

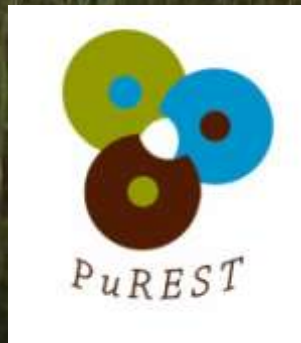
Development of Apsuciems Mire based on palaeoecological analyses

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ESF project Nr.
1DP/1.1.1.2.0/13/APIA/VIA
A/044 «Starpdisciplināra
jauno zinātnieku grupa
Latvijas purvu un to resursu
izpētei, ilgtspējīgai
izmantošanai un
aizsardzībai (PuReST)



IEGULDĪJUMS TAVĀ NĀKOTNĒ



Role of the palaeobotanical analysis in modern palaeoecology and environmental protection

- Palaeobotanical reconstructions are helpful when:
 - Climate changes, sea and lake level changes, trophy of water changes;
 - Migration routes of plants;
 - History of human food: fossil cereals (rye, wheat) in archaeological excavations;
 - Reconstruction of the natural habitats in nature protection and **restoration process**;
- Important questions:
 - Which plant species is native or should be native on the restored habitat?
 - What is natural?
 - Which plant communities occurred in the peatlands before it was destroyed?
- **We will know it, if we use palaeobotanical analysis**



Nymphaea alba



Lemna minor

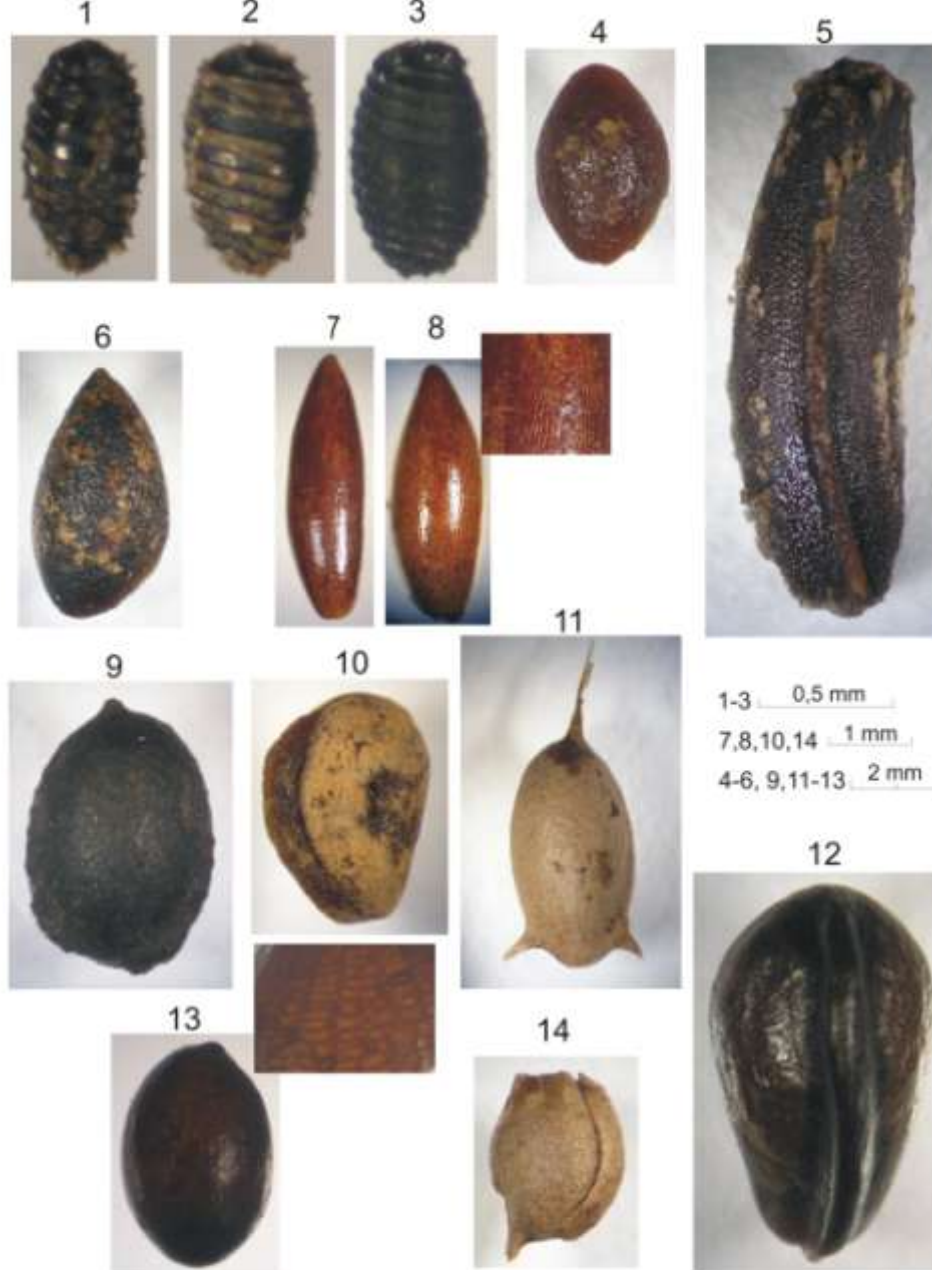


3 *Potamogeton lucens*



Chara sp.

