European and Mediterranean Plant Protection Organization
Organisation Européenne et Méditerranéenne pour la Protection des Plantes

EPPO Prioritization Process for Invasive Alien Plants

14-18617

Ambrosia confertiflora (Asteraceae)

Ambrosia confertiflora in the Sharon plain in Israel © Avinoam Danin

The prioritization process assessment for *Ambrosia confertiflora* (Asteraceae) has been elaborated by the EPPO Secretariat and was reviewed by the EPPO Panel on Invasive Alien Plants in 2014.

Section A Prioritization process scheme for the elaboration of different lists of invasive alien plants (pests or potential pests) for the area under assessment

Init1 - Enter the name of the pest
Ambrosia confertiflora de Candolle

Init2 - Indicate the taxonomic position and synonyms
Asteraceae

Init3 - Clearly define the PRA area
The EPPO region (see map at http://www.eppo.int/ABOUT_EPPO/images/clickable_map.htm).

Init4 - Provide the reasons for performing this assessment, and report any risk analysis available for the assessed species.
Ambrosia confertiflora (Asteraceae) is a perennial herb native to northern Mexico and to the southwestern United States. This species has been introduced to Australia and Israel. *A. confertiflora* has deleterious agricultural and environmental impacts, and its pollen is a severe allergen. This species has a very limited distribution in the EPPO region, and can be considered an emerging invader at the EPPO region scale.

A.1 - Is the plant species known to be alien in all, or a significant part, of the area under assessment?
Yes
The species originates from northern Mexico and the southwestern United States and is alien in the whole EPPO region.

A.2 - Is the plant species established in at least a part of the area under assessment?
Yes (for references and an updated distribution, please, check the EPPO PQR Database. https://www.eppo.int/DATABASES/pqr/pqr.htm)

The species is established in Israel (Dufour-Dror, 2012). *A. confertiflora* began to spread in the Shechem area in central Samaria during the mid-1990s. It is now widespread in Samaria, especially along roads and in cultivated areas, but also in Nature Reserves such as Wadi Qana. The plant spread westwards and is now present in the Emek Hefer area (Sharon region), where 480 ha of riverbanks along the Alexander river are already heavily infested. The plant also spread eastward along Wadi Tirza and has reached the Northern Jordan Valley. Additional foci were recently discovered along the Yarkon River, on the Carmel mount, in the Haifa region, in the southern part of Yizre'el valley in lower Galilee, and in the south near Gadera and in the Ashdod area (Israel Ministry of Environmental Protection, 2013).

The species is native to North America: USA (Arizona, California, Colorado, Kansas, Nevada, New Mexico, Oklahoma, Tennessee, Texas, Utah). A map of the distribution of the species at the county level is available on the Biota of North America Program Website at http://bonap.net/MapGallery/County/Ambrosia%20confertiflora.png and México (Aguascalientes, Baja California Norte, Baja California Sur, Chihuahua, Coahuila, Colima, Durango, Guanajuato, Guerrero, Jalisco, México, Nuevo León, Querétaro, San Luis Potosí, Sinaloa, Sonora, Tamaulipas and Zacatecas).

The species has also been introduced and is established in North America in Hawaii, as well as in Puerto Rico and in Australia (New South Wales, Queensland, South Australia). In Australia, the species was introduced into Queensland in 1950 and is confined to small colonies in the western Darling Downs and the Burnett Pastoral District. In New South Wales, populations occur on the Far Western and North Western Plains and on the Central Western Slopes, while in South Australia the species is only recorded in the surroundings of Adelaide (Parsons & Cuthbertson, 2001).
The species has been reported as present in the Dominican Republic (alien), but this could not be confirmed.

The GBIF worldwide distribution map of *A. confertiflora* omits distribution records in Puerto Rico and Israel but otherwise fits quite well with its known occurrences (see Figure 1).

