

Flies that are indicative of the state of biodiversity of the peat bogs of Québec and Vermont

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Peat bogs are wetlands that develop when the production of organic matter exceeds its decomposition; the result is an accumulation of peat. While peat bogs are characteristic of boreal regions, some bogs are present in more temperate areas. These bogs are relics of the last glaciation. Today, a number of these bogs are threatened by agriculture, forestry work, urban sprawl and peat harvesting. These threats are of particular concern in that peat bogs play several important ecological roles, notably by retaining water, by filtering polluted water, by acting as a carbon reservoir, and by providing habitats for a large variety of plants and animals.

The species composition of peat bogs, the vegetation structure and the properties of soils contrast with those of the other types of ecosystems. Since peat bogs are home to several animal and plant species that are typical of boreal forests, the bogs of southern Québec have often been referred to as boreal islands.

The insects living in peat bogs are highly diversified. Due to their role, insects hold an important place here. Diptera (order of flies and mosquitoes) were chosen as indicators to carry out a study on the biodiversity of peat bogs, because these insects occupy several ecological niches in the bogs; they are herbivores, predators, parasites or saprophages¹. Diptera are also choice organisms for studying certain ecological variables in that a large sampling may be made at a low cost. Indeed, diptera use a variety of habitats to feed and are sensitive to changes in the environment.

The team, made up of Amy Moores and Terry Wheeler of McGill University as well as Jade Savage of Bishop's University, surveyed six peat bogs of northern Vermont and southern Québec. Among them, the peat bog of the Saint-Daniel sector, located in Parc national de Frontenac, is in a preservation zone. The goal of the research was to determine the impact of the surface area of peat bogs, of the vegetation structure and of the use of adjacent territories on the diversity of diptera. During the summer of 2006, insects were harvested using a combination of three types of traps. In all, 7,867 insects were collected. They are currently being identified and analyzed at McGill University's Lyman Entomological Museum.

The peat bog of Parc national de Frontenac was an ideal site for the project; its surface area is large, the park is well preserved and it is surrounded by natural forests. The ecological integrity of this benchmark site makes it possible to study diptera communities in an environment free from disturbances. The preliminary results already indicate a greater abundance in comparison with the other sites under study. In all, some 1,600 insects were collected there, which represents about 20% of the harvests and which points to a high specific diversity.

The continuation of the work to identify species and the analysis of data should allow researchers to highlight the key variables for the preservation of the biodiversity of the diptera populations of peat bogs. These data will certainly allow us to better understand this unique ecosystem and to

¹ Feeds on organic matter undergoing decomposition.

better protect the peat bog of Parc national de Frontenac as well as those which do not benefit from the same preservation status.