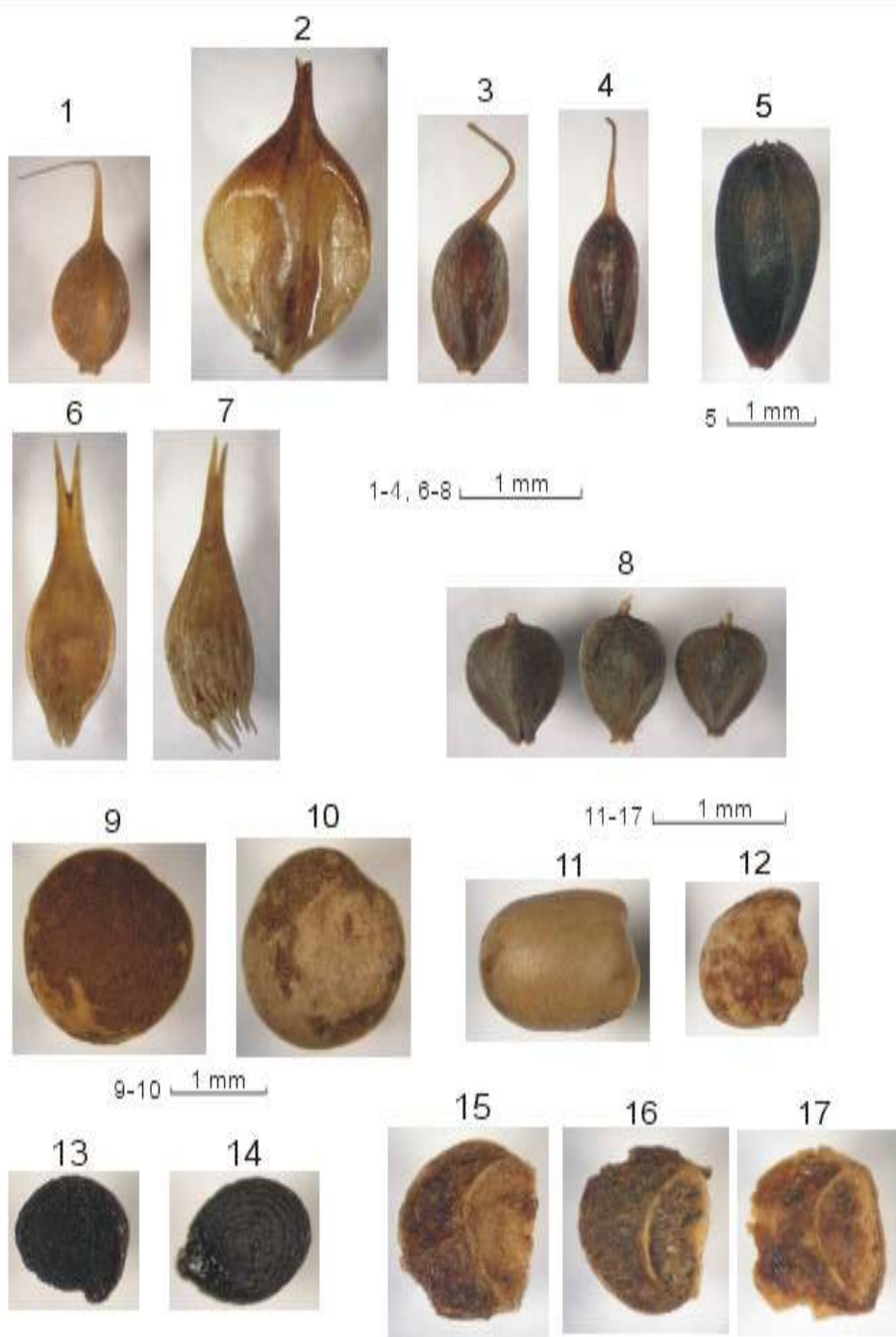
Wetlands are museum of nature



Ryc. 7.4.A.
1-3 Ramienice (*Chara* sp.), 4,6 Jezierza morska (*Najas marina*), 5 Osoka aloesowata (*Stratiotes aloides*), 7,8 Jezierza giętka (*Najas flexilis*), 9 Rogatek krótkoszyjkowy (*Ceratophyllum submersum*), 10 Rdestnica pływająca (*Potamogeton natans*), 11 Rogatek sztywny (*Ceratophyllum demersum*), 12 Grąźel żółty (*Nuphar lutea*), 13 Grzebień biały (*Nymphaea alba*), 14 Rdestnica alpejska (*Potamogeton alpinus*)

