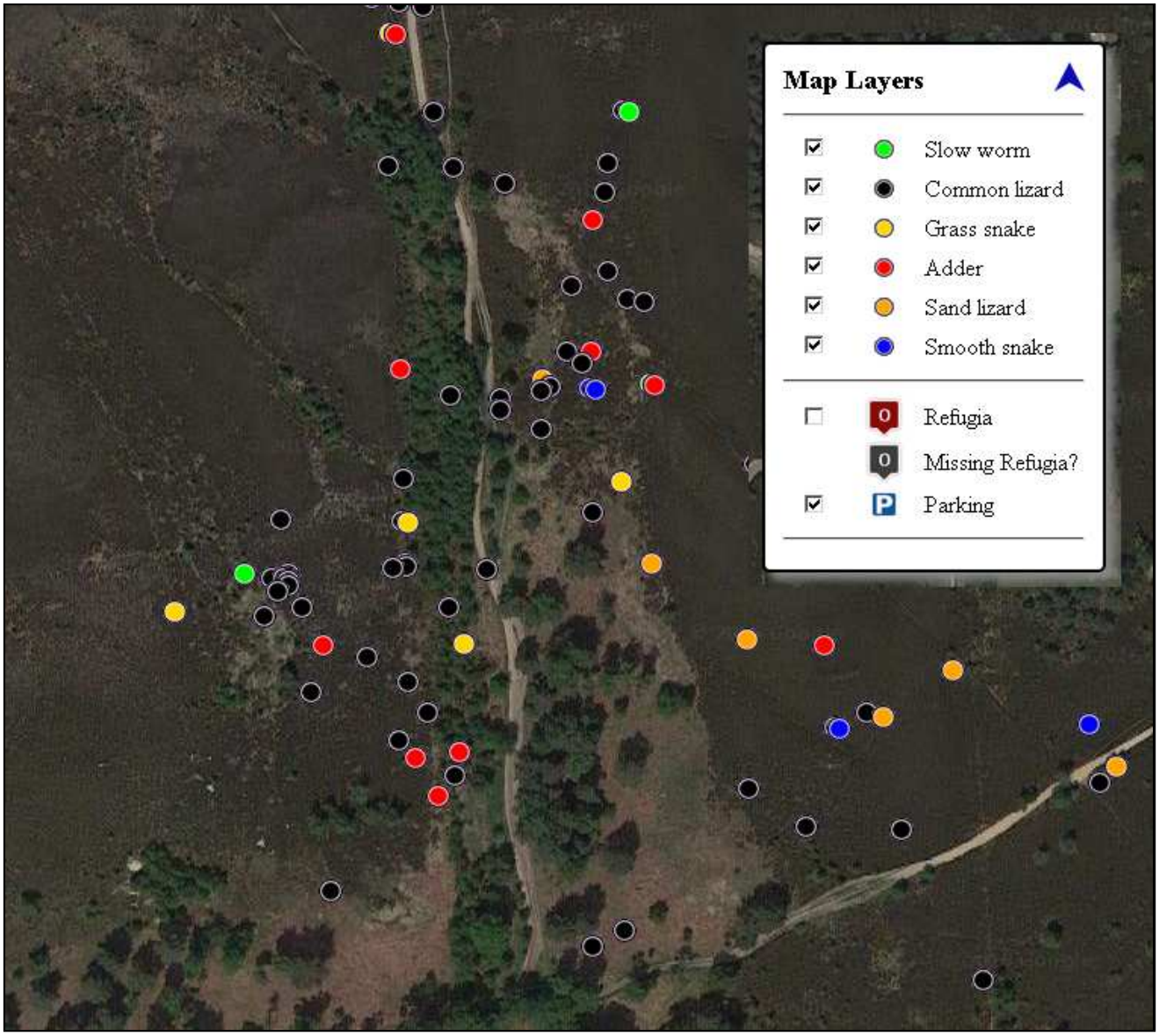
SARG Guide

Surrey Amphibian and Reptile Group

UK Herpetological Map Icons



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Herpeta Distribution Mapping Iconography

1. Introduction

1.1. As the Internet develops, distribution mapping of reptile and amphibian species on interactive mapping is becoming simpler, and more popular. It is usual practice to use icons on a map to represent the sighting of a particular species.

1.2. Many ARGs, Charities and Trusts use distribution mapping, and if each organisation uses different icons to represent species' distributions then no two maps would look the same and users would have to adjust to differing iconography.

