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2010/001 First report of *Diabrotica virgifera virgifera* in Belarus

The NPPO of Belarus recently informed the EPPO Secretariat of the first record of *Diabrotica virgifera virgifera* (Coleoptera: Chrysomelidae – EPPO A2 List) on its territory. During a survey, 1 adult beetle was caught in a pheromone trap in August 2009. This trap was located in a maize field in the south of the Brest district (Brest region), 900 m from the point of entry 'Tomashovka' at the border with Poland. This location is also very close to the border with Ukraine. A focus zone of 1 km radius was delimited around the field where the insect was captured, as well a buffer zone of 40 km radius surrounding the focus zone. The focus zone was monitored with pheromone traps but no additional beetles were caught. Monitoring will continue in both the focus and buffer zones in 2010.
The situation of *Diabrotica virgifera virgifera* in Belarus can be described as follows: **Present, a single adult was caught for the first time in August 2009 in a maize field (south of the Brest district) close to the borders with Poland and Ukraine, under official control.**

Source: NPPO of Belarus, 2010-01.

Additional key words: new record **Computer codes:** DIABVI, BY

2010/002 First record of *Tuta absoluta* in Bulgaria

The NPPO of Bulgaria recently informed the EPPO Secretariat of the first record of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) on its territory.
The situation of *Tuta absoluta* in Bulgaria can be described as: **Present, first found in 2009, no further details.**

Source: NPPO of Bulgaria, 2009-12.

Additional key words: new record **Computer codes:** GNORAB, BG

2010/003 First record of *Tuta absoluta* in Cyprus

The NPPO of Cyprus recently informed the EPPO Secretariat of the first record of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) on its territory. During an intensive monitoring programme using pheromone traps, *T. absoluta* was detected in most glasshouse tomato producing areas in November 2009. It is believed that the pest entered Cyprus with imports of infested tomato fruits from other European countries but this could not be confirmed. Measures are taken by the Department of Agriculture to control *T. absoluta* (chemical treatments, use of biological control agents and appropriate cultural practices).
The situation of *Tuta absoluta* in Cyprus can be described as: **Present, first found in 2009 in most glasshouse tomato producing areas, under official control.**

Source: NPPO of Cyprus, 2009-12.

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

2010/004 First record of *Tuta absoluta* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of the first record of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) on its territory. The pest was found in Baden-Württemberg during a monitoring programme which was carried out from September to October 2009. Pheromone traps were placed in tomato crops, central markets, and packing stations. In total, 27 adults were caught in pheromone traps. *T. absoluta* was caught in 1 central market, 1 packing station, and 4 production sites. All infested production sites were located near central markets and packing stations, or were sites where additional tomatoes had been regularly brought from Italy, the Netherlands and Spain. It is thought that *T. absoluta* has been introduced with consignments of tomatoes from infested countries. At the infested production sites, tomato plants are subject to destruction measures.
The pest status of *Tuta absoluta* in Germany is officially declared as: **Transient, only in some areas, actionable, under surveillance.**

Source: NPPO of Germany, 2009-12.

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

2010/005 *Tuta absoluta* found in Piemonte region, Italy

In Italy, *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A2 List) was first reported in spring 2008 in Calabria, and then on tomato crops in several other Italian regions (EPPO RS 2009/023, 2009/106 and 2009/153, 2009/172). The NPPO of Italy recently informed the EPPO Secretariat of the first detection of *T. absoluta* in Piemonte region. During a monitoring programme, *T. absoluta* was caught (on pheromone traps) in glasshouse tomato crops in the municipalities of Pecetto Torinese (Torino province), Beinasco (Torino province), Fossano (Cuneo province), Ceresole d'Alba (Cuneo province), Asti (Asti province) and Alessandria (Alessandria province). In addition, several specimens were caught in a large fruit and vegetable market in Torino, and in the premises of a company transforming tomato fruits in Pozzolo Formigaro (Alessandria province).
The situation of *Tuta absoluta* in Italy can be described as follows: **Present, first found in 2008, now reported from Abruzzo, Calabria, Campania, Lazio, Liguria, Sardegna, Sicilia, Piemonte, Puglia, Umbria, and Veneto, under official control.**

Source: NPPO of Italy, 2009-12.

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

2010/006 *Anoplophora glabripennis* found again in Germany

The NPPO of Germany recently informed the EPPO Secretariat that *Anoplophora glabripennis* (Coleoptera: Cerambycidae – EPPO A1 List) has been found again in Nordrhein-Westfalen. It can be recalled that in 2005 and again in 2007, *A. glabripennis* had been detected near Bornheim (Nordrhein-Westfalen) and subjected to eradication measures (EPPO RS 2008/095).
On 2009-08-14, 3 heavily infested *Acer platanoides* cv. 'Globosum' were found in a private property in Alfter (Nordrhein-Westfalen). The trees showed bore holes, shoot wilting and

feeding shavings. Numerous beetles and larvae were found and identified as *A. glabripennis*. On 2009-08-28, a willow tree (*Salix caprea*) showing similar symptoms was observed in another nearby private property but no living beetles could be found. The private properties concerned are located outside the buffer zone which was already delimited in Bornheim. It is not known whether this new infestation results from natural dispersal from the originally infested area in Bornheim, or is a new introduction via packaging wood material from a stone trader located nearby. All infested trees were burnt. Further examinations and inspections are being carried out to define the extent of the infestation and delimit the infested and buffer zones.
The pest status of *Anoplophora glabripennis* in Germany is officially declared as: **Transient, actionable, under eradication.**

Source: NPPO of Germany, 2010-01.

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

2010/007 First record of *Drosophila suzukii* in Italy: addition to the EPPO Alert List

The NPPO of Italy recently informed the EPPO Secretariat of the first record of *Drosophila suzukii* (Diptera: Drosophilidae) on its territory. In September 2009, numerous larvae of an unknown drosophilidae were found in ripening raspberries (*Rubus idaeus*) collected from a field near Pergine Valsugana (province of Trento – Trentino-Alto Adige region) in the northeast of Italy. The insect was identified as *D. suzukii*, an Asian pest of fruit crops which has recently been found damaging small fruit and fruit tree crops in North America. In Italy following its initial discovery, *D. suzukii* was detected during the autumn 2009 in a few areas of the province of Trento, in the municipalities of Pergine Valsugana (Canzolino), Trento (Vigo Meano), Imer, Segonzano, and Vigo Cavedine. Damage has been observed on the following crops: *Vaccinium* spp. (blueberries), *Rubus idaeus* (raspberries), *Fragaria ananassa* (strawberries), *Rubus* spp. (blackberries). It is noted that small fruit crops are economically important in the province of Trento (covering approximately 600 ha, mainly in the eastern valleys of the province), and it is feared that the pest may attack other major fruit crops (e.g. cherries, peaches, nectarines, plums, grapes and apples) in Italy. In Trentino, all fruits from infected crops were collected and destroyed. In 2010, surveys will be intensified to determine the extent of the infestation (inspection of fruit crops, trapping programmes etc.) and fruit growers will be informed of this new pest introduction.
Drosophila suzukii originates from Asia. The species was first described in Japan in 1931 (although its presence was first registered in Yamanashi Prefecture, Honshu, in 1916). In Japan, *D. suzukii* is reported to cause damage to several fruits crops (including cherries and blueberries). In the USA, the presence of *D. suzukii* has been reported in Hawaii since the 1980s, but apparently without any particular damage to fruit crops. In continental USA, unusual damage caused by a drosophila fly was first observed in September 2008 in a raspberry field in Santa Cruz County, California (US). At first, the pest was misidentified as *D. biarmipes* but with additional samples being collected from other locations in Santa Cruz County and cherry growing areas of the Central Valley, the identity of the pest could be confirmed as *D. suzukii*. At the end of 2009, the insect was considered to be established in many Californian counties. During 2009, *D. suzukii* spread to other US states (Florida, Oregon and Washington) and to British Columbia in Canada (Fraser and Central Okanagan Valleys).

