Majorca, Spain, 22th - 23th June 2017

Several hornets were captured close to the clusters of honey bee hives, tagged with vertical polarized transponders and then released in order to follow the flight towards their nest. Extensive field testing proved that the flying capabilities of the hornets were not reduced and we were able to record an important collection of data. The installation of the radar on a telescopic tower drastically improved the maneuverability of the system and the capability to follow the insects preferential flying directions. The system was able to produce continuous traces with a clear indication of the most probable position of the nest. The maximum range of detection was about 150 m in all directions. The designed system has three major advantages over conventional harmonic radars. Firstly and most importantly, it adopts advanced processing techniques to suppress clutter and to improve target detection. Secondly, it allows radar operations in complex environments, generally hilly and rich of vegetation. Finally, it can continuously track tagged insects (24/7) and in any meteorological condition, providing an effective tool in order to locate the nests of the yellow-legged Asian hornet. A major upgrades of the system is under development and will be adopted in the forthcoming 2017 field test campaign.

Where is *Vespa velutina* in Europe? Distribution data collection, reliability, availability and depiction

Manino A., Lioy S., Romano A., Carisio A., Laurino D., Porporato M.

Department of Agricultural, Forest and Food Sciences, University of Turin, Largo Paolo Braccini 2, 10095, Grugliasco (Turin), Italy

Vespa velutina has been spreading in Europe since 2004 when it was first discovered in France and it is now present in seven countries. Official agencies, research centres, beekeeper associations, beekeepers and common people are all concerned by its spread throughout Europe, and all of them are collecting data on its actual distribution. Despite the many efforts in monitoring

and reporting the presence of *V. velutina*, accurate and complete information is impaired by various constraints due to national and regional boundaries, language difficulties and data quality. Both official data and those reported in research papers can definitively be relied upon, while those from other sources, and particularly those on the web, are often imprecise, false or misleading, even if supported by pictures; nevertheless, such data are often the only data available for vast areas, consequently they are essential to update and/or integrate more sound information. A good report should state the locality, with geographic coordinates, date, whether a nest or individuals were observed, the name of the observer and the name of the person/institution who validated the report; unfortunately, part of such information is often not available for privacy or ownership reasons. In any case, large databases are difficult to be scanned and the data are more often shown on a map, but the overall effect greatly depends on the cartographic representation that is chosen. For example, it is possible to show every locality where *V. velutina* has been spotted with a single dot, or use a grid with an arbitrary square surface or choose to use entire nations, regions or districts as territorial units, making a substantial difference in the final output.

Development of a surveillance network for Asian hornet (*Vespa velutina*) in the region of Veneto (northeast of Italy)

Mutinelli F., Ferré N., Mazzucato M., Montarsi F.

Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (PD), Italy

Following the detection of Asian hornet (*Vespa velutina*) in the region of Veneto (northeast of Italy) approx. 300 km eastern ward to the area where it had been previously reported, surveillance actions have been taken in order to assess the spreading of this invasive species and plan control measures.
A new trend is to engage "citizens or non-specialists" to collect field and geospatial data providing the so-called Volunteered Geographic Information. Thanks to the participative forms of