

curly dock
Rumex crispus L.

bitter dock
R. obtusifolius L.

dooryard dock
R. longifolius DC.

Introduction

These three *Rumex* species share similar ecological attributes, biological attributes, and invasive potentials. All three are treated together here.

Invasiveness Rank: 48 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Synonyms for *Rumex crispus*: *Lapathum crispum* (Linnaeus) Scopoli
Other common names: narrowleaf dock, sour dock, yellow dock

Synonyms for *Rumex obtusifolius*: *Acetosa oblongifolia* (L.) A.& D. Löve, *Rumex crispatus* Michaux, *R. obtusifolius* ssp. *agrestis* (Fries) Danser, *R. obtusifolius* ssp. *agrestis* Fries, *R. obtusifolius* ssp. *sylvestris* (Wallr.) Rech. f., *R. obtusifolius* var. *sylvestris* (Wallr.) Koch, *R. rugelii* Meisner
Other common names: bluntleaf dock, broadleaf dock

Synonyms for *Rumex longifolius*: *R. domesticus* Hartman, *R. hippolapathum* Fries
Other common names: None

Family: Polygonaceae

Description

Curly dock, bitter dock, and dooryard dock are closely related and similar in appearance. They are robust, perennial herbs that grow up to 152 ½ cm tall with deep, fleshy taproots. Stems are reddish, erect, and usually unbranched. Before flowering, plants develop a basal rosette of leaves. Basal leaves are lanceolate and up to 30 ½ cm long. Flowers are small, greenish-red, composed of three outer green tepals and three inner red tepals, and arranged in dense terminal clusters that can grow up to 61 cm long. The entire plant turns reddish-brown at maturity. Fruits are three-sided and enclosed by the inner, winged tepals. The leaves of curly dock have truncate or wedge-shaped bases and strongly crisped margins. Dooryard dock and bitter dock can be distinguished from other *Rumex* species by the heart-shaped bases and smooth, flat, usually entire margins of their leaves. Bitter dock can be distinguished from other

Rumex species by the presence of distinctly dentate margins on its tepals (FNA 1993+, Royer and Dickinson 1999, Whitson et al. 2000).



Inflorescence of *Rumex crispus* L.

Similar species: Several *Rumex* species that grow basal rosettes of leaves are native to Alaska and can be

confused with curly dock, bitter dock, or dooryard dock. Arctic dock (*Rumex arcticus*) and western dock (*R. occidentalis* or *R. fenestratus*) grow in wet meadows, marshes, and river banks throughout Alaska. These species can be distinguished by a combination of characteristics (see Table 1 below). Hybrids commonly occur between many *Rumex* species (Cavers and Harper 1964).

Table 1. Comparison of five *Rumex* species

Species	basal leaves	flower clusters	fruit scale
curly dock (<i>R. crispus</i>), introduced	tapered bases, strongly crisped margins	dense	entire margins, with 3 tubercles
bitter dock (<i>R. obtusifolius</i>), introduced	broad, heart shaped bases, margins entire, flat	usually lax and widely spaced	Distinctly dentate, tubercles usually 1
dooryard dock (<i>R. longifolius</i>), introduced	Rounded-truncate bases, margins entire	normally dense	margins entire, tubercles normally absent
arctic dock (<i>R. arcticus</i>), native	tapered bases, margins entire, flat	interrupted	margins entire, tubercles absent
western dock (<i>R. occidentalis</i>), native	heart-shaped or rounded bases, margins entire	dense to interrupted	margins entire, tubercles absent



Leaf of *Rumex crispus* L.

Ecological Impact

Impact on community composition, structure, and interactions: Curly dock and dooryard dock readily establish in semi-natural graminoid-forb roadside habitats in Southcentral Alaska, where they create a new layer of vegetation (M. Carlson – pers. obs., I. Lapina – pers. obs.). They push out native species once they have established. The seeds and vegetation of *Rumex* species can be toxic to animals (Royer and Dickinson 1999). Bitter dock is avoided by rabbits, but it appears to be a favorite food of deer (Amphlett and Rea 1909 cited in Cavers and Harper 1964). *Rumex* species provide alternate hosts for a variety of viruses, fungi (Dal Bello and Carranza 1995), and nematodes (Townshend and

Davidson 1962, Edwards and Taylor 1963).