Because *D. suzukii* is currently spreading and causing damage to fruit crops in North America, and has also been introduced into Europe, the EPPO Secretariat decided to add it to the EPPO Alert List.

Drosophila suzukii (Diptera: Drosophilidae – spotted wing drosophila)

Why	*Drosophila suzukii* is an Asian pest of fruit crops which has almost simultaneously been introduced into North America and in Italy (in 2008 and 2009, respectively). Because the pest has a high potential for spread and can cause economic damage to many fruit crops, the EPPO Secretariat decided to add *D. suzukii* to the Alert List.
Where	**EPPO region:** Italy (province of Trento - Trentino-Alto Adige region), Russia (Far East). **Note:** Hauser *et al.* (2009) mention that *D. suzukii* has been found in October 2008 in Spain near Barcelona. The EPPO Secretariat is currently verifying this information. In their paper, it was also mentioned that unconfirmed records had been made from Montpellier and the Alps in France, but the French NPPO confirmed that *D. suzukii* has not been reported from its territory and that no specimens have ever been sent to their official laboratories for identification. **Asia:** China (Guangxi, Guizhou, Henan, Hubei, Yunnan, Zhejiang), India (Chandigarh, Jammu and Kashmir, Uttar Pradesh), Japan (Hokkaido, Honshu, Kyushu, Ryukyu), Korea Republic (including Cheju island), Myanmar, Russia (Primor'e region - Far East), Thailand. **North America:** Canada (British Columbia, first found in autumn 2009 in the Fraser Valley area and caught in a cherry orchard in the Central Okanagan Valley), **USA** (Hawaii introduced into the 1980s; California (2008), Oregon (2009), Washington (2009)).
On which plants	*D. suzukii* has a wide host range and can attack many fruit crops, including small fruit crops, fruit trees and grapevine. Its host range includes: *Actinidia* spp. (kiwis), *Diospyros kaki* (persimmons), *Ficus carica* (figs), *Fragaria ananassa* (strawberries), *Malus domestica* (apples), *Prunus avium* (sweet cherries), *P. domestica* (plums), *P. persica* (peaches), *Pyrus pyrifolia* (Asian pears), *Rubus armeniacus* (Himalayan blackberries), *R. loganobaccus* (loganberries), *R. idaeus* (raspberries), *R. laciniatus* (evergreen blackberries), *R. ursinus* (marionberries), and other blackberries (*Rubus* spp.), *Vaccinium* spp. (blueberries), *Vitis vinifera* (table and wine grapes).
Damage	Although the vast majority of *Drosophila* species are not fruit pests (larvae developing only in damaged or rotting fruits), *D. suzukii* is one of the very few *Drosophila* species which are able to feed on healthy ripening fruit while they are still attached to the plant. Damage is caused by larvae feeding on fruit pulp inside the fruit and berries. Very rapidly, infested fruit begin to collapse around the feeding site. Thereafter, secondary fungal or bacterial infections may contribute to further fruit deterioration (i.e. rotting). In the USA, severe losses have been reported in cherry production in California (estimated at 25% state-wide in 2009). Several berry growers in California, Oregon and Washington, and peach growers from Oregon have reported up to 100% crop losses in some fields. Adults are brownish yellow flies with black bands on the abdomen, and bright red eyes. Males (2.6 - 2.8 mm long) have a dark spot along the front edge of each wing (hence its English common name), and two rows of combs on each fore tarsus. Females (3.2 - 3.4 mm long) do not have spots on their wings, nor tarsal combs. On average, females can lay 1 to 3 eggs at each oviposition puncture (and more than 300 eggs in their lifetime), but as many females may visit the same piece of fruit up to 60-70 insects may emerge from a single fruit. Larvae (up to 3.5 mm) have white cylindrical bodies, tapered in their anterior part with elevated posterior spiracles. There are three larval instars before pupation takes place. Pupae (2-3 mm long) are reddish brown with two small projections at the end, and can be inside or outside the fruit.

Pictures can be viewed on the Internet:
http://cemariposa.ucdavis.edu/files/67726.pdf
http://berrygrape.org/files/Dsuzukii_alert.pdf
http://cisr.ucr.edu/spotted_wing_drosophila_cherry_vinegar_fly.html
http://www.agf.gov.bc.ca/cropprot/swd.htm

Reproduction in *Drosophila* species is particularly rapid with a short life cycle of 1 to 2 weeks depending of the climatic conditions, therefore a single pair of flies can produce hundreds of offspring within a couple of weeks. In Japan, *D. suzukii* has about 13 generations per year, and predictions made for the Californian climate are of 3 to 10 generations per year. *D. suzukii* seems to prefer high humidity and moderate temperatures. Cold winters do not seem to limit the insect's survival, considering its establishment in Northern China and the Southern part of Hokkaido (Japan).

Dissemination: Adults are highly mobile. The rapid spread which is currently being observed in North America demonstrates the high capacity of this insect for natural spread. Over long distances, trade of infested fruit and plants can ensure pest dissemination. For the moment, it is not known how *D. suzukii* was introduced into North America and Europe.

Pathway: Plants of planting, fruit of *D. suzukii* host plants.

Possible risks: Many host plants of *D. suzukii* (e.g. *Fragaria, Prunus, Rubus, Vaccinium, Vitis vinifera*) are economically important crops across the EPPO region. The high reproduction rate and capacity for natural spread probably render containment or eradication very difficult. In addition, early infestations are difficult to detect (small oviposition scars) and these infested fruit are likely to be traded undetected. For the moment, data is lacking on the potential of establishment of *D. suzukii* in the EPPO region, but the fact that *D. suzukii* seems to favour cool and humid climate (e.g. in central coastal California) suggests that it probably has the potential to establish in most parts of the EPPO region. Preliminary results from Climex/Maxent modelling studies (done for North America only) showed that *D. suzukii* has the potential to establish along the west coast of USA and Canada (e.g. British Columbia), and in large parts of Eastern USA. For the moment, data is lacking about field (e.g. 'attract-and-kill strategy') and post-harvest treatments (e.g. cold treatments, fumigation, irradiation) but investigations are being initiated in the USA. It is considered that sanitation techniques (fruit removal, pruning) could help to reduce pest populations. There is no data on biological control but it is mentioned in the Japanese literature that larvae of *D. suzukii* were naturally parasitized by a species belonging to the genus *Phaenopria* (Hymenoptera: Diapriidae). Although data is lacking about the insect biology and its economic impact, preliminary observations made in countries where the pest has been introduced, suggest that *D. suzukii* is a serious threat to many fruit crops in the EPPO region.

