ORGANISATION EUROPEENNE ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES

EUROPEAN AND MEDITERRANEAN
PLANT PROTECTION ORGANIZATION

INTERNATIONAL YEAR OF
PLANT HEALTH
2020

EPPO Reporting Service

NO. 8 PARIS, 2020-08

21 Bld Richard Lenoir
75011 Paris

Tel: 33 1 45 20 77 94
E-mail: hq@eppo.int

Web: www.eppo.int
GD: gd.eppo.int

2020/158 New data on quarantine pests and pests of the EPPO Alert List

By searching through the literature, the EPPO Secretariat has extracted the following new data concerning quarantine pests and pests included (or formerly included) on the EPPO Alert List, and indicated in bold the situation of the pest concerned using the terms of ISPM no. 8.

- **New records**

In Pakistan, beet necrotic yellow vein virus (*Benyvirus*, BNYVV – EPPO A2 List) was detected during surveys conducted in 2013-2014 in the major sugar beet growing areas of the Khyber Pakhtunkhwa province (Northwestern Pakistan). The virus was detected in leaf samples showing symptoms of rhizomania (Ahmad *et al.*, 2018).

In Argentina, zucchini lethal chlorosis virus (*Orthotospovirus*, ZLCV, formerly EPPO Alert List), was first recorded on symptomatic cucurbit crops (*Cucurbita maxima, C. pepo, C. ficifolia, C. moschata*) in Salta and Jujuy provinces. This is the first report of ZLCV outside of Brazil. **Present**.

In New Zealand, in late May 2020, a small population of *Tetranychus evansi* (Acari: Tetranychidae - EPPO A2 List) was found through routine surveillance at a location near Auckland International Airport. Subsequently, a further population was found in Pakuranga in South Auckland. The 2 locations are about 20 kilometres apart. **Present, few occurrences**.

- **Detailed records**

In Kyrgyzstan fireblight (*Erwinia amylovora* – EPPO A2 List) was first observed in 2008 (EPPO RS 2013/096). The disease is now widespread in the Northern part of the country, affecting apple orchards across Chuy and Issyk Kul provinces (Doolotkeldieva *et al.*, 2019). According to Doolotkeldieva & Bobushova (2016), *E. amylovora* was also isolated from pear fruit and hawthorn in regions of Osh (South-West) and og Jalal Abad (Central-West), respectively.

In Ecuador, '*Candidatus* Liberibacter solanacearum' (Solanaceae haplotypes are listed in the EPPO A1 List) was first detected on potato in June 2019 (EPPO RS 2020/101). Between August and December 2019, symptoms resembling those of '*Ca* L. solanacearum' infection were observed in commercial fields of tamarillo (*Solanum betaceum*) and cape gooseberry (*Physalis peruviana*) in Pichincha and Imbabura provinces, together with high populations of the vector *Bactericera cockerelli* (Hemiptera: Triozidae - EPPO A1 List). '*Ca* L. solanacearum' (haplotype A) was identified by molecular tests (Caicedo *et al.*, 2020).

In China, *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae - EPPO A2 List) was first observed in Xinjiang. It is now recorded in Jilin and Heilongjiang in Northeast China. In 2019, it occurred in 46 counties in these three provinces/autonomous regions in China. Eradication measures are applied (Wang *et al.*, 2020).

In China, *Meloidogyne enterolobii* (EPPO A2 List) is first reported from Hunan on mulberry trees (*Morus* sp.). This nematode also affects mulberry trees in Guangdong and Guangxi (Zang *et al.*, 2020).

In India, *Meloidogyne enterolobii* (EPPO A2 List) is reported from Madhya Pradesh. The nematode was detected in guava (*Psidium guajava*) orchards (Singh, 2020).

In South Africa *Meloidogyne enterolobii* (EPPO A2 List) is reported from the provinces of Limpopo, Northern Cape and North West (Rashidifard *et al.*, 2019).

In Kazakhstan, *Myiopardalis pardalina* (Diptera: Tephritidae, formerly EPPO Alert List) was first found in the Kyzylorda region in 2004. Toyzhigitova *et al.* (2019) report that it now occurs in the following districts of this region: Kazalinsk, Karmakshy, Zhalagash, Syrdarya, Shieli, Zhanakorgan. The pest can cause crop losses, generally these are from 10 to 25% but they can be up to 100%.

- **Host plants**

During surveys in *Ulmus* species in Belgium in 2017-2018, '*Candidatus* Phytoplasma fragariae' (EU Annexes) was detected in seven different locations in non-symptomatic elm trees (*Ulmus* sp.) and one maple tree (*Acer* sp.). Until now, elm and maple trees were not known as host plants of this phytoplasma (Steyer *et al.*, 2019).

Meloidogyne enterolobii (EPPO A2 List) was found infesting Chinese elms *(Ulmus parvifolia*) in Florida (US) (Moore *et al.*, 2020).

- **New pests**

Watermelon green mottle mosaic virus (*Tobamovirus*, WGMMV) is a new virus described by Cheng *et al.* (2019) infecting watermelon in Taiwan. It was found infecting cucurbit fruits and plants in California in November 2017 and again in June 2018. These are the first records for North America. The following species were found positive: opo gourd (*Lagenaria siceraria*), fuzzy gourd (*Benincasa hispida*), Asian pumpkin (*Cucurbita pepo*), Japanese cucumber (*Cucumis sativus*), and bitter melon (*Momordica charantia*). Many plants were coinfected with *Cucumber green mottle mosaic virus* (*Tobamovirus*, CGMMV) and WGMMV, but single infections were identified by RT-PCR from bitter melon (Pitman *et al.*, 2019).

Sources:

Ahmad S, Ali A, Ahmad M, Ullah N, Afridi UK, Bostan N, Qureshi R, Tawwab S, Ahmad I, Zubair M (2018) Characterization of beet necrotic yellow vein virus in Pakistan. *Journal of Plant Pathology* **100**, 357. https://doi.org/10.1007/s42161-018-0083-1

Caicedo J, Vallejo M, Simbaña L, Rivera LI (2020) First report of 'Candidatus Liberibacter solanacearum' causing leaf discoloration and wilting in tamarillo and cape gooseberry in Ecuador. *New Disease Reports* **41**, 30. http://dx.doi.org/10.5197/j.2044-0588.2020.041.030

Cheng Y-H, Huang C-H, Chang C-J, Jan F-J (2019) Identification and characterisation of watermelon green mottle mosaic virus as a new cucurbit-infecting tobamovirus. *Annals of Applied Biology* 174(1), 31–39. https://doi.org/10.1111/aab.12467

Doolotkeldieva T, Bobushova S (2016) Fire blight disease caused by *Erwinia amylovora*on Rosaceae plants in Kyrgyzstan and biological agents to control this disease. *Advances in Microbiology* **6**(11), 831–851. 10.4236/aim.2016.611080

Doolotkeldieva T, Bobushova S, Schuster C, Konurbaeva M, Leclerque A (2019) Isolation and genetic characterization of *Erwinia amylovora* bacteria from Kyrgyzstan. *European Journal of Plant Pathology* **155**(2),677–686. https://doi.org/10.1007/s10658-019-01790-3

INTERNET

Biosecurity New-Zealand (2020-06) Tomato red spider mite, *Tetranychus evansi*. https://www.biosecurity.govt.nz/protection-and-response/responding/alerts/tomato-red-spider-mite/

