

## The status of *Bupleurum falcatum* L. (Apiaceae) in the British flora

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### ABSTRACT

The umbellifer *Bupleurum falcatum* L. has only been recorded from one locality in the British Isles and its status as a native in the modern British flora is uncertain. Recent analyses of fossiliferous Pleistocene temperate stage sediments from two English sites have yielded mericarps of *B. falcatum* subsp. *falcatum*. These finds show that this taxon was once naturally occurring on the British mainland and had a more northerly range than at present. It is difficult to determine whether the one extant British population has a native status as a result of natural dispersal from the continent during the Flandrian Stage, is a relic of a Late Pleistocene temperate stage population that survived in Britain during the last cold stage (Devensian), or alternatively has an alien status with a relatively recent introduction by human activity. Its occurrence in the Late Pleistocene fossil record may support the opinion that the extant population is native.

KEYWORDS: Fossil record, native status, Pleistocene, Umbelliferae, Sick-leaved Hare's-Ear.

### INTRODUCTION

The first British record of *Bupleurum falcatum* L. (Apiaceae) was made by Thomas Corder in 1831. He described the plant as being abundant on either side of the turnpike between Chelmsford and Ongar, Essex (Corder 1833). A number of authorities have debated whether or not this population is indigenous to the British Isles. Gibson (1862) said it "appears truly indigenous", whilst Jermyn (1974) and Tutin (1980) have expressed reservations about its native status. In 1962 hedgerow clearance and ditch cleaning destroyed the population in southern Essex (Jermyn 1974), but Stace (1991) says it reappeared in 1979.

Palaeobotanical investigations of fossiliferous organic sediments from two gravel-pits at Frog Hall, Warwickshire (SP/413.734) and Somersham, Cambridgeshire (TL/373.799) yielded mericarps of *B. falcatum* subsp. *falcatum*. These finds show that this taxon was once naturally occurring in Britain and add to the discussion about the status of this taxon in the British flora.

The macroscopic remains of *B. falcatum* subsp. *falcatum* came from assemblages that were dominated by waterside, damp ground and aquatic taxa. It is probable that deposition at both sites took place in a low energy, fluvial environment or in a pond on a floodplain. The taxa represented in both assemblages show that contemporary conditions were temperate and were probably similar to those in southern Britain today.

The age of the temperate stage deposits at Frog Hall is controversial. The deposits stratigraphically overlie the nearby type section of the cold Wolstonian Stage at Wolston. If the accepted British stratigraphical sequence is applied (Mitchell *et al.* 1973) then these deposits are last interglacial (Ipswichian) in age. However, the age of the Wolston cold stage sediments has been disputed (Sumbler 1983). The Somersham deposits which yielded the mericarps of *B. falcatum* subsp. *falcatum* have been correlated with Ipswichian pollen zone II (R. G. West, pers. comm. 1993).

## THE FOSSIL SPECIMEN

The best preserved mericarp was recovered from Frog Hall, but three flattened and less well preserved mericarps were found at Somersham (R. G. West, pers. comm. 1993). It is possible to determine the fossil specimen to subspecies level because the two recognised subspecies are distinguished by the characteristics of the fruits (Tutin 1968). *B. falcatum* subsp. *cernuum* (Ten.) Arcangeli can be identified by its relatively large fruits (c. 5 mm in length) which have winged ridges running longitudinally. *B. falcatum* subsp. *falcatum* has a smaller fruit (c. 3 mm in length) and the longitudinal ridges are usually not winged. Despite the variability of this species, noted by Tutin (1968), there is no problem in the placement of the fossil specimens into the latter subspecies. Tutin (1980) states that the modern British population belongs to subsp. *falcatum* also.

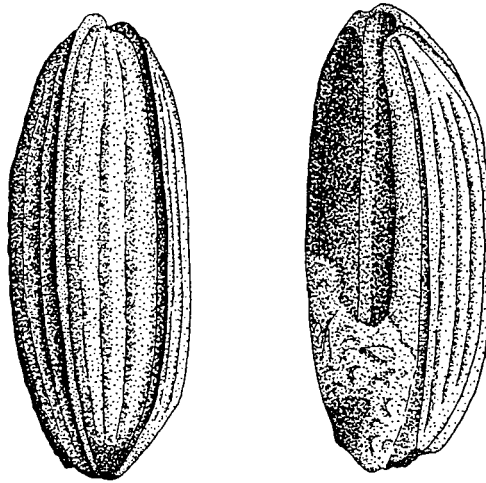
The fossil mericarp from Frog Hall is 2.9 mm long and has a maximum width of 1.1 mm (Fig. 1). There are five prominent, slender, longitudinal ridges which are not winged. It is difficult to say whether these ridges were winged or not, as delicate features are not always preserved. The commissure is relatively broad and has a fairly deep longitudinal groove.

## DISCUSSION

The occurrence of *B. falcatum* subsp. *falcatum* in British Pleistocene deposits is of botanical interest because today this plant only occurs in one locality in the British Isles and the native status of this population has been questioned. Both the fossil records are found north of the present day occurrence at North Heath, Essex and show that this taxon was naturally occurring on the British mainland in the Late Pleistocene.

There are three possible origins of the extant British population: it may be a remnant of a Late Pleistocene temperate stage population, it may have been naturally dispersed from the continent, or it may have been introduced by human activity.

If the modern population is a remnant of a Late Pleistocene temperate stage population it must



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1 mm

FIGURE 1. The mericarp of *Bupleurum falcatum* subsp. *falcatum* recovered from Pleistocene sediments collected from Frog Hall, Warwickshire.

have survived the glacial and periglacial conditions that prevailed during the Devensian Stage. If this taxon was absent from the British mainland in the Devensian and Early Flandrian then it may have been transported to southern England by natural dispersal from the continent. Alternatively, the modern population may have an alien status with a relatively recent introduction by human activity. Jermyn (1974) did speculate that fruits may have been transported to Essex by soldiers who were returning from the Napoleonic wars. On the continent the modern distribution of this taxon extends north-westwards along stretches of the French coastline (Fitter 1978). The Dover Strait and the English Channel appear to have acted as an effective barrier to a more extensive colonisation of Britain by this taxon from continental populations in the Flandrian Stage.

The lack of knowledge about the distribution and behaviour of *B. falcatum* subsp. *falcatum* in the Late Pleistocene, due to its poor representation in the fossil record, makes it difficult to determine the precise time and mode of arrival in England. However, the occurrence of *B. falcatum* subsp. *falcatum* in the Late Pleistocene fossil record adds support to the opinion that the extant population is native.

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