

## News Release

# Going through Hoops for Water Quality is Focus of Research by Senior Jenny DuBay at the U of M Crookston

By Itollefs on Tuesday, July 9, 2013

Summer means going through a lot of hoops for Jenny DuBay, a senior from Apple Valley, Minn., majoring in natural



resources at the University of Minnesota Crookston. DuBay designed a series of floating vegetated mats out of hula-hoops and water noodles as part of an undergraduate research project that will assess phosphorus removal utilizing different plant species.

Earlier in the spring, DuBay, under the guidance of Katy Smith, assistant professor in environmental sciences at the U of M Crookston, conducted a preliminary study assessing the ability of different plant species to remove phosphorus from the water they are growing in. After the preliminary study a site was located that has significant run-off from agricultural land and farm animal waste.

An earlier prototype of the mats led DuBay to her current design built on a hula-hoop frame and topped with burlap covered water noodles formed around the hoop. They have fabric across the opening and a screen around the top that allows the passage of water but keeps the plants contained. The mats are weighted with cement blocks to keep them positioned in the pond.



The mats are filled with plants including two of each kind and four replicates. The *Lemma*, a genus of free-floating aquatic plants from the duckweed family, doesn't need soil but the other mats contain peat as a growing media. Those mats include a fern, two different species of *Rumex* (Dock), and cattails. She planted the mats on Sunday, June 30, 2013, and is hoping to keep them there until the fall depending on the weather. The plan is to harvest the biomass in October.

Contamination of surface and ground water is a serious environmental concern. Research has shown that floating vegetated mats can be used to grow biomass and remove nutrients from wastewater. Smith whose research interests include the use of plants to clean the environment, led the development of the environmental sciences program at the U of M Crookston and her work includes research on soil management practices to improve both soil quality and productivity.

Funding for DuBay's project came from the University of Minnesota Undergraduate Research Opportunities Program and the Northwest Minnesota Regional Sustainable Development Partnership.

DuBay worked last summer for the shallow lakes project for the

Minnesota DNR and this summer is working banding ducks near Bemidji.



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In the photos: Students working on assembly of mats, at top, left to right, are Tucker Flaten, Gyaltzo Gurung, Jenny DuBay, and Andrea Ramponi.

Center, left: Tucker Flaten places the wire netting around the mat to be placed in the pond.

Bottom, right: A series of mats with the plants are held in place by cement blocks. The design of the mats is the work of Senior Jenny DuBay.

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