Macrofossil
of the aquatic plants



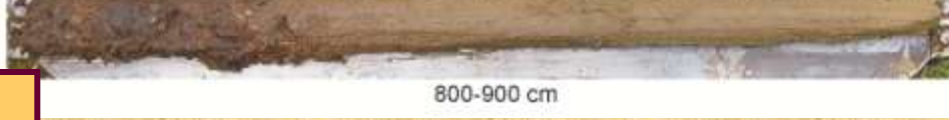


Subfossil remains of peatland plants

Peatlands are reliable museum of nature



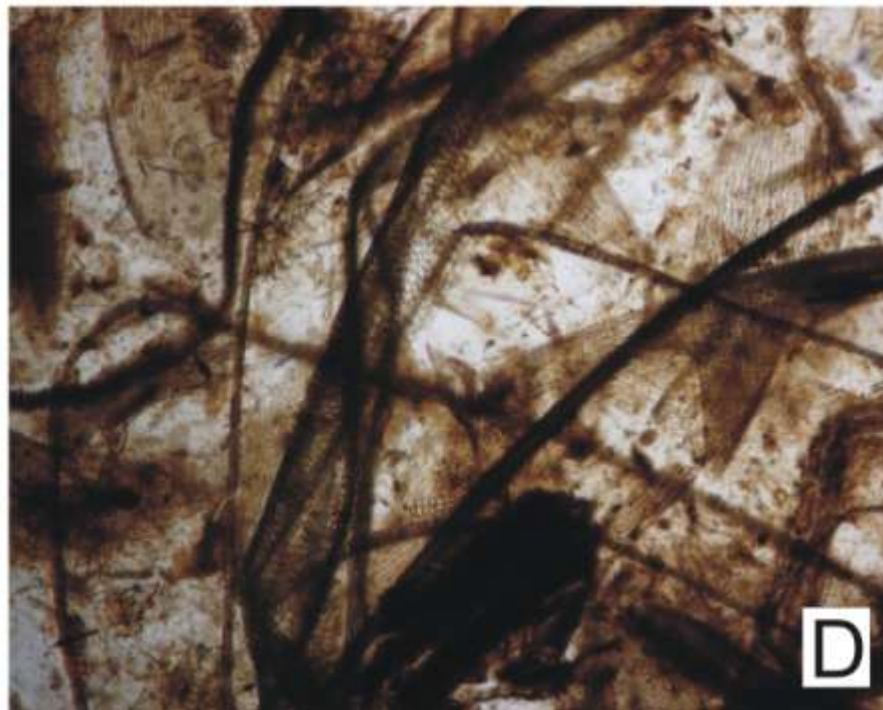
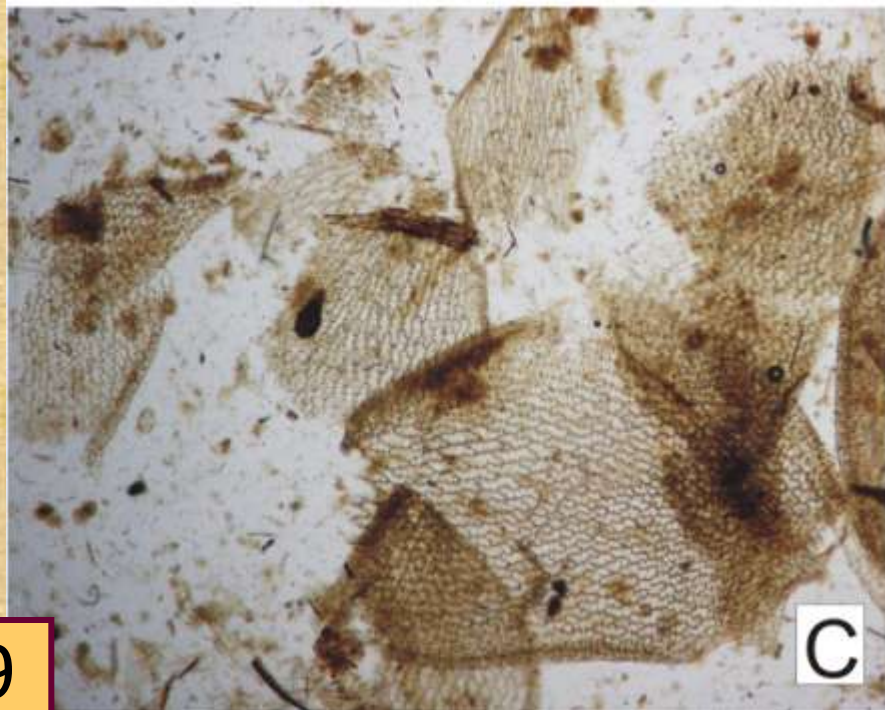
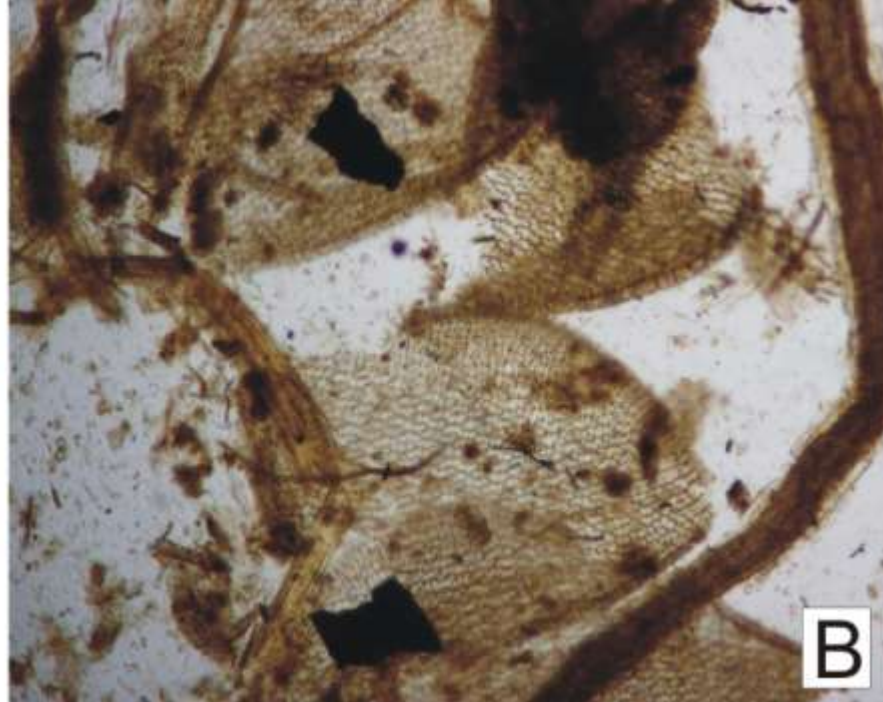
GAZWA MIRE core II



