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2013/049 Situation of *Anoplophora glabripennis* in Switzerland

In Switzerland, *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) was first found in September 2011. Several dead specimens were discovered in the canton of Friburg and then in Thurgau (EPPO RS 2011/189 and 2011/239). In May 2012, the pest was also detected by sniffer dogs on a consignment of granite stones at the Rhine port of Basel (EPPO RS 2012/148). In July 2012, an outbreak of *A. glabripennis* was discovered by a gardener of the public green service of the municipality of Winterthur, canton of Zürich. An extensive information campaign has been carried out in Switzerland since the beginning of 2012, thus professionals in the area of horticulture and forestry are paying particular attention to symptoms possibly caused by longhorn beetles. 30 *Acer pseudoplatanus* trees planted along the 'Sulzer-Allee' and 1 *Salix caprea*, within an area of 30 m x 150 m, were found to be infested by *A. glabripennis*. The majority of the infested trees exhibited several exit holes and egg deposits. Larvae (including last instar larvae) were found when cutting tree parts, and approximately 140 adult beetles were caught during the subsequent felling of the trees (in addition some beetles were able to escape).
The origin of this outbreak is unknown. The 'Sulzer-Allee' is located in a former industrial area being reconverted into a residential quarter. Along this avenue, 66 trees of *A. pseudoplatanus* (of which 30 were to be infested) had been planted in 2008. According to the extent of the outbreak, it is assumed that *A. glabripennis* was introduced 4-6 years ago, probably with infested wood packaging material. The history of the trees (origin, pest status of the place of production) is also being investigated, as an introduction of the pest with nursery stock cannot yet be excluded.
Immediate action consisted of the complete destruction of all 66 trees of the 'Sulzer-Allee' and the infested *S. caprea*. An extensive detection survey is being carried out by the phytosanitary authorities of the canton of Zürich, within a radius of 500 m around the infested area. Three sniffer dogs will also be used in this survey. The monitoring design and the detailed control measures will be decided once the results of the current survey are completed.
The pest status of *Anoplophora glabripennis* in Switzerland is officially declared as: **Present, under eradication.**

Source: NPPO of Switzerland (2013-02).

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

2013/050 Update on the situation of *Aromia bungii* in Campania (IT)

In Italy, the presence of *Aromia bungii* (Coleoptera: Cerambycidae – EPPO Alert List) was first reported in September 2012 in Campania region. The pest was discovered in urban areas between Napoli and Pozzuoli (EPPO RS 2012/204). *A. bungii* was observed on scattered apricot (*Prunus armeniaca*), cherry (*P. avium*), and plum (*P. domestica*) trees. Numerous larvae at different stages could be retrieved from these infested trees. In order to eradicate the pest, phytosanitary measures were ordered by the Regional Plant Protection Service of Campania and officially published in a regional decree in November 2012. These measures include: 1) destruction of infested trees with the removal and destruction of the stump; 2) insecticide treatments against adult beetles in the infested areas; 3) a specific monitoring programme. In addition, a communication campaign has been launched to inform researchers, growers, municipalities, and the general public about this pest. Posters, brochures, web pages, videos, press releases, papers, TV adverts have been prepared, and meetings are also being organized to inform all interested

parties. According to the first results of the monitoring programme, A. *bungii* has been detected in limited areas in the province of Napoli. It was found on approximately 300 *Prunus* trees in the municipalities of Napoli, Pozzuoli, Marano, and Monte di Procida. Infested trees (mainly *P. armeniaca* and to a lesser extent *P. avium* and *P. domestica*) were essentially found in private gardens and orchards (sometimes in a state of semi-abandonment) in urban environments.
The situation of *Aromia bungii* in Italy can be described as follows. **Present, first reported in 2012, in several localities in the province of Napoli (Campania region), under eradication.**

Source: NPPO of Italy (2013-03).

INTERNET
Regione Campania – Assessorato Agricoltura.
Cerambicide dal collo rosso
http://www.agricoltura.regione.campania.it/difesa/aromia.html
Decreto Dirigenziale n. 426 del 14/11/2012 'Misure fitosanitarie regionali di controllo ed eradicazione di *Aromia bungii* in Campania ai sensi del Decreto Legislativo 19 agosto 2005, n. 214 et sue modifiche'.
http://www.agricoltura.regione.campania.it/difesa/files/DRD_426-14-11-12.pdf

Additional key words: detailed record **Computer codes:** AROMBU, IT

2013/051 Incursion of *Batocera rubus albofasciata* in Italy

At the end of summer 2011, a single adult beetle of *Batocera rubus albofasciata* (Coleoptera: Cerambycidae) was found on the trunk of a tree in a forest of *Quercus* and *Castanea* in the municipality of Merola di Carpineti (province of Reggio-Emilia, Emilia-Romagna region), Italy. Monitoring was carried out in the area where the pest was observed using light traps and beating, but no further adult specimens were found. No signs of the insect (i.e. exit holes or frass) were detected on potential host plants. For the moment, the origin of this beetle remains unknown, but a questionnaire has been sent to 18 municipalities located around the finding site to try to identify amateurs or traders of bonsais and insects. Identified persons and companies will be contacted to verify whether the pest might have been accidentally introduced as entomological specimens or with bonsais or other exotic plants. Finally, in February 2012 a meteorological station close to the finding place recorded a minimum temperature of minus 17.5°C. It is therefore supposed that, if adults of *B. rubus albofasciata* were still present in this area, it is very unlikely that they have survived.
The pest status of *Batocera rubus albofasciata* in Italy is officially declared as: **Transient, after the first year from the finding, no new specimens or signs of the pest were found. Further investigations in progress.**

Note: It can be recalled that in 2011, the NPPO of France had also intercepted *B. rubus*. A single adult had emerged from a *Ficus macrocarpa* bonsai which was subsequently destroyed (see EPPO RS 2011/140).

Source: NPPO of Italy (2013-03).

Additional key words: incursion **Computer codes:** BATCRB, IT

2013/052 First reports of *Bactrocera invadens* in Mayotte and Madagascar

In the Indian Ocean islands, *Bactrocera invadens* (Diptera: Tephritidae – EPPO A1 List) was detected in 2005 in the Comoros. Since then, it spread to the islands of Mayotte and Madagascar.

- **Mayotte**

In 2007, the presence of *B. invadens* was confirmed in Mayotte.
The situation of *Bactrocera invadens* in Mayotte can be described as follows: **Present, first found in 2007.**

- **Madagascar**

The detection of *B. invadens* in Comoros and Mayotte triggered the implementation of a surveillance programme in Madagascar. A trapping network was deployed in the Northern and Northwestern part of the country. In 2010, the presence of *B. invadens* was recorded for the first time: 2 males were caught in Toamasina (Atsinanana market - Eastern part of the Island) and 1 near Ambohijafy (near Antananarivo, Analamanga region). In November 2011, numerous males were caught in traps placed in mango orchards near Mahajanga (Boeny region, Northwestern part of the Island). A wider trapping programme was implemented in different regions of Madagascar, and in 2012 the presence of *B. invadens* was confirmed in the following regions: Analamanga, Atsinanana, Boeny, Menabe, and Sava. It is now considered that *B. invadens* is established in Madagascar. Surveillance is continuing in Madagascar to determine the distribution of the pest and study the population fluctuations over the seasons. In addition, studies will be conducted to determine the host range of *B. invadens* and its damage to crops.
The situation of *Bactrocera invadens* in Madagascar can be described as follows: **Present, first found in 2010 and then trapped in different regions (Analamanga, Atsinanana, Boeny, Menabe, Sava).**

Source: INTERNET

Direction de l'Alimentation, de l'Agriculture et de la Forêt de la Réunion. Actualité phytosanitaire (2011-02-24). http://daaf974.agriculture.gouv.fr/IMG/pdf/520_cle871991.pdf

Invasive Fruit Fly Pests in Africa. A diagnostic tool and information reference for the four Asian species of fruit fly (Diptera, Tephritidae) that have become accidentally established as pests in Africa, including the Indian Ocean Islands by Marc De Meyer, Salah Mohamed & Ian M. White. http://www.africamuseum.be/fruitfly/AfroAsia.htm

Raoelijaona, JCY, Raoelijaona AR, Ratovonomenjanahary TZ, Brunet C, de Meyer M, Vayssières JF, Quilici S (2012) Situation of *Bactrocera invadens* (Diptera: Tephritidae) in Madagascar. Abstract of a paper presented at the TEAM 2nd International Meeting 'Biological invasions of Tephritidae ecological and economic impacts' (Kolymbari, Crete (GR), 2012-07-03/06) p 141. http://www.teamfly2012.com/public/conferences/1/schedConfs/1/abstract_book_2nd_team_meeting.pdf

Personal communication with Olivier Pinguet, NPPO of Réunion (2013-03).

Additional key words: new record **Computer codes:** BCTRIN, MG, YT

2013/053 First report of *Bactrocera zonata* in Sudan

In July 2011, *Bactrocera zonata* (Diptera: Tephritidae – EPPO A1 List) was detected for the first time in Sudan. The pest was trapped in 3 locations in Wad Medani (Gezira state). Since this initial finding, a trapping programme has been implemented to monitor the presence and abundance of *B. zonata* in Wad Medani, Elkamlin (both in Gezira state) and Singa (Sinnar State). This survey confirmed the presence of *B. zonata* in Wad Medani, as well as in Singa and Elkamlin. In Wad Medani, it was caught in all trapping sites. In Singa and Elkamlin, it was caught in smaller numbers and only in 2 and 1 trapping sites, respectively. During this trapping programme, another fruit fly, *B. invadens*, was also caught.
The situation of *Bactrocera zonata* in Sudan can be described as follows: **Present, first found in 2011, caught in the states of Gezira and Sinnar.**

Source: Salah FEE, Abdelgader H, de Villiers M (2012) The occurrence of the peach fruit fly, *Bactrocera zonata* (Saunders) (Tephritidae) in Sudan. Abstract of a paper presented at the TEAM 2nd International Meeting 'Biological invasions of Tephritidae ecological and economic impacts' (Kolymbari, Crete (GR), 2012-07-03/06) p 128. http://www.teamfly2012.com/public/conferences/1/schedConfs/1/abstract_book_2nd_team_meeting.pdf

