

FIRST REPORT OF FRESHWATER JELLYFISH IN MONTANA

By Grant G. Grisak

INTERMOUNTAIN JOURNAL OF SCIENCES
Vol. 16, No. 1-3: 1-3
September, 2010

FIRST REPORT OF FRESHWATER JELLYFISH IN MONTANA

Grant G. Grisak, Montana Fish, Wildlife and Parks, Great Falls, Montana 59405

The first known sample of freshwater jellyfish [(*Craspedacusta sowerbyi*) Lankester, 1880 (Cnidaria: Limnomedusae: Olindiidae)] in Montana came from an artificial pond on an abandoned golf course in Cascade County near the town of Great Falls in 2009 (Fig. 1). The pond is located ~600 m from the Missouri River and is part of a four pond network connected by a dry artificial stream.

C. sowerbyi originated in the Yangtze River area of China. Distribution of this species is widespread throughout Europe (Didžiulis 2008) and believed to be caused by transporting ornamental pond plants

containing eggs or polyps. The first reported case outside of China was in London England in 1880. As of 2009, freshwater jellyfish have been reported in all of the continental 48 states except Montana, North Dakota, South Dakota, and Wyoming (T. Peard, Indiana University of Pennsylvania, personal communication, 2010). Most populations are found in lakes and ponds and only about 8 percent in flowing water (Beckett and Turanchik 1980).

The initial collection occurred on 25 August 2009. Hydromedusa were observed swimming near the surface, collected with a dip net, and then preserved in 10-percent

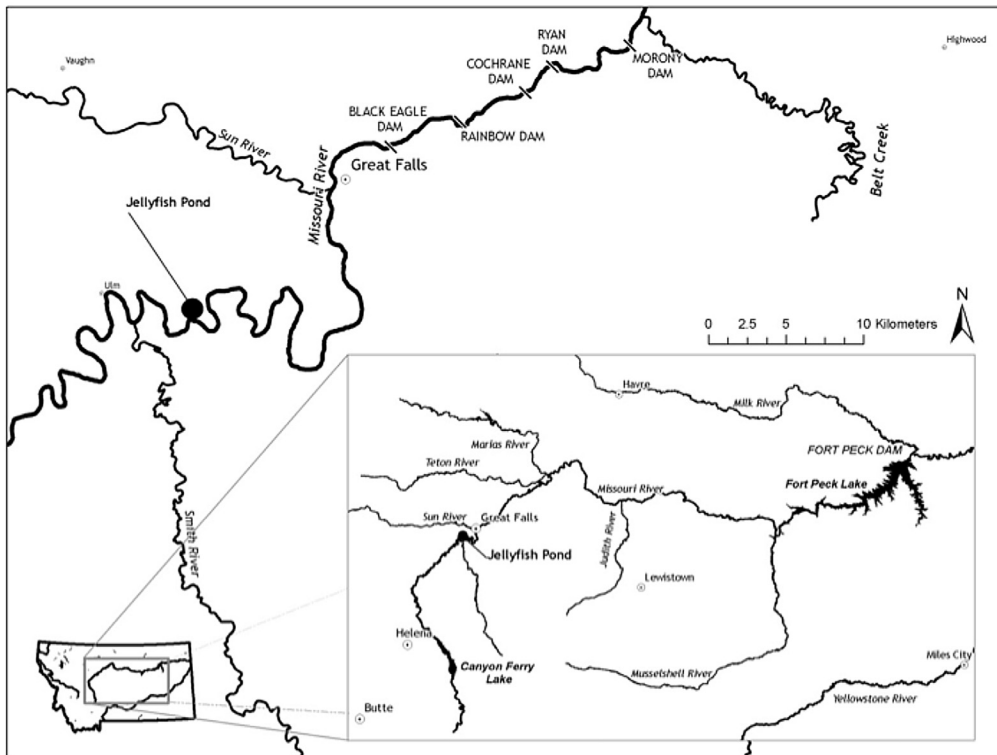


Figure 1. Location of freshwater jellyfish pond in Montana and six downstream reservoirs on the Missouri River.