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2010/008 First report of *Dendrolimus pini* in the United Kingdom

The NPPO of the United Kingdom recently informed the EPPO Secretariat of the first finding of *Dendrolimus pini* (Lepidoptera: Lasiocampidae) on its territory. Following reports (2007) of trapping of adult males by amateur moth recorders in 2004 (1 male) and 2007 (2 males), official surveys have been carried out in 2008 and 2009 (ground litter surveys, sticky band traps and pheromone and light trapping). Ten adult males were trapped in 2008 but no other life stages/gender were detected in any of the surveys. In 2009, 98 adult males were trapped in the same area and, in September 2009, one live larva, a cocoon, and pupal remains were discovered following a selective felling of mature *Pinus sylvestris.* It is not yet known how or when *D. pini* was introduced and this is still

under investigation. The area affected lies approximately 14 km west of Inverness, Scotland and is confined to a small number of plantations amounting to approximately 1400 hectares. Pest management options are still being evaluated.
The pest status *of Dendrolimus pini* in the United Kingdom is officially declared as: **Present, locally in forests in North-East Scotland at low prevalence. Control measures are being evaluated.**

Source: NPPO of the United Kingdom, 2009-10.

Additional key words: new record **Computer codes:** DENDPI, GB

2010/009 *Leptoglossus occidentalis*: an invasive alien species spreading in Europe

Leptoglossus occidentalis (Heteroptera: Coreidae – common names: western conifer seed bug or leaf-footed conifer seed bug) was first described in 1910 in California (US) and is considered as native to the western areas of North America, from Mexico in the south through California and Utah to British Columbia, Alberta, and Saskatchewan in the north. Since the end of the last century the range of this bug has been expanding, more particularly eastwards beyond the Rocky Mountains. In the 1950s and 1960s it reached Indiana, Iowa, Montana, Nebraska and Kansas. By the 1970s it was established in Wisconsin and Illinois, and by the mid 1980s it was found in Minnesota, Michigan, Ontario (Canada), and Connecticut. In the 1990s, it was reported from New York, Massachusetts, Rhode Island, New Hampshire, Maine, Pennsylvania and New Brunswick (Canada).
In Europe, *L. occidentalis* was observed for the first time in 1999 in Northern Italy, and within a very short time its presence was reported from more than 15 European countries (see below), thus clearly demonstrating an invasive behaviour. It is hypothetized that its current distribution in Europe probably results from several introductions which were then followed by natural spread. It is hypothetized that this insect may have been introduced through trade of timber. Interestingly, *L. occidentalis* was discovered for the first time in Asia in 2008; few specimens were observed in Tokyo, Japan.
In North America, the main host plants of *L. occidentalis* are *Pinus* species and *Pseudotsuga menziesii*, but the insect has also been found on *Abies, Calocedrus decurens, Cedrus, Juniperus, Tsuga canadensis* and *Picea* spp. Adults feed on flowers and seeds of conifer species in spring. Females lay eggs on needles and young larvae feed primarily on developing cones and occasionally on needles. They insert their long proboscises into the cones to suck juices from the seeds (bugs remaining on the outside of the cone). There are five larval instars and adults appear during summer. In USA and Canada, the species is monovoltine, but in Mexico it is polyvoltine. Adults are the overwintering stage, and in autumn they look for shelter and may enter buildings, sometimes becoming a nuisance to humans. In USA, *L. occidentalis* is considered to be a pest of conifer cones, as its feeding activity can affect the seed production of conifer stands.
Many pictures of *L. occidentalis* can be found on the Internet, for example:
http://www.inhs.uiuc.edu/~sjtaylor/coreidae/coreidae.html
http://www.forestryimages.org/browse/subthumb.cfm?sub=459&start=1
In Europe, no severe damage was reported in forests or conifer seed production, so far. However, it must be acknowledged that many records have been made by both amateur and professional entomologists in cities, essentially in buildings or near parks and gardens. In many cases, it was not possible to associate pest records with observations on potential host plants. Therefore it seems desirable that studies on the distribution of *L. occidentalis* and the possible impacts of this invasive species on coniferous forest ecosystems or in urban environments should be conducted.

Spread of *Leptoglossus occidentalis* in Europe

- **1999: first record from Italy**

In Europe, *L. occidentalis* was first observed in Italy near Vicenza (Veneto region) in 1999 (see EPPO RS 2006/160). This first record was followed by a rapid spread in Italy, and *L. occidentalis* has been found in Lombardia, Veneto, Abruzzo, Friuli-Venezia Giulia, Emilia-Romagna, Trentino-Alto Adige, and Sicilia. In Sicilia, the first specimens were caught in September 2002, and the insect rapidly spread accross the island. It was collected on cones and plants of *Pinus halepensis, P. laricio, P. pinea, P. nigra* and *Pseudotsuga menziesii*, as well as inside or near buidlings. In 2009, the regional Plant Protection Organization of the Valle d'Aosta region reported the presence of this insect in the municipalities of Aosta, Châtillon, Introd, and Morgex.

- **2002**

Switzerland: *L. occidentalis* was first recorded in Ticino in 2002. In 2007, it was found in the north, in the cantons of Uri and Vaud (see RS 2008/199).

- **2003**

Slovenia: It was first found in 2003 at Brje (near Komen) and in 2004 near Ljubljana (see EPPO RS 2006/160).

Spain: The first specimen was captured in Cataluña in 2003, in woodlands located near Barcelona (Vallbona d'Anoia). In 2007 and 2008, the insect was observed in several sites in the provinces of Barcelona and Girona. In 2008, new records were made in Jaén (Andalucía), and in the cities of Murcia and Madrid.

- **2004**

Croatia: It was first reported in 2004 on the Island of Cres on *Pinus nigra*. In 2007 it was also found on other islands: Rab, Hvar and Brač, showing that this insect has spread rapidly along the Adriatic coast. However, population densities appeared to be low (only few specimens caught).

Hungary: The first specimen was recorded in October 2004 at Keszthely (county of Zala) in the west part of Hungary. Other specimens were later observed in Budapest and Litér (county of Veszprém) in 2005, and in the north-east in Mátrafüred (Gyöngyös, county of Heves) in 2006.

- **2005**

Austria: *L. occidentalis* was first found in Vienna, Kärnten (Carinthia) and Tyrol in autumn 2005. In 2006, it was also observed in Salzburg.

- **2006**

Slovakia: It was first observed in May 2006 in a park in the city of Nitra.

