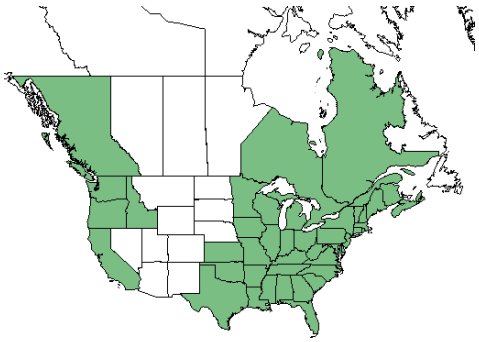
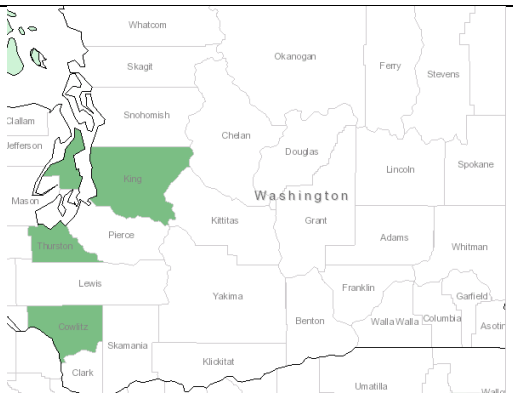
Plant Propagation Protocol for *Utricularia gibba*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/UTGI.pdf

TAXONOMY	
Plant Family	
Scientific Name	Lentibulariacea (1)
Common Name	Bladderwort family
Species Scientific Name	
Scientific Name	*Utricularia gibba* L. (1)
Varieties	Information not available on USDA plants database
Sub-species	Information not available on USDA plants database.
Cultivar	
Common Synonym(s)	*Utricularia biflora* Lam. (1) *Utricularia fibrosa* Walter (1) *Utricularia obtusa* Sw. (1) *Utricularia pumila* Walter
Common Name(s)	Humped bladderwort (1)
Species Code (as per USDA Plants database)	UTGI
GENERAL INFORMATION	
Geographical range	North American Distribution (1)  Washington State Distribution (1)

	
Ecological distribution	Humped bladderwort requires a wetland ecosystem in order to survive (2).
Climate and elevation range	This species can be found in the state of Washington at elevations of 160 to 490 feet. In general it can handle a range of climates from a continental climates with dry summers to tropical rainforest climates with more than 60 mm a month in precipitation.
Local habitat and abundance	Humped bladderwort occurs in exposed waters such as lakes and lake edges in lowlands zones. In these zones, associated species include algae, Canadian waterweed, watershield, pond lily, purple marshlocks, hoary sedge, and common rush can be found. Wildlife animals that have known to eat these plants include but are not limited to: muskrats, ducks, and other bird species (3). This plant is unusual in that it actually consumes micro invertebrate species to satisfy its nutrient requirement by capturing and digesting them in its bladder-like structures. (4). In terms of its abundance, there are fewer than five occurrences of this species in Washington State and it is currently part of the Washington rare plant list, although not much research has retrieved results regarding its rarity at present time (2).
Plant strategy type / successional stage	Due to its opportunistic ability to gain nutrients by consuming invertebrates in low nitrogen and phosphorous environments it can survive in a variety of open waters so long as they are not rapidly moving. The ease of establishment of this species has led to it being labeled as a weed among the horticulture community (5).
Plant characteristics	The humped bladderwort is a rootless perennial aquatic herb with thin stems that are about 10 inches long (2, 3). It has yellow flowers which are hermaphroditic and irregular in form with 2 to 5 sepals, 5 petals, 2 stamens,

	and one ovary per plant. Leaves are about ¼ of an inch long and are submerged underwater. Attached to the thread like leaf segments are carnivorous bladders. The bladders deflated pouches that are not used for floatation but to capture aquatic creatures for consumption. Recent microscopic observation has found microorganisms such as bacteria, and algae that survive within the bladders, which have led to speculations of a symbiotic relationship with the plant and these small organisms.
PROPAGATION DETAILS	
Propagation by Seed	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed (2)
Product Type	Propagules
Stock Type	This plant species is not generally available commercially and not widely researched and thus information on nursery methods to efficiently propagate this plant are currently not available (3).
Time to Grow	Humped bladderwort species in the wild tend to grow during spring when water temperature rises and air can be readily absorbed through its leaves to cause buoyancy (2).
Target Specifications	When producing humped bladderworts you want to have a target in obtaining specifications usually found among this species. These specifications include stem leaves between 1/8 and 3/8 inch long, bladders about 1/16 inch wide, 1 to 4 flowers ¼ to 5/16 inches long, at the end of a 6 inch stalk (7)
Propagule Collection Instructions	Flowering occurs usually during the warmer parts of the year followed by fruit development. A major part of seed collection is identification. Mature fruits are a single chamber, rounded capsule, with a central column that contains many seeds (2). Consideration of small fruit size should be taken into consideration when extracting seeds.
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	For best results it is advised that water in which seeds are placed have microorganisms in which the plants can consume for nutrient uptake. Water should also be medium hard, acid water with humic acid (10).

Growing Area Preparation / Annual Practices for Perennial Crops	Growing conditions of this species include sunlight, wet soil, and available water rich in microorganisms for this plant to survive (7). Considered one of the easier bladderworts to grow, it is advised that Humped bladderwort cultivation can be easily achieved in a small growing container filled with water, waterlogged peat or water filled trays of other plants (8).
Establishment Phase Details	N/A
Length of Establishment Phase	N/A
Active Growth Phase	N/A
Length of Active Growth Phase	N/A
Hardening Phase	N/A
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	N/A
INFORMATION SOURCES	
References	(1) Plants Database. USDA Natural Resrouces Conservation Service, 20 May. 2015. Web. (2) Douglas, G.W., G.B. Straley, D. Meidinger, and J. Pojar. 1999. Illustrated Flora of British Columbia vol. 3: Dicotyledons (Diapensiaceae Through Onagraceae). Ministry of Environment, Lands and Parks, Victoria, British Columbia. 423 pp. (3) *Utricularia gibba.* Rook, 2005. Web. 20 May. 2014. (4) Young, Ed. *Flesh-Eating Plant Cleaned Junk From Its Minimalist Genome*. National Geography, 2013. Web. 20 May. 2014. (5) *Utricularia gibba*. IUCNredlist, 2014. Web. 20 May. 2014. (6) *Connecticut Wildflowers*. Connecticut Botanical Society. 2005. Web. 20 May. 2014. (7) *Native Plant Database*: *Utricularia gibba*. Wildflowercenter The University of Texas at Austin,2015. Web. 20 May. 2014. (8) Schnell, Donald. 2002. *Carnivorous Plants of the United States and Canada*. Timber Press: Portland, Oregon. pp. 369–370. ISBN 0-88192-540-3

	(9) Utriculara gibba Floating Bladderwort. Lefora, 2012. Web. 20 May. 2014. (10) Adamec L, 1997. Mineral nutrition of carnivorous plants - a review. Bot. Rev. Botanical Review, 63:273-299.
Other Sources Consulted	N/A
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