

*Daphnogene polymorpha* (A. Braun) Ettingshausen 1851 (Lauraceae)

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**Leaf description**

- **morphology:**  
**organisation:** simple, mainly coriaceous; **petiole:** present, bent or straight up to more than 1.5 cm long; **shape:** ovate, elliptic or obovate up to about 10 cm long; **leaf base:** base angle acute; base shape straight, concave or rounded; **leaf apex:** apex angle acute; apex shape acute, acuminate; **margin:** entire; **1°-vein framework:** suprabasal acrodromous, lateral main veins originating alternate to suboppositely, running into the upper third or fourth of the lamina; **2°-vein framework:** brochidodromous; **3°-vein framework:** percurrent, sinuous, almost horizontal.
  - **cuticle:**  
adaxial cuticle distinctly thicker than abaxial one, thus more commonly preserved than abaxial cuticle, hypostomatic; **adaxial cuticle:** thick, usually glabrous (no trichome bases); anticlines rather variable from almost straight to bent to undulate and knobby; hypodermis visible when very well preserved and not strongly macerated; **abaxial cuticle:** (very) delicate, anticlines as on the adaxial cuticle forming irregularly polygonal cell outlines, 10–25 µm across, stomatal complexes paracytic, length rather variable about 10–24 µm, shape transversal oval to roundish, more or less asymmetric in shape, cuticle over guard cells very thin, not staining, cuticular ledges indistinct, front cavity short elliptic; trichome bases variably dense, often somewhat raised above the surface level of the cuticle, trichome base cells more or less distinctly radially arranged and thickened, bordering the trichome pore by a thickened poral rim; mesophyllous secretory bodies present, shape globular to lense-shaped, diameter about 30 µm.
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**Paleecology**

- **habitat:** probably in a wide range of habitats from wetlands to mesophytic forests
  - **vegetation type:** warm temperate broad-leaved evergreen to mixed mesophytic forests
  - **life form:** tree or shrub
  - **foliage persistence:** evergreen leaves
  - **flower ecology (pollination):** probably animal-pollinated (zoophilous)
  - **fruit ecology (dispersal):** animal-dispersed (zoochorous), fleshy fruits
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**Stratigraphy / Distribution**

- **stratigraphy:** Miocene
  - **distribution:** Europe to Asia Minor
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**Miscellaneous**

- **synonyms:** Due to the uncertainties of the assignment within the laurel family, such leaves were assigned to the genera *Cinnamomophyllum*, *Cinnamomum* and *Daphnogene*. Common specific synonyms are, among others, *Daphnogene scheuchzeri* and *Daphnogene bilinica*.
- **modern relationship:** *Cinnamomum camphora* (L.) J. PRESL.
- **remarks:** *D. polymorpha* is characterised by three major veins in which the lateral ones originate alternately to suboppositely from the central one in some distance from the base. Morphologically, this leaf type is hardly to be distinguished from *D. cinnamomifolia*. It is a pragmatic view that such

leaves deriving from Miocene sediments are assigned to *D. polymorpha*. Smaller and more leathery leaves are regarded as sun leaves (*D. polymorpha* forma *bilinica*) while larger-sized, less leathery leaves may be regarded as shade leaves (*D. polymorpha* forma *polymorpha*). The abundance of such leaves decreases from the early to late Miocene plant assemblages in Central Europe. This trend parallels the overall vegetation change from more evergreen towards deciduous forests. Towards southern Europe, *D. polymorpha* persisted longer. Fruits formerly assigned to *Homalanthus costatus* MAI (Euphorbiaceae) were assigned to *Cinnamomum* (Pingen et al. 1994). From this latter study it was also inferred that the leaves from Kreuzau may be assigned to *Cinnamomum* Sect. *Camphora*.

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## 24 macroscopic leaf traits are stored in *Digiphyll*

#	trait code	trait: characters 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-3.2	leaf shape: obovate
6	A-3.3	leaf shape: ovate
7	A-4.1	leaf base angle: acute
8	A-5.1	leaf base shape: without basal extension
9	A-5.1.1	leaf base shape, without basal extension: cuneate (straight)
10	A-5.1.2	leaf base shape, without basal extension: rounded
11	A-5.1.4	leaf base shape, without basal extension: concavo-convex
12	A-6.1	leaf apex angle: acute
13	A-7.1	leaf apex shape: attenuate (straight)
14	A-7.2	leaf apex shape: acuminate
15	A-8.1	leaf margin: untoothed
16	B-1.2	primary vein framework: palmate
17	B-1.2.3	primary vein framework, palmate: acrodromous
18	B-1.2.3.2	primary vein framework, palmate, acrodromous: suprabasal acrodromous
19	B-2.3	secondary vein framework: 2° veins form loops and do not reach margin
20	B-2.3.1	secondary vein framework, 2° veins form loops and do not reach margin: brochidodromous
21	B-3.2	intramarginal vein: absent
22	B-4.2	intersecondaries: absent
23	B-5.1	tertiary vein framework: percurrent
24	B-5.2	tertiary vein framework: reticulate

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

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## ? microscopic leaf traits are stored in *Digiphyll*

coming soon

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## Fossil images

images not yet available

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## References

- **Ferguson D.K. (1971):** The Miocene flora of Kreuzau, Western Germany. – *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Natuurkunde*, 60(1): 1-297.
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- **Kovar-Eder J. & Hably L. (2006):** The Late Miocene flora of Mataschen, Styria (Austria), Early Pannonian). – *Acta Palaeobotanica*, 46/2: 157-233.
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- **Pingen M., Ferguson D.K. & Collinson M.E. (1994):** *Homalanthus costatus* Mai: A new Miocene fruit of *Cinnamomum* (Schaeffer) (Lauraceae). – *Palaeontographica*, Abt. B, 232: 155-174.

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