France: *L. occidentalis* was first found in France in September 2006 (the first specimen was observed, drowned in a swimming pool in the Mediterranean part of France). It was later reported from several departments (mainly in the south-east of France, with the exception of Paris): Ain, Alpes-de-Haute-Provence, Alpes-Maritimes, Ardèche, Bouches-du-Rhône, Hautes-Alpes, Haute-Corse, Drôme, Gard, Hérault, Isère, Lot-et-Garonne, Lozère, Paris, Rhône, Tarn, Tarn-et-Garonne, Var, Vaucluse. Interestingly, it is reported that *L. occidentalis* was intercepted in May 2006 in Le Havre on a consignment from the USA containing sawn wood of *Quercus*. It is suspected that *L. occidentalis* may have been introduced via seaports (possibly with trade of wood or wood products), as the insect has been found near major harbours like Venezia (Italy), Barcelona (Spain), Le Havre

(intercepted only, France), Weymouth (United Kingdom) and Ostende (Belgium). In an English translation of the original paper from Dusoulier *et al.* (2008) later published in Het News (no.12 Autumn 2008), a small note has been added and indicated that *L. occidentalis* has now spread across Northern France, the bug being found in many locations in Normandie and the Centre region. Finally, a recent paper indicates that the bug now occurs in Alsace.

Germany: It was first found in October 2006 in Berlin. Other specimens were observed in Köln (Nordrhein-Westfalen) in 2007, in several urban sites in Baden-Württemberg in 2008 (Mannheim, Freiburg, Villingen), and in Merzig (Saarland) in 2009.

Czech Republic: It was first found on 2006-10-08 on a window of the State Phytosanitary Administration in Brno. Another specimen was found in 2007-07-23 under a *Pinus nigra* tree in a botanical garden in Brno. Later in 2007, 7 adults and 5 larvae were found in the botanical garden in Brno. Other findings were then made in autumn 2007 in Olomouc and Brno-Lesná.

Serbia: *L. occidentalis* was observed for the first time in Novi Sad in October 2006. The insect had flown into the apartment of a biologist who was able to take a picture of it! The first specimen which could be firmly identified was caught a year later in September 2007 on the balcony of an entomologist in Belgrade (Stari Košutnjak). Two more specimens were caught in 2008 in Novi Sad.

- **2007**

Belgium: *L. occidentalis* was observed for the first time near Ostende in 2007.

United Kingdom: *L. occidentalis* was collected for the first time at Weymouth College (Dorset) in England in January 2007. No further specimens were found until 2008 when numerous adults were observed in light traps along the south coast of England, clearly indicating a large migration across the English Channel. Subsequently, it was found at several locations in England (at least 35 records in 2008) mainly along the south coast of England but as far north as Kendal (Cumbria). In addition, a single specimen was intercepted in a timber shipment from the USA.

Poland: In October 2007, two populations of *L. occidentalis* were recorded in the southern part of Poland: in Wrocław on a window near a group of *Pinus strobus* trees; and at Miechów near Cracow on a window sill near *P. sylvestris* trees.

- **2008**

Montenegro: In August 2008, *L. occidentalis* was collected for the first time (1 male specimen) in Budva, in a park.

Bulgaria: In October 2008, 1 female of *L. occidentalis* was observed for the first time in Bulgaria, in the building of the national radio in Sofia.

Source:

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Additional key words: new record, detailed record

Computer codes: LEPLOC, AT, BE, BG, CA, CH, CZ, DE, ES, FR, GB, HR, HU, IT, JP, ME, MX, PL, RS, SI, SK, US

2010/010 *Oxycarenus lavaterae* found for the first time in the Netherlands

The NPPO of the Netherlands informed the EPPO Secretariat of the first record of *Oxycarenus lavaterae* (Heteroptera: Lygaeidae) on its territory. Aggregates of overwintering bugs were found in 2007 in a nursery on *Tilia cordata* plants which had been imported from Italy. Because *O. lavaterae* already occurs in Europe with a low economic impact and has the potential to spread naturally, no phytosanitary measures were taken in the Netherlands.
The pest status of *Oxycarenus lavaterae* in the Netherlands is officially declared as: **Present, at low prevalence.**

O. lavaterae feed and develop on plants belonging to the Malvaceae family, such as *Althea, Hibiscus, Lavatera,* and *Malva sylvestris* but do not cause particular damage. It is considered that 2 generations usually take place on these hosts during the vegetation period. Large adult colonies overwinter on trees, mainly on lime trees (*Tilia americana, T. cordata, T. parviflora, T. platyphyllos*), and less frequently on other species (*Populus, Platanus, Aesculus hippocastanum*). Adults do not cause plant damage but may be a nuisance in urban environments because of the high numbers of individuals.
Pictures of the insect can be viewed on the Internet:
http://www.galerie-insecte.org/galerie/ref-1260.htm
http://commons.wikimedia.org/wiki/Category:Oxycarenus_lavaterae
Until recently, *O. lavaterae* was considered to occur only around the Mediterranean Basin and in Africa, but it is now spreading towards Northern and Central Europe. It is not known whether this is a consequence of global warming or an adaptation of the species to colder conditions than in its area of origin. The EPPO Secretariat has gathered the following tentative distribution list:
EPPO region: Austria (first found in 2001, now in Burgenland, Steiermark, Niederösterreich and Vienna), Bosnia and Herzegovina, Bulgaria (1998), Croatia, Czech Republic (2004), France (south, but spreading towards the north since the 1970s), Germany (2004), Hungary, Italy, Montenegro, Portugal, Serbia, Slovakia (1999), Slovenia, Spain, Switzerland (in the South but first found in 2004/2005 in Basel).
Africa: *O. lavaterae* is considered to be an Afrotropical insect but no specific data could be found on its distribution in Africa.

Source: NPPO of the Netherlands, 2009-06.
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Additional key words: new record **Computer codes:** OXYALV, NL

2010/011 *Marchalina hellenica* found on the Island of Procida, Italy

The NPPO of Italy informed the EPPO Secretariat that *Marchalina hellenica* (Hemiptera: Margarodidae – formerly EPPO Alert List) has been recorded on the Island of Procida (province of Napoli, Campania region). So far, *M. hellenica* was only present on the nearby Island of Ischia (see EPPO 2006/130). On Procida, *M. hellenica* was found in only 1 *Pinus taeda* tree which has now been destroyed. Further surveys carried out on the island did not detect the pest. It is considered that this isolated finding resulted from natural spread from the nearby Island of Ischia where the pest is now established.

Source: NPPO of Italy, 2009-12.

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

2010/012 *Chrysomphalus aonidum* is reported from Calabria, Italy

The NPPO of Italy recently informed the EPPO Secretariat that *Chrysomphalus aonidum* (Hemiptera: Diaspididae – Florida red scale) has been found in Calabria region. In July 2009, the Regional PPO of Calabria detected *C. aonidum* in the municipality of Bianco, Province of Reggio Calabria. The pest was observed on leaves and fruits of citrus plants (*Citrus limon, C. reticulata, Fortunella japonica*) in private urban areas. Surveys are being implemented in the surrounding areas to determine the extent of the infestation. An eradication programme is currently being developed by the Regional PPO of Calabria.
The pest status of *Chrysomphalus aonidum* in Italy is officially declared as: **Present, one isolated outbreak.**

Note: *C. aonidum* is considered to originate from Asia but it has become widely distributed in tropical and subtropical regions of the world. It is a highly polyphagous pest (feeds on more than 270 species from 69 plant families) but the most significant damage is observed on citrus. In the EPPO region, *C. aonidum* has been recorded around the Mediterranean Basin on citrus in Algeria, Egypt, Israel, Lebanon, Morocco, Spain (Islas Canarias only), Greece, and Turkey. In other European countries (e.g. France, Hungary, Netherlands, Poland), it is occasionally reported on ornamental plants grown in glasshouses.
In Italy, the presence of *C. aonidum* had been observed earlier but only in protected conditions. It was observed in Sicilia on *Cycas* spp. in 1994 and later on *Kentia* and *Dracaena* in glasshouses. It was detected outdoor on citrus for the first time in spring 2006 in Calabria. It was observed on *Citrus aurantium* grown for ornamental purposes in the centre of the municipality of Bianco (same location as in 2009). Other citrus trees growing in private gardens nearby were also infested. Interestingly, the presence of *C. aonidum* on outdoor citrus trees is also rather recent in Greece (2000) and Spain (1999). In mainland Spain, *C. aonidum* was first detected on outdoor citrus near Valencia in 1999, but the pest was successfully eradicated from this region (however, it is still recorded as present from Islas Canarias).