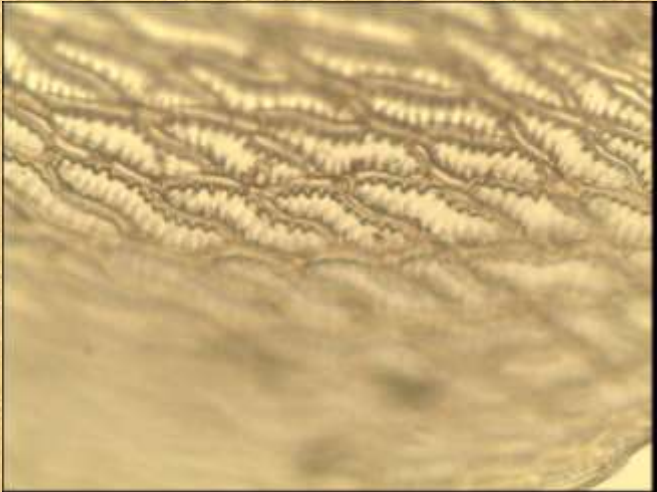
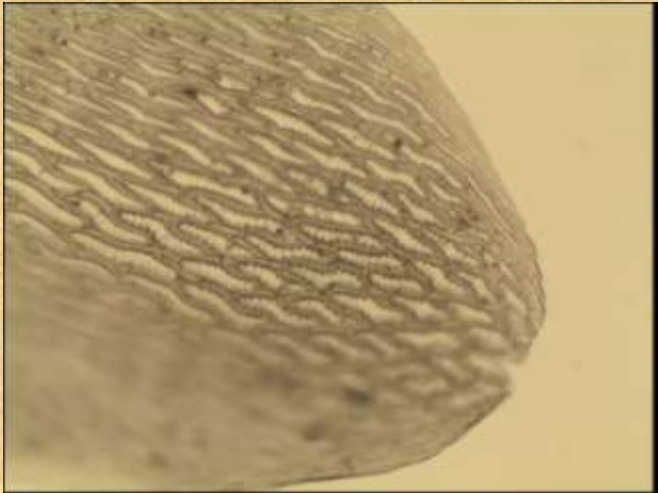
Museum of nature

