

SHORT COMMUNICATION

A description of *Gymnadenia densiflora* (Wahlenb.) A. Dietr. by Matthias de Lobel (1581)

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Key words

dune slack
Gymnadenia conopsea
herbal
wood cut

Abstract – A description and two woodcuts of an orchid in the herbal of Matthias de Lobel (1581) appear to represent *Gymnadenia densiflora*, whose status as an independent species has recently been confirmed by genetic analysis. The pictured specimens came from the dunes near The Hague, the Netherlands. Data on the past and present occurrence of *G. densiflora* in the Dutch dunes are briefly summarized. There are occasional mentions of abundant presence in some locations, but nowadays it has become very rare in these dunes.

Samenvatting – Een orchidee die in het 'Kruydtboeck' van Matthias de Lobel (1581) wordt beschreven en met twee houtsnedes afgebeeld, is te identificeren met Dichte muggenorchtis (*Gymnadenia densiflora*). Deze wordt tegenwoordig op grond van genetisch onderzoek erkend als zelfstandige soort naast Grote muggenorchtis (*G. conopsea*). De afgebeelde planten zijn afkomstig uit de duinen bij Den Haag. De soort kwam hier destijds veel voor en ook uit later tijd zijn er enige meldingen van talrijk optreden in bepaalde duingebieden. Vermoedelijk had dit optreden in grote aantallen echter een incidenteel karakter en was het van voorbijgaande aard. Hoewel de Dichte muggenorchtis verspreid over een groot deel van de Nederlandse kustduinen is aangetroffen, was hij aanzienlijk zeldzamer dan Moeraswespenorchtis (*Epipactis palustris*) en Vleeskleurige orchis (*Dactylorhiza incarnata*). Inmiddels is het voorkomen van Dichte muggenorchtis langs de kust vrijwel beperkt tot het Waddengebied.

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For a long time *Gymnadenia densiflora* (Wahlenb.) A. Dietr. was considered a variety or subspecies of *G. conopsea* (L.) R.Br. due to the strong morphological resemblance of both orchid taxa. However, Stark et al. (2011) showed that *G. densiflora* should be classified as an independent species, as it appears to be more closely related to *G. nigra* (L.) Rchb.f. and allied species that were formerly classified as a separate genus *Nigritella* Rich.

In spite of the apparent shallowness of the morphological differences between *G. densiflora* and *G. conopsea*, they relate to easily observable features. *Gymnadenia densiflora* has a strikingly compact inflorescence whose axis is largely hidden by the flowers. The scent of these flowers is described as 'an intensive pleasant smell reminiscent of carnation, lilac or cloves', far more agreeable than that of *G. conopsea* (Marhold

et al. 2005). The average width of the second lowermost leaf in *G. densiflora* is about twice that of *G. conopsea* (Marhold et al. 2005; see also Duistermaat 2020).

These characteristics allow the identification of the *Gymnadenia* species described by the Flemish botanist Matthias de Lobel (1538–1616), also known as Lobelius and as de l'Obel, in his 'Kruydtboeck', a herbal in the Dutch language of that time. It was published in 1581 and dedicated to Prince William of Orange, in whose service de Lobel acted as his personal physician. Among 16th century botanists, de Lobel stood out by his comparatively modern insight in systematics: he was the first to treat monocots as a separate group within vascular plants. Poaceae and Orchidaceae were families in which he showed a special interest (Weeda 2016). In contrast with this systematic interest, de Lobel's herbal shows a somewhat chaotic composition. Its

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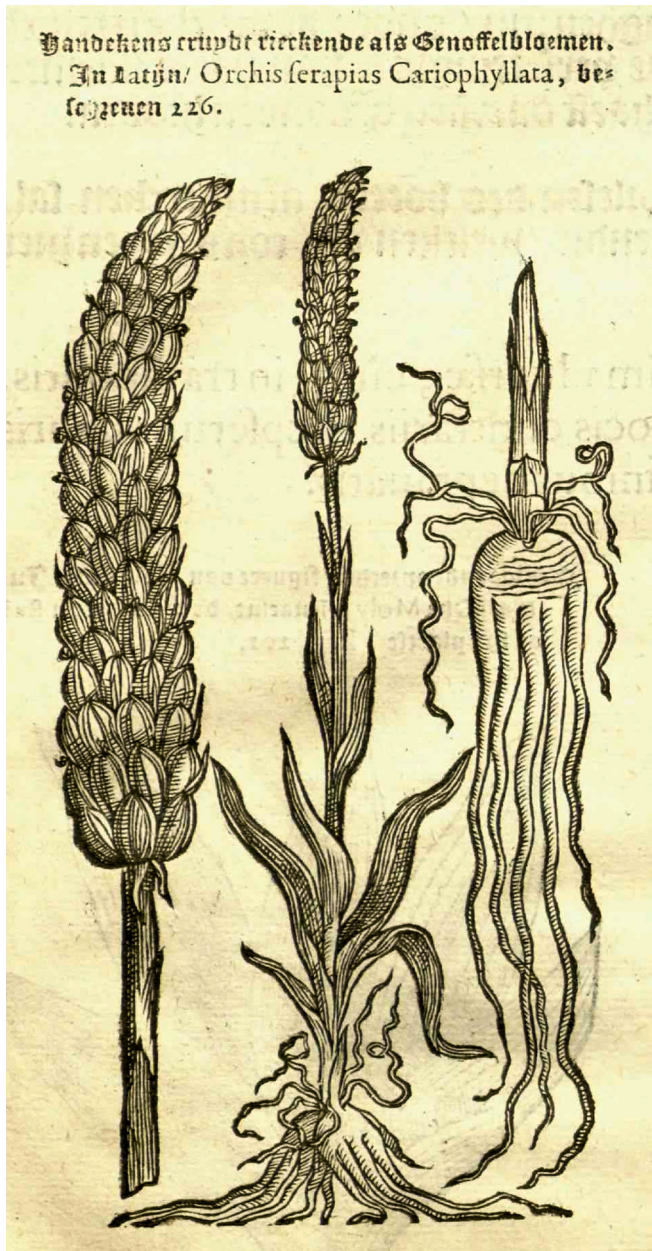


