

# SUPPLEMENTARY MATERIALS 1

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## Record breaking achievements by spiders and the scientists who study them

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This file contains comments about the official biological records held by spiders as listed in the Guinness World Records database ([www.guinnessworldrecords.com](http://www.guinnessworldrecords.com)).

For each record, we report the record holder according to the Guinness World Records database, as of October 4th, 2017. We hereby list:

- Official biological records **confirmed** by scientific literature, which we have included in the Spider World Records.
- Official biological records that we consider **incorrect**, i.e. needing an update in the Guinness World Records. Marked with one asterisk (\*).
- Official biological records that we consider **incomplete**, e.g., for which we found new information or added specifications (see main text for details). Marked with two asterisks (\*\*).
- Official biological records that we have **not reported** due to low pertinence to our work or to the impossibility to confirm them using scientific literature. Marked with three asterisks (\*\*\*)

Full bibliographic information for the references cited herein can be found in the reference section of the main text.

### **- Rarest spider \*\***

Record holder (GWR, 2017): *Adelocosa anops*, a cave-dwelling spider inhabiting a few caves in the Hawaiian island of Kauai, covering an area of 10.5 km<sup>2</sup>. Censuses for this species has never documented more than 30 individuals.

Comment: if we consider only the range occupied by the spider, there are other species which can compete for the record (see "*Rarest spiders*" in the main text). For instance, *Nothopantes horridus* is recorded exclusively from two abandoned limestone quarries near Plymouth (UK), covering overall a surface of ca. 0.1 km<sup>2</sup> (Cardoso & Hilton-Taylor, 2015). Besides, it is worth noting that population counts of cave-dwelling species are often unreliable: caves are connected with rock fissures and other habitats inaccessible to men, which often precludes correct population estimations (Mammola & Isaia, 2017).

### **- Smallest spider \*\***

Record holder (GWR, 2017): *Patu marplei* — body length of 0.3 mm.

Comment: according to the original description, the male of *Patu digua* is smaller than *P. marplei* (cfr. Forster, 1959 and Forster & Platnick, 1977). See also "*Smallest female adult spiders*" in the main text.

### **- Noisiest spider \*\***

Record holder (GWR, 2017): the European buzzing spider *Anyphaena accentuata*, which produce a buzzing sound as par of its courtship behaviour.

Comment: there are other suitable candidates. See "*Loudest spider*" for more information.

### **- Fastest spider \***

Record holder (GWR, 2017): *Tegenaria gigantea* (= *Tegenaria atrica*), reaching a maximum running speed of 1.9 km/h.

Comment: the Moroccan flic-flac spider *Cebrennus rechenbergi* is faster than *Tegenaria*

*gigantea*.

**- Oldest spider \*\***

Record holder (GWR, 2017): *Theraphosa blondi*

Comment: see "*Longest life span*" for more information.

**- Largest spider**

Record holder (GWR, 2017): a male of *Theraphosa blondi*, having a recorded leg-span of 28 cm.

Comment: see "*Largest living spiders*" for more informations.

**- Strongest spider \*\*\***

Record holder (GWR, 2017): the Californian trap-door spider *Bothriocyrtum californicum*, resisting a force 38 times its own weight attempting to open its trap-door

Comment: we did not find published evidence in scientific literature about this record.

**- Most spinnerets for a spider**

Record holder (GWR, 2017): Mesothelae, having four pairs of spinnerets.

**- Largest spider family**

Record holder (GWR, 2017): Salticidae (> 5,000 species)

**- Smallest spider web**

Record holder (GWR, 2017): Symphytognathidae (web less than 10 mm in diameter).

**- Earliest fossil spiders**

Record holder (GWR, 2017): Mesothelae, which existed 300 Myr ago.

**- Highest living spider**

Record holder (GWR, 2017): *Europhrys omnisuperstes*, found at 6,700 m on Mount Everest

**- Strongest spider web**

Record holder (GWR, 2017): web of the Darwin's bark spider *Caerostris darwini*

**- Most venomous spider \*\***

Record holder (GWR, 2017): *Atrax robustus*

Comment: see main text ("*Most venomous to humans*") for some specifications about this record.

**- Largest spider species \*\***

Record holder (GWR, 2017): *Theraphosa blondi* (see also "

Comment: when considering legspan, *Heteropoda maxima* is the record holder (see "*Largest living spiders*").

