New records of ectoparasites from passerine birds in the High Tatras of Slovakia

S.E. BUSH*, D.R. GUSTAFSSON and D.H. CLAYTON

Department of Biology, University of Utah, 257 South 1400 East, Salt Lake City, UT, USA 84112; e-mail: *bush@biology.utah.edu

Abstract. During the summer of 2015, 52 passerine birds, representing 16 genera and 19 species were captured at a field site in the High Tatra Mountains, Tatranská Javorina, Slovakia. These birds were examined for ectoparasites, including chewing lice (Phthiraptera: Ischnocera), fleas (Siphonaptera), flies (Diptera: Hippoboscidae), and feather mites (Acari). A list of host-parasite associations is provided, along with data on parasite prevalence and intensity. Many of the records are known host associations, but two species of lice (one named, one unnamed) represent new host records.

Key words: Passeriformes, Phthiraptera, Ischnocera, Philopteridae, Ricinidae, Siphonaptera, Acari

Introduction

The High Tatras are a mountain range along the Slovakia-Poland border. We surveyed the ectoparasites of birds mist-netted in the High Tatras June-July 2015 at the Institute of High Mountain Biology (University of Žilina), which is situated in the small village of Tatranská Javorina, Slovakia. The site contains mature mixed deciduous and coniferous trees and small open fields with wildflowers, adjacent to a mountain stream. We concentrated primarily on chewing lice, which are permanent parasites that pass all stages of their life cycle on the body of the host (Clayton et al. 2015). The collecting method we used is particularly effective for quantifying populations of lice, as we describe below.

Material and Methods

Birds were captured with mist-nets placed on the grounds of the Institute of High Mountain Biology, Tatranská Javorina, Slovakia (49.266° N 20.143° E elevation 1000 m), during June and July of 2015. Each bird was processed on location. Ectoparasites were removed by placing each bird in a “fumigation chamber” or “anesthesia jar” for at least 15 min., which is a standard method for removing ectoparasites from live birds (Clayton and Drown 2001). Briefly, a cloth collar was fitted around the neck of each bird and the body of the bird lowered into a wide-mouthed glass jar containing a cotton-ball soaked with chloroform. The chloroform vapors penetrated the bird’s plumage and killed ectoparasitic arthropods, which were then collected by removing the bird from the fumigation chamber and ruffling its feathers over a clean white sheet of paper. This method is described in detail by Clayton and Drown (2001). Since the bird’s head remained out of the jar during this process, each bird’s head was visually examined and any parasites on the head were removed with forceps. This sampling method recovers most lice, as well as other ectoparasites like fleas and flies (Clayton and Walther 1997; Clayton and Drown 2001). However, it is less reliable for the removal of feather mites. We examined the flight feathers of each bird for mites, and preserved a sample of mites from infested birds.

To avoid cross-contamination, birds were held in clean paper-bags prior to fumigation, and the chambers and all working surfaces were carefully cleaned and inspected between birds. All recovered parasites were preserved in 95% ethanol, and are deposited in the Price Institute of Parasite Research (PiPeR) at the University of Utah, Salt Lake City, Utah, USA.

Results

A total of 52 passerine birds representing 16 genera and 19 species were examined (Table 1). Overall, 44.2% (23/52) birds were infested with at least one type of ectoparasite.

Lice

Lice were the most common ectoparasite. In all, 26.9% (14/52) of birds were infested with lice. Ten species of feather lice were recovered (Table 2); four species in the Brueelia-complex (Brueelia spp., and Guimaraesiella spp.) (Gustafsson and Bush 2017), five species of Philopterus, and one species of Ricinus. All of these genera are already known to be associated with passerines; however, two of the species collected represent new host records: Philopterus tringilae ex Pyrrhula pyrrhula (Eurasian bullfinch), and Philopterus sp. ex Carduelis spinus (Eurasian siskin).
The unnamed *Philopterus* was a unique morpho-species found on two different host individuals. No lice in the genus *Philopterus* are known from this host (Price et al. 2003), so this may be a new species.

**Other ectoparasites**

Fleas (Siponaptera) were found on 11.5% (6/52) of the birds, and a single hippoboscid fly (Diptera) was found on one of the 52 birds. Feather mites (Acari) were found on 15.4% (8/52) of the birds.

**Discussion**

A study of avian ectoparasites by Sychra et al. (2011) examined the ectoparasites of passerine birds captured near the Sub-Beskidian Hills of the Czech Republic (49°34’N, 17°59E, elev. 400m). Sychra et al. (2011) examined 16 avian species, nine of which were species we also examined in this study: *Fringilla coelebs*, *Parus major*, *Periparus ater*, *Phylloscopus collybita*, *Prunella modularis*, *Pyrrhula pyrrhula*, *Sylvia atricapilla*, *Turdus merula*, and *Turdus philomelos*. Sychra et al. (2011) ob-
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We thank Sonora and Austin Clayton for their field assistance. We thank Zuzana Hrehová, Marián Janiga and Michal Némethy, for various forms of assistance. This work was supported by the Research Institute of High Mountain Biology, University of Žilina, Slovakia, and NSF-DEB1050706, USA.

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Received 26 June 2017; accepted 5 January 2018.