Short Communication

The Gall Wasp *Plagiotrochus amenti* Potentially Dangerous for the Cork Oak Found for the First Time in Tunisia

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ABSTRACT

Pujade-Villar, J., Grami, M., and Ben Jamâa, M.L. 2010. The gall wasp *Plagiotrochus amenti* potentially dangerous for cork oak found for the first time in Tunisia. Tunisian Journal of Plant Protection 5: 225-230.

The occurrence of *Plagiotrochus amenti* in Tunisia is reported here for the first time. This gallicolous wasp is a potential pest for the oak tree, and its expansion could result in economical losses in Tunisia for the cork industry. The dangers of its potential proliferation are exposed. The indications for recognition of its appearance are given.

Keywords: Cynipidae, Hymenoptera, Pest, *Plagiotrochus amenti*, *Quercus suber*, Tunisia

The cork oak (*Quercus suber*) is used in the Western Mediterranean area as a resource for cork plantation. This species is distributed in 7 countries: Portugal, Spain, France and Italy (in Europe) and Tunisia, Morocco and Algeria (in North Africa), with an area of 2.3 million ha (63% in Europe and 37% in Africa). This important resource has many natural enemies (17). In Tunisia, some of them, especially the larvae of Lepidoptera such as *Lymantria dispar* are able to attack leaves and to cause severe defoliation. Other insects, as the larvae of beetles *Platypus cylindrus*, *Cerambyx cerdo*, and the ant *Crematogaster scutellaris*, produce various wood injuries which can be invaded by fungi and other micro-organisms that can cause serious disruptions in the cork oak. By infesting the tree, these insects affect the quality or prevent the extraction of the cork while others cause the death of branches or the cork oak itself. Recently (2), a potential new pest has been found in Algeria: *Plagiotrochus amenti* (Hymenoptera: Cynipidae). In the present paper, we record the presence of this species for the first time in Tunisia. A recently approved project related to the Tunisian-Spanish bilateral cooperation granted by AECID (2009) has permitted the authors to sample the oaks in the North of Tunisia. The material has been collected and deposited in the collections of the University de Barcelona (UB) and *Institut National des Recherches en Génie Rural Eaux et Forêts* (INRGREF) (Fig. 1).

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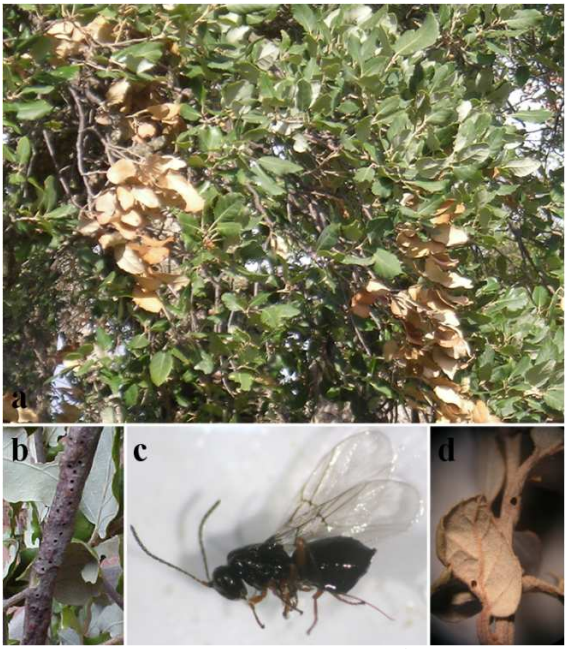
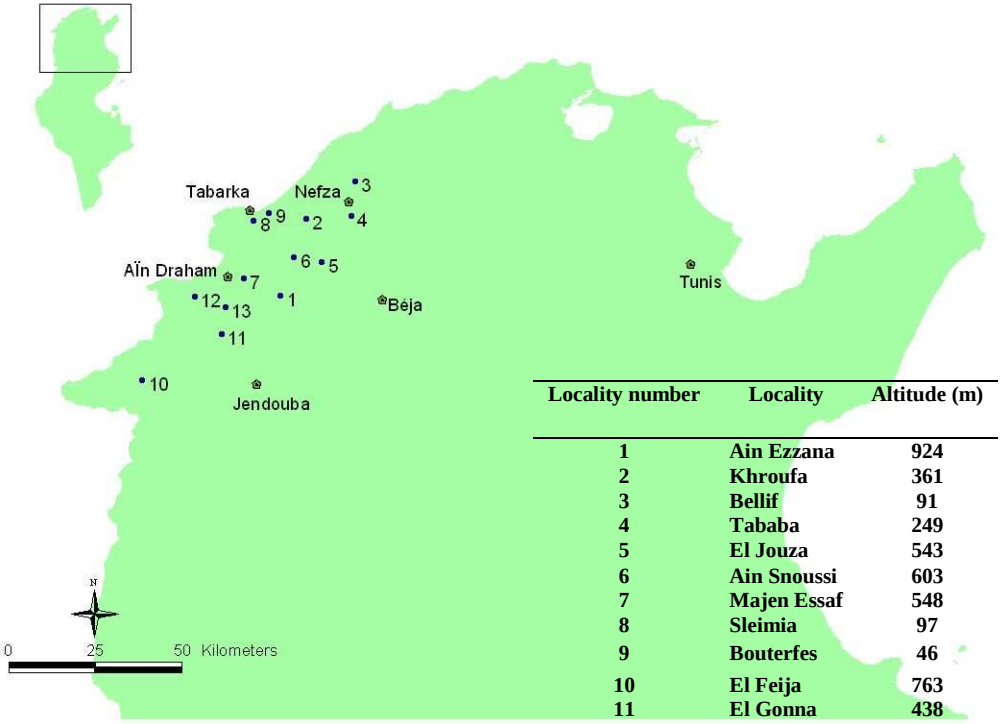


