B.C. SPARTINA
Working Group
protecting our shores

What is *Spartina*?

- *Spartina* species are salt-tolerant grasses that grow in intertidal salt marshes and mudflats.
- Four invasive *Spartina* species threaten our shorelines: *Spartina anglica* (English cordgrass), originally from England, *S. densiflora* (dense-flowered cordgrass) from South America, *S. patens* (salt meadow cordgrass) and *S. alterniflora* (smooth cordgrass) from the Atlantic Coast of North America. All except *S. alterniflora* have been found in British Columbia.

Why is it a problem?

- Left unchecked, *Spartina* has the ability to out-compete native marsh plants, spread across intertidal mudflats and form vast "*Spartina* meadows". This would mean a loss of vital habitat for fish, crabs and shellfish, and shorebirds and waterfowl.

photo credit: Pat Lim / Claire de la Salle

Our mission statement

Work collaboratively to eradicate invasive Spartina in B.C. through detection, removal, education, and research - to maintain the ecological integrity of our intertidal habitats."

What do we do?

Each year with the help of volunteers, we map the location of *Spartina* in our marshes and mudflats, remove *Spartina* manually, and raise awareness through workshops and displays.

How can I get involved?

- Report your *Spartina* sighting to the Greater Vancouver Invasive Plant Council at (604) 880-8358 or info@gvipc.ca
- Visit our website www.spartina.ca for resources and information
- Join our summer work parties – call the Vancouver Aquarium's River Works coordinator at (604) 659-3503 or riverworks@vanaqua.org

With thanks to our project funder Canada

photo credit: Claire de la Salle

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Spartina anglica

(English cordgrass)

photo credit: Claire de la Salle

photo credit: Mohd Hafeez

Spartina anglica
(English cordgrass)

Ecology:

- Perennial, salt-tolerant grass
- Habitat ranges from high marsh zone to intertidal mudflat where native marsh species will not grow
- Flowers from June through September
- Reproduces vegetatively and via seed

Description:

- Can be found as a single plant (grown from seed) or as a circular clump or clone (spreads outwards through its underground stems or rhizomes) – eventually clones can grow together to form a large stand or meadow.
- Bright green leaf blades grow at distinctive 45-90 degree angle to the stems
- Leaf blades are 5-12 mm wide, 5-40 cm in length
- Stems are tall, up to 1.5 m, and often reddish-coloured
- Flower heads (inflorescences) resemble that of wheat, erect with 2-12 "spikes" along one side only

Origin:

- A fertile hybrid species of *S. maritima* (native to England) and *S. alterniflora* (native to Eastern US and introduced to England)

Found to date in BC:

- Fraser River Delta mudflats (Boundary Bay, Robert's Bank)

photo credit: Pat Lim

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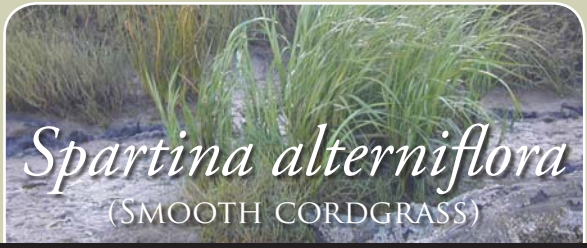
Spartina alterniflora

(Smooth cordgrass)

photo credit: Washington State Department of Agriculture



Spartina alterniflora

(Smooth cordgrass)

Ecology:

- Perennial, salt-tolerant grass
- Found in the high- to low- marsh range including mudflats where few other species will grow
- Flowers from July through November
- Reproduces vegetatively (spreading from rhizomes) and via seed

Description:

- Growth pattern: single plant will spread into a circular clone, clones coalesce to form stands or meadows
- Leaf blades are robust, green-grey in colour and 2-25 cm wide and 20-55 cm long
- Stems are 7-12 mm wide at base, grow from 60-250 cm in height.
- Inflorescences (flower heads) Many spikes grown tightly together, 10-40 cm long

Origin:

- Atlantic Coast of North America

Found to date in BC:

- This plant has not yet been sighted in BC. However it has become a problem in neighbouring Washington State and has the potential to spread northward.

photo credit: Washington State Department of Agriculture

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Spartina patens

(SALT MEADOW CORDGRASS)

photo credit: Gary Williams

Spartina patens
(SALT MEADOW CORDGRASS)

Ecology:

- Perennial, salt-tolerant grass
- Found in the high-marsh zone
- Flowers in late summer

Description:

- Spreads via rhizome to form a dense mat of fine stems
- Leaves are inward-rolled, 1-4 mm wide and 10-50 cm long
- Stems thin and pliant, up to 1.2 m in height
- Inflorescences (flower heads) droopy and reddish-coloured

Origin:

- Atlantic Coast of North America

Found to date in BC:

- Found to date in BC: Port Moody Arm; Comox estuary, spreading into Baynes Sound

photo credit: Gary Williams

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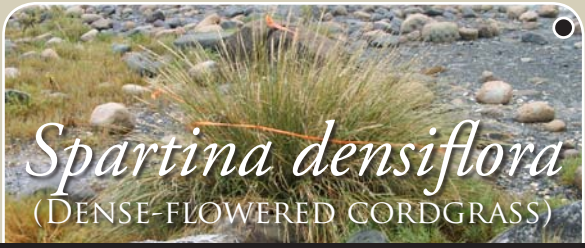
Spartina densiflora

(Dense-flowered cordgrass)

photo credit: Gary Williams



Spartina densiflora
(Dense-flowered cordgrass)

Ecology:

- Perennial, salt-tolerant grass
- Habitat ranges from cobble beach to salt marsh (high marsh to upper mudflat)
- Flowers April through July

Description:

- grows in dense tufts or clumps
- Grayish green leaves are narrow and inward-rolled, 4-8 mm wide, 12-43 cm in long
- Stems up to 1.5 m in height
- Inflorescence (flower head) of 2-13 spikes, 60 degrees from central axis

Origin:

- South America

Found to date in BC:

- Baynes Sound on East Coast of Vancouver Island

photo credit: Gary Williams

Native Marsh Plants

(Don't mistake these native plant species for Spartina)

Distichlis spicata – Seashore saltgrass

- Grows in dense patches
- Leaves are yellowish-green, 2-4 mm wide and finer than leaves of *Spartina anglica*
- Stems are solid and short (10-40 cm) – much smaller than mature *Spartina anglica*
- Ligule (joint between leaf blade and stem) has ridge with small, dense bristles (*Spartina* species have fine, straight hairs)

photo credit: Kathleen Fry

Triglochin maritimum – Seaside arrow-grass

Arrow-grass grows in circular clumps similar to *Spartina anglica*, but look for these differences:

- Grows in higher intertidal zone only
- It is a rush, not a grass (despite the name), therefore has a round stem
- Leaves and stems narrow and fleshy, grow vertically and do not branch at a 45-90 degree angle like *Spartina anglica* does
- Leaves are a dark green colour, 20 – 120 cm in height, flowering stem often taller than leaves

photo credit: Gary Williams

Native Marsh Plants

(Don't mistake these native plant species for Spartina)

Leymus mollis – American dunegrass

- Dunegrass grows up to 1.8 m. Smaller plants especially can be mistaken for *Spartina anglica* or S. *alterniflora*
- Grows in coastal sand-dunes, above the stranded-log line on beaches
- Leaf blades are grayish green, 6-15 mm wide
- Ligule has no fine hairs or bristles

Plantago maritima – Seaside plantain

- found in marsh zone on beaches and rocky areas
- small, with bright green fleshy leaves only 5-25 cm in length
- leaves all protrude from base of plant rather than branching out from vertical stems as in *Spartina anglica*

photo credit: Gary Williams

Spartina
Mapping Protocol

GPS Use:

- Once you locate the plant, stand still holding the GPS unit clear of your body and use the averaging function for 30-60 counts to get the best accuracy (within 5 m)

