**Spartina densiflora**

**System:** Terrestrial

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantae</td>
<td>Magnoliophyta</td>
<td>Liliopsida</td>
<td>Cyperales</td>
<td>Poaceae</td>
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</tbody>
</table>

**Common name**
Austral cordgrass (English), espartillo (English, Argentina, Uruguay)

**Synonym**
- Chauvinia chilensis, Steud. (1855)
- Spartina montevidensis, Arechav. (1894)
- Spartina patagonica, Speg. (1897)
- Spartina densiflora, Brongn. var. typica St.-Yves, nom inval. (1932)
- Spartina densiflora, Brongn. var. typica St.-Yves subv. brongniartii St.-Yves (1932)
- Spartina densiflora, Brongn. var. typical St.-Yves subv. pauper St.-Yves (1932)
- Spartina juncea, Willd. var. montevidensis (Arechav.) St.-Yves (1932)
- Spartina juncea, Willd. var. laxiflora St.Yves (1932)

**Similar species**
- Scirpus maritimus, Spartina alterniflora, Spartina anglica, Spartina foliosa, Spartina maritima, Spartina patens, Triglochin maritima

**Summary**
Spartina densiflora is an invasive cordgrass that primarily inhabits marsh and wetland environments. It is an extremely aggressive species that is capable of outcompeting native plants in their local ecosystems. The rapid growth rate and lack of dormancy period make Spartina densiflora a threat to local biodiversity in regions where it is invasive.

**Species Description**
*Spartina densiflora* is a cordgrass that grows caespitosely and has been known to form small meadows (Pfauth, 1998). Stems are up to 1.5 meters in length and are glabrous like the leaves which are inrolled when fresh, with pronounced ridges and leaf margins minutely ciliate. Rhizomes are present, though they are thin and wiry (Pfauth, 1998).

**Notes**
*Spartina densiflora* shows great phenotypic plasticity. It may vary between a tall form of 1.5 m and a short form of few centimeters tall (often called the Patagonian form). The density of inflorescences, spikes, spikelets, and their shape and size may vary importantly among plants (and that is why the common name “densflower” may lead to the misidentification of introduced clones) (Dr. Alejandro Bortolus, pers.comm., 2009).

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Lifecycle Stages
Spartina densiflora demonstrates a pattern of sequential development of identical growth units derived from tillers. Populations of S. densiflora are sustained by the growth of live shoots to support an annual die-back phase (Castillo, 2007). Spring to early fall is the time for rapid growth and development. S. densiflora blooms from April through July when it experiences the die-back phase with the loss of flowering culms (NWCB, 2007). S. densiflora does not show a clear dormancy period during the year within its native range (Bortolus 2006).

Uses
Spartina densiflora provides shelter from predators and nest building material for birds in southern South America, birds include two rare and endemic species as well as nearly 35 other bird species that use the marsh for migration (Bortolus, 2006). Mammals also benefit from the growth of S. densiflora as a place to feed and breed in urban areas where other such places may be scarce (Bortolus, 2006). In native ranges S. densiflora provides mass quantities of detritus to estuarine systems annually (NWCB, 2007).

Habitat Description
Spartina densiflora is capable of invading a broad spectrum of habitats from intertidal marshes to terrestrial ecosystems. Soils that can support S. densiflora vary from well drained and oxygenated, to muddy and anoixc (Bortolus, 2006). Within the tidal marsh itself, S. densiflora outcompetes native flora between the lowest and highest topographic levels (Nieva, 2001). S. densiflora inhabits estuaries as well as open coastline where it succesfully populates rocky shores of softer limestone substrate or hard volcanic rock (Bortolus, 2006).

Reproduction
Spartina densiflora relies on both vegetative tiller production and seed germination to drive expansion over a range of salinities. The lack of a dormant period allows S. densiflora a competitive advantage over other species. Studies show that the germination rate of seeds are limited with increased salinities (Kittleson, 1997). In addition, higher desities of propagules can be found at higher elevations within the marsh. A negative correlation between rate of flowering and rate of propagule production exists (Nieva, 2001). Population density as well as competition effect these rates of establishment and reproduction as undisturbed areas are much more vulnerable to colonization success (Kittleson, 1997). Both sexual and asexual reproduction are a part of the reproduction of S. Densiflora, but the asexual role is very small in comparison (Nieva, 2001).