Fig. 1. Damages noted on *Q. suber*; **a**: Death of *Q. suber* branches caused by *Diplodia* sp. and resembling attacks of *P. amenti*, **b**: Branch of *Q. suber* attacked by the asexual generation of *P. amenti*, **c**: Asexual form of *P. amenti*, **d**: Twig with galls of the sexual form of *P. amenti*.

This study was conducted in the cork oak forest located in the Northwest of Tunisia. The relief is often bumped where the altitude varies from 400 to 1203 m (Jebel Ghorra). Rains are abounding and vary from 800 to 1500 mm (Aïn Draham). The annual medium temperature drops with altitude 18°C in Tabarka and 15°C in Aïn Draham. The absolute maximum temperature of August is about of 47°C in Tabarka, 43°C in Aïn Draham and 49°C in El Feija. The Khemir-Mogods Mountain belongs to the humid Mediterranean climatic and it is characterized by a very strong summer dryness contrasting with a very important winter rainfall measurement. The gall wasps were collected on *Q. suber* trees from different cork oak forests (Fig. 2) between February and March 2009 for all localities and from Ain Ezzana in October 2009.



Locality number	Locality	Altitude (m)
1	Ain Ezzana	924
2	Khroufa	361
3	Bellif	91
4	Tababa	249
5	El Jouza	543
6	Ain Snoussi	603
7	Majen Essaf	548
8	Sleimia	97
9	Bouterfes	46
10	El Feija	763
11	El Gonna	438
12	Adissa	453
13	Ain El Beya	247

Fig. 2. Localities in which gall wasps of *P. amenti* were collected on *Q. suber* trees.

The species, *P. amenti* has been detected from Tunisia. We have collected asexual and sexual galls, and asexual adults in different points of the Khemir Mountains (Table 1).

Table 1. Studied material: asexual and sexual galls, and sexual adults collected in different points of the Khemir mountains

Locality	Date of collect	Date of emergence	Generation	Number of adults
Nefza (Beja)	24.02.2009	02.03.2009	sexual	3 females
		05.03.2009		1 female
		10.03.2009		3 females
Tabarka (Jendouba)	24.02.2009	02.03.2009	sexual	4 females
Ain Ezzana (Ain Draham)	27.10.2009		asexual	
			asexual	

P. amenti is native from the Western Mediterranean area, where the host (*Q. suber*) is present. It has been reported from Portugal and Spain (8, 10), France (12) and recently from Algeria (2); it was also recorded in Switzerland (1) but *Q. suber* is not indigenous for this country. It has also been mentioned from Andorra 100 Km far away from its host plant due probably to the wind effect (14). *P. amenti* was also introduced to North America (18) and Argentina (4). The oak cynipids, grouped in the tribe Cynipini, have an alternating cycle (11). This cycle is characterized by a sexual generation (with the presence of males and females) followed by another asexual (only females). Both generations were recorded in the present work and they are known to produce different galls, almost always in different plant organs.