Source: NPPO of Italy, 2009-10.

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

2010/013 Isolated finding of *Thaumatotibia (Cryptophlebia) leucotreta* on *Capsicum chinensis* in the Netherlands

The NPPO of the Netherlands recently informed the EPPO Secretariat of the first record of *Thaumatotibia leucotreta* (Lepidoptera: Tortricidae - false codling moth) in a Dutch glasshouse on *Capsicum chinense* (Habanero chilli pepper). A crop inspection had been conducted in this glasshouse to trace-back an interception of *T. leucotreta* which had been made by the USA on *C. chinense* fruits imported from the Netherlands. On 2009-10-07, 1 larva of *T. leucotreta* was detected in a *C. chinense* fruit (not yet harvested) which was deformed. The Dutch NPPO explained that the production facility of this grower was connected to a packaging area in which capsicum fruits originating from Uganda were regularly processed and packed. The grower usually imported *C. chinense* fruits from Uganda from mid-November until March, and *C. annuum* fruits from Uganda during the whole year. Therefore, it was considered most likely that a consignment of infected peppers had caused the introduction of *T. leucotreta* into the production facility.
T. leucotreta is a polyphagous pest which feeds on more than 70 plant species, including important crops such as: *Citrus* spp., *Capsicum* spp., *Gossypium hirsutum* (cotton), *Persea americana* (avocado), *Phaseolus* spp., *Prunus* spp., *Vitis* spp. (grapevine), *Olea* spp., and *Zea mays*. Damage is mainly caused by larvae feeding inside the fruits. In some crops, such as on *C. chinense*, fruit deformation can be observed. *T. leucotreta* is known to occur in many African countries, south of the Sahara. The insect can be found on its host crops throughout the year in tropical and sub-tropical climates (without diapause). Larvae feed inside the fruits and then fall to the soil surface to pupate. *T. leucotreta* is a multivoltine species. For example, in South Africa where the pest breeds all year-round on oranges (*C. sinensis*), up to 6 generations per year have been observed.
A preliminary Pest Risk Analysis (PRA) has been conducted and concluded that the pest was unlikely to establish outdoors in the Netherlands and that it presented a low risk for the country. However, a fuller PRA was to be conducted by the Dutch NPPO before the end of 2009. The grower of the infested site has taken control measures to eradicate *T. leucotreta* from the premises. Growers and traders have been informed about this finding and the possible risks associated with the imports of *Capsicum* spp. from Africa and a surveillance programme using pheromone traps will be implemented.
The pest status of *Thaumatotibia leucotreta* in the Netherlands is officially declared as: **Absent, isolated finding, only detected on** *Capsicum chinense.*

Source: NPPO of the Netherlands, 2009-11.

Additional key words: phytosanitary incident **Computer codes:** ARGPLE, NL

2010/014 Incursion of *Stathmopoda auriferella* in the Netherlands

The NPPO of the Netherlands recently informed the EPPO Secretariat of the detection of 1 adult specimen of *Stathmopoda auriferella* (Lepidoptera: Oecophoridae) on an ornamental plant of *Melodorum fruticosum* (Annonaceae) as a result of monitoring activities. The plants were growing in glasshouses and had been imported from Thailand. The insect was detected on the 2009-07-29. No particular phytosanitary measures will be taken.
The pest status of *Stathmopoda auriferella* in the Netherlands is officially declared as: **Absent, intercepted only.**

S. auriferella is a microlepidoptera, adults have a wingspan of approximately 12 mm. Pictures of the adult can be viewed on the Internet:
http://www.jpmoth.org/Stathmopodidae/Stathmopoda_auriferella.html
S. auriferella is polyphagous and its larvae are reported to feed mainly on flower buds, flowers and fruits, but there are also records of leaf damage (e.g. on *Gynura bicolor* and *Hibiscus cannabinus*). Concerning fruit crops, *S. auriferella* has been reported on *Actinidia sinensis* (kiwi), *Citrus sinensis* (orange), *Cocus nucifera* (coconut), *Coffea* spp., *Malus domestica* (apple), *Mangifera indica* (mango), *Prunus persica* (peach) and *Vitis vinifera* (grapevine). However, data is lacking on the host range of the *S. auriferella* and its economic impact on the above crops.
The following geographical distribution was gathered by the EPPO Secretariat from the literature but it is most likely to be incomplete.
EPPO region: Greece (Kriti, reported in 2004).
Africa: Cameroon, Egypt, Nigeria
Asia: China, India (Himachal Pradesh, Punjab), Indonesia (Java), Japan, Korea Republic, Malaysia (West), Pakistan, Philippines, Russia (Far East), Sri Lanka, Thailand.

Source: NPPO of the Netherlands (2009-11).

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Additional key words: phytosanitary incident **Computer codes:** STATSP, NL

2010/015 *Hypercompe icasia* intercepted on pot plants in the Netherlands

The NPPO of the Netherlands informed the EPPO Secretariat of the interception of *Hypercompe icasia* (Lepidoptera: Arctiidae). Insect larvae were found on *Dracaena* pot plants imported from Costa Rica in 2009. This species had been intercepted before on *Begonia* pot plants imported from Costa Rica in 2006 (eggs) and in 2008 (larvae). *H. icasia* is a polyphagous pest (e.g. *Apium, Citrus, Musa, Phaseolus,* cultivated Solanaceae*, Vanilla*) which is known to occur in South America, Central America, and the Caribbean. In its current area of distribution, the incidence of the pest is generally low and no severe outbreaks have been reported.
Pictures of the adults can be viewed on the Internet:
http://www.inra.fr/papillon/arctiid/texteng/h_icasia.htm

Source: NPPO of the Netherlands, 2009-06.

Additional key words: interception **Computer codes:** NL

2010/016 First record of *Monilinia fructicola* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of the first record of *Monilinia fructicola* (EPPO A2 List) on its territory. The fungus has been detected in an orchard in fruits of *Rubus fruticosus* (blackberries) and in an adjacent orchard in fruits of *Prunus domestica* (plums). Symptoms were first observed on 2009-08-01, but the identification of the pathogen by PCR was completed only on the 2009-11-19. The origin of this infestation remains unknown. Eradication measures have been applied and intensive surveys are being carried out in the area where the fungus was detected.
The pest status of *Monilinia fructicola* in Germany is officially declared as: **Transient, actionable, under eradication.**

Source: NPPO of Germany, 2009-12.

