



## **BARANOWSKIELLA EHNSTROMI, THE SMALLEST BEETLE OF EUROPE – NEW FOR SLOVAKIA**

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**Abstract:** In May 2019 a beetle species *Baranowskiella ehnstromi* of the family Ptiliidae, new for the Slovak territory, has been found. Its bionomy is closely related with its host fungal species *Phellinopsis conchata* upon which it is totally dependent. *P. conchata* is rather rare, but after understanding its ecology and distribution author found many localities of its occurrence, which were at the same time the localities of *B. ehnstromi*. The beetle has been recorded by the field research, but also from the dried specimens of *P. conchata* deposited in mycological collections. The oldest records are those of Viktor Greschik from 1888 and Andrej Kmeť from 1889 deposited at the mycological herbarium of the Slovak National Museum-Natural History Museum. Presented article brings the knowledge about the ecology of the beetle and its host fungus, with an emphasis on their relationship, supplemented by the detailed botanical description of the localities.

**Key words:** Coleoptera, Nanosellini, Ptiliidae, *Phellinopsis conchata*, *Fomitoporia punctata*, Slovakia

### **INTRODUCTION**

*Baranowskiella ehnstromi* Sörensson, 1997 was originally described from Sweden and Finland (SÖRENSSON 1997). Later it has been recorded also in Norway (Andersen et al. 2003), Denmark (SCIENCENORDIC 2012), Luxembourg, Germany, Belgium, France (SCHULTHEIS et al. 2014, DODELIN et al. 2015, ROSE 2017), Switzerland, Austria (CORAY et al. 2014), Czech Republic (BEZDĚK et al. 2016), Great Britain (ANDREW et al. 2016) and Hungary (PAPP et al. 2017). Two wood inhabiting fungal species has been described as hosts of this species – *Phellinopsis conchata* (Pers.) Y. C. Dai (SÖRENSSON 1997) and *Fomitoporia punctata* (Fr.) Murrill = *Phellinus punctatus* (P. Karst) Pilát (ANDERSEN 2003), of the family Hymenochaetaceae (Basidiomycetes).

*Baranowskiella ehnstromi* is a member of worldwide distributed family Ptiliidae, consisting of more than 70 genera and about 550 described species (HALL 1999, 2005). More than 130 species of the subfamilies Acrotrichinae and Ptiliinae of the 21 genera are known from the Europe territory (JOHNSON 2004). Tribe Nanosellini (Ptiliinae) comprises more than 20 species distributed mainly

in South, Central and North America, Papua New Guinea and at New Zealand. Several species has been described also from Africa and India (SÖRENSON 1997). Only a few representatives of this tribe live in Palearctic region: besides European species *Baranowskiella ehnstromi* it is *Nepalumpia markusi* Hall, 1999 from Nepal, *Mikado japonicus* Matthews, 1889 from Japan and Taiwan and representatives of other 3 newly described genera and 11 species from Russian Far East (JOHNSON 2004, POLILOV 2008a).

Representatives of the Nanosellini tribe are amongst the world smallest beetle species, the smallest described species *Vitusella fijiensis* Hall, 1999 from Fidji and *Scydosella musawasensis* Hall, 1999 from Nicaragua are 0.3 mm in size (HALL 1999, POLILOV 2008b). *Baranowskiella ehnstromi* is by its size 0,49 – 0,56 mm the smallest beetle species known from Europe (SÖRENSON 1977).

## RESULTS AND DISCUSSION

### Field records of *Baranowskiella ehnstromi*

**Bodíky** (Podunajská rovina lowland; Figs 3-6) – alt. 120 m, Danube river arms system with lowland floodplain forest with *Salix alba*, *Populus alba*, *Populus* sp., *Acer negundo*, *Corylus avellana*, managed by irregular – occasional artificial floods. All the findings from this site are from the same lying trunk of *Salix alba*.

4.V.2019 – on carpophores of *Phellinopsis conchata* growing horizontally next to each other on a fallen trunk of *Salix alba* covered with mosses lying in dense undergrowth, over two hundred adults on the underside of the fungi, in pores or crawling on and around them.

(*Phellinopsis conchata* (BRA CR31840) – L. Zíbarová, T. Tejklová, I. Kautmanová leg., L. Zíbarová det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

6.V.2019 – on carpophores of *Phellinopsis conchata* growing horizontally next to each other on a trunk of *Salix alba*, lots of adults and larvae on underside of fungi.