Kieffer (6), based in a collection made in Portugal, described a gall in the catkins of the cork oak caused by an insect species named *P. amenti*. Later on, Tavares (15) re-described this gall type and the sexual adults producing it. Nieves-Aldrey (7) detected in Spain the sexual form in one-year branches of *Q. suber* and also described a new asexual form, *P. pardoi* from branches, which belongs (synonym) (9) to *P. suberi* described by Weld (18) from USA in introduced *Q. suber*. *P. suberi* was also mentioned in Argentinean plantations (4). The cycle between *P. amenti* and *P. suberi* has been recently closed (5, 13). The adult of the asexual form (Fig. 1c) and the females of the sexual form have a very similar morphology (7). The galls of the sexual form are commonly found in annual branches (Fig. 1d), while the asexual form is located in branches from 2 to 3 years (Fig. 1b).

The galls of the asexual form and those of the sexual form found in the twigs can cause damage to the branches of *Q. suber*. When the number of larval chambers is small, they weaken or reduce the strength of the tree and may cause the death of the branch, resembling an attack occasioned by *Diplodia* sp. (Fig. 1a). Large economic losses caused by the asexual form gall wasp have been reported in Argentina and the USA (EEUU) (2, 4, 19). At the end of the 20th century, punctual demographic explosions of this gall wasp were observed in the North-Eastern Iberian Peninsula (Pujade-Villar, unpublished data) generating local disruptions similar to those described in the American continent, which is evidenced by a yellowing of the leaves, before the death of the affected limbs. For all the reasons mentioned above, the detection of this gall wasp is important as it represents a threat for the Tunisian cork oak forest: a future expansion of this hymenopteran may cause additional difficulties in the Tunisian cork economy. *P. amenti* is a very serious potential plague of *Q. suber*.

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RESUME

Pujade-Villar J., Grami M. et Ben Jamâa M.L. 2010. La guêpe gallicole *Plagiotrochus amenti* potentiellement dangereuse pour le chêne-liège trouvée pour la première fois en Tunisie. Tunisian Journal of Plant Protection 5: 225-230.

La présence de *Plagiotrochus amenti* en Tunisie est mentionnée pour la première fois ici. Cette guêpe gallicole est un insecte potentiellement nuisible pour le chêne et son expansion pourrait engendrer des pertes économiques pour l'industrie du liège en Tunisie. La biologie de cette espèce et les dangers de sa prolifération potentielle sont exposés. Les indications de reconnaissance de cet insecte sont également données.

Mots clés: Cynipidae, *Hymenoptera*, insecte nuisible, *Plagiotrochus amenti*, *Quercus suber*, Tunisie

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ملخص

بوجاد-فييار جولي ومبروك قرامي ومحمد الحبيب بن جامع. 2010. العثور لأول مرة على دبور التدرن *Plagiotrochus amenti* ذي الخطورة المحتملة على فلين الفرنان/السنديان.

Tunisian Journal of Plant Protection 5: 225-230

تمت الإشارة هنا إلى وجود حشرة *Plagiotrochus amenti* على الفرنان في تونس لأول مرة. يمكن أن يكون هذا الدبور المُحدث للتدرن آفة محتملة لأشجار الفرنان ويمكن أن يُلحق انتشاره خسائر اقتصادية جسيمة لقطاع الفلين بتونس. تم التعرض إلى مخاطر انتشار هذه الحشرة وتكاثرها المحتمل، كما تم إعطاء دلالات لتشخيص الحشرة.

كلمات مفتاحية: تونس، حشرة ضارة، عفصيات ،غشائيات الأجنحة، *Quercus suber*، *Plagiotrochus amenti*

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