Additional key words: new record **Computer codes:** DACUZO, SD

2013/054 First report of *Rhagoletis completa* in Hungary

The NPPO of Hungary recently informed the EPPO Secretariat of the first record of *Rhagoletis completa* (Diptera: Tephritidae – EU Annexes) on its territory. In October 2011, scientists identified larvae of *R. completa* in walnut (*Juglans regia*) husks in 2 private gardens located near the town of Kőszeg (county Vas, Western Hungary). This finding was reported to the NPPO in December 2011. At the end of June 2012, NPPO inspectors placed baited yellow sticky traps in these 2 private gardens and in July 2012, 6 adults of *R. completa* were caught on 4 traps. Specimens were identified both morphologically and by PCR. When the pest was detected in July, walnuts were not affected but during inspections carried out at the end of August, 2-3% of the fruit had turned brown to black and fallen prematurely from the trees. Phytosanitary measures were taken to prevent any further spread. The soil was protected with a cover to avoid pupation in the soil. The garden owners were ordered to continuously collect and destroy all fallen fruit, and to apply insecticide treatments every 10-14 days until the end of the flight period of the pest. In addition, an intensive survey was launched (100 yellow sticky traps were deployed in county Vas and neighbouring areas). As a result, *R. completa* was detected in 8 and 6 municipalities of the counties of Vas and Zala, respectively. All infested trees were found in private gardens and along the roads between municipalities. No affected trees were found in walnut orchards. Information was provided to the municipalities concerned on how to prevent the spread of the pest (soil cover, collection of fallen fruit, insecticide treatments). It is suspected that *R. completa* may have spread naturally from Austria and Slovenia or may have been carried by vehicles.
The pest status of *Rhagoletis completa* in Hungary is officially declared as: **Present only in some areas (Western Hungary at the Austrian and Slovenian borders).**

Source: NPPO of Hungary (2013-02).

Additional key words: new record **Computer codes:** RHAGCO, HU

2013/055 *Rhagoletis cingulata* detected for the first time in Languedoc-Roussillon region (FR)

In France, *Rhagoletis cingulata* (Diptera: Tephritidae – EPPO A2 List) was detected for the first time in 2010 in 1 production site (*Prunus* sp.) in Provence-Alpes-Côte d'Azur and then in another production site (*Juglans regia*) in Aquitaine (EPPO RS 2010/181 and 2011/174). Eradication measures were applied on these sites and a national trapping programme was initiated to monitor the pest. In September 2012, 2 adults of *R. cingulata* were identified on a trap which was located in a cherry tree (*Prunus avium* cv. 'Noir de Meched') near experimental cherry orchards in Languedoc-Roussillon. No other captures were made. Phytosanitary measures were taken to eradicate the pest. The grower was ordered to apply chemical treatments during the vegetation period, to avoid leaving over ripe cherries on the trees, and to mechanically destroy all fallen fruits.
The pest status of *Rhagoletis cingulata* in France is officially declared as: **Transient, under eradication.**

Source: NPPO of France (2013-02).

Additional key words: detailed record **Computer codes:** RHAGCI, FR

2013/056 First report of *Pseudococcus viburni* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of the first record of *Pseudococcus viburni* (Hemiptera: Pseudococcidae) on its territory. In Heilbronn (Baden-Württemberg), 7 catalpa trees (*Catalpa bignonioides*) in a car park were found to be infested by *P. viburni* in October 2012. In 2011, similar mealybugs had been found on these trees but could not be identified morphologically (no adults could be collected at that time). The source of this infestation is unknown. Infested trees and surrounding plants have been destroyed, and inspections on other plants are continuing in this car park. An express PRA has been conducted and concluded that *P. viburni* may present a medium risk to Germany and the European Union. The overall uncertainty of the PRA was estimated as medium due to the general lack of information about the pest distribution and potential for spread under the German climatic conditions.
The pest status of *Pseudococcus viburni* in Germany is officially declared as: **Transient, under eradication, in one area (in Baden-Württemberg).**

EPPO note: *P. viburni* is a polyphagous species which can be found on most parts of its hosts including the main roots, fruit, leaves, stems, and under bark crevices. It attacks economically important crops such as: apple (*Malus domestica*), citrus, grapevine (*Vitis vinifera*), pear (*Pyrus communis*), pomegranate (*Punica granatum*), stone fruit (*Prunus* spp.), strawberry (*Fragaria ananassa*), tomato (*Solanum lycopersicum*), walnut (*Juglans regia*). This mealybug can also be found on many ornamental plants. In vineyards, *P. viburni* has been shown to transmit viruses (Grapevine virus A, Grapevine virus B, Grapevine leaf roll-associated virus 3). Information is generally lacking on the economic impact of *P. viburni*. It is generally considered as a minor pest but in some cases, control measures are necessary. For example, in the last decade, *P. viburni* has been causing damage in tomato glasshouses and apple orchards in France. This has triggered research on the possible use of parasitoids such as *Pseudaphycus flavidulus* (Hymenoptera: Encyrtidae). *P. viburni* is a cosmopolitan species which is thought to originate from South America. Due to some taxonomic confusion, both its origin and geographical distribution remain difficult to establish with certainty. It is currently considered that *P. viburni* belongs to the

P. maritimus complex, and that *Dactylopius affinis, P. affinis, P. capensis, P. indicus, P. latipes, P. longispinus* var. *latipes, P. malacearum, P. nicotianae, P. obscurus* are synonyms.
The geographical distribution given below has been summarized from ScaleNet:

EPPO region: Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Israel, Italy (including Sardegna, Sicilia), Morocco, Netherlands, Portugal (including Azores, Madeira), Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom (Channel Islands, England and Wales, Scotland).

Africa: Morocco, Saint Helena, South Africa, Zimbabwe.

Asia: Afghanistan, China, Indonesia (Java), Iran, Israel, Republic of Korea, Philippines, Sri Lanka.

North America: Canada (British Columbia, New Brunswick), Mexico, USA (Alabama, California, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Utah, Virginia, Washington, West Virginia, Wisconsin).

Central America and Caribbean: Costa Rica, Cuba, Guadeloupe, Guatemala, Jamaica, Panama.

South America: Argentina, Bolivia, Brazil (Espirito Santo, Minas Gerais, Rio de Janeiro, Rio Grande do Sul, Sao Paulo), Chile, Ecuador, Peru, Uruguay, Venezuela.

Oceania: Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria, Western Australia), New Zealand.

Source: NPPO of Germany (2013-01).

Ben-Dov Y (1994) A systematic catalogue of the mealybugs of the world (Insecta: Homoptera: Coccoidea: Pseudococcidae and Putoidae) with data on geographical distribution, host plants, biology and economic importance. Intercept Limited, Andover (GB), 686 pp.
Charles JG (2011) Using parasitoids to infer a native range for the obscure mealybug, Pseudococcus viburni, in South America. *BioControl 56(2), 155-161.*
Garau R, Prota VA, Boscia D, Fiori M, Prota U (1995) Pseudococcus affinis Mask., new vector of grapevine trichoviruses A and B. *Vitis* **34**(1), 67-68.
Golino DA, Sim ST, Gill R, Rowhani A (2002) California mealybugs can spread grapevine leafroll disease. *California Agriculture* **56**(6), 196-201.
INTERNET
ScaleNet. *Pseudococcus viburni*. http://www.sel.barc.usda.gov/catalogs/pseudoco/Pseudococcusviburni.htm
Julius Khün-Institut. Express PRA on *Pseudococcus viburni* dated 2013-03-10 (in German). http://pflanzengesundheit.jki.bund.de/dokumente/upload/b3733_pseudococcus_viburni-express-pra.pdf
Siham M, Kreiter P (2009) Lutte contre *Pseudococcus viburni en* verger de pommier. Mise en place d'un réseau de lâcher d'auxiliaires. *Infos-CTIFL* no. 249, 38-42.

Additional key words: new record **Computer codes:** PSECOB, DE

2013/057 *Corythauma ayyari:* a new lacebug found in France, Israel and Italy

Corythauma ayyari (Hemiptera: Tingidae), the jasmine lace bug, is originating from Asia. According to the literature, it has been recorded on the following host plants: *Jasminum*, *Lantana, Musa, Hedychium, Ocimum* and *Daedalacanthus nervosus*. On *Jasminum*, feeding by nymphs and adults results in small chlorotic spots on the upper leaf surface. The leaf undersides characteristically become black or dark brown due to the presence of excrement. Photosynthesis is reduced as the insect damages the palisade parenchyma. Attacked leaves may curl up, desiccate and fall prematurely. *C. ayyari* is known to occur in India, Laos, Malaysia (Penang Island), Pakistan, and Thailand. However during the last decade, its presence has been reported from Israel (2004), France (2009) and more recently Italy.

In Israel, *C. ayyari* was first discovered in 2004 attacking ornamental jasmine near Tel Aviv. Large numbers of adults, sometimes together with nymphs, were sporadically observed in Herzliya (near Tel Aviv) during August-October from 2004 to 2011. *C. ayyari* was observed on *Jasminum sambac (=J. pubescens*) and *Volkameria inermis*.

In France, the first outbreaks of *C. ayyari* were observed in 2009 on jasmine plants at Puget sur Argens (Var department).

The NPPO of Italy recently informed the EPPO Secretariat of the first record of *C. ayyari* on its territory. In December 2012, the insect was detected on a single potted plant of *Jasminum officinale* located on a private balcony in Caserta, Campania region. The affected plant showed leaf depigmentation and patches of excrement on the underside of the leaves. The origin of this infestation is not known. *C. ayyari* was found on a single, 10-year old potted plant and further investigations carried out in adjacent gardens did not detect the pest. The infested plant was destroyed.
The pest status of *Corythauma ayyari* in Italy is officially declared as: **Transient, detected on a potted plant. Further investigation will be carried out in the area.**

Source: INTERNET
FREDON-PACA
Bulletin de Santé du Végétal. Zones non agricoles et pépinières ornementales, no. 28 (2012-10-01).
http://www.fredonpaca.fr/IMG/pdf/BSV_ZNA_PO_no28_01102012.pdf

Novoselsky T, Freidberg A (2013) Note: *Corythauma ayyari* (Drake) (Hemiptera: Heteroptera: Tingidae) – a new pest of ornamentals in Israel. *Phytoparasitica* **41**(1), 149-150.

NPPO of Italy (2013-01).