(*Phellinopsis conchata* (BRA CR31844) – I. Kautmanová leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

15.V.2019 – on carpophores of *Phellinopsis conchata* growing horizontally next to each other on a fallen trunk of *Salix alba* covered with mosses, again a lot of adults on the underside of the fungi.

(*Phellinopsis conchata* (BRA CR31839) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

15.IX.2019 – after artificial floods on carpophores of *Phellinopsis conchata* growing horizontally next to each other on a fallen trunk of *Salix alba*, the trunk was flooded with water (M. Kautmanová, pers. comm.), several living adults on each of the three collected carpophores, also dead individuals and larvae in various stages of development.

(*Phellinopsis conchata* (BRA CR31991) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)



**Fig. 1.** Adult of *Baranowskiella ehnstromi*, upper view (on right antenna and on the end of abdomen with spores of *Phellinopsis conchata*), lateral view and bottom view, photo A. Polhorský.



**Fig. 2.** Adult of *Baranowskiella ehnstromi*, detail of head, photo A. Polhorský.

18.XI.2019 – on carpophores of *Phellinopsis conchata* growing horizontally on a trunk of *Salix alba*, over 400 adults on three carpophores, beetles settled in pores or crawling around. This collection was made in cold period with temperatures up to - 4°C.

(*Phellinopsis conchata*, *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

4.XII.2019 – on frozen carpophores of *Phellinopsis conchata* growing horizontally on a trunk of *Salix alba*, new site with lot of conjoined carpophores at the underside of the trunk, dozens of adults in good condition on most of the collected carpophores, adults crawling around the pores, after three days of minus temperatures, the temperature dropped to - 6 ° C.

(*Phellinopsis conchata*, *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Pavčina Lehota**, PR Jelšie (Liptovská kotlina basin) – alt. 690 m, alder growth with *Alnus glutinosa*, *Alnus incana*, *Fraxinus excelsior*, *Salix alba*, *Salix caprea*, *Prunus padus*, *Frangula alnus*, *Corylus avellana*, *Lonicera xylosteum*, *Sambucus nigra*, *Picea abies*, three localities 300 meters apart.

12.VIII.2019 – on the underside of *Phellinopsis conchata* growing on top of each other on an old standing *Prunus padus*, in the forest, a large number of adults, several adults also on the fruiting body on a fallen branch under the tree.

(*Phellinopsis conchata* (BRA CR31785) – P. Tomka leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

12.VIII.2019 – on the underside of *Phellinopsis conchata* carpophores growing on top of one another on standing *Salix alba*, dozens of adults. On *Fomitoporia punctata* found on the locality, the beetle was not found.

(*Phellinopsis conchata* (BRA CR31846), *Fomitoporia punctata* – P. Tomka leg. et det.; *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

12.VIII.2019 – on older carpophores of *Phellinopsis conchata* covered with moss growing vertically one above the other on damaged old *Prunus padus*, at the edge of the forest, dozens of adults.

(*Phellinopsis conchata* (BRA CR31842) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Prosiek**, Prosiecka dolina valley (Chočské vrchy mountains) – alt. 690 m, the alluvium of the Prosiečanka stream, a shoreline with *Salix eleagnos*, *Salix caprea*, *Alnus incana*, *Prunus padus*, *Acer* sp., *Lonicera xylosteum*.

15.VIII.2019 – on the carpophores of *Phellinopsis conchata* growing on top of one another on standing living *Salix eleagnos* trunks, dozens of living and dead adults. On carpophores of *Fomitoporia punctata* found on the locality, the beetle was not found.

(*Phellinopsis conchata* (BRA CR31843), *Fomitoporia punctata* – M. Peiger leg. et det.; *Baranowskiella ehnstromi* – V. Kautman leg. et det.)



**Fig. 3.** Bodíky, floodplain forest - locality of the first record of *Baranowskiella ehnstromi* site in Slovakia, 15.IX.2019, photo V. Kautman.



**Fig. 4.** Bodíky, floodplain forest, 15.IX.2019, photo V. Kautman.



**Fig. 5.** Bodiky – interior of the floodplain forest, 15.IX.2019, photo V. Kautman.



**Fig. 6.** Bodiky – fallen trunk of *Salix alba* with horizontally growing basidiomata of *Phellinopsis conchata* – the place of occurrence of *Baranowskiella ehnstromi*, 15.IX.2019, photo V. Kautman.