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

2010/017 *Blueberry scorch virus* detected in Trentino-Alto Adige and Piemonte regions, Italy

In 2004, the presence of *Blueberry scorch virus* (*Carlavirus*, BlScV – EPPO A2 List) was reported for the first time in Europe. BlScV was detected in a small number of *Vaccinium corymbosum* plants cultivated in Piemonte region, Italy (EPPO RS 2005/101). In 2009, the NPPO of Italy again reported the presence of BlScV in Piemonte (4 outbreaks) and in a new area in the region of Trentino-Alto Adige (1 outbreak).

- **Trentino-Alto Adige**

The Regional PPO of the region of Trentino-Alto Adige detected the presence of BlScV in the municipality of Carzano (Bassa Valsugana e Tesino, province of Trento). The virus was detected in a glasshouse (1700 m²) on 2 plants only (1 *Vaccinium corymbosum* and 1 *V. ashei*). The 2 infected plants were destroyed. Surveys were initiated in the surroundings to determine the extent of the disease. Seven production sites and 3 nurseries producing

planting material of *Vaccinium* were inspected and samples were collected. All tested samples gave negative results.

- **Piemonte**

The Regional PPO of the region of Piemonte detected the presence of BlScV in the municipalities of Campiglione Fenile (Torino province), Brondello (Cuneo province), San Damiano Macra (Cuneo province) and Costigliole Saluzzo (Cuneo province). In Costigliole Saluzzo, 7 200 *Vaccinium* plants (3.8 ha) were destroyed and surveys which were conducted afterwards did not detect the virus in this area. In the other outbreak sites, infested plants were destroyed, as follows:
- Campiglione Fenile: 37 infested plants were removed (corresponding to 5% of the crop),
- San Damiano Macra: 20 infested plants were removed (2%),
- Brondello: 20 infested plants were removed (7%).

In the Piemonte region, surveys have been carried out in the main nurseries producing *Vaccinium* planting material. In addition to visual inspections, samples have systematically been collected and tested in the laboratory. So far, all results were negative.

The situation of *Blueberry scorch virus* in Italy can be described as follows: **Present, first found in 2004 in Piemonte, several outbreaks were reported in 2009 in Piemonte (4 outbreaks) and Trentino-Alto Adige (1 outbreak), under eradication.**

Source: NPPO of Italy, 2009-09 and 2009-11.

Additional key words: detailed record **Computer codes:** BLSCV0, IT

2010/018 First record of *Chalara fraxinea* in Italy

The NPPO of Italy recently informed the EPPO Secretariat of the first record of *Chalara fraxinea* (EPPO Alert List) on its territory. The regional PPO of Friuli-Venezia Giulia has detected *C. fraxinea* on a few young ash trees (*Fraxinus excelsior*) in the municipality of Tarvisio (Province of Udine). The identity of the pathogen was confirmed by the University of Padova (IT) and the Slovenian Forestry Institute of Ljubljana (SI). All symptomatic trees and nearby ash trees were destroyed. Surveys will be conducted in Friuli-Venezia Giulia (e.g. in other foothills and Valli del Natisone) to determine the extent of the disease.
The situation of *Chalara fraxinea* in Italy can be described as: **Present, first detected in 2009 in Friuli-Venezia Giulia, under official control.**

Source: NPPO of Italy, 2009-11.

Additional key words: new record **Computer codes:** CHAAFR, IT

2010/019 First report of *Cylindrocladium buxicola* in Spain

In 2008, severe defoliation was observed on potted plants of *Buxus sempervirens* cv. 'Suffruticosa' (2 to 3 year-old) in a nursery of Galicia, in Spain. Affected plants showed dark brown to black spots on the leaves and black streaks on the stems. In this nursery, approximately 60% of the *Buxus* plants were affected and had finally been defoliated. Several diseased plants (10) were collected in September 2008 and tested in the laboratory. Results confirmed the presence of *Cylindrocladium buxicola* (formerly EPPO Alert List). This is the first report of *C. buxicola* in Spain.

Source: Pintos Varela C, González Penalta B, Mansilla Vázquez JP, Aguín Casal O (2009) First report of *Cylindrocladium buxicola* on *Buxus sempervirens* in Spain. *Plant Disease* **93**(6), p 668.

Additional key words: new record **Computer codes:** CYLDBY, ES

2010/020 Cactaceae in Europe

The cactus family (Cactaceae) is mainly restricted to the Americas and comprises more than 1800 species. Diversity centres are the Andean region, Central Mexico, and Brazil, where cacti colonise a wide range of dry habitats, although several species occur up to the cool-temperate regions of Patagonia and Alaska.
In Europe, the cacti species which are now found outdoors in the Mediterranean region result from deliberate introductions, but in some cases these introductions have been followed by uncontrolled invasion events. Until the 19th century, the dominant pathway of entry for cacti in Europe was deliberate planting by farmers for economic reasons. For instance, *Opontia ficus-indica* was widely planted in the Mediterranean region for its edible fruits or for animal forage. In the last decades, deliberate planting in the wild by cacti enthusiasts for ornamental reasons has become the dominant pathway. Once planted, cacti produce seeds that are eaten and dispersed by birds and small mammals, and even by lizards and wild boars. Cacti invasions cause problems for nature conservation, especially when habitats such as rock vegetation, open dry grassland, and Garrigue are invaded. Most climate change scenari for the Mediterranean region predict a considerable reduction in precipitation and an increase of up to 5°C of the average annual temperature by 2100. As cacti are drought resistant and tolerant to high temperatures, it can be expected that climate change will enhance the invasion success of cacti in Europe.

A list of cacti species recorded in Europe has been compiled from different sources (checklists, databases, floras, atlases) for North, West, Central and South Europe. This list contains in total 26 species. All of them are confined to dry, open habitats on acid siliceous bedrocks, and mainly occur in the Mediterranean biogeographic region. By far, the most represented genus is *Opuntia* with 20 species. The most widespread species is *Opuntia humifusa* (6 countries), followed by *O. ficus-indica* and *O. maxima* (5 countries). Most species are rare and only locally established (28 invasion events) or casual (13 invasion events), whereas 17 invasion events have led to wider invasions. The number of invasion events over a 50-year period increased from three (1801-1851) to nine (1951-2000).
The table below presents the 26 cactus species which have been recorded in Europe with their situation in each country:

Species of Cactaceae	Casual	Locally established	Widely established
Austrocylindropuntia cylindrica		IT	
Cereus peruvianus	ES	FR	
Cereus triangularis		ES	
Cylindropuntia imbricata	ES		
Cylindropuntia spinosior		ES	
Hylocereus undatus		ES	
Opuntia ammophila		ES	
Opuntia bernichiana		ES	
Opuntia caespitosa		FR	
Opuntia crassa	FR		
Opuntia dejecta		IT	
Opuntia dillenii		IT, PT	ES
Opuntia engelmannii		ES	
Opuntia ficus-indica			ES, FR, HR, IT, PT
Opuntia huajuapensis	ES		
Opuntia humifusa		HR, DE, ES	CH, FR, IT
Opuntia imbricata	CH, FR	ES	

Species of Cactaceae	Casual	Locally established	Widely established
Opuntia maxima		IT	ES, FR, HR, PT
Opuntia microdasys	FR, PT	ES	
Opuntia monacantha	CZ, DE, ES		FR
Opuntia phaeacantha		AT, ES	IT
Opuntia robusta		IT	
Opuntia rosea		ES	
Opuntia stricta	PT	ES, FR, IT	
Opuntia subulata	PT	ES, FR	IT
Opuntia tuna		FR, IT	ES

Source: Essl F, Kobler J (2008) Spiny invaders – Patterns and determinants of cacti invasion in Europe. *Flora* **204**, 485-494.

