Characterizing the feeding habits of the testate amoebae *Hyalosphenia papilio* and *Nebela tincta* along a microenvironmental gradient in *Sphagnum* mire and ^{13}C and ^{15}N isotopic analyses

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SUMMARY

Population dynamics and feeding habits of the testate amoebae *Nebela tincta* and *Hyalosphenia papilio* were studied along a short "fen" to "bog" gradient in a *Sphagnum*-dominated mire (Jura, France). Samples were collected in living "top segments" (0-3 cm) and early declining "bottom segments" (3-6 cm) of *Sphagnum fallax* peat. Observations of digestive vacuole content and stable isotope analyses (^{13}C and ^{15}N) were used to establish the feeding behavior of both testate amoeba species. Owing to their vertical distribution, the feeding habit of *H. papilio* was described from top segments, and that of *N. tincta* from bottom segments. Among identified food sources, those most frequently ingested by *N. tincta* were spores and mycelia of fungi (55%), microalgae (25%) and cyanobacteria (8.5%). For *H. papilio*, the most frequently ingested preys were ciliates (55%) and microalgae (35%). Nonmetric Multidimensional Scaling analysis clearly demonstrated that the two species did not have the same feeding habit along the "fen-bog" gradient, and furthermore that a significant spatial split exists in the feeding behavior of *H. papilio*. Additionally, isotope analyses suggested that *H. papilio* and *N. tincta* did not have the same trophic position in the microbial food web, probably resulting from their different feeding strategies.