**Malužiná**, Skribňovo valley (Nízke Tatry mountains) – alt. 700 m, near Bocianka stream, banks with *Alnus incana*, *Alnus glutinosa*, *Salix alba*, *Salix eleagnos*, *Salix caprea*, *Prunus padus*, *Corylus avellana*, *Lonicera xylosteum*, *Ribes* sp., *Picea abies*, *Tilia cordata*.

16.VIII.2019 – on carpophores of *Phellinopsis conchata* growing on top of one another on old damaged *Prunus padus* trunk, dozens of living and dead adults. On carpophores of *Fomitoporia punctata* found on the locality, the beetle was not found.

(*Phellinopsis conchata* (BRA CR31845) a *Fomitoporia punctata* – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Kráľova Lehota** (Nízke Tatry mountains) – alt. 620 m, confluence of Čierny Váh and Biely Váh rivers, on the bank of the river outgrown by *Salix alba*, *Salix eleagnos*, *Salix caprea*, *Prunus padus*, *Alnus incana*, *Frangula alnus*, *Corylus avellana*, *Lonicera xylosteum*, *Euonymus europaeus*, *Sambucus nigra*, *Ribes* sp., *Viburnum opulus*.

17.VIII.2019 – on very young carpophores of *Phellinopsis conchata* growing next to each other of thin fallen branch of *Salix eleagnos* hanging in the air and on the trunk of the same tree, growing vertically, several adults in the pores and out of them. On carpophores of *Fomitoporia punctata* found on the locality, the beetle was not found.

17.VIII.2019 – on the *Salix eleagnos* trunk lying directly in alluvial deposits, on very small carpophores of *Phellinopsis conchata* (up to 12 mm) growing initially in a crevasse, now lying in deposits, about 10 adults on two small fruiting bodies.

(*Phellinopsis conchata* (BRA CR31841) a *Fomitoporia punctata* – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

2.XI.2019 – on the river bank in the tree growth, on the lying trunk of *Prunus padus*, 3 dead larvae, without adults, after severe night frosts.

(*Phellinopsis conchata* (BRA CR32011) – P. Tomka leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Hybe**, Hybická tiesňava gorge (Podtatranská kotlina basin) – alt. 800 – 860 m, old outgrown pastures, in forest with *Picea abies*, *Corylus avellana*, *Salix caprea*, *Salix alba*, *Populus tremula*, *Alnus incana*, *Ribes* sp., *Lonicera nigra*, *Lonicera xylosteum*.

21.VIII.2019 – on carpophores of *Phellinopsis conchata* on old *Salix caprea* as well as on lying and standing trunks from few individuals to many adults on each carpophore, on four sites. On carpophores of *Fomitoporia punctata* found on the locality, the beetle was not found.

(*Phellinopsis conchata* (BRA CR31838), (BRA CR32008) – M. Kolényová, I. Jánošík, V. Kautman leg. et det., *Fomitoporia punctata*, *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Bratislava**, NR Ostrov Kopáč (Podunajská rovina lowland) – alt. 132 m, islands of vegetation at the steppe locality with *Quercus* sp., *Populus alba*, *Populus* sp., *Ailanthus altissima*, *Salix eleagnos*, *Crataegus* sp., *Prunus spinosa*, *Rosa* sp., *Swida sanguinea*.

4.IX.2019 – on the underside of *Phellinopsis conchata* growing horizontally and vertically on the semi-lying still living *Salix eleagnos*, several living and dead adults.

(*Salix eleagnos* – M. Zaliberová det.; *Phellinopsis conchata* (BRA CR32009) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Jakubovany** (Liptovská kotlina basin) – alt. 825 m, front part of the Trnovecká dolina valley, near Trnovec stream, spruce forest with admixture of *Salix caprea*, *Alnus incana*, *Abies alba*.

7.IX.2019 – on two smaller carpophores of *Phellinopsis conchata* growing horizontally on lying *Salix caprea* covered with mosses, 3 adults.

(*Phellinopsis conchata* – M. Peiger leg. et det., *Baranowskiella ehnstromi* – M. Peiger leg. et det.)