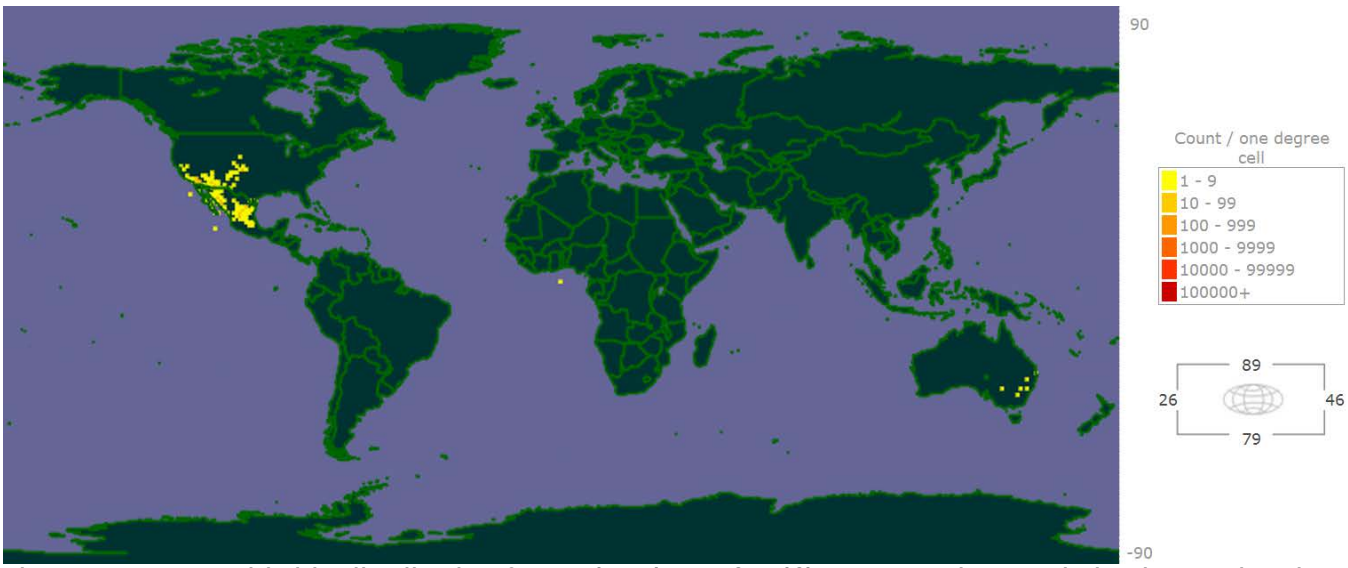

Figure 1: GBIF worldwide distribution for *Ambrosia confertiflora*. Records are missing in Israel and Puerto Rico and there is an erroneous record at the centre of the map, off the African coast.
Biodiversity occurrence data accessed through GBIF Data Portal, data.gbif.org, 2014-03-26.

A. confertiflora is likely to establish in the whole Mediterranean basin considering its current distribution, and possibly in the most thermophilous parts of the temperate area (the GBIF Niche Model is not provided as it is not considered accurate).

Questions A.5, A.6, A.7 and A.8 all have to be assessed independently. The risk should be considered for the area under assessment where the species is able to establish and to cause damage. The risk should not be downgraded by making an average for the entire area under assessment, if it is different from the area of potential establishment.

As far as possible, evidence should be obtained from records of invasive behaviour in the area under assessment or in the EPPO region. Information on invasive behaviour elsewhere may also provide guidance.

It should be ensured that suitable habitats are present in the area under assessment, for instance, mangroves and some specific cropping systems are not found in the EPPO region.

Any impact through hybridization on native plant species, crops or wild crop relatives is also considered in this section.

A.5 - How high is the spread potential of the plant in the area under assessment?

High

Level of uncertainty: Low

A. confertiflora reproduces from seeds and through vegetative propagation which happens through adaptive buds found on spreading horizontal roots. The species can spread naturally over short distances through creeping roots. The seeds can also be spread over long distances when the hooked spines attach to livestock and wild animals, or can be spread by water, especially during flooding, as the woody burr floats (Australian Government, Weeds in Australia Website; Southern Tablelands and South Coast Noxious Plants Committee Website).

The plant is spread through human activities when seeds attach to clothing and other fibrous material (e.g. tents). Root fragments may also be spread over long distance as a contaminant of machinery and vehicles, in particular agricultural machinery (Israel Ministry of Environmental Protection, Undated).

The plant spreads very fast both vegetatively and through seeds and is considered to have the fastest rate of spread among terrestrial invasive alien plants in Israel (Israel Ministry of Environmental Protection, 2013).

A.6 - How high is the potential negative impact of the plant on native species, habitats and ecosystems in the area under assessment?

List natural and semi-natural habitats where the species in known to occur. It includes all EUNIS habitat types 1 (http://eunis.eea.europa.eu/habitats-code-browser.jsp), except I (Regularly or recently cultivated agricultural, horticultural and domestic habitats) and J (Constructed, industrial and other artificial habitats).

High

Level of uncertainty: Medium

According to the EUNIS nomenclature, the following natural or semi-natural habitats are invaded: Littoral zone of inland surface waterbodies [C3]; Mires, bogs and fens: valley mires, poor fens and transition mires [D2]; Grasslands and lands dominated by forbs, mosses or lichens: dry grassland [E1], mesic grasslands [E2]; sparsely wooded grasslands [E7].

Ambrosia confertiflora forms very dense stands. The plant radically modifies the vegetation cover and consequently the whole ecosystem (Israel Ministry of Environmental Protection, 2013; Australian Government Website), readily suppressing understory native plants which results in environmental impacts, in particular in humid habitats, in grasslands and in wadibeds. In Israel, the plant spreads rapidly

in wetlands and thrives along riverbanks where it displaces native species and creates pure stands which lead to the collapse of natural ecosystems in riparian habitats (JM Dufour-Dror, pers. comm., 2014).

A.7 - How high is the potential negative impact of the plant on agriculture, horticulture or forestry in the area under assessment?