WIELKI MECHACZ MIRE core II

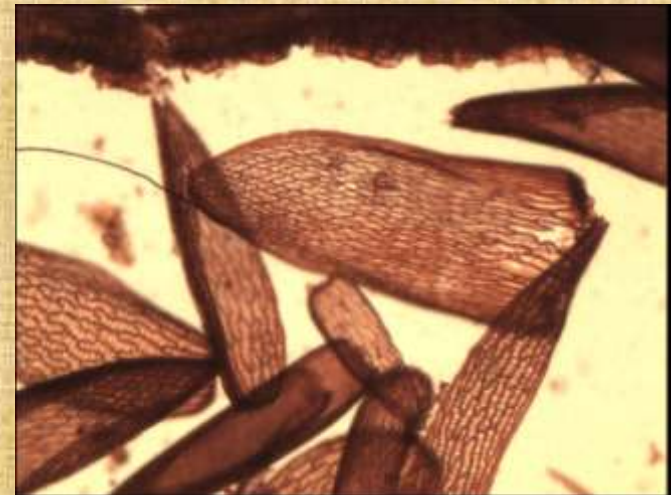




Sphagnum balticum

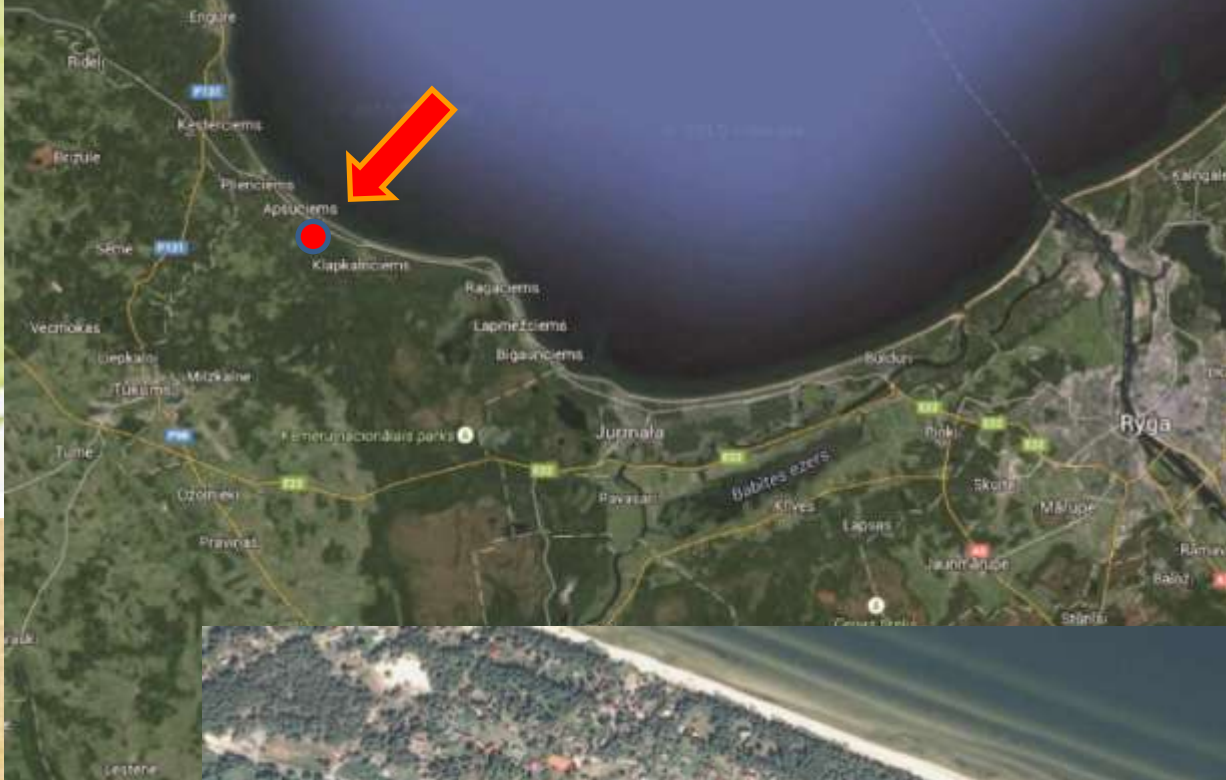


Sphagnum fuscum





● Location of the study sites.



Study site

Apšuciems Mire

rich fen area (15 ha)
nature reserve,
included in the Natura 2000
network in Latvia (Natura 2000
code LV0531400)





Apšuciems Mire



Myrica gale



13

Scorpidium scorpioides

Peat cores from Apšuciems Mire used to palaeoecological analysis



Core I, 0-235 cm

Core II, 0-100 cm

It hosts two habitats of the Habitats Directive Annex I, namely 7230 Alkaline fens and 7210* Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliane* (Council of the European Communities 1992).



Cladium mariscus



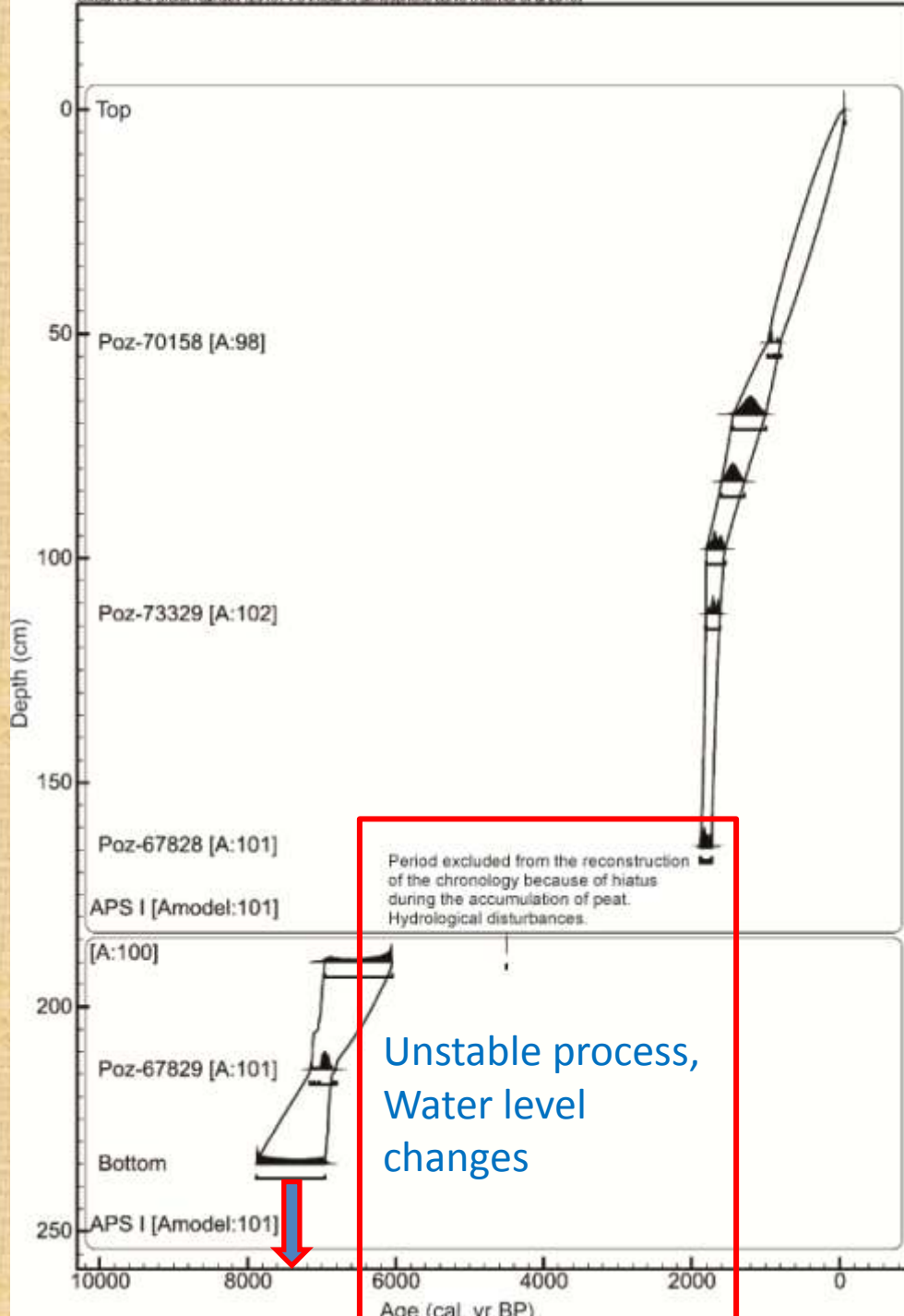
Schoenus ferrugineus



Sphagnum sp.