**Šiba** (Čergov mountains) – alt. 530 m, valley of Šibská voda stream, near the forest road, mixed forest with *Fagus sylvatica*, *Abies alba*, *Carpinus betulus*, *Salix caprea*, *Salix* sp., *Alnus incana*, *Acer* sp., *Corylus avellana*, *Prunus avium*.

11.X.2019 – on carpophores of *Phellinopsis conchata* growing vertically on old *Salix caprea*, several adults and remnants of dead animals. On carpophores of *Fomitoporia punctata* found on the locality, the beetle was not found.

(*Phellinopsis conchata* (BRA CR32013) a *Fomitoporia punctata* – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Terňa** (Čergov mountains) – alt. 410 m, Ternianka stream valley, river banks outgrown by *Alnus incana*, *Alnus glutinosa*, *Carpinus betulus*, *Salix alba*, *Salix caprea*, *Prunus padus*, *Prunus avium*, *Crataegus* sp., *Corylus avellana*, *Swida sanguinea*, near the forest road.

12.X.2019 – on carpophores of *Phellinopsis conchata* growing vertically all around the old *Salix caprea* up to 3 m, 10 adults on two carpophores, also dead beetles.

(*Phellinopsis conchata* (BRA CR32012) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

**Šarišské Sokolovce** (Čergov mountains) – alt. 480 m, Veľký potok stream valley, banks outgrown by *Alnus incana*, *Salix eleagnos*, *Salix alba*, *Salix caprea*, *Carpinus betulus*, *Fagus sylvatica*, *Corylus avellana*, *Acer* sp., *Prunus avium*, *Populus tremula*, *Fraxinus* sp., *Prunus spinosa*, in broad alluvium in dense old growth.

12.X.2019 – on carpophores of *Phellinopsis conchata* growing on very old *Salix caprea*, many old carpophores and a few young ones, 15 adults crawling around pores or hidden inside, only on young carpophores, also remnants of dead beetles.

(*Phellinopsis conchata* (BRA CR32010, BRA CR32014) – V. Kautman leg. et det., *Baranowskiella ehnstromi* – V. Kautman leg. et det.)

### **Baranowskiella ehnstromi** in herbaria

In the herbarium of SNM – Natural History Museum in Bratislava I have examined 48 herbarium specimens of *Phellinopsis conchata* exicates, where in nine cases dead adults of *Baranowskiella ehnstromi* were found, six of them collected before 1997 when *B. ehnstromi* was described. The oldest findings were adults of the species from 1888 and 1889 unintentionally collected by Viktor Greschik<sup>1</sup> and Andrej Kmeť<sup>2</sup> along with a host fungus.

#### **Levoča – hill Brezová**

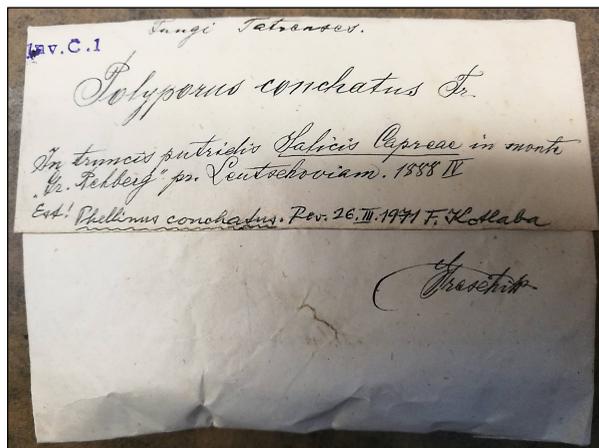
(Levočské vrchy mountains)  
– Fungi Tatrances, in truncis  
putridis Salicis Capreae in  
monte Gr. Rehberg pr.  
Leutschoviam, 1888 IV.,  
Greschik. (as *Polyporus*  
*conchatus* Fr.) (Fig. 7).

Rev. 26.III.1971 F. Kotlaba.

Est! *Phellinus conchatus*.

IV.1888 – adult of *B.*  
*ehnstromi* without head –  
thorax, abdomen and elytras.

(*Phellinopsis conchata* (BRA  
CR32137) – V. Greschik leg. et  
det., F. Kotlaba rev.,  
*Baranowskiella ehnstromi* – V.  
Kautman det.)



**Fig. 7.** Schede of Viktor Greschik's herbarium specimen BRA CR32137 from Brezová hill near Levoča from 1888, at which the presence of *Baranowskiella ehnstromi* has been confirmed, photo I. Kautmanová.