1.3. The aim of this paper is to define a common standard for the use of icons representing herpetological distribution data. Organisations can choose their own icons, however use of the icons described below will conform to the common standard agreed by ARC, ARG-UK and SARG.

2. Icon Properties

2.1. Icons should have good contrast from the underlying mapping. As both Google and Bing online maps can be viewed as road maps and aerial images, it is difficult to choose colours that will stand out against all backgrounds. For this reason, icons should be constructed of two colours: a fill colour and a border colour. This should enable good contrast against all backgrounds, providing the fill and border colours and not similar to each other and the contrast between these colours is strong.

2.2. The colours allocated to each species should be as different as possible from each other. Not everybody's colour sight is perfect, and different display media can alter shade and hue of a particular colour. Due to the relatively large number of wild species of reptile and amphibian (both native and introduced) that occur across the British Isles, it is not a simple matter to choose more than 20 distinct colour schemes for distribution icons. By allocating differently shaped icons to amphibians and reptiles, this demand can be reduced to around a dozen distinct colour combinations, which is more easily manageable.

2.3. As the predominant background colour for road maps is white, this colour should be avoided as a border colour.

2.4. As icons should be informative at all map scales, simple colours and shapes ought to be adopted in favour of graphical icons (where possible), as graphical icons become cluttered and illegible at small scale factors.

3. Icons Types

3.1. As the sophistication of mapping visualisations increases, a growing number of icons types are required. These may represent legacy records compared with current records, those with high confidence (verified) compared with low confidence, introductions and hibernacula locations.

3.2. The table below defines the icon types allocated to these differing characteristics of species distribution.

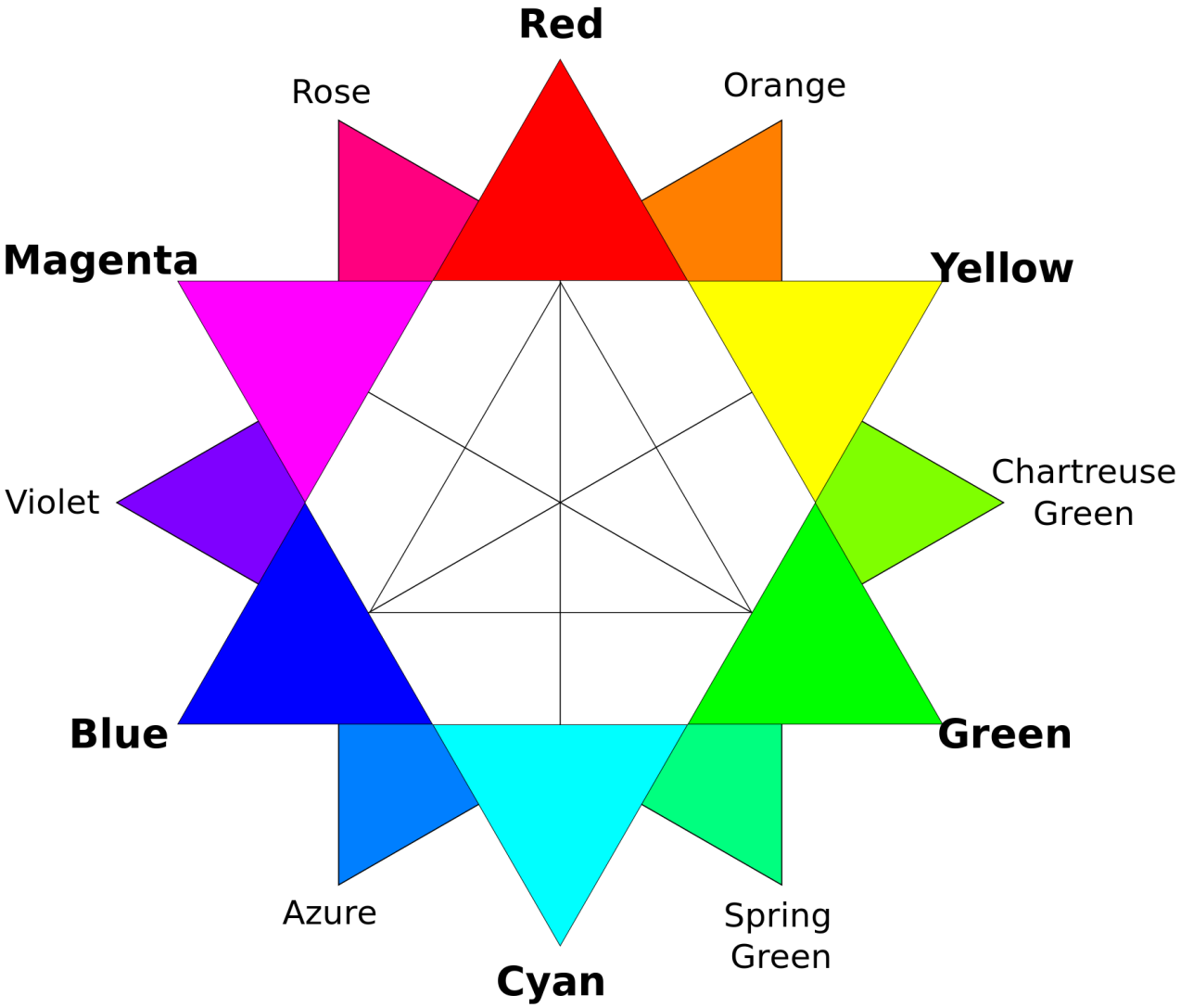
Characteristic	Icon type		Notes
	High Confidence	Low Confidence	
Current distribution	Solid fill circle or diamond correlating to species colour code with solid, contrasting colour fill border. Reptiles:  Amphibians: 	As 'current high', but with a transparent or white 'hole' at the centre of the icon. Reptiles:  Amphibians: 	Dates relevant to the definition of current should appear on any key. Default for 'current' is within the last 5 years.
Legacy (or historic) distribution	As 'current high', but with a transparent or white 'hole' at the centre of the icon. Reptiles:  Amphibians: 	Usual fill colour no border, with central transparent or white hole. Reptiles:  Amphibians: 	Used to show range contraction or expansion

