

"PLANTAGO INTERMEDIA" IN BRITAIN ?

By J. E. LOUSLEY

In a recent paper Prof. W. Brockhaus has drawn attention to an interesting plant which he has studied on the shores of a series of dams in Westphalia (Brockhaus, 1957). This has been referred to *P. intermedia* Gilib., and he states that it can be distinguished from *P. major* by the following characters:—

	<i>P. intermedia</i>	<i>P. major</i>
Plant	small to medium size (it can attain the size of <i>P. major</i>).	usually larger.
Leaves	usually 3-5 (6-7) nerved, distantly sinuate toothed at the base, the teeth frequently pointed, sometimes lacking.	5-9 nerved, rarely toothed.
Scapes	prostrate, or ascending in a curve from a prostrate base.	oblique to erect-ascending or ascending from a curved base.
Leaves and scapes	usually hairy below, often suffused with violet.	usually glabrous.
Inflorescence	usually short-cylindrical, usually 3-5 cm. long.	slender, usually much longer.
Capsules	larger and thicker than in <i>P. major</i> , outline of the lid usually covered by the calyx.	outline of the lid usually clearly visible, not covered by the calyx (capsule must be ripe).
Seeds	numerous, 21.4 (18-19) per capsule. Extreme values: 15 and 24. Length: 1.03 (1.109) mm. Surface: as in <i>P. major</i> .	less numerous, 6.56 (7.79) per capsule. Extreme values: 2 and 14. Length: 1.7 (1.52) mm.

Although small forms of *P. major* (subsp. *eu-major* Pilger) superficially resemble the plant under consideration, Brockhaus says that it is only with a few individuals that he is left in doubt about the identification. The ascending scape from a prostrate base, the short cylindrical inflorescences of the usually smaller plant, and the larger number of seeds per capsule are the easiest characters by which it can be distinguished from *P. major*. It is often possible to see without the use of a lens whether the capsule contains about 20 (*P. intermedia*) or about 7 (*P. major*) seeds.

His interest in this plantain arose from studies in plant-sociology—he includes it in Class *Isoetetalia*, Order *Nanocyperion flavescens* W. Koch, 1926 near *Gnaphalium uliginosum*, *Hypericum humifusum*, *Peplis portula*, *Limosella aquatica*, *Riccia glauca*, etc. (It is similarly classified for Holland by Westhoff, van Dijk & Passchier, 1942, p. 21.) Brockhaus finds it on the shores of dams in an area of (acid) slate hills, growing on wet loamy-sand or muddy soils exposed by falls in water level. As an example of the associated species he gives the following from the shallow shore of the Möhne dam near Körbecke:

<i>Juncus filiformis</i>	3.3	<i>Polygonum hydropiper</i>	+ .1
<i>Plantago intermedia</i>	2.2	<i>Mentha arvensis</i>	+ .2
<i>Ranunculus repens</i>	3.4	<i>Ranunculus aquatilis</i>	1.2
<i>Alopecurus geniculatus</i>	+ .2		

Brockhaus draws attention to work published by Walo Koch in 1928, and quotes evidence that the latter found no reason subsequently to change his view that *P. intermedia* is a distinct species. He applied a detailed statistical analysis to the characters selected, including especially seed number and size, and found that his results conformed to a Galton curve. Koch, like Brockhaus, found that his *P. intermedia* was a calcifuge, but the characteristic habitat in Switzerland was loamy-sandy corn-fields, mainly on alluvial soils, where it grew in an association of *Centunculeto-Anthoceretum* of which characteristic species included *Sagina apetala*, *S. ciliata*, *Hypericum humifusum*, *Anagallis minima* (*Centunculus minimus*), *Gnaphalium uliginosum*, etc.

In 1952, when on a visit to England, Prof. Brockhaus examined specimens in my herbarium, and recognized material which I collected from a pool on Denge Beach, E. Kent, v.c. 15, on August 16, 1936, as the plant which he had been studying in Germany. This I remembered gathering from shingle exposed by a fall in the level in the water of the pool and growing in very open vegetation. I saw it there again in 1955. Most of the characters given in the above table apply, but my attention was first drawn to the plant by the thin texture of the leaves with their very prominent three nerves. Specimens of this gathering are also at Kew.