Streito JC, Matocq A, Guilbert E (2010) Découverte d'un foyer de *Corythauma ayyari* (Drake 1933) et point sur la presence de plusieurs espèces de *Stephanitis* envahissants en France (Hemiptera: Tingidae). *L'Entomologiste* **66**, 7-12 (abst.).

Additional key words: new record **Computer codes:** COTMAY, FR, IL, IT

2013/058 Addition of *Agrilus auroguttatus* to the EPPO Alert List

Because severe damage and tree mortality caused by *Agrilus auroguttatus* (Coleoptera: Buprestidae) have been observed on oak trees in California (US), the Panel on Phytosanitary Measures decided that *A. auroguttatus* should be added to the EPPO Alert List.

***Agrilus auroguttatus* (Coleoptera: Buprestidae - goldspotted oak borer)**

Why — *Agrilus auroguttatus* (Coleoptera: Buprestidae - goldspotted oak borer) has recently been introduced into California (US) where it attacks oak trees. Although *A. auroguttatus* is a North American species probably originating from Arizona (US), its introduction into California is considered to be a serious threat to native oak species. Because extensive tree mortality has been observed in California, the Panel on Phytosanitary Measures decided that *A. auroguttatus* should be added to the EPPO Alert List.

Where — *A. auroguttatus* is morphologically very similar to *Agrilus coxalis* which ranges from central Mexico to Guatemala. Over the years, several authors have considered that they represented either the same species or subspecies of *A. coxalis* (*A. coxalis coxalis* and *A. coxalis auroguttatus*). At present, it seems accepted that they are distinct species; that the pest introduced into California is *A. auroguttatus*; and that *A. auroguttatus* originates from Southern Arizona.
In California, the first outbreaks were observed in 2004 in the San Diego county (Descanso, Guatay, Pine Valley), although it is suspected that the pest has probably been present since the early 2000s. In 2009, a satellite infestation was observed near La jolla (Marion Bear Memorial Park – San Diego county). In 2012, the pest was detected in Riverside county (community of Idyllwild), approximately 60 km south of the main outbreak site in San Diego county.
EPPO region: absent.
North America: USA (Arizona, California), Mexico (Baja California Sur).

On which plants — *Quercus* spp. with a preference for species belonging to the red oak group. In California, *A. auroguttatus* mainly attacks *Q. agrifolia* (coast live oak), *Q. kelloggii* (California white oak), *Q. chrysolepis* (canyon live oak). In its natural range, *A. auroguttatus* is not considered as a pest, although recent surveys conducted in Southeastern Arizona revealed some injuries on *Q. emoryi* (Emory oak) and *Q. hypoleucoides* (silverleaf oak), but with low levels of infestation and tree mortality. During surveys conducted in 2008/2009, no damage was observed on 'white' oaks in Arizona, or only rarely on *Q. engelmannii* (belonging to the white oak group), in California. No mortality was observed on the latter species.

Damage — Symptoms of infestations are wet, dark-coloured stains on the bark surface, D-shaped adult exit holes (3 mm wide), and a reduction of foliage in the tree crown. Larvae feed in the phloem, primarily at the interface of the xylem and phloem, and bore galleries which form dark and sinuous patterns on the wood surface. After several years of continuous infestation, oak trees may die.
In California, it is estimated that since 2002, *A. auroguttatus* has contributed to the mortality of more than 80 000 oak trees over approximately 5 000 km^2. The infested area continues to increase as the insect population grows and spreads.
Adults are small buprestids (about 10 mm long and 2 mm wide) with 6 golden-yellow spots on the dark green forewings and 2 spots on the edge of the thorax. Adults are rarely observed on trees. Mature larvae are about 18 mm long and 3 mm wide. They are legless, white, with two pincher-like spines at the tip of the abdomen. Pupae are found in the outer bark in pupal chambers. They resemble adults, but are commonly white in colour. Eggs (1 mm wide) are laid in bark crevices as is the case for other *Agrilus* spp. Little is known about the biology of the insect; it is believed that *A. auroguttatus* has one generation per year.

Dissemination	Adults can fly but no data is available on their flying capacity. As a wood borer, *A. auroguttatus* may easily be transported with untreated wood and wood products moving in trade, as well as with plants for planting. It is generally considered that *A. auroguttatus* does not attack thin branches or small trunks (diameter < 12 cm at chest height). Therefore, it seems that the risk of moving young and small trees would be lower than with wood and wood products. In the USA, it is strongly suspected that *A. auroguttatus* has been introduced into California and spread with movements of infested firewood.
Pathway	Plants for planting, wood and bark (including firewood), wood products of host plants from areas where *A. auroguttatus* occurs.
Possible risks	Oaks (*Quercus* spp.) are important forest and amenity trees in the EPPO region. As significant tree mortality has been observed in California, it is considered that *A. auroguttatus* has the potential to significantly alter the landscape and have negative impacts on the forest economy. Because of its hidden mode of life, *A. auroguttatus* can easily escape detection during visual inspections. For the moment, no trapping system has been found to be sufficiently efficient to be used in field surveys. Chemical control of wood borers either in forest or urban environments is difficult. Most of the measures taken to slow down the spread of the pest in California are to remove dead and injured trees (followed by careful handling and destruction of infested material) and request the general public not to move firewood. At present, no biological control agents are available although some larval parasitoids (e.g. *Calosota elongata, Atanycolus simplex*) or predators (*Agulla* sp.) have been identified. One of the main uncertainties when considering the risk for the EPPO region is the lack of data on the susceptibility of European oak species to *A. auroguttatus*. Oak species attacked in California (*Q. agrifolia*, *Q. kelloggii*, *Q. chrysolepis*) are probably only grown for ornamental purposes in the EPPO region. But the EPPO Secretariat has no data on their economic importance for the horticultural sector. In addition, the most important forest oak species in the EPPO region belong to the 'white oak' group which are very rarely attacked by *A. auroguttatus*. Nevertheless, particular attention should be paid to alien wood borers, such as *A. auroguttatus,* which under certain circumstances can show an invasive and aggressive behaviour.
Sources	Coleman TW, Graves AD, Hoddle M, Heath Z, Chen Y, Flint ML, Seybold SJ (2012) Forest stand composition and impacts associated with *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae) and *Agrilus coxalis* Waterhouse in oak woodlands. *Forest Ecology and Management* **276**, 104–117. Coleman TW, Lopez V, Rugman-Jones V, Stouthamer P, Seybold R, Reardon SJ, Hoddle MS (2012) Can the destruction of California's oak woodlands be prevented? Potential for biological control of the goldspotted oak borer, *Agrilus auroguttatus*. *BioControl* **57**(2), 211-225. Coleman TW, Seybold SJ (2008) Previously unrecorded damage to oak, *Quercus* spp. in Southern California by the goldspotted oak borer, *Agrilus coxalis* Waterhouse (Coleoptera: Buprestidae). *Pan-Pacific Entomologist* **84**(4), 288-300. Coleman TW, Seybold SJ (2011) Collection history and comparison of the interactions of the goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), with host oaks in Southern California and Southeastern Arizona, USA. *Coleopterists Bulletin* **65**(2), 93-108. INTERNET California Government. Newsroom. Invasive pest found in Riverside county - Fire and forest officials ask public's help to stop spread. http://www.fire.ca.gov/communications/communications_newsreleases_GSOB_Riverside.php University of California, Riverside. Center for Invasive Species Research. The goldspotted oak borer by V Lopez and M Hoddle (dated February 2013). http://cisr.ucr.edu/goldspotted_oak_borer.html University of California, Davis. - Pest Notes. Publication 74163. Goldspotted oak borer by ML Flint, MI Jones, SJ Seybold (dated January 2013), 7 pp. http://ucanr.edu/sites/gsobinfo/files/159957.pdf - A field guide to insects and disease of California oaks. http://ucanr.org/sites/gsobinfo/files/133806.pdf

EPPO RS 2013/058
Panel review date - Entry date 2013-03

2013/059 First report of *Pseudomonas syringae* pv. *aesculi* in the Czech Republic

From 2008 to 2010, horse chestnut (*Aesculus hippocastanum*) trees growing in 216 locations in the Czech Republic were surveyed for the possible presence of bleeding canker disease (*Pseudomonas syringae* pv. *aesculi* – EPPO Alert List). Typical symptoms (rust-coloured liquid oozing from cracks in the bark and necrotic lesions in the phloem) were observed at 16 locations. Samples were collected from 5 of these locations for further testing (pathogenicity test, real-time PCR). The presence of *Pseudomonas syringae* pv. *aesculi* could be confirmed in 1 location (Měděnec) on 3 trees. This is the first report of *Pseudomonas syringae* pv. *aesculi* in the Czech Republic.

Source: Mertelik J, Kloudova K, Pankova I, Krejzar V, Kudela V (2013) Occurrence of horse chestnut bleeding canker caused by *Pseudomonas syringae* pv. *aesculi* in the Czech Republic. *Forest Pathology*, doi:10.1111/efp.12021.

Additional key words: new record **Computer codes:** PSDMAX, CZ

2013/060 Blueberry necrotic ring blotch virus: a new virus on *Vaccinium*

Blueberry necrotic ring blotch disorder first appeared in Georgia (US) in 2006 on *Vaccinium corymbosum* (Southern highbush blueberries). The disease was then also found in North Carolina, Florida, Mississippi and South Carolina. Symptoms are characterized by irregular red or brown spots, sometime with green centres, which may coalesce to cover the entire leaf and lead to plant defoliation. Although, no plant mortality has been reported, severe and repeated defoliation has a negative impact on fruit yield. Recent studies have showed that the causal agent is a new virus species tentatively called Blueberry necrotic ring blotch virus (BNRBV). It is also suspected that this virus could be transmitted by eriophyid mites belonging to the genus *Calacarus*

Source: Burkle C, Olmstead JW, Harmon PF (2012) A potential vector of Blueberry necrotic ring blotch virus and symptoms on various host genotypes. *Phytopathology* **102**, S4.17.

Quito-Avila DF, Martin RR (2012) Blueberry necrotic ring blotch virus represents a unique genus of plant RNA viruses. *Phytopathology* **102**, S4.96.

Additional key words: new pest **Computer codes:** BNRBV0, US

2013/061 *Raspberry latent virus:* a new virus on raspberry

Raspberry latent virus (RpLV) is a newly characterized virus (Reoviridae) found in commercial raspberry (*Rubus idaeus*) fields in Oregon, Washington (US) and British Columbia (CA). Unlike other reoviruses, which are transmitted by Delphicidae and Cidadellicae, RpLV is transmitted, with a low efficiency rate, by aphids (e.g. *Amphorophora agathonica*). Considering the genetic features of RpLV and its transmission by aphids, it is suggested that it could belong to a new genus tentatively called Raslavirus.

