PLANT MACROFOSSIL

Birks H.H. Plant macrofossil introduction. In Encyclopedia of Quaternary Science, 2007, pp. 2266–2288

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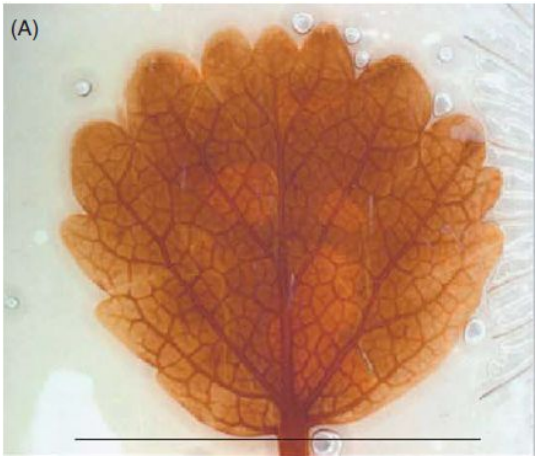
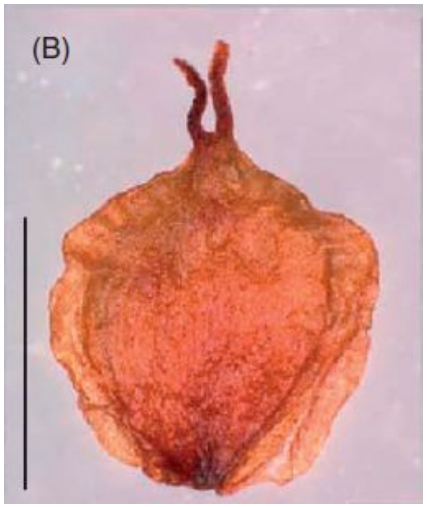
WHAT IS A PLANT MACROFOSSIL?

1) A plant fossil that is visible to the naked eye and that can be manipulated by hand,

2) The median size is 0.5–2.0 mm.



(A) Betula nana (leaf)



(B) Betula nana (fruit)

(C) Potentilla (Comarum) palustre (fruits) / Сабельник болотный (плод)

a) Fruits / плоды,
b) Seeds / семена,
c) Leaves / листья,
d) Cuticles / кутикула,
e) Buds / почки,
f) Bud scales / чешуйки почек,
g) Anthers / пыльники,
g) Flower parts / части цветка,
h) Rhizomes / корневища,
i) Twigs / ветки,
j) Wood / древесина,
k) Bark / кора,
l) etc.

WHY STUDY PLANT MACROFOSSILS?

1) Higher taxonomic resolution than pollen, often to species level,
2) Recovering taxa that produce little or no pollen,

3) Reconstruction of past local vegetation in detail *(because macroremains are relatively heavy and most of them are deposited near their sources),*
4) Identification of a false signal from longdistance pollen,

5) Using in radiocarbon AMS ^{14}C chronology,
6) The reconstructions of atmospheric CO2 concentrations from stomatal density on fossil leaf cuticles during the Late Glacial period
7) DNA research and ect.

