

Occurrence of Ibaliiidae (Hymenoptera: Cynipoidea) in the Czech Republic

Výskyt žlabatek čeledi Ibaliiidae (Hymenoptera: Cynipoidea) v České republice

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Abstract. All known records of the family Ibaliiidae (Hymenoptera: Cynipoidea) from the Czech Republic are reviewed. All three known European species have been confirmed to occur both in Bohemia and Moravia. *I. leucospoides* is widely distributed in the territory of the Czech Republic, while *I. jakowlewi* and *I. rufipes* are known only from a few localities. All species treated are classified as vulnerable in the national red list of threatened species.

Key words: Hymenoptera, Ibaliiidae, *Ibalia*, faunistics, Czech Republic

INTRODUCTION

Ibaliiidae is a small but widely distributed family comprising less than 50 species in total (Liu & Nordlander 1994), with three species in Europe (Ronquist & Forshage 2010), also occurring in the Czech Republic (Holý 2008, Mikula 1989, Pfeffer 1983). All known Ibaliiidae are primary, solitary endoparasitoids of wood-boring larvae of Siricidae. They usually are egg-larval parasitoids. The host of *I. jakowlewi* Jacobson, 1899 is exclusively *Tremex fuscicornis* (Fabricius, 1787), whereas those of *I. leucospoides* (Hochenwarth, 1785) and *I. rufipes* Cresson, 1879 include various *Sirex*, *Urocerus* and *Xeris* species (Liu & Nordlander 1994).

The data on distribution and ecology of *Ibalia* species in the Czech Republic are very scattered. Only eight papers have been published on this subject so far (Bouček 1957, Dvořák et al. 2010, Holý 2008, Kolubajiv 1962, Madl 1989, Mikula 1989, Pfeffer 1983, Slavíček 1928). The first preliminary checklist compiled by Mikula (1989) included *I. leucospoides* and *I. rufipes* (both from Bohemia and Moravia) only, with *I. jakowlewi* omitted in spite that this species was noticed from Bohemia already by Pfeffer (1983).

The first faunistic record of *I. leucospoides* without further specification was published by Slavíček (1928) from the Olomouc region (northern Moravia). Bouček (1957) considered this species to be rare, reportedly occurring mostly in pine forests. Kolubajiv (1962) was the first to record this species in Bohemia based on a sole female specimen reared from the log infested with larvae of *Urocerus gigas* (Linnaeus, 1758) (Hymenoptera: Siricidae), coming from the vicinity of Prague. The most recent finding of the species comes from Albrechtický (northern Moravia) (Dvořák et al. 2010). *I. rufipes* was mentioned by Mikula (1989) with no further details.

The first faunistic record of *I. jakowlewi* was published by Pfeffer (1983) from southern Bohemia. He reared one female from a birch log infested with *Tremex fuscicornis*. The first record for Moravia was published by Holý (2008).

MATERIAL AND METHODS

All faunistic data on Ibaliiidae in the Czech Republic based on the examination of all available specimens from the collections of prominent museums, research institutes and selected private collections were gathered and evaluated. In case of absence or incomplete designation of the specimens, we followed the publication data. In two cases we used data from the internet photo databases.

The nomenclature follows Ronquist & Forshage (2010). Faunistic data are listed in the following order: country, geographic name of collecting site, code number in parentheses referring to the central European grid for mapping of flora and fauna (Novák 1989, Pruner & Míka 1996), altitude, date of collection, number and sex of specimens, method of collection, name of collector and collection. In case of incomplete data, we left the corresponding part of the record unfilled. The faunistic maps are based on the web page Biolib (<http://www.biolib.cz/cz/tooltaxonmap/id1>).

Explanations to the unclear localities:

- ad 1): "Grygov" (labelled as Prague-Grygov) – the sample log without host specification might be collected in Grygov, but adults emerged later in Prague (January 1956).
ad 2): "Prague-Letná" (labelled as Letná) – there are at least nine homonymic locations in the Czech Republic but it most probably refers to the urban neighbourhood of Prague.
ad 3): "Slatina nad Zdobnicí" (labelled as Bohemia, Slatina n. J.) – Slatina n. J. does not exist, this location probably refers to Slatina nad Zdobnicí, the residence of J. Roubal.
ad 4): some specimens from the Slavíček's collection are provided with collecting data only without locality. We assume that they were collected in those locations in Central Moravia (Litovel, Bouzov, Konice), where he once worked as a teacher (Koleška 1993).