Source: Quito-Avila DF, Lightle D, Lee J, Martin RR (2012) Transmission biology of *Raspberry latent virus*, the first aphid-borne reovirus. *Phytopathology* **102**(5), 547-553.

Additional key words: new pest **Computer codes:** RPLV00, CA, US

2013/062 *Neonectria ramulariae* causing seed rot of *Fagus crenata* in Japan

In Japan, during a survey of seed diseases of *Fagus crenata* (Japanese beech), a new fungal disease was frequently observed in a beech forest in Tazawako (Akita prefecture, Northern Honshu). Many rotting seeds were observed on the ground (split seed coats and brown cotyledons). The causal agent of this seed rot was identified as *Neonectria ramulariae* (anamorph: *Cylindrocarpon obtusiusculum*). This is the first time that this soil-borne fungus is reported to cause a disease on seeds of *F. crenata*.

Source: Hirooka Y, Ichihara Y, Masuya H, Kubono T (2012) Seed rot, a new disease of beech tree caused by *Neonectria ramulariae* (anamorph: *Cylindrocarpon obtusiusculum*). *Journal of Phytopathology* **160**(9), 504-506.

Additional key words: etiology **Computer codes:** NNECRA, JP

2013/063 *Gnomoniopsis castanea* sp. nov is the causal agent of nut rot

Nut rot ('mummificazione bianca delle castagne') is a disease of chestnut (*Castanea sativa*) which has been observed in Italy since the second half of the 19th century but whose incidence has increased since 2005 in the north-west. Until recently, the identity of the causal agent remained uncertain and several fungal species had been proposed (e.g. *Phomopsis endogena, Ciboria batschiana, Sclerotinia pseudotuberosa, Phomopsis castanea*). Recent studies have shown that the main causal agent of nut rot is a new fungal species: *Gnomoniopsis castanea* sp. nov. In addition to Italy, this species has also been isolated from rotten nuts from Southeastern France, Southern Switzerland and a very closely related species has been recorded in New Zealand.

Source: Visentin I, Gentile S, Valentino D, Gonthier P, Tamietti G, Cardinale F (2012) *Gnomoniopsis castanea* sp. nov. (Gnomoniaceae, Diaporthales) as the causal agent of nut rot in sweet chestnut. *Journal of Plant Pathology* **94**(2), 411-419.

Additional key words: new pest **Computer codes:** GNMPCA, IT

2013/064 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 on the EPPO Alert List. The situation of the pest concerned is indicated in bold, using the terms of ISPM no. 8.

- **New records**

Arceuthobium minutissimum (EPPO A1 List - Himalayan dwarf mistletoe) occurs in Bhutan. In Western Bhutan, it is widespread and very damaging to dry forests of *Pinus wallichiana* (blue pine) in the districts of Paro, Ha and Thimphu. Infected trees show deformations, stunted growth, witches' brooms, reduced cone production, and mortality (Dorji *et al.*, 2012). **Present, widespread in Western Bhutan.**

Bemisia tabaci (Hemiptera: Aleyrodidae – EPPO A2 List) occurs in Bosnia and Herzegovina and Montenegro. In Bosnia-Herzegovina, it was first found in 2008 in both glasshouse and outdoor crops. **Present, in protected and outdoor crops.**

In Montenegro, it was found for the first time in 2008 on ornamental plants in a greenhouse near Podgorica. Surveys carried out from 2008 to 2011 detected the pest in several glasshouses (ornamental plants) in Podgorica, Bar, Ulcinj and Radanovici (near Tivat). In autumn 2011, *B. tabaci* was found once on an outdoor melon crop near Ulcinj (Hrnčić *et al.*, 2012). **Present, mainly in protected crops.**

Cydalima perspectalis (Lepidoptera: Crambidae – formerly EPPO Alert List) is recorded for the first time from Croatia. In June 2012, 2 specimens were caught in a light trap in the northern part of Istria, on Parenzana road between the villages of Valica and Sveta Marija na Krasu, close to the Slovenian border (Koren & Črne, 2012).

Glycaspis brimblecombei (Hemiptera: Psyllidae – formerly EPPO Alert List) was detected for the first time in 2011 in the Gharb region, in Morocco. Two outbreaks were found on eucalyptus forests in the province of El Kelaa des Sraghna (Ibnelazyz, 2011).

In Montenegro, the presence of *Peach latent mosaic viroid* was detected for the first time during a survey carried out in 2007. The viroid was detected in peach trees (*Prunus persica* cv. 'Elegant Lady') in the area of Ćemovsko, a region where approximately 40% of the peach production is located (Mavrič Pleško *et al.*, 2012).

In Norway, *Pseudomonas syringae* pv. *aesculi* (EPPO Alert List) causing bleeding cankers on horse chestnut (*Aesculus hippocastanum*) was detected for the first time in June 2010 in the south western part (Talgø *et al.*, 2012).

Plum pox virus (*Potyvirus*, PPV – EPPO A2 List) occurs in Belarus. It was first identified in 2000 in the Minsk region on symptomatic plum trees (*Prunus domestica* cv. 'Nagrada Namanskaja'). Surveys conducted in 2011 showed that PPV was detected in 32% of the symptomatic samples collected from stone fruit orchards in the regions of Vitebsk, Grodno and Mogilev (Salavei *et al.*, 2012).

- **Detailed records**

In the USA, a recent review concerning *Agrilus anxius* (Coleoptera: Buprestidae – EPPO A1 List) indicates that it also occurs in Arizona, North Carolina and Rhode Island (Muilenburg & Herms, 2012).

- **Epidemiology**

Studies have recently shown that *Frankliniella fusca* can transmit *Iris yellow spot virus* (*Tospovirus*, IYSV – formerly EPPO Alert List) but with a lower efficiency than *Thrips tabaci* (Srinivasan *et al.*, 2012).

- **Taxonomy**

The fruit fly species *Trirhithromyia cyanescens* (Diptera: Tephritidae – EU Annexes) has now been transferred into the genus *Neoceratitis*, and thus should now be called *Neoceratitis cyanescens* (de Meyer & Freidberg, 2012).

Source: De Meyer M, Freidberg A (2012) Taxonomic revision of the fruit fly genus *Neoceratitis* Hendel (Diptera: Tephritidae). *Zootaxa* **3223**, 24-39.

Dorji S, Donaubauer E, Wingfield MJ, Chhetri DB, Kirisits T (2012) Himalayan dwarf mistletoe (*Arceuthobium minutissimum*) and the leafy mistletoe *Taxillus*

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Koren T, Črne M (2012) The first record of the box tree moth, *Cydalima perspectalis* (Walker, 1859) (Lepidoptera, Cambidae) in Croatia. *Natura Croatia* **21**(2), 507-510.
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Talgø V, Spies Perminow JI, Sletten A, Bente Brurberg M, Herrero ML, Strømeng GM, Arne Stensvand A (2012) Fungal and bacterial diseases on horse chestnut in Norway. *Journal of Agricultural Extension and Rural Development* **4**(9), 256-258.

Additional key words: new record, detailed record, epidemiology, taxonomy

Computer codes: AGRLAX, AREMI, BEMITA, CERTCY, DPHNPE, GLYSBR, IYSV00, PLMVD0, PPV000, PSDMAX, BA, BT, BY, HR, MA, ME, NO, US

2013/065 EPPO report on notifications of non-compliance

The EPPO Secretariat has gathered below the notifications of non-compliance for 2012 received since the previous report (EPPO RS 2012/245) and those for the beginning of 2013. Notifications have been sent via Europhyt for the EU countries and Switzerland. The EPPO Secretariat has selected notifications of non-compliance made because of the detection of pests. Other notifications of non-compliance due to prohibited commodities, missing or invalid certificates are not indicated. It must be pointed out that the report is only partial, as many EPPO countries have not yet sent their notifications. When a consignment has been re-exported and the country of origin is unknown, the re-exporting country is indicated in brackets. When the occurrence of a pest in a given country is not known to the EPPO Secretariat, this is indicated by an asterisk (*).

Interceptions (2012)

