

The First Record of *Vespa velutina* Lepeletier, 1836 in Algeria and Biocontrol Implications

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Abstract: This study reports the first record of the Asian hornet, *Vespa velutina* Lepeletier, 1836 (Hymenoptera: Vespidae) in Algeria. A single adult was collected in a garden in Birkhadem (36°43'30"N, 03°02'41"E; 140 m a.s.l.) in September 16, 2025. Identification was based on the morphological characteristics including a uniformly black mesosoma, an orange fourth abdominal tergite, and dark legs with yellow distal parts. The detection of *V. velutina* in northern Algeria extends the known distribution of this invasive species in North Africa. Considering its predatory behavior toward honeybees and its potential impact on pollinators, this finding highlights the need for early bio-surveillance, risk assessment, and the development of environmentally safe biocontrol strategies to prevent its establishment and spread.

Keywords: Asian hornet, yellow-legged hornet, Invasive species, Africa, biosurveillance.

Cezayir’de *Vespa velutina* Lepeletier, 1836’nın İlk Kaydı ve Biyolojik Mücadeleye Yönelik Çıkarımları

Öz: Bu çalışmada, Asya eşekarısı *Vespa velutina* Lepeletier 1836’nın (Hymenoptera: Vespidae) Cezayir’in kuzeyinde ilk kez kaydedildiği bildirilmektedir. Tek bir ergin birey, 16 Eylül 2025’te Birkhadem’deki bir bahçede (36°43’30”K, 3°02’41”D; 140 m rakım) toplanmıştır. Teşhis, morfolojik özelliklere dayanmıştır; mezosomanın bütünüyle siyah olması, dördüncü abdominal tergitin turuncu renkte bulunması ve distal kısımları sarı olan koyu renkli bacaklar. Cezayir’in kuzeyinde *V. velutina*’nın saptanması, bu istilacı türün Kuzey Afrika’daki bilinen dağılımını genişletmektedir. Bal arılarına yönelik yırtıcı davranışı ve tozlayıcılar üzerindeki olası etkileri göz önünde bulundurulduğunda, bu bulgu erken biyoizleme, risk değerlendirmesi ve türün yerleşmesi ile yayılışını önlemek amacıyla çevre açısından güvenli biyolojik mücadele stratejilerinin geliştirilmesi gereğini vurgulamaktadır.

Anahtar kelimeler: Asya eşekarısı, sarı bacaklı eşekarısı, İstilacı tür, Afrika, biyoizleme.

Biological invasions today pose a major threat to ecosystems and biodiversity. Native to the Southeast Asia, the Asian hornet *Vespa velutina* Lepeletier has spread rapidly across Europe since the 2000s (Villemant et al., 2011; Monceau et al., 2014). An opportunistic predator, it exerts substantial pressure on colonies of the western honeybee (*Apis mellifera* L.) and also preys on many other insects and invertebrates, making it a significant risk factor for local biodiversity (Kim & Choi, 2021; Rome et al., 2021).

In September 16, 2025, around 17:00, while we were on the terrace of a private garden in Birkhadem (Algiers; 36°43'30"N, 03°02'41"E; 140 m a.s.l.; ~29°C), we observed a large black insect circling a bone on which small wasps were feeding; the individual, noticeably more robust, directly attacked the wasps. It was captured with a net, euthanized using insecticidal vapors, then placed at -18°C to preserve external characters before photography (OLYMPUS E-M10 Mark III). The specimen measured 24 mm, whereas the small wasps (identified as *Vespula* sp.) were ~11 mm. After determination, using Archer’s (1989) key and comparison with recent literature, the combination of the characters namely a uniformly black thorax, an orange fourth abdominal tergite, and dark legs with yellow distal parts (along with other diagnostic traits described) confirms that the specimen is *Vespa velutina* (Fig.1). The specimen is dry-preserved in the

corresponding author’s collection.



Figure 1. Photograph of *Vespa velutina* captured in Birkhadem. A - Oblique anterior view. B - Abdomen, dorsal view.

This first record for Algeria and the Maghreb expands the species’ known distribution in North Africa and supports the implementation of structured bio-surveillance. Beyond beekeeping, the species is an opportunistic predator of a wide range of invertebrates (social Hymenoptera, Diptera, Lepidoptera) with potential effects on trophic networks and ecosystem services (Kim & Choi, 2021; Rome et al., 2021). For Algeria, the priority is early, coordinated bio-surveillance. Control of *Vespa velutina* relies on the destruction of nests after their detection by tracking worker flights using radio telemetry and drones (Kennedy et al., 2018; Rojas-Nossa et al., 2022).

Spring trapping of foundresses is commonly practiced but its effectiveness is limited by high bycatch of non-target insects (Rojas-Nossa et al., 2018). More selective alternatives, such as electric harps near apiaries, have shown significant reductions in predation without notable impact on the non-target fauna (Rojas-Nossa et al., 2022). In parallel, biocontrol options should be explored cautiously: optimization of olfactory baits (Couto et al., 2014) and evaluation of entomopathogenic agents (e.g., *Metarhizium robertsii*, *Beauveria bassiana*) whose potential effectiveness must be confirmed for selectivity and environmental safety before any large-scale deployment (Meyling & Eilenberg, 2007; Poidatz et al., 2018; Smagghe et al., 2013). Overall, this first record argues for an integrated strategy combining selective trapping, systematic nest destruction, technological innovations, and the development of specific baits, while also leveraging natural ecological interactions to limit the expansion of *V. velutina* in North Africa.

Ethics committee approval: Ethics committee approval is not required for this study.

Conflict of interest: The author declares that there is no conflict of interest.

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