Moore MR, Brito JB, Qiu S, Roberts CG & Combee LA (2020) First report of root-knot nematodes (*Meloidogyne* species) infecting Chinese elm tree (*Ulmus parvifolia*) in

Florida, USA. *Journal of Nematology* **52**: e2020-49. DOI: 10.21307/jofnem-2020-049

Pitman TL, Posis KG, Tian T, Belanger CA, Roy A, Falk BW (2019) First report of watermelon green mottle mosaic virus in North America. *Plant Disease* **103**(12), 3288. https://doi.org/10.1094/PDIS-02-19-0308-PDN

Pozzi EA, Luciani CE, Celli MG, Conci VC, Perotto MC (2020) First report of zucchini lethal chlorosis virus in Argentina infecting squash crops. *Plant Disease* **104**(2), 602. https://doi.org/10.1094/PDIS-05-19-1064-PDN

Rashidifard M, Fourie H, Daneel MS, Marais M (2019) Morphological and morphometrical identification of *Meloidogyne* populations from various crop production areas in South Africa with emphasis on *M. enterolobii*. *Zootaxa*, 4658(2), 251–274. doi:10.11646/zootaxa.4658.2.3

Singh N (2020) Emerging problem of guava decline caused by *Meloidogyne enterolobii* and *Fusarium oxysporum* f.sp. *psidii*. *Indian Phytopathology* **73,** 373–374. https://doi.org/10.1007/s42360-020-00198-y

Steyer S, Fauche F, Deeren AM, Goedefroit T, De Jonghe K (2019) Phytoplasma survey in *Ulmus* species in Belgium. *Phytopathogenic Mollicutes* **9**(1), 221-222. DOI:10.5958/2249-4677.2019.00111.7

Toyzhigitova B, Yskak S, Łozowicka B, Kaczyński P, Dinasilov A, Zhunisbay R, Wołejko E (2019) Biological and chemical protection of melon crops against *Myiopardalis pardalina* Bigot. *Journal of Plant Diseases and Protection* **126**, 359–366. https://doi.org/10.1007/s41348-019-00231-x

Wang C, Xu H, Pan X-b (2020) Management of Colorado potato beetle in invasive frontier areas. *Journal of Integrative Agriculture* **19**(2), 360-366. https://doi.org/10.1016/S2095-3119(19)62801-7

Zhang P, Shao H, You C, Feng Y, Xie Z (2020) Characterization of root-knot nematodes infecting mulberry in South China. *Journal of Nematology* **52**, e2020-05. DOI: 10.21307/jofnem-2020-004

Additional key words: detailed record, new host plant, new pest, new record

Computer codes: BNYVV0, CARYPA, ERWIAM, LIBEPS, LPTNDE, MELGMY, PHYPFG, TETREV, WGMMV0, ZLCV00, AR, BE, CN, EC, IN, KG, KZ, NZ, PK, ZA

2020/159 VALITEST regional training workshops on the concept of validation

In the framework of the EU funded VALITEST research project (https://www.valitest.eu), the organization of three regional training workshops is planned in the first quarter of 2021 on the concept of validation in Plant Health diagnostics.

- One event will be organized in Rome (IT) by CREA and NIB.
- One event will be organized in Warsaw (PL) by PIORIN.
- One event will be organized in Wageningen (NL) by WUR and FERA.

The objectives of these training workshops are:

- To introduce the concept of validation and present the state of the art in terms of choice of a test and analysis of the results of performance evaluation
- To train experts on the use of kits (including on-site and field tests)
- To present the state of the art in term of organization and analysis of interlaboratory comparisons (with a focus on test performance studies).

The three workshops will include presentations, small group activities and practical sessions. They will be open to the technical staff of public and private diagnostic laboratories and of companies producing diagnostic kits. There will be a maximum of 25 attendees in each training workshop.

For more information and to make an expression of interest:
https://www.surveymonkey.com/r/JVDG9MV

Source: EPPO Secretariat (2020-07).

Additional key words: training, diagnostics

2020/160 New and revised dynamic EPPO datasheets are available in the EPPO Global Database

The EPPO Secretariat is in the process of revising the EPPO datasheets on pests recommended for regulation. This project is also supported by an EU grant agreement. This revision provides the opportunity to create dynamic datasheets in the EPPO Global Database in which the sections on pest identity, host range and geographical distribution are automatically generated by the database. It is planned that these dynamic datasheets will progressively replace the PDF documents that are currently stored in the database. Since the previous report (EPPO RS 2020/138), the following revised EPPO datasheets have been published in the EPPO Global Database:

Aphelenchoides besseyi: https://gd.eppo.int/taxon/APLOBE/datasheet
Epitrix papa: https://gd.eppo.int/taxon/EPIXPP/datasheet
Epitrix tuberis: https://gd.eppo.int/taxon/EPIXTU/datasheet

Source: EPPO Secretariat (2020-08).

Additional key words: publication **Computer codes:** APLOBE, EPIXPP, EPIXTU

2020/161 First report of *Spodoptera frugiperda* in Israel

The NPPO of Israel recently informed the EPPO Secretariat of the first record of *Spodoptera frugiperda* (Lepidoptera: Noctuidae – EPPO A1 List) in commercial maize (*Zea mays*) crops on its territory. In late June 2020, fall armyworm was first found in Southern Israel in Western Negev, close to the coast and border with Gaza. In July 2020, it was also found in Northern Israel in the Bet Shaan valley. In Southern Israel, the presence of *S. frugiperda* was initially noticed by growers and extension officers. The insect was also caught in traps placed near maize fields. In Northern Israel, first findings were also made by growers and extension officers. For the moment, only minor damage has been observed. It is thought that the pest entered Israel by natural spread from Egypt. Official control measures are being implemented. Insecticide treatments are being applied in infested fields and surveys have been intensified on maize and other host plants throughout the country.
The pest status of *Spodoptera frugiperda* in Israel is officially declared as: **Present: only in some areas (Western Negev, Bet Shaan valley).**

Source: NPPO of Israel (2020-08).

Pictures: *Spodoptera frugiperda*. https://gd.eppo.int/taxon/LAPHFR/photos

Additional key words: new record **Computer codes:** LAPHFR, IL

2020/162 First report of *Diaphorina citri* in Nigeria

During surveys conducted in October 2019 in Oyo state (a major citrus-producing state in south-western Nigeria), the presence of *Diaphorina citri* (vector of '*Candidatus* Liberibacter asiaticus' - Hemiptera: Liviidae, EPPO A1 List) was detected. Surveys were conducted in 10 sites (4 orchards and 6 backyard gardens). Adults were observed feeding on citrus leaves in 8 of the 10 sites, while nymphs were recovered only from one backyard garden. *D. citri* was observed on sweet orange (*Citrus sinensis*), grapefruit (*Citrus paradisi*) and sour orange (*Citrus aurantium*). The identity of the pest was confirmed by morphological and molecular analysis. The authors consider that *D. citri* is established and relatively widespread in Oyo state. Tests using a Taqman multiplex real-time PCR did not detect any of the Liberibacter species associated with huanglongbing in the psyllids tested. During the survey none of the inspected trees showed symptoms of infestation by *Trioza erytreae* (Hemiptera: Triozidae), the African citrus psyllid. It may be recalled that '*Candidatus* Liberibacter africanus' was recently reported from Nigeria in Benue and Nasarawa states (EPPO RS 2020/100) but no indication about the possible presence of vectors was given. This is the first report of *D. citri* in western Africa.
The situation of *Diaphorina citri* in Nigeria can be described as: **Present, widespread in Oyo state**.