<sup>1</sup> **Viktor Greschik** (\*29.III.1862 Levoča – †17.VIII.1946 Levoča) – Slovak botanist and historian. In 1882 he worked as a teacher in Kežmarok, 1887 – 1914 in Levoča. He dealt with flora of Spiš and Tatr regions, especially with bryophytes, lichens and fungi. He compiled a herbarium containing about 25 000 plant specimens, only a part of which was preserved.

<sup>2</sup> **Andrej Kmeť** (\*19.XI.1841 Bzenica – †16.II.1908 Turčiansky Sv. Martin) – Roman Catholic priest, Slovak archaeologist, geologist, mineralogist, paleontologist, historian, ethnographer and botanist. He worked as a priest in Krnišov, Prenčov and Martin, he devoted himself to plants and fungi mainly from the territory of the Štiavnické vrchy mountains. He compiled a herbarium containing 72,000 specimens, of which 25,000 were fungi and Myxomycetes. His seed collection is also known. Herbarium is deposited in the Slovak National Museum-Natural History Museum in Bratislava

**Prenčov – Sitno** (Štiavnické vrchy mountains) – !Mercurio corrosivo praeparatum!  
FUNGI SCHEMNITZIENSES. In trunco emort. Populi trem., Prenčov, M. Sytno,  
21. nov. 1889, legit Andr. Kmeť (as *Polyporus conchatus* Pers.) (Fig. 8).

Rev. 24.III.1971 F. Kotlaba. Est! *Phellinus conchatus*.

21.XI.1889 – two torsos of *B. ehnstromi* with elytras.

(*Phellinopsis conchata* (BRA CR32136) – Andrej Kmeť leg. et det., F. Kotlaba rev., *Baranowskiella ehnstromi* – V. Kautman det.)



Fig. 8. Schede of Andrej Kmeť's herbarium specimen BRA CR32136 from Sitno hill near Prenčov from 1889, at which the presence of *B. ehnstromi* has been confirmed, photo I. Kautmanová.

**Levoča** (Hornádska kotlina basin) – Mycotheca carpathica, Leutschau actu Hammers  
[?] von *Robinia pseudoacacia* (as *Fomes torulosus* Fr. var. *pseudoacaciae* Bourd. )  
Rev. 2.IV.1971 F. Kotlaba. Est *Phellinus conchatus*!!

X. 1932 – one torso of adult with elytras and a single elytra of *B. ehnstromi*.

(*Phellinopsis conchata* (BRA CR32135) – V. Greschik leg. et det., F. Kotlaba rev., *Baranowskiella ehnstromi* – V. Kautman det.)

**Hamuliakovo** (Podunajská nížina lowland) – Slovacia occid., Podunajská nížina:  
ad corticem *Salicis* sp. prope pag. Hamuliakovo (as *Phellinus conchatus*).

20.IV.1979 – torso of adult *B. ehnstromi* and three elytras.

(*Phellinopsis conchata* (BRA CR32133) – P. Lizoň leg. et det., *Baranowskiella ehnstromi* – V. Kautman det.)

**Ladzany** (Krupinská vrchovina) – Slovakia centr., Krupinská vrchovina: ad corticem Betulae in silva frond. situ occid. a pago Ladzany, as *Phellinus conchatus*.

18.IX.1979 – two complete adults of *B. ehnstromi*.

(*Phellinopsis conchata* (BRA CR32134) – P. Lizoň et M. Svrček leg., M. Svrček det., *Baranowskiella ehnstromi* – V. Kautman det.)

**Banská Štiavnica – Počúvadlo** (Štiavnické vrchy mountains) – západná úboč Petrovho vrchu (green mark), above Počúvadlo lake, 810 m a.s.l., *Salix caprea* – lying tree trunk, as *Phellinus conchatus*.

7.IX.1996 – thorax and elytras of *B. ehnstromi*.

(*Phellinopsis conchata* (BRA CR15695) – L. Hagara leg., P. Vampola det., *Baranowskiella ehnstromi* – V. Kautman det.)

**Tatranská kotlina** (Vysoké Tatry – Belianske Tatry mountains) – Biela stream, growth of *Picea abies*, *Abies alba*, *Alnus incana*, *Salix* sp., *Salix caprea*, on lying tree trunk of *Salix caprea*, as *Phellinus conchatus*.