ethanol for photographs and examination. Mean diameter of the jellyfish measured 29 mm (17-34; Fig. 2). A second visit occurred on 3 September 2009 to make museum collections and record habitat conditions. The pond surface area was 1.09 ha, maximum depth was 2.04 m and mean depth was 1.25 m (Fig 3). Secchi reading was 31 cm. Surface water temperature was 18.1 oC. The substrate of the pond was primarily coarse sand with a few piles of rock 12-25 cm in diameter. No vegetation was present in the water or along the shoreline. Two plankton tows were made from a small raft with a 30-cm diameter 80-micron Wisconsin net at the deepest part of the pond. Plankton collected were *Bosmina* spp., *Cyclops* spp., Nauplii of *Cyclops* and trace amounts of rotifers *Kellicotia* spp., *Conochilius* spp., and *Asplanchna* spp. One yellow perch (*Perca flavescens*) measuring 49 mm long and several water boatmen (Corixidae) were collected.

The life history, distribution and feeding habits of this species have been adequately described by Stefani et al. (2010) and Smith and Alexander (2008). Field and laboratory studies show when population levels are abundant, *C. sowerbyi* can have significant reductions in plankton abundance (Pérez-Bote et al. 2006, Jankowski et al. 2005) as well as selectivity for plankton species and size (Smith and Alexander 2008, Pérez-Bote et al. 2006).

The location of this population raises concern about possible expansion into the Missouri River. Six hydroelectric dams (Black Eagle, Rainbow, Cochrane, Ryan, Morony) that impound reservoirs on the Missouri River downstream of this pond would provide adequate habitat for this organism to survive (Fig.1). The reservoir effect of the closest dam begins 33 river-km downstream of this pond. Fort Peck Reservoir, the largest earthen dam in the United States, is located on the Missouri River 386 river-km downstream of the

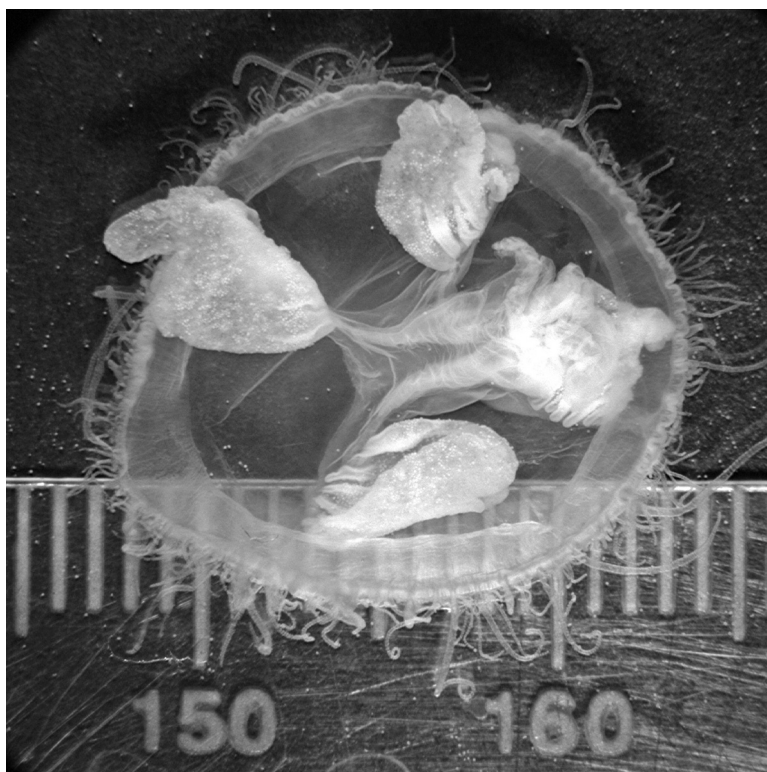


Figure 2. Freshwater jellyfish (*Craspedacusta sowerbyi*) sampled from a pond in Montana, 2009.