Source: Oke AO, Oladigbolu AA, Kunta M, Alabi OJ, Sétamou M (2020) First report of the occurrence of Asian citrus psyllid *Diaphorina citri* (Hemiptera: Liviidae), an invasive species in Nigeria, West Africa. *Scientific Report* **10,** 9418. https://doi.org/10.1038/s41598-020-66380-4

Pictures: *Diaphorina citri*. https://gd.eppo.int/taxon/DIAACI/photos

Additional key words: new record **Computer codes:** DIAACI, NG

2020/163 First report of *Diaphorina citri* in Ethiopia, and details of the distribution of *Trioza erytreae*

Ajene *et al*. (2020) conducted surveys in Ethiopia between June and November 2017 in citrus-growing regions ranging from 900 to 2460 m above sea level (asl) for the two vectors of huanglongbing, *Trioza erytreae* (Hemiptera: Triozidae – EPPO A2 List) and *Diaphorina citri* (Hemiptera: Liviidae, EPPO A1 List). Surveys were conducted in 70 sites in Amhara, Oromia, and Tigray regions and included sampling in large orchards, small-scale rural farms, and backyard gardens. Psyllids were identified morphologically following EPPO Diagnostic Protocols and molecular analysis (mt COI sequencing) were conducted to determine haplotypes.
No vectors were detected in Oromia and Tigray regions. The presence of *D. citri* was detected in 5 sites in the North Wollo district (Amhara region), all in backyard gardens, located between 1619 and 2112 m asl. In total 28 adults were collected. This is the first record of *D. citri* in Ethiopia. The analysis of the COI sequences from Ethiopia revealed that a new haplotype of the psyllid is present in Ethiopia, which is closer to the haplotype from Brazil than to the haplotype from Kenya and Tanzania.
T. erytreae occurred mostly in the highland areas of Amhara (districts of Gondar and Gojjam) between 1867 and 2460 m asl. It was found on citrus plants and other host plants such as *Casimiroa edulis* (white sapote) and *Clausena anisata*. *T. erytreae* was not found at the locations where *D. citri* was detected during the survey.

Another article by Hailu & Wakgari (2019) describes surveys conducted in May 2018 in crops of *Casimiroa edulis* in Eastern Ethiopia (region of Oromia, Dire Dawa and Harari). *T. erytreae* was recorded causing high levels of damage in this crop in the region of Oromia (zone of Eastern Hararghe and West Hararghe) and Harari.

The situation of *Diaphorina citri* in Ethiopia can be described as: **Present, restricted distribution**.

Source: Ajene IJ, Khamis F, Ballo S, Pietersen G, van Asch B, Seid N, Azerefegne F, Ekesi S, Mohamed S (2020) Detection of Asian citrus psyllid (Hemiptera: Psyllidae) in Ethiopia: a new haplotype and its implication to the proliferation of Huanglongbing, *Journal of Economic Entomology* **113**(4), 1640–1647. https://doi.org/10.1093/jee/toaa113
Hailu T, Wakgari M (2019) Distribution and damage of African citrus psyllids (*Trioza erytreae*) in *Casimiroa edulis* producing areas of the Eastern Zone of Ethiopia. *International Journal of Environment, Agriculture and Biotechnology* **4**(3), 741–750. http://dx.doi.org/10.22161/ijeab/4.3.22

Pictures: *Diaphorina citri*. https://gd.eppo.int/taxon/DIAACI/photos

Additional key words: new record **Computer codes:** DIAACI, ET

2020/164 Update of the situation of *Trioza erytreae* in Spain

Trioza erytreae (Hemiptera: Triozidae – EPPO A2 List, one of the vectors of huanglongbing) was first detected in mainland Spain in 2014, in Galicia. The NPPO of Spain recently informed the EPPO Secretariat of the findings of the psyllid along the Atlantic coast in the neighbouring regions of Asturias, Cantabria and Pais Vasco, and updated the situation in Galicia.

- In Galicia, surveys are conducted. As a result, *T. erytreae* was detected in isolated trees from small orchards, private gardens and public parks. The regulated area has

been extended. An updated map is available in the regional decree (https://www.xunta.gal/dog/Publicados/2020/20200508/AnuncioG0426-040520-0004_es.pdf). Official measures are applied.

- In Cantabria, an individual reported suspicious symptoms on a lemon tree (*Citrus limon*) at the end of May 2020 in a private garden located in the locality of Mogro, municipality of Miengo. Samples were taken and *T. erytreae* was identified by the Regional Laboratory.
- In Asturias, individuals reported suspicious symptoms at the end of June 2020 in 7 private gardens and 2 orchards for personal consumption located in the localities of Somió and Jove, municipality of Gijón, and in the locality of Quintes, municipality of Villaviciosa. In July, the psyllid was further reported from 8 private gardens, 1 public garden and 1 small orchard located in the municipalities of Cudillero, Peñamellera Baja, Carreño and Navia. In August, *T. erytreae* was detected in one lemon tree in a garden centre in the municipality of Avilés, as well as in 3 private gardens in the municipalities of Avilés, Gozón and Valdés. Samples were taken from lemon trees (*Citrus limon*) and orange trees (*Citrus sinensis*) and *T. erytreae* was identified by the Regional Laboratory.
- In Pais Vasco, *T. erytreae* was detected on 1 lemon tree (*Citrus limon*) in a private garden located in the municipality of Donostia/San Sebastián, in the province of Guipuzcoa in August 2020. This is the first detection in this Autonomous Region. Samples were taken and *T. erytreae* was identified by the Regional Laboratory.

Eradication measures are being applied according to article 5 of Royal Decree 23/2016 (amended by Royal Decree 491/2020). They include:
- collection of information on the presence of host plants in the affected areas.
- establishment of regulated areas (infested zone and a buffer zone of 3 km radius around the infested zone).
- surveillance in nurseries and garden centres located within the regulated areas.
- treatment of infested plants.

The pest status of *Trioza erytreae* in Spain is officially declared as: **Present, under eradication, only in some parts of the Member State concerned.**

Source: NPPO of Spain (2020-05, 2020-06, 2020-07, 2020-08).

Pictures: *Trioza erytreae*. https://gd.eppo.int/taxon/TRIZER/photos

Additional key words: detailed record **Computer codes:** TRIZER, ES

2020/165 Addition to the EPPO Alert List: *Phlyctinus callosus* (Coleoptera: Curculionidae), banded fruit weevil

Why: *Phlyctinus callosus* (Coleoptera: Curculionidae), the banded fruit weevil, is reported to cause economic damage in grapevine and fruit trees. During the EU-funded project DROPSA (Strategies to develop effective, innovative and practical approaches to protect major European fruit crops from pests and pathogens), *P. callosus* was identified as a pest of fruit which may present a risk for the EPPO region. The Panel on Phytosanitary Measures recommended to add it to the Alert List.
The taxonomy of *P. callosus* is under revision. Haran *et al.* (2020) stated that *P. callosus* is a species complex including 5 newly described species in addition to *P. callosus sensu stricto*. Two species, *P. callosus s.s.* and *P. xerophilus*, are important pests in grapevines and

orchards in South Africa. Only *P. callosus s.s.* is reported as established in other countries but *P. xerophilus* has also spread out of its native range in South Africa. Haran *et al.* (2020) provided a description and an identification key for the 6 species.