Fig. 1. Woodcut of a fruiting plant of *Gymnadenia densiflora* (Wahlenb.) A.Dietr. in de Lobel's herbal (1581, part II, p. 296).

main text (994 pp.) is followed by an second part, containing two appendices with independent paginations (312 + 15 pp.), a number of indices (unpaged) and finally three unnumbered pages filled with wood-cuts to avoid empty space.

Among the orchids mentioned in his herbal is 'Orchis Serapias Caryophyllata', which was said to be numerous in the dunes near The Hague, the Netherlands (de Lobel 1581, p. 226). The noun 'Serapias' in de Lobel's conception refers to orchids with handshaped tubers, such as *Dactylorhiza* species. The adjective 'Caryophyllata' alludes to carnation and clove, which share the pleasant flower smell of the orchid. According to de Lobel, its main flowering time is July and its inflorescence is described as a spike of light purple flowers closely crowded together and very sweetly smelling like carnation flowers. These features clearly point towards *G. densiflora*.

De Lobel had a widespread network of correspondents at his disposal. The orchid under discussion was observed in the dunes

near The Hague by the nobleman Wenceslaus 't Serclaes, an ally of William of Orange (van Harderwijk & Schotel 1874). When de Lobel wrote his description, he was still waiting for living plants suited for making woodcuts. In the second part of his herbal (de Lobel 1581, part II, p. 296) a picture of fruiting specimens is inserted (Fig. 1). Due to the imbricate arrangement of the fruits, the axis of the spike is completely hidden. A flowering plant is portrayed in the unnumbered pages at the very end of the second part of the herbal (Fig. 2). In both woodcuts, the spike is shown as half as long as the flowerless part of the stem, whose length is described as a hand's breadth (20 cm), so that the depicted plants were about 30 cm tall. De Lobel's description was quoted (without the woodcuts) in additional notes in the posthumously edited herbal of Dodoens (1608), which became more widely used than de Lobel's herbal.



Fig. 2. Woodcut of a flowering plant of *Gymnadenia densiflora* (Wahlenb.) A.Dietr. in de Lobel's herbal (1581, unnumbered page at the end of part II).

Judging from the collections in Naturalis Biodiversity Center (Leyden, the Netherlands), most or all records of *Gymnadenia conopsea* from the Dutch dunes relate to *G. densiflora*. They were distinguished as *G. conopsea* var. *friesica* Schlecht. by Vermeulen (1958). According to Vermeulen and Westhoff & van Oosten (1991) it has an optimum at the edge of moderately moist dune slacks subject to some calcareous sand spray.

In the past, *Gymnadenia densiflora* was rather widespread along the Dutch North Sea coast, although it was definitely rarer than *Dactylorhiza incarnata* (L.) Soó and *Epipactis palustris* (L.) Crantz (Holkema 1870; Mennema et al. 1985; Vermeulen 1958; Vuyck 1916). Locally *G. densiflora* could be numerous, as was already stated by de Lobel (1581) for the dunes near The Hague. Two centuries later, de Gorter (1781) reported a site near Raaphorst (inner dune area near Wassenaar, 10 km northeast of The Hague) as a location where the species was rather abundant and, furthermore, mentioned dune slacks as its habitat. Other reports of numerous occurrences in dune slacks refer to the outer dunes northwest of Haarlem (van Eeden 1866) and the Dutch Wadden Islands of Schiermonnikoog (Holkema 1870), Texel (Hoogenraad & De Visser Smits 1903), and Terschelling (Jongens 1927). Presumably this abundance had a temporary character due to the dynamic character of dune habitats. An example of this is reported by Sipkes (1917) from a dune slack near Bergen (west of Alkmaar). After a dry summer, *Gymnadenia* showed a sudden increase from 20 to 100 visible plants in the lower part of this valley, followed by a steady decline.

Meanwhile *Gymnadenia densiflora* has vanished from the mainland dunes between Den Helder and Hook of Holland, where rewetting has not led to its re-establishment so far. In the dunes near The Hague and Wassenaar it has not even been recorded for more than a century. At present its coastal occurrence in The Netherlands is almost confined to the Wadden Sea area (NDFF & FLORON 2025).

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