

A new alien species in France: first records of the green cone-headed planthopper *Acanalonia conica* (Say, 1830) (Hemiptera, Fulgoromorpha, Acanaloniidae)

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Abstract. – The green cone-headed planthopper *Acanalonia conica* (Say, 1830) is a Nearctic species recently detected in Italy, Switzerland, Romania, Slovenia and Austria. We here report its first capture in France based on a specimen found in Auzeville-Tolosanne (Haute-Garonne) and one observation uploaded on the online biodiversity platform iNaturalist.

Résumé. – Une nouvelle espèce exotique en France : premiers signalements du Fulgore *Acanalonia conica* (Say, 1830) (Hemiptera, Fulgoromorpha, Acanaloniidae). *Acanalonia conica* (Say, 1830) est un insecte d'origine néarctique récemment détecté en Italie, Suisse, Roumanie, Slovénie et Autriche. Nous signalons ici ses premières observations en France, avec la capture d'un individu trouvé à Auzeville-Tolosanne (Haute-Garonne) et une observation enregistrée dans la base de données naturaliste iNaturalist.

Keywords. – Introduced species, allochthonous species, exotic species, invasive species.

The green cone-headed planthopper *Acanalonia conica* (Say, 1830) (Hemiptera, Fulgoromorpha, Acanaloniidae) is a widely distributed planthopper species in both the Nearctic and more recently in Palaearctic areas (BOURGOIN, 2020). It originated from North America, where it is widely distributed in eastern, central, and south-eastern USA and in Canada (Ontario) (BARTLETT *et al.*, 2014). In Europe (table I), it was detected for the first time in Italy in 2004 (D'URSO & ULIANA, 2004, 2006), spreading in north Italy (ALDINI *et al.*, 2008, 2010; ZANDIGIACOMO *et al.*, 2009) and expanding into Switzerland (TRIVELLONE *et al.*, 2015), Romania (CHIRECEAENU *et al.*, 2017), Slovenia (SELJAK, 2018) and very recently Austria (HOLZINGER *et al.*, 2020). We here report the first mentions of this species in France.

Table I. – European countries where the presence of *Acanalonia conica* (Say, 1830) is reported (listed by chronological order).

Country	Collection methods	Reference
Italy	UV lamp and active scouting on <i>Buddleja davidii</i> , and other plants	D'URSO <i>et al.</i> , 2004, 2006; ALDINI <i>et al.</i> , 2008, 2010
Switzerland	Mouth aspirator	TRIVELLONE <i>et al.</i> , 2014
Romania	Yellow sticky traps	CHIRECEAENU <i>et al.</i> , 2017
Slovenia	Sweep-netting of plants or with a suction sampler and light trapping	SELJAK, 2018
Austria	Opportunistic records	HOLZINGER <i>et al.</i> , 2020
France	Opportunistic records	iNaturalist; this paper

A. conica is often observed with the New World Flatid planthopper *Metcalfa pruinosa* (Say, 1830) (Flatidae Nephesini) (WILSON & LUCCHI, 2001), another known invasive species in Europe, of economic concern for various crops (ZANGHERI & DONADINI, 1980). Being a polyphagous species with a diet including several traded plants species (WILSON & Mc PHERSON, 1981) and inserting eggs directly in its host-plant twigs and branches, *A. conica* could easily be subject to passive dispersion by humans and this might explain how it reached Europe since the 2000's.

MATERIAL AND METHODS

On the 23.VII.2020, one female individual was collected in a residence at Auzeville-Tolosanne (Haute-Garonne) close to Toulouse in south-western France (fig. 1). The insect was collected because of its unknown appearance and its eye-catching morphological proximity to the flatid planthopper *M. pruinosa* combined with a surprising bright green colour. This was an opportunistic observation, out of any biodiversity study or pest monitoring program, and only due to the attention given to the “little things that run the world” (WILSON, 1987).

On the following days, surroundings of artificial lights on the residence walls were inspected. The closest garden was also inspected later on the 29.VII.2020 with particular attention to a honey-suckle plant (*Lonicera sp.*), a vine plant (*Vitis sp.*) (listed as host-plant by WILSON & Mc PHERSON, 1981) and a bramble plant (*Rubus sp.*), which is a common host-plant for *M. pruinosa*. However, no more individuals could be found.

The naturalist online database iNaturalist (<https://www.inaturalist.org/>) has been checked (last time on the 25.IX.2020), searching for *A. conica* and Acanaloniidae records. The image galleries from “Le monde des insectes” (<https://www.insecte.org/>) and Faune-France (<https://www.faune-france.org/>) were checked on the 25.IX.2020.

