# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Brassica tournefortii***

***Brassica tournefortii*** 简体中文 正體中文

**System:** Terrestrial

| Kingdom | Phylum | Class | Order | Family |
|---|---|---|---|---|
| Plantae | Magnoliophyta | Magnoliopsida | Capparales | Brassicaceae |

**Common name** Sahara mustard (English), Aslooz (English, Libya), Tournefort's birdrape (English), Asian mustard (English), African mustard (English), wild turnip (English), Mediterranean turnip (English)

**Synonym** *Brassica tournefortii* , var. *sisymbrioides* (Fisch.) Grossh.

**Similar species**

**Summary** Brassica tournefortii, commonly known as Sahara mustard, is an annual herb that is especially common in areas with wind-blown sediments and disturbed sites such as roadsides and abandoned fields. It appears to suppress native wildflowers by monopolising available soil moisture as it builds canopy and matures seed long before many native species have begun to flower. *B. tournefortii* also increases fuel loads and fire hazard in desert scrub and coastal sage scrub. There is very little information regarding the control of this species. It is reported that managing for dense stands of native grasses will assist in eradicating this species from areas, but there are no documented mechanical and biological controls that are successful in managing this species.

view this species on IUCN Red List

## Species Description

*Brassica tournefortii* is described as an annual herb with stems 10 to 100cm tall. The plants flower early; the small, dull yellow flowers are inconspicuous compared to most other true mustards. Petals are less than 5 to 7mm. Individual flower stalks are longer than the sepals and spread away from the stem. Fruits have an obvious beak at the tip. The pedicels of the fruits are 4 to 10mm long and diverge stiffly from the stem at a forty-five degree angle (Sanders and Minnich, 2000).
*B. tournefortii* shows variability in size depending on the availability of soil moisture. Drought-stressed plants can reproduce with leaves as small as 8cm long and on sandy soils with sufficient moisture leaves have known to grow to more than 50cm long, giving the plant a 1m spread, making it the largest herbaceous rosette plant in the region (Van Devender *et al.* 1997).

## Lifecycle Stages

North American region: Sanders and Minnich (2000) state that, \"*B. tournefortii* flower or fruit as early as December or January and set seed by February. Most plants are in fruit or dead by April. Time of flowering probably is controlled by the onset of the rainy season. Early flowering may be triggered by hot spells during winter. During warm or dry winters, plants mature at a small size, ripen seeds, and perish by February. Once soils have chilled in fall, rains as small as 4cm cause mass germination. The period of most rapid growth is from the first winter rains or February to April. Within two to three months, plants can grow to a biomass of 3.0 tons/ha-1, but usually less than 0.5 tons/ha-1. Total biomass does not correlate with annual precipitation because hot, dry spells frequently cause plants to reach premature flowering and fruiting in early winter.\"

**Uses**
The Plants For A Future Database (1997) states that the leaves of *Brassica tournefortii* can be used to create various oils. The authors state that the leaves and young shoots can be cooked, and edible oil can be obtained from the seed. Dr. Khaled O. Abukhabta (pers. com. 2005) reports from Libya that it is widely used as food, mixed with kuskus (couscous) and some other spices to give it a very good flavour. He adds that in addition to it's laxative effect (high content of fibers), it contains 3-methylsulfinylpropyl glucosinolate, which reduces the risk of cancer of the lung, stomach, colon and rectum, with a possible reduction in endometrial and ovarian cancer and a decrease in total cancer incidence.

**Habitat Description**
Sanders and Minnich (2000) report that, \"*Brassica tournefortii* is especially common in areas with wind-blown sediments. This species is also invading exotic annual grassland and coastal sage scrub. It often forms almost pure stands on abandoned sandy fields. The authors also state that *B. tournefortii* is most common in disturbed sites such as roadsides and abandoned fields, and that it can be found, but is scarce, on alluvial fans and rocky hill slopes.\" The Mojave Weed Management Area (UNDATED) states that, \"*B. tournefortii* is especially common in sandy lowland habitats across the Sonoran Desert, including low dunes, interdune troughs, sandy flats, and sandy-gravelly washes.\"
Brooks and Pyke (2002) in their study of the role of invasive plants and fire in the deserts of North America describe the invasion sequence of species in the deserts of N. America. They explain that new populations of invasives go through a very slow initial lag phase. They are restricted to sites with relativly high nutrient and water levels until they reach a 'critical mass' and take advantage of years when there is high rainfall. The authors state that this sequence was demonstrated by *B. tournefortii* in the Sonoran desert during the 1960s to 1970s and in the Mojave desert during 1980s to 1990s.

