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Conserving Lightfoot's Algae

Presentation given by Jenny Bryant (Curator of Algae, Natural History Museum, London) on 17th November 2005 to the NatSCA Botany Collections Seminar.

Flora Scotica (1777) by the Reverend John Lightfoot was the first flora of northern Britain in which Linnaean binomials were used; eighteen of these were newly published algal names (Dixon, 1983). In 1791 Lightfoot's collection was in the possession of Queen Charlotte (wife of George III) and was already in poor condition when examined by Samuel Goodenough. He suggested that it needed specialist care (*l.c.*). Subsequently, the collection was moved to Saffron Walden Museum, thence to RBG, Kew (K). However, the algal specimens remained at Saffron Walden, to be rediscovered in an attic (in poor conservation conditions) in 1958 (Dixon, 1959). From there they were first transferred to K and then to BM.

In 2003 the collection (of approximately 600 specimens) was the only major historic item remaining in the backlog of the BM algae section and a start was made to incorporate it. The state of the original specimens and paperwork was found to be poor and extremely fragile. Preliminary examination showed that many brittle specimens would deteriorate substantially if they were handled. They bore the original binomials, as no updating of nomenclature or re-identification had been attempted.

Emma Ruffle, then one of the BM team of herbarium technicians, was consulted and we agreed protocols for the consolidation and mounting of the material. Emma was chosen for her expertise in paper conservation, proven carefulness and attention to detail. She used her conservation skills and dexterity to stabilize the specimens and render them sufficiently safe for the further handling necessary during nomenclatural update and data entry.

The specimens were first taken out of the 18th century paper covers; annotations on the covers were removed and kept with the specimens. Some of the specimens were so delicate or fragmented that they had to be put into folds of Japanese tissue before they could be put into herbarium packets. Bespoke packets, prepared from archival paper, were made for the large specimens. No specimens were put in the press and all were encapsulated using the original or archival paper. Labels were repaired using Japanese tissue and some were held in Melinex sleeves when either too fragile to mount or with annotation on both sides. The main conservation aim was to minimize future handling of the fragile material.

During the conservation and incorporation of the collection the BM curator found some previously unrecognised Type specimens and two of the earliest named algal records for the Greater London area. An interesting development on the day of the workshop was that the conference delegates from Plymouth Museum recognized some of the writing on the Lightfoot material as being the same as for collections in their charge (probably that of Samuel Goodenough).

References

Dixon, P. S. 1959. Notes on two important algal herbaria. *Br. Phycol. Bull.* 1: 35-42.
Dixon, P. S. 1983. The algae of Lightfoot's Flora scotica. *Bull. Br. Mus. Nat. Hist. (Bot.)* 11: 1-15.
Lightfoot, J. 1777. *Flora scotica*, vols 1 & 2. London.

Self-destruct acidification in carrageenophyte algae

During the 1980's and 1990's marine algae specimens in the BM herbarium were found to be suffering acidification. This self-destruct process is caused by spontaneous hydrolysis of sulphate half-ester groups associated with carrageenan, a commercially important algal product (see Nelson and Falshaw in Taxon, vol. 48, 1999). The deterioration has no known trigger and if the acidification remains unchecked it destroys the specimen and the sheets filed above and below. Physical removal of the affected parts, which become blackened and sticky, and re-mounting can halt the process, but not in all cases. In order to monitor this problem photocopies are made before and after remedial curation and a regular check of the affected carrageen containing genera is carried out. The phenomenon is a worldwide problem in herbaria and was *not* noted prior to the 1980's.