Impact on ecosystem processes: The impacts of exotic *Rumex* species on ecosystem processes have not been documented.

Biology and Invasive Potential

Reproductive potential: Plants reproduce by seeds only. The number of seeds produced per plant varies from less than 100 to more than 60,000 annually. Plants can resprout from underground parts after the aboveground portion has been damaged (Cavers and Harper 1964, Monaco and Cumbo 1972).

Role of disturbance in establishment: Dock seedlings do not usually become established in closed communities. Soil disturbance and the removal of surrounding vegetation are required for seeds to germinate (Cavers and Harper 1964).

Potential for long-distance dispersal: Seeds can be dispersed long distances by wind and water. They have spines that allow them to attach to animal fur and bird feathers (Cavers and Harper 1967, DiTomaso and Healy 2003).

Potential to be spread by human activity: Seeds can attach to clothing and the fur of domestic animals. They can survive being ingested by cattle (Cavers and Harper 1964). Curly dock is a common contaminant of commercial seeds (Dorph-Petersen 1925, Singh 2001) and soil (DiTomaso and Healy 2003).

Germination requirements: The optimal temperature range for germination is between 20°C and 25°C in both light and dark. Germination can occur in any month, but it peaks in early spring and fall (Cavers and Harper 1964, Benvenuti et al. 2001).

Growth requirements: Curly dock, bitter dock, and dooryard dock grow on nearly all soil types except for very acidic soils. They grow best on moist to wet soils and tolerate poor drainage. Mature plants can withstand severe cold and drought (Cavers and Harper 1964, DiTomaso and Healy 2003).

Congeneric weeds: Sheep sorrel (*Rumex acetosella*) is considered a noxious weed in Alabama, Connecticut, Iowa, Kentucky, and Louisiana. All *Rumex* species are considered noxious in Oklahoma (USDA, NRCS 2006, Invaders 2010).

Legal Listings

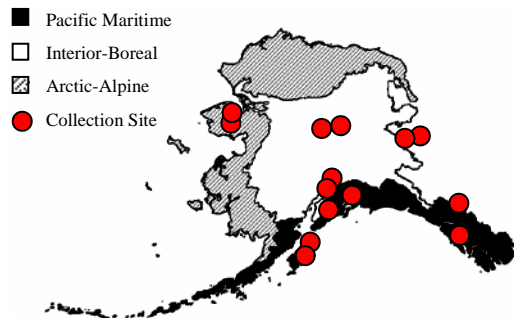
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (*Rumex crispus*: IA, IN, MI, MN; all *Rumex* species: OK)
- Federal noxious weed
- Listed noxious in Canada or other countries

Distribution and abundance

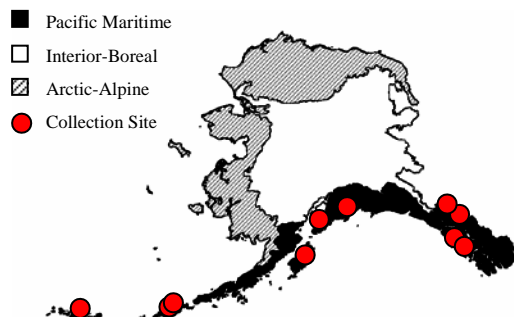
Curly dock, bitter dock, and dooryard dock are species of disturbed substrates, agricultural fields, roadsides,

and waste places (Hultén 1968, Welsh 1974, DiTomaso and Healy 2003). These species are likely to invade riparian areas, including wet meadows, riverbanks, pond edges, and irrigation ditches (DiTomaso and Healy 2003).