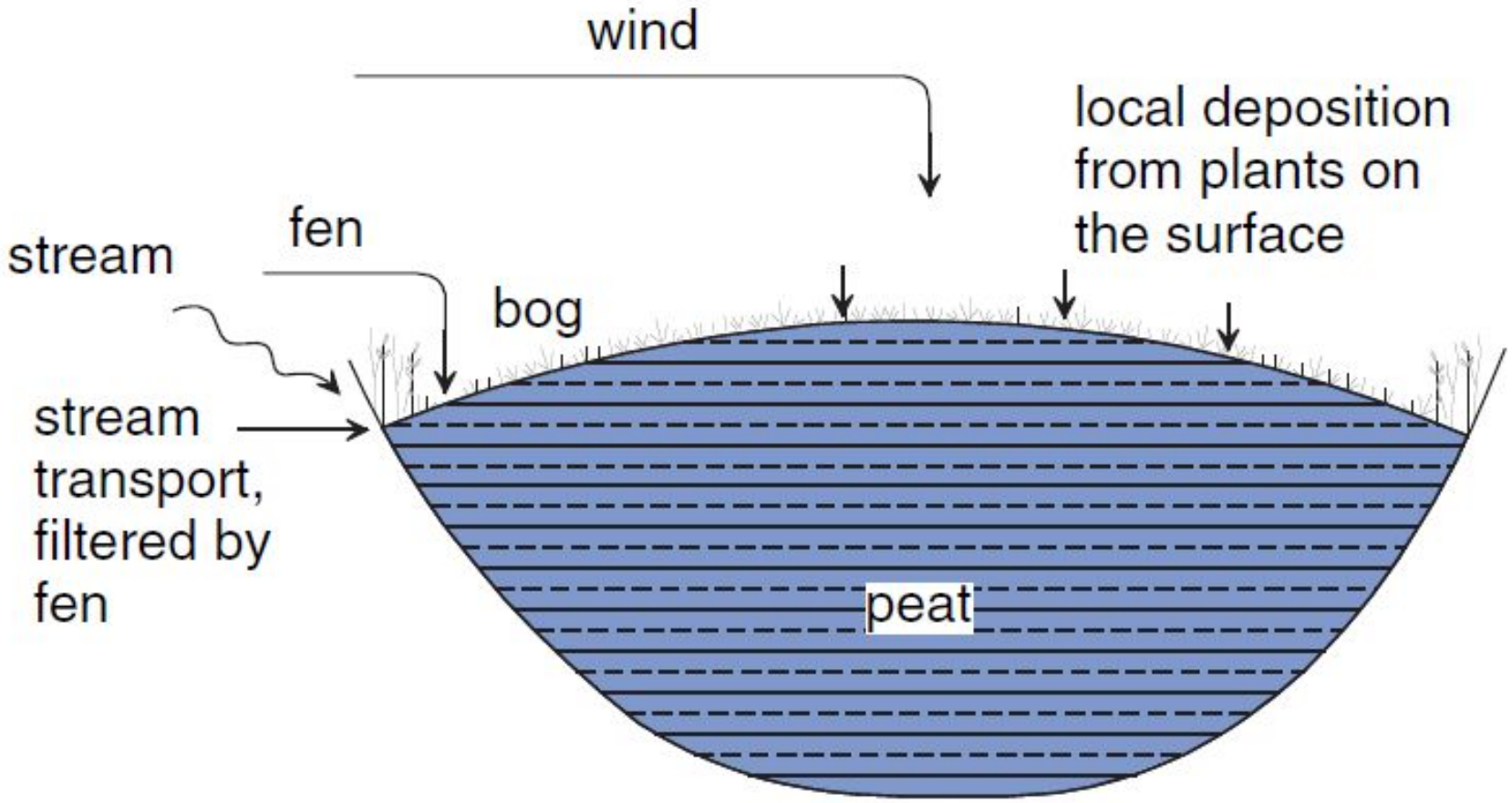
THE MAIN GOAL **is reconstruction of the past local vegetation**

Heat and moisture ratio in the past

WHERE ARE MACROFOSSILS FOUND? (1)

