Vespa velutina and other invasive invertebrates species

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Monitoring the invasion of *Vespa velutina* and development of control measures to limit its impact in Belgium

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Accidental introduction of the yellow-legged hornet *Vespa velutina nigrithorax* in France in 2004 resulted in rapid spread and dispersal to neighboring European countries within the next decade. In Belgium, the first nest was reported in 2016 although the first observation of an individual male hornet dates from 2011. Since 2016, the invasion front extended further north with an increase in the number of detected and eradicated nests. Eight nests were found and destroyed in 2017 although most were detected late in season at which point
founder queens had managed to escape. In 2018, 61 nests were detected (55 promptly destroyed) of which 23 (38 %) were neutralized before the onset of autumn thanks to active surveillance in early summer. Meanwhile, significant progress was made in developing appropriate control measures to oppose the spread of the Asian hornet. These strategies can be split in three major components: (i) raising awareness among beekeepers, schools, nature enthusiasts and the public on *Vespa velutina* and its identification, (ii) monitoring of the invasion using an online portal for reporting occurrences of hornets and nests alongside citizen science activities to search for hornets, and (iii) outlining and implementing a rapid response protocol for nest destruction by the fire brigade. Passive surveillance is organized by stimulating the reporting of opportunistic observations by naturalists, beekeepers and the public. Active surveillance is organized with beekeepers and nature enthusiast that engage as sentinels for hornet detection. Field-based actions such as targeted searches to find nests in the vicinity of hornet reports, common ivy bioblitzes and awareness raising in nature reserves and facilities with educational apiaries, complement the active surveillance network. As the feasibility of eradication and spread limitation of this invasive insect are deemed very low, a long term control strategy aiming at mitigating hornet impact by reducing nest densities, offers a more realistic prospect in Belgium.