

Characeae: Meeting and Excursions in Southsweden

26.06.2019-30.06.2019

Roland Bengtsson, Elke Naumer-Bernhardt, Karl Georg Bernhardt, Sebastian Bernhardt, Irmgard Blindow, John Bruinsma, Willie Bruinsma, Maria Carlsson, Wolfgang Diewald, Thomas Franke, Lars Gezelius, Thomas Gregor, Ulrike Hamann, Anders Hargeby, Andreas Hedrén, Markus Hofbauer, Gustav Johansson, Christian Jorda, Tom Kirschey, Heiko Korsch, Egbert Korte, Volker Krautkrämer, Tina Kyrkander, Kathrin Linnemann, Marcus Mannfeld, Friederike Möbius, Silke Oldorff, Jens Pätzolt, Lothar Ratai, Yvonne Rychlak, Cornelia Straubinger, Mikael Svensson, Matthias Teppke, Markus Tschakert, Klaus van de Weyer, Arno Waterstraat, Ursula Zinko

Species collected for Herbarium WHB (BOKU Vienna) **bold**

GPS-Coordinates: LATxx°yy'zz.z'' LONGxx°yy'zz.z'' WGS84

Wednesday 26.06.2019

Travelling to Aneboda /Lammhult, passing the Lake Krankesjön by Revingeby 18 km east of Lund

001: N55 70 66 E13 47 75 6 m

Götaland, Provinz Skåne län, ca. 10 km E Lund, SW Harlösa, Krankesjön-See

Military exercise area, vegetation on dry sandy soils

Guidning: Ursula Zinko

Agrostis capillaris

Berteroa incana

Campanula persicifolia

Carex arenaria

Centaurea scabiosa

Echium vulgare

Galium verum

Hypericum perforatum

Leontodon hispidus

Lotus corniculatus

Pilosella officinale

Plantago lanceolata

Rumex acetosa

Rumex acetosella

Scleranthus polycarpus

Spergula arvensis

Spergularia rubra

Lakeshore, reeds:

Cladium mariscus

Eleocharis palustris agg.

Phalaris arundinacea

Rorippa austriaca

Salix repens

Schoenoplectus lacustris

Thalictrum flavum

Waterbody:

Ceratophyllum demersum

Chara aspera

Chara subspinosa*

Chara hispida*

Chara tomentosa

Nitellopsis obtusa

Potamogeton crispus

Potamogeton friesii

Potamogeton perfoliatus

Potamogeton pusillus

Ranunculus circinatus

Stuckenia pectinata

***Volvox* sp.**

* including transition forms between *C. hispida* and *C. subspinosa*

001 a ohne Koordinaten südlich Osby

Waldrand, Eichen-Birken-Wald

Hieracium lachenalii

17:15 Arrival in Aneboda

Evening: Dinner at Svenssons Gårdscafé, Lammhult

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| Thursday 27.06.2019 |
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8:00 Breakfast

9:00 Meeting in Byggdegården, Aneboda

Moderation by Irmgard Blindow

Introduction and information

Irmgard Blindow: Presentation and information about the historical development and ecological significance of the Limnological Field Station in Aneboda

Geschichte von Aneboda

- 1906 Anlage von Fischteichen in Aneboda (Karpfen, Schleie, Hecht) durch SSFF (Södra Sveriges Fiskeriförening)
- 1907 – 1908 Start einer Fischereischule in Aneboda (SSFF)
- 1910 Einar Naumann angestellt für Auftragsforschung (Fischerei), damals 18 Jahre alt. Daneben: verschiedene limnologische Untersuchungen, u.a. Plankton im Straken.
- 1914 erster Limnologiekurs (SSFF): Plankton, Bedeutung der Nährstoffe

- 1917 Doktorarbeit Naumann (Plankton)
- 1919 Naumann wird als Biologe an der Uni Lund angestellt: Aneboda im Sommer, Lund im übrigen Jahr. Vergleichende Untersuchungen zur Plankton – und Fischproduktion führen zu seiner „Regionalen Limnologie“.
- 1919 Die Begriffe Oligotrophie, Eutrophie werden von Naumann definiert, bezogen auf die Primärproduktion des Phytoplanktons!
- 1925 Naumann hört bei der SSFF auf zu arbeiten, widmet sich ganz seinen limnologischen Untersuchungen.
- 1925 Naumann heiratet die Tochter des „Mellangarden“ in Aneboda, Grundstücksschenkung vom Schwiegervater, Errichtung eines ersten limnologischen Labors.
- 1929 Persönliche Professur in Lund

Die Limnologie in Aneboda

- 1920 – 1934 Aneboda nimmt eine leitende Position in der europäischen Limnologie ein. Besuch u.a. von Ohle, Thienemann, Gessner
- Schüler Naumanns: Thunmark. Lic: Fiolen; Aberg, Rodhe, Lic: Wasserchemie Aneboda-Gebiet
- 1922 Gründung der S.I.L. (Internationale Limnologische Vereinigung) durch Naumann und Thienemann

Wer war Naumann?