Abbreviations:

- FGMRI – Forestry and Game Management Research Institute, Strnady
MMBC – Moravian Museum, Brno
NMPC – National Museum, Prague
NNR – National Nature Reserve
NP – National Park
NR – Nature Reserve
OLML – Biology Centre, Oberösterreichisches Landesmuseum, Linz
PLA – Protected Landscape Area
RMOČ – Regional Museum, Olomouc
SMOC – Silesian Museum, Opava

RESULTS AND DISCUSSION

Ibalia jakowlewi Jacobson, 1899

Bohemia centr.: Velký Osek, wood of Bačov (5957), 189 m a.s.l., 2008, 1 ♀, reared from *Betula* log, P. Šrůtka lgt., K. Holý det. et coll.; **Bohemia mer.:** Temelín, area of a nuclear power station (6852), 443 m a.s.l., 21.v.–24.vi.2007, 1 ♀, Malaise trap, J. Farkač lgt., K. Holý det., coll. J. Straka; **Bohemia occ.:** Nový Drahov, Soos NNR (5840), 430 m a.s.l., 24.vi.1978, 1 ♀, reared from *Tremex fuscicornis* from *Betula pubescens* log, A. Pfeffer lgt. et det., coll. NMPC; **Moravia mer.:** Hodonín (7168), 167 m a.s.l., vi.1958, 1 ♀, M. Kocourek lgt., K. Holý det., coll. MMBC; Rohatec (7169), 181 m a.s.l., 17.v.1948, 1 ♂, R. Obrtel lgt., K. Holý det., coll. MMBC.

In total, five specimens are known from the territory of the Czech Republic (3 females from Bohemia, 1 male and 1 female from Moravia).

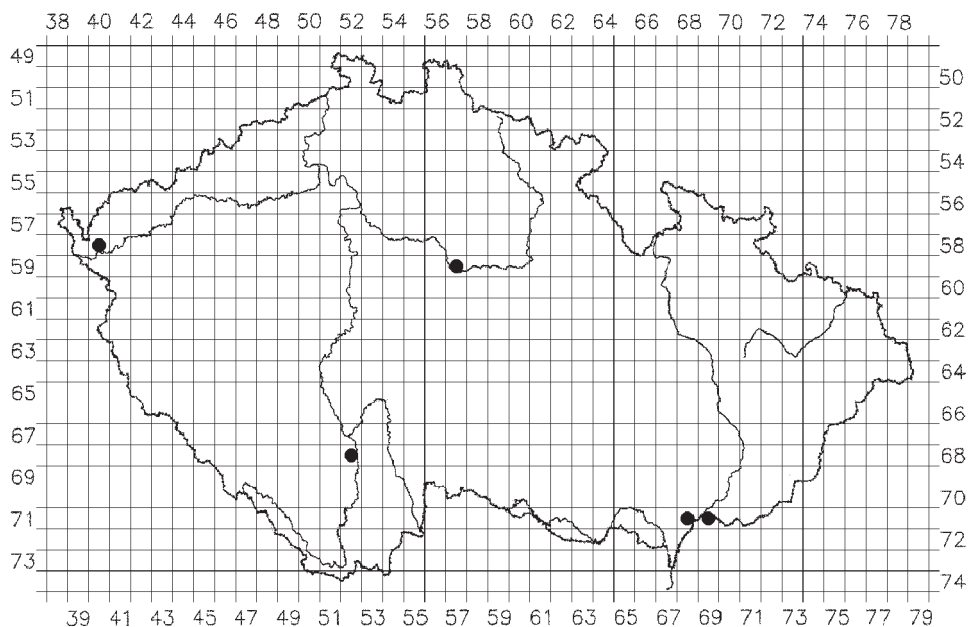


Fig. 1. Occurrence of *Ibalia jakowlewi* in the Czech Republic.
Obr. 1. Výskyt *Ibalia jakowlewi* v České republice.

