



European Stag Beetle Monitoring Network

A CITIZENS SCIENCE PROJECT

Stag Beetle News

In this yearly newsletter, we have nice research news for you and the 2019 transect walk results. Thanks for joining us. Have you already started up a transect? If there are stag beetles in your area, [here](#) you can find more info on how to monitor them.

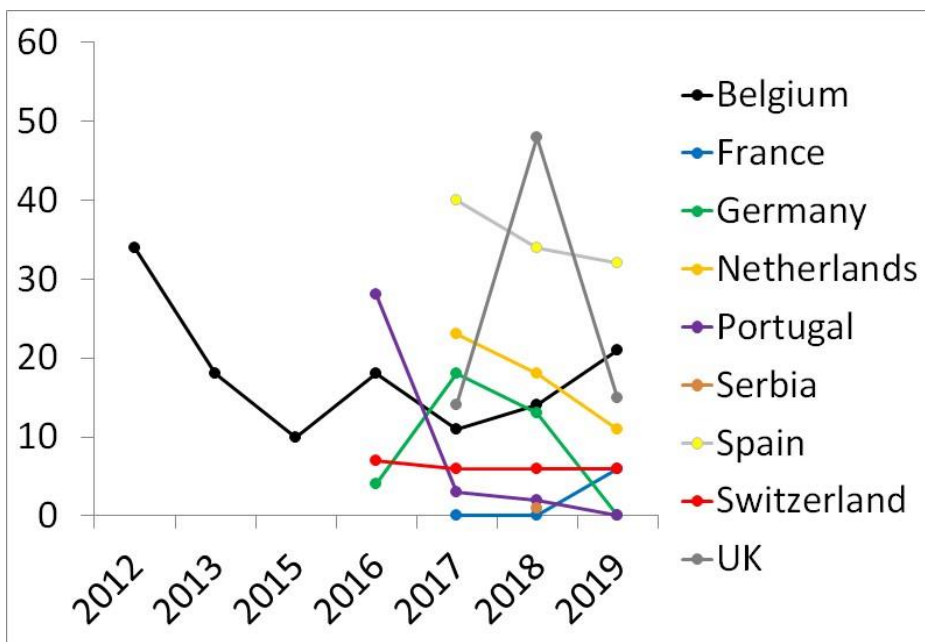
Transect walks declining

This citizen science project was started up in order to follow the population trend of the European stag beetle. In order to analyse the data, we need long-term data so that is why we take a look at the data entered this year and the transects that have been continued.

This year, we received data from **91 transect walks**. That is quite a bit lower than the previous years (136 in 2018 and 115 in 2019). Mainly in Germany, the Netherlands and United Kingdom, the number of transect walks decreased. Luckily, in many other regions the number of walks remained stable or even increased. Furthermore, the first transect walks for France were added.

The same trend is visible if we look at the number of transects with four or more transect walks: 13 in 2019 compared to 19 and 16 in the previous years.

So please **keep up the good work**, we need long time series if we want to assess population increases or declines. If you skipped your transect one or two year, no problem but take up the work again this year. Only transects repeated in more than one year, can be analysed to see any decline.



Stag beetle behaviour and gender

All together, we already have data from **more than 400 transect walks** so we thought it would be a nice idea to look a bit closer to what kind of observations you have been entering. From the 444 transect walks analysed only **232 had stag beetle observations** (so 52%). Regarding behaviour, it is clear that copulating and dead animals are a strong minority. Only during 6% of the transect walks with observations copulating was observed. Dead animals are found in 14% of the transect walks. So the majority of observations refer to **flying and non-flying** individuals. About 67% of the walks with observations have flying beetles and in 50% they are even the majority of the observations. Non-flying beetles are present at 48% of the transect walks and represent the majority of observations in 27% of the transect walks.

