GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Erodium cicutarium***

Erodium cicutarium 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Geraniales	Geraniaceae

Common name cutleaf filaree (English), redstem filaree (English), tachuela (Spanish, Chile), relojito (Spanish, Chile), pin-weed (English), pin-grass (English), alfilerillo (Spanish, Chile), filaree (English), heronsbill (English), redstem stork's bill (English), California filaree (English), stork's bill (English), loiquilahuen (Spanish, Chile), alfilaria (English), alfilaree (English), redstem (English)

Synonym

Similar species *Erodium moschatum*

Summary Erodium cicutarium is an annual, winter annual or biennial that is a pioneer on disturbed and arid sites. It can cause yield reductions of crops and the seed is very difficult to clean out of small seeded crops. Erodium cicutarium is considered a noxious weed as it crowds out or outcompetes crops and native plant species. Erodium cicutarium provides forage for rodents, desert tortoise, big game animals, livestock and also upland game birds and songbirds. Prevention may be the best method for controlling Erodium cicutarium, however, it may be impossible to actually prevent this species from colonising, or to eradicate it, once present. There are few known chemical control methods for Erodium cicutarium besides, general herbicide controls.

view this species on IUCN Red List

Species Description
Erodium cicutarium is described as an annual, winter annual or biennial. It has a prostrate basal rosette and upright, often leafy flowering stalks. The stalks range from < 10cm to about 50cm high, and originate in the axils of the leaves. The leaves are divided into fine leaflets (or lobes) and are finely dissected, similar to those of a carrot. The flowers are about 1cm across, pink or lavender, and borne on stalks in clusters of 2-12. The sepals of the flowers are somewhat pointed and hairy. The fruiting structure (consisting of the seeds, persistent bristly styles, and central placental axis) is 2-5cm long and resembles a stork's bill. At maturity, the developing fruit splits into 5 segments, each with a long, spirally twisting style with a seed attached at the base. The style twists hygroscopically, drilling the seed into the soil (The Manitoba Agriculture, Food and Rural Initiatives, 2001; Hickman, 1993).

Notes
Blackshaw *et al*. (2000) report that, \"In Canada, *Erodium cicutarium* has been present as a weed in farmyards and along roadsides for many years. Recent weed surveys indicate that it is increasing in occurrence and abundance on cropland (Anonymous, 1992; Thomas et al., 1995).\" Blackshaw and Harker (1998) state that, \"*E. cicutarium* may be expected to be less prevalent and competitive with crops in very arid environments.\"

Lifecycle Stages
Griffith (1998) states that, \"*Erodium cicutarium* germinates early spring through late summer and flowers in early spring or early summer.\" Fedorenko *et al.* (1996) report that in Argentina, \"*E. cicutarium* can hasten their reproductive phase at the end of the growing season, a time when maximum air temperatures are high (35 °C) and soil water availability is reduced (e.g. precipitation during October and November was only 17% of that in July and September. This could be an important strategy in these species, allowing them to persist as seeds, and produce a new generation under favourable environmental conditions.\"

Uses
Howard (1992) reports that, \"*Erodium cicutarium* provides seasonal forage for rodents, desert tortoise, big game animals, and livestock. The seeds are eaten by upland game birds, songbirds, and rodents.\" Howard (1992) states that, \"The presence or absence of *E. cicutarium* pollen in fossil records, sediment lakebeds, and artifacts has been used as a dating technique in paleobotany and archeology.\"

Habitat Description
Howard (1992) reports that, *E. cicutarium* besides being a pioneer on disturbed sites, is also a residual or secondary colonizer. Seedlings can either establish from on-site seed or from seed carried in by animals. In annual grassland communities, *E. cicutarium* a persistent ruderal can be intolerant of the mulch layer that builds up in some areas. *E. cicutarium* will tolerate partial shade, but vigor is reduced. Griffith (1998) adds that, \"*E. cicutarium* prefers dry, sandy soil, and is found in many perennial horticultural crops, turfgrass, and landscapes.\" It also grows readily on soils of less sandy texture. It occurs in great abundance throughout arid parts of California, including the Mojave Desert. According to Mensing and Byrne (1998), *E. cicutarium* was among the first invasive Eurasian plants to become naturalized in California. Blackshaw *et al.,* (2000) report that in Canada, \"Weed surveys indicate that *E. cicutarium* has recently increased in distribution and abundance on cropland, especially in areas where conservation tillage has been adopted (Anonymous 1992 ; Thomas *et al.,* 1995, in Blackshaw *et al.,* 2000).\"