The flight period is from May to June, which agrees with Kierych (1973). The altitude of collecting sites is from 167 to 443 m a.s.l. Two specimens were reared from the birch tree (*Betula pubescens* and *Betula* sp.) and one specimen from an infested larva of *Tremex fuscicornis*.

***Ibalia leucospoides* (Hochenwarth, 1785)**

Bohemia bor.: Jizerské hory PLA, Bedřichov env., 200 m east of Nová louka NR, grass undergrowth of bog spruce forest (5157), 800 m a.s.l., 11.vii.2001, 1 ♀, P. Lauterer lgt. et det., coll. MMBC; České Švýcarsko NP, Doubice, Pryskyřičný důl (5052), 310 m a.s.l., 14.vii.2006, 1 ♀, M. Trýzna lgt., J. Macek det., coll. NMPC; **Bohemia centr.:** Čelákovice (5854), 184 m a.s.l., viii.1946, 1 ♂, 1 ♀, J. Matoušek lgt., J. Šnoflák det., coll. MMBC; Čelákovice env., Lipovka – Grado NR (5854), 17.viii.–7.ix.1993, 1 ♀, Malaise trap, J. Macek lgt. et det., coll. NMPC; Křivoklátsko PLA, Křivoklát (5949), 250 m a.s.l., 25.vii.1964, 1 ♂, Z. Karas lgt., K. Holý det. et coll.; Prague (58–6051–54), 1 ♀ (Madl 1989); Prague–Letná (5952), 200 m a.s.l., 19.viii.1945, 1 ♀, coll. NMPC; Prague–Lipence – Kazín (6052), 235 m a.s.l., 13.viii.1950, 1 ♂, J. Macek lgt., K. Holý det., coll. SMOC; vicinity of Prague, reared from the spruce log infested with *Urocerus gigas* in boiler room. The log came from the vicinity of Prague, 16.vii.1944, 1 ♂, S. Kolubajiv lgt. et det. (Kolubajiv 1962); **Bohemia mer.:** Šumava NP, Kvilda (7047), montane spruce forest, 1,062 m a.s.l., 23.viii.2010, tens of specimens, on the spruce timber, J. Němec observ. and photographed, F. Vitali det., K. Holý revid. (www.biolib.cz); Temelín (6852), 443 m a.s.l., 24.vii.1996, 1 ♀, M. Halada lgt., K. Holý det., coll.

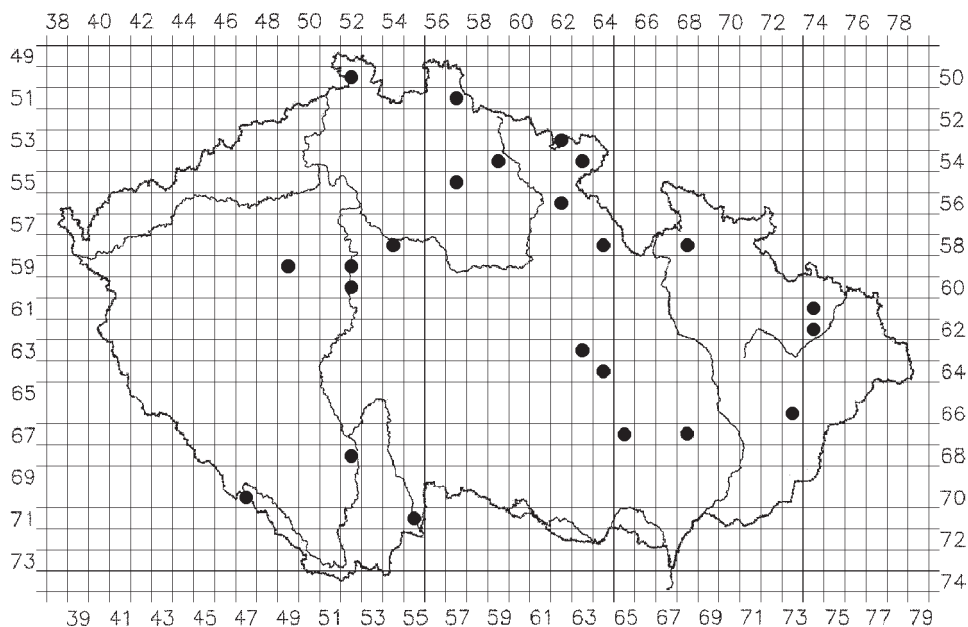


Fig. 2. Occurrence of *Ibalia leucospoides* in the Czech Republic.
 Obr. 2. Výskyt *Ibalia leucospoides* v České republice.