Where: *P. callosus* is native to South Africa and was introduced in several countries in Oceania in the 19th century, and more recently in Reunion island.
EPPO region: Absent.
Africa: Reunion, Saint Helena, South Africa (native).
Oceania: Australia (New South Wales, South Australia, Tasmania, Victoria, Western Australia), New Zealand, Norfolk Island.

On which plants: *P. callosus* is a polyphagous species, feeding on a wide range of monocotyledonous and dicotyledonous species. Adults spend the day in the leaf litter on the ground in the vicinity of the host plant and climb onto its aerial parts during the night to feed and mate. It is considered as an important pest of grapevine (*Vitis vinifera*) and fruit trees (*Malus domestica* and *Prunus* spp.) in South Africa, Australia and New-Zealand. It also damages a number of ornamental plants.

Damage: Larvae are present in the soil and feed on roots. Adults feed on stems, leaves and fruit. *P. callosus* cause damage to fruit on apple, nectarine, pear, plum and peach. On grapevine, damage is mostly to leaves and stems (incl. those of bunches or berries). Lesions on fruit make it unmarketable and infestations cause rejection of fruit for exports. Young fruit trees can be defoliated entirely at high adult population densities. Larvae cause damage to roots, which may be important on root vegetables or young vines and trees.
Control is carried out via insecticide sprays against adults, and the use of trunk barriers to prevent the beetle from reaching the fruit. Biocontrol with entomopathogenic nematodes and fungi has also been developed. Post-harvest treatments are applied in South Africa to guarantee pest freedom of exported fruits.
Adults are flightless weevils (body length: 4.8-6.1 mm), greyish-brown, with a bulbous abdomen which has the characteristic pale-white V-stripe that is prominent at the posterior margin. Eggs are laid on or near the soil surface, or on loose debris and organic litter in late summer or early autumn. After hatching, first instar larvae burrow into the soil, where they feed on the roots of host plants. The larvae have an orange head. *P. callosus* has one or two generations per year.

Dissemination: Adults are flightless. They are known to be associated with fruit in trade. As eggs are laid on soil or plant debris, and larvae live in soil, they could be associated with host plants for planting with soil attached and possibly root vegetables.
P. callosus is regularly intercepted on fruit in the USA, and was recently intercepted in a consignment of apples from South Africa to Ireland.

Pathway: fruit, plants for planting with soil, soil. Cut flowers? Root vegetables?

Possible risks: *P. callosus* is a known pest of grapevine and fruit trees which are economically important crops in the EPPO region. The beetle currently occurs in regions with Mediterranean or warm temperate climates, which suggests that *P. callosus* would be well adapted at least to the Mediterranean part of the EPPO region.

Sources

Anonymous (2020) Garden weevil in vineyards. Government of Western Australia. Online https://www.agric.wa.gov.au/pome-fruit/garden-weevil-vineyards (accessed in July 2020).
Bourke (2020) Rapid Pest Risk Analysis (PRA) for Phlyctinus callosus. Ireland Department of Agriculture Food and the Marine. 53 pp

Bredenhand E, Hoorn A, van May F, Ferreira T, Johnson S (2010) Evaluation of techniques for monitoring banded fruit weevil, *Phlyctinus callosus* (Schoenherr) (Coleoptera: Curculionidae), infestation in blueberry orchards. *African Entomology* **18**(1), 205-209. https://doi.org/10.4001/003.018.0118

Haran JM, Hansen S, Benoit l, Addison P (2020) Description of five new species in the genus *Phlyctinus* Schoenherr (Coleoptera, Curculionidae): a first step in deciphering the *P. callosus* complex. *European Journal of Taxonomy* **669**, 1-29. https://doi.org/10.5852/ejt.2020.669

Pryke JS, Samways MJ (2007) Current control of phytosanitary insect pests in table grape vineyards of the Hex River Valley, South Africa. *African Entomology* **15**(1), 25–36. DOI: 10.4001/1021-3589-15.1.25

Smit R (2019) Postharvest phytosanitary disinfestation strategies using thermal and atmospheric stress: commodity and insect tolerances. PhD thesis. https://scholar.sun.ac.za/handle/10019.1/107254

Suffert M, Wilstermann A, Petter F, Schrader G, Grousset F (2018) Identification of new pests likely to be introduced into Europe with the fruit trade. *EPPO Bull*etin **48**(1), 144-154.

EPPO RS 2020/165

Panel review date -

Entry date 2020-08

Additional key words: Alert List

Computer codes: PHLYCA

2020/166 Update of the situation of *Popillia japonica* in Italy

In Italy, an outbreak of *Popillia japonica* (Coleoptera: Rutelidae – EPPO A2 List) is under official control in Lombardia and Piemonte (EPPO RS 2020/116). As this pest may easily be transported as a hitchhiker, the Italian NPPO has set up a trapping network in the regions surrounding the outbreak. On 2020-07-02, for the first time, two adults of *P. japonica* have been found in Parma province (Emilia-Romagna Region), 1 live female was caught in the interport at Fontevivo (an intermodal transport hub) and a dead male near a car park close to the A1 motorway at Fontanellato. Additional traps were installed in the areas of these findings and further visual inspections will be carried out on the main hosts to assess the presence of the pest. Such a finding is considered as an incursion without any establishment to date.

The pest status of *Popillia japonica* in Italy is officially declared as: **Present, under eradication, only in some parts of the Member State concerned.**

Source: NPPO of Italy (2020-07).

Pictures: *Popillia japonica*. https://gd.eppo.int/taxon/POPIJA/photos

Additional key words: detailed record

Computer codes: POPIJA, IT

2020/167 Update of the situation of *Popillia japonica* in Switzerland

In Switzerland, *Popillia japonica* (Coleoptera: Rutelidae – EPPO A2 List) was first found in Ticino in June 2017 (EPPO RS 2017/160) and adults have been regularly trapped since then (EPPO RS 2019/157). In July 2020, for the first time, adults of *P. japonica* have been found in high numbers in two different vineyards directly on plants (*Vitis vinifera*), and also in traps, in the municipality of Genestrerio-Mendrisio (Canton of Ticino). No significant damage has been observed in the infested vineyards so far. Official measures have been taken.

The pest status of *Popillia japonica* in Switzerland is officially declared as: **Transient, actionable, under eradication.**

Source: NPPO of Switzerland (2020-07).

Pictures: *Popillia japonica*. https://gd.eppo.int/taxon/POPIJA/photos

Additional key words: detailed record **Computer codes:** POPIJA, CH

2020/168 First report of *Ips duplicatus* in Slovenia

The NPPO of Slovenia recently informed the EPPO Secretariat of the first finding of *Ips duplicatus* (Coleoptera: Scolytinae - EU Annexes) on its territory. One beetle was caught in a pheromone trap specific to *Ips typographus* (Coleoptera: Scolytinae - EU Annexes). The trap was placed in a forest in the Central Slovenia region (municipality of Komenda). In the wider surroundings of the site where the pest was found, traps for *Ips typographus* will be analysed also for possible catches of *Ips duplicatus*.
The pest status of *Ips duplicatus* in Slovenia is officially declared as**: Present, at low prevalence**.