RESULTS AND DISCUSSION

The insect was rapidly identified as *Acanalonia conica* based on its general habitus and then identification was confirmed based on the criteria listed in BARTLETT (2020) and FREUND & WILSON (1995). No mention of *A. conica* in France could be found, neither in the literature nor on the specialized websites “Le monde des insectes” and “Faune-France” where a large community of French professional and amateur entomologists report their observations and manage picture galleries. Only in the online database iNaturalist, two other records could be found for France. One is reported from La Rivière-de-Corps (Région Grand-Est, on the 22.VII.2020, by Maypa10) and supported by a picture (fig. 2), confirming it was a valid observation. The second one is reported from Trosly-Breuil (Région Haut-de-France, on the 23.VIII.2020 by Alain Claisse), but probably invalid, linked to a picture incompatible with *A. conica*.

To our knowledge, observations in Auzeville-Tolosanne and La Rivière-de-Corps are thus the first mentions of this allochthonous species in France. This shows that *A. conica* is still in expansion in Europe and further observations should be expected soon in France. According to SFORZA (2008), *A. conica* has all the characteristics of a highly invasive agricultural pest in France, with a similar harmfulness to *M. pruinosa*, which is not an insect of economic concern in North America but became a serious pest in Europe. The current absence of natural enemies and the strong polyphagy of *A. conica* suggest it could become a local pest, especially on grapevine, which is its main host plant. However, *A. conica* has not yet been reported to any damage on crops or horticultural plants in Italy despite a 15 years long presence. To our knowledge, it is also not recorded as a plant disease vector in the literature.

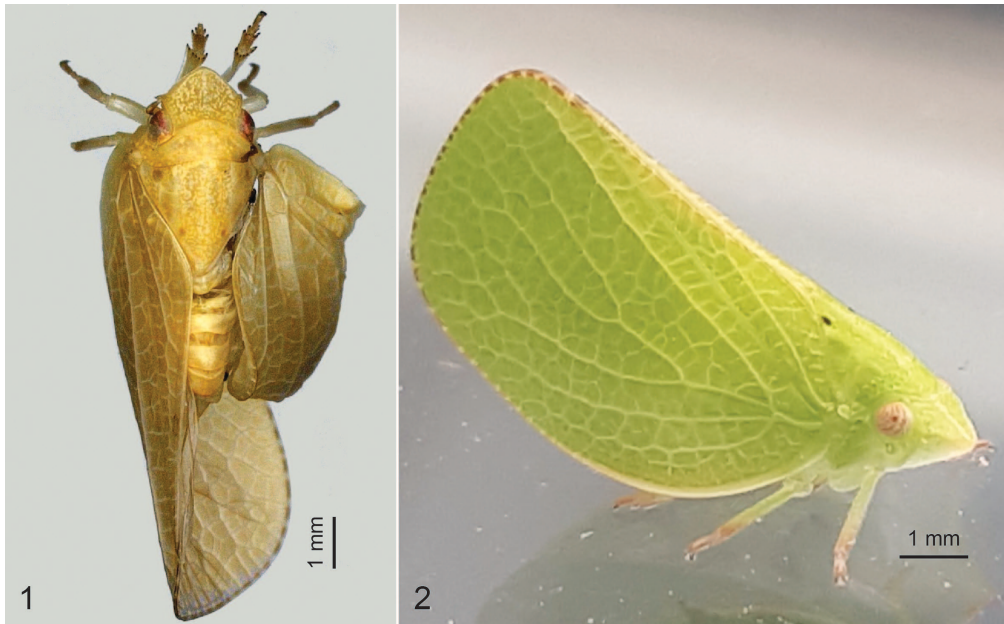


Fig. 1-2. – *Acanalonia conica* (Say). – **1**, Dorsal view of the female found in Auzeville-Tolosanne (Haute-Garonne, France) on the 23.VII.2020. The right wing suffers a malformation, indicating that this individual probably grew in the close vicinity of the place it was found. (Picture by Philippe Reynaud). – **2**, Live specimen found in La Rivière-de-Corps (Aube, France) on the 22.VII.2020. *A. conica* has roughly the same general shape as *Metcalfa pruinosa* (Say) but is bright green colored. (Picture by Laura F.).

Acanalonia conica (Say, 1830) is the first representative in France of the family Acanaloniidae, a small Nearctic planthopper group of 9 genera and less than a hundred of species (BOURGOIN, 2020), for half century considered as a subgroup of Issidae (FENNAH, 1954; EMELJANOV, 1999). It is rather characteristic although it also superficially looks to a flatid representative. However, from Issidae, it will be easily separated by the absence of lateral metatibial spines and from Flatidae by the absence of any tubercles on the forewing clavus.