OLML; Třeboňsko PLA, Tušův (7155), 451 m a.s.l., viii.1966, 1 ♀, K. Deneš lgt., K. Holý det. et coll.; **Bohemia or.:** Broumovsko PLA, Adršpach (5362), 518 m a.s.l., 11.viii.1995, 2 ♀♀, J. Macek lgt. et det., coll. NMPC; Broumovsko PLA, Broumov (5463-64), 395 m a.s.l., vii.1917, 1 ♂, J. Sekera lgt., coll. NMPC; Dolní Branná (5459), 428 m a.s.l., 4.ix.1931, 1 ♀, K. Špaček lgt. et det. (the label is without the name of the collector, but the handwriting corresponds with that of Špaček), coll. NMPC; Nové Město nad Metují (5662), 332 m a.s.l., vii.1955, 1 ♀, J. Macek lgt., K. Holý det., coll. MMBC; Slatina nad Zdobnicí (5864), 420 m a.s.l., vii.1948, 1 ♂, J. Roubal lgt., coll. NMPC; Sobotka, Carbaník (5557), 305 m a.s.l., 3.ix.1948, 2 ♀♀, K. Samšíňák lgt., coll. NMPC; **Moravia bor.:** Poodří PLA, Albrechtický (6274), 241 m a.s.l., 2009, 1 ♂, J. Holuša lgt., K. Holý det. et coll.; Háj ve Slezsku (6174), 233 m a.s.l., 1.ix.1918, 1 ♀, V. Zavadil lgt., coll. NMPC; Jeseníky PLA, Kouty nad Desnou, by the Hlučivá Desná river (5868), 760 m a.s.l., 2.viii.2010, 1 ♂, S. Krejčík observ. and photographed, K. Holý det. (www.meloidae.com); Vsetín (6673-74), 342 m a.s.l., 27.vii.1909, 1 ♀, 28.vii.1909, 1 ♀, both V. Zavadil lgt., coll. NMPC; **Moravia centr.:** 10.viii.1896, 1 ♂, 25.viii.1896, 1 ♂, 20.vii.1905, 1 ♀, all J. Slavíček lgt., coll. MMBC; **Moravia mer.:** Brno (67-6865-66), 205 m a.s.l., 1.ix.1935, 1 ♀, F. Gregor lgt., coll. NMPC; Lhota u Pačlavic (6768), 260 m a.s.l., 1.vii.1996, 1 ♀, 10.vii.1997, 3 ♀♀, all K. Deneš lgt., M. Schwarz det., coll. OLML; **Moravia occ.:** Rovečín (= Rovečné) (6464), 572 m a.s.l., 1 ♀, A. Fleischer lgt., coll. MMBC; Ubušín (6363), 605 m a.s.l., 3.viii.1928, 1 ♀, 18.vii.1933, 1 ♂, 29.viii.1936, 1 ♀, all F. Gregor lgt., coll. NMPC.

Unidentified localities: Spot height Strážiště u Koma, v.1910, 1 ♂, coll. NMPC; Prague, on the window of FGMRI, 27.vii.1949, 1 spec., K. Holý det., coll. FGMRI (the specimen might have emerged from imported wood timber).

Non-labelled specimens: 1 ♀, coll. FGMRI; 1 ♂ and 1 ♀, coll. SMOC; 1 ♀, coll. MMBC and 1 ♂, coll. RMOC, both from the Slavíček's collection – probably Central Moravia.

In total we examined 36 mounted specimens from the territory of the Czech Republic (7 males, 12 females from Bohemia, 4 males, 13 females from Moravia), one locality with tens of observed specimens from Bohemia and one pictured male specimen from Moravia.