Additional key words: invasive alien plants

Computer codes: AUQCY, CEEUR, HCRTA, HCRUN, MHAPO, OPUAP, OPUCR, OPUDE, OPUDI, OPUEN, OPUEX, OPUHJ, OPUHU, OPUFI, OPUIM, OPUMI OPURS, OPUSP, OPUST, OPUVU, OPUMX, OPUPH, OPURO, OPUTN, PLEHP, PRJFC

2010/021 New records of alien and invasive plants in Georgia

Within the framework of a Swiss-Georgian research project, literature sources and field surveys were compiled in order to prepare an inventory of the alien flora of Georgia. The Georgian vascular flora includes 4200 taxa, of which 460 are alien. Of these 460 alien species, 80 are cultivated, and the 380 remaining ones are either considered subspontaneous, adventive, naturalized or invasive. Alien species thus represent 8.9% of the flora of Georgia. Almost a third of all alien species recorded in Georgia have been introduced from Asia (33%). Of these, approximately 90% originate from East Asia. A high number of species are of Mediterranean origin (22%), and over the recent years, an increasing number of plant invaders of North American origin (17%) have been recorded in the western parts of Georgia. Plant invaders from Europe (13%) are mainly from Atlantic Europe.
Among the 16 species considered to be invasive in Georgia, 10 originate from Asia and 4 from North America. No European or Mediterranean species have become invasive so far, although many species of these origins are now naturalized in Georgia.

The following 16 alien plants are considered invasive in Georgia, their origin, life form and ecological group are indicated, as well as their distribution in the EPPO region according to the DAISIE database:

Species	Origin	Life form	Ecological group	EPPO region
Ailanthus altissima (Simaroubaceae) (EPPO List of Invasive Alien Plants)	E-Asia	Tree	Dry grasslands	Widespread
Ambrosia artemisiifolia (Asteraceae) (EPPO List of IAP)	N-Am.	Annual	Ruderal	Widespread
Clerodendrum bungei (Verbenaceae)	E-Asia	Shrub	Ruderal	/
Crassocephalum crepidioides (Asteraceae)	S-Am.	Annual	Ruderal	TR
Miscanthus sinensis (Poaceae)	E-Asia	Perennial	Ruderal	Azores (PT), IT, TR
Opuntia humifusa (Cactaceae)	N-Am.	Shrub	Dry grasslands	ES, FR, GR, IT

Species	Origin	Life form	Ecological group	EPPO region
Opuntia phaeacantha (Cactaceae)	N-Am.	Shrub	Dry grasslands	ES
Paspalum dilatatum (Poaceae)	S-Am.	Perennial	Lowlands	ES (incl. Baleares, Canarias), FR (incl. Corse), GR, IT (incl. Sardinia), PT (incl. Azores, Madeira)
Perilla frutescens (Lamiaceae)	E-Asia	Perennial	Marshes and wet meadows	/
Pleioblastus distichus (Poaceae)	E-Asia	Perennial	Ruderal	/
Pleioblastus humilis (Poaceae)	E-Asia	Perennial	Ruderal	/
Pleioblastus pumilus (Poaceae)	E-Asia	Perennial	Ruderal	/
Rhus javanica (Anacardiaceae)	E-Asia	Tree	Ruderal	/
Robinia pseudoacacia (Fabaceae)	N-Am.	Tree	Forest	Widespread
Spiraea japonica (Rosaceae)	E-Asia	Shrub	Ruderal	BE, DE, FR, GB, IT
Vitex rotundifolia (Verbenaceae)	E-Asia	Shrub	Lowlands	/

Other species are not considered as invasive in Georgia, but are listed by EPPO (EPPO A2 List, EPPO List of Invasive Alien Plants, or Alert List), and should deserve further attention in Georgia:

Species	Origin	Life form	Ecological group
Akebia quinata (Lardizabalaceae) (EPPO Alert List)	E-Asia	Shrub	Ruderal
Amorpha fruticosa (Fabaceae) (EPPO List of IAP)	N-Am.	Shrub	Forest
Araujia sericifera (Asclepiadaceae) (EPPO Alert List)	S-Am.	Shrub	Ruderal
Baccharis halimifolia (Asteraceae) (EPPO List of IAP)	N-Am.	Shrub	Marshes and wet meadows
Buddleja davidii (Buddlejaceae) (EPPO List of IAP)	E-Asia	Shrub	Ruderal
Cyperus esculentus (Cyperaceae) (EPPO List of IAP)	Medit.	Perennial	Marshes and wet meadows
Egeria densa (Hydrocharitaceae) (EPPO List of IAP)	S-Am.	Aquatic plant	Aquatic plant
Helianthus tuberosus (Asteraceae) (EPPO List of IAP)	N-Am.	Perennial	Ruderal
Hydrocotyle ranunculoides (Apiaceae) (EPPO A2 List)	E-Asia	Perennial	Lowland
Microstegium vimineum (Poaceae) (EPPO Alert List)	Asia	Annual	Ruderal
Oxalis pes-caprae (Oxalidaceae) (EPPO List of IAP)	South Africa	Perennial	Ruderal
Polygonum perfoliatum (Polygonaceae) (EPPO A2 List)	E-Asia	Perennial	Ruderal
Reynoutria japonica (Polygonaceae) (EPPO List of IAP)	E-Asia	Perennial	Ruderal
Solidago canadensis (Asteraceae) (EPPO List of IAP)	N-Am.	Perennial	Ruderal

Some other species, even if not listed by EPPO, are considered invasive in some EPPO countries, and should also deserve attention: e.g. *Acer negundo* (Aceraceae), *Aster novae-angliae* (Asteraceae), *Aster novi-belgii* (Asteraceae), *Conyza bonariensis* (Asteraceae), *Conyza canadensis* (Asteraeceae), *Cuscuta campestris* (Cuscutaceae), *Elodea canadensis* (Hydrocharitaceae).

Source: Delivering Alien Invasive Species Inventories for Europe http://www.europe-aliens.org/speciesSearch.do

Kikodze D, Memiadze N, Kharazishvili D, Manvelidze Z, Mueller-Schaerer H (2010) The alien flora of Georgia. 36 pp.