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Agromyzidae	*Chrysanthemum*	Cut flowers	Colombia	Spain	1
Bemisia tabaci	*Alternanthera sessilis*	Plants for planting	Sri Lanka	United Kingdom	1
	Anubias	Plants for planting	Singapore	United Kingdom	1
	Cucurbita pepo	Vegetables	Jordan	United Kingdom	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
***B. tabaci* (cont.)**	*Hygrophila*	Plants for planting	Sri Lanka	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	Israel	United Kingdom	1
	Ocimum sanctum	Vegetables (leaves)	Cambodia	France	2
Clavibacter michiganensis* subsp. *sepedonicus	*Solanum tuberosum*	Ware potatoes	Poland	Hungary	9
Diptera	*Momordica*	Vegetables	Sri Lanka	United Kingdom	1
Fungi	*Mandevilla sanderi*	Cuttings	Brazil	Italy	1
Hirschmanniella	*Hygrophila*	Aquarium plants	Singapore	Germany	1
Insecta	*Citrus aurantifolia*	Fruit	Ecuador	Spain	1
	Prunus armeniaca, Prunus persica	Seeds	Morocco	France	1
Lepidoptera	*Momordica*	Vegetables	Bangladesh	Italy	1
	Solanum	Vegetables	Sri Lanka	Italy	1
Leucinodes orbonalis	*Solanum aethiopicum*	Vegetables	Cameroon	Belgium	1
	Solanum aethiopicum	Vegetables	Togo	Belgium	1
Liriomyza	*Apium graveolens*	Vegetables	Cambodia	United Kingdom	1
	Brassica	Vegetables	China	United Kingdom	1
	Chrysanthemum	Cut flowers	Colombia	United Kingdom	1
	Coriandrum	Vegetables (leaves)	Cambodia	United Kingdom	1
	Eryngium	Cut flowers	Ecuador	United Kingdom	1
	Ocimum basilicum	Vegetables (leaves)	Cambodia	France	4
	Solidago	Cut flowers	Zimbabwe	United Kingdom	1
Liriomyza huidobrensis	*Chrysanthemum*	Cut flowers	Ecuador	Netherlands	1
	Chrysanthemum	Cut flowers	Ecuador	Spain	3
	Eryngium	Cut flowers	Kenya	Netherlands	2
Liriomyza huidobrensis, Liriomyza trifolii	*Apium graveolens*	Vegetables	Cambodia	Sweden	1
Liriomyza sativae	*Apium graveolens*	Vegetables	Surinam*	Netherlands	1
	Ocimum basilicum	Vegetables (leaves)	India	Netherlands	1
Liriomyza trifolii	*Aster*	Cut flowers	Zimbabwe	Netherlands	1
	Gypsophila	Cut flowers	Israel	Latvia	1
	Ocimum americanum	Vegetables (leaves)	Cambodia*	Sweden	1
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Sweden	1
	Ocimum basilicum	Vegetables (leaves)	Spain (Canary Isl.)	United Kingdom	1
Liriomyza trifolii, Spodoptera litura	*Ocimum basilicum*	Vegetables (leaves)	Cambodia	Netherlands	1
***Myzus*, Thripidae**	*Hydrangea*	Cut flowers	Peru	Spain	1
Opogona sacchari	*Chrysalidocarpus*	Plants for planting	Netherlands	Hungary	1
	Dracaena marginata	Plants for planting	Costa Rica*	Spain	1
	Rhapis excelsa	Plants for planting	Netherlands	Cyprus	1
Paysandisia archon	*Washingtonia robusta*	Plants for planting	Spain	France	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Phyllosticta citriasiana	*Citrus*	Fruit	China	Spain	1
Potato spindle tuber viroid	*Calibrachoa, Petunia*	Cuttings	Israel*	Germany	1
	Petunia	Cuttings	Israel*	Germany	2
Spodoptera frugiperda	*Asparagus*	Vegetables	Peru	Netherlands	1
Spodoptera littoralis	*Rosa*	Cut flowers	Zimbabwe	Netherlands	6
	Solidago	Cut flowers	Zimbabwe	Netherlands	1
Thripidae	*Amaranthus*	Vegetables (leaves)	Jamaica	United Kingdom	1
	Luffa acutangula	Vegetables	Ghana	United Kingdom	3
	Momordica	Vegetables	Cambodia	United Kingdom	1
	Momordica	Vegetables	Dominican Rep.	United Kingdom	2
	Momordica	Vegetables	India	United Kingdom	5
	Momordica	Vegetables	Pakistan	United Kingdom	1
	Momordica charantia	Vegetables	India	United Kingdom	1
	Solanum melongena	Vegetables	Bangladesh	United Kingdom	1
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	1
	Solanum melongena	Vegetables	Ghana	United Kingdom	1
Thrips	*Momordica*	Vegetables	Dominican Rep.	Germany	1
	Momordica charantia	Vegetables	Dominican Rep.	Germany	1
Thrips palmi	*Momordica charantia*	Vegetables	India	France	1
	Solanum aethiopicum	Vegetables	Burkina Faso*	France	2
	Solanum melongena	Vegetables	Dominican Rep.	Belgium	1
Xanthomonas axonopodis **pv. *citri***	*Citrus*	Fruit	Bangladesh	United Kingdom	1
	Citrus latifolia	Fruit	Bangladesh	United Kingdom	1

- **Fruit flies**

Pest	Consignment	Country of origin	Destination	nb
Bactrocera	*Mangifera indica*	Cameroon	France	1
	Psidium guajava	Thailand	Netherlands	2
Bactrocera cucurbitae	*Momordica charantia*	Sri Lanka	France	1
Bactrocera dorsalis	*Annona squamosa*	Thailand	France	1
	Mangifera indica	Thailand	France	1
Bactrocera latifrons	*Capsicum frutescens*	Cambodia*	France	1
Bactrocera zonata	*Benincasa hispida*	Pakistan	France	1
Tephritidae (non-European)	*Annona*	India	United Kingdom	2
	Capsicum	Cambodia	France	1
	Capsicum frutescens	Cambodia	France	5
	Mangifera	Thailand	Switzerland	1
	Mangifera indica	Cameroon	France	1
	Momordica	Kenya	United Kingdom	2
	Momordica charantia	Kenya	United Kingdom	1
	Momordica cochinchinensis	Sri Lanka	Italy	1

Pest	Consignment	Country of origin	Destination	nb
Tephritidae (non-European)	*Psidium guajava*	Thailand	United Kingdom	2
	Syzygium samarangense	Thailand	Switzerland	1
	Trichosanthes	India	United Kingdom	2
	Trichosanthes	Sri Lanka	United Kingdom	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	2

- **Wood**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Apriona germari	Unspecified	Wood packing material (crate)	China	Belgium	2
Bostrichidae	Unspecified	Wood packing material (crate)	India	Germany	1
Bursaphelenchus mucronatus	Unspecified	Wood packing material (crate)	Korea, Dem. People's Rep.	Germany	1
	Unspecified	Wood packing material (pallet)	Belarus	Latvia	1
Cerambycidae	Unspecified	Wood packing material	China	United Kingdom	1
Cerambycidae, Scolytidae	Entandrophragma cylindricum	Wood and bark	Congo	Spain	1
Heterobostrychus aequalis	Unspecified	Wood packing material (pallet)	Malaysia	Germany	1
Insecta	Unspecified	Wood packing material	China	Switzerland	1
	Unspecified	Wood packing material (pallet)	China	Switzerland	1
	Unspecified	Wood packing material (pallet)	Thailand	Switzerland	1
***Ips,* Platypodidae, Scolytidae**	Unspecified	Wood packing material	China	Germany	1
Lyctus	Unspecified	Wood packing material (pallet)	China	Germany	1
	Unspecified	Wood packing material (pallet)	India	Germany	1
Nematoda	Unspecified	Wood packing material	Taiwan	Finland	1
Scolytidae	*Chlorophora excelsa*	Wood and bark	Central African Rep.	Spain	1
Sinoxylon	Unspecified	Wood packing material (pallet)	China	Germany	1
	Unspecified	Wood packing material (pallet)	India	Germany	2
	Unspecified	Wood packing material (pallet)	India	Netherlands	2
	Unspecified	Wood packing material (pallet)	Indonesia	Germany	1
Zootermopsis agusticollis	Unspecified	Wood packing material (pallet)	China	Spain	1

- **Bonsais**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Ceroplastes, Meloidogyne, Tylenchorhynchidae	*Ficus microcarpa*	Bonsais	China	Italy	1

Interceptions (2013)

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Acari, Aleyrodidae	*Fuchsia*	Cuttings	Brazil	Italy	1
Agromyzidae	*Apium graveolens*	Vegetables	Cambodia	Denmark	1
Alternaria	*Mandevilla sanderi*	Cuttings	Brazil	Italy	1
Bemisia	*Rosa*	Cut flowers	Kenya	Germany	2
Bemisia tabaci	*Aphelandra*	Plants for planting	Brazil	Netherlands	1
	Aster	Cut flowers	Israel	Belgium	1
	Lantana camara	Cuttings	Ethiopia	Netherlands	1
	Lisianthus	Cut flowers	Israel	United Kingdom	1
	Ocimum	Vegetables (leaves)	Malaysia	United Kingdom	1
	Ocimum	Vegetables (leaves)	Nigeria	Ireland	1
	Ocimum basilicum	Vegetables (leaves)	Colombia	Netherlands	1
	Ocimum basilicum	Vegetables (leaves)	Israel	Germany	1
	Ocimum basilicum	Vegetables (leaves)	Malaysia	United Kingdom	1
	Oxypetalum caeruleum	Cuttings	Japan	Denmark	1
	Plectranthus	Cuttings	Tanzania	Netherlands	1
Bemisia, Liriomyza	*Ocimum basilicum*	Vegetables (leaves)	Turkey	Germany	1
Clavibacter michiganensis* subsp. *michiganensis	*Capsicum annuum, Solanum lycopersicum*	Seeds	China	Germany	1
	Solanum lycopersicum	Seeds	China	Italy	1
Clavibacter michiganensis* subsp. *sepedonicus	*Solanum tuberosum*	Ware potatoes	Poland	Hungary	1
	Solanum tuberosum	Ware potatoes	Turkey	Bulgaria	1
Diaphania	*Momordica*	Vegetables	Pakistan	Germany	1
Diptera	*Mecardonia*	Cuttings	Costa Rica	United Kingdom	1
	Momordica	Vegetables	India	United Kingdom	1
	Oryza sativa	Stored products	Thailand	Spain	1
Dryocosmus kuriphilus	*Castanea sativa*	Plants for planting	Italy	France	1
Erwinia amylovora	*Cotoneaster dammeri*	Plants for planting	Belgium	France	1
Helicoverpa armigera	*Pisum sativum*	Vegetables	Egypt	Ireland	1
Helicoverpa armigera, Spodoptera littoralis	*Rosa*	Cut flowers	Zimbabwe	Netherlands	1
Lepidoptera	*Solanum*	Vegetables	Pakistan	Italy	1
	Solanum	Vegetables	Sri Lanka	Italy	1
	Solanum indicum	Vegetables	Sri Lanka	Italy	1
Leucinodes orbonalis	*Solanum melongena*	Vegetables	Malaysia	Belgium	1
Liriomyza	*Apium graveolens*	Vegetables	Cambodia	Sweden	1
	Chrysanthemum	Cut flowers	Colombia	United Kingdom	1
	Chrysanthemum	Cut flowers	Spain (Canary Isl.)	United Kingdom	1
	Coriandrum sativum	Vegetables (leaves)	Vietnam	United Kingdom	1
	Ocimum	Vegetables (leaves)	Laos	United Kingdom	1

