

## Luronium – 2017



### 2.1. Latinsk navn (Latin name)

*Luronium natans* (L.) Rafin.

#### ***Luronium natans* growth forms and Methodology.**

According to the English botanical literature, *Luronium natans* has two distinct forms: *submersum* - with submerged linear-lanceolate leaves, which are flat and only grow in water, and *repens* - with “expanded” leaves. Expanded leaves have petioles and blades, and may float or be submerged (WILLBY & EATON 1993, LANSDOWN & WADE 2003). Thus, the division line is between forms having only submerged leaves and forms having both submerged and expanded floating leaves. Forms growing on the not flooded, exposed substrate, are not described in details.

In turn, in Polish botanical literature (f.e. SZMEJA 2001) there are described two forms either. The division line is between submerged plants (even they have expanded floating leaves) and terrestrial forms. The latter grow on the exposed substrate, not in the water, and they have aerial ovate leaves, sometimes with remnants of a rosette of submerged leaves. However, the causes of variation in growth form are apparently environmental rather than genetic, and these forms are not consistent.

So, we distinguish three forms for the purposes of this study - it makes it easier to inventory *Luronium* in the field and better shows the diversity of the population of this plant in the area of research although these forms are often a continuum in space or in time:

- (i) **Submerge vegetative form** - completely submerged form with rosettes of linear-lanceolate leaves connected with white or green stolons but without “expanded” floating leaves. It occurs in deeper water – one to several meters.
- (ii) **Submerge form with floating leaves** - form with submerged leaves rosettes, stolons and with “expanded” floating leaves (elliptical to ovate, on long petioles which grow out of underwater leaves rosette); white flowers (~1 cm of diameter) occur on the water surface (on long pedunculates); forms grow in not very deep water, usually up to 1 m depth.
- (iii) **Terrestrial form** - with “expanded” aerial leaves, elliptical to ovate shape, on short petioles, sometimes with white flowers; they occur on exposed muddy bottom or in not very deep water (up to several centimeters).

## **2.2 Røddlistestatus (redlist status)**

Sterkt truet - Endangered (EN)

## **2.3 Utbredelse (spreading/place)**

*Luronium natans* is an European endemic. It occurs in Western and Central Europe, southern part of Scandinavia, in the range of the Atlantic and Subatlantic climate. The Oslo populations seems to be the northernmost in the whole range (and the only natural sites in Norway). The main range of distribution of this plant is Western and Central Europe, including Poland.

## **2.4 Lokalteter i Norge (locations in Norway)**

In Norway *Luronium natans* is known from 5 lakes in Oslo municipality where their occurrence were noticed during last 100 years. Information about *Luronium* in “Kinnhalvøya i Brunlanes, Larvik i Vestfold” was based on the false identification of the species. The location of Oppegård given in 1999 is not confirmed and “Roppestaddammen” from Fredrikstad was implanted.

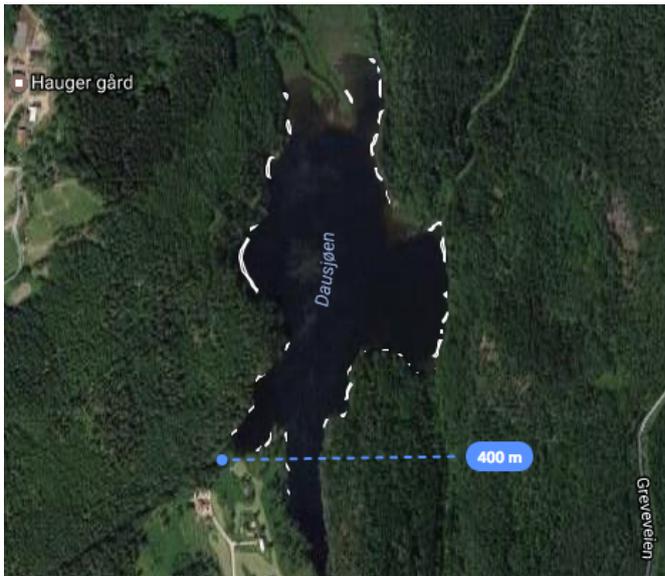
### **2.4.1. Lokalteter i Oslo (locations in Oslo)**

#### **5 known locations:**

- Alunsøen, Breisjøen, Dausjøen, Svartkulp, Maridalsvannet – confirmed in this year.