- Impulsiv, originell, kreativ, mitreissend
- 217 Publikationen in 23 Jahren
- Begründer der Seenklassifizierung, die aber auch scharf kritisiert wurde, u.a. auf S.I.L. Symposium 1934
- 1934 Naumann begeht Selbstmord, nur 43 Jahre alt.

Nach Naumann

- 1944 Permanente Professur für Limnologie in Lund
- 1949 Thunmark wird Prof. für Limnologie: Regionale Limnologie, Phytoplankton, Mikroorganismen
- 1968 Sven Björk wird Prof. für Limnologie. Schilf, Seenrestaurierung
- 1992 Wilhelm Granéli Prof. für Limnologie, Schilf, Humus, Mikroorganismen. Heute Präfekt des “Ekologihuset” in Lund
- Heute: Lars-Anders Hansson Prof. für Limnologie. Biologische Interaktionen.

Presentations:

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| Maria Carlsson | 15 threatened Charophyte and Potamogeton species in Sweden – a knowledge-building program |
| Thomas Franke | Case-studies for the recovery of historical locations of charophytes in northern Bavaria (Germany) |
| Sebastian Bernhard | The new Red List of stoneworts in Saxony. An overview about current composition, distribution and threat |

The European Book Project (European monograph of charophytes)

Klaus van de Weyer / Irmgard Blindow Overview over the project, checklist and some tricky taxa

Heiko Korsch Data on charophyte distribution in Europe – State of the art and problems

Excursions

Alternative 1: Lake Fiolen, oligotrophic to mesotrophic soft water lake, submersed vegetation down to at least 4 m

004: N57 04 20.0 E14 32 05.9 235 m

Götaland, Provinz Kronobergs län, Vitteryd, Lake Fiolen, southern shore

Shoreline:

Calla palustris

Caltha palustris

Carex pallescens

Equisetum fluviatile

Glyceria fluitans

Iris pseudacorus

Juncus conglomeratus

Lysimachia thysiflora

Menyanthes trifoliata

Nuphar pumila

Schoenoplectus lacustris

Waterbody:

Drepanocladus aduncus

Fontinalis antipyretica

Isoetes lacustris

Littorella uniflora

Lobelia dortmanna

Myriophyllum alternifolium

Nitella flexilis vel opaca

Nostoc zetterstedtii

Subularia aquatica

Signal crayfish was common! One individuuum was preserved with ethanol and is stored at the Aneboda field station. The occurrence of crayfish was later confirmed by the SLU (?) scientists who visited the lake for scientific fishing.

005: N57 05 58.6 E0 14 33 41.6 234 m

Götaland, Provinz Kronobergs län, ca. 3.5 km S Aneboda, an Straße 756

Picea abies Forest, border

Anthoxanthum odoratum

Avenella flexuosa

Calluna vulgaris

Campanula persicifolia

Cirsium heterophyllum
Cyanus montata
Hypericum perforatum
Potentilla erecta

Pteridium aquilinum
Sorbus hybridus
Trifolium media

Alternative 2: Växjö lakes, ongoing lake restoration project

Ecological restoration of the lakes, reestablishment of Characeae and other submerged macrophytes

Guiding Andreas Hedrén, Växjö kommun

Site 1 Trummen

Nitella flexilis / opaca

Potamogeton obtusifolius

Site 2 Växjösjön

Nitella flexilis (fertil)
Nymphaea alba
Persicaria amphibia

Potamogeton crispus
Potamogeton natans
Potamogeton praelongus

Alternative 3: Åshultsmossen, ombrotrophic mire

Andromeda polifolia
Calluna vulgaris
Carex lasiocarpa
Carex limosa
Carex nigra
Carex rostrata
Comarum palustre
Drosera anglica
Drosera rotundifolia

Eriophorum angustifolia
Eriophorum vaginatum
Ledum palustre
Menyanthes trifoliata
Narthecium ossifragum
Rubus chamaemorus
Scheuchzeria palustris
Vaccinium oxycoccus
Vaccinium uliginosus

Evening: Dinner at Svenssons Gårdscafé, Lammhult

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| Friday 28.06.2019 |
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9:00 start