The habitats and the situations in which the species has negative impact on agriculture, horticulture or forestry should be listed. It includes EUNIS habitat (http://eunis.eea.europa.eu/habitats-code-browser.jsp) I (Regularly or recently cultivated agricultural, horticultural and domestic habitats) and J (Constructed, industrial and other artificial habitats).
Medium
Level of uncertainty: High

According to the EUNIS nomenclature, the following habitats are invaded: Regularly or recently cultivated agricultural, horticultural and domestic habitats: Arable land and market gardens [I1]; Cultivated areas of gardens and parks [I2]; Constructed, industrial and other artificial habitats : transport networks and other constructed hard-surfaced areas [J4] ; Highly artificial man-made waters and associated structures [J5]; Waste deposit [J6].

A. confertiflora is also a serious pest in cultivated fields, citrus groves and orchards in general (Israel Ministry of Environmental Protection, 2013), and in grape (Conabio Website). It competes for nutrients and interferes with the harvest (Parsons & Cuthbertson 2001). The plant spreads among cultivated fields and mixes with crops which cannot be harvested properly. As a consequence of *A. confertiflora* invasion, cultivation ceased in several fields in the Sharon area in Israel. Proliferation of *A. confertiflora* has devastating effects on organic farming. It has already caused great damage to *Moringa* spp. fields in the Sharon region (JM Dufour-Dror, pers. comm., 2014). In addition, the plant is unpalatable to stock and excludes other pasture plants and can reduce carrying capacity (Southern Tablelands and South Coast Noxious Plants Committee Website). The burrs of the plant contaminate wool and can lower its value (Parsons & Cuthbertson, 2001).
As little information is available on this point, the uncertainty is assessed as high.

A.8 - How high are the potential additional impacts (e.g. on animal and human health, on infrastructures, on recreational activities, other trade related impacts such as market losses)?
High
Level of uncertainty: Medium

As with the other *Ambrosia* species, *A. confertiflora* produces a large amount of pollen considered to be severely allergenic (the pollenlibrary Website), causing hay fever and contact dermatitis in susceptible people (Parsons & Cuthbertson, 2001), although no report on this allergenic effect were observed so far in Israel.
The plant also invades gardens and parks and is reported to disrupt their maintenance (Israel Ministry of Environmental Protection, Undated).
As little information is available on this point, the uncertainty is assessed as medium.

Responses to questions on impacts (A.6, A.7 and A.8) should be reported in the matrix in Fig. 2 in order to categorize the species. The highest score should be considered; however, impacts listed in question A.8 cannot be taken on their own as the highest impacts. Only if A.6 and/or A.7 is medium and A.8 is high should the overall impact be considered high.
Those species that have both a high spread potential and a high impact (either on cultivated or uncultivated ecosystems) are included in the list of invasive alien plants. Species with either medium

spread or impacts are included in the observation list of invasive alien plants. Species with low spread and high impact are included in the observation list of invasive alien plants. All other species are registered on the list of minor concern.
The conclusions of the process can be presented in a matrix (see Fig. 2).

		A5 -Spread potential		
		Low	Medium	High
Adverse impacts (maximum rating from questions A6, A7. and A.8)	Low	List of minor concern	List of minor concern	List of minor concern
	Medium	List of minor concern	Observation list of invasive alien plants	Observation list of invasive alien plants
	High	Observation list of invasive alien plants	Observation list of invasive alien plants	List of invasive alien plants

Fig. 2 matrix combining spread potential and adverse impacts.

The answer provided to question A.5 on the spread potential of the species assessed was:
High
The answer provided to question A.6 on negative impact on native species, habitats and ecosystems was:
High
The answer provided to question A.7 on negative impact on agriculture, horticulture or forestry was:
Medium
The answer provided to question A.8 on additional impacts was:
High

According to the ratings provided, the assessed species falls into the:
List of invasive alien plants

A.9 - The overall uncertainty for Part A of the EPPO prioritization process for invasive alien plants should be summarized:
High
There remains uncertainty on the details of agricultural and environmental impacts, as well as on impacts on human health.

Section B Prioritization process scheme for the identification of invasive alien plants for which a PRA is needed

B.1 - Is the plant species internationally traded or are there other existing or potential international pathways?
List the pathway(s) as justification.
Yes, at least one international pathway is identified.

Seeds of the species are suspected to have entered Israel as contaminants in seed mixes imported from the United States for feeding birds and pond fish (Israel Ministry of Environmental Protection, 2013). It is unknown how *A. confertiflora* arrived in Australia (Australian Government Website**)**.

B.2 - Is the risk of introduction by these international pathways identified to be superior to natural spread?
Yes
A. confertiflora has still a very limited distribution in the EPPO region and natural spread is limited compared with spread through human activities (i.e. as a contaminant of agricultural produce, machinery, livestock, etc.).

B.3 - Does the plant species still have a significant area suitable for further spread in the area under assessment?

Large area suitable for further spread.

The species is only known to be established in Israel, its current distribution is therefore very limited, in particular with regard to its potential distribution which may extend from the Mediterranean to the temperate area.

The species assessed is a high priority for PRA.

The guidelines on pest risk analysis of EPPO Standard PM 5/3 *Decision-support scheme for quarantine pests* **should be followed to perform a PRA.**

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