### **2.4.2. Location in Fredrikstad – Roppestaddammen – confirmed in this year.**

## Location: 1. DAUSJØEN



Map. The white marks show the location of *Luronium* along the shore.

Observations were made from a shore, in eastern part of a lake. Plants could be observed only to the water depth of about 1 m and 3 – 5 m from the shoreline.

**Individuals:** Very abundant, sometimes as many as 200 individuals / 1m<sup>2</sup>. If we estimate: 10 individuals /m<sup>2</sup> and 2000 m of shoreline x 3 m wide belt of occurrence = 60 000 (for 200 individuals / 1m<sup>2</sup> = 1 200 000) individuals, or more.

**Area:** We estimate that *Luronium* is present on 60 – 70% of the lake shoreline (or more after our diving observation in last year). It grows more often on the Eastern side of the lake with the exception of a steep cliff in the southern part. It does not grow only in shallow, very muddy bays and in places where the water is immediately very deep. See the map.

**Environment (habitat):** Lake with stable water level. Plants prefer the depths between 10 - 100 cm. At that depth floating leaves can be visible. We still do not know how is distributed submerge vegetative form in the whole lake. *Luronium* grows preferably on empty sandy (mineral) bottom with a thin layer of organic sediment, but also together with: *Lobelia dortmanna*, *Juncus bulbosus*, *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsiflora*, *Alisma plantago-aquatica* (rarely), *Nuphar luteum* and in deeper parts with *Isoetes lacustris*, *I. echinospora*.

**Condition:** During first visit to the lake (1.07) I did not notice any floating leaves and flowers. Submerge vegetative form have been noticed in few chosen places in the same quantity as last years. During second visit (23.07) water level was about 30 cm lower than maximum. Clusters of floating leaves were visible along eastern shore only on shallow water (to the depth of 50cm from max.) and there were no flowers! On the exposed bottom terrestrial form could be found. In the place were I usually observe submerge vegetative form (about 1m deep) there were few floating leaves and quite a lot of flowers.

**GPS-coordinates:** 60° 0'31.70"N 10°47'23.08"E

[Luronium-Dausjoen1](#)

**Date of watch:** 1.07; 23.07.2017

**Photos:** R. Gramsz

**Observer:** R. Gramsz



Photo 1. When the water is lower plants can grow as terrestrial form on exposed bottom.  
23.07.2017.

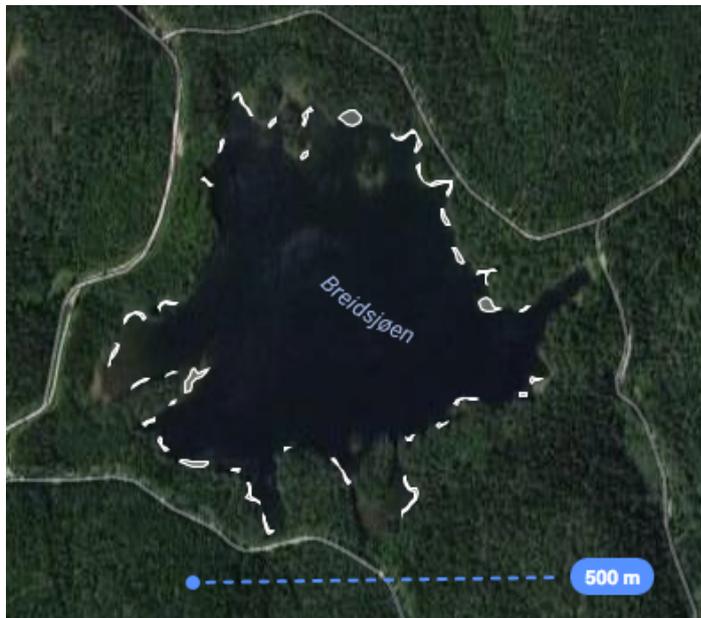


Photo 2. Eastern shore of Dausjøen. On shallow water plants developed floating leaves but no flowers. 23.07.2017.