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
***Liriomyza* (cont.)**	*Ocimum basilicum*	Vegetables (leaves)	Kenya	United Kingdom	1
	Solidago	Cut flowers	Zimbabwe	United Kingdom	1
	Trigonella foenum-graecum	Vegetables (leaves)	India	Germany	1
Liriomyza huidobrensis	*Apium graveolens*	Vegetables	Cambodia*	Sweden	1
	Aster	Cut flowers	Ecuador	Netherlands	2
	Chrysanthemum	Cut flowers	Ecuador	Netherlands	1
	Dahlia	Plants for planting	Kenya	Netherlands	1
	Dianthus	Cut flowers	Ecuador	Netherlands	1
	Eryngium	Cut flowers	Kenya	Netherlands	1
	Gypsophila	Cut flowers	Ecuador	Netherlands	1
	Gypsophila	Cut flowers	Kenya	Netherlands	1
Liriomyza sativae	*Apium graveolens*	Vegetables	Surinam*	Netherlands	1
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Netherlands	1
	Ocimum basilicum	Vegetables (leaves)	Malaysia	Netherlands	1
Liriomyza trifolii	*Aster*	Cut flowers	Egypt	Netherlands	1
	Gypsophila	Cut flowers	Israel	Belgium	1
	Ocimum basilicum	Vegetables (leaves)	Cambodia*	Sweden	3
	Solidago	Cut flowers	Zambia	Netherlands	4
Liriomyza trifolii, Spodoptera littoralis	*Aster*	Cut flowers	Zimbabwe	Netherlands	1
Paysandisia archon	*Chamaerops humilis*	Plants for planting	Italy	France	2
Potato spindle tuber viroid	*Calibrachoa, Petunia*	Cuttings	Israel	Germany	1
	Petunia	Cuttings	Israel	Germany	1
Rhynchophorus ferrugineus	*Arecaeae*	Plants for planting	Spain	France	1
Spodoptera littoralis	*Rosa*	Cut flowers	Kenya	Netherlands	1
	Rosa	Cut flowers	Uganda	Netherlands	2
	Rosa	Cut flowers	Zimbabwe	Netherlands	5
	Solidago	Cut flowers	Zambia	Netherlands	1
Spodoptera litura	*Coriandrum sativum*	Vegetables (leaves)	Vietnam	United Kingdom	1
Thripidae	*Citrus aurantifolia*	Fruit	Bangladesh	United Kingdom	1
	Luffa	Vegetables	Ghana	United Kingdom	1
	Luffa acutangula	Vegetables	Ghana	United Kingdom	2
	Momordica	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica	Vegetables	India	United Kingdom	4
	Momordica	Vegetables	Pakistan	United Kingdom	1
	Momordica charantia	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica, Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	1
	Solanum melongena	Vegetables	Bangladesh	United Kingdom	8
	Solanum melongena	Vegetables	Dominican Rep.	United Kingdom	1
	Solanum melongena	Vegetables	India	United Kingdom	2
	Solanum melongena	Vegetables	Pakistan	United Kingdom	2
Thrips	*Momordica charantia*	Vegetables	Dominican Rep.	Germany	2

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Thrips palmi	*Dendrobium*	Cut flowers	Thailand	Netherlands	1
	Luffa	Vegetables	Ghana*	United Kingdom	1
	Momordica	Vegetables	India	United Kingdom	1
	Momordica charantia	Vegetables	Cambodia*	Belgium	1
	Momordica charantia	Vegetables	Dominican Rep.	Belgium	1
	Momordica charantia	Vegetables	Dominican Rep.	United Kingdom	1
	Momordica charantia	Vegetables	India	France	2
	Momordica charantia	Vegetables	India	United Kingdom	3
	Momordica charantia	Vegetables	Malaysia	Belgium	1
	Solanum melongena	Vegetables	Bangladesh	United Kingdom	1
	Solanum melongena	Vegetables	Dominican Rep.	Netherlands	1
	Solanum melongena	Vegetables	India	Netherlands	3
	Solanum melongena	Vegetables	Sri Lanka	Switzerland	1
	Solanum melongena	Vegetables	Surinam	Netherlands	1
	Solanum melongena	Vegetables	Vietnam	United Kingdom	1
Thysanoptera	*Momordica charantia*	Vegetables	India	Switzerland	1
	Solanum melongena	Vegetables	India	Switzerland	3
Trialeurodes vaporariorum	*Rosa rugosa*	Cut flowers	South Africa	Ireland	1

- **Fruit flies**

Pest	Consignment	Country of origin	Destination	nb
Anastrepha	*Chrysophyllum*	Surinam	Netherlands	1
	Mangifera	Jamaica	United Kingdom	1
	Mangifera indica	Dominican Rep.	Netherlands	1
	Mangifera indica	Surinam	Netherlands	1
Bactrocera	*Citrus*	China	Netherlands	1
	Citrus maxima	China	Netherlands	1
	Mangifera	Sri Lanka	United Kingdom	1
	Mangifera, Psidium guajava	Sri Lanka	United Kingdom	1
	Momordica	Sri Lanka	United Kingdom	1
	Psidium guajava	Sri Lanka	United Kingdom	1
	Trichosanthes	Sri Lanka	United Kingdom	1
	Trichosanthes cucumerina	India	United Kingdom	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	2
Dacus	*Momordica*	Kenya	United Kingdom	1
Tephritidae (non-European)	*Annona*	Lebanon	United Kingdom	1
	Luffa acutangula	Ghana	United Kingdom	1
	Mangifera	Sri Lanka	United Kingdom	1
	Mangifera	Thailand	United Kingdom	1
	Mangifera indica	Dominican Rep.	Belgium	1
	Mangifera indica	Dominican Rep.	France	1
	Mangifera indica	Kenya	United Kingdom	1
	Mangifera indica	Sri Lanka	Italy	1
	Momordica	Cambodia	United Kingdom	1
	Momordica	Gambia	United Kingdom	1
	Momordica	India	United Kingdom	2
	Momordica	Kenya	United Kingdom	4
	Momordica	Pakistan	United Kingdom	1

Pest	Consignment	Country of origin	Destination	nb
Tephritidae (non-European)	*Momordica*	Sri Lanka	United Kingdom	1
	Psidium guajava	Dominican Rep.	Germany	1
	Psidium guajava	Thailand	United Kingdom	1
	Solanum melongena	Kenya	Germany	1
	Trichosanthes cucumerina	Sri Lanka	United Kingdom	1

- **Wood**

Pest	Consignment	Type of commodity	Country of origin	Destination	nb
Anoplophora glabripennis	Unspecified	Object with wooden parts	China	Czech Rep.	1
Bostrichidae	Unspecified	Wood packing material	India	Germany	1
	Unspecified	Wood packing material (crate)	India	Germany	1
	Unspecified	Wood packing material (pallet)	Indonesia	Germany	1
Bursaphelenchus	Coniferae	Wood and bark	Portugal	Germany	1
Cerambycidae	Unspecified	Wood packing material (pallet)	China	Netherlands	1
Grub holes > 3 mm	*Larix*	Wood and bark	Russia	Finland	1
Insecta	Unspecified	Wood packing material (crate)	Iran	Switzerland	1
	Unspecified	Wood packing material (pallet)	China	Switzerland	4
Scolytidae	*Entandrophragma cylindricum*	Wood and bark	Central African Rep.	Spain	1
	Entandrophragma cylindricum	Wood and bark	Congo	Spain	1
Sinoxylon	Unspecified	Wood packing material (crate)	India	Germany	2
	Unspecified	Wood packing material (pallet)	Malaysia	Netherlands	1

Source: EPPO Secretariat, 2013-02

2013/066 The situation of *Eichhornia crassipes* in the Guadiana river (ES)

In Spain, *Eichhornia crassipes* (Pontederiaceae, EPPO A2 List) was first detected in 2004 and was present in an 80 km long stretch of the Guadiana River in the municipalities of Medellín and Mérida (Extremadura). Despite intensive management efforts through the removal of 183 000 tonnes of plant material in 2004 and 2006, and of 40 000 tonnes removed in 2010, the species spread again in 2011. Forty one thousand (51 000) tonnes were removed in 2012. As of 2012, more than 21 million euros had been spent to manage the species. The Guadiana River provides water to 42 000 hectares of cultivated land. Although these agricultural areas are not currently affected, if *E. crassipes* were to spread through irrigation canals, it would have detrimental impacts on water provision.

Source: El País (2013) El camalote enraíza en el Guadiana. 24 Marso. http://sociedad.elpais.com/sociedad/2013/03/23/actualidad/1364077349_999085.html

Additional key words: record, invasive alien plants **Computer codes:** EICCR, ES

2013/067 First report of *Cardiospermum grandiflorum* in Malta

In Malta, *Cardiospermum grandiflorum* (Sapindaceae, EPPO Alert List) has recently been recorded as invading the Natura 2000 site 'Wied Babu' in Żurrieq. The species has been introduced as an ornamental plant in Malta and escaped, and is now considered to have devastating impacts on the native biodiversity of the island.
This species, along with control options, has been included in the 'Guidelines on managing non-native plant invaders and restoring native plant communities in terrestrial settings in the Maltese Islands' adopted at the beginning of 2013.

Source: Ameen J (2013) Valley flora being slowly choked by invasive plant. Times of Malta. 9 March 2013. http://www.timesofmalta.com/articles/view/20130309/local/Valley-flora-being-slowly-choked-by-invasive-plant.460792

MEPA (2013) Guidelines on managing non-native plant invaders and restoring native plant communities in terrestrial settings in the Maltese Islands. 88 p. http://www.mepa.org.mt/guidelines-alienplants

Additional key words: new record, invasive alien plants **Computer codes:** CRIGR, MT

2013/068 The situation of *Egeria densa* in Austria

Transient (casual) populations of *Egeria densa* (Hydrocharitaceae, EPPO List of Invasive Alien Plants) have been observed in 3 locations in Austria:

- In Vienna in Alte Donau, according to Forstner & Hübl (1971);
- In Steiermark, in a small lake near Graz, according to Fritsch (1930);
- In Kärnten in 'Warmbad Villach', according to Melzer (1983).

These populations did not establish in Austria, and it is suspected that the presence of *E. densa* in these locations was due disposal of aquatic waste.

Source: Essl F & Rabitsch W (2002) Neobiota in Österreich. Umweltbundesamt, Wien, 432 pp. (http://www.umweltbundesamt.at/fileadmin/site/publikationen/DP089.pdf)

Fritsch K (1930) Neunter Beitrag zur Flora der Steiermark. *Mitteilungen des Naturwissenschaftlichen Vereines für Steiermark* **67**, 53–89.

Melzer H (1983) Floristisch Neues aus Kärnten. *Carinthia II* **93**, 151–165.

Forstner W & Hübl E (1971) Ruderal-, Segetal- und Adventivflora von Wien. Notring Verlag, Wien, 159 pp.