For completeness' sake we also included non-labelled specimens and specimens from doubtful or unidentified localities (3 males, 3 females and 1 specimen). However, these specimens might come from the Czech Republic as well as from the neighbouring countries.

Based on the given data, the flight period seems to be shorter extending from July to September which does not quite agree with the Kierych's (1973) statement on a longer flight period from July to November.

In the Czech Republic the specimens were collected in a wide altitude range from lowlands to mountains (184–1,062 m a.s.l.), nevertheless the occurrence in higher altitudes is predictable based on the unpublished finding of one specimen from the Alps collected in the altitude of 1,700 m a.s.l.

***Ibalia rufipes* Cresson, 1879 (syn.: *I. drewseni* Borries, 1891)**

Bohemia centr.: Čelákovice (5854), 184 m a.s.l., v.1946, 1 ♂, J. Matoušek lgt., K. Holý det., coll. MMBC; **Bohemia mer.:** Hluboká nad Vltavou (6952), 394 m a.s.l., 20.vii.1978, 1 ♀, Z. Karas lgt., K. Holý det. et coll.; Třeboňsko PLA, Chlum u Třeboně, Františkov (7055), 492 m a.s.l., v.2000, 1 ♂, J. Halada lgt., K. Holý det., coll. OLML; Třeboňsko PLA, Majdalena (7055), 438 m a.s.l., vi.1988, 1 ♀, K. Deneš lgt., M. Schwarz det., coll. OLML; **Bohemia or.:** Nepřívěc (5557), 305 m a.s.l., 14.v.1951, 1 ♂, K. Samšíňák lgt., coll. NMPC; **Bohemia:** Rájov, July, 1 ♀, K. Holý det., coll. FGMRI; **Moravia bor.:** Grygov (6469), 206 m a.s.l., i.1956, 1 ♀, K. Holý det., coll. FGMRI; **Moravia mer.:** Břeclav, Boří les wood (7266), 192 m a.s.l., 19.v.1972, 1 ♂, J. Strejček lgt., M. Schwarz det., coll. OLML; Moravský Písek (7069-70), 177 m a.s.l., v.1970, 1 ♀, L. Krejčíček lgt., K. Holý det., coll. MMBC; Vyškov (6767-68), 254 m a.s.l., 1964, 2 ♂♂, M. Kocourek lgt., K. Holý det., coll. MMBC; dtto, 1 ♀, M. Kocourek lgt., M. Schwarz det., coll. OLML.

In total 12 specimens were examined from the territory of the Czech Republic (3 males, 3 females from Bohemia and 3 males, 3 females from Moravia).

The flight period lasts from May to July which is one month longer than published by Spradbery (1970), who reared the adults of *I. rufipes* from a timber, emerging in the period from mid-May to June.

In the Czech Republic the specimens were collected in lowlands and hills (177–492 m a.s.l.), but Spradbery (1970) states a wider altitude range between 15 and 1,643 m a.s.l.

Threat status. Based on the scarcity of collecting data as well as infrequent encounters of adults in the wild we assess all species of Ibalidae to be rare and we propose them, based on Lukáš (2001), to be included in the red list of threatened species of the Czech Republic in the category “vulnerable”.

