

*Populus balsamoides* Goepfert 1855 (Salicaceae)

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**Leaf description**

- **morphology:** leaves usually large, chartaceous, paper-like; **organisation:** simple; **petiole:** very long, up to at least 9 cm; **shape:** broad ovate to elliptic, triangle-like; **leaf base:** base angle obtuse, base shape rounded to convex, sometimes almost truncate; **leaf apex:** apex angle acute, apex shape somewhat acuminate; **margin:** simple dentate, teeth regularly spaced, dense, small-sized, tooth apex rounded, glanduliferous, tooth sinus rounded; **1°-vein framework:** actinodromous, three strong main veins and occasionally two further lateral ones which are less pronounced; **2°-vein framework:** semicraspedodromous; intersecondaries present; **3°-vein framework:** percurrent.
  - **cuticle:** of both surfaces very delicate; probably hypostomatic; **adaxial cuticle:** anticlines straight, cell outlines polygonal, about 20–30 µm across; **abaxial cuticle:** anticlines straight or rounded, cell outlines 17–25 µm, striation may be present especially near stomata, perpendicular to the length axis of the stomata, stomatal ledges conspicuous forming a more or less narrow, spindle-shaped front cavity of rather variable size, about 12–35 µm long.
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**Paleocology**

- **habitat:** alluvial habitats
  - **vegetation type:** mixed mesophytic to broad-leaved deciduous forests
  - **life form:** tree
  - **foliage persistence:** deciduous leaves
  - **flower ecology (pollination):** ?
  - **fruit ecology (dispersal):** wind-dispersed (anemochorous)
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**Stratigraphy / Distribution**

- **stratigraphy:** Upper Lower Miocene to Pliocene
  - **distribution:** Europe
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**Miscellaneous**

- **synonyms:** –
  - **modern relationship:** Similar leaves are found, for example, in *P. balsamifera* L. and *P. × canadensis* MOENCH in N-America. *P. balsamoides* is also compared to *P. lasiocarpa* OLIV. (Zastawniak 1972) and *P. tibetica* THOMSON ex R. KAM. (Iljinskaja in Budantsev 2005).
  - **remarks:** This poplar is characterised by the uniform and dense dentation. The teeth apices may be glandular (see e.g. Worobiec & Szyrkiewicz 2016, pl. 3 fig. 2a, b). Cuticular features have been described only rarely (Ferguson 1971, Taxon X; Worobiec et al. 2012, Worobiec & Szyrkiewicz 2016).
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27 macroscopic leaf traits are stored in *Digiphyll*

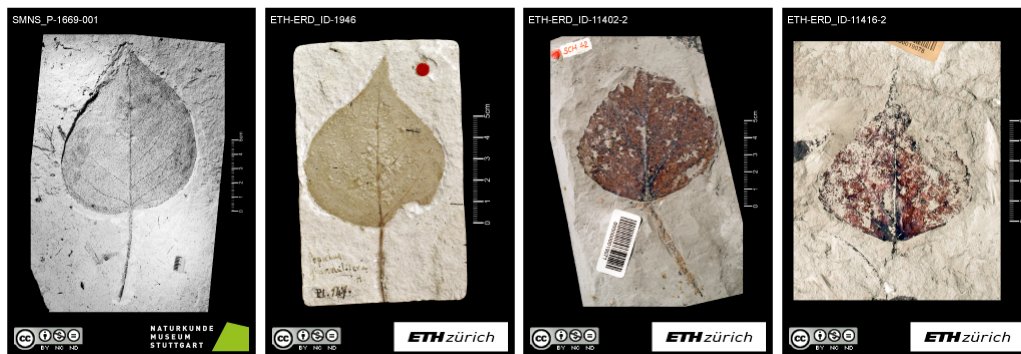
#	trait code	trait: charcters state
1	A-1.2	petiole: present
2	A-1.2.2	petiole, present: long
3	A-2.1	leaf organisation: simple
4	A-3.1	leaf shape: elliptic
5	A-3.3	leaf shape: ovate
6	A-4.2	leaf base angle: obtuse
7	A-5.1	leaf base shape: without basal extension
8	A-5.1.2	leaf base shape, without basal extension: rounded
9	A-5.1.3	leaf base shape, without basal extension: truncate
10	A-5.1.4	leaf base shape, without basal extension: concavo-convex
11	A-6.1	leaf apex angle: acute
12	A-7.2	leaf apex shape: acuminate
13	A-8.2	leaf margin: toothed
14	A-8.2.2	leaf margin, toothed: dentate
15	A-9.1.1	leaf teeth, order number of teeth: simple order (first order)
16	A-9.2.1	leaf teeth, tooth density: dense
17	A-9.3.1	leaf teeth, tooth size: small
18	A-9.4.2	leaf teeth, tooth apex shape: rounded
19	A-9.5.2	leaf teeth, tooth sinus shape: rounded
20	B-1.2	primary vein framework: palmate
21	B-1.2.1	primary vein framework, palmate: actinodromous
22	B-1.2.1.1	primary vein framework, palmate, actinodromous: basal actinodromous
23	B-2.1	secondary vein framework: 2° veins reach margin
24	B-2.1.2	secondary vein framework, 2° veins reach margin: semicraspedodromous
25	B-3.2	intramarginal vein: absent
26	B-4.1	intersecondaries: present
27	B-5.1	tertiary vein framework: percurrent

For a detailed description of the leaf traits see menu *Manuals*.

? microscopic leaf traits are stored in *Digiphyll*

comming soon

### Fossil images



## References

- **Budantsev L. (ed.) (2005):** Fossil flowering plants of Russia and adjacent countries. Vol. 4, Nyctaginaceae-Salicaceae. – *Rossijskaja Akademia Nauk*, St. Petersburg. 184 p.
- **Ferguson D.K. (1971):** The Miocene flora of Kreuzau, Western Germany. – *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen*, Afd. Natuurkunde, 60(1): 1-297.
- **Hantke R. (1954):** Die fossile Flora der obermiozänen Oehninger-Fundstelle Schrotzburg (Schienerberg, Süd-Baden). – *Denkschriften der Schweizerischen Naturforschenden Gesellschaft*, 80/2: 1-118.
- **Heer O. (1856):** Flora tertiaria Helvetiae II. – *Winterthur (Wurster & Comp.)*: 177 pp.
  
- **Worobiec G. & Szykiewicz A. (2016):** Neogene wetland vegetation based on a leaf assemblage from Bełchatów Lignite Mine (Central Poland). – *Acta Palaeobotanica*, 56/2: 441-497.
- **Worobiec G., Worobiec E. & Szykiewicz A. (2012):** Plant assemblage from the Upper Miocene deposits of the Bełchatów Lignite Mine (Central Poland). – *Acta Palaeobotanica*, 52/2: 369-413.
- **Zastawniak E. (1972):** Pliocene leaf flora from Domański Wierch near Czarny Dunajec (Western Carpathians, Poland). – *Acta Palaeobotanica*, 13/1: 3-73.

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