Carpobrotus edulis (L.) N.E. Br.

Iceplant (Hottentot fig)

Family: Aizoaceae
Range: Primarily a weed in coastal regions of California.
Habitat: Has escaped cultivation in many coastal areas where it especially thrives in dune communities, including coastal scrub, grassland, chaparral, bluffs, dunes, and other sandy coastal sites. Does not tolerate cold winter climates.
Origin: Native to South Africa. Hottentot fig is extensively planted along highways as an ornamental and to prevent soil erosion. In addition, it is cultivated as a landscape ornamental in coastal regions and inland in mild winter areas.
Impacts: Hottentot fig displaces native dune species, and large infestations change the ecology of the community. Plants trap more sand than native dune species and generally stabilize dune communities unnaturally. Plants also die when completely buried. In time, an increased amount of organic matter in the sandy soil can promote invasion by other weed species that otherwise would not be able to inhabit dune soils.
California Invasive Plant Council (Cal-IPC) Inventory: High Invasiveness

Iceplant or Hottentot fig and other iceplants are mat-forming or trailing perennials to 1.5 ft tall. All have succulent leaves. The leaves of Hottentot fig are sessile, opposite, elongate and triangular in cross-section. The stems of the plant are woody near the base and can trail for 10 ft and root at the nodes. Clonal populations can grow to nearly 200 ft in diameter. Plants generally turn reddish when stressed, which may occur due to nitrogen deficiency, or when plants are dying.

Flowers are solitary and showy at the stem tips, 8 to 10 cm diameter, with numerous pink or yellow (aging to pink) linear petals. Plants reproduce both vegetatively by stem fragments and by seed. The capsules are berry-like, large, fleshy, and persist on plants for months, eventually turning yellow with age. There are numerous seeds per capsule, which remain in fruit until they are consumed by animals or decompose. Fruits are primarily dispersed with animals such as deer, rabbits, and rodents after they are consumed. Seeds can survive ingestion by animals, and those that pass through an animal's gut germinate more readily than seeds from intact fruits. Fruits that are not eaten become hard, forcing seeds to remain dormant until fruits decompose, usually within 3 years.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Mechanical removal is effective at any time of year. Hottentot fig and other iceplant species are easily removed by hand pulling. One method of removal is by tearing up the plants up by the roots. Large mats can be removed by rolling them up like a carpet but this is very labor intensive. Because the plant can grow roots and shoots from any node, all live plants and stem fragments must be removed from contact with the soil to prevent resprouting. If removal is not possible, mulching with the removed plant material is adequate to prevent most resprouting, but requires at least one follow-up visit to remove resprouts. Heavy equipment can also be used to remove iceplants. Earth-moving machinery such as a scoop with a brush rake attached, a skid-steer, bobcat, or tractor, can be used, but it is still necessary to remove buried stems and to mulch the soil to prevent reestablishment. Tarping is also a method of managing iceplant, as it blocks light and eventually kills the plant. Removal of iceplants can leave behind a layer of accumulated dead and decaying organic debris. The debris may contain seeds of iceplant or other weedy species. Furthermore, the carbon in the litter provides nutrients to potential invaders. It may be necessary to also remove this dead material.
Cultural	Burning is not an effective strategy for control of iceplants. While the heat of the fire will kill the seeds, the

	succulent foliage will not entirely be killed by fire, even if enough fuel was available to carry a burn. Grazing is also not a recommended control option, particularly on sensitive dunes.
Biological	There are currently no biological controls for *Carpobrotus edulis* or any other species of iceplant. The iceplant scale insects, *Pulvinariella mesembryanthemi* and *P. delottoi*, have a small impact on some individuals, but would likely not be useful as a control tool.

CHEMICAL CONTROL

The following specific use information is based on reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
Aminocyclopyrachlor + chlorsulfuron *Perspective*	**Rate:** 4.75 to 8 oz product (*Perspective*)/acre **Timing:** Postemergence and preemergence. Postemergence applications are most effective when applied to plants from the seedling to the mid-rosette stage. **Remarks:** *Perspective* provides broad-spectrum control of many broadleaf species. Although generally safe to grasses, it may suppress or injure certain annual and perennial grass species. Do not treat in the root zone of desirable trees and shrubs. Do not apply more than 11 oz product/acre per year. At this high rate, cool-season grasses will be damaged, including bluebunch wheatgrass. Not yet labeled for grazing lands. Add an adjuvant to the spray solution. This product is not approved for use in California and some counties of Colorado (San Luis Valley).
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup*, *Accord XRT II*, and others	**Rate:** Broadcast foliar treatment: 1.3 qt product (*Roundup ProMax*)/acre (1.46 lb a.e./acre). Spot treatment: 1.5 to 2% v/v solution **Timing:** Because of the succulent nature of the plants, it is best to apply the herbicide at a time when the plant is rapidly growing. **Remarks:** Glyphosate is the only chemical option registered in California that has been shown to effectively kill *Carpobrotus edulis* or other iceplant species. The addition of 1% surfactant can increase the effectiveness of the herbicide. Since glyphosate is nonselective, it may be more appropriate to use a shielded sprayer or even a wiper application technique at 50% concentrate of the herbicide.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.