Specimens resembling those from Dungeness have been collected from gravel pits and the banks of reservoirs and lakes in various parts of Britain. At the British Museum (Natural History) there is material from Windermere, Westmorland, v.c. 69; sand-hills between Lytham and St. Annes, W. Lancs., v.c. 60; Witley, Surrey, v.c. 17; and Rudyard Reservoir, Staffs., v.c. 39; at Kew from Cropstone Reservoir, Leics., v.c. 55. It seems that in a restricted type of habitat there is a plant which may be recognizable on critical morphological characters which deserves careful investigation. It should be grown from seed and from ramets on a range of different soils under various moisture conditions, and the characters tested by scoring herbarium, cultivated and field plants. If the taxon proves tenable, it possibly will be found to include plants which occasionally occur in wet arable fields under conditions similar to those described by Walo Koch for Switzerland.

The name *Plantago intermedia* Gilib. has been applied on many earlier occasions to British plants but most authors have included material which on Prof. Brockhaus' interpretation would be treated as small forms of *P. major* L. The combination *P. major* var. *intermedia* (Gilibert) is often cited as of Syme, but Syme, in *English Botany*, 1867, bases his name on Decaisne and had in mind a plant of dry places, though some of his characters agree. F. N. Williams in his *Prodromus Florae Britannicae* (1909) came near to the modern interpretation of *P. intermedia* but included some of the lake shore plants in *P. uliginosa* F. W. Schmidt. F. A. Lees (1883) was confused and Salmon (1931) gave an unsatisfactory description. Babington (1881) gives brief characters for "*P. intermedia* (Lilib.)" and says "is probably distinct".

Until the characters have been tested and the taxonomy worked out, it is useless to consider questions of nomenclature, but it seems advisable to point out that Gilibert's name may not be the correct one. His description is accompanied by an illustration showing a plant with sharp serrations extending to the apex of the leaves, very unlike those drawn by Prof. Brockhaus, or exhibited in specimens at Kew collected by Jordan from Perrache, Lyons, the type locality. There are a number of other names which will need to be reviewed.

The work of Marsden-Jones and Turrill (Turrill, 1948) has demonstrated that *P. major* is an extremely plastic species and great caution is necessary in dealing with the group to which it belongs. The purpose of this short paper is to draw attention to a possible segregate which, according to Prof. Brockhaus, is differentiated on morphological and ecological characters, in the hope that someone will take up the study of a plant which has puzzled British botanists for nearly a century.

REFERENCES

- BABINGTON, C. C., 1881, *Manual of British Botany*, ed. 8, 297. London.
- BROCKHAUS, W., 1957, Wenigblütiger Wegerich (*Plantago intermedia* Gilibert) im Sauerlande, *Natur. & Heimat*, **17**, Heft 2.
- GILIBERT, J. E., 1806, *Histoire des plantes d'Europe ou Éléments de botanique pratique*, ed. 2, **1**, 125-126. Lyon.
- KOCH, WALO, 1926, *Die Vegetationseinheiten der Linthebene*. Zurich.
- , 1928, *Plantago intermedia* Gilibert eine in der Neuzeit verkannte Art, *Ber. Schweiz. Bot. Ges.*, **37**, 45-61, 66.
- LEES, F. A., 1883, *Rep. Botanical Record Club*, **2**, 225-226.
- MOTT, F. T., *Rep. Bot. Exchange Club*, **1**, 492-493, 1897.
- SALMON, C. E., 1931, *Flora of Surrey*, 541-542. London.
- SYME, J. T., 1867, *English Botany*, **7**, 167-168. London.
- TURRILL, W. B., 1948, *British Plant Life*, 128-129. London.
- WESTHOFF, V., VAN DIJK, IR. J. W. & PASSCHIER, H., 1942, *Ovezicht der Plantengemeenschappen in Nederland*, 21's Graveland.
- WILLIAMS, F. N., 1909, *Prodromus Florae Britannicae*, **1**, 354-356. Brentford.