Personal communication with Swen Follak, AGES, email: swen.follak@ages.at and with Franz Essl, Umweltbundesamt Austria, email: franz.essl@umweltbundesamt.at

Additional key words: record, invasive alien plants **Computer codes:** ELDDE, AU

2013/069 First record of *Maireana brevifolia* in Islas Canarias (ES)

In Gran Canaria, *Maireana brevifolia* (Chenopodiaceae) was recorded for the first time in in Islas Canarias (Fuerteventura and Gran Canaria) in July 2005 in the area of Maspalomas and has since then established in various locations in the South and the East of the island. It is mainly found in anthropogenic habitats such as roadsides, fallowlands and abandoned agricultural areas. It is also found in natural protected areas such as the nature reserve of the dunes of Maspalomas, the Arinaga mountain or the Aguimes mountain. The species is regulated as an invasive alien plant in Spain. This succulent shrub growing up to 1.5 m high is thought to have been introduced in Islas Canarias as an ornamental plant in parks and gardens (e.g. hotel gardens), or as an experimental revegetation species for arid lands.
M. brevifolia (Chenopodiaceae) is native to the South and West of Australia. It has been voluntarily introduced as a forage plant in Chile, Israel and Pakistan. It has also been introduced for its capacity to withstand drought and salinity or to grow on hypersaline soils (e.g. South Africa, Zimbabwe, etc).

Source: Carlos Suárez Rodríguez blog, Dirreción General de Ordenación Territorial, Consejería de medio Ambiente y Política Territorial
http://casuaro.blogspot.fr/2010/02/el-mato-azul-maireana-brevifolia-rbr-pg.html

Ministerio de agricultura, alimentación y medio ambiente, Boletín Official de Estado, Lunes 12 de diciembre de 2011, Núm. 29, Sec. I., 25 pp
http://www.boe.es/boe/dias/2011/12/12/pdfs/BOE-A-2011-19398.pdf

Additional key words: new record, invasive alien plants **Computer codes:** MRNBR, ES

2013/070 Update on the Code of conduct on invasive alien aquatic plants in the Netherlands

The Dutch Code of conduct on invasive alien aquatic plants has been implemented in the Netherlands in 2010. This Code of conduct represents a tool for dialogue and cooperation on invasive alien plants in between governmental institutions and those importing, producing, selling and planting species. Such a Code of conduct needs to be constantly renegotiated and to be flexible enough to include new species potentially invasive in trade.
As a consequence, 3 ecological assessments were performed for the Netherlands for 3 species newly traded as ornamental or aquarium plants: *Lagarosiphon major* (Hydrocharitaceae, EPPO List of IAP), *Mimulus guttatus* (Phrymaceae) and *Vallisneria*

spiralis (Hydrocharitaceae). The Belgian Invasive Species Environmental Impact Assessment (ISEIA) protocol was used to perform these ecological assessments.

These assessments represented a basis for discussion with the nursery industry in the Netherlands. The result of these assessments and the content of the basic documents produced to support the assessments are presented in EPPO RS 2013/071, 2013/072).

Source: Q-bank website, Invasive Plants: http://www.q-bank.eu/Plants/

The Belgian Invasive Species Environmental Impact Assessment (ISEIA) protocol http://ias.biodiversity.be/documents/ISEIA_protocol.pdf

J van Valkenburg, Dutch Plant Protection Organization, E-mail: j.l.c.h.van.valkenburg@minlnv.nl

Additional key words: invasive alien plants, risk assessment **Computer codes:** LGAMA, MIUGU, VAISP, AT, BE, CH, CZ, DE, ES, FI, FR, DE, GB, IE, IT, LV, LT NL, NO, PL, RU, SE

2013/071 Assessment of the ecological effects of *Mimulus guttatus* in the Netherlands

An assessment of the ecological risk that *Mimulus guttatus* (Phrymaceae) represents for the Netherlands has been performed following the Belgian Invasive Species Environmental Impact Assessment (ISEIA).
M. guttatus is a semi aquatic plant originating from the western part of North America, from Mexico up to Canada. This plant is traded as an ornamental, as well as via wildflower seed mixtures. Within the EPPO region, it is recorded in Austria, Belgium, Czech Republic, Denmark (including Faroe Island), Estonia, Finland, France, Germany, Great Britain, Iceland, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Russia, Sweden and Switzerland. It is also recorded in Australia (Tasmania, Victoria) and in New Zealand. The species is widespread in the Netherlands and occurs in moist meadows and along riverbanks, including in sites that are in winter. The plant reproduces both vegetatively through fragmented parts and sexually through seeds. Seeds and fragments are spread by water, the numerous seeds produced can also be transported by wind and animals (deer, birds, cattle). The probability of spread of the species was therefore assessed as high. Although the species has been observed to colonize high conservation value habitats listed in the Habitat Directive (92/43/EEC), no negative effects on native species have been reported as the species has a limited competitive ability, and no impacts on ecosystem functioning could be highlighted in the Netherlands.
As a consequence, *M. guttatus* is assessed as representing a low ecological risk, and no management measures are recommended in the Netherlands, in particular considering the wide distribution of the species.

Source: Koopman KR, Beringen R, Collas FPL, Matthews Odé JB, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Knowledge document for risk analysis of the non-native Monkeyflower (*Mimulus guttatus*) in the Netherlands. Pp 43.
http://www.q-bank.eu/Plants/Controlsheets/KD_Mimulus_final20120921.pdf

Matthews J, Beringen R, Collas FPL, Koopman KR, Odé B, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Risk analysis of the non-native Monkeyflower (*Mimulus guttatus*) in the Netherlands. Pp 29.
http://www.q-

bank.eu/Plants/Controlsheets/RA_Mimulus_gutattus_final20121101.pdf

The Belgian Invasive Species Environmental Impact Assessment (ISEIA) protocol
http://ias.biodiversity.be/documents/ISEIA_protocol.pdf

Additional key words: invasive alien plants, risk assessment **Computer codes:** MIUGU, AT, AU, BE, CH, CZ, DE, ES, FI, FR, DE, GB, IE, IS, IT, LV, LT NL, NO, PL, RU, SE, US, NZ

2013/072 Assessment of the ecological effects of *Vallisneria spiralis* in the Netherlands

An assessment of the ecological risk that *Vallisneria spiralis* (Hydrocharitaceae) represents for the Netherlands has been performed following the Belgian Invasive Species Environmental Impact Assessment (ISEIA).
V. spiralis is a perennial, rhizomatous submerged aquatic plant originating from Asia, Southern Europe and Northern Africa. The species is known to colonize both tropical and subtropical areas and is increasing its potential range in the colder regions of Europe, although it does not tolerate temperatures below 5°C. In the EPPO region, *V. spiralis* is known to occur in Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, France (including Corsica), Germany, Greece, Hungary (native), Italy (native), Israel (native), Luxembourg, the Former Yugoslav Republic of Macedonia, Moldova, Montenegro, the Netherlands, Poland, Romania, Russia, Serbia, Spain (including Baleares, Islas Canarias), the United Kingdom and Switzerland.
V. spiralis is traded in the Netherlands and in other EPPO countries as an aquarium plant. A survey revealed that 2% of 230 buyers of aquatic plants in the Netherlands had disposed of aquatic plants in open waters. *V. spiralis* reproduces vegetatively through runners, sexually through seeds, and both runners and seeds spread via wind and water currents. Seeds can also be spread by waterfowl. The spread capacity of *V. spiralis* is considered as high.
Negative effects on native submerged macrophytes have been recorded in thermal waters in Poland, but in the Netherlands, there are no signs that aquatic plant species are replaced by *V. spiralis*. Furthermore, no adverse effects on ecosystem functioning had been observed. The plant is not regarded as invasive in all the European countries where it is present. However, the species forms dense monospecific stands that may decrease the drainage capacity of streams and negatively affect recreation sites. Social impacts are also expected to remain low.
It was concluded that there is therefore no basis to recommend restrictions on the sale of *V. spiralis* in the Netherlands. In addition, the early implementation of mechanical removal of the plant is not recommended due to the cost of the operation and of the potential for *V. spiralis* to spread even after a control action.

Source: Collas FPL, Beringen R, Koopman KR, Matthews J, Odé B, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Knowledge document for risk analysis of the non-native Tapegrass (*Vallisneria spiralis*) in the Netherlands. p 38.
http://www.q-bank.eu/Plants/Controlsheets/KD_Vallisneria_final20121115.pdf

Matthews J, Beringen R, Collas FPL, Koopman KR, Odé B, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Risk analysis of the non-native Tapegrass (*Vallisneria spiralis*) in the Netherlands. p 32.
http://www.q-bank.eu/Plants/Controlsheets/RA_Valisneria_spiralis_final20121101.pdf

The Belgian Invasive Species Environmental Impact Assessment (ISEIA) protocol
http://ias.biodiversity.be/documents/ISEIA_protocol.pdf

Additional key words: invasive alien plants, risk assessment

Computer codes: VAISP, AL, AT, BE, BG, CH, CZ, DE, ES, FR, GB, GR, HU, HR, IT, IL, LU, MD, ME, MK, NL, PL, RO, RU, RS

2013/073 Mini datasheet on *Lagarosiphon major*

Lagarosiphon major (Hydrocharitaceae) is an aquatic plant originating from Southern Africa. One of its English common names is 'Curly waterweed'. The species is listed on the EPPO List of Invasive Alien Plants and widely distributed in the EPPO region, Africa and Oceania. An assessment of the ecological risk that represents *Lagarosiphon major* (Hydrocharitaceae) for the Netherlands has been performed following the Belgian Invasive Species Environmental Impact Assessment (ISEIA), concluding that *L. major* was rated as a medium risk species.

Geographical distribution

EPPO Region: Belgium, France (including Reunion), Germany, Ireland, Italy, the Netherlands, Spain, Switzerland, the United Kingdom.
Africa: Botswana (native), Lesotho (native), Réunion, South Africa (native), Zimbabwe (native), Zambia (native).
Oceania: Australia (New South Wales, Tasmania), New Zealand.

Note: In Austria, transient population had been observed in 1938 but the species is not reported as established. In Australia, the species is reported as established in the coastal districts of northern New South Wales and possibly in Tasmania. Small infestations near Melbourne, in Victoria, and Newcastle, in New South Wales, were eradicated in the late 1970s. No verified record could be found on the presence of *L. major* in Mauritius and Rodrigues Island.