Waypoint Naming:

- The name will be 5 digits long: 3 digits will be determined by the GPS (between 001 and 999), the 4th will be the size class of the plant, the 5th is the species of *Spartina* (examples below):

Size Class:

S = Single plant or Seedling

A = "Clone" or small plant cluster - less than 0.3m diameter

B = Clone - 0.3 m to 1.0 m diameter

C = Clone larger than 1.0 m in diameter

D = Cluster of small plants in ~ 5 m diameter area

M = Center of a large area (greater than 5 m) with many clones, too many to map individually. Indicate the extent of the area infested by using the GPS's "tracking" function or series of M points, and making a text note describing what you did.

Species Codes:

1 = *Spartina anglica*

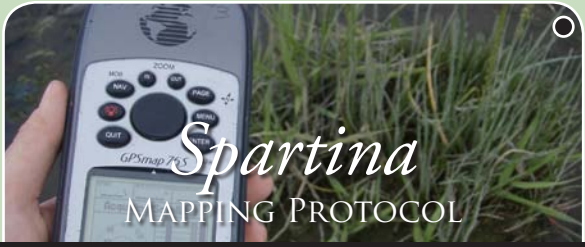
2 = *Spartina densiflora*

3 = *Spartina patens*

4 = *Spartina alterniflora*

Example: 001C1 = a clone larger than 1m diameter of *Spartina anglica*

photo credit: Claire de la Salle



Spartina Mapping Protocol

Mapping Removed Plants:

- **R =** single plant or clone removed by hand
- **Y =** a *Spartina* burial site (excavator buries large clone under 2 m of sediment)
- **X =** Extent of large area of plant removal (same directions as the "M" size class)
- **Z =** Total extent of area you mapped – start and end points – even if you found no *Spartina* this is valuable information. Please enter a short text note to describe your searched area.

GPS code = 001S1
Seedling – *Spartina angelica*

GPS code = 002C1
Clone larger than 1 m – *Spartina angelica*

The Excel template file for submitting your GPS data can be found at http://spartina.ca The site includes other aids for identifying *Spartina* sp.

photo credit: Claire de la Salle

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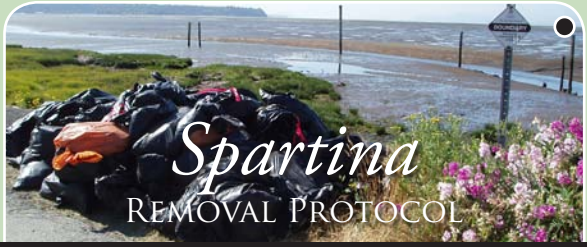
Spartina
Removal Protocol

Important:

- Remove all of the plant including root system (i.e. roots and rhizomes, or thick underground stems from which leaves and other stems can grow)
- Dig around plant leaving some space between the shovel and the plant, so that you are not severing too many roots or rhizomes
- Pry upwards with the shovel to dislodge the plant from the sediment
- Once the plant is removed, sift through the sediment it was removed from with your hands to make sure the white root and rhizome fragments are not left behind– don't worry about the tiny root hairs (<1 mm diameter) growing off the main roots, they will not grow a new plant.
- Remove as much sediment from the plant as possible by shaking, pulling off consolidated mud, or washing in a tide pool (this will lessen weight and reduce number of garbage bags needed). Make sure to retrieve any roots that fall off.

photo credit: Sarah Anning / Pat Lim



Spartina Removal Protocol

- Place all removed plant material in a heavy-duty garbage bag and remove from the site

- Scan the removal area to ensure that no other *Spartina* plants are present. For example, some plants may have been missed during the initial mapping or seedlings may have sprouted after the mapping was done. If you have extra marking flags use them to mark any new plants you find.

- Removal events are coordinated by the **BC Spartina Working Group**, to ensure compliance with permits and effective control methods. To join a work party contact riverworks@vanaqua.org

photo credit: Claire de la Salle