Aims of our palaeoecological studies

- the reconstruction of development of rich-fen;
- the determination of sensibility of the plants on rich fen on climate changes and fires activity;
- the reconstructions of the *Cladium mariscus* communities history as a one of most dominant species on analysed fen on the eastern border of recent distribution in Europe



Chronology

(based on 4 radiocarbon dates (AMS))

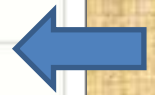
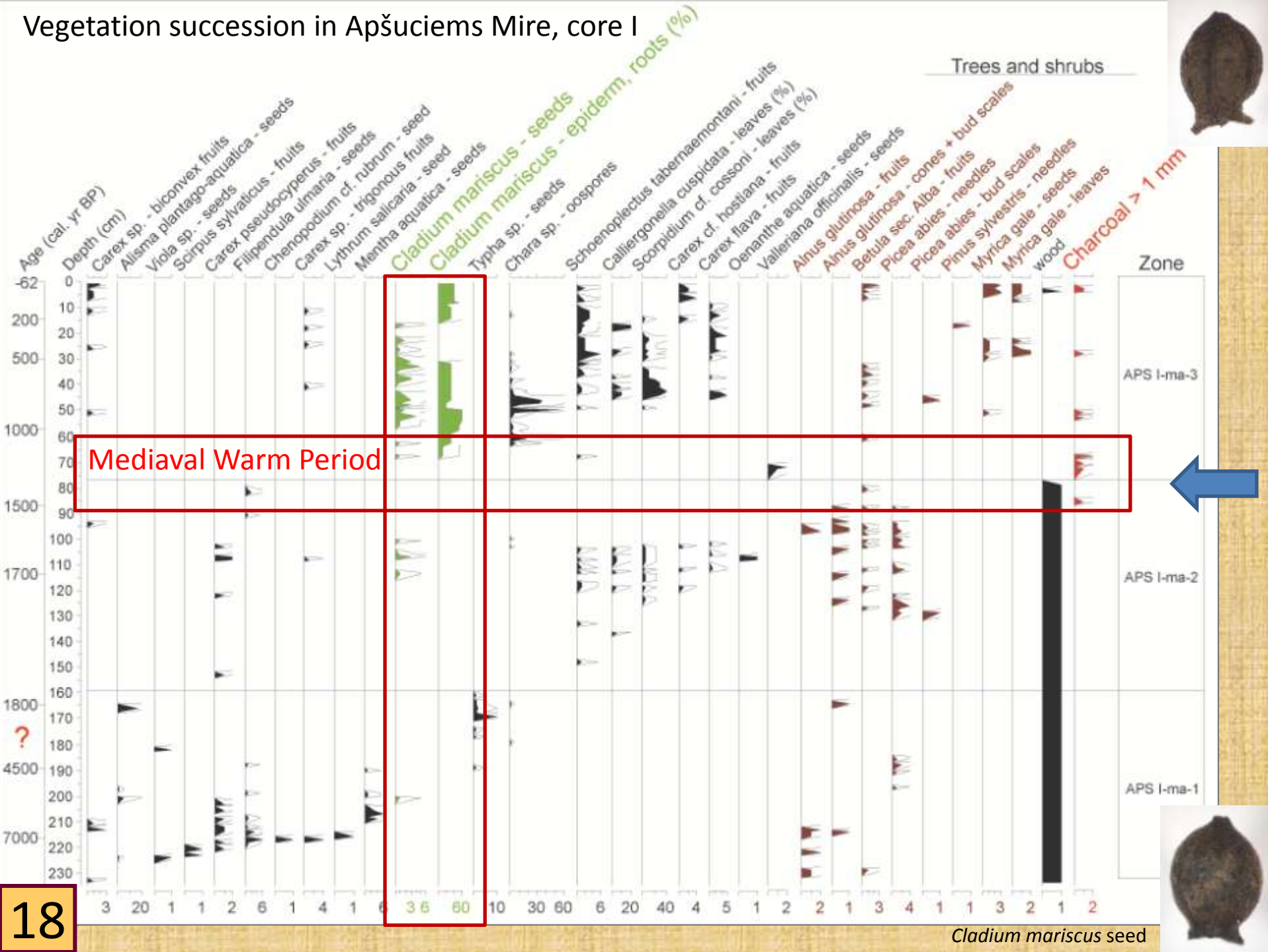
and peat accumulation process

Period excluded from the reconstruction of the chronology because of hiatus during the accumulation of peat. Hydrological disturbances.