Characteristic	Icon type	Notes
Introduction	Solid fill star correlating to species colour code with solid, contrasting colour fill border. Reptiles:  Amphibians: 	Only high confidence sites are recorded.
Hibernaculum	Solid fill triangle correlating to species colour code with solid, contrasting colour fill border. Reptiles:  Amphibian hibernacula are not recorded.	Identifies sensitive habitat management areas. Also indicates aggregation or 'lying out' areas.
Toad Crossing	Standard toad-crossing pictographic icon. 	Can be used for any amphibian species crossing site.

4. Colours

4.1. In order to choose colours which are as distinct as possible, colours should ideally be drawn from primary, secondary and tertiary colours only. Additionally, black, grey and white can be used. A few additional colours are required to maintain historical consistency.

4.2. The 'colour wheel' shown below is a useful method to define colour separation.



5. Colour Definitions and Codes

Monochromes										
#	Colour	HTML Name	Hex Code	RGB			HSL			Colour block
				R	G	B	H	S	L	
1	Black	Black	#000000	0	0	0	0.00	0.00	0.00	
2	Grey	DarkGray	#7F7F7F	127	127	127	0.00	0.00	0.50	
3	White	White	#FFFFFF	255	255	255	0.00	0.00	1.00	

Primary Colours										
#	Colour	HTML Name	Hex Code	RGB			HSL			Colour block
				R	G	B	H	S	L	
4	Red	Red	#FF0000	255	0	0	0.00	1.00	0.50	
5	Blue	Blue	#0000FF	0	0	255	0.67	1.00	0.50	
6	Green	Green	#00FF00	0	255	0	0.33	1.00	0.50	

Secondary Colours										
#	Colour	HTML Name	Hex Code	RGB			HSL			Colour block
				R	G	B	H	S	L	
7	Yellow	Gold	#FFD700	255	215	0	0.14	1.00	0.50	
8	Cyan	Cyan	#00FFFF	0	255	255	0.50	1.00	0.50	
9	Magenta	Magenta	#FF00FF	255	0	255	0.83	1.00	0.50	

Tertiary Colours										
#	Colour	HTML Name	Hex Code	RGB			HSL			Colour block
				R	G	B	H	S	B	
10	Violet	Violet	#7F00FF	127	0	255	0.75	1.00	0.50	
11	Orange	Orange	#FEA700	254	167	0	0.11	1.00	0.50	
12	Azure	Azure	#007FFF	0	127	255	0.58	1.00	0.50	
13	Spring green	SpringGreen	#00FF7F	0	255	127	0.42	1.00	0.50	
14	Chartreuse	Chartreuse	#7FFF00	127	255	0	0.25	1.00	0.50	
15	Rose	Rose	#FF007F	255	0	127	0.92	1.00	0.50	