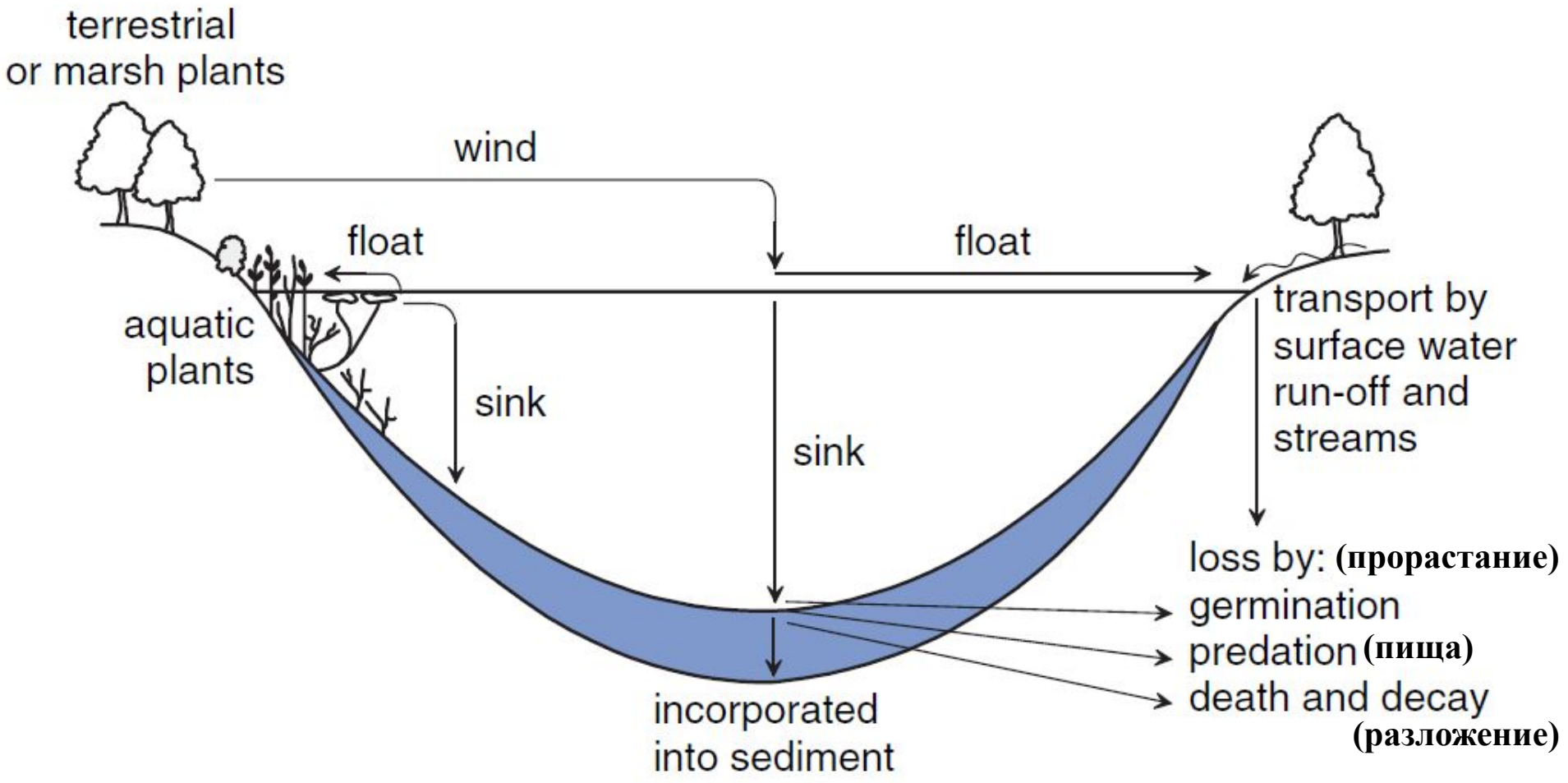
Usually in **anoxic**, **waterlogged**, **arid**, or sometimes **frozen environments**

Plant macrofossils are most often studied from lake or peat sediments:



WHERE ARE MACROFOSSILS FOUND? (2)

Plant macrofossils are most often studied from lake or peat sediments:



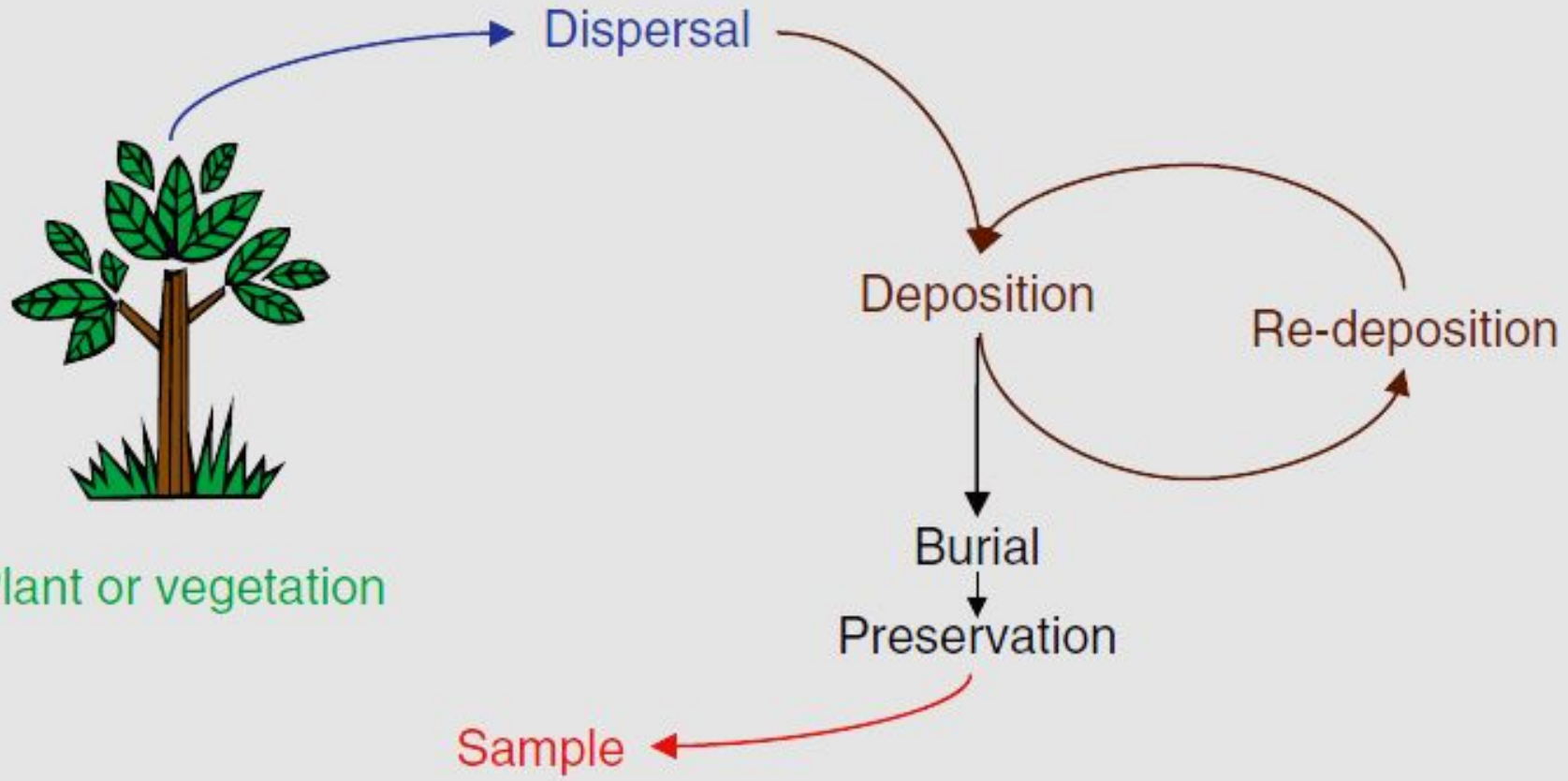
… also from soils, permafrost, alluvial sediments, archeological excavations, preserved animal bodies etc.

HOW DO WE STUDY PLANT MACROFOSSILS?

Lake sediment with fossils → sampling → **Core / Samples**

INTERPRETATION

Taphonomic processes in the formation of a macrofossil assemblage



Thank you for attention!

Macrofossil analysis requires good botanical knowledge
of plant morphology, identification, taxonomy, and ecology
and people with these skills are rare and decreasing in numbers…