**Reproduction**
*Brassica tournefortii* appears to be self-compatible or autogamous, as there is virtually 100 percent fruit set on most plants. A well-developed plant produces between 750 and 9,000 seeds. Seed longevity is unknown, but based on observations of other species of *Brassica*, it is probably several years. There is little evidence of herbivory or seed parasitism (Sanders and Minnich, 2000).

**Nutrition**
The Plants For A Future Database (1997) states that, \"*Brassica tournefortii* prefers light (sandy), medium (loamy) and heavy (clay) soils and requires well-drained soil. It prefers acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It requires moist soil.\"

**General Impacts**
Sanders and Minnich (2000) report that, \"Dense stands of *B. tournefortii* appear to suppress native wildflowers. Because of its early phenology, it appears to monopolise available soil moisture as it builds canopy and matures seed long before many native species have begun to flower. This species also locally dominates exotic grasslands in dry, open sites, especially disturbed areas. It expands over larger areas when drought suppresses other exotic annuals such as *Bromus rubens*, *Avena fatua*, *Brassica geniculata*, and *Erodium cicutarium*. *B. tournefortii* increases fuel loads and fire hazard in desert scrub and coastal sage scrub. It also establishes from a soil seed bank after fire.\"
Van Devender *et al.* (1997) identify *B. tournefortii* as one of six weeds (the other five being grasses: *Bromus madritensis* ssp. *rubens*, *Pennisetum ciliare*, *P. setaceum*, *Schismus arabicus*, and *S. barbatus*) that have the potential to cause the most ecological damage in the Sonoran Desert Region. *B. tournefortii* is especially common in sandy lowland habitats across the Sonoran Desert, including low dunes, interdune troughs, sandy flats,\r\nand sandy-gravelly washes.

**Management Info**
Mechanical: The spread of *B. tournefortii* can be reduced by controlling it along roads, which provide corridors for rapid invasion into new habitats. In small areas Sahara mustard can be eradicated by pulling plants before they mature seed. This is most effective in new invasions where a seed bank has not been established (Invaders of the Sonoran Desert Region, Undated). Sanders and Minnich (2000) report that, \"Hand pulling of *B. tournefortii* might be effective in limited areas when seed pools have been suppressed. Planned burns may not be a useful option. Although fires cause high seed loss, stem densities reach pre-burn levels within one or two growing seasons. Partial seed survival after fire may be related to its hard seed coat. *B. tournefortii* is closely related to a number of important vegetable crops, so it will be difficult to find an agent that will attack this plant but not damage food crops. Even the possibility of transfer of a control agent to a valuable food crop may create political pressures that could prevent importation of the agent. Since *B. tournefortii* establishes from a seed bank, it is doubtful that grazing could suppress the spread of this annual. The establishment of dense cover of exotic annual grasses apparently suppresses this species.\"
Chemical: In selected areas herbicide treatment may be effective. Sahara mustard tends to be the first annual to germinate after a rain, so early treatment may reduce its abundance and allow later-germinating natives to establish (Invaders of the Sonoran desert, Undated). ALS inhibitor herbicides are used widely \"because of their low use rates, high efficacy, low mammalian toxicity and good selectivity in over 12 major crops\" (Brown and Cotterman, 1994 in Heap, 1997). However, at least 33 ALS-inhibitor resistant weed species have been recorded. *B. tournefortii* was identified to be resistant to Chlorsulfuron in 1992 in Australia (Heap, 1997).
In an Australian study by Adkins *et al.* (1997) the authors determined that *B. tournefortii* and other winter weeds were still susceptible to chlorsulfuron, despite fears that they may be becomming more resistant with continued use. Yu *et al.* (2003) reports that, \"An African mustard *Brassica tournefortii* (Gouan.) biotype with a Pro to Ala substitution also was reported as highly resistant to SU and TP [herbicides] but not to IM herbicides (Boutsalis *et al.* 1999, in Yu *et al.* \r\n2003).\"
Biological: Invaders of the Sonoran desert (Undated) state that \"It is unlikely that a biological agent, if found, would be approved because many important crop plants are in the genus *Brassica* (e.g., cabbage, cauliflower, broccoli, brussels sprouts). There are also numerous native mustards that might be threatened by a biological agent\".