Reproduction
Howard (1992) states that, \"*Erodium cicutarium* reproduces sexually. Seasonal rains and soil temperatures trigger germination. Light rains result in lower germination rates than heavier rains. Plants are sexually mature 2 to 4 months following germination. Seed either falls beneath the parent plant or is disseminated by animals. Rodents frequently bury *E. cicutarium* seed in a food cache where unconsumed seed later germinates. Seed also catches on animal fur and is disseminated in that manner. Seeds of *E. cicutarium* can remain viable for many years, and form extensive seed banks.\" Blackshaw and Harker (1998) state that, \"*E. cicutarium* germinates readily at soil temperatures of 5-20 °C (Blackshaw, 1992) and optimum growth occurs at 15-25 °C (Blackshaw & Entz, 1995).\"

Nutrition
Blackshaw and Harker (1998) state that, \"Increased competitive ability of *Erodium cicutarium* appeared to be related to increased rainfall during the growing season. Weed surveys in western Canada indicate that *E. cicutarium* occurs more frequently on irrigated cropland and in areas receiving greater than 500mm precipitation annually (Anonymous, 1992, in Blackshaw and Harker 1998). Palaez et al. (1995, in Blackshaw and Harker 1998)) found that *E. cicutarium* exhibited more vigorous and productive growth under wet than dry conditions but that it could persist under drought stress.\" In one arid California grassland, *Erodium cicutarium* cover averaged 30-85% in growing seasons when precipitation totaled only 13.1-17.7cm (Kimball and Schiffman 2003).

General Impacts
E. cicutarium has the potential to become a serious competitor of early planted spring crops on the Canadian prairies, it has been recognised as a problem weed capable of causing economic losses in pasture and forage crops (such as *Medicago sativa*), and in arid wildlands. This is facilitated by its ability to emerge and thrive under cool to moderate temperatures (Blackshaw and Harker, 1998).
Kimball and Schiffman (2003) discuss the characteristics of *E. cicutarium* that make it such a problem weed: \"*E. cicutarium* germinates and flowers early and continues to flower throughout the growing season, giving it a longer inductive time period than many later-maturing annual species; \" *E. cicutarium* is a fierce competitor, producing many seeds that germinate early, developing a deep tap root quickly, depleting soil water, and preventing sunlight from reaching seedlings of other species that germinate later and it may prevent establishment of perennial grasses by blocking access to light.
Brooks *et al.* (2003) report that increased density and biomass of *E. cicutarium* created in response to increased soil nitrogen may heighten competition for soil moisture, potentially decreasing density, biomass and diversity of native annual plants.

Management Info
An integrated approach to the management of *Erodium cicutarium* is important, especially since herbicides for in-crop control of *E. cicutarium* are limited and control is often unsatisfactory. For details on management options, please see *management information*.

Principal source: *Erodium cicutarium* (Howard, 1992)
Pest Management - Weeds - Stork's Bill (Manitoba Agriculture, Food and Rural Initiatives, 2001)

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

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ALIEN RANGE

[2] AUSTRALIA
[1] FALKLAND ISLANDS (MALVINAS)
[1] NEW ZEALAND
[6] CANADA
[1] GEORGIA
[48] UNITED STATES

BIBLIOGRAPHY
24 references found for **Erodium cicutarium**

Managment information
Blackshaw, R., and Harker. 1998. *Erodium cicutarium density and duration of interference effects on yield of wheat, oilseed rape, pea and dry bean*. Weed Research 38(1): 55.
Summary: Scientificpaper regarding impacts and management of species as well as distribution information in Canada.
Blackshaw, R., G. P. Semach, and J. T. O Donovan. 2000. Utilization of Wheat Seed Rate to Manage Redstem Filaree (Erodium cicutarium)in a Zero-Tillage Cropping System 1. Weed Technology 14:389-396.
Summary: Scientific paper regarding impacts and management of species as well as distribution information in Canada.
Crop Protection Section. 1984. *Stork s Bill (Erodium cicutarium)*. Plant Industry Branch Saskatchewan Agriculture.
Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://www.agr.gov.sk.ca/DOCS/crops/integrated_pest_management/weed_identification_broadleaf_weeds/Stork.asp?firstPick=Crops&secondpick=Integrated%20Pest%20Management&thirdpick=Weed%20Identification%20-%20Broadleaf% [Accessed 15 January 2004]
Griffith. 1998. *Erodium cicutarium (Redstem filaree): Biology*. Oregon State University Agronomic Weed Science Program: Weed Programs in Oregon.
Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://cropandsoil.oregonstate.edu/weeds/Redstem_filaree/biology.html [Accessed 15 January 2004]