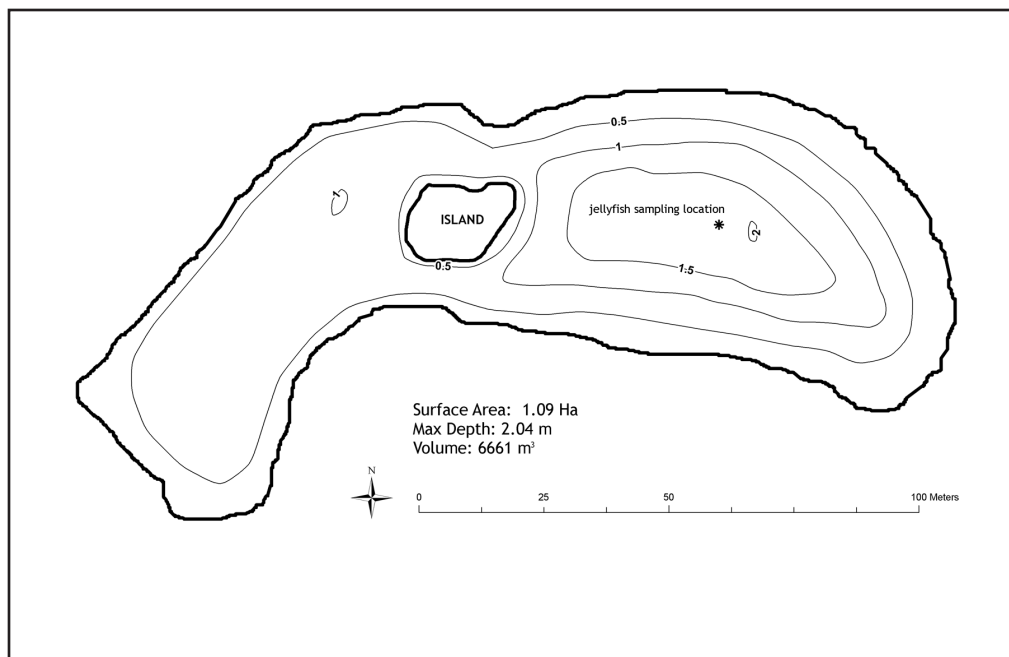


Figure 3. Bathymetric map of freshwater jellyfish pond in Montana with plankton sampling location. Map contours are 0.5-m increments.

pond. This 206-km long reservoir is vital habitat for the last self sustaining population of paddlefish (*Polyodon spathula*) in the United States, and for Cisco (*Coregonus artedii*), which is an important forage fish for the Fort Peck Reservoir sport fishery. Both of these fish species feed almost exclusively on plankton during all life stages. Given the ability of this organism to select for specific plankton and affect their reduction, the ecological impacts of this species could be far reaching if it becomes established in the Missouri River reservoirs.

LITERATURE CITED

- Beckett, D.C. and E. J. Turanchik. 1980. Occurrence of the freshwater jellyfish *Craspedacusta sowerbyi* Lankester in the Ohio River. *Ohio Journal of Science* 80: 95.
- Didžiulis, V. 2008. Invasive Alien Species Fact Sheet – *Craspedacusta sowerbyi*. – From: Online Database of the North European and Baltic Network on Invasive Alien Species – NOBANIS. www.nobanis.org.
- Jankowski, T, T Strauss, and H. Ratte. 2005. Trophic interactions of the freshwater jellyfish *Craspedacusta sowerbyi*. *Journal of Plankton Research* 27:811-823.
- Pérez-Bote, J.L., A. Muñoz, R. Morán, R. Roso, and A. J. Romero. 2006. First record of *Craspedacusta sowerbyi* Lankester, 1880 (Cnidaria: Limnomedusae: Olindiidae) in the Proserpina Reservoir (Extremadura, SW Spain) with notes on their feeding habits. *Belgian Journal of Zoology* 136:163-166.
- Smith, A. S. and J.E. Alexander. 2008. Potential effects of the freshwater jellyfish *Craspedacusta sowerbyi* on zooplankton community abundance. *Journal of Plankton research* 30:1323–1327.
- Stefani, F. B. Leoni, A. Marieni, and L. Garibaldi. 2010. A new record of *Craspedacusta sowerbyi*, Lankester 1880 (Cnidaria, Limnomedusae) in Northern Italy. *Journal of Limnology* 69:1-4.

Received 17 March 2010

Accepted 5 August 2010