

StopVelutina reporting system Insights from a 4-year experience



Sperimentale delle Venezie



Laura Bortolotti¹, Marco Barbujani², Federico Cappa³, Rita Cervo³, Alessandro Cini³, Antonio Felicioli⁴, Antonio Iannone¹, Franco Mutinelli²

¹CREA - Centro di ricerca agricoltura e ambiente, Bologna, Italy
²Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (PD), Italy
³Dipartimento di Biologia, Università di Firenze, Italy
⁴Dipartimento di Scienze Veterinarie, Università di Pisa, Italy

Background

The Asian hornet Vespa velutina arrived in Italy from the border with France probably in 2012 but was officially reported in 2013. In three years it invaded the whole province of Imperia and part of that of Savona, in Liguria region. It was repeatedly reported also in the South Western of Piedmont and in one locality in South Eastern Piedmont.

The StopVelutina reporting system is active since October 2015 to collect reports from beekeepers and citizens about the presence of *V. velutina* in Italy. The aim of the project is to monitor the spread of the hornet throughout Italy and to establish an early warning system. The reporting system was advertised through meetings, lectures, articles on specialized magazines and a dedicated Facebook page. It includes different reporting ways: an online form on StopVelutina website, the StopVelutina Facebook page, different institutional mail addresses for each region and, since 2017, a WhatsApp number.

Reports

To date the total number of reports is 1,461, with an increasing trend from 2015 to 2018, with respectively five, 106, 495 and 855 reports. Fig. 1 shows the distribution of the reports in the different Italian regions.

Correct reports: beside the province of Imperia and Savona (Liguria) and some localities of South Piedmont, they came from:

- Province of Rovigo (Veneto): in November 2016 adults of *V. velutina* were reported in an apiary and in January 2017 a *V. velutina* nest was found on a tree nearby.

- Province of Mantua (Lombardy): in spring 2017 a queen was captured in a home-made trap, about 20 km from the previous finding; fortunately, in the following years no further reports came from these two areas.

- Province of La Spezia: in summer 2018 several adults were reported and in 2019 the number of reports in this area increased enormously; two nests were found and destroyed, but probably many others were present. This is currently the outbreak that raises most concern for the hornet southward

Incorrect reports: most of the received reports were of insect other than *V. velutina*. Two provinces in the south of Italy, Rome and Naples, sent a large number of reports, which concerned sightings of *V. crabro* and *V. orientalis* respectively. Other frequently reported insect are showed in Fig. 2; for *Dolichovespula* the reports mainly concerned nests, because this is the only other wasp species that make nests on trees.



Figure 1 – Reports of *Vespa Velutina* divided by province in the years 2016-2018; in the oval the currently invaded area; in the three circles the new outbreaks identified through the reporting system.



Figure 2 – Incorrect reports sent to Stopvelutina; from left to right: V. crabro; V. orientalis; Megascolia flavifrons; Sphecidae wasp; Vespula sp.; Dolichovespula sp. nest.

The trend of reports over the months follows the general life cycle of hornet colonies (Fig. 3):

- February/March: the founder queens leave the diapause and they are seen foraging on flowers
- March/April: the primary nests built by the queens are reported in



this period

- May/June: queens and workers are reported hovering in front of the hives
- July/August: worker predation in front of the hives increases enormously
- September/October: nest size increases exponentially and they are frequently reported
- November/January: the reports regards empty nests of the previous season, which become evident with the fall of the leaves of trees.

The reports of only *V. velutina* (100 reports, in the small grey graph) are in agreement with this general cycle, with an anticipation of queen appearance, around the half of February (in the upper box).

Conclusion

The StopVelutina reporting system showed an increase success in public response and an extensive territorial and time coverage, with reports coming from all over Italy and during the whole year. The system allowed the early identification of some outbreaks in regions far from the known spreading front. However, the number of reports whose identification was not possible remains too high (from 30 to 40% in the three years) and there are still many incorrect identifications of *V. velutina*, mainly mistaken for *V. crabro*. The future implementation of the system should allow tuning the dissemination and signalling protocols in order to improve citizens' participation and data reliability.

Figure 3 – Reports of *Vespa Velutina* throughout the season in the years 2016-2018; in the small grey graph the reports of *V. velutina* only.



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