**Principal source:** Sanders and Minnich, 2000 *Brassica tournefortii*

**Compiler:** National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

**Review:** Expert review underway

**Pubblication date:** 2005-10-18

**ALIEN RANGE**

**[2]** AUSTRALIA
**[1]** MEXICO
**[15]** UNITED STATES

**BIBLIOGRAPHY**
**17** references found for **Brassica tournefortii**

**Managment information**
Brooks, M.L., and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1-14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.
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**Summary:** Available from: http://www.desertmuseum.org/invaders/invaders_saharamustard.htm [Accessed 23 July 2004]
Mojave Weed Management Area. UNDATED. Sahara Mustard (*Brassica tournefortii*). From the California Exotic Pest Plant Council 1997 Symposium Proceedings, Mojave WMA Program Coordinator. Victorville, CA.
**Summary:** Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
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Obbens, F J ., R W Davis & L W Sage., 2001. Vegetation, flora and recommendations for conservation management of Jingaring Nature Reserve: A botanical gem in the Western Australian wheat-belt. Journal of the Royal Society of Western Australia, 84: 53-61
Plants for a Future. 2000. *Brassica tournefortii*. Plants For A Future Database [Online Database].
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Available from: http://www.ibiblio.org/pfaf/cgi-bin/arr_html?Brassica+tournefortii [Accessed 10 February 2004]
Sanders, A., and R. Minnich. 2000. *Brassica tournefortii*. California Invasive Plant Council, Berkeley, CA.
**Summary:** Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://ucce.ucdavis.edu/datastore/detailreport.cfm?usernumber=12&surveynumber=182 [Accessed 10 February 2004]
Van Devender, Thomas R., Richard S. Felger., & Alberto B rquez M., 1997. Exotic Plants in the Sonoran Desert Region, Arizona and Sonora. California Exotic Pest Plant Council 1997 Symposium Proceedings

**General information**

CONABIO. 2008. Sistema de informaci n sobre especies invasoras en M xico. Especies invasoras - Plantas. Comisi n Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.
**Summary:** English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - Plants is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci n sobre especies invasoras de m xico cuenta actualmente con informaci n aceca de nombre cient fico, familia, grupo y nombre com n, as como h bitat, estado de la invasi n en M xico, rutas de introducci n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci n novedades, para conocer los cambios.
Especies invasoras - Plantas is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]
Dr. Khaled O. Abukhabta, pers. com. 2005. Email communication describing culinary and medicinal uses of *Brassica tournefortii*.
ITIS (Integrated Taxonomic Information System), 2002. Online Database *Brassica tournefortii*.
**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
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Liu, J., C. Dixelius, I. Eriksson, and K. Glimelius. 1995. *Brassica napus* (+) B. Tournefortii, a somatic hybrid containing traits of agronomic importance for rapeseed breeding. Plant Science 109: 75-86.
**Summary:** Study that provides some basic background information and biology of species.
USDA-GRIN (Germplasm Resources Information Network). 2003. *Brassica tournefortii*. National Genetic Resources Program [Online Database] National Germplasm Resources Laboratory, Beltsville, Maryland.
**Summary:** Information on common names, synonyms, and the distributional range of species.
Available from: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?7691 [Accessed 10 February 2004]
USDA-NRCS (Natural Resource Conservation Service). 2002. *Brassica tournefortii*. The PLANTS Database Version 3.5 [Online Database] National Plant Data Center, Baton Rouge, LA.
**Summary:** Available from:
http://plants.usda.gov/java/nameSearch?keywordquery=Brassica+tournefortii&mode=sciname&submit.x=14&submit.y=9 [Accessed 10 March 2006]
Yu, Q., Zhang, X. Q., Hashem, A., Walsh, M. J., & Powles, S. B. 2003. ALS gene proline (197) mutations confer ALS herbicide resistance in eight separated wild radish (Raphanus raphanistrum) populations. Weed Science 51(6):831-838.
**Summary:** Scientific Study investigating the resisitance of species and others to herbicides.