Source: NPPO of Slovenia (2020-06).

Additional key words: new record **Computer codes:** IPSXDU, SI

2020/169 Update on the situation of *Corythucha arcuata* in the EPPO region

The oak lace bug, *Corythucha arcuata* (Heteroptera: Tingidae – formerly EPPO Alert List) continues to spread within the EPPO region. In an article published in 2020, Csóka *et al*. mention its presence in Albania (first record in 2016) and in Southern Ukraine (first record in 2017). According to Zubrik *et al*. (2019), the pest was first recorded in June 2018 in southern Slovakia, on leaves of *Quercus cerris* growing in a mixed stand. In August 2018, other specimens (nymphs and adults) were observed on *Quercus robur* leaves, near Čičarovce, in eastern Slovakia.
To assess the potential host status of species, oak species and other potential hosts were checked in 20 sentinel gardens in 7 countries (Croatia, Hungary, Italy, Romania, Serbia, Slovakia and Slovenia) between 2013 and 2018, as well as in oak stands of the countries where the presence of *C. arcuata* has been known for at least 2 years.
Out of 48 oak species surveyed in sentinel gardens, 27 proved to be suitable hosts. The following 13 species are new host records: *Quercus aliena, Q. dentata, Q. faginea, Q. gambelii, Q. iberica, Q. imeretina, Q. libani, Q. lyrata, Q. mongolica, Q. pontica, Q. pyrenaica, Q. trojana, Q. variabilis.*
Outbreak populations in forests were most commonly found *on Q. robur, Q. frainetto, Q. petraea* and *Q. cerris.*

Source:
Csóka G, Hirka A, Mutun S, Glavendekić M, Mikó Á, Szőcs L, Paulin M, Eötvös CB, Gáspár C, Csepelényi M, Szénási Á, Franjević M, Gninenko Y, Dautbašić M, Muzejinović O, Zúbrik M, Netoiu C, Buzatu A, Bălăcenoiu F, Jurc M, Jurc D, Bernardinelli I, Streito JC, Avtzis D, Hrašovec B (2020), Spread and potential host range of the invasive oak lace bug [*Corythucha arcuata* (Say, 1832) – Heteroptera: Tingidae] in Eurasia. *Agricultural and Forest Entomology* **22,** 61-74. https://doi.org/10.1111/afe.12362

Zúbrik M, Gubka A, Rell S, Kunca A, Vakula J, Galko J, Nikolov C, Leontovyč R (2019) First record of *Corythucha arcuata* in Slovakia – Short Communication. *Plant Protection Science*, **55**, 129–133.

Pictures: *Corythucha arcuata*. https://gd.eppo.int/taxon/CRTHAR/photos

Additional key words: detailed record, host plants **Computer codes:** CRTHAR, AL, SK, UA

2020/170 First record of an *Erthesina* species (Hemiptera: Pentatomidae) resembling *E. fullo* in Albania

Since March 2017, an unusual stink bug species has been observed in Albania, in several localities close to the cities of Tirana and Durrës. In total, 16 observations of this Pentatomidae species have been shared on Internet platforms (iNaturalist and a Facebook group). For the moment, this insect has not been firmly identified, but according to the morphological characteristics observed on posted pictures, Lupoli *et al*. (2020) have considered that it was most probably *Erthesina fullo* (Hemiptera: Pentatomidae – yellow spotted stink bug). If confirmed, this would be the first time that *E. fullo* is reported in Albania and in Europe.

In its biology and behaviour, *E. fullo* presents many similarities *with Halyomorpha halys*. *E. fullo* is a highly polyphagous species which can feed on several economically important fruit crops, such as *Actinidia chinensis* (kiwifruit), *Citrus* spp., *Malus domestica* (apple), *Prunus armeniaca* (apricot), *P. persica* (peach), *Punica granatum* (pomegranate), as well as on many ornamental or forest tree species, such as *Fraxinus, Populus, Robinia, Salix, Ulmus*. *E. fullo* originates from Asia, where it is considered as a pest. *E. fullo* is known to be a hitchhiker pest, carried by passengers, luggage, containers, used machinery and vehicles. *E. fullo* adults aggregate and can overwinter in large numbers in human settlements. *E. fullo* is a 'stink bug' and emits an unpleasant smell when disturbed. Thus, *E. fullo* has also the potential to become a nuisance pest. In a recent review, Mi *et al*. (2020) considered that *E. fullo* is a potentially invasive species that could pose serious risks to many countries outside its native range.

EPPO note: In the framework of the EU project (DROPSA), *E. fullo* had been identified as posing a potential risk to Europe on fruit crops, in particular on citrus fruit. A geographical distribution and a preliminary list of host plants can be viewed on the EPPO Global Database: https://gd.eppo.int/taxon/ERTNFU

Source: Lupoli R, van der Heyden T, Dioli P (2020) *Erthesina* Spinola, 1837 – a new alien genus for Europe found in Albania (Hemiptera: Pentatomidae). *Heteroptera Poloniae – Acta Faunistica* **14**, 121–123.
Mi Q, Zhang J, Gould E, Chen J, Sun Z, Zhang F (2020) Biology, ecology, and management of *Erthesina fullo* (Hemiptera: Pentatomidae): A review. *Insects* **11**, 346. https://doi.org/10.3390/insects11060346

Additional key words: new record **Computer codes:** 1ERTNG, ERTNFU, AL

2020/171 First report of *Meloidogyne luci* in the Azores (Portugal)

In Portugal, the nematode *Meloidogyne luci* (EPPO Alert List) was first found in 2013 near Coimbra (in the continental part of Portugal) in a potato field (EPPO RS 2017/217). The NPPO of Portugal recently informed the EPPO Secretariat of the first finding of *M. luci* in Pico Island which is part of the Azores islands.

Samples were collected in July 2019 as part of the survey program for *Meloidogyne fallax* and *M. chitwoodi*. Nematodes were found in a small plot (500 m^2) of ware potatoes (*Solanum tuberosum*) for personal consumption in the municipality of Santo António. The plants were symptomless. The identity of the pest was confirmed by the national reference laboratory (INIAV) with biochemical and molecular tests, as well as with bioassays.

Eradication measures have been taken. They include the prohibition of growing solanaceous plants in the infested field and the requirement to disinfect equipment and tools before using them in other plots. Surveys will be intensified around the infested plot.

The pest status of *Meloidogyne luci* in Portugal is officially declared as**: Present, under eradication, only in some parts of the Member State concerned, at low prevalence**.

Source: NPPO of Portugal (2020-07).

Pictures: *Meloidogyne luci*. https://gd.eppo.int/taxon/MELGLC/photos

Additional key words: new record **Computer codes:** MELGC, PT

2020/172 Update of the situation of *Meloidogyne fallax* in Sweden

In Sweden, the nematode *Meloidogyne fallax* (EPPO A2 List) was first found in 2018 in two potato (*Solanum tuberosum*) fields (EPPO RS 2019/038) as well as in one field that had been cropped with sugarbeet (*Beta vulgaris*) in the neighbouring municipalities of Kristianstad and Scania. Following these findings, official measures on movement of soil and machinery were applied, and the farmers kept their fields under black fallow in 2019. Soil samples were taken and tested in December 2019 and no second stage juvenile (J2) larvae could be detected. The farmers were allowed to grow crops that are harvested for their aboveground plant parts. Monitoring will carry on in 2020.

