**CALTHA NATANS PALLAS (RANUNCULACEAE) NEW FOR MICHIGAN AND THUNDER BAY DISTRICT, ONTARIO**

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**ABSTRACT**

We describe newly discovered populations of *Caltha natans* in Michigan and Thunder Bay District, Ontario. This species is a small aquatic plant distributed in a narrow band from northern Alberta to the Lake Superior area. Its distribution in eastern North America is consistent with dispersal by water along the receding ice front or Lake Agassiz shoreline before 9900 years BP, after which dispersal virtually ceased.

**Keywords:** *Caltha natans*, Michigan, Ontario, post-glacial dispersal

**INTRODUCTION**

*Caltha natans* Pall. (floating marsh marigold) is a small, irregularly circumpolar aquatic plant with floating or creeping stems that root at nodes. In contrast to its more common relative *C. palustris* L. (marsh marigold), the heart-shaped, leaf blades of *C. natans* are smaller (2–5 cm wide) and its flowers (1 cm wide) are white-sepaled (rarely pink) and bloom in June to August (Figure 1). Its North American range includes Alaska, Yukon, Northwest Territories, Nunavut, northern British Columbia and Alberta, extending in a narrow band through Saskatchewan, Manitoba and northwestern Ontario to Minnesota and Wisconsin (Ford 1997) (Figure 2).

Habitat for *Caltha natans* in eastern North America is typically shallow, slow-moving streams often associated with beaver disturbance. Populations occasionally extend into shallow waters of lakes near stream mouths. Plants are usually rooted in shallow water on muddy substrate or stranded on mud flats (pers. obs., Lakela 1965, Lakela 1943, Walton 1994). Lakela (1965) also reported the species in drainage ditches in Minnesota.

In Ontario, *Caltha natans* is ranked as S2 (very restricted range, often 20 or fewer populations) (Natural Heritage Information Centre 2008) and is restricted to the western edge of the province, with the exception of a disjunct record in the Ekwan River Basin approximately 75 km west of James Bay (Figure 2) (Riley 2003). The species is locally common on the Aulneau Peninsula on Lake of the Woods and in the southern part of Woodland Caribou Provincial Park on the Manitoba border (pers. obs. A.G. Harris).

*Caltha natans* is ranked as Endangered in Wisconsin (Wisconsin Department of Natural Resources 2004) and Minnesota (Minnesota Department of Natural Resources 2007). In Wisconsin, it occurs at a single location on the St. Croix River in Douglas County in the northwest corner of the state (Wisconsin State
In Minnesota, populations have been found at about five locations in St. Louis Co. but some of these populations have apparently disappeared due to habitat destruction (Lakela 1965, Coffin and Pfannmuller 1988). The species was discovered in Voyageurs National Park (St. Louis County) in 1999 (University of Minnesota Herbarium 2009), and near Duluth in the early 1990s (Walton 1994). Subsequent to its discovery in Michigan (described in this paper), *Caltha natans* was added as Threatened to the Proposed List of Endangered and Threatened Species for Michigan in September 2008 (MDNR 2008).

**MATERIALS AND METHODS**


**RESULTS**

**Baraga County, Michigan**

On 26 September 2007, Allan Harris (AGH) discovered a population of *Caltha natans* in a narrow channel draining into Silver River, about 10 km ESE
of L’Anse, Baraga County (46° 43’ N, 88° 19’ W) (Figure 3). About 12 plants were rooted in about 30 cm of water. (Collection: Marr #3745, MICH). On 16 October 2008, Janet Marr, Pam Nankervis, and Todd Warner observed three additional plants growing nearby in shallow water along the edges of Silver River (associates: Callitriche verna L. and Potamogeton sp.). This population is about 250 km east of the nearest known record, in Wisconsin (Walton 1994).

**Lac des Mille Lacs, Thunder Bay District Ontario**

On 25 September 2006 AGH discovered a population of Caltha natans in a small unnamed stream flowing into Gill Lake, east of Lac des Mille Lacs, in Thunder Bay District Ontario (48° 58’ 26” N, 90° 26’ 27” W) (Figure 3). About 20 plants were rooted in 20 cm of water at the edges of the stream with Sparganium emersum Rehmann. Substrate was fine sedimentary organic material. (Collection # AGH-06-122, LKHD). The species was not previously known in Thunder Bay District (Thunder Bay Field Naturalists 2003). The Lac des Mille Lacs population is about 130 km northeast of the nearest known record, in Quetico Provincial Park (Walshe 1980).
**DISCUSSION**

_Caltha natans_ is relatively widely dispersed within about 100 km south of the position of the Laurentide Ice Sheet at about 9900 years BP (Figure 3) (Teller et al. 1983). The species apparently did not disperse to the northeast as the ice retreated, despite abundant potential habitat through northern Ontario. In contrast, some genera of aquatic plants (_Potamogeton, Myriophyllum, Isoetes_) apparently closely followed the receding ice sheet (Dieffenbacher-Krall and Jacobson 2001). _Caltha_ fruits are unspecialized for long-distance transportation by wind or animals (Schuett-pelz and Hoot 2004) and water appears to be the most likely dispersal mechanism. The distribution of _Caltha natans_ in central North America is consistent with dispersal by water along the receding ice front or Lake Agassiz shoreline before 9900 years BP, after which dispersal virtually ceased. The outlier near James Bay, however, does represent a more recent dispersal since this area was covered by ice or seawater until about 7200 years BP (Thorleifson 1996).

Although apparently quite rare in eastern North America, additional populations of _Caltha natans_ may yet be discovered in northwestern Ontario, Min-
nesota, northern Wisconsin, and the Upper Peninsula of Michigan within about 100 km of the 9900 years BP ice margin.

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LITERATURE CITED


