

## COLLECTIONS CORNER

### USEFUL MARINE MONOCOTS—MORE COLLECTIONS THAN DATA?

While plant taxonomists have for centuries gathered and maintained tens of millions of herbarium specimens to support their work, economic botanists have no such comprehensive resources on which to rely. Instead, they may have to look elsewhere for collections or, from scratch, build up their own. The point is well illustrated with respect to a very discrete set of the plant kingdom—useful, marine monocotyledons.

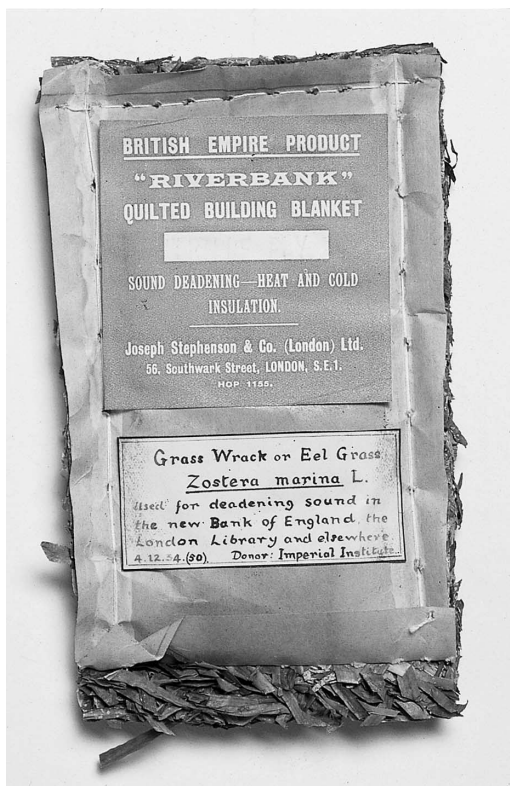
There are 12 genera that are entirely marine (den Hartog 1970): five in the Zannichelliaceae (*Amphibolis*, *Cymodocea*, *Halodule*, *Syringodium*, *Thalassodendron*), three in the Zosteraceae (*Heterozostera*, *Phyllospadix*, *Zostera*) and Hydrocharitaceae (*Enhalus*, *Halophila*, *Thalassia*), and one in the monogeneric family Posidoniaceae (family placement follows Brummitt 1992).

Aside from its ecological importance in temperate coastal ecosystems, for example as a primary food for many species of wildfowl, perhaps the best known genus economically is *Zostera*. In North America, traditional cultures variously ate the leaves, rhizomes and stems of *Z. marina* (Moerman 1998), while the Seri of the Gulf of California provide the only known case of eating, from the same species, the seeds of any marine plant (Felger and Moser 1973).

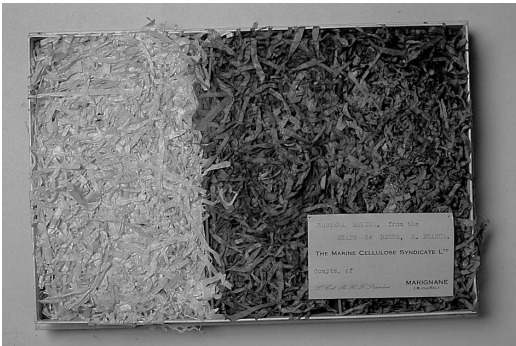
On the Danish island of Laesø Lockley (1952) described a farmhouse thatched with up to six feet (1.8 m) of *Z. marina* that had been in place for 200 years. He quoted that “It used to be thrown up each autumn in tremendous quantities . . . It was partly dried and laid on roofs for thatch, or was used to stuff beds, sofas and chairs. It also made good feed for cattle and litter for the byre” (byre = cow barn). Similar availability, and adaptation of its insulating qualities for buildings, also led to commercial harvesting of the same species, first from the coasts of New England, USA, then, from 1907 to the early 1960s (and peaking in the late 1920s), from those of Nova Scotia, Canada (Wyllie-Echeverria and Cox 1999). Leaves were gathered from the tidal flats and sold to two companies for processing into quilts with much-ex-

tended sound deadening and heat insulating qualities.

