Mini data sheet on *Gunnera tinctoria* (Gunneraceae)

Added in 2013 – Deleted in 2014

Reasons for deletion:
Gunnera tinctoria was added to the EPPO Alert List in 2013 and according to the conclusions of the prioritization process assessment, it was transferred to the List of Invasive Alien Plants in 2014.

Why
Gunnera tinctoria (Gunneraceae) is a large herbaceous plant originating from South America. It is used as an ornamental waterside plant. Two of its English common names are 'Chilean rhubarb' or 'giant rhubarb'. It reproduces vigorously by seeds which are spread by birds and water. It also reproduces vegetatively by rhizomes. The plant smothers other plants in riparian habitats and forests, and is considered as invasive in New Zealand and in the British Isles. In the EPPO region, it is only recorded in France, Ireland, the United Kingdom and Azores (Portugal). As *G. tinctoria* still has a limited distribution in the EPPO region and presents an invasive behaviour in areas where it has been introduced, the EPPO Secretariat decided to add it to the EPPO Alert List.

Geographical distribution
EPPO Region: France (Côtes d'Armor), Ireland, Portugal (Azores: São Miguel Island), the United Kingdom (England, Scotland, Wales).
South America (native): Argentina, Bolivia, Colombia, Chile, Ecuador, Peru, Venezuela.
North America: USA (California).
Oceania: New Zealand.
Note: In its native range, *G. tinctoria* occurs predominantly in the Andean region of Chile and Colombia. In its native range, this plant is a delicacy associated with Mapuche Indian customs, the young petioles are eaten raw with salt and chili. The species is present in Spain but not naturalized. Although the species has been mentioned as native to Brazil and recorded in Australia, no records could be found to validate these occurrences.

Morphology
G. tinctoria is a large, clump forming, herbaceous plant growing up to 2 m tall and resembling rhubarb. It has horizontal rhizomes which can grow up to 1.5-2 m for mature plants. Stems are spiny, leaves can be up to 2 m in diameter with 5 to 7 lobes, very coriaceous and hairy underneath, in particular on the veins. Flowers are borne on a panicle 1 m long, rising from the base of the leaves. Flowers resemble elongated broccoli and there can be 3 or 4 per plant. Individual flowers are green, sessile, densely packed, apetalous and only 1 mm long. A plant can produce hundreds of drupes which are reddish, oblong, 1.5 to 2 mm long, each containing a single ovoid seed of approximately 1.2 mm by 1.5 mm and weighing about 4 mg.

In which habitats
The plant is found on coastal cliffs, riparian zones, forests and wetlands as well as in areas that have been transformed by human activity such as former agricultural fields, quarries and road sides. According to the Corine Land Cover nomenclature, the following habitats are invaded: mixed forests, broad-leaved forests; inland wetlands (marshes, peat bogs); coastal wetlands; banks of continental water, riverbanks/canalsides (dry river beds); road and rail networks and associated land; other artificial surfaces (wastelands); green urban areas, including parks, gardens, sport and leisure facilities.

Biology and ecology
G. tinctoria is a geophyte that grows in temperate areas with high rainfall. It can occupy a variety of habitats but prefers moist soils (it establishes less often on well drained sandy or stony soils), and tolerates seasonally water logged wet soils. It also tolerates salt spray and can grow at the high tide mark in coastal areas. The plant also forms a symbiosis with nitrogen fixing Cyanobacteria (genus *Nostoc*) present inside its cells.

The plant is perennial but it is deciduous or semi-deciduous under harsh winter conditions. During winter, it may die back but new leaves are produced in spring. Growth starts in early spring (e.g. in March in Ireland), prior to the emergence of native species. Under cold conditions, the plant may take 3 years to reach its maximum height, and flowers only after 3 to 5 years. The plant blooms early in spring and flowers last at least for a month. It is wind pollinated, although hymenopterans, in particular bees, are reported to pollinate the plant in New Zealand. Fruits mature in late summer-early autumn. A single plant can produce 250 000 seeds per year. Seeds have a very high germination rate, but are not expected to have a very long viability although the plant is reported to be able to form a large and persistent soil seed bank. The species can also grow from stem fragments or from rhizomes. These rhizomes can increase by 15 cm annually when established. Seed germination occurs from spring through summer.

Pathways

The plant is used as an ornamental waterside plant. The thousands of seeds produced are naturally dispersed by water and birds. Anthropogenic activities such as clearing ditches, road building and movement of soil may also spread the plant.

Impacts

The huge leaves of *G. tinctoria* which grows in colonies shade out any plant or animal present beneath. The formation of almost monospecific stands of *G. tinctoria* leads to changes in plant communities in Western Ireland, and the species-rich native grasslands are replaced by a sparse cover of dicotyledonous plants (which are not found in uninfested grasslands). *G. tinctoria* also replaces *Salix cinerea* (Salicaceae) in Great Britain, thus altering the process of natural vegetation succession. In New Zealand, *G. tinctoria* is reported to affect nationally threatened plant species or uncommon species on coastal cliffs. Furthermore, it colonizes habitats of high ecological importance. In the United Kingdom it indeed occurs in mires, heaths, wet grasslands and along watercourses, including habitats which are of patrimonial value. In the Azores, it is found in nature reserves and colonizes conservation habitats: the Macaronesian laurel forest and the endemic forests with *Juniperus* spp. However, the species exhibits different invasiveness behaviour across these different countries and in different situations. The species can also block drains and streams and obstruct access to natural and recreational areas. It may cause erosion when colonizing steep areas, and increase the risk of flooding. The species is also reported to create a negative visual impact on the landscape.

Control

G. tinctoria is difficult to control as the environments in which it grows may be difficult to access (e.g. steep slopes). Flower heads should be removed and destroyed as soon as possible, in particular near streams or sites of high conservation value. Concerning chemical treatments, the highest efficacy was obtained when herbicides were sprayed early in the growing season before seed could mature. Satisfactory results have been obtained in New Zealand with triclopyr 600 EC as it had fewer impacts on adjacent desirable plants. Cutting the leaves and flower stalks at the base and applying manually 25% glyphosate has also shown satisfactory results. The plant can be controlled by mechanical means, but it is imperative to remove the entire rhizome as small pieces of it can re-sprout. Monitoring of management actions should be undertaken within a year to ensure that the population is diminishing.

Sources

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