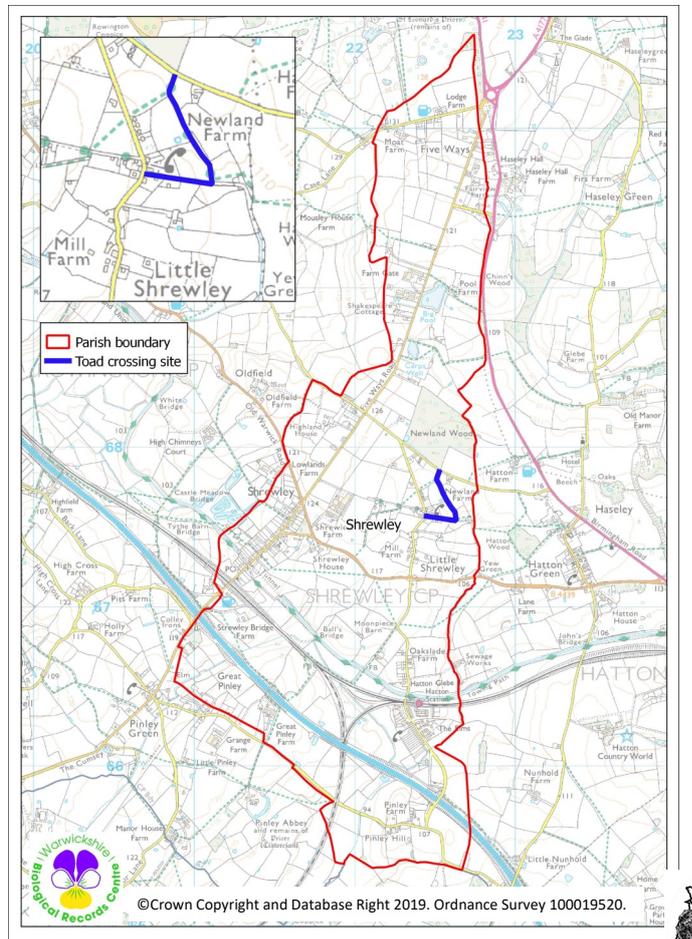
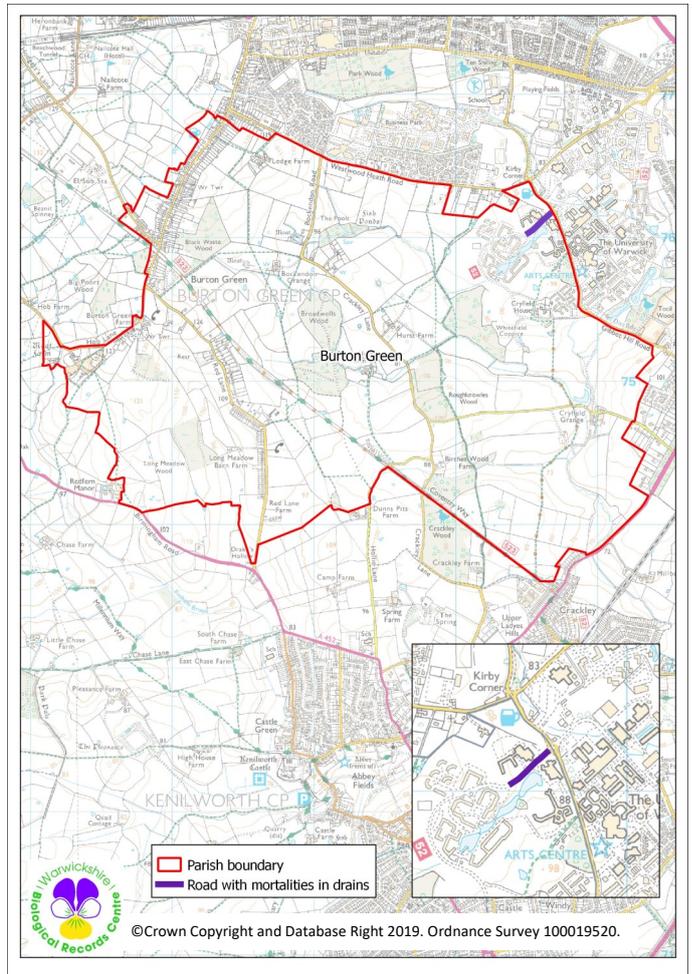
www.stratford-herald.com/92066-92066.html

www.coventrytelegraph.net/news/coventry-news/help-toad-out-hole--3101621

af.reuters.com/article/commoditiesNews/idAFL4N1XH514

www.reptilesmagazine.com/Frogs-In-England-Stuck-In-Storm-Drains-Get-Help-From-Team-WART

www.ourwarwickshire.org.uk/content/article/toad-watch



Further Reading

Species Ecology, Identification and Survey

<https://www.arguk.org/info-advice/id-guides>

Amphibians and Reptiles, Trevor Beebee, Pelagic Publishing, 2013

Britain's Reptiles and Amphibians, Howard Inns, Wildguides 2009

Great Crested Newt Conservation Handbook - Froglife 2001 - https://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook_compressed.pdf

Field Guide to the Amphibians and Reptiles of Britain and Europe - British Wildlife Field Guides 2016

Froglife Advice Sheet 10 - Reptile Survey - Froglife, 1999

Reptiles and Amphibians of Britain and Europe - Collins, 2002

Habitat Creation and Management

<https://www.arc-trust.org/habitat-management-handbooks>

Amphibian Habitat Management Handbook - Amphibian and Reptile Conservation, 2011

Reptile Habitat Management Handbook -Amphibian and Reptile Conservation, 2010

Pond Creation

<https://www.arguk.org/info-advice/wildlife-gardening>

<https://www.arc-trust.org/help-amphibians>

<https://freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit>

https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/Planting-Up-Ponds-FEB10_2.pdf

<https://www.froglife.org/wp-content/uploads/2013/07/JAW2014-for-printing-HLF1.pdf>

<https://www.froglife.org/wp-content/uploads/2013/06/making-a-mini-pond.pdf>

<https://www.wildlifetrusts.org/actions/how-build-pond>

<http://www.nonnativespecies.org/beplantwise/pondowner/index.cfm>

Species Legislation

Changes do occur in species legislation so for further advice and guidance please refer to the following websites:

www.gov.uk/topic/planning-development/protected-sites-species

<http://jncc.defra.gov.uk>

www.arc-trust.org



Adult common lizard basking on plastic sheet (green form)



**Warwickshire
Amphibian &
Reptile
Team**

Helping Native Amphibians and Reptiles
in Warwickshire