Nutrition
The photosynthesis process for S. densiflora can be impacted by the increase in salinity levels. Leaf expansion and leaf water potential are negatively correlated with salinity concentrations. The die-back on S.densiflora is significantly increased when a carbon inbalance is present. This is possible when the short photoperiods and anoxic sediments place more physiological stress on the plants than they can handle. This process causes a lower count of live shoots to be produced, thus making the die-back more catastrophic to the future survival of the plant (Castillo 2005).
General Impacts
Competition between *Spartina densiflora* and native flora leads to a loss of local plant biodiversity and decline of species specific habitats, which negatively affects local fauna. The increased invasion of *S. densiflora* can lead to a rise in marsh elevation because of plant presence on mudflats, thus limiting water flow and increasing sedimentation (San Francisco Estuary Invasive Spartina Project, undated). *S. densiflora* adds more complexity to mudflat habitats and it may increase local abundance and diversity of the associated fauna (Dr. Alejandro Bortolus, pers.comm., 2009).

Management Info
**Physical:** Manual or mechanical extraction as well as mowing, burning or covering are all management techniques that can work effectively on small populations of *Spartina densiflora* but have complications in areas with a large population.

**Chemical:** A combination of the aquatic herbicides imazapyr or glyphosate and surfactant is applied through various means directly to *S. densiflora* to eradicate and control populations of the invasive cordgrass. These two herbicides are currently the only aquatic chemicals approved for use in estuarine environments in the state of California by the USEPA and the California Department of Pesticide Regulation (CDPR) see ([San Francisco Estuary Invasive Spartina Project, undated](http://www.iucngisd.org/gisd/species.php?sc=1372)).

**Principal source:** Bortolus, Alejandro., 2006. The austral cordgrass *Spartina densiflora* Brong.: its taxonomy, biogeography and natural history


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

**Review:** Dr Alejandro Bortolus, Grupo de Ecologia en Ambientes Costeros (GEAC) Centro Nacional Patagonico -CONICET. Argentina

**Pubblication date:** 2008-05-16

**ALIEN RANGE**


**Red List assessed species 1:** EN = 1; Reithrodontomys raviventris EN

**BIBLIOGRAPHY**

26 references found for *Spartina densiflora*
Management information

Summary: A study that looked at the spread of Spartina densiflora and other non-native Spartina species. The researchers also examined the ability of the non-natives to colonize a given habitat.


Summary: Information on description, economic importance, distribution, habitat, history, growth, and impacts and management of species.


Summary: A study that analyzed the ways in which Spartina species invade in order to make predictions about ways to protect habitat from the invasives.


Summary: A study done in Humboldt Bay, California that looked at the mechanisms for expansion for Spartina densiflora.

General information

Summary: This paper serves as a brief overview of Spartina densiflora in many different aspects.


Summary: Online database that provides information on invasive plants that effect the state of California.


Summary: A study that looked at the correlation between salinity levels and distribution limits of Spartina densiflora.


Summary: Variations in the life span of Spartina densiflora were analyzed in this study to help identify factors that limited the plants colonization and continued growth.


Summary: A study that looked at the tolerances of Spartina densiflora and Spartina maritima to different ecophysiological factors that can influence growth patterns and habitat limits.


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.

FULL ACCOUNT FOR: *Spartina densiflora*


**Summary:** This study, done in the Odiel Marshes of southwest Spain focuses on the ways that *Spartina densiflora* is able to achieve such high ecological success.


**Summary:** This study s aim was to gain knowledge of *Spartina densiflora* and its clonal growth habits as well as its interactions with the physiographic position in the tidal frame.


**Summary:** Online database that provides information on noxious weeds and invasive species to the Washington state area.


**Summary:** This paper gives detailed information about the physical characteristics of *Spartina densiflora* and provides a key.


San Francisco Estuary Invasive Spartina Project., undated. Invasive Spartina Project: Introduced *Spartina densiflora* (dense flowered cordgrass)

**Summary:** Project outlining details and local impacts of *Spartina densiflora* in San Francisco Bay estuaries.


**Summary:** Online database that contains presentations from past symposiums held by California Invasive Plant Council.


University of California, undated. Online database *Spartina densiflora*.

**Summary:** Online database that contains general information about invasive plant species.


**Summary:** Available from: http://www.ars-grin.gov/cgi-bin/nphs/htmltaxon.pl?416236 [Accessed 30 January 2008]


**Summary:** Online database that includes detailed information about various plants in the United States and its territories.