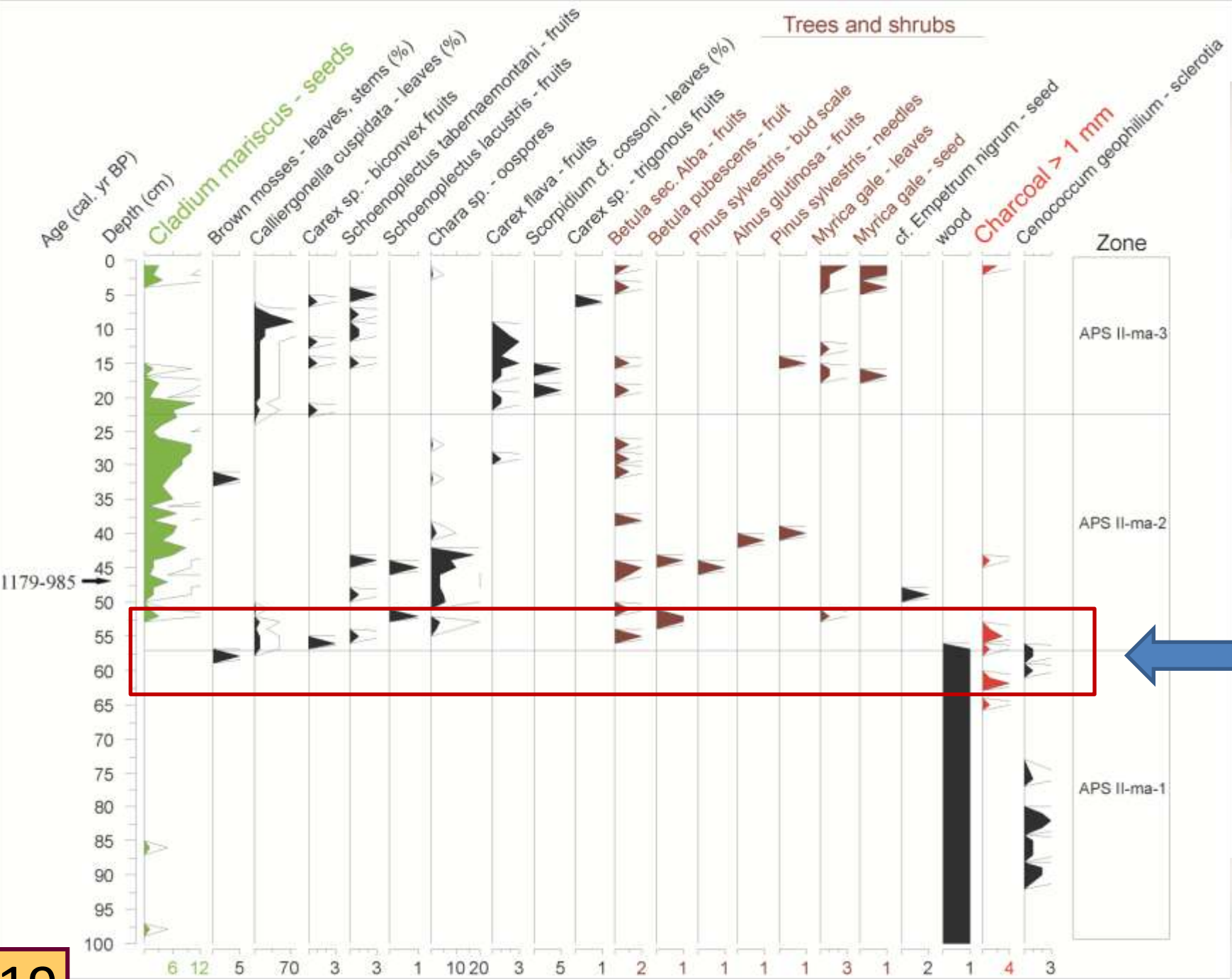
Unstable process, Water level changes

Age–depth model of the peat profile Core I

Vegetation succession in Apšuciems Mire, core I

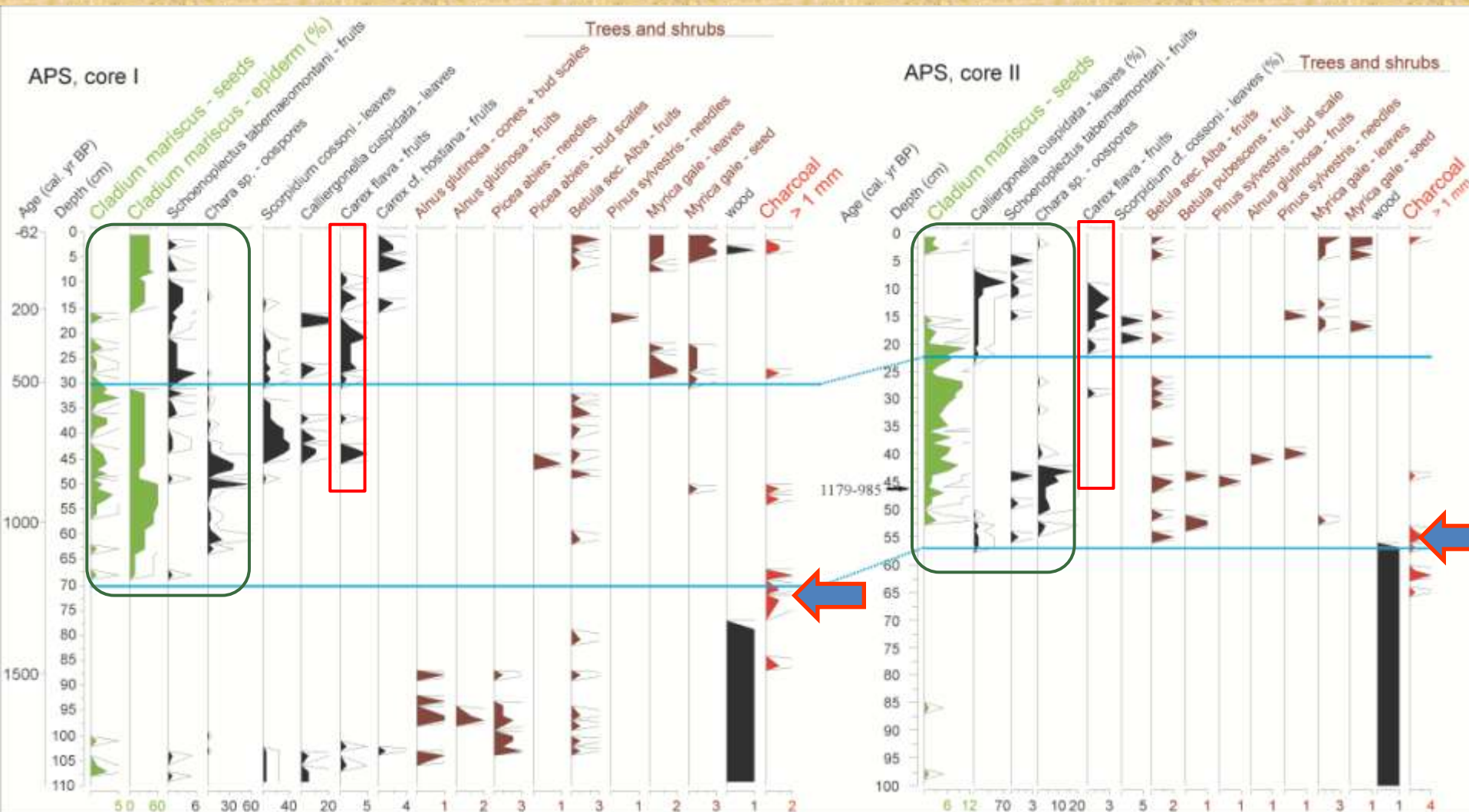


Trees and shrubs

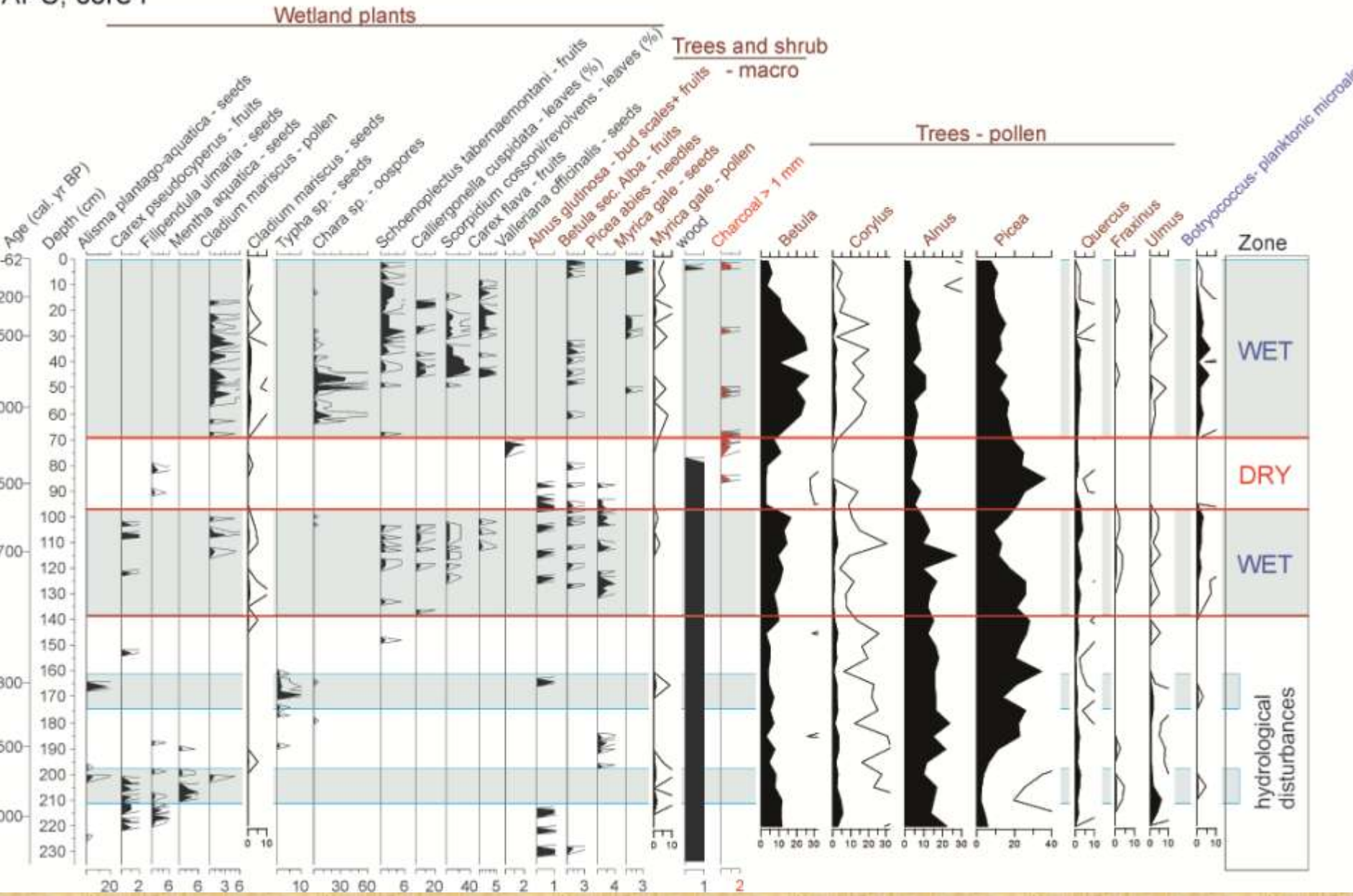


Vegetation succession in Apšuciems Mire, core II

Similarity in the development of vegetation in place I and II



Fire > destroyed plants communities > less evapotranspiration > increase water level > development of plant communities occur in wet habitat



Manuscript

„Reconstructing development of rich-fen in SE Baltic coast, Latvia, using biotic proxies during last 7000 years: implications for plant communities development and palaeoclimatic research”

- Mariusz Gałka, Liene Aunina, Kazimierz Tobolski, Angelica Feurdean
- **Wetlands**, international journal, IF 1,572

Thank you very much for your attention



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