8.X.2002 – 5 dead adults of *B. ehnstromi* and their remnants.

(*Phellinopsis conchata* (BRA CR15699) – L. Hagara leg. et det., *Baranowskiella ehnstromi* – V. Kautman det.)

**Bratislava – Rusovce** (Podunajská rovina lowland) – left bank of Rusovecké distributary, 550 m SE – ESE from church, floodplain forest, stump of *Salix alba*, 128 m a.s.l., as *Phellinus conchatus*.

20.VI.2004 – 9 larvae and one adult of *B. ehnstromi* sticking from tube.

(*Phellinopsis conchata* (BRA CR15702) – L. Hagara leg. et det., *Baranowskiella ehnstromi* – V. Kautman det.)

**Zádielská tiesňava** (Slovenský Kras mountains) – on *Pyrus pyraster*, as *Phellinus conchatus*.

15.IX.2004 – 3 elytras and a torso of *B. ehnstromi*.

(*Phellinopsis conchata* (BRA CR12144) – M. Beran leg., P. Vampola det., *Baranowskiella ehnstromi* – V. Kautman det.)

I have studied one collection of *Phellinopsis conchata* at the herbarium of the Plant Science and Biodiversity Center of the Slovak Academy of Sciences in Bratislava, where *B. ehnstromi* was found.

**Sweden, Grimsheden**, without host tree, as *Phellinus conchatus*.

15.IX.2012 – 3 adults and elytra of *B. ehnstromi*.

(*Phellinopsis conchata* (SAV F-10599) – C. G. Mellberg leg., M. Jeppson det., *Baranowskiella ehnstromi* – V. Kautman det.)

Also two specimens of *P. conchata* from the private herbarium of Ľudovít Varjú were checked, but *B. ehnstromi* was not found there.

Specimens of *Baranowskiella ehnstromi* are deposited in the collections of SNM-NHM in Bratislava and in the private collection of the author, exsiccates of *Phellinopsis conchata* from each location are in the mycological herbarium of the same museum. Adults found in the host fungi exsiccates at nine herbarium specimens (BRA CR32137, BRA CR32136, BRA CR32135, BRA CR32133, BRA CR32314, BRA CR15695, BRA CR15699, BRA CR15702, BRA CR12144) and one specimen from Plant Science and Biodiversity Center of the Slovak Academy of Sciences (SAV F-10599) are enclosed in test tubes in specimen envelopes.

### **Ecology of *Baranowskiella ehnstromi***

*Baranowskiella ehnstromi* has been recorded by field research in Slovakia at Podunajská rovina lowland, Liptovská kotlina basin, Nízke Tatry mountains, Podtatranská kotlina basin and Čergov mountains at the following sites: Bodíky, Pavčina Lehota – Jelšie, Prosiek, Malužiná – Skribňovo, Kráľova Lehota – Biely and Čierny Váh junction, Hybe – Hybická tiesňava, Bratislava – Kopáč, Jakubovany and at the valleys above the Šiba, Terňa and Šarišské Sokolovce villages.

Host fungus *Phellinopsis conchata* has been recorded by field research at 19 sites (11 localities). Occurrence of the beetle has been confirmed at all of them except one microlocality at Hybická tiesňava gorge.

Adults of *B. ehnstromi* have been recorded also in herbarium specimens of host fungus deposited at SNM-NHM in Bratislava from Levočské vrchy mountains (Levoča – 2 localities), Štiavnické vrchy mountains (Ladzany, Prenčov, Počúvadlo), Podunajská rovina lowland (Hamuliakovo, Rusovce), Belianske Tatry mountains (Tatranská Kotlina) and Slovenský Kras mountains (Zádielska tiesňava). Together twenty localities of the species are known recently from Slovakia. Adults of the beetles were found also in herbarium specimen of *P. conchata* from Sweden deposited at SAV-F. Other findings of this kind are supposed, always in close relationship of the beetle and its host fungus.

Host fungus at our territory was always *Phellinopsis conchata*.

*Phellinopsis conchata* = *Phellinus conchatus* is the main host of *Baranowskiella ehnstromi*, the species *Fomitoporia punctata* = *Phellinus punctatus* growing on hazel (*Corylus avellana*) was recorded as a host only once in Norway (ANDERSEN 2003). *F. punctata* has been recorded and investigated at the localities Jelšie, Prosiecka dolina, Skribňovo, Biely and Čierny Váh, Hybická tiesňava, Čergov and others, but occurrence of *B. ehnstromi* was not confirmed.