Photo 3. On deeper water there were few floating leaves and quite a lot of flowers. 23.07.2017.

## Location: 2. BREISJØEN



Map 1. The white marks show the location of *Luronium* along the shore.

**Individuals:** Very abundant.

**Area:** *Luronium* is present on ca. 60% of the lake shoreline. It does not grow only in shallow, very muddy bays and where the water is immediately very deep and stony. See map.

**Environment (habitat):** This lake has variable water level. Plants can grow both on the expose shore and submerge in water. *Luronium* grows preferably on empty sandy (mineral or mix mineral-organic) bottom. On the depth of water to about 1m *Luronium* grows together with: *Lobelia dortmanna*, *Juncus bulbosus*, *Ranunculus reptans*, *Isoëtes echinospora* (?), *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsiflora*. Vegetation at a places deeper than 1.5m is very pure so, if *Luronium* is growing there it has no competition.

**Condition:** *Luronium* grows very abundantly this year and during observation (19.07) was very well visible with floating leaves and flowers on about 60% of shoreline. (increase from 50%)

Two forms of *Luronium* were found. The dominating was **submerge form with floating leaves** (usually 0.2 – 1m). The highest concentration is observed along water depth of about 0.5 - 1m below maximum. Plants growing at the depth 0.2 -1m very often generate flowers (white, blooming on the surface of water and submerge). **Submerge vegetative form** was notice in some places on deeper than 1m water.

**GPS-Coordinates:** 59°58'47.17"N 10°51'38.11"E

[Luronium-Breisjoen2](#)

**Date of watch:** 19.07.2017; **Photos:** R. Gramsz ; **Observer:** R. Gramsz

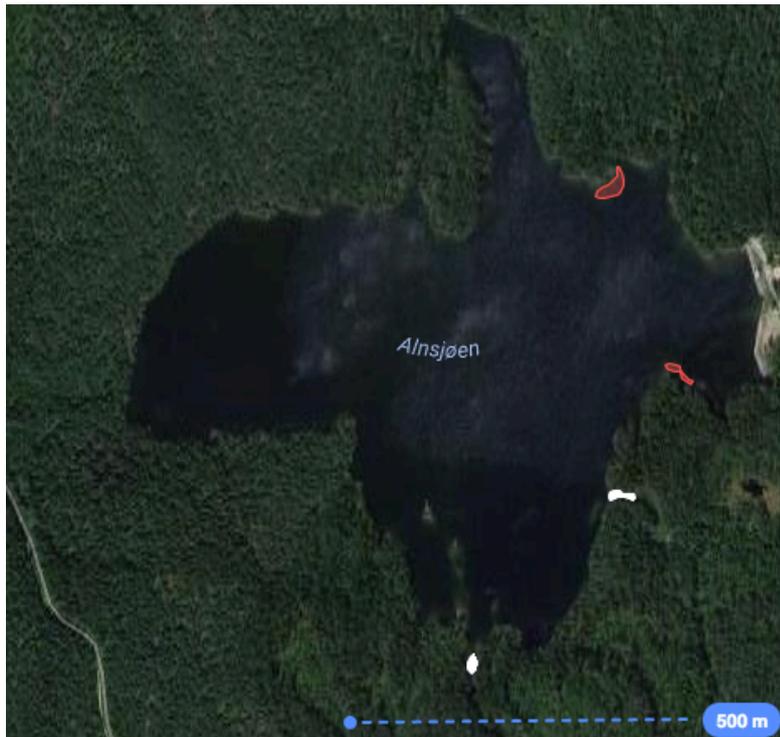


Photo 1. Abundant growth of *Luronium* in a bay in SE part of Breisjøen. 19.07.2017.



