Mosses as a food component of groundhopper Tetrix ceperoi

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INTRODUCTION

Tetrigidae (groundhoppers) are small, short-horned Orthoptera with an elongated pronotum, which covers the abdomen and hind wings (Kočárek et al. 2005). Generally, Tetrigidae belong to the least-studied groups of Orthoptera (Hochkirch et al. 2006), when especially their ecological preferences and food biology is almost unknown. Tetrigidae are known to feed on algae, lichens, mosses, small plants and detritus, but there are published only a few concrete data about their food biology (Podgornaya 1983, Paranjape et al. 1987). In some species, as Tetrix ceperoi (Bolivar, 1887), the food preferences has not yet been studied in detail.

We carried out a preliminary analysis of the food composition by the dissection of the alimentary tract contents of T. ceperoi.

<table>
<thead>
<tr>
<th>Moss species</th>
<th>Number of T. ceperoi specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbula sp. (B. convoluta or B. unguliculata)</td>
<td>6 3.1 6 35.3 12 33.3</td>
</tr>
<tr>
<td>Bryum argenteum</td>
<td>4 2 1 6 35.3 10 27.8</td>
</tr>
<tr>
<td>Bryum caespiticum</td>
<td>15 7 8 9 17 10 32 88.9</td>
</tr>
<tr>
<td>Ceratodon purpureus</td>
<td>6 3.1 6 41.2 13 36.1</td>
</tr>
</tbody>
</table>

Tab. 1. Frequency of the moss species in the gut content of T. ceperoi individuals

Fig 1: T. ceperoi is a West-Mediterranean species, which reaches the north-eastern edge of its range in Central Europe. In the Czech Republic, the species has been reported for the first time in 2002 (Holusá & Holusa 2002) and up to now we know only few localities in southern Moravia. T. ceperoi is restricted to damp, warm habitats, such as dune valleys, sand pits or heath ponds in the territory of the Czech Republic.

MATERIAL AND METHODS

The groundhoppers have been collected in the sand pit near Bzenec-Přivov in SE Moravia (48°55'40.67"N, 17°16'47.37"E) by sweeping and immediately stored in ethylalcohol. Together with the insects, the samples of all visually different terrestrial mosses have been collected, that were subsequently identified to species level. Altogether, 21 males and 18 females of T. ceperoi have been used for dissections of their alimentary tract and the analysis of its content. The dissections have been made by the cutting of the abdomen cavity by thin forceps and taking out the esophagus, crop and proventriculus. The permanent microscopic preparations of the alimentary tract content have been made with the use of Hoyer’s solution (Anderson 1954). For the comparison and determinations of the tissue fragments in alimentary tract contents, the permanent microscopic preparations of the leaves of each moss species taken from the same locality have been made by the same method.

RESULTS

At least four moss species have been found to be a component of the diet of T. ceperoi: Bryum argenteum, B. caespiticum, Ceratodon purpureus, Barbula sp. (B. convoluta or B. unguliculata), when the total number of epigal mosses detected at the locality was 13 species. The most frequent moss in gut of T. ceperoi was Bryum caespiticum (in gut of 88.9 % specimens – see Tab. 1), which was also the dominant moss at the locality with dominance of 70 %. Altogether, the presence of at least one fragment of one moss species has been detected in 89.8 % of specimens, fragments of vascular plants (grasses) has been found in 20% of specimens (only females) and algae in 25% of specimens. Organic detritus was present in all specimens and occasionally some animal fragments have been found (sclerotised parts of unidentified beetle larvae). The average number of moss species detected simultaneously in gut content of one specimen was 1.5 in males and 2.0 in females, when the maximal number was 4 moss species (see Fig. 5).

Fig 2: Habitat of T. ceperoi near Bzenec-Přivov

Fig 3: 4 Details of the most frequent moss species in the gut content of Tetrix ceperoi. Fig 1: Bryum argenteum; Fig 2: Bryum caespiticum

Fig 4: Fragments of mosses Bryum caespiticum in preparation from alimentary tract of T. ceperoi

Fig 5: Number of moss species simultaneously detected in gut content of T. ceperoi

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REFERENCES


