

# *Vespa velutina* Lepeletier, 1836 (Hymenoptera: Vespidae): first records in Iberian Peninsula

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*Vespa velutina* Lepeletier, 1836 (Hymenoptera: Vespidae) is reported for the first time from the Iberian Peninsula based on catches made during 2010 in Guipuzcoa and Navarra provinces (northern Spain). Notes about its current geographical distribution, biology, and economic and medical importance are also provided.

## Introduction

The insect subfamily Vespinae (Hymenoptera: Vespidae) contains 67 extant species in four genera: *Dolichovespula* Rohwer, 1916; *Provespa* Ashmead, 1903; *Vespula* Thomson, 1869; and *Vespa* Linnaeus, 1758 (Carpenter & Kojima, 1997). Until 2005, the genus *Vespa* was represented in Europe by two native wasp species: *Vespa crabro* Linnaeus, 1758 and *Vespa orientalis* Linnaeus, 1771. The former has a distribution range which extends from nearly all Europe to Asia, and also includes North America since its introduction in the mid-1800s; the latter is present in Southern Europe (Albania, Bulgaria, Cyprus, Greece, Italy and Turkey; Fauna Europaea, 2011). However, in 2005 an Asian species, *Vespa velutina* Lepeletier, 1836 (Asian black hornet), was first detected at Nérac, Lot-et-Garonne, France, feeding on a fruit of *Diospyros kaki* (Haxaire *et al.*, 2006; Villemant *et al.*, 2006). It is thought that its accidental introduction into France was made via a consignment of imported goods from China. Since then, the insect spread rapidly throughout the southwest of France, and by the end of 2006 it was present in different departments of Aquitaine (Mollet & Torre, 2006). At present, *V. velutina* is well established across the southwestern part of France (Villemant *et al.*, 2008).

Concerning the Spanish mainland, a female worker of *V. velutina* was found in the locality of Amaiur, province of Navarra (northern Spain) in August 2010 (Castro & Pagola Carte, 2010), and more reports were produced in different localities (Legazpi, Irun, Hondarribia, Oiartzun, Pasaia, Lasarte-Oria and Aduna) of eastern Guipuzcoa (Basque Country) during October 2010 (Fig. 1). Since then, 56 nests have been retired along Guipuzcoa province to date. Insects had been caught in wasp traps baited with a mixture of beer, white wine and blackberry juice and located close to bee hives (*Apis mellifera* Linnaeus, 1758). Identification of these specimens was made by the Entomology Research Unit of Neiker-Tecnalia (Basque Institute for Agricultural Research and Development) and voucher specimens have been deposited in the collection of this Institute. Recently, *V. velutina* has been found in Oñati (Guipuzcoa), a locality close to Biscay province, clearly indicating that the hornet is present

across the Basque Country. Although there are no records from the other provinces of the Basque Country (Biscay and Alava), it is likely that its presence might be reported in these territories in the near future.

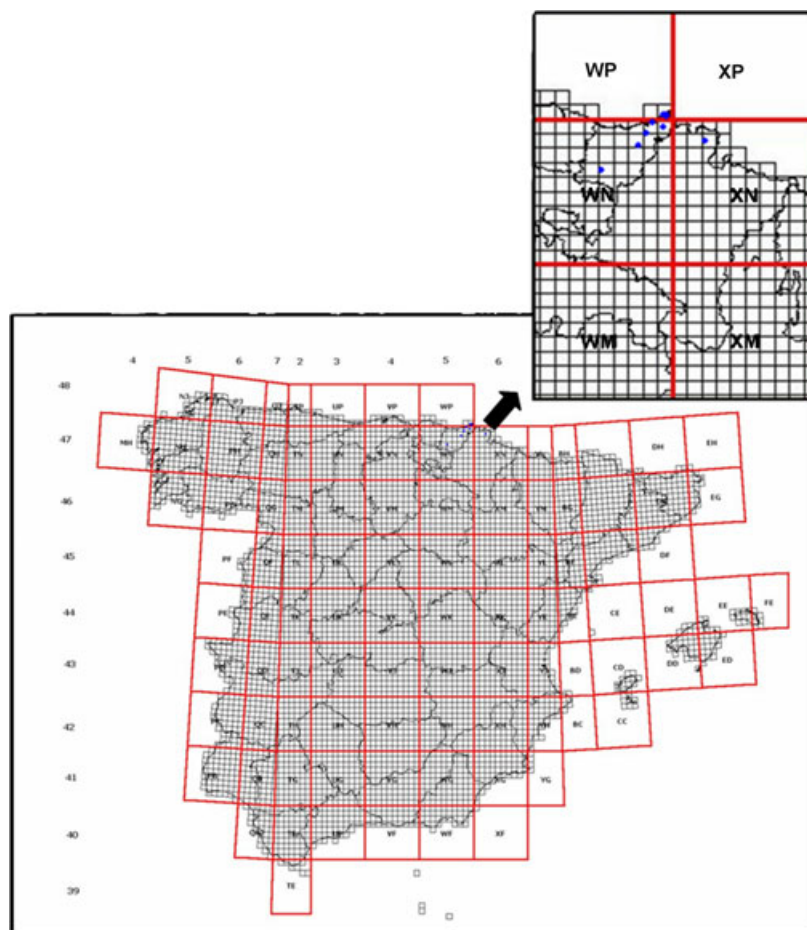
The sub-species of *V. velutina* introduced into France and the Basque Country is *V. velutina nigrithorax* du Buysson, 1805, which is often confused with *V. crabro germana* Christ, 1791, a wasp species commonly found in mainland Spain. However, several morphological characters can easily be used to distinguish between the two species. The head of *V. velutina* is black with an orange frons (Fig. 2.1), whereas the head of *V. crabro* is more yellowish (Fig. 2.2). Also, *V. velutina* is characterized by a completely black thorax (Fig. 2.3), whereas the thorax of *V. crabro* is partially brownish at its central part, with a black, V-shaped pattern surrounding it (Fig. 2.4). Differences can also be observed on the abdomen: *V. velutina* shows terga II–III edged with a thin yellow band and the fourth tergite has a wide orange band (Fig. 2.5), whereas *V. crabro* has yellowish tergites striped with characteristic black spots (Fig. 2.6). All photographs in Fig. 2 were taken using a Leica MZ95 stereomicroscope with an attached Leica DFC300 camera (Leica Microsystems GMBH, Wetzlar, Germany).

## Distribution

*Vespa velutina* originates from Asia, where it is widespread. It is known to occur in: China (South and Central provinces, Hong Kong), India (northeast), Indonesia (Java, Sumatra, South Sulawesi and Lesser Sunda Islands), Malaysia (Peninsular) and Taiwan (Archer, 1989). The subspecies *nigrithorax* is present in Southern Asia (China, northern India, Korea, Nepal; Van Der Vecht, 1959; Archer, 1991; Kim *et al.*, 2006).

## Biology

Little is known about the biology of *V. velutina* in Europe. Concerning its life cycle, it has been observed in France that mated queens emerge from their overwintering or hibernation period in February–March. Each queen establishes a new



**Fig. 1** The study region in northern Spain (inset), showing detection sites (blue spots) of *Vespa velutina nigrithorax* in Guipuzcoa (left upper side) and Navarra (right upper side) provinces.

colony and begins construction of the embryo nest. First workers emerge in May and mature individuals emerge in autumn. Finally, the colony stops its activities at the onset of winter (November–December). At this period, males (after having mated) and workers die, and future queens begin their hibernation (Villemant *et al.*, 2008).

*Vespa velutina* is generalist predator. Its diet mainly consists of other hymenoptera and diptera, but also other includes insect orders (Hemiptera, Orthoptera), spiders, fruits and vertebrate flesh (Muller *et al.*, 2009).

Nests are large and round, and built at the tops of trees or low down in bushes. Although in France nests were typically constructed on high trees (oaks, poplars, acacias, conifers) (Villemant *et al.*, 2008), it seems that their presence in urban areas has recently increased (G. Fert, personal communication).

### Economic and medical importance

*Vespa velutina* is a specialized predator of honeybee foragers and thus represents a serious threat to apiculture. Concerning human health, there have been no attacks reported on humans in

France, except for one envenomation case linked to *V. velutina* (De Haro *et al.*, 2010). Despite this fact, it is considered to be one of the most aggressive hornets in its area of origin (Barthelemy, 2008).

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### *Vespa velutina* Lapeletier, 1836 (Hymenoptera: Vespidae): Premiers signalements dans la Péninsule ibérique

*Vespa velutina* Lapeletier, 1836 (Hymenoptera: Vespidae) est signalé pour la première fois dans la Péninsule ibérique sur la base de piégeages faits en 2010 dans les provinces de Guipuzcoa et de Navarra (nord de l'Espagne). Cet article comprend également des notes sur sa répartition géographique actuelle, sa biologie, et son importance économique et médicale.



Fig. 2 1, *Vespa velutina* head; 2, *V. crabro* head; 3, *V. velutina* thorax; 4, *V. crabro* thorax; 5, *V. velutina* abdomen; 6, *V. crabro* abdomen.

### ***Vespa velutina* Lepelletier, 1836 (Hymenoptera: Vespidae): первые обнаружения на Пиренейском полуострове**

На Пиренейском полуострове *Vespa velutina* Lepelletier, 1836 (Hymenoptera: Vespidae) была впервые зарегистрирована в результате отловов, производившихся в течение 2010 года в провинциях Гипускоа и Наварра (Северная Испания). В статье приводятся данные о ее нынешнем распространении, биологии, экономическом и санитарном значении.

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