Legacy ARC Colours										
#	ARC Colour	HTML Name	Hex Code	RGB			HSL			Colour block
				R	G	B	H	S	L	
16	Dark green	DarkGreen	#006400	0	100	0	0.33	1.00	0.20	
17	Khaki	Khaki4	#827839	130	120	57	0.52	0.56	0.51	
18	Blue-grey	MediumSlateBlue	#5E5A80	94	90	128	0.68	0.17	0.43	
19	Pink	HotPink	#F660AB	246	96	171	0.92	0.89	0.67	
20	Brown	Brown	#804000	128	64	0	0.08	1.00	0.24	

6. Icon Allocations - Reptiles

Native Reptile Species (Great Britain)								
Species Name	**Icon shape**	**Fill (Border) colour**	**Icon**					
			Current		**Historic**		**Hibernaculum**	**Introduction**
			Verified	**Unverified**	**Verified**	**Unverified**		
Adder *(Vipera berus)*	*Circle*	*Red (black)*						
Smooth snake *(Coronella austriaca)*	*Circle*	*Blue (black)*						
Grass snake *(Natrix natrix)*	*Circle*	*Gold (black)*						
Sand lizard *(Lacerta agilis)*	*Circle*	*Orange (black)*					*N/a*	
Common lizard *(Zootoca vivipara)*	*Circle*	*Grey (black)*					*N/a*	
Slow worm *(Anguis fragilis)*	*Circle*	*Green (black)*					*N/a*	

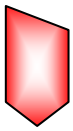
Introduced Reptile Species (Great Britain)								
Species Name	**Icon shape**	**Fill (Border) colour**	**Icon**					
			Current		**Historic**		**Hibernaculum**	**Introduction**
			Verified	**Unverified**	**Verified**	**Unverified**		
Aesculapian snake *(Elaphe longissima)*	*Circle*	*Magenta (black)*						
Common wall lizard *(Podarcis muralis)*	*Circle*	*Khaki (black)*					*N/a*	
Western green lizard *(Lacerta bilineata)*	*Circle*	*Darkgreen (black)*					*N/a*	
Red-eared slider *(Trachemys scripta)*	*Circle*	*Pink (black)*					*N/a*	
European pond terrapin *(Emys orbiculari)*	*Circle*	*Violet (black)*					*N/a*	

7. Icon Allocations - Amphibians

Native Amphibian Species (Great Britain)							
Species Name	**Icon shape**	**Fill (Border) colour**	**Icon**				
			Current		**Historic**		**Introduction**
			Verified	**Unverified**	**Verified**	**Unverified**	
Pool frog (Northern) *(Pelophylax lessonae)*	*Diamond*	*Cyan (black)*					
Common frog *(Rana temporaria)*	*Diamond*	*Green (black)*					
Common toad *(Bufo bufo)*	*Diamond*	*Grey (red)*					
Natterjack toad *(Epidalea calamita)*	*Diamond*	*Pink (black)*					
Great Crested newt *(Triturus cristatus)*	*Diamond*	*Blue (black)*					
Palmate newt *(Lissotriton helveticus)*	*Diamond*	*Yellow (black)*					
Smooth newt *(Lissotriton vulgaris)*	*Diamond*	*Red (black)*					

Introduced Amphibian Species (Great Britain)							
Species Name	**Icon shape**	**Fill (Border) colour**	**Icon**				
			Current		**Historic**		**Introduction**
			Verified	**Unverified**	**Verified**	**Unverified**	
Water frog *(N/a)*	*Diamond*	*Cyan (black)*					
Pool frog (Southern) *(Pelophylax lessonae)*	*Diamond*	*Cyan (black)*					
Edible frog *(Pelophylax kl. esculentus)*	*Diamond*	*Cyan (black)*					
Marsh frog *(Pelophylax ridibundus)*	*Diamond*	*Cyan (black)*					
Midwife toad *(Alytes obstetricans)*	*Diamond*	*Khaki (black)*					
North American bullfrog *(Lithobates catesbeiana)*	*Diamond*	*Violet (black)*					
African clawed frog *(Xenopus laevis)*	*Diamond*	*Rose (black)*					
Marbled newt *(Triturus marmoratus)*	*Diamond*	*Orange (black)*					
Italian crested newt *(Triturus carnifex)*	*Diamond*	*Azure (black)*					
Italian/Crested hybrid *(N/a)*	*Diamond*	*Azure (black)*					
Alpine newt *(Ichthyosaura alpestris)*	*Diamond*	*Magenta (black)*					
European tree frog *(Hyla arborea)*	*Diamond*	*Chartreuse (black)*					
Agile frog *(Rana dalmatina)*	*Diamond*	*SpringGreen (black)*					

8. Icon Allocations - Miscellaneous

Description	Icon shape	Fill colour	Border colour	Icon
Refuge (reptile survey tin)	*Numbered 'peaked' Square*	*Magenta*	*White*	
Pond	*Square button*	*Light Grey*	*Inset blue circle*	
Parking place	*Square button*	*Blue*	*White 'P'*	
Toad crossing	*Road Sign*	*White*	*Red*	
Site of regional importance	*Polygon*	*Feathered red*	*Black*	

9. Icon Construction and Naming

SARG Icon Set – Nomenclature and construction example			
Icon	**Name**	**24px Scaled Vector Graphic (SVG) path** <svg width='24' height='24' viewBox='0 0 24 24' xmlns='http://www.w3.org/2000/svg' version='1.1'>	**Represents**
	Circle_red_border_solid_filled.png	<path d='M5,12a7,7 0 1,0 14,0a7,7 0 1,0 -14,0' stroke='black' stroke-width='2' fill='red' />	Current, verified reptile record
	Circle_red_border_none_solid.png	<path d='M5,12a7,7 0 1,0 14,0a7,7 0 1,0 -14,0' stroke='black' stroke-width='0' fill='red' />	Current, unverified reptile record
	Circle_red_border_solid_hollow.png	<path d='M5,12a7,7 0 1,0 14,0a7,7 0 1,0 -14,0' stroke='black' stroke-width='2' fill='red' /><path d='M9,12a3,3 0 1,0 6,0a3,3 0 1,0 -6,0' stroke='black' stroke-width='0' fill='white' />	Historic, verified reptile record
	Circle_red_border_none_hollow.png	<path d='M5,12a7,7 0 1,0 14,0a7,7 0 1,0 -14,0' stroke='black' stroke-width='0' fill='red' /><path d='M9,12a3,3 0 1,0 6,0a3,3 0 1,0 -6,0' stroke='black' stroke-width='0' fill='white' />	Historic, unverified reptile record
	Diamond_red_border_solid_filled.png	<path d='M6,6 18,6 18,18 6,18 6,6' stroke='black' fill='red' stroke-width='2' transform='rotate(45,12,12)' />	Current, verified amphibian record
	Diamond _red_border_none_filled.png	<path d='M6,6 18,6 18,18 6,18 6,6' stroke='black' fill='red' stroke-width='0' transform='rotate(45,12,12)' />	Current, unverified amphibian record
	Diamond _red_border_solid_hollow.png	<path d='M6,6 18,6 18,18 6,18 6,6' stroke='black' fill='red' stroke-width='2' transform='rotate(45,12,12)' /><path d='M9,9 15,9 15,15 9,15 9,9' stroke='black' fill='white' stroke-width='0' transform='rotate(45,12,12)' />	Historic, verified amphibian record
	Diamond _red_border_none_hollow.png	<path d='M6,6 18,6 18,18 6,18 6,6' stroke='black' fill='red' stroke-width='0' transform='rotate(45,12,12)' /><path d='M9,9 15,9 15,15 9,15 9,9' stroke='black' fill='white' stroke-width='0' transform='rotate(45,12,12)' />	Historic, unverified amphibian record
	Triangle_red_border_solid_filled.png	<path d='M12,4 20,20 4,20 12,4' stroke='black' fill='red' stroke-width='2" />	Hibernaculum
	Star_red_border_solid_filled.png	<path d='M2.5,8.9 9.6,8.8 12,2 14.4,8.8 21.5,8.9 15.8,13.2 17.9,20 12,16 6.1,20 8.2,13.2 2.5 8.9' stroke='black' fill='red' stroke-width='1' />	Reptile introduction
	InvertedStar_red_border_solid_filled.png	<path d='M21.5,15 14.3,15.2 12,22 9.6,15.2 2.5,15.1 8.2,10.8 6.1,3.9 12,8 17.9,3.9 15.8,10.8 21.5,15' stroke='black' fill='$Colour' stroke-width='1' />	Amphibian reintroduction

9.1. You can generate any icon in .PNG format using the SVG code above (modify 'fill' value for various colours), and converting at: http://svgtopng.com/

9.2. Or, you can download the compressed icon set from:

- http://surrey-arg.org.uk/Icons/MapIcons/SVG/SARG_map_icons_svg.zip in vector (svg) format.
- http://surrey-arg.org.uk/Icons/MapIcons/PNG/SARG_map_icons_png.zip in raster (png) format.