Morphology

L. major is a perennial, submerged, rhizomatous aquatic plant with leaves that alternate spirally along the stems. The leaves are minutely toothed, 5-20 mm long, 2-3 mm wide. Stems are sparsely branched until they approach the water surface. At the nodes, single, pale adventitious roots are produced for additional nutrient uptake. Additional adventitious roots attach the plant to the substrate. The female flower is very small with 3 white/pink petals with a very thin stalk emerging above the water's surface. The male flowers are free floating, and are moved by wind and currents. However, outside of its native range, only female plants are known to occur, and reproduction is only vegetative. Fragments or branches detach and subsequently root.

In which habitats

L. major can colonize freshwater lakes, water-bodies, slow-moving streams, deep reservoirs and dams. It is also reported to occur in wetlands, riparian zones as well as in canals and drainage ditches. According to the Corine Land Cover nomenclature, the following habitats are invaded: Continental waters (water courses, water bodies).

Biology and ecology

L. major usually develops in clear, still and slow-flowing water systems where it can grow at a depth of up to 3 meters. It can live in a wide range of trophic conditions providing that a silty or sandy bottom rich in nutrients is available. It grows faster in temperate

alkaline waters. It is tolerant to low nutrient waters but grows best in waters with a good nutrient supply, and in conditions of high light density. It prefers the cooler waters of the temperate zone, with optimum temperatures of 20-23°C, and a maximum temperature around 25°C. The plant can tolerate cold temperatures as it overwinters in the South of Britain, and vegetative plant parts remain alive throughout winter.

Pathways

L. major is traded as an aquarium plant and as an ornamental plant in ponds, it is even considered as an 'oxygenating plant' although dense stands consume more oxygen than they produce. The species may then spread naturally through water currents, and possibly via waterfowl. Vegetative fragments are spread through different waterbodies by boats and trailers, fishing, and machinery.

Impacts

As observed for most non-native Hydrocharitaceae species, this submerged perennial aquatic plant makes dense monospecific populations which often colonise all of water bodies, restrict water movement, cut off light, produce anoxic conditions and trap sediments. *L. major* has been reported to outcompete native aquatic plants (e.g. *Charophytes, Myriophyllum*, *Potamogeton*) especially in Ireland, and following invasion, the number of native plants decreased significantly. It also affects associated populations of fish and aquatic macroinvertebrates, especially in alkaline waters. Dense beds of the plant provide a poor habitat for aquatic animals and are not consumed by fish. These dense beds also attract herbivorous birds and detritivores such as crayfish, which in turn adversely affect the native flora. The presence of dense stands of *L. major* increases dissolved reactive phosphorous and dissolved inorganic nitrogen and results in changes in temperature and dissolved oxygen level. *L. major* is known to modify and to raise the water pH over 10 and to deplete dissolved CO_2 concentrations, creating stressful conditions for other aquatic organisms. The dense stands also interfere with recreation activities as swimming and angling. *L. major* may have a negative impact agriculture by limiting flows in irrigation channels. In the United Kingdom, the estimated yearly cost of *L. major* is 1 173 214 GBP. *L. major* has also negative effects on water cooling systems for power stations and increases the risk of adjacent land flooding.

Control

Manual removal of the plant may be effective for newly colonized sites at low densities. Mechanical control trials have been undertaken with the use of a blunt V-blade behind a boat. Chemical control includes spraying with the active substance 'diquat' approved for use in aquatic environments. In all cases, stem fragmentation should be avoided, and manual removal may be combined with mechanical harvesting through handpicking of the remaining fragments. All these management methods are costly, may not provide good results over the long term, and may have adverse environmental effects.

Source: Branquart E, Stiers I, Triest L, Vanderhoeven S, Van Landuyt W, Van Rossum F & Verloove F (2010) *Lagarosiphon major*. Invasive species in Belgium Website. http://ias.biodiversity.be/species/show/68

CABI Invasive Species Compendium (2011) *Lagarosiphon major*. http://www.cabi.org/isc/?compid=5&dsid=30548&loadmodule=datasheet&page=481&site=144#

Essl F & Rabitsch W (2002) Neobiota in Österreich. Umweltbundesamt, Wien, 432 pp. http://www.umweltbundesamt.at/fileadmin/site/publikationen/DP089.pdf

Global Invasive Species Database (2006) *Lagarosiphon major*. http://www.issg.org/database/species/ecology.asp?si=403&fr=1&sts=&lang=EN

Matthews J, Beringen R, Collas FPL, Koopman KR, Odé B, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Risk analysis of the non-native Curly Waterweed (*Lagarosiphon major*) in the Netherlands. p 32. http://www.q-bank.eu/Plants/Controlsheets/RA_Lagarosiphon_final20121101.pdf

Matthews J, Beringen R, Collas FPL, Koopman KR, Odé B, Pot R, Sparrius LB, van Valkenburg JLCH, Verbrugge LNH & Leuven RSEW (2012) Knowledge document for risk analysis of the non-native Curly Waterweed (*Lagarosiphon major*) in the Netherlands. p 43. http://www.q-bank.eu/Plants/Controlsheets/KD_Lagarosiphon_final20121031.pdf

Pacific Island Ecosystems at Risk (2011) *Lagarosiphon major*. http://www.hear.org/pier/species/lagarosiphon_major.htm

Queensland Government (Undated) *Lagarosiphon major*. http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Lagarosiphon_major.htm

The Belgian Invasive Species Environmental Impact Assessment (ISEIA) protocol. http://ias.biodiversity.be/documents/ISEIA_protocol.pdf

Additional key words: invasive alien plants, risk assessment **Computer codes:** LGAMA, BE, CH, DE, ES, FR, GB, IE, IT, NL

2013/074 Top 20 environmental weeds for classical biological control in Europe

Classical biological control remains the only tool available for permanent ecological and economical management of invasive alien species that are able to become invasive because their co-evolved natural enemies are absent. Many successful classical biological control programmes abound around the world, despite disproportionate attention being given to occasional and predictable non-target impacts. More than 130 case studies are known in Europe against insect pests, no exotic classical biological control agent has been released in the EU against an alien invasive plant.

Widespread alien plants invading non-cropping ecosystems in Europe was reviewed for their potential as targets for classical biological control from an ecological, social and economic perspective. The available scientific literature listing and prioritizing alien plants was cross-referenced. An aggregated list of over 200 species considered to be the most invasive alien plants in temperate and Mediterranean climates in Europe was then assessed against the following criteria:

- Historical success of biological control against target invasive alien plant, ecological homologues and related species;
- Taxonomic isolation of the species from European native flora (as a measure of risk of non-target damage);
- Likelihood of suitable natural enemies being available as potential agents;
- Target species value to agriculture, horticulture and forestry (potential conflicts of interest);
- History of invasion outside of Europe (opportunities for international collaboration).

Following this assessment, 20 alien plants were prioritized as potential biological control target species for Europe, categorized into 3 groups of decreasing priority (species have a similar priority within each group). These species are listed below, with their area of origin, their climatic conditions and some of the criteria used to hierarchize them:

Group	Species	Area of origin	EU Climatic distribution	Genus native to Europe	Conflict of interest	Existing biocontrol programs
1	*Buddleia davidii* (Scrophulariaceae, EPPO List of Invasive alien plants)	As.	Temperate	No	Ornamental plant	Yes
	Fallopia japonica (Polygonaceae, EPPO List of IAP)	As.	Temperate	Yes	No	Yes
2	*Acacia dealbata* (Fabaceae, EPPO List of IAP)	Austr.	Medit.	No	Ornamental plant	Yes, at least partial success
	Azolla filiculoides (Salviniaceae, EPPO Observation list of IAP)	N-Am.	Temperate/ Medit.	No	No	Yes, at least partial success
	Ailanthus altissma (Simaroubaceae), EPPO List of IAP)	As.	Temperate/ Medit.	No	No	Yes
	Impatiens glandulifera (Balsaminaceae, EPPO List of IAP)	India	Temperate	Yes	Ornamental plant	No
	Rhododendron ponticum (Ericaceae, EPPO Observation list of IAP)	S-Eur.	Temperate/ Medit.	Yes	Ornamental plant	Yes
	Robinia pseudoacacia (Fabaceae)	N-Am.	Temperate	No	Forestry plant	No
	Senecio inaequidens (Asteraceae, EPPO List of IAP)	S-Af.	Temperate/ Medit.	Yes	No	Yes
3	*Ambrosia artemisiifolia* (Asteraceae, EPPO List of IAP)	N-Am.	Temperate/ Medit.	Yes	No	Yes, at least partial success
	Carpobrotus edulis (Aizoaceae, EPPO List of IAP)	S-Af.	Temperate/ Medit.	No	No	No
	Heracleum mantegazzianum (Apiaceae, EPPO List of IAP)	Caucas	Temperate	Yes	No	Yes
	Solanum elaeagnifolium (Solanaceae, EPPO A2 List)	Am.	Temperate/ Medit.	Yes	No	Yes, at least partial success
	Baccharis halimifolia (Asteraceae, EPPO List of IAP)	N-Am.	Medit.	No	No	Yes, at least partial success
	Hydrocotyle ranunculoides (Apiaceae, EPPO A2 List)	N-Am.	Temperate/ Medit.	Yes	No	Yes
	Ludwigia grandiflora (Onagraceae, EPPO A2 List)	S-Am.	Temperate/ Medit.	Yes	No	Yes
	Crassula helmsii (Crassulaceae, EPPO A2 List)	Australasia	Temperate	Yes	No	No
	Elodea canadensis (Hydrocharitaceae)	N-Am.	Temperate	No	No	No
	Myriophyllum aquaticum (Haloragaceae)	S-Am.	Temperate/ Medit.	Yes	No	Yes
	Solidago canadensis (Asteraceae)	N-Am.	Temperate	Yes	No	No

Furthermore, the authors identify three constraints likely to be an obstacle adoption of classical biological control of invasive alien plants in Europe: (i) public perception, (ii) funding reliability and (iii) legislative and regulatory issues.

Source: Sheppard AW, Shaw RH & Sforza R (2006) Top 20 environmental weeds for classical biological control in Europe: a review of opportunities, regulations and other barriers to adoption. *Weed Research* **46**, 93–117.

Additional key words: invasive alien plants, biological control

Computer codes: ACADA, AILAL, AMBEL, AZOFI, BACHA, BUDDA, CBSED, CSBHE, HYDRA, IPAGL, LUDUR, MYPBR, POLCU, RHOPO, ROBPS, SENIQ, SOOCA