

Luronium – 2014



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)

Sårbar. (Vulnerable)

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.

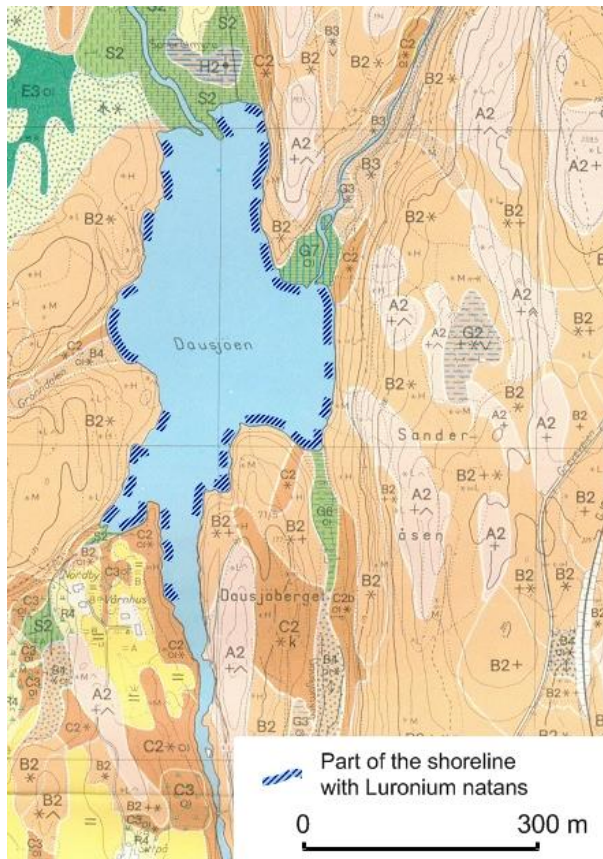
2.4 Lokalteter i Norge (locations in Norway)

"Flytegro (*Luronium natans*) vurderes som sårbar (VU) fordi den bare er sikkert dokumentert fra fem små vatn innen to 4-km²-ruter, og fordi antall reproduktive individer fluktuierer sterkt. Flytegro er belagt i de offentlige herbariene fra Ak Oslo: Maridalen: Alnsjøen (1923-1978), Svartkulp (1948-2002), Breisjøen (1949-2002), Dausjøen (1995), og ei vik i Maridalsvatnet (1996-2009). Mye tyder på at den er kommet inn, trolig med fugl, til Alnsjøen tidlig på 1900-tallet og har spredt seg videre derfra. Forekomstene i Nordmarka synes stabile og er pr. idag ikke utsatt for negative påvirkningsfaktorer, men bestandene har store fluktuasjoner. I tillegg er arten rapportert fra Øf Fredrikstad: Roppestaddammen i 2009, men der som innplantet. En rapport fra Ak Oppegård i 1999 er ikke bekreftet, og en fra Vf Larvik bygde på feilbestemt materiale. Flytegro ser ut til å være lite påvirket av den tidligere drikkevannsreguleringen i Breisjøen, og den nåværende i Maridalsvannet. Arten omtales med kart hos Fægri & Danielsen (1996)." - Text from: Norsk_røddliste_for_arter_2010_pjuZH.pdf

2.4.1. Lokalteter i Oslo (locations in Oslo)

5 known locations (Alunsjøen, Breisjøen, Dausjøen – confirmed by our researches in years 2008 – 2014. and Maridalsvannet, Svartkulp – confirmed in years 2013; 2014).

Location: 1. DAUSJØEN



Observations were made only from a shore, in eastern part of a lake! Plants could be observed only to the water depth of about 1.5 – 2 m and 3 – 5 m from the shoreline. *Luronium* can grow deeper- down to 3 m deep, but this area could not be examined from the shore (a boat is necessary).

Individuals: Very abundant, sometimes as many as 200 individuals / 1m². If we estimate: 10 individuals /m² and 2000 m of shoreline x 3 m wide belt of occurrence = 60 000 (for 200 individuals / 1m² = 1 200 000) individuals, or more.

Area: We estimate that *Luronium* is present on 60 – 70% of the lake shoreline. 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. *Luronium* grows preferably on empty sandy bottom with a thin layer of organic sediment, but also together with: *Lobelia dortmanna*, *Juncus bulbosus*, *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsoiflora*, *Alisma plantago-aquatica* (rarely), *Nuphar luteum*

Condition: In many places on Eastern shore submerge form with floating leaves and flowers were noticed on a depth 10 – 50cm. Submerge vegetative form have been noticed in few chosen places in the same quantity as last years. In estuary of Movannsbekken on wet muddy soil terrestrial form of *Luronium* has been notice. Phot.2.

Care:

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

[Luronium-Dausjoen1](#)

Date of watch: 11.07.2014

Owner:

Photos: R. Gramsz

Observer: R. Gramsz, J. Potocka.

Phot.1. Part of a SE shoreline with *Luronium*. 11.07.2014



Phot.2. Terrestrial form of *Luronium* in estuary of Movannsbekken. 11.07.2014



Phot.3. Abundant underwater meadow of *Luronium* with floating leaves and flowers. 11.07.2014



BREISJØEN , ALUNSJØEN, SVARTKULP.



Location: 2. BREISJØEN

Observations were made only from the shore!

Individuals: Abundant

Area: *Luronium* is present on ca. 50% of the lake shoreline. It does not grow only in shallow, very muddy bays and where the water is immediately very deep. Also there is lack of *Luronium* close to the dam in Eastern part of a lake. See map.

Environment (habitat): This lake has variable water level. Plants can grow both on the expose shore and submerge in water. The highest concentration is observed along water depth of about 1m below maximum. *Luronium* grows preferably on empty sandy bottom, but also together with: *Lobelia dortmanna*, *Juncus bulbosus*, *Ranunculus reptans*, *Isoëtes echinospora* (?), *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsoiflora*.

Condition: This year two forms of *Luronium* were found: 1. Submerge vegetative form (deeper than 1m). 2. Submerge form with floating leaves (usually 0.2 – 1m). Terrestrial form

has not been found this year as the water level was at maximum at a date of observation. The plants bloomed profusely in all places known from last years.

Care: !!! – It will be very interesting to know (if it exists – data from limnigraph) the record of water level changes during as many years as possible.

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

[Luronium-Breisjoen2](#)

(See the map. Map datum (Kartdatum): WGS 84; Position format (Posisjonsformat): UTM UPS) GPS 1: 0603737/ 6650352; GPS 2: 0603700/ 6650374; GPS 3: 0603661/ 6650387; GPS 4: 0603616/ 6650450; GPS 5: 0603672/ 6650527; GPS 6: 0603661/ 6650635

Date of watch: 15.07.2014

Owner:

Photos: R. Gramsz,

Observer: R. Gramsz, J. Potocka

Phot.1. SW shore of Brejsjøen (GPS: 4-5). There is maximum level of water. *Luronium* with floating leaves and flowers grows on depth 20 -50 cm. 15.07.2014



Phot.2. Most abundantly submerge form with floating leaves grows some distance from ashore on depth of water about 1m. 15.07.2014.



Phot.3. *Luronium natans* with floating leaves and flowers in Breisjøen. 15.07.2014



Location: ~~3. ALUNSSJOEN~~

Individuals: Not found

Area: 2 places in small bays in Eastern and Southern part of a lake.

Environment (habitat): This lake is with variable water level. Plants grows in a very shallow, both standing and flowing water in places where flow in streams forms pools still full of water. During maximum water level in the lake this places are submerged.

At a day of observation the lake water level was at maximum. That means, it was 1 – 2 m of water over usually dry bottom of a bays were *Luronium* plants has been recently found.

With other plants:

Site 1. in water- *Alisma plantago-aquatica*, *Glyceria fluitans*, *Hippuris vulgaris*. On shore- *Carex lasiocarpa* (dominant), *Carex stellulata*, *Carex rostrata*, *Carex vesicaria*, *Comarum palustre*, *Epilobium palustre*, *Equisetum fluviatile*, *Galium palustre*, *Juncus bufonius*, *Lysimachia thyrsoiflora*, *Menyanthes trifoliata*, *Peucedanum palustre*, *Polygonum minor*, *Ranunculus reptans*, *Rorippa palustris* cfr., *Sphagnum squarrosum*, *Veronica scutellata*

Site 2. in water- *Alisma plantago-aquatica*, *Alopecurus aequalis*, *Glyceria fluitans*, *Juncus bufonius*, *Rorippa palustris* cfr.,

Condition: In so high level of water it was not possible to find *Luronium* but we hope that it still subsist in those places.

Care: !!! – It will be very interesting to know (if it exists – data from limnigraph) the record of water level changes during as many years as possible.

