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Non-avian vertebrates in Glasgow Botanic Gardens

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There has been very little systematic recording of the vertebrates (other than birds) in Glasgow Botanic Gardens following the article about mammals that was part of the original "On the Wildside" supplement (Sutcliffe, 1998). It appears that, since then, there has been little change in the species present. However, there have been several new records, which are outlined in this update.

Only a single fish, a three-spined stickleback (*Gasterosteus aculeatus*), appears to have been recorded in the Botanic Gardens itself, in the former pond beside the Kibble Palace in 1994. A stone loach (*Barbatula barbatula*) and a minnow (*Phoxinus phoxinus*) were both seen in the River Kelvin beside the gardens in 1983; and an eel (*Anguilla anguilla*) was seen there in 2016.

The only amphibians recorded in the gardens are common frog (*Rana temporaria*) and newts. The former pond beside the Kibble Palace used to support frogs. Some frog-spawn was removed and taken to Bingham's Pond about 1,500 m to the northwest in early 2004, in preparation for restoration work on the Kibble Palace, during which the old pond was destroyed. A new pond has since been established and adult frogs, tadpoles and newt eggs were recorded there in 2011. Adult frogs and immature newts (species undetermined) were recorded in 2017. Palmate newts (*Lissotriton helveticus*) are now known to breed in the small stone artificial ponds at the back of the Hopkirk Building.

For just over two weeks during August and September 2017, the Botanic Gardens played host to the entertainment *Jurassic Kingdom* - several "animatronic dinosaurs" that are reconstructions of Jurassic giants and which attracted large crowds. These are the only "reptiles" to have been recorded in the gardens!

New species of mammals have been confirmed. The presence of the wood mouse (*Apodemus sylvaticus*) was long suspected but confirmed only in 2017. There were three records of an otter (*Lutra lutra*) (possibly the same individual) during December 2010 between the Flint Mill and 80 m upstream of the Humpback Bridge below the Kibble Palace, confirming the species' presence along the River Kelvin. Grey squirrels (*Sciurus*

carolinensis) continue to delight many visitors during the day. Red foxes *Vulpes vulpes* are regular visitors when the gardens are closed at night and there was a fox den on the river-bank close to Ha'penny Bridge on the River Kelvin in 2008.

Bats are still regularly observed feeding around the gardens at night. Since the earlier paper (Sutcliffe, 1998), pipistrelle bats have been "split" and two species are now recognised. They are very similar to look at, but call at different frequencies (45 kHz and 55 kHz), and so can be distinguished using bat detectors. Both the common pipistrelle (*Pipistrellus pipistrellus sensu stricto*) and the soprano pipistrelle (*P. pygmaeus*) have been recorded in the gardens. Daubenton's bats (*Myotis daubentonii*) are regularly seen feeding over the River Kelvin during the annual bat and moth nights held in the Botanic Gardens. The Clyde Bat Group bring along powerful spotlights and bat detectors, allowing those who attend to both see and hear the enhanced echolocation sounds of the bats as they hunt over the water. Since they have been recorded nearby in Hyndland, it is possible that the brown long-eared bat (*Plecotus auritus*) visits the Gardens, and Natterer's bat (*Myotis nattereri*) (nearest record: Rouken Glen on the south side Glasgow) could also be present (P. Emslie, pers. comm.).

Table 1 provides a list of all non-avian vertebrate species recorded in Glasgow Botanic Gardens. In view of the dates of some of the "Latest records", particularly those of fish and rodents, there is obviously a need for a systematic, and preferably quantitative, survey of all non-avian vertebrate groups currently present in the Gardens. Future updates will be available at www.gnhs.org.uk/biodiversity/GBG_splist.pdf.

REFERENCE

Sutcliffe, R. (1998). Resident wildlife, seen and unseen: mammals. *The Glasgow Naturalist* 23(3), 54-55.

Species	Common name	Latest record
Fish		
<i>Anguilla anguilla</i>	eel	2016
<i>Barbatula barbatula</i>	stone loach	1983
<i>Gasterosteus aculeatus</i>	three-spined stickleback	1994
<i>Phoxinus phoxinus</i>	minnow	1983
Amphibians		
<i>Lissotriton helveticus</i>	palmate newt	2018
<i>Rana temporaria</i>	common frog	2018
Mammals		
<i>Apodemus sylvaticus</i>	wood mouse	2017
<i>Canis lupus ssp. familiaris</i>	domestic dog	1991
<i>Capreolus capreolus</i>	roe deer	1997
<i>Erinaceus europaeus</i>	hedgehog	1998
<i>Felis catus</i>	feral cat	1997
<i>Lutra lutra</i>	otter	2010
<i>Microtus agrestis</i>	field vole	1997
<i>Mus musculus</i>	house mouse	1997
<i>Myodes glareolus</i>	bank vole	1997
<i>Myotis daubentonii</i>	Daubenton's bat	2017
<i>Neovison vison</i>	American mink	1998
<i>Oryctolagus cuniculus</i>	rabbit	2018
<i>Pipistrellus pipistrellus</i>	common pipistrelle	2001
<i>Pipistrellus pygmaeus</i>	soprano pipistrelle	2018
<i>Rattus norvegicus</i>	brown rat	1997
<i>Sciurus carolinensis</i>	grey squirrel	2018
<i>Vulpes vulpes</i>	red fox	2008

Table 1. Non-avian vertebrates recorded from Glasgow Botanic Gardens. This is an updated version of the list at: www.gnhs.org.uk/biodiversity/GBG_splist.pdf.