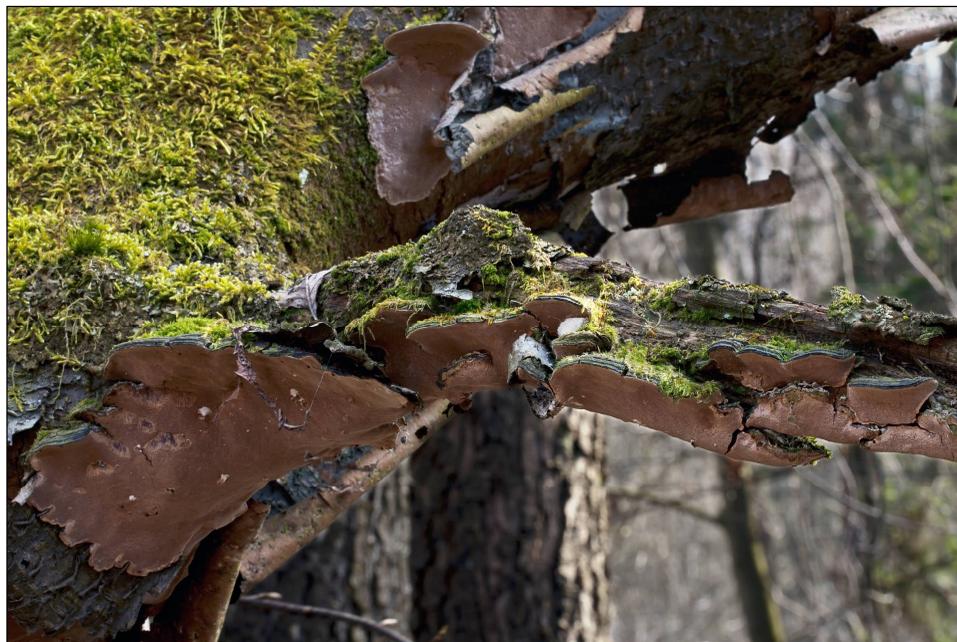
**Fig. 9.** *Phellinopsis conchata* on *Salix eleagnos* – detail of basidiomata outgrown with mosses, Prosiecka dolina valley, photo M. Peiger.



**Fig. 10.** *Phellinopsis conchata*, basidiomata growing vertically on old tree of *Salix eleagnos*, Prosiecka dolina valley, photo M. Peiger.



**Fig. 11.** *Phellinopsis conchata*, old basidiomata on *Salix alba*, PR Jelšie, photo P. Tomka.



**Fig. 12.** *Phellinopsis conchata*, basidiomata on branches of *Prunus padus*, PR Jelšie, photo P. Tomka.

Host fungus *Phellinopsis conchata* grows in Slovakia on various deciduous trees, preferably willows. Until recently following species were recorded as hosts of the fungus and *B. ehnstromi* as well: *Salix alba*, *S. caprea*, *S. eleagnos*, *Prunus padus*, *Pyrus pyraster*, *Robinia pseudoacacia*, *Populus tremula* and *Betula* sp.

Carpophores of the fungus can be observed also on *Salix purpurea*, *S. fragilis*, *S. pentandra*, *Prunus mahaleb*, *Cornus mas*, *Populus alba*, *Sorbus aucuparia*, on introduced *Catalpa bignonioides* and *Cotinus coggygria*, *Prunus cerasifera* and others. KOTLABA (1984) published 23 tree species on which this saprotrophic fungus grows from the territory of former Czechoslovakia. As the new host species of *Phellinopsis conchata* we have found *Prunus padus*, *Pyrus pyraster*, *Robinia pseudoacacia* and *Betula* sp. Because *P. conchata* is widely distributed also outside Europe (North America, tropic and subtropical Asia, Australia, New Zealand and others) also the distribution of *B. ehnstromi* is probably much wider than supposed.

The fruitbodies of host fungi can be found growing vertically one above the other on standing, living, mostly old and damaged trunks or horizontally side by side on fallen lying dead trunks. They occur less often on thin branches in crowns or rarely on branches fallen on the ground.