Concerning **gender**, 50% of the transects with observations have female observations, meaning that they are also lacking in half of the observations. Only in 18% of the cases, female observations are dominant. For males, 79% of the observations include males with 67% where they are dominant.

Wildlife observations

In the comments of the walks, you have been adding a lot of **other wild life observations**. They will never been analysed fully but we thought it might be a good idea to go trough the list and see what kind of other things you have encountered during your evening walks. Concerning beetles, I think the June beetle (*Amphimallon solstitiale*), **lesser stag beetle** (*Dorcus parallelipedus*) and **tanner beetle** (*Prionus coriarius*) have been mentioned the most. The field period of the tanner beetle starts when the stag beetles are declining. Among the other insects, we found several dragonflies and moths but also the invasive Asian hornet (*Vespa velutina*) has been reported several times for different Spanish transects.



The lesser stag beetle (*Dorcus parallelipedus*), the small brother of the big stag beetle, has been seen a few times along the transects.



Furthermore, a lot of **birds** have been listed, with many common 'garden' birds like the house sparrow (*Passer domesticus*), barn swallow (*Hirundo rustica*), blackbird (*Turdus merula*) and robin (*Erithacus rubecula*) but also more forest species like the nightjar (*Caprimulgus europaeus*) and great spotted woodpecker (*Dendrocopus major*) or even woodcock (*Scolopax rusticola*). Many of these creatures mentioned, give way that the transect were walked in the evening. When it comes to predation on stag beetles, the **magpie** (*Pica pica*) is mentioned a few times. Other predators on the lists have to be looked for among the mammals, the **common noctule bat** (*Nyctalus noctula*) was seen hunting and capturing stag beetles. Also Arianna, our internship student this year, could witness noctulebats hunting and found the dismembered stag beetle heads the next morning. Also some cats, organising their own stag beetle monitoring, are mentioned. Other rare mammals seen were **wild boar** (*Sus scrofa*, resulting in this nice video <https://youtu.be/IIKeddryH4I>) and **common genet cat** (*Genetta genetta*). Also some amphibians and reptiles listed also include common toad (*Bufo bufo*) upto snakes like **smooth snake** (*Coronella austriaca*) and **Baskian viper** (*Vipera seoanei*).

The magpie and noctule bat, two species seen hunting on stagbeetles.

Finally, Arianna has also seen a **stone marten** (*Martes foina*) which had a great interest in our Belgian transect. Possibly, he or she also came to hunt on the stag beetles and even revisited the transect during three different evenings. Proof was finally delivered by this quick smart phone picture.



Science news

The postglacial colonisation of the stag beetle

Every specimen carries its own set of genes and by studying these genes we get insight in the ancestral tree of that specimen. Depending on the genes studied and techniques used we can look into the near or farther past. In this study, researchers from Belgium, UK and Italy looked at the mitochondrial DNA from stag beetles at 121 European locations. The resembles of the genetic patterns at these locations tells us something about the colonization of this species after the last ice age. The results show two clear groups in Europe, one group is found in Greece and the other one is found all over Europe. Based on this, they could confirm that a group of stag beetles survived in Greece during the last ice age, but since then this population has not colonized any new territory. The other population, however, shows clear patterns of recent and rapid range expansion after the last ice age. The origin of this population lies in central Italy. This means that quickly after the last ice age, these stag beetles were able to cross the Alps and then spread out to entire Europe up to the Ural Mountains, about 3500 km from their starting point in central Italy.