11:00 arrival at Lake Tåkern

Alternative 1: Lake Tåkern

Information about the lake ecosystem by Anders Hargeby, University of Linköping

Excursion with boats, bird watching, visit of the exhibition

006: N58 19 52.7 E14 49 25.8 51 m

Götaland, Provinz Östergötlands län, Svanshals, Lake Tåkern, southern shore

Shallow water on deep muddy ground

Carex elata

Carex pseudocyperus

Chara contraria

Chara globularis

Chara tomentosa

Elodea canadensis

Hippuris vulgaris

Hydrocharis morsus-ranae

Lemna minor

Lemna trisulca

Myriophyllum spicatum

Nitellopsis obtusa

Persicaria amphibia

Phragmites australis

Potamogeton crispus

Potamogeton friesii

Potamogeton perfoliatus

Ranunculus circinatus

Stuckenia pectinata

Typha latifolia

Zannichellina palustris* ssp. *palustris

Forest

Avenella flexuosa

Betula pendula

Populus tremula

Pyrola rotundifolia

Rubus saxatilis

Alternative 2: Lake Vättern

1: 58.53278°N, 14.98061°O Bikösvägen, Motala

Chara aspera incl. *C. aspera* var. *subinermis*

Chara virgata

Littorella uniflora

Lobelia dortmanna

Myriophyllum alterniflorum (also reddish individuals, the habitus resembling of *M. spicatum*)

Nitella opaca

2: 58.52951°N, 14.98303°O Bikösvägen, Hafen, Motala

Callitriche hermaphroditica

3: 58.640824°N, 14.934883°O Lake Vättern Östergötlands län

Chara aspera

Chara virgata

Littorella uniflora

Lobelia dortmanna

Isoetes lacustris
Myriophyllum alterniflorum
Nitella opaca
Subularia aquatica
Potamogeton gramineum

4: 58.72667°N, 14.96374°O Forsanäsvägen, Forsanäset, Akersund

Chara aspera
Chara globularis
Chara virgata
Elodea canadensis
Littorella uniflora
Lobelia dortmanna

Way between Vättern and Aneboda: 57.539091°N, 14.267871°O Lake Hokusjön

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|-----------------------------------|---|
| <i>Juncus bulbosus</i> | <i>Nymphoides peltata</i> |
| <i>Nitella opaca</i> | <i>Potamogeton gramineus</i> |
| <i>Crassula aquatilis</i> | <i>Potamogeton obtusifolius</i> |
| <i>Littorella uniflora</i> | <i>Persicaria amphibia</i> |
| <i>Myriophyllum alterniflorum</i> | |
| <i>Sparganium natans</i> | |
| <i>Lobelia dortmanna</i> | |
| <i>Isoetes echinospora</i> | <i>Myriophyllum alterniflorum</i> (also reddish individuals, the habitus resembling of <i>M. spicatum</i>) |
| <i>Nuphar candida</i> | <i>Nitella opaca</i> |
| <i>Nuphar lutea</i> | |
| <i>Lemna trisulca</i> | |
| <i>Alisma plantago-aquatica</i> | |

Saturday 29.06.2019

007: N56 05 37.8 E0 14 20 467

Götaland, Provinz Skåne län, N Bromölla, Lake Levräsjön, southern shore

Lake Levräsjön, hardwater lake

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|-------------------------|--------------------------------|
| <i>Chara filiformis</i> | <i>Drepanocladus aduncus</i> |
| <i>Chara contraria</i> | <i>Elodea canadensis</i> |
| <i>Chara aspera</i> | <i>Fontinalis antipyretica</i> |
| <i>Chara globularis</i> | <i>Nitella opaca</i> |
| <i>Chara tomentosa</i> | <i>Nitellopsis obtusa</i> |
| <i>Chara subspinosa</i> | <i>Phragmites australis</i> |

Platypnidium riparioides
Potamogeton compressus
Potamogeton friesii
Potamogeton perfoliatus
Potamogeton pusillus

Schoenoplectus tabernaemontani
Stuckenia filiformis
Stuckenia pectinata
Utricularia vulgaris agg.

There was some discussion about the identity of *Chara filiformis*, because the plants collected showed some transitions to *C. contraria*.

