GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Salix cinerea***

Salix cinerea 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Malpighiales	Salicaceae

Common name salice cerognolo (Italian), Grau Weide (German), gray willow (English), gray sallow (English), wierzba szara (Polish), asch Weide (German), graa pil (Danish), pussy willow (English), saule cendré (French)

Synonym *Salix acuminata* , Mill.
Salix aquatica , Sm.
Salix cinerea , f. *tricolor* Dippel

Similar species

Summary Salix cinerea can be classified as a shrub or small tree. It has become particularly invasive in the Australasian-Pacific region where it is extremely hardy and tolerant of a wide range of soils and habitats, including areas that were previously uninhabited. Salix cinerea will obstruct and divert streams, invading shallow water by the layering of branches and toppling of over-mature, live stems. Displacement of native vegetation occurs with a loss of biodiversity, and reduction in the quantity and quality. The root system can modify banks and streams, eliminating niches for a variety of organisms.

view this species on IUCN Red List

Species Description
Salix cinerea is a small tree that can reach heights of 10m but is typically found to be a small shrub of only 1-2m in height. It is generally branched from the base but can sometimes be found with a distinct trunk. Branches spread to form a broad, rounded or flattened crown. Its bark is dark grey-brown, which becomes fissured with age. The twigs are dark reddish-brown, which are densely pubescent at first and can remain so for the first year before becoming glabrous or sub-glabrous. The leaves are shiny on the upper surface, and covered with soft grey hairs underneath. The leaves of *S. cinerea* are very varied, usually obovate or broadly oblanceolate, 2-9cm long and 1-3cm wide. Catkins appear in advance of the leaves and are cylindrical and 2-3cm long and 0.6-1cm wide. Female catkins are smaller and narrower than the male. The fruit is a capsule with two valves, containing many tiny seeds (Royal New Zealand Institute of Horticulture, 2005; and Slimbridge Wetland Plants, UNDATED).

Lifecycle Stages
Cremer (2003) states that *S. cinerea* is predominantly pollinated by insects, and perhaps partly by wind. Both male and female flowers are highly attractive to bees that can fly up to 3 or 5 km to collect pollen and nectar but for the most part crosspollination is usually considered to be restricted to much smaller distances, such as 50 m. Flowering and the production of viable seed may begin as soon as 2 or 3 years after germination. When the fruit has ripened it dries and opens. In warm, dry weather the movement of the cottony hairs attached to its base then levers the seed out. Wind, although not necessary, accelerates that release. Seed will float on water only while it remains attached to its cotton parachute, but that soon falls off, unless the water is very still. Seed will germinate on and under water and tiny seedlings can survive under water for up to a month but cannot grow until exposed to air and therefore it is possible for seedlings to be transported by flooding (Cremer, 2003).

Uses
Plants for a Future, (2000) report that, \"The fresh bark of all members of this genus contains salicin, which probably decomposes into salicylic acid (closely related to aspirin) in the human body. This is used as an anodyne and febrifuge. The bark of this species is used interchangeably with *S. alba*. It is taken internally in the treatment of rheumatism, arthritis, gout, inflammatory stages of autoimmune diseases, diarrhea, dysentery, feverish illnesses, neuralgia and headache. The bark is removed during the summer and dried for later use. The leaves are used internally in the treatment of minor feverish illnesses and colic. The leaves can be harvested throughout the growing season and are used fresh or dried.\"

Habitat Description
In its invasive ranges *S. cinerea* has found its way into riparian habits, brackish wetlands on coastland, wet forests, alpine bogs, as well as disturbed and undisturbed land on national park land and elsewhere. *S. cinerea* can grow on a wide range of soils and can tolerate permanent water logging, poor aeration and a pH down to 3.5 making it an extremely hardy species (Cremer, 2003).

General Impacts
Cremer (2003) has extensively covers a range of negative impacts from *Salix cinerea* invasion. The author has found that this species obstructs and diverts streams because their seedlings can establish thickets on exposed wet sediments and they can invade shallow water by the layering of branches and toppling of over mature, live stems. At this point extensive displacement of native vegetation with loss of biodiversity, and reductions in the quantity and quality of water can occur because of the diversion of floodwaters and erosion of floodplains, roads and bridges may then occur. *S. cinerea* also produce dense shade during the growing season eliminating most native terrestrial plants growing beneath and inhibiting aquatic plants and incidentally decreasing the temperature and the oxygen content of the water. Because of the deciduous nature of *S. cinerea* leaf inputs to streams are largely restricted to autumn which may cause scarcity of food for some organisms at most times, and superabundance in autumn (with consequent anaerobic decay in stagnant waters). The underwater roots of this species can modify the banks, and in shallow streams, cover the ground, eliminating niches for organisms needing shelter in hollows. And because this species is exotic it has become a poor link in the food chain for native organisms.

Management Info
Mechanical: Cremer (1999) gives a brief overview of a variety of mechanical control procedures that can be used in the control of smaller infestations of*S. cinerea* and other willow species but for larger invasions chemical methods will yield best results. The author reports that *S. cinerea* less than 1 metre tall and few in number can be pulled out by hand. Roots that remain do not sucker but buried portions of stems may take root and must also be pulled out. Use of heavy machinery can be effective but is not advisable on wet sites if the accidental incorporation of broken, live branches into the ground cannot be kept to a minimum. *S. Cinerea* can be felled, but except for some large, old willows the remaining stump usually coppices (produces shoots). The green crowns can be burnt immediately after felling (fire restrictions permitting). Burning may be an option if the tree can be completely girdled by fire at ground level, however young trees tend to sprout from the buried portion of their stem. Grazing can retard young *S. Cinerea* growth but will rarely kill the plant.
Chemical: Cremer (2003) reporst that, \"The main method of controlling *S. Cinerea* is injection of stems with the weedicide Glyphosate. Painting of freshly cut stems with Glyphosate is particularly effective and the spraying of foliage of shorter plants (< 2m tall) is often effective as well.\" *S. Cinerea* can sometimes be resistant to this treatment of painting freshly cut stems and may need to be painted several times. Effectiveness is increased if the bark is also sprayed if it is thin or stripped if it is thick (Cremer, 1999).
Biological: The introduction of a biological agent has been considered for control of *S. Cinerea* in New Zealand, but opposition to the intentional introduction of further non native organisms is likely (Syrett, 2002). As other countries explore the possibilities of biological control agents, similar opposition will most likely arise also. Harman (2004) has researched and identified a varying number of possible biological control agents for *S. Cinerea*. The author gives a brief introduction and background on these species and while many species appear promising, extensive research is needed before any agent is ever released. First, each varying degrees of research must be conducted to determine which species have a narrow host range. This is critical to the success of a biological control program for *S. Cinere*a in New Zealand. There are many Salix hybrids that are beneficial and are used extensively for riverbank protection and soil stabilization and any introduced agent must be specific enough to not damage desirable hybrids and other species present in New Zealand.

Pathway
Introduced in the early period of European settlement and widely planted in many wet areas for soil reclamation and stabilisation (Royal New Zealand Institute of Horticulture, 2005).

Principal source: Cremer, 2003. Introduced willows can become invasive pests in Australia

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ALIEN RANGE

[13] AUSTRALIA
[23] UNITED STATES
[6] NEW ZEALAND

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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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