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Institut de biologie

Master's thesis opportunity

Preliminary study of the impact of treating Asian hornet nests with SO_2 on different types of forest soil

Context:
The Asian hornet (*Vespa velutina nigrithorax*) was first recorded in France in 2004 via imported goods. Since then, it has colonised much of Europe and continues to spread. The first nest of this hornet was discovered in 2019 in the canton of Vaud, then in 2020 in the cantons of Jura and Geneva. This species is currently present in the western half of Switzerland. As part of the fight against this invasive species, in 2025 the Swiss Confederation issued a general decision allowing the use of sulphur dioxide (SO_2) to destroy nests, including in forests.

Goals:
Sulphur dioxide has long been used by apiary inspectors to destroy bee colonies infected with foulbrood disease. In this context, SO_2 is used only in confined, enclosed spaces, i.e. beehives. In the fight against the Asian hornet, SO_2 is used in open spaces. Although it is injected directly into the nests, in some cases fragments of the nest fall to the ground. This study aims to determine the impact of SO_2 on different types of forest soil and, potentially, on selected invertebrate species used as models.

Knowledge and skill required: Background in biology, soil sciences, environmental sciences, or related field. Desire to participate in the evolution of the fight against an invasive species, to combine field and laboratory work and the ability to travel independently in the forests of the municipality of Neuchâtel (driving licence required). The analyses are funded by a grant from the IBIOL at the University of Neuchâtel.

Collaboration:
Carine Vogel, biologist and manager of the Swiss Asian Hornet Reporting Platform
Pierre-Olivier Aragno, Environment and Sustainable Development Officer, City of Neuchâtel
Lukas Seehausen, CABI, biologist, specialist in risk analysis and invasive species
University of Neuchâtel: Edward Mitchell, Alexandre Aebi, Claire Le Bayon

Keywords: Asian hornet, soil, insecticide.

Working place: The working place is UNINE, Soils Biodiversity and Functional Ecology Labs.

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