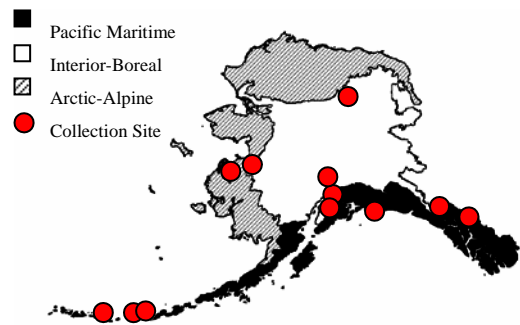
Native and current distribution: Curly dock, bitter dock, and dooryard dock are native to Europe and Asia. They have been introduced into Africa, North America, South America, Australia, and New Zealand.



Distribution of curly dock (*Rumex crispus*) in Alaska



Distribution of bitter dock (*Rumex obtusifolius*) in Alaska



Distribution of dooryard dock (*Rumex longifolius*) in Alaska

Management

Curly dock, bitter dock, and dooryard dock are difficult to eradicate once they have established because of their high seed production, long-lived seed banks, and ability to regenerate from root fragments. Hand-cutting plants below the ground or applying herbicides can control infestations (Cavers and Harper 1964, DiTomaso and Healy 2003).

References:

- AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2010. Available: <http://akweeds.uaa.alaska.edu/>
- Amphlett, J. and C. Rea. 1909. *The Botany of Worcestershire*. Birmingham.
- Benvenuti, S., M. Macchia and S. Miele. 2001. Light, temperature and burial depth effects on *Rumex obtusifolius* seed germination and emergence. *Weed Research* 41: 177-186.
- Cavers, P.B. and J.L. Harper. 1964. *Rumex obtusifolius* L. and *R. crispus* L. *The Journal of Ecology* 52(3): 737-766.
- Cavers, P.B. and J.L. Harper. 1967. The comparative biology of closely related species living in the same area: IX. *Rumex*: The nature of adaptation to a sea-shore habitat. *The Journal of Ecology* 55(1): 73-82.
- Dal-Bello, G.M. and M.R. Carranza. 1995. Weed diseases in La Plata area II. Identification of pathogens with potential for weed biocontrol programmes. *Revista de la Facultad de Agronomia, La Plata* 71(1): 7-14.
- DiTomaso, J.M. and E.A. Healy. 2003. *Aquatic and riparian weeds of the West*. California: University of California, Agriculture and Natural Resources; Pp. 329-341.
- Dorph-Petersen, K. 1925. Examination of the occurrence and vitality of various weed seed species under different conditions, made at the Danish State Seed Testing Station during the years 1896-1923. 4th International Seed Testing Congress, 1924, Cambridge, England. pp. 128-138.

- Edwards, D.I. and D.P. Taylor. 1963. Host range of an Illinois population of the stem nematode (*Ditylenchus dipsaci*) isolated from onion. *Nematologica* 9: 305-312.
- eFloras. 2008. Published on the Internet <http://www.efloras.org> [accessed 4 November 2010]. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.
- Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*. 7+ vols. New York and Oxford.
- Hultén, E. 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press, Stanford, CA. 1008 p.
- Invaders Database System. 2010. University of Montana. Missoula, MT. <http://invader.dbs.umt.edu/>
- ITIS. 2010. Integrated Taxonomic Information System. <http://www.itis.gov/>
- Lapina, I. Botanist, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2710 – Pers. obs.
- Monaco, T.J. and E.L. Cumbo. 1972. Growth and development of curly dock and broadleaf dock. *Weed Science* 20: 64-67.
- Royer, F., and R. Dickinson. 1999. *Weeds of the Northern U.S. and Canada*. The University of Alberta press. 434 pp.
- Singh, S. 1925. Interception of weeds in imported wheat grain consignments. *Annual of Agricultural Research* 22(1): 83-87.
- Townshend, J.L. and T.R. Davidson. 1962. Some weed hosts of the northern root-knot nematode, *Meloidogyne hapla* Chitwood, 1949, in Ontario. *Canadian Journal of Botany* 40: 543-548.
- USDA, NRCS. 2006. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- Welsh, S. L. 1974. *Anderson's flora of Alaska and adjacent parts of Canada*. Brigham University Press. 724 pp.
- Whitson, T. D., L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee, R. Parker. 2000. *Weeds of the West*. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities, Cooperative Extension Services. University of Wyoming. Laramie, Wyoming. 630 pp.