Photo 2. Even in the area close to the dam I have found few clusters of *Luronium* with floating leaves and white flowers. 19.07.2017.

### Location: 3. ALUNSJØEN



**Map.** The white marks show two locations of *Luronium* only found in 2008 and 2009. The red marks show two new locations found in 2017.

**Individuals:** 1 big and few small clusters of submerge form with floating leaves.

**Area:** 2 places in SE and NE part of a lake, close to the dam. 2 x 20m + 3 x 20m.

**Environment (habitat):** The Littoral belt of Alunsjøen is still very pure with vegetation after dam rebuilding in 2007 -2008. So, *Luronium* behaves a little as pioneer plant.

**Condition:** In both new found places plants were in good condition with floating leaves and flowers.

**Care:**

**GPS-coordinates:** 59°57'57.94"N 10°51'4.54"E

[Luronium-Alunsjoen3](#)

**Date of watch:** 19.07.2017

**Photos:** R. Gramsz

**Observer:** R. Gramsz

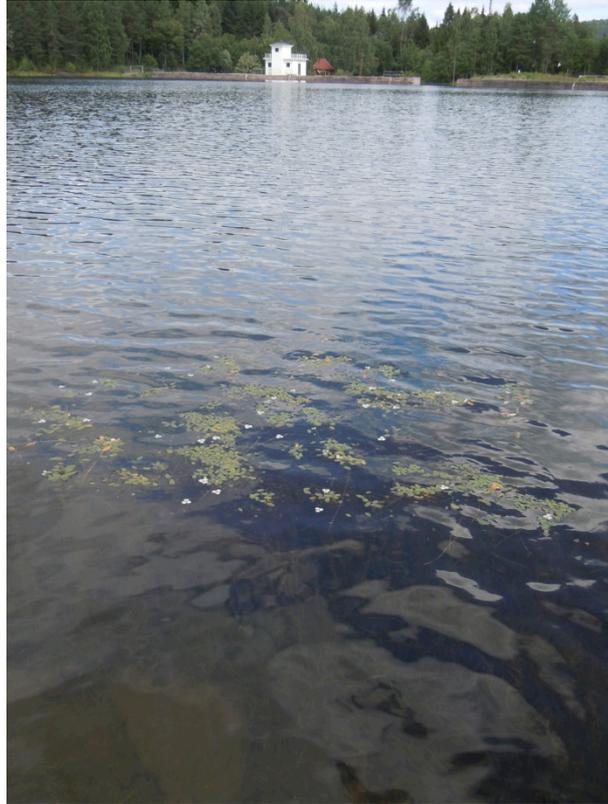


Photo 1. Alunnsjøen. New location of *Luronium* first found by Gunnar Klevjer and Per Madsen in 2014. 19.07.2017.

