



The distribution of different types of *Sphagnum* peat: a comparison between different mires

Tapio Toivonen, Onerva Valo and Samu Valpola

Geological Survey of Finland, P.O. Box 97, FI-67101 Kokkola, Finland
Phone: +358 20 550 11, e-mail: tapio.toivonen@gtk.fi, onerva.valo@gtk.fi, samu.valpola@gtk.fi

Summary

Different types of poorly humified *Sphagnum* peat – *Acutifolia* (A), *Palustris* (P) and *Cuspidata* (Q) – can be identified in field studies. These subtypes differ in quality and properties, and they can be used for different purposes. In this study, three bogs from different parts of the raised bog area in Finland are presented with maps and cross-section profiles. They show the gradual shift in the *Sphagnum* subtype composition towards the northern parts of the study area.

Key index words: horticultural peat, peatlands, raised bogs, *Sphagnum*, Finland

Introduction

Peatlands cover about ten million hectares of Finland, which is approximately one third of the country's area. The Geological Survey of Finland (GTK) studies geological peatlands, i.e. mires of over 20 ha in area, with over 0.3 m thick peat layer. Geological mires cover about 5.1 million ha, and they contain about 69 billion m³ peat, of which 9.7 billion m³ is poorly humified (H1–3) *Sphagnum* peat. In the raised bog area, the proportion of *Sphagnum* peat is greatest.

So far, GTK has investigated 1.9 million ha of the 5.1 million ha geological peatland area in Finland. GTK's overall peat data contains information from about 14 000 single mire basins (Virtanen *et al.*, 2003).

In GTK's studies, different types of poorly humified (H1–3) *Sphagnum* peat, *Acutifolia* (A), *Palustris* (P) and *Cuspidata* (Q), have been recognized since 1991. Bogs can be sorted for different purposes according to the proportion of each *Sphagnum* subtype. In horticultural and environmental peat industry, desirable qualities are durable structure and good capacity of holding water and nutrients. These requirements are best met with the *Acutifolia* type mosses and least satisfactorily with the *Cuspidata* mosses.

Materials and methods

The material of this poster is a selection of three bogs belonging to the study material introduced in the oral presentation by the same authors (on the distribution of different types of *Sphagnum* peat in southern and western Finland). These bogs represent different cases in the study and come from different parts of the study area. The aspects of interest are demonstrated with maps and cross-section profiles of the bogs. The research areas are shown in the map (Fig. 1).

Results

The studies reveal that there are few *Acutifolia*-dominant bogs, and they are most commonly situated in the concentric and plateau bog area. The remains of *Cuspidata*-



Figure 1. Mire zones of Finland and the locations of the example bogs.

type mosses prevail in Finnish raised bogs, and the remains of *Palustris* mosses are least frequent.

The three bogs shown as examples are situated in different parts of the raised bog area. There are two profiles from the core line drawn across each bog, one demonstrating the humification (decomposition) of the peat, the other showing the peat components. In the humification profile, the peat is divided into three classes: poorly humified (H1–3) surface



peat, the intermediate H4 peat and well humified (H5–10) peat layer. In the peat component profile, the *Acutifolia*-, *Cuspidata*- and *Palustria*-dominated peats are shown with different colours. The *Acutifolia* peat is found most commonly in the coastal concentric and plateau bogs while the *Cuspidata* peat becomes more common in the eccentric bogs and dominates the aapamire area.

The Stormossen bog in Porvoo represents coastal plateau bogs. The bog has over 2 m thick layer of poorly humified (H1–3) surface peat layer, of which 75% is composed of *Acutifolia* peat component, 21% of *Cuspidata*

component and 0% of *Palustria* component. The remaining 4% is composed of unspecified *Sphagnum* peat, 1%, and cottongrass fibres, 3% (Toivonen, 2001).

The Rösmosa bog in Merikarvia represents an intermediate form between concentric and eccentric bogs in the west coast. This bog also has over 2 m thick layer of poorly humified (H1–3) surface peat layer, of which 80% is composed of *Acutifolia* peat component, 16% of *Cuspidata* component and 2% of *Palustria* component. The remaining 2% is composed of unspecified *Sphagnum* peat, 1%, and cottongrass fibres, 1% (Toivonen and Suomi, 2005).