**- Largest spider eyes**

Record holder (GWR, 2017): *Deinopis* spp.

**- Largest spider eggs \***

Record holder (GWR, 2017): Genus *Mygalomorphus*

Comment: this genus does not exist (see WSC, 2017).

**- Smallest spider eggs \*\*\***

Record holder (GWR, 2017): *Oonops domesticus*

Comment: we were not able to find evidence in scientific literature supporting this record — quantitative data about egg size are extremely scattered and rare.

**- First spider web in space**

Record holder (GWR, 2017): webs and individuals of two *Araneus diadematus* (Arabella and Anita)

**- Least venomous spiders \*\***

Record holder (GWR, 2017): Uloboridae, lacking venom glands.

Comment: Holarcheidae should also be added, given that they lack poison gland openings in their fangs.

**- Most bioluminescent spider**

Record holder (GWR, 2017): *Cosmophasis umbratica*

**- Simplest spider web \*\*\***

Record holder (GWR, 2017): *Miagrammopes*, *Mastophora*, *Cladomelea akermani*

Comment: part of these records were included under the label "*Most creative hunting strategy*".

**- Earliest orb weaver spider**

Record holder (GWR, 2017): *Cretaraneus vitalbae*

**- Most sociable spider**

Record holder (GWR, 2017): *Anelosimus eximus*

**- Largest spider web outdoor \*\*\***

Record holder (GWR, 2017): a cobweb covering 4.5 hectares

Comment: we were not able to find evidence in scientific literature supporting this record

**- Most maternal mother \*\***

Record holder (GWR, 2017): *Theridion sisyphium*

Comment: there are other potential holders for this record — matiphagy has evolved in at least six spider families (Schneider, 1996). See “*Best mother*”.

**- Oldest spider silk**

Record holder (GWR, 2017): silk in amber from 120 Myr ago

**- Most aquatic spider**

Record holder (GWR, 2017): the water spider *Argyroneta aquatica*

**- Largest fossil spider**

Record holder (GWR, 2017): *Mongolarachne jurassica*

**- First herbivorous spider \*\***

Record holder (GWR, 2017): *Bagheera kiplingi*

Comment: see "Strangest diet" for some specifications.

**- Largest spider web indoors \*\*\***

Record holder (GWR, 2017): a spider's web of 5.08 m

**- Largest orb-web spider**

Record holder (GWR, 2017): *Nephila komaci*, having a leg-span of up to 12 cm

**- Smallest families of spiders \*\***

Record holder (GWR, 2017): Huttoniidae, Sinopimoidae, Trogloraptoridae , all including a single species

Comment: Sinopimoidae is not a valid family anymore. The only species belonging to this family (*Sinopimoa bicolor*) was transferred to Linyphiidae (WSC, 2017).

**- Most widespread widow spider \*\*\***

Record holder (GWR, 2017): *Latrodectus geometricus*

**- Oldest spider gossamer**

Record holder (GWR, 2017): cobweb encase in amber of 140 Myr old

**- Oldest spider in amber**

Record holder (GWR, 2017): a species of Linyphiidae

**- Oldest recorded victim attacked in spider web by web's spider**

Record holder (GWR, 2017): the parasitic wasp *Cascoscelio incassus*

**- Oldest spider web with trapped prey**

Record holder (GWR, 2017): a piece of amber of 110 Myr ago

**- Largest piece of natural spider silk \*\*\***

Record holder (GWR, 2017): a piece of cloth of 3.3 x 1.2 m made from natural spider silk

**- Best adaptation to seawater by a spider species \*\***

Record holder (GWR, 2017): *Desis marina*

Comment: see also main text ("*Longest time under water*") for some specifications.

**- Largest continuous area of spider webs \*\*\***

Record holder (GWR, 2017): huge interwoven webs of *Stegodyphus* covering vegetation in a continuous silken mass for several kilometers

Comment: we have found no evidence in scientific literature to support this record.

**- Largest item of clothing woven from spider silk**

Record holder (GWR, 2017): a lady's cape

**- Most eggs laid by a spider in a single batch \***

Record holder (GWR, 2017): Genus *Mygalomorphus* (3,000 eggs)

Comment: this genus does not exist (see WSC, 2017).

**- Fewest eggs laid by a spider in a single batch \***

Record holder (GWR, 2017): *Oonops domesticus*, laying 2 eggs

Comment: some eggsacs of *Telema tenella* contain one egg only (Juberthie, 1985).