In 2019-2020, official monitoring for *Meloidogyne chitwoodi* and *M. fallax* was conducted, and 215 soil samples were taken according to EPPO Standard PM 9/17 National regulatory control system for *Meloidogyne chitwoodi* and *Meloidogyne fallax*. In June 2020, *M. fallax* was detected in one field (2 J2/100 mL soil) in the municipality of Laholm, also in Southern Sweden but on the west coast. The field was planted with peas for canning (*Pisum sativum*). It is suspected that the nematode was introduced either by cropping of potatoes in previous years or by soil from infested fields. Ware potatoes (*Solanum tuberosum* cv. Elana) were cropped in the infested field in 2019 and trace-back investigation of the seed source will be initiated. Additional monitoring surveys on the entire production site are planned after harvest of peas at the infested field, starting in the beginning of July.

The pest status of *Meloidogyne fallax* in Sweden is officially declared as**: Present, under eradication.**

Source: NPPO of Sweden (2020-02, 2020-06).

Pictures: *Meloidogyne fallax*. https://gd.eppo.int/taxon/MELGFA/photos

Additional key words: detailed record **Computer codes:** MELGFA, SE

2020/173 First report of tomato brown rugose fruit virus in Cyprus

The NPPO of Cyprus recently informed the EPPO Secretariat of the first detection of tomato brown rugose fruit virus (*Tobamovirus*, ToBRFV – EPPO Alert List) on its territory. The virus was detected in a greenhouse (4 ha) producing tomato fruit (*Solanum lycopersicum)* in the village of Ayia Napa (district of Ammochostos / Famagusta) on the eastern coast of Cyprus, after the producer notified symptoms to the authorities. The identity of the pathogen was confirmed by the Official National Laboratory on July 15, 2020. Official measures will be taken to prevent any further spread of the virus. Once the fruit has been harvested, containment measures will be switched to eradication.
The pest status of *Tomato brown rugose fruit virus* in Cyprus is officially declared as: **Transient, actionable, under eradication**.

Source: NPPO of Cyprus (2020-08).

Pictures: *Tomato brown rugose fruit virus*. https://gd.eppo.int/taxon/TOBRFV/photos

Additional key words: new record **Computer codes:** TOBRFV, CY

2020/174 Eradication of Grapevine flavescence dorée phytoplasma from Spain

The NPPO of Spain recently informed the EPPO Secretariat of the eradication of Grapevine flavescence dorée phytoplasma (EPPO A2 List) from its territory. In 2010, Grapevine flavescence dorée phytoplasma was detected in the municipality of Capmany, Girona province, in the Autonomous Region of Cataluña. The infected area was composed of 0.60 ha of vineyard (*Vitis vinifera*) and 244 isolated plants of *Vitis* sp. A demarcated area was established (14.60 ha) and eradication measures were implemented. Intensive surveys have been carried out since then. Grapevine flavescence dorée phytoplasma has not been detected in the area since 2013. It is therefore considered as eradicated in the Autonomous Region of Cataluña and in Spain.
The pest status of Grapevine flavescence dorée phytoplasma in Spain is officially declared as: **Absent, pest eradicated.**

Source: NPPO of Spain (2020-08).

Pictures: *Grapevine flavescence dorée phytoplasma*. https://gd.eppo.int/taxon/TRIZER/photos

Additional key words: eradication **Computer codes:** PHYP64, ES

2020/175 Surveys for phytoplasmas in the Russian Federation

Surveys for '*Candidatus* Phytoplasma solani' (EPPO A2 List) associated with bois noir disease and for Grapevine flavescence dorée phytoplasma (EPPO A2 List) were performed in Southern Russia. In 2012-2018, more than 600 samples of grapevine (*Vitis vinifera*) were tested by molecular analysis. This survey confirmed the presence of '*Candidatus* Phytoplasma solani' in Crimea (in 245.44 ha in 2018). The main vector is *Hyalesthes obsoletus*. The presence of Grapevine flavescence dorée phytoplasma was not detected. However, the vector *Scaphoideus titanus* was detected (Bondarenkolda *et al.*, 2019).

Surveys for '*Candidatus Phytoplasma* mali' (associated with apple proliferation, EPPO A2 List), and '*Candidatus* Phytoplasma pyri' (associated with pear decline - EPPO A2 List) were conducted in 2016-2018 in Central and Southern Russia. In total, 372 samples of pear (*Pyrus communis*), 355 of apple (*Malus domestica*), and 130 of quince (*Cydonia oblonga*) were analyzed by molecular tests. One sample tested positive for '*Ca.* P. pyri'; it was detected in a research station in 2017. The infected tree was uprooted, and further testing showed that the site was then pest free. All commercial orchards are considered free from both phytoplasmas (Bashkirova *et al.*, 2019).

Source: Bashkirova IG, Bondarenko GN, Kornev KP (2019) Study of methods for detecting quarantine phytoplasma's from the apple proliferation group on the territory of Russia. *Phytopathogenic Mollicutes* **9**(1), 211-212.DOI:10.5958/2249-4677.2019.00106.3
Bondarenkolda G, BashkirovaIda I, Aleynikova NV, Radionovskaya YE (2019) Monitoring of 'Candidatus Phytoplasma solani' and "flavescence dorée" phytoplasma in south regions of the Russian Federation. *Phytopathogenic Mollicutes* **9**(1), 209-210. DOI: 10.5958/2249-4677.2019.00105.1

Additional key words: detailed record, absence **Computer codes:** PHYP64, PHYPMA, PHYPPY, PHYPSO, SCAPLI, HYAEOB, RU

2020/176 Pathotypes of *Synchytrium endobioticum* in Turkey

In Turkey, *Synchytrium endobioticum* (EPPO A2 List) was first found in 2003 (EPPO RS 2005/034) and was later found in 3 provinces in Central Anatolia Region and 2 provinces in the Black Sea Region. Different pathotypes occurs, some have been identified as European pathotypes 1(D1), 6(O1), 18(T1), and one new pathotype has been named 38(Nev). In order to characterize other pathotypes present in Turkey, a set of potato varieties used in Ukraine was used to test 14 isolates collected from Nevşehir, Niğde and Kayseri. None of the isolates belonged to the Ukrainian pathotypes but the 14 isolates could be assigned to 7 pathotypes differentiated by Ukrainian potato varieties.