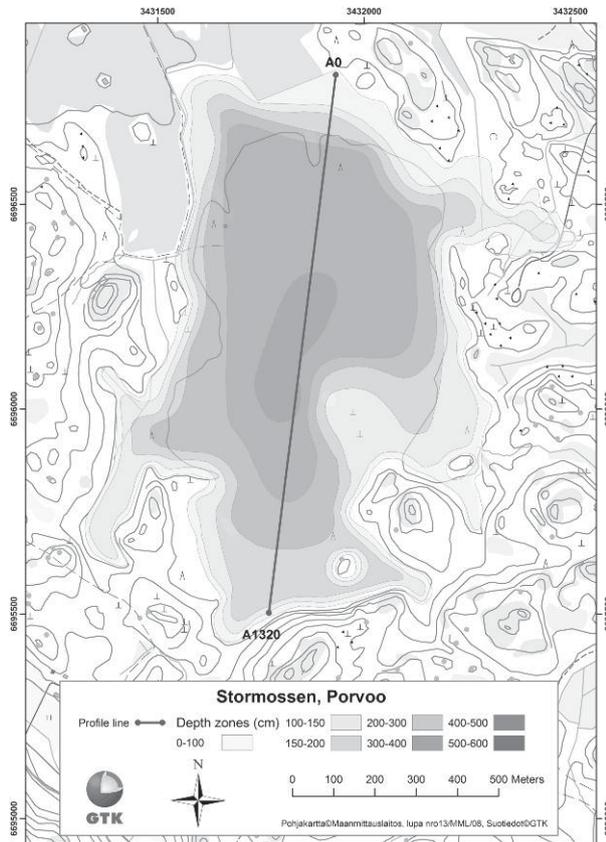


Figure 2. The map of the Stormossen bog.

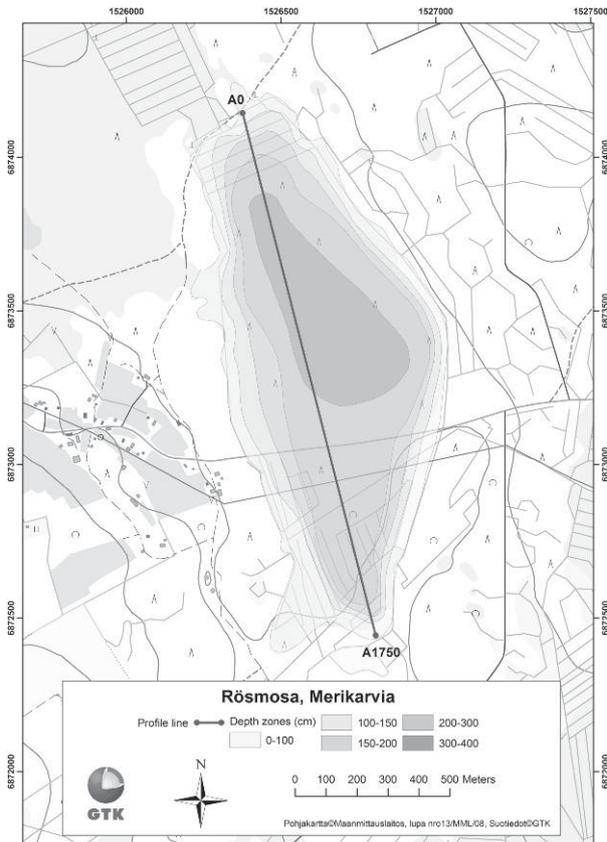


Figure 4. The map of the Rösmosa bog.

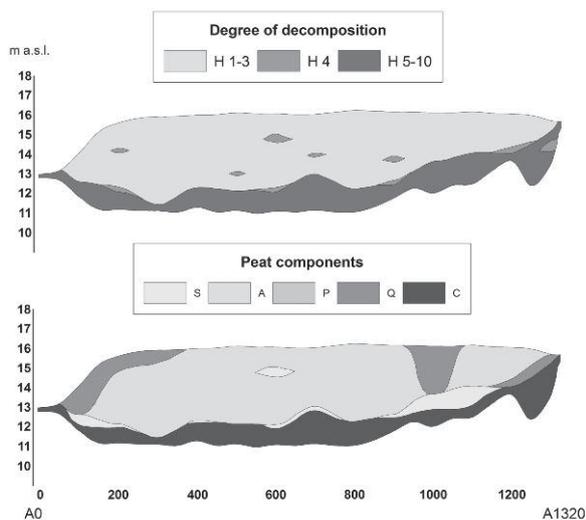


Figure 3. Profiles representing the humification and peat components in the Stormossen bog.

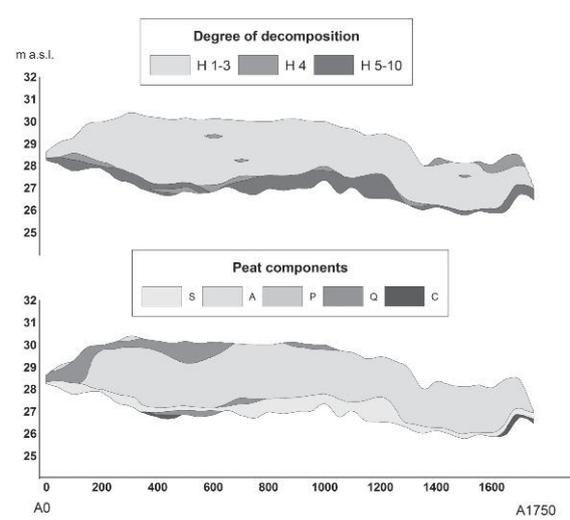


Figure 5. Profiles representing the humification and peat components in the Rösmosa bog.