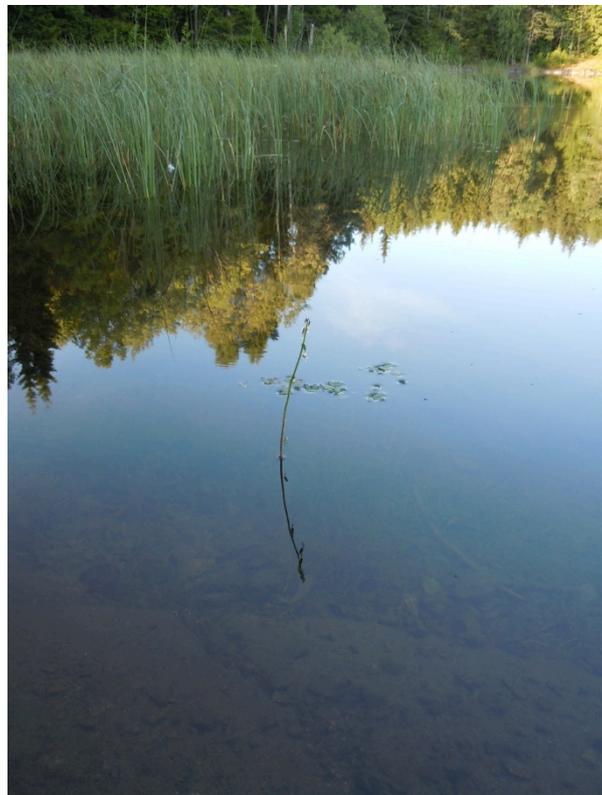
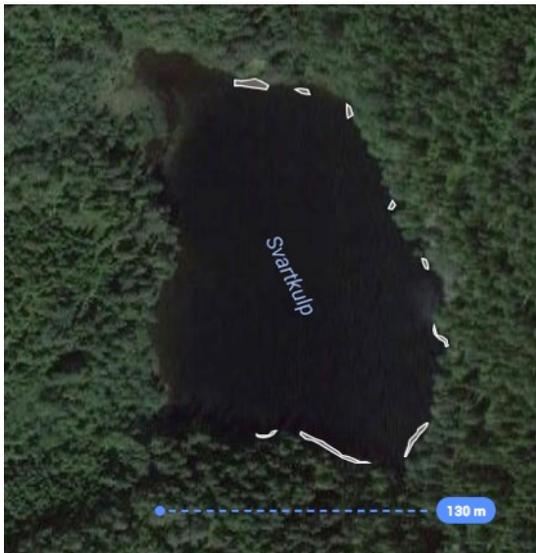


Photo 2. One of few small clusters of *Luronium* floating leaves (together with *Lobelia dortmanna* inflorescence) found this year in NE part of Alunnsjøen. 19.07.2017.

#### Location: 4. SVARTKULP



Map. The white marks show the location of *Luronium* along the shore.

**Individuals:** This year observations, only from ashore, confirm *Luronium* existence (floating leaves) in few places on Northern and Eastern shore.

**Area:** Ca. 1600 m<sup>2</sup> – as found out in last year. (with submerge vegetative form)

**Environment (habitat):** This lake has rather stabile water level. Is relatively small and surrounded by forest and high, steep rocks on Eastern side. Western and North - Western shallow shore is overgrown by mire vegetation. *Luronium* plants are growing preferably on empty mineral (or mix mineral/organic) bottom, but also together with: *Nuphar luteum*, *Potamogeton natans*, *Juncus bulbosus*, *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsiflora*, *Sparganium sp.* Observations with the help of diving discovered the occurrence of single-growing, large rosettes also opposite the muddy western shore.

**Condition:** Only a few clusters of floating leaves were visible on Northern and Eastern shore.

**Care:**

**GPS-Coordinates:** 59°58'30.95"N 10°50'51.30"E

[Luronium-Svartkulp4](#)

**Date of watch:** 19.07.2017

**Owner:**

**Photos:** R. Gramsz

**Observer:** R. Gramsz



Photo 1. Svartkulp from Northern shore. Only two floating leaves are visible but there is growing a dozen of submerge underwater rosettes. 19.07.2017.

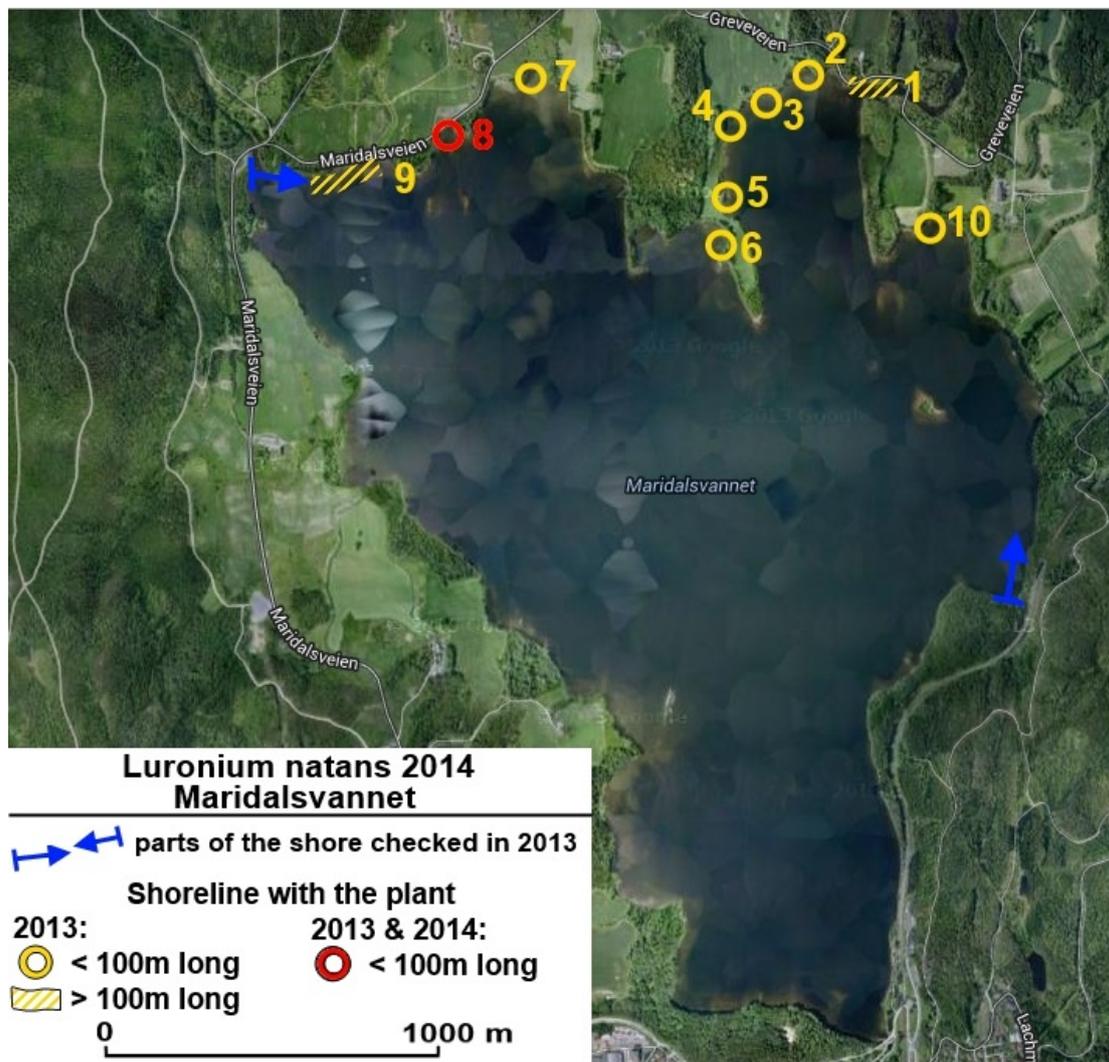
## Location: 5. MARIDALSVANNET

Most of this summer the water level in Maridalsvannet was close to maximum. That situation as we know from former years makes very difficult to do *Luronium* observations **from ashore**. The problem is:

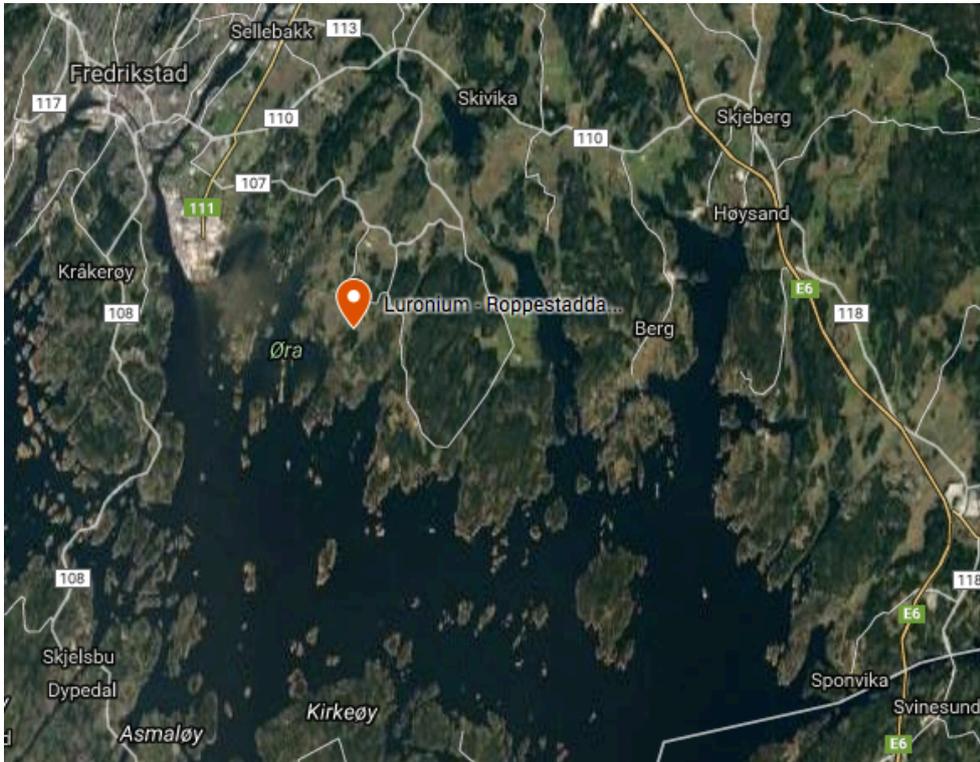
- To get access to sites of *Luronium* (we discovered them in 2013 when the water level was 60 -80cm lower)
- To notice their presence while *Luronium* very seldom forms floating leaves and flowers in this lake.

During some visits in sites 1 and 8 (the only places from which you can perform general observations standing behind the fence) in 19.07.2017 two small bundle of floating leaves was observed on location 8.

Map – “*Luronium natans* 2014 Maridalsvannet” (The same as in the year 2014 and 2016 only on location 8 *Luronium* were noticed)



## Location 6: FREDRIKSTSD - ROPPESTADDAMEN



Map. General localization of Luronium site – Roppestaddamen.

**Individuals:** Very abundant

**Area:** *Luronium* occurs in two small ponds.

- Roppestaddammen with a size ca. 60m x 15m and *Luronium* is growing on at least 40% of it area.
- Roppestadmyra ca. 20m x 40m with *Luronium* growing on at least 50% of it area in this year ( more than estimated in last year).

**Environment (habitat):** Both ponds are located on the site of a small, disused granite quarry or close to it. Roppestaddammen fills irregular rock cavity and this place is quite well sunlit. Roppestadmyra has an oval shape and looks as if it was dug in the peat. This pond is surrounded by forest and shaded. Both ponds are not deeper than 1m (Roppestaddamen) and maybe 1.5m (Roppestadmyra).

In Roppestaddamen besides *Luronium natans* is possible to find: *Acorus calamus*, *Baldelia (ranunculoides?)*, *Calla palustris*, *Carex acutiformis*, *C. rostrata*, *C. pseudocyperus*, *C. stellulata*, *Comarum palustre*, *Equisetum fluviatile*, *Glyceria fluitans*, *Juncus conglomeratus*, *J. effuses*, *J. ensifolius?* *J. bulbosus*, *Lemna minor*, *Lysimachia vulgaris*, *Menyanthes trifoliata*, *Nymphaea alba*, *Ranunculus flamula*, *R. lingua*, *Utricularia vulgaris*, *U. intermedia*,

In Ropestadmyra: *Luronium natans*, *Carex rostrata*, *C. stellulata*, *Comarum palustre*, *Glyceria fluitans*, *Juncus effusus*, *Nymphaea alba*, *Utricularia sp.div*,

**Condition:** *Luronium* plants were visible in both pounds with floating leaves and flowers. In this shallow pounds most of *Luronium* population can exist as submerge form with floating leaves. Regardless of the competition of other aquatic plants *Luronium* created a compact pieces that concern no less than 30 - 50% of the entire surface of ponds. In this year water level was about 20 cm lower than maximum.

**Care:** *Luronium* was planted in those pounds.

**GPS-coordinates:** 59.1667, 11.02638

**Date of watch:** 29.06.2017.

**Owner:**

**Photos:** R. Gramsz   **Observer:** R. Gramsz



Photo 1. Roppestaddammen. Flowers on the stems raised above the water like in the terrestrial form. Water level at a time of observation was about 20 cm lower than maximum. 27.06.2016.



Photo 2. Roppestadmyra. More *Luronium* visible on this pond surface than last year. (Compare with last year photo) 29.06.2017.

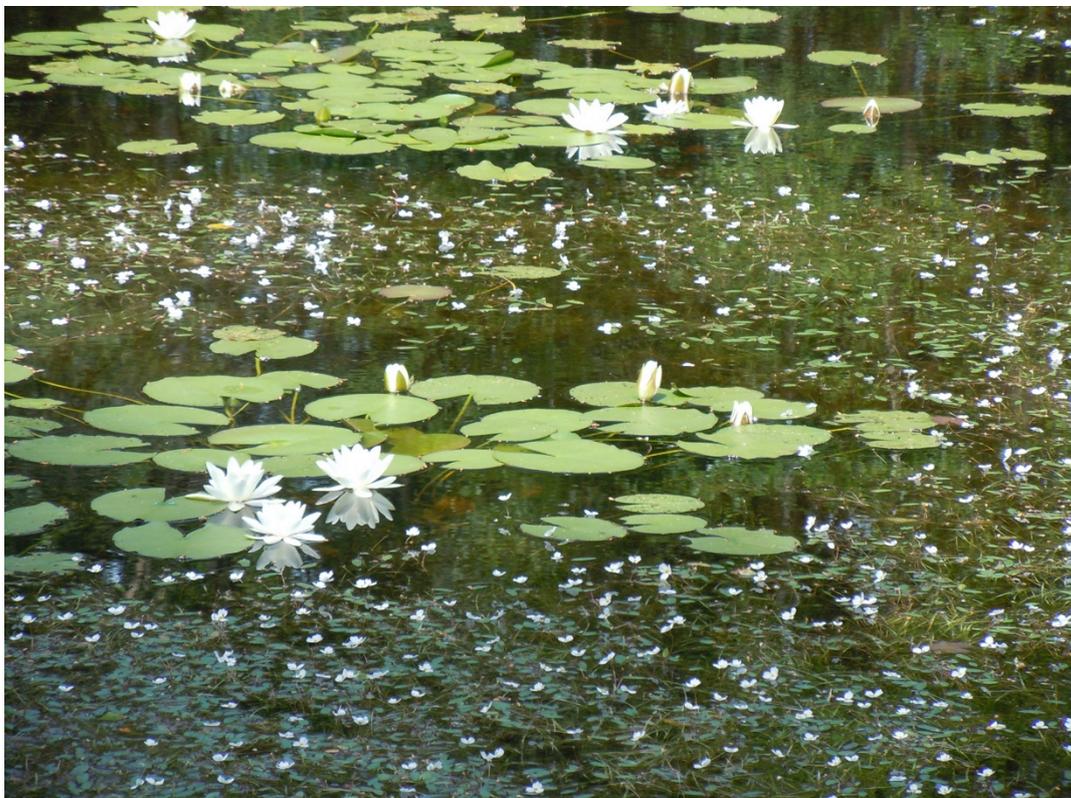


Photo 3. *Luronium* in Roppestadmyra. 29.06.2017.