Source: Çakir E, Zelya Ag, Maden S (2019) Comparison of the Turkish pathotypes of potato wart caused by *Synchytrium endobioticum* with the Ukranian pathotypes. *Plant Protection Bulletin* **59** (1), 1-6. DOI: 10.16955/plantorb.422160

Pictures *Synchytrium endobioticum*. https://gd.eppo.int/taxon/SYNCEN/photos

Additional key words: detailed record **Computer codes:** SYNCEN, TR

2020/177 Update of the situation of *Ceratocystis platani* in Switzerland

In Switzerland, the presence of *Ceratocystis platani* (EPPO A2 List) causing the canker stain of plane was first observed in 1983 in Ticino. *C. platani* also occurred later in Canton of Vaud (1987) and Canton of Geneva (2001-2003). No symptomatic plants have been observed in Canton of Geneva and Canton of Vaud for at least 10 years and spores of the fungus were last detected in 2009 in Geneva using spore traps.
In Canton of Ticino, *C. platani* is still present, with a restricted distribution: there are 6 demarcated areas established in Ticino and official measures have been taken with the aim to eradicate *C. platani*. The demarcated areas consist of infected zones (width of at least 300 m, including all plants known to be infected) and buffer zones of a width of at least 1

km, surrounding the infected zones. In these demarcated areas, a total of 23 newly infected plane trees were removed in winter 2019/2020. A map of the regulated areas in available at https://www4.ti.ch/fileadmin/DFE/DE-SA/fito/Cartine_delimitazione_CCP.pdf. Monitoring is ongoing.
The pest status of *Ceratocystis platani* in Switzerland is officially declared as**: Present, under eradication, only in some parts of the Member State concerned**.

Source: NPPO of Switzerland (2020-06).

Pictures: *Ceratocystis platani*. https://gd.eppo.int/taxon/CERAFP/photos

Additional key words: detailed record **Computer codes:** CERAFP, CH

2020/178 New data of host range of *Peronospora belbahrii*, causal agent of basil downy mildew

In Israel, inoculation studies were conducted on 102 plant species and cultivars to assess the host range of *Peronospora belbahrii* within the Lamiaceae family. Of the 22 genera tested in the growth chambers and in the field, sporulation occurred in plants belonging to the following six genera: *Ocimum, Salvia, Rosmarinus* (now synonymized with *Salvia*), *Nepeta, Agastache,* and *Micromeria*. Restricted lesions with no sporulation occurred in plants belonging to four genera: *Lamium, Mentha, Majorana,* and *Salvia*. Plants of all other genera showed no symptoms.
This is the first report on the susceptibility of *Salvia eigii, S. fruticosa,* and *S. pinnata* as well as rosemary (*Rosmarinus officinalis*), white leaved savory (*Micromeria fruticosa*), and Syrian catnip (*Nepeta curviflora*) to downy mildew caused by *P. belbahrii* in Israel. However further studies should be conducted to assess if natural infection is possible.

Source: Naim YB, Falach-Block L, Ben-Daniel B-H, Cohen Y (2019) Host range of *Peronospora belbahrii*, causal agent of basil downy mildew, in Israel. *European Journal of Plant Pathology* **155**(3), 789–799. doi:10.1007/s10658-019-01809-9

Pictures: *Peronospora belbahrii*. https://gd.eppo.int/taxon/PEROBE/photos

Additional key words: host plants **Computer codes:** PEROBE

2020/179 *Solanum carolinense* in the EPPO region: addition to the EPPO Alert List

Why
Solanum carolinense (Solanaceae, horsenettle) is a weedy species in its native range (North America) where it can have a negative impact on agriculture and crop yields. It has already been recorded in crops such as maize and sugar beet in Germany and Northern Italy and projections of climatic suitability under current climate conditions reveal considerable scope for further invasion in Central European countries.
Due to its extensive root system and rapid growth, effective control is difficult. Thus, yield losses and control costs are potentially high.

Geographical distribution
EPPO region: Austria, Germany, Italy, the Netherlands.
Asia: Bangladesh, China, India, Japan, Nepal, South Korea.
North America: Canada, Mexico, USA (native).
South America: Brazil.
Oceania: Australia, New Zealand.

Morphology
S. carolinense is a perennial, herbaceous species. 30-120 cm tall, erect, loosely branched. Stems armed with slender yellowish spines up to 5 mm long.
Leaves: ovate to oblong, irregularly wavy-toothed or lobed, 4-14 cm long by 2-6 cm wide, both surfaces stellate pubescent with yellowish hairs, petioles up to 20 mm long.
Flowers: in open cymose racemes on prickly pedicels, calyx lobes 6-7 mm long, spineless, corolla violet or occasionally white, 5 lobed, approximately 3 cm in diameter, mature berry globose, 10-20 mm in diameter, pale orange or yellow, smooth and glabrous.
Seeds: 2 mm long, obovate, flattened, granulose, yellow or light brown.

Biology and Ecology
S. carolinense reproduces by seed and roots. Each fruit can produce between 40-170 seeds. It can grow in a wide range of soil types and grows well in sandy or gravelly soils. The extensive root system (both vertical and horizontal) has adventitious buds. The seedbank longevity can be up to 4 years when buried at depths of 8-12 cm.

Habitats
Ruderal habitats, roadsides, riverbanks and urban habitats (gardens), agricultural habitats (grain and vegetable fields, orchards and pastures).

Pathways for movement
Contaminant of seed (soybean and maize). There is also the potential that the species may enter the EPPO region as a contaminant of grain, as well as with water and soil movement.

Impacts
Yield losses attributed to the weed have been reported in maize, groundnut and bean in the USA. It is also reported as a weed in vegetable fields and orchards. It is also poisonous to livestock and can be an alternate host to a variety of insect pests.

Control
Any control of established populations can be very difficult due to the extensive root system and therefore preventing the establishment of the species is the most effective control measure. *S. carolinense* is susceptible to a wide range of herbicides. Chemical control (e.g. glyphosate) can be effective when used at the fruit bearing stage.

Sources
Bassett IJ, Munro DB (1986) The biology of Canadian weeds: 78, *Solanum carolinense* L. and *Solanum rostratum* Dunal. *Canadian Journal of Plant Science* **66**, 977-991.

Follak S (2019) Distribution and small-scale spread of the invasive weed *Solanum carolinense* in Austria. *EPPO Bulletin*, DOI: 10.1111/epp.12644

Pictures *Solanum carolinense*. https://gd.eppo.int/taxon/SOLCA/photos

Additional key words: invasive alien plant, alert list **Computer codes:** SOLCA

2020/180 First report of *Perilla frutescens* in Bosnia and Herzegovina

Perilla frutescens (Lamiaceae) is an annual herbaceous species that grows up to 2 m tall. It is native to the Himalayas and South East Asia. *P. frutescens* is divided into three varieties (*P. frutescens* var. *frutescens*, *P. frutescens* var. *purpurascens* and *P. frutescens* var. *crispa*). Within the EPPO region, *P. frutescens* has been reported as alien in Belgium, Croatia (Dalmatia), Czech Republic, European Russia, Germany, Hungary, Italy, Montenegro, Romania, Spain, Turkey and the United Kingdom. The species is invasive in parts of North America where it grows along roadsides, ditches, forest margins, and on hillsides. It spreads to natural areas, especially disturbed areas. It can disrupt native ecosystems by outcompeting native plants. It is also toxic to livestock. The first finding of *P. frutescens* for Bosnia and Herzegovina was recorded in Central Bosnia, near Jelaške village at the beginning of August 2018. Only a few plants were observed at a rubbish dump. The species has recently been recorded along the banks of the Krivaja River in the vicinity of the village Jelaške near the Olovo town. It is unknown how this species was introduced into Bosnia and Herzegovina, but it is most likely as a garden escapee. Further monitoring of the species should take place.

Source: Maslo S, Šarić Š, Sarajlic N (2019) *Perila frutescens* (L.) Britton (Lamiaceae), a new alien species in the flora of Bosnia and Herzegovina. *Prosinac* **7**, 2.

Additional key words: new record **Computer codes:** PRJFR, BA

2020/181 Positive effects of biological control of *Pistia stratiotes*

Pistia stratiotes (Araceae: EPPO A2 List) is a free-floating perennial freshwater macrophyte native to South America. The species is invasive in many regions of the world including Africa, Asia, Central America and the Caribbean, North America, and Oceania. In the EPPO region, the species is established in thermally abnormal waters in Slovenia and Germany and is invasive in the south of France. Management of *P. stratiotes,* in the form of biological control has been implemented by several countries (e.g. Australia, South Africa, USA) using *Neohydronomus affinis* (Coleoptera: Curculionidae). Using large outdoor mesocosms, the effect of *P. stratiotes* invasion on benthic macroinvertebrate biodiversity and its recovery after the introduction of *N. affinis* was evaluated. Three treatments were set-up and replicated and included (1) with *P. stratiotes*, (2) with *P. stratiotes* and the biocontrol agent and (3) no *P. stratiotes* (control). Each treatment was measured for benthic macroinvertebrate biodiversity over a 36-week period. Mats of *P. stratiotes* altered the community composition and reduced the benthic macroinvertebrate diversity compared to the control. The biocontrol agent reduced the percentage cover of *P. stratiotes* which

resulted in a significant increase in dissolved oxygen and the benthic macroinvertebrate community recovered to a level similar to the control.

Source: Coetzee JA, Langa SDF, Motitsoe SN, Hill MP (2020) Biological control of water lettuce, *Pistia stratiotes* L., facilitates macroinvertebrate biodiversity recovery: a mesocosm study. *Hydrobiologia*. DOI: 10.1007/s10750-020-04369-w

Pictures *Pistia stratiotes*. https://gd.eppo.int/taxon/PIIST/photos

Computer codes: PIIST, ZA

Additional key words: biological control, invasive alien plants

2020/182 *Spiraea tomentosa:* current and future distribution

Spiraea tomentosa (Rosaceae) is native to North America and has been utilized as an ornamental species in the EPPO region since the 18th century. In the EPPO region, the species is invasive in Belgium, Denmark, Germany, Norway, Poland, Slovenia and the United Kingdom. The species can have negative impacts on native plant communities, especially wetland habitats. However, to-date little is known about its biology, ecology, and potential distribution in Europe. Currently, the species shows a distribution in Europe which is somewhat random (i.e. not correlated with climatic suitability but rather due to the areas where the species has been planted). The current study modelled the current and future distribution of *S. tomentosa* in Europe using occurrence data from the Global Biodiversity Information Facility (GBIF) and supplemented with data from the literature. The model was performed using MaxEnt with bioclimatic variables. The results showed that the current distribution of *S. tomentosa* is significantly narrower than the potential distribution of suitable climate niches – indicating that future range expansion can be expected, and this will potentially be exacerbated by climate change. Management strategies should prevent further invasions of the species in areas where it may establish and cause negative impacts.

Source: Wiatrowska B, Pietras M, Kolanowska M, Danielewicz W (2020) Current occurrence and potential future climate niche distribution of the invasive shrub *Spiraea tomentosa* L. in its native and non-native ranges. *Global Ecology and Conservation*. DOI: https://doi.org/10.1016/j.gecco.2020.e01226

Pictures *Spiraea tomentosa*. https://gd.eppo.int/taxon/SPVTO/photos

Additional key words: new record **Computer codes:** SPVTO

2020/183 Checklist of alien flora of Algeria

This checklist includes alien flora to Algeria whose presence is due to intentional or accidental introduction because of human activity. Those taxa included should (1) have been introduced (or presumed to be introduced) through activities related to humans or their domestic animals, whether intentionally or not, and (2) have been found in the natural environment. In total, 211 alien plants (206 species and 5 subspecies) belonging to 151 genera and 51 families were recorded in Algeria from the current literature. Most of the alien plants originated from North America (31.3%) and the Mediterranean Basin (19.4%). Nearly half (43%) are therophytes (short lived annual species) and occur in highly disturbed habitats (62%), such as arable fields (44.5%) or ruderal habitats (17.5%). Introduced plants for ornamental purposes account for almost half (43.6%) of the alien flora. A large proportion (51.2%) of the alien species are naturalized in Algeria, with about 16% considered as invasive or potentially invasive (Table 1).

Table 1. List of alien plant species considered invasive or potentially invasive in Algeria. Invasive score: 1 = with a clear invasive behaviour, although by the moment it is only found in largely disturbed systems. It is needed to monitor its further behaviour. 2 = it is known as invasive and although it is not threatening natural or man-made ecosystems, it is suspected to do it in the near future. 3 = dangerous (invasive and causing ecological damage or alteration) for natural ecosystems.

Species	Family	Invasive score
Abutilon theophrasti	Malvoideae	1
Acacia mearnsii	Fabaceae	3
Acacia melanoxylon	Fabaceae	1
Acacia saligna	Fabaceae	3
Agave americana	Asparagaceae	2
Ageratina adenophora	Asteraceae	2
*Ailanthus altissima**	Simaroubaceae	3
*Ambrosia artemisiifolia**	Asteraceae	2
*Carpobrotus acinaciformis**	Aizoaceae	2
*Carpobrotus edulis**	Aizoaceae	3
Chenopodium ambrosioides	Amaranthaceae	1
Cotula coronopifolia	Asteraceae	3
Cuscuta campestris	Convolvulaceae	3
Elaeagnus angustifolia	Elaeagnaceae	1
Erigeron bonariensis	Asteraceae	2
Erigeron canadensis	Asteraceae	2
Erigeron karvinskianus	Asteraceae	1
Ipomoea indica	Ipomoea	2
*Fallopia baldschuanicum**	Polygonaceae	2
Lantana camara	Verbenaceae	1
Leucaena leucocephala subsp. *glabrata*	Mimosoideae	2
Nicotiana glauca	Solanaceae	2
Opuntia ficus-indica	Cataceae	3
*Oxalis pes-caprae**	Oxalidaceae	3
*Paspalum distichum**	Panicoideae	3
Phytolacca americana	Phytolaccaceae	3
Polygala myrtifolia	Polygalaceae	3
Ricinus communis	Euphorbiaceae	2
Robinia pseudoacacia	Fabaceae	3
*Solanum elaeagnifolium***	Solanaceae	3
Symphyotrichum squamatum	Asteraceae	2
Xanthium orientale subsp. *italicum*	Asteraceae	1
Xanthium spinosum	Asteraceae	2
Xanthium strumarium subsp. *strumarium*	Asteraceae	2

** EPPO List of Invasive Alien Plants*

*** EPPO A2 List*

Source: Meddour R, Sahar O, Fried G (2020) A preliminary checklist of the alien flora of Algeria (North Africa): taxonomy, traits and invasiveness potential. *Botany Letters*. DOI: https://doi.org/10.1080/23818107.2020.180277

Additional key words: invasive alien plants

Computer codes: ABUTH, ACAMR, ACAME, ACASA, AGVAM, AILAL, AMBEL, ASTSQ, BIKBA, CBSAC, CBSED, CHEAM, CULCO, CVCCA, EUPAD, ELGAN, ERIBO, ERICA, ERIKA, IPOAC, LANCA, LUALG, NIOGL, OPUFI, OXAPC, PASDS, PHTAM, POGMY, RIICO, ROBPS, SOLEL, XANSI, XANSP, XANST, DZ