Egeria densa Planch.

Brazilian egeria

Family: Hydrocharitaceae
Range: Most western states including Washington, Oregon, Idaho, Colorado, Utah, Arizona, New Mexico, and California. Most common in Washington, Oregon and California.
Habitat: Slow-flowing or still water in ditches, sloughs, canals, rivers, ponds, lakes, reservoirs; often in nutrient-rich substrates. Plants are highly susceptible to iron deficiency and grow best under low light. Does not survive prolonged periods of near freezing temperatures.
Origin: Native to eastern South America. Brazilian egeria is still commonly sold as aquarium décor under the name *Egeria* or *Anacharis*. Plants can naturalize in warm temperate to cool sub-tropical regions when unwanted aquarium contents are released into lakes, ponds, or waterways.
Impacts: Brazilian egeria can aggressively invade new aquatic environments, displace native aquatic vegetation by forming dense stands or large sub-surface mats, and alter the dynamics of aquatic ecosystems. Other detrimental and economic impacts from heavy infestations can include water flow impediment in waterways, increased flooding, clogged pumps and boat propellers, and reduced use of lakes and waterways for fishing and other recreational activities.
Western states listed as Noxious Weed: Oregon, Washington
California Invasive Plant Council (Cal-IPC) Inventory: High Invasiveness

Brazilian egeria is a submerged perennial aquatic weed. Its stems typically grow rooted in the substrate. The leaves are sessile, 1 to 2.5 inches long in whorls of 3-6. On lower stems, the leaves are scale-like and opposite. The leaf margins are minutely toothed, visible with low magnification.

Brazilian egeria is a dioecious species, but populations in the United States consist only of male plants. Male flowers extend 1.5 inches above the water surface on long thread-like flower tubes several inches long. The three petals are showy, glossy white and wrinkled. Because only male flowers occur in the western United States, there is no fruit production. As such, all populations of Brazilian egeria reproduce vegetatively, by stolons and stem fragments. Unlike hydrilla, Brazilian egeria does not produce tubers or turions. Plants can easily fragment into free-floating pieces that root at nodes, and these fragments can start new colonies when carried elsewhere. However, adventitious roots and lateral branches only grow from double nodes (specialized nodes separated by a shortened internode), typically spaced along stems at 6- to 12-node intervals. Only fragments with a double node develop into new plants. Vegetative parts disperse with flooding, waterfowl, and human activities, such as fishing and boating.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, dredging)	Removing and destroying stem fragments from recreational equipment, such as boat propellers, docking lines, and fishing gear can help prevent the spread of Brazilian egeria. Removing dense canopies by mechanical harvesting may stimulate growth and spread viable fragments. Diver-assisted dredging is very effective in small areas (< 2 acres).
Cultural	Dewatering (drawdown) during summer months may desiccate and kill sparse populations, but large biomass tends to form large clumps that protect the interior from drying out. Brazilian egeria grows

	rapidly, so repeated exposure to heat or severe freezing may be necessary.
Biological	The triploid (sterile) grass carp (white amur) is a relatively nonselective herbivorous fish that will consume Brazilian egeria, and uses it as one of its most preferred diets. Some research is underway to determine the utility of a fly (*Hydrellia* sp.) whose larvae feed on Brazilian egeria, but no releases have yet been permitted in the United States.

CHEMICAL CONTROL

The following specific use information is based on published papers and 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.

BRANCHED-CHAIN AMINO ACID INHIBITORS	
Penoxsulam *Galleon*	**Rate:** For in-water treatment: 25 to 75 ppb. Treatments may need to be repeated, but not to exceed 150 ppb in an annual season. For dewatered (drawdown) treatment: 5.6 to 11.2 oz product/acre (1.4 to 2.8 oz a.i./acre) **Timing:** Apply directly to water in early spring to early summer during the period of rapid growth. For drawdown, apply during mid- to late winter before refilling. **Remarks:** Penoxsulam is a slow-acting herbicide and may take 4 to 6 weeks for effective control. For drawdown applications use 20 to 100 gal/acre of spray solution to wet the sediment.
PIGMENT SYNTHESIS INHIBITORS	
Fluridone *Sonar*	**Rate:** For in-water treatment: 5 to 20 ppb, but exposures must be maintained for 6 to 8 weeks for optimal control. Generally, two seasons of control with fluridone are optimal for management of well-established Brazilian egeria populations. **Timing:** Apply directly to water in early spring to early summer. **Remarks:** Fluridone is a systemic herbicide. It affects young, rapidly growing plants. Lower rates can be used if applied during early spring growth and when water movement is not likely to dilute or move the herbicide.
CONTACT PHOTOSYNTHETIC INHIBITORS	
Diquat *Reward*	**Rate:** For in-water treatment: 0.1 to 0.25 ppm **Timing:** Apply directly to water in late spring to early summer. **Remarks:** Diquat is a fast-acting contact herbicide that can be effective in mid- to late summer, but if biomass is large, only a portion of the infested sites should be treated to minimize effects of reduced dissolved oxygen. Diquat is quickly bound to, and becomes inactivated on, suspended clay particles and it should not be used in moderately or highly turbid water.
INORGANIC HERBICIDES	
Chelated copper *Komeen*, *Cutrine-plus*	**Rate:** For in-water treatment: 0.5 to 1 ppm elemental copper **Timing:** Apply directly to water in early summer when plants and biomass are small. **Remarks:** Chelated copper is a fast-acting contact herbicide. Retreatment may be required within 3 to 5 weeks. If biomass is large, treat only one-third of infested area to minimize decrease in dissolved oxygen. Chelated copper products are less affected by high pH than inorganic copper.
NON-HERBICIDAL CHEMICALS	
Dyes or colorants *Aquashade*	Although technically not herbicides, dyes and colorants control submerged aquatic plants by absorbing light in the water column and reducing photosynthesis. Applications should be made in early spring and repeated to maintain concentration recommended on the label. Colorants are not as effective on well-established plants in mid- to late summer.

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.