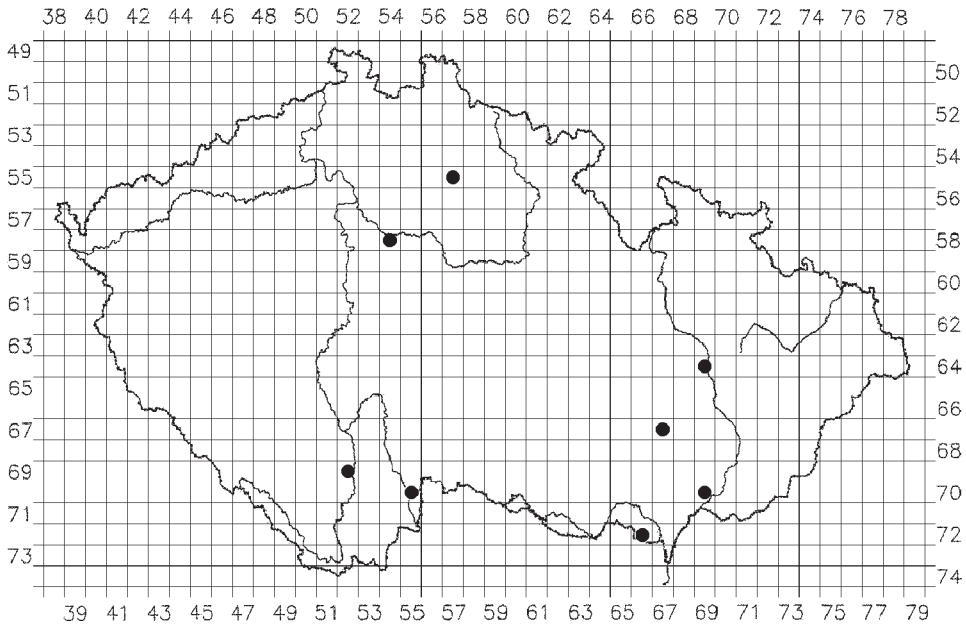


Fig. 3. Occurrence of *Ibalia rufipes* in the Czech Republic.
Obr. 3. Výskyt *Ibalia rufipes* v České republice.

CONCLUSION

In the present paper, all available data on Ibaliiidae from the territory of the Czech Republic are reviewed. We examined altogether 5 specimens of *Ibalia jakowlewi*, 36 specimens of *I. leucospoides* and 12 specimens of *I. rufipes* from various collections, adding three records of *I. leucospoides* from the literature as well as outdoor observation data from two localities. Seven specimens of *I. leucospoides* are of unclear origin and are mentioned for completeness' sake only.

I. leucospoides, the commonest species of the genus, is widely distributed from lowlands to mountains. Due to rare occurrence and scarcity of collecting data, the distribution pattern of both *I. jakowlewi* and *I. rufipes* could not be assessed. The flight period of *I. leucospoides* is in late summer (July–September), that of *I. rufipes* in early summer (May–July) and that of *I. jakowlewi* in May and June.

The superfamily Cynipoidea was not included in the published red list of threatened species of the Czech Republic (Farkač et al. 2005). Based on the rareness we propose to include all species of Ibaliiidae in the category “vulnerable”.

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SOUHRN

Čeďed' Ibaliidae (Hymenoptera: Cynipoidea) je v Evropě zastoupena třemi druhy, které se vyskytují i v České republice (v Čechách i na Moravě). *Ibalia jakowlewi* napadá pilořitku listnáčovou (*Tremex fuscicornis*) vyvíjející se v listnatých stromech, zatímco *I. leucospoides* a *I. rufipes* parazitují pilořitky rodu *Sirex*, *Urocerus* a *Xeris*, žijící v jehličnanech.

Z našeho území bylo dosud o čeledi Ibaliidae publikováno pouze 8 prací (Bouček 1957, Dvořák et al. 2010, Holý 2008, Kolubajiv 1962, Madl 1989, Mikula 1989, Pfeffer 1983, Slaviček 1928), které přinášejí pouze útržkovité informace. Jediný seznam sestavil Mikula (1989), který uvádí druhy *I. leucospoides* a *I. rufipes* z Čech i Moravy, ale opomenul *I. jakowlewi*, publikovanou dříve Pfefferem (1983) z Čech.

První práci o výskytu *I. leucospoides* publikoval Slaviček (1928) z župy Olomoucké. Bouček (1957) považuje tento druh za celkem vzácný, vyskytující se hlavně v borových lesích. Kolubajiv (1962) vychoval jednu samici ze smrkového dřeva napadeného pilořitkou velkou (*Urocerus gigas*), pocházejícího z okolí Prahy. Poslední údaj o výskytu tohoto druhu je z CHKO Poodří z Albrechtickek (Dvořák et al. 2010). První údaj o výskytu *I. jakowlewi* v Čechách publikoval Pfeffer (1983), který vychoval jednu samici z březