Anabaena lapponica Borge, 1913

Most likely ID: n.a.

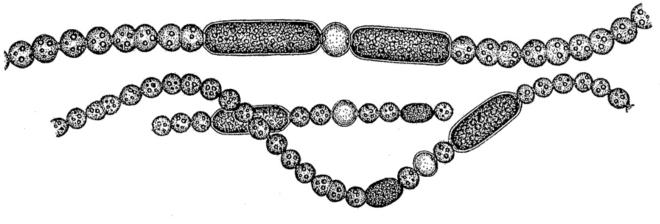
Synonym: n.a.

Sampling location: Simmelried

Phylogenetic tree: Anabaena lapponica

Diagnosis:

- trichomes single, straight or slightly bent with indistinct sheath
- vegetative cells spherical, diameter (5)-6-9 μm
- heterocysts spherical, diameter 9-11.5 μm
- akinetes cylindrical, smooth, $11.5-13-(21) \mu m$ wide , $20-55-(85) \mu m$ long
- akinetes next to heterocysts, blueish green



after Skuja

Anabaena lapponica

So far I have only found *Anabaena lapponica* between floating plant masses in the <u>Simmelried</u>. However, *Anabaena lapponica* is not very common there.

Anabaena lapponica can be recognized by the spherical, vegetative cells and the large,

cylindrical akinetes (s. figs. 2 a-b and 3 a-b). The akinetes are blue-green and stand out from the olive green of the vegetative cells. In my population, the akinetes were $25-35 \mu m long$. The surface of the akinetes of *Anabaena lapponica* is smooth, which distinguishes it from the similar species Anabaena echinospora, in which the akinetes have a spiky surface.

Between two akinetes each there is a spherical heterocyst with a thickened cell wall. In these specialized cells, nitrogen is fixed to ammonium with the help of the enzyme nitrogenase. As nitrogenase is inhibited by oxygen, a thickened cell wall has formed to shield the oxygen off.



Fig. 1: Anabaena lapponica. Overview of some straight and bent trichomes. Obj. 60 X.

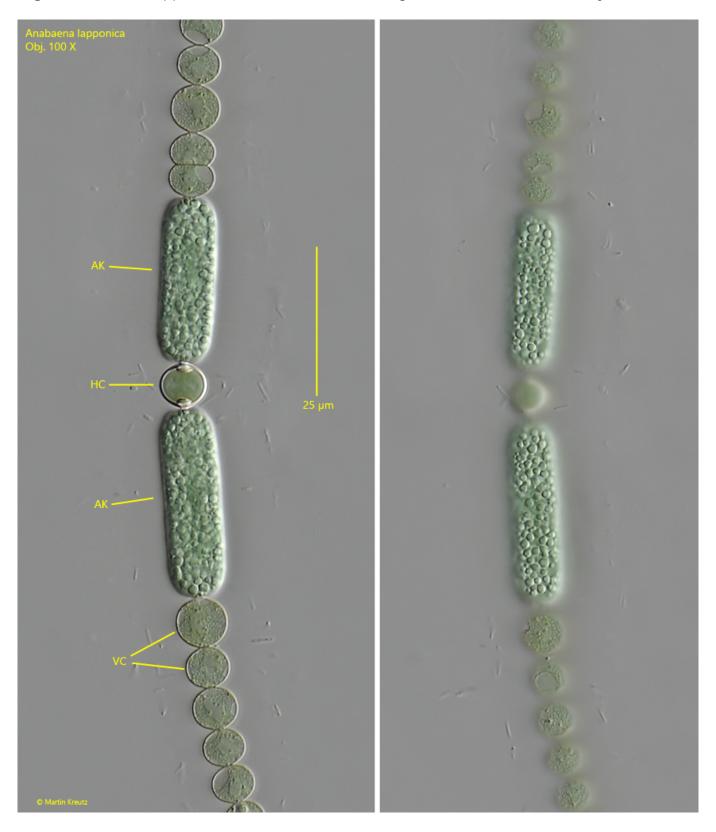
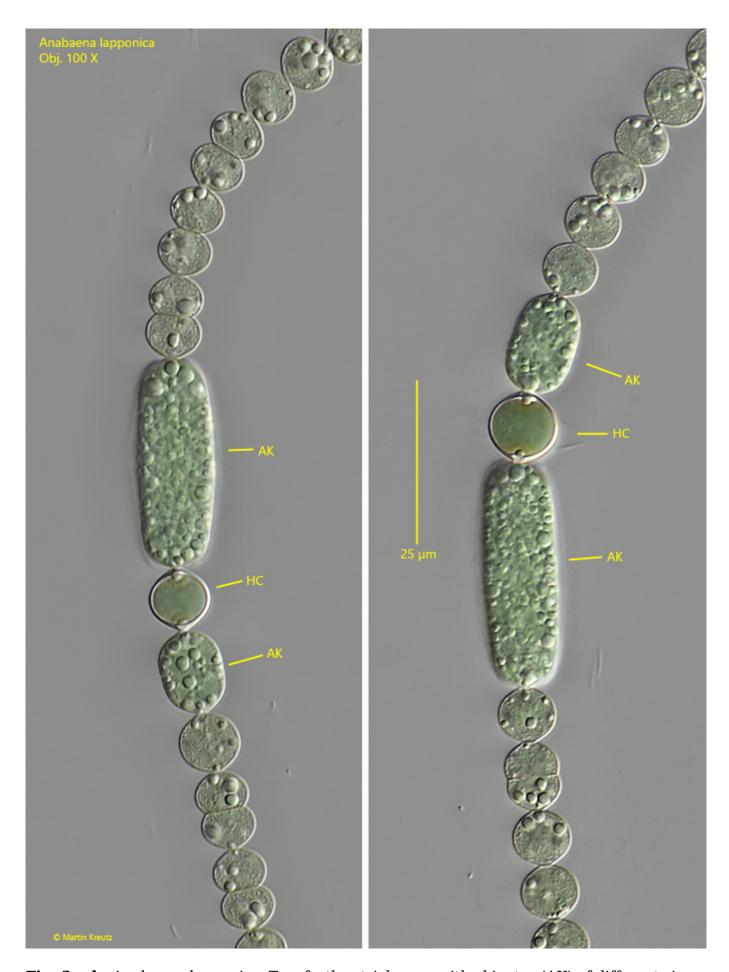


Fig. 2 a-b: Anabaena lapponica. Two focal planes of the cylindrical akinetes (AK) and the spherical heterocyst (HC) in between. The two akinetes are 28 and 33 μm long. The diameter of the heterocyst is $8.3 \mu m$. VC = vegetative cells. Obj. 100 X.



 $\textbf{Fig. 3 a-b:} \ \textit{Anabaena lapponica}. \ \textbf{Two further trichomes with akinetes (AK) of different sizes}$

with the spherical heterocysts (HC) in between. Obj. 100 $\rm X.$