The relative rarity of *Phellinopsis conchata* may also be due to its inconspicuous appearance from above and overlooking. The horizontally growing fruitbodies on lying trunks, unlike the vertical ones, merge with the bark and are difficult to spot even from a short distance. The upper, dark-colored part of the fruitbodies is often covered with mosses. More distinctive cinnamon-brown pores on the underside of the fruitbodies are always turned downwards and can only be seen on the fruitbodies, which grow (not often) at higher places. Sometimes the the fruitbodies grow on the underside of the branches, undifferentiated into two parts, forming only the lower layer with the pores.

In Slovakia, more than 100 localities of this fungus are known, more or less evenly distributed throughout the territory. In the Czech Republic, it is a less common species known from several scattered sites (KOTLABA 1984, KOTLABA et al. 1998, ZÍBAROVÁ pers. comm.).

*Baranowskiella ehnstromi* is by its way of life closely tied to the host fungus, more precisely to its lower part - a hymenophore with densely arranged pores, colored light brown to cinnamon, similar to the color of a beetle imago. The head and eyes of the adult beetle are colored darker, the antennae are with ten articles, the last two articles are dilated, forming a mallet. The elongated, hairy, very narrow and spindle-shaped body is adapted to penetrate into the pores used by the imago as a shelter, always one imago at a time per tube. Often they stick their abdomens out, which is typical for them. The author observed

several times the copulation of the adults in this position without coming out of the adjacent pores. Adults always enter the pores head first, always backing out of the pipes, never seen the other way around. They often climb over the hymenium, crawl in and out alternately. Occasionally they leave the bottom of the fruitbodies and climb over to the top, but often return quickly to the tubes on the bottom. They feed on spores and hyphae of the host fungus (HALL 2005).

White-colored larval stages were often observed along with adults. They behaved similarly, crawled through the mouth of the pores, or concealed in individual openings. Sometimes, it was also possible to find the remains of dead adults as a proof of the former presence of the species on the fruitbodies of the host fungus.

The numbers of adults ranged from a few tens (50 – 70 – 100 – 200) to single individuals on one fruitbody. The total number of adults at the locality has always been greater, since only a few host fungi have been taken from the site to preserve population. Flying adults has never been observed and no sign or attempt to open the elytras, too.

Adults were found at individual sites from spring to autumn, more precisely from early May to the first half of December. At the Bodíky locality they were abundant on the same fruiting bodies from May 4, 2019 to December 4, 2019, probably in several generations. We can assume even the earlier occurrence, since at the beginning of May the population at the locality in Bodíky was numerous and there also dead adults were found. In the autumn, the occurrence is surprisingly strong, as confirmed by a finding from mid-November and the first half of December at the same site, although several times before these findings temperatures dropped below freezing ( $-6^{\circ}\text{C}$ ). This was confirmed also by the presence of adults on fungi found by Greschik in April 1888 and by Kmet's finding of November 21, 1889, documenting the early spring and autumn occurrence of *B. ehnstromi*, too.

The occurrence was confirmed in various localities from lowland to mountains from an altitude of 120 m above sea level in Bodíky to 860 m at Hybická tiesňava gorge.

Surprising is also the diversity of individual sites from the Danube floodplain forest, through the steppe habitat, to mixed forests, old overgrown mountain pastures and alluvia of mountain streams in spruce growth.



Fig. 13. Adults of *Baranowskiella ehnstromi*, Hybe – Hybická tiesňava, 21.VIII.2019, photo L. Jánošík.



Fig. 14. Adult of *Baranowskiella ehnstromi* in host fungus pore, cross section of the fruitbody, Bodíky village, 4.V.2019, photo A. Polhorský.



Fig. 15. Adults of *Baranowskiella ehnstromi* hidden in the pores of the host fungus just before the mating with typically sticking out back parts, Bodíky village, 4.V.2019, photo A. Polhorský.



Fig. 16. Adults of *Baranowskiella ehnstromi* hidden in the pores of the host fungus with typically sticking out back parts, Bodíky village, 4.V.2019, photo A. Polhorský.



**Fig. 17.** Larva of *Baranowskiella ehnstromi*, Bodíky village, 4.V.2019, photo A. Polhorský.



**Fig. 18.** Adults of *Baranowskiella ehnstromi* hidden in the pores of the host fungus, Bodíky village, 4.V.2019, photo A. Polhorský.

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