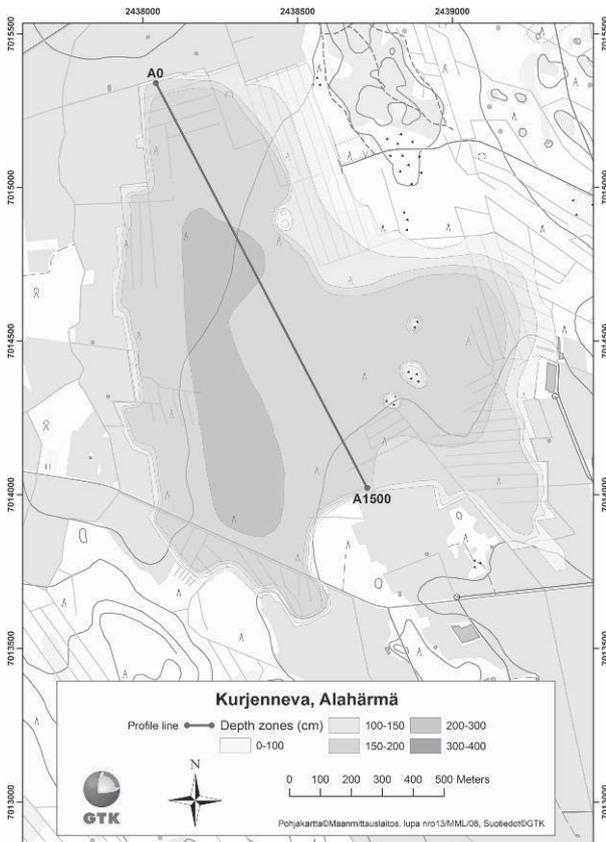


Figure 6. The map of the Kurjenneva bog.

The Kurjenneva bog in Alahärmä is situated in the eccentric bog area. The bog has over 1 m thick layer of poorly humified (H1–3) surface peat layer, of which 57% is composed of *Cuspidata* peat component, 26% of *Acutifolia* component and 9% of *Palustris* component. The remaining 8% is composed of unspecified *Sphagnum* peat, 2%, and cottongrass fibres, 6% (Toivonen and Valo, 2008).

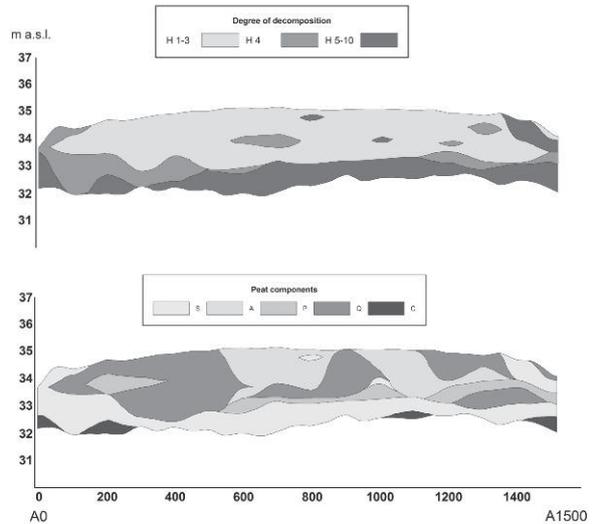


Figure 7. Profiles representing the humification and peat components in the Kurjenneva bog.

References

- Toivonen, T. (2001). *Porvoossa tutkitut suot ja niiden turvevarat* (English abstract: the mires and peat reserves of Porvoo). Geologian tutkimuskeskus, Turvetutkimusraportti **334**, 29pp.
- Toivonen, T. and Suomi, T. (2005). *Merikarviällä tutkitut suot ja niiden turvevarat* (English abstract: the peatlands and peat reserves of Merikarvia, Western Finland). Geologian tutkimuskeskus, Turvetutkimusraportti **364**, 48pp.
- Toivonen, T. and Valo, O. (2007). *Alahärmässä tutkitut suot ja niiden turvevarat* (English abstract: the peatlands peat reserves of Alahärmä, Western Finland). Geologian tutkimuskeskus, Turvetutkimusraportti **380**, 68pp.
- Virtanen, K., Hänninen, P., Kallinen R.-L., Vartiainen, S., Herranen, T. and Jokisaari, R. (2003). *Suomen turvevarat 2000* (English abstract: the Peat Reserves of Finland in 2000). Geologian tutkimuskeskus, Tutkimusraportti **156**, 101pp.