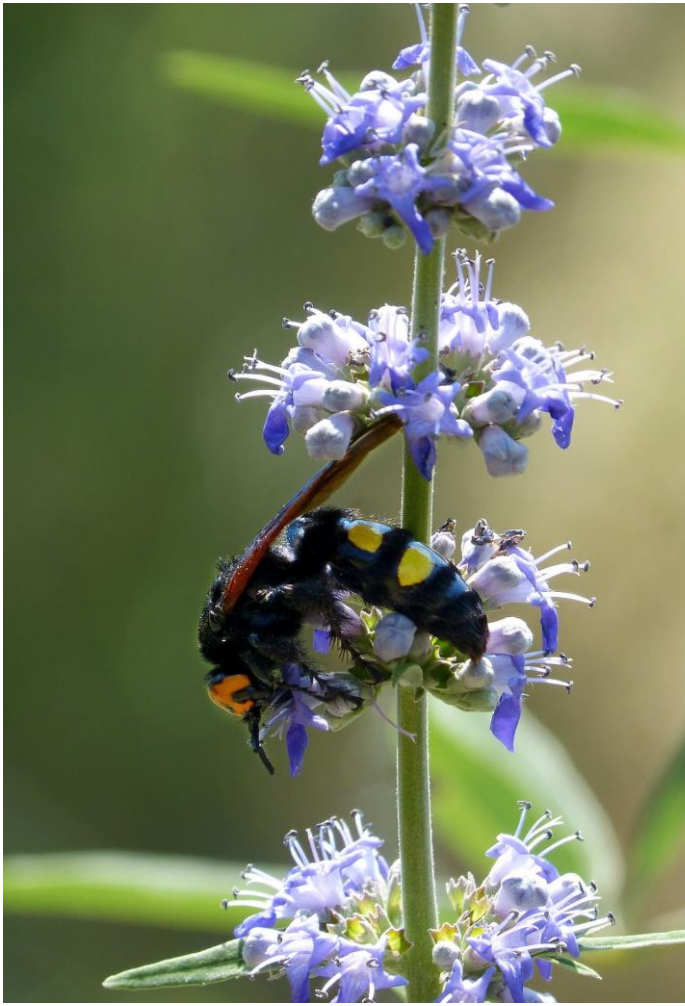
More info: Cox K, McKeown N, Antonini G, Harvey D, Solano E, Van Breusegem A & Thomaes A (2019) Phylogeographic structure and ecological niche modelling reveal signals of isolation and postglacial colonisation in the European stag beetle. PLoS ONE, 14(4): e0215860

Magical and medicinal practice with stag beetles in Roman times

In Roman times, it was believed that pendants, rings and gemstones could possess supernatural magical or medicinal qualities. These artefacts were sometimes made from animals and Romans had a particular interest for exotic and unusual objects. Pliny (23–79 AD) and Antoninus Liberalis (2nd-3rd century AD) both clearly describe a stag beetle with two long pincers which was used to make infants necklaces which should protect them against maladies. However, no archaeological finds of this practice are known so it is difficult to assess how wide spread this practice was. Therefore, the researcher tried to explore how these beetles would have been collected and turned into jewellery. Comparison is made with the charivari chain of the traditional lederhosen that sometimes include stag beetle heads as amulets. Finally, the fact that a stag beetle head remains moving for a few days after dismembered gives rise to speculate that the medical use of the beetle is related to this peculiar situation between life and death.

More info: Parker A (2019). Curing with creepy crawlies: A phenomenological approach to beetle pendants used in roman magical and medicinal practice. Theoretical Roman Archaeology Journal, 2(1): 1–16

Meet Mrs. *Megascolia*



Female *Megascolia maculata* in Spain visiting a flower

Mrs. *Megascolia* is one of the largest European wasps (up to 4.5 cm) and her offspring has quite an appetite to become so big. So mom is looking for a nutritious meal to put her eggs. On the menu are larvae of stag and rhinoceros beetles, which she paralyzes and lays one egg aside. The wasp larvae will feed upon the single beetle larvae and then pupate. In Europe, two species are present: *M. maculata* which lives in Southern Europe up to Czech Republic and *M. bidens* on the Iberian peninsula. The larger females have a yellow or orange head in contrast to a black head for the males, both sexes have four yellow spots on the abdomen (two for male *M. bidens*). Have you ever seen this large wasp? Of course we let them be, they might be as endangered as their prey.

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