Haar, M. J., S. A. Fennimore, H. A. Ajwa, and C. Q. Winterbottom. 2003. *Chloropicrin effect on weed seed viability*. Crop Protection 22: 109 -115.
Summary: A detailed report on resistance of species to various new and old herbicides.
Hoffmann, A. J. 1978. Flora Silvestre de Chile Zona Central (4 ed. 1998) El Mercurio , Santa Maria 5542, Santiago, Chile.
Summary: Illustrated field guide (in Spanish) to common plants of central Chile
Howard, J. L. 1992. *Erodium cicutarium*. Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory.
Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://www.fs.fed.us/database/feis/plants/forb/erocic/index.html [Accessed 15 January 2004]
Kimball, S., and P. M. Schiffman. 2003. *Differing Effects of Cattle Grazing on Native and Alien Plants*. Conservation Biology 17(6): 1681-1693.
Summary: A detailed report on the effects of grazing on species, along with background information and distribution.
Manitoba Agriculture, Food and Rural Initiatives. 2001. *Pest Management - Weeds - Stork s Bill*. Weeds, Insects, & Diseases: Biology, Scouting Techniques, Effects on Crop Quality, Threshold/Yield Loss and Control Tips.
Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://www.gov.mb.ca/agriculture/crops/weeds/fab16s00.html [Accessed 15 January 2004]
Meyer, M. D. and P. M. Schiffman. 1999. *Fire season and mulch reduction in a California grassland: a comparison of restoration strategies*.Madrono 46: 25-37.
Summary: Paper reporting on the results of an experimental comparison of grassland restoration strategies
Muenscher, W. C. 1980. *Weeds* (2nd ed.) Cornell University Press
Summary: Book describing many important North American weed species.
The Garry Oak Ecosystems Recovery Team (GOERT)., 2007. Exotic plant species in Garry oak and associated ecosystems in British Columbia
Summary: Available from: http://www.goert.ca/pubs_invasive.php#plant_species [Accessed 13 February 2008]
Trainor, M., and A. J., Bussan. 2001. *Redstem Filaree (Stork s Bill): Erodium cicutarium*. Montana State Weed Science: Montana State University Extension and Department of Land Resources and Environmental Sciences.
Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.
Available from: http://weeds.montana.edu/crop/redstem.htm [Accessed 15 January 2004]
Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.
Summary: This database compiles information on alien species from British Overseas Territories.
Available from: http://www.jncc.gov.uk/page-3660 [Accessed 10 November 2009]

General information

Brooks, M. 2003a. *Effects of increased soil nitrogen on the dominance of alien annual plants in the Mojave Desert*. Journal of Applied Ecology 40: 344-353.
Summary: Scientific paper regarding the impacts, nutrient requirements, and life history of species.
Fedorenko, D. E., O. A. Fernandez, C. A. Busso, and O. E. Elia. 1996. *Phenology of Medicago minima and Erodium cicutarium in semi-arid Argentina*. Journal of Arid Environments 33: 409-416.
Summary: Scientific Paper that offers some background information on species and distribution information.
Gelbard, J. L., and J. Belnap. 2003. *Roads as Conduits for Exotic Plant Invasions in a Semiarid Landscape*. Conservation Biology 17(2): 420-432. [Accessed 25 June 2004]
Summary: A research paper regarding the prolific spread of species and some distribution information
Hickman, J. C. (ed.) 1993. The Jepson Manual: Higher Plants of California. University of California Press.
Summary: Flora of California with detailed species descriptions
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Erodium cicutarium*
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.
Available from:
http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Erodium+cicutarium&p_format=&p_ifx=plglt&p_lang= [Accessed March 2005]
Mayor M. D., R. M. BoHo, D. V. PelaHez, and O. R. Elia. 1999. *Seasonal variation of the seed bank of Medicago minimaand Erodium cicutarium as related to grazing history and presence of shrubs in central Argentina*. Journal of Arid Environments 43: 205-212.
Summary: A detailed report on the effects of grazing on species, along with background information and distribution.
Mensing, S. and R. Byrne. 1998. *Pre-mission invasion of Erodium cicutarium in California*. Journal of biogeography 25: 757-762.
Summary: A historical report that documents the introduction and spread of species throughout North America.
Pakeman, R. J., J. P. Attwood, and J. Engelen. 1998. *Sources of plants colonizing experimentally disturbed patches in an acidic grassland, in eastern England*. Journal of Ecology 86: 1032-1041.
Summary: A scientific paper that documents the species spread in England, offers management information, and some distributions.
USDA-GRIN (Germplasm Resources Information Network). 2003. *Erodium cicutarium*. National Genetic Resources Program [Online Database] National Germplasm Resources Laboratory, Beltsville, Maryland.
Summary: Information on common names, synonyms, and the distributional range of species.
USDA-NRCS (Natural Resource Conservation Service). 2005. *Erodium cicutarium*. The PLANTS Database Version 3.5 [Online Database] National Plant Data Center, Baton Rouge, LA.
Summary: Available from: http://plants.usda.gov/java/profile?symbol=ERCI6 [Accessed 6 March 2006].