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REFERENCES

- ALDINI R. N., MAZZONI E., MORI N. & CIAMPITTI M., 2008. – On the distribution in Italy of the Nearctic hopper *Acanalonia conica*, with ecological notes. *Bulletin of Insectology*, **61** (1) : 153-154.
- ALDINI R. N., MORI N., CIAMPITTI M., PASQUALE I. & MAZZONI E., 2010. – Ulteriori dati sulla progressiva diffusione di *Acanalonia conica* (Say) (Rhynchota Acanaloniidae) nel Nord Italia. *Notiziario sulla protezione delle piante*, (III) **2** : 21-31.
- BARTLETT C. R., 2020. – Planthoppers of North America (accessed VIII.2020). <https://sites.udel.edu/planthoppers/>
- BARTLETT C. R., O'BRIEN L. B. & WILSON S. W., 2014. – A review of the planthoppers (Hemiptera: Fulgoroidea) of the United States. *Memoirs of the American Entomological Society*, **50** : 1-287.
- BOURGOIN T., 2020. – FLOW (*Fulgoromorpha Lists On the Web*): a world knowledge base dedicated to *Fulgoromorpha*. Version 8, updated September 17, 2020. <http://hemiptera-databases.org/flow/>
- CHIRECEANU C., TEODORU A., GUTUE M., DUMITRU M. & ANASTASIU P., 2017. – Two new invasive hemipteran species first recorded in Romania: *Orienteus ishidae* (Matsumura 1902) (Cicadellidae) and *Acanalonia conica* (Say 1830) (Acanaloniidae). *Journal of Entomology and Zoology Studies*, **5** (2) : 824-830.

- D'URSO V. & ULIANA M., 2004. – *First record of Acanalonia conica (Issidae) in Italy*. Third European Hemiptera Congress, Abstracts, St. Petersburg : 26-27.
- D'URSO V. & ULIANA M., 2006. – *Acanalonia conica* (Hemiptera, Fulgoromorpha, Acanaloniidae), a Nearctic species recently introduced in Europe. *Deutsche Entomologische Zeitschrift*, **53** (1) : 103-107. <https://doi.org/10.1002/mmnd.200600010>
- EMELJANOV A. F., 1999. – Notes on delimitation of families of the Issidae group with description of a new species of Caliscelidae belonging to a new genus and tribe (Homoptera, Fulgoroidea). *Zoosystematica Rossica*, **8** (1) : 61-72.
- FENNAH R. G., 1954. – The higher classification of the family Issidae (Homoptera: Fulgoroidea) with descriptions of new species. *Transactions of the Royal Entomological Society of London*, **105** : 455-474. <https://doi.org/10.1111/j.1365-2311.1954.tb00772.x>
- FREUND R. & WILSON S. W., 1995. – The planthopper genus *Acanalonia* in the United States (Homoptera: Issidae): male and female genitalic morphology. *Insecta Mundi*, **9** (3) : 4195-215.
- HOLZINGER W. E., HUBER E., SCHLOSSER L. & KUNZ G., 2020. – *Acanalonia conica* (Say, 1830) and three other true hopper species new for Austria (Hemiptera: Auchenorrhyncha). *Cicadina*, **19** : 9-19.
- SELJAK G., 2018. – Notable new findings of Auchenorrhyncha (Hemiptera) in Slovenia. *Acta Entomologica Slovenica*, **26** (2) : 181-194.
- SFORZA R., 2008. – *Espèces invasives en viticulture*. AFPP. 8^e Conférence internationale sur les ravageurs en agriculture, 22-23 October 2008, Montpellier : 535-546.
- TRIVELLONE V., KNOP E., TURRINI T., ANDREY A., HUMBERT J. Y. & KUNZ G., 2015. – New and remarkable leafhoppers and planthoppers (Hemiptera: Auchenorrhyncha) from Switzerland. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, **88** (3-4) : 273-275.
- WILSON E. O., 1987. – The little things that run the world (the importance and conservation of Invertebrates). *Conservation Biology*, **1** (4) : 344-346. <https://doi.org/10.1111/j.1523-1739.1987.tb00055.x>
- WILSON S. W. & LUCCHI A., 2001. – Distribution and ecology of *Metcalfa pruinosa* and associated plant-hoppers in North America (Homoptera: Fulgoroidea). *Atti della Accademia nazionale italiana di entomologia, Rendiconti*, **49** : 121-130.
- WILSON S. W. & MCPHERSON J. E., 1981. – Life histories of *Acanalonia bivittata* and *A. conica* with descriptions of immature stages. *Annals of the Entomological Society of America*, **74** : 289-298. <https://doi.org/10.1093/aesa/74.3.289>
- ZANDIGIACOMO P., CARGNUS E., PAVAN F. & VILLANI A., 2010. – *Primi reperti della cicalina Acanalonia conica (Say) in Friuli Venezia Giulia*. Notiziario ERSA 4/2009.
- ZANGHERI S. & DONADINI P., 1980. – Appearance in the Venice district of a Nearctic bug: *Metcalfa pruinosa* Say (Homoptera, Flatidae). *Redia*, **63** : 301-305.
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