Net primary production (NPP) of each of the three dominant Sphagna spp. is the product of linear growth of stems (cm yr-1) and stem mass density (SMD), with SMD defined as the mass of 1-cm lengths of Sphagnum stems beneath the capitula per m2. We measured linear growth using the cranked wire method (Clymo 1970). We set 30 cranked wires in each of the 21 study plots, The poor fen plots had a mixture of Sphagnum fuscum, S. magellanicum, and S. angustifolium; the 30 wires were placed according to species representation within each plot, with wires divided between one, two, or all three species. Each year, from 2011 through 2015, we set cranked wires and remeasured them in late September or early October. To measure SMD, we collected surface monoculture cores (6.5 cm diam.) of each of the three Sphagnum spp. in each plot between July 7th and 10th of each year. From each core, we removed and counted all capitula to determine moss plant density (individual plants m-2). We separated 70 stems of Sphagnum spp., and 40 stems of S. angustifolium, and 40 stems of S. magellanicum to a length of 2 cm and dried the stems at 55 °C for 5 days before weighing. These weights divided by 2 and again by 70 or 40 depending on the species to represent the average mass of a 1-cm stem of an individual Sphagnum plant; this value was multiplied by plant density to yield SMD. From cores collected in early July and early October from 2013 through 2015, we calculated capitulum mass density (CMD) as the dry mass of all capitula from a core, scaled up to a m2 basis. Capitula and stems were dried, homogenized with a Thomas Wiley Mini-Mill, and analyzed for N concentration on a Flash EA 1112 Series CN Soil Analyzer. We calculated the amount of N annually utilized by Sphagnum to satisfy NPP requirements as the product of Sphagnum NPP and the N concentration in the 0-2 cm stem sections. For both summer and fall collections, we calculated the quantity of N stored in capitula (g N m-2) as the product of CMD and N concentration in the capitula.