In the early afternoon trip to the coast with shallow water in Edenryd

Place 1: 007b

56.0389 N, 14.5224 E

at the swimming place

Chara baltica
Rancunculus baudotii

Tripolium pannonicum ssp. *maritima*

Place 2: Gruppe Thomas Gregor / Irmgard Blindow (007c)

56.04192 N, 14.5294 E

Chara aspera
Chara baltica
Chara canescens
Cotula australis
Stuckenia pectinata
Ruppia maritima

Zannichellia palustris ssp. *palustris*
Tolypella nidifica
Fucus vesiculosus
Glaux maritima
Potentilla anserina
P. reptans

007d: Edenryd (Gruppe Silke Oldorff) Bodarna, Tosteberga hamm

Chara aspera
Chara baltica

Chara canescens
Ruppia maritima

009: 29-JUN-19 18:14:38 N57 07 22.2 E14 33 47.7 196 m

Götaland, Provinz Kronobergs län, ca 6 km SSW Lammhult, Aneboda, Stråken-See, NW-Ufer

Agricultural field (*Hordeum*)

Erysimum cheiranthus
Galeopsis speciosa

Hordeum distichum
Spergularia arvensis

End of the meeting

The participants of the German Characean working group want to express their deepest gratitude to our Swedish hosts. Thank you very much, Maria, Roland, Ursula, Tina, Andreas, Anders, Micke, Gustav and Lars, for all support and all nice, interesting discussions. Thanks to you, it was a marvellous meeting. We hope to see you again soon!!

Protokol: Karl (Kalle!) Georg Bernhardt, with additions by Irmgard Blindow



I. Blindow

Lake Väckjösjön, Andreas Hedrén explains and demonstrates the management measures



I. Blindow



I. Blindow



I. Blindow



I. Blindow



I. Blindow



I. Blindow



I. Blindow

Linné's Råshult, restoration of the traditional agricultural landscape



I. Blindow



Aneboda field station: Solhäll building. V. Krautkrämer



At Svensson's Gårdscafé, Lammhult. V. Krautkrämer



Byggdegård in Aneboda. V. Krautkrämer



Byggdegård in Aneboda, presentations. V. Krautkrämer



Galeopsis speciosa. Filed close to the Byggdegård, Aneboda. V. Krautkrämer



After the determination, Aneboda field station. V. Krautkrämer



After the determination, Aneboda field station. V. Krautkrämer



After the determination, Aneboda field station. V. Krautkrämer



Calla palustris. Small water body close to Lammhult. V. Krautkrämer



No comment... V. Krautkrämer



Meeting place in Bromölla before the Lake Levasjön excursion. V. Krautkrämer



Meeting place in Bromölla before the Lake Levrasjön excursion. V. Krautkrämer



Meeting place in Bromölla before the Lake Levrasjön excursion. V. Krautkrämer



Meeting place in Bromölla before the Lake Levräsjön excursion. V. Krautkrämer



Meeting place in Bromölla before the Lake Levrasjön excursion. V. Krautkrämer



Svensson's Gärdscafé, Lammhult. V. Krautkrämer



Svensson's Gårdscafé, Lammhult. V. Krautkrämer



Subularia aquatica. V. Krautkrämer



Breakfast, dining room in Aneboda field station. V. Krautkrämer



Iris pseudacorus. Lake Fiolen. V. Krautkrämer



Group photograph, Aneboda field station. Marion Wilhelm.