No example of a manufactured product was shown by these authors, but Fig. 1 illustrates an example made by a third company. Donated to Kew in 1934, it lacks any data on the provenance of the *Z. marina* it contains other than it was a product of the British Empire—which, of course, included Britain too. There is, however, no evidence of *Z. marina* being collected and processed as insulation material in the U.K. even though the species is locally abundant. Edlin (1951), for example, in an authoritative, albeit popular, account of the uses of British plants,



**Fig. 1.** Quilted building blanket made of *Zostera marina* leaves, a ‘Riverbank’ British Empire Product, sold by J. Stephenson & Co. Ltd., London, 1934 (EBC 34441). Accompanying notes state that it was “Used for deadening sound in the new London Library and elsewhere”. (A. McRobb, RBG Kew.)



**Fig. 2.** Leaves of *Z. marina*, donated by the Marine Cellulose Syndicate Ltd, Marignane, France, 1927 (EBC 34448). (A. McRobb, RBG Kew.)



**Fig. 4.** Fibre made from *Posidonia australis* (known locally as gerrieweed), South Australia, 1910 (EBC 34469). (A. McRobb, RBG Kew.)

made no reference to *Zostera* as insulation material and Tutin (1942) inferred that collection for this purpose took place only in other countries. Whatever its geographical origin (perhaps Nova Scotia?), the existence of a sample of a quilted building blanket (as it is described) makes it possible for any sceptic, scientist or potential entrepreneur to test those insulating qualities of *Zostera* that have been exploited in both traditional and industrial contexts. A collection (Fig. 2) of *Z. marina* from southern France, labelled Marine Cellulose Syndicate Ltd, hints at another potential use perhaps unrecorded in readily accessible literature.

About the main uses of the genus *Posidonia*, the existence of collections supplements the very scant economic literature (e.g. Klumpp and Vandervalk 1984). Balls of their fibres (Fig. 3) are a common sight on the shores of the Mediterranean and Australia, and “enormous quantities”

of washed up leaf material were illustrated by den Hartog (1970). Once their source was identified (ca. 1906; see Anon. 1907), the commercial potential of fibres of *P. australis* aroused much interest. In 1910, for example, Marine Fibres and Yarns Limited aimed to control “large concessions for Marine Fibre deposits granted by the Government of South Australia.” These deposits were nine feet (2.7 m) deep, extended over an area of 128 sq. miles (332 sq. km), and could support an annual harvest of 20,000 tons (20,320 t). Tests, claimed the company prospectus, showed the suitability of the fibre (Fig. 4) for the cloth and upholstery trades, but an internal Kew memorandum records the demise of the company by 1914. Unlike with *Zostera*, harvesting was due to be done by dredging from the sea bottom rather than collecting from the shore. Problems with the fibre—it being “weak, brittle and harsh to the touch”—reduced its val-



**Fig. 3.** Stems and balls of fibre of *Posidonia oceanica*, Cannes, France, 1866 (EBC 34462). The largest ball is ca. 5.5 cm across. (A. McRobb, RBG Kew.)



**Fig. 5.** ‘Semi prepared’ bed stuffing made of *Posidonia oceanica* leaves, Sicily, Italy, 1906 (EBC 34465). (A. McRobb, RBG Kew.)



**Fig. 6.** Brushes made from rhizomes of *Amphibolis antarctica*, Western Australia, 1902 (EBC 34477). (A. McRobb, RBG Kew.)

ue for textiles (Posidoniaceae box files, Economic Botany Library, RBG Kew), and there was in time just limited use of *Posidonia* as insulation material (Anon. 1917).

Of commercial activity surrounding a Mediterranean species there is little easily accessible literature, few data, and just three—simultaneous—collections of leaf material (Fig. 5) at Kew. These collections of *P. oceanica* (then *P. caulini*) came from Crinellino, near Catania, Sicily, where a factory employing 50 was founded in 1905 to make mattress bed stuffing from (Anon. 1906). What happened to the enterprise is not known, and neither has any record been found of any exploitation of the fibre as with *P. australis*. The use of *P. oceanica* to stuff mattresses recalls that of *Z. marina* in Denmark (Lockley 1951) but only *Z. marina* has the flea-repellent reputation for which it has been recorded in Shetland, Scotland (Vickery 1997)!

Economically the most obscure genus highlighted here is *Amphibolis*. No literature has been found on any economic application at all, but the possession of strong fibres by rhizomes of *A. antarctica* is shown by bundles as brushes (Fig. 6). What further use can be made of this

information, perhaps unobtainable otherwise, one time will tell.

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