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

Site 1. 59°57'50.45"N 10°51'18.85"E

Site 2. 59°57'41.56"N 10°51'5.12"E

[Luronium-Alunsjoen3](#)

[Luronium-Alunsjoen3.1](#)

[Luronium-Alunsjoen3.2](#)

Date of watch: 17.07.2014

Owner:

Photos: R. Gramsz

Observer: R. Gramsz, J. Potocka

Phot.1. Alunsjoen, location 1. Looking like *Luronium* submerge vegetative rosettes is most likely one of *Sparganium* species. 17.07.2014



Phot.2. Alunsjoen, location 2 with maximum water level in the lake. 17.07.2014



Location: 4. SVARTKULP

Observations were made only from the shore!

Individuals: If we estimate: 10 individuals/1 m² x 200 m² = 2000 individuals. *Luronium* grows on ca. 10% of shoreline with rather sparse patches.

Area: Ca. 200 m². *Luronium* is spread (probably) on ca.10% of the Northern, Eastern and South- Eastern lake shoreline. We could make observations in the belt about 2 m wide from shoreline.

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 sandy bottom, but also together with: *Nuphar luteum*, *Potamogeton natans*, *Juncus bulbosus*, *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsiflora*. *Sparganium* sp.

Condition: This year we confirm growth of *Luronium* in Northern and along Eastern shore of Svartkulp. In many of those places plants developed this year floating leaves and flowers. But we still know very little about submerged vegetative form.

Care:

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

[Luronium-Svartkulp4](#)

Date of watch: 15.07.2014

Owner:

Photos: R. Gramsz

Observer: R. Gramsz, J. Potocka

Phot.1. Svartkulp from Northern shore. In foreground, among sedges, *Menyanthes trifoliata* and *Potamogeton natans* visible floating leaves and flowers of Luronium. 15.07.2014



Phot.2. The same area as on phot.1. - enlarged. 15.07.2014



Phot.3. *Luronium* with floating leaves and flowers along Eastern shoreline. 15.07.2014



Location: 5. MARIDALSVANNET

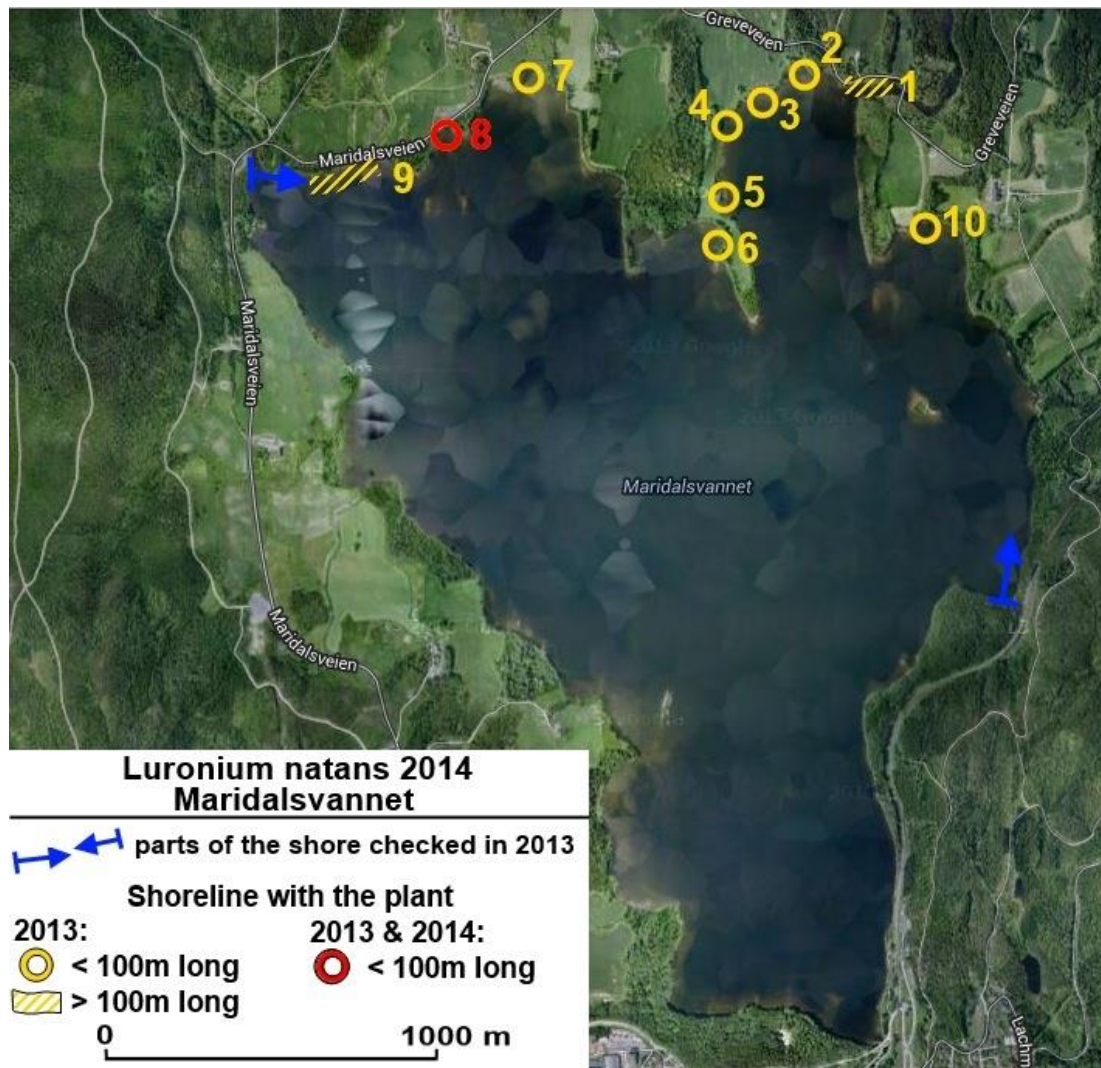
Most of this summer the water level in Maridalsvannet was close to maximum. That situation as we know from former years makes very difficult to do *Luronium* observations from ashore. The problem is:

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

We have been able only superficially check 3 sites in Northern shoreline of Maridalsvannet and only in one of them “site 8” we notice few floating leaves of *Luronium*.

Maridalsvannet in July 2014 with high water level.





Individuals: It is difficult to count *Luronium* individuals. The spots with *Luronium* we have found in Maridalsvannet at the year 2013 are less abundant than in Dausjøen or Breisjøen and all 10 of them together cover not more than 600m of shoreline (we checked ca. 7 -8 km of North – Eastern shoreline of Maridalsvannet). It means that *Luronium* is grooving on ca. 8% of this part of Maridalsvannet shoreline. The other, South – Western half of Maridalsvannet shoreline is still not checked.

Area: 10 different size spots which cover together about 600m of checked (7 -8 km) of North – Eastern shoreline of Maridalsvannet.

Environment (habitat): Big lake with variable water level. The water surface in the lake can strongly wave because of its size. *Luronium* avoids exposure to waves and it is possible to find it only in sheltered bays, behind rocky spurs or protected against waving by other plants. Usually *Luronium* has been found at a depth of 30 to 150 cm (from maximum water level). With other plants: *Lobelia dortmanna*, *Littorella uniflora*, *Juncus bulbosus*, *Ranunculus reptans*, *Isoetes lacustris*, *Equisetum fluviatile*, *Carex vesicaria*, *Lysimachia thyrsoiflora*, *Nuphar luteum*, *Potamogeton natans*, *Sparganium sp.*

Condition

Facts: Only few floating leaves and flowers were detected on site "8".

Assumptions: But this is the easiest place to observe *Luronium* in Maridalsvannet and it was not noticed there last years. So, that may means that *Luronium* is very well developed this year and if we could get access to other sites we would notice that also. Anyway we are deeply convinced that *Luronium* exist in all discovered in 2013 sites at least as submerged vegetative rosettes and with a similar number like last year.

Site 8. Small bay SW from church ruin, very close to road.

GPS-Coordinates: 59°59'40.50" N, 10°45'48.50" E [Luronium-Maridalsvannet5.8](#)

We notice only few floating leaves and flower of *Luronium natans* some distance from a shore on a current depth of water about 1m. Closer to the shore on the depth of water about 20-30 cm grows water form of *Alisma plantago-aquatica* which can be mistaken with *Luronium*. Also noticed: *Lobelia dortmanna*, *Myriophyllum alterniflorum*.

Date of watch: 11-17.07.2014

Owner:

Photos: R. Gramsz, J. Potocka

Observer: R. Gramsz, J. Potocka

Phot.1. Maridalsvannet, site 8. Few floating leaves and flower of *Luronium natans* are point with a stick. 17.07.2014. Phot. J.P.



Phot.2. Floating leaves and flower of *Luronium natans*. Enlarge area from phot.1. 17.07.2014. Phot. J.P.



Phot.1. Most likely leaves of water form of *Alisma plantago-aquatica*. 17.07.2014. Phot. R.G.



Phot.2. Water form of *Alisma plantago-aquatica*.(?) 17.07.2014. Phot. R.G.