Edenryd. V. Krautkrämer



Edenryd. V. Krautkrämer



Levrasjön. V. Krautkrämer



Chara tomentosa, probably Levrasjön. V. Krautkrämer



Chara aspera and *Stuckenia filiformis*, Levräsjön. Silke Oldorff



Chara subspinososa, Levräsjön. Silke Oldorff



Crassula aquatilis. Lake Hokasjön. Silke Oldorff



Cow, not very healthy. Tom Kirschey



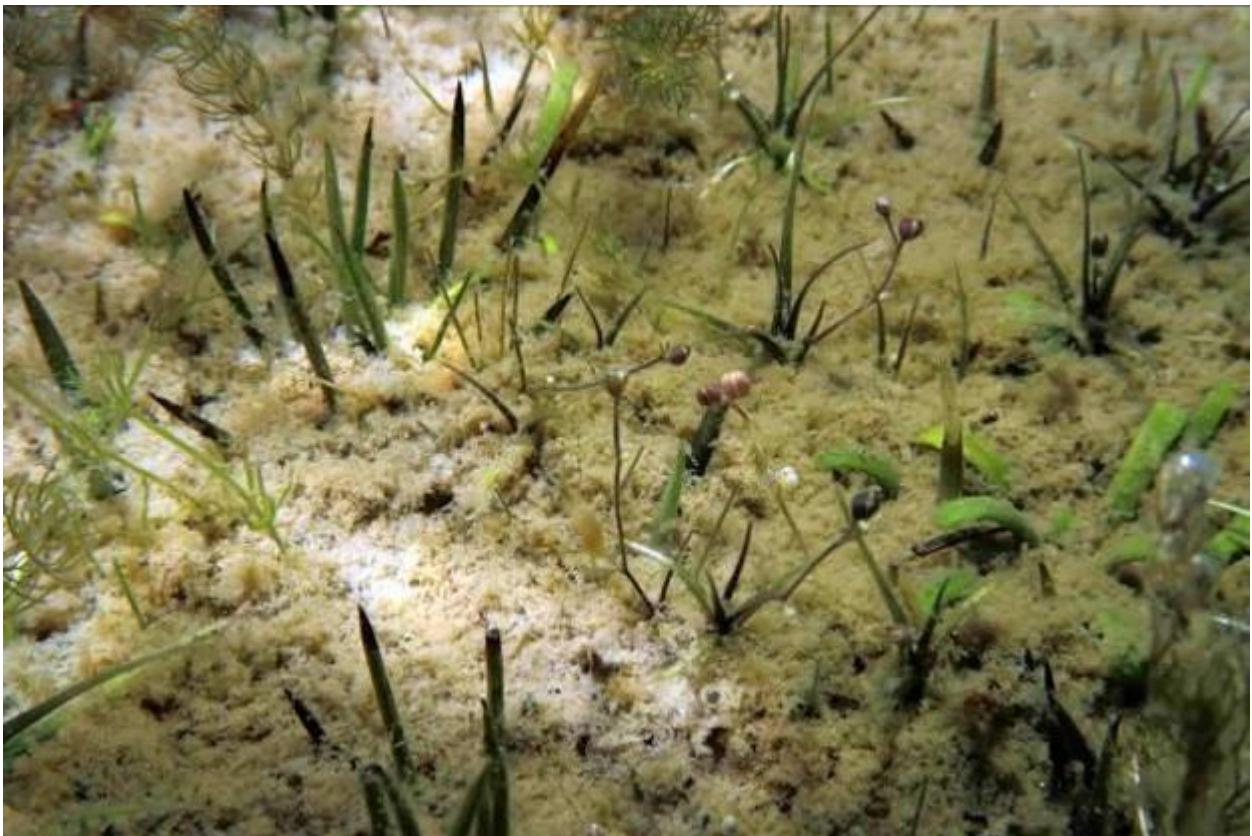
Fiolen, submerged vegetation (*Lobelia*, *Littorella*, *Isoetes*). Silke Oldorff



Lake Vättern. Silke Oldorff



Lobelia dortmanna. Lake Vättern. Silke Oldorff



Myriophyllum alterniflorum, *Nitella flexilis / opaca*, *Subularia aquatica*, *Lobelia dortmanna*, *Isoetes* sp.
Lake Vättern. Silke Oldorff



Signal crayfish. Lake Vättern. Silke Oldorff



Lake Vättern. Silke Oldorff



Isoetes lacustris. Lake Fiolen. Silke Oldorff



Nostoc zetterstedtii. Lake Fiolen. Silke Oldorff



Lobelia dortmanna with *Myriophyllum alterniflorum*, *Isoetes*, *Nitella* sp. Lake Vättern. Silke Oldorff



Signal crayfish. Lake Vättern. Silke Oldorff



Nymphaea sp. near Aneboda. Tom Kirschey



Potamogeton friesii. Levräsjön. Silke Oldorff



Potamogeton gramineum. Lake Vättern. Silke Oldorff



Potamogeton obtusifolius. Lake Hokusjön. Silke Oldorff



Subularia aquatica. Lake Vättern. Silke Oldorff



Isoetes. Lake Fiolen. V. Krautkrämer



Nostoc zetterstedtii, Lake Fiolen. V. Krautkrämer



Burbot (Quappe; lake; *Lota lota*). Lake Fiolen. V. Krautkrämer



Isoetes. Lake Fiolen. V. Krautkrämer



Lake Fiolen. V. Krautkrämer



Subularia aquatica, Lake Fiolen. V. Krautkrämer



Lobelia dortmanna, Lake Fiolen. V. Krautkrämer



Burbot (Quappe; lake; *Lota lota*). Lake Fiolen. V. Krautkrämer



Littorella uniflora flowering, shore of Lake Stråken. V. Krautkrämer



Drosera intermedia, shore of Lake Stråken. V. Krautkrämer



Carex cf. *oederi*, shore of Lake Stråken. V. Krautkrämer



Lobelia dortmanna, Lake Vättern. V. Krautkrämer



Characean vegetation, Lake Vättern. V. Krautkrämer



the "glass house", Aneboda field station. Tom Kirschey



Lake Stråken in the morning mist. Tom Kirschey