Additional key words: invasive alien plants, new records

Computer codes: ACRNE, AILAL, AJASE, AKEBI, AMBEL, AMHFR, CLZBU, CRSCR, CVCCA, CYPES, ELDCA, ELDDE, ERIBO, HELTU, HYDRA, MISSI, OPUHU, OPUPH, OXAPC, PASDI, PLEDI, PLEHU, POLCU, POLPF, PRJFR, RHUJV, ROBPS, SOOCA, SPVJA, VIXRO, GE

2010/022 *Hygrophila polysperma* in the EPPO region: addition to the EPPO Alert List

Hygrophila polysperma (Acanthaceae, common name: Indian swamp weed) is an aquatic perennial plant native to Asia. The species is traded as an aquarium plant. Within the EPPO region, it is not recorded as naturalized. Because this plant has shown invasive behaviour where it has been introduced elsewhere in the world, it can be considered a potential future invader in the EPPO region.

Geographical distribution

Asia (native): Bangladesh, Bhutan, Cambodia, China (Guangdong, Guangxi, Yunnan), India, Lao, Myanmar, Nepal, Pakistan (Sindh), Thailand, Vietnam.

North America: USA (Florida, Texas, Virginia), Mexico (Tamaulipas).

Morphology

H. polysperma is a hairy perennial plant with both aquatic and emergent stems, which is rooted in the soil. The aquatic form has opposite, elliptic to oblong leaves of 8 cm long and 2 cm wide. The emergent form differs in having smaller, narrower and darker leaves. Flowers are small, solitary, nearly hidden by leaves, with a bluish-white corolla measuring 8 mm. The fruit is a capsule of 7-9 mm long covered with hairs, especially near the top, splitting length-wise to release 20 to 30 tiny round seeds.

Biology and ecology

H. polysperma is reported as a fast-growing and fast-spreading invasive plant. Submerged plants may occupy the entire water column while emergent plants grow in shallow water areas and in saturated sediments along the shoreline. *H. polysperma* forms monocultures with emersed stems rooted at 3 m or more below the water surface. In North America, growth of shoots begins with the increase of water temperature in March. Shoots reach the surface in late spring. During summer, fragments with numerous adventitious roots break away and readily root upon contact with soil. These shoots form large and heavy floating mats which can have detrimental impacts. The mat or individuals can sink and produce a new colony. The old root crowns produce new shoots, which grow slowly during the winter. The importance of seeds in plant reproduction is not certain.

The invasive behaviour of this plant is considered to be due to its multiple growth forms, and its ability to produce a high biomass and to form a dense canopy at the water-air surface. The species is also considered to be capable of positive net photosynthesis at low light levels. It can subsist within a temperature range of 18 to 30°C, and a pH range of 6.5 to 7.8 (other publications mention a pH range of 5-7). The species tends to grow more

vigorously in flowing water. In Florida, the species has been reported as able to expand from 0.04 ha to 0.41 ha in one year.

In which habitats

In warmer climates, *H. polysperma* prefers flowing streams, but it may also be found in slow-moving waters and in lakes. According to the Corine Land Cover nomenclature, the following habitats are invaded: continental waters (water courses, water bodies), banks of continental water, Riverbanks/canalsides (dry river beds).

Pathways

Within the EPPO region, *H. polysperma* is imported for aquarium purposes in large quantities into various countries such as Austria, Estonia, France, Hungary, Latvia, the Netherlands and Switzerland. *H. polysperma* fragments very easily (vegetative reproduction), and these plant fragments can be spread by boats or wildlife.

Impacts

H. polysperma can out-shade other submersed plants, and is even reported to out-compete the very invasive *Hydrilla verticillata* (EPPO Alert List), as well as *Ludwigia repens*. It can occupy the entire water column and restricts light to other species, displacing native flora and fauna, and disrupting the aquatic ecosystem balance. Additionally, when large stands of *H. polysperma* die, their decomposition can create anoxic conditions resulting in fish death. Mats formed by the plant may also provide suitable breeding grounds for mosquitoes. *H. polysperma* clogs irrigation and flood-control canals, and interferes with water control pumping stations. It is also detrimental to navigation and recreational activities such as fishing and swimming.

Control

The species is considered to be difficult to control, even more so than *Hydrilla verticillata*. The use of mechanical harvesters further fragments the plant and favours its spread. Registered aquatic herbicides only marginally control *H. polysperma*. Endothal is the only active substance mentioned in the literature as having some efficacy against the plant.
In the USA, this species is listed at the federal level as a noxious weed, and is regulated in many States.

Considering the invasive behaviour of this species elsewhere in the world, it is considered that flowing freshwater bodies of the Mediterranean and temperate countries are at risk, and that the species should usefully be monitored, particularly in countries currently importing this species as an aquarium plant. *H. polysperma* is therefore added to the Alert List.

Source: Commonwealth of Massachussets, Department of Conservation and Recreation (Undated) Eastern Indian Hygrophila: an exotic aquatic plant. 3 pp. http://www.mass.gov/dcr/waterSupply/lakepond/factsheet/Hygrophila.pdf
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Mora-Olivo A, Daniel TF, Martínez M (2008) *Hygrophila polysperma* (Acanthaceae), una maleza aquática registrada por primera vez para la flora mexicana. *Revista Mexicana de Biodiversidad* **79**, 265-269. http://www.ejournal.unam.mx/bio/BIOD79-01/BIO079000121.pdf

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Additional key words: invasive alien plants, alert list **Computer codes:** HYGPO

2010/023 Integrated Pest Management Education at the University of Minnesota (US)

The Integrated Pest Management (IPM3) Education is an American consortium of federal agencies and land-grant institutions. This web-based platform provides training on pest management. Target audiences include federal agencies, state/local government officials, gardeners, crop consultants, pest management professionals, and anyone who has an interest in becoming proficient in Integrated Pest Management. These web based training sessions are widely open to participants within EPPO countries.
Training sessions will be repeated several times throughout 2010. A core concept module provides courses on economic concepts, host plant resistance, biological, chemical, physical, cultural and regulatory controls. Specific modules will also be offered on invasive alien species, arthropod pest management and plant pathology.

Source: University of Minnesota, Integrated Pest Management website: http://www.cce.umn.edu/Integrated-Pest-Management-Education/
Contact: ipm3@umn.edu

Additional key words: invasive alien species, training

2010/024 Your input to the EPPO questionnaire on invasive alien plants in Mediterranean countries is needed

In the framework of the organization of the 2nd Workshop on Invasive Alien Plants in Mediterranean Type Regions of the World, EPPO is launching a questionnaire to gather lists of invasive alien plants and eradication projects in the Mediterranean area. The conclusions will be shared during the workshop, and contributors will be acknowledged. The EPPO Secretariat has already received many valuable contributions from Mediterranean countries, but to make this survey as exhaustive as possible, we would welcome additional contributions, particularly from the southern side of the Mediterranean Sea.
The questionnaire is available on the EPPO website and can be returned to the EPPO Secretariat until the 2010-02-15:
http://archives.eppo.org/MEETINGS/2010_conferences/questionnaire_medit_invasive_plants_2009.xls

Source: International Workshop on Invasive Plants in the Mediterranean Type Regions of the World, Trabzon, TR, 2010-08-02/06.
http://archives.eppo.org/MEETINGS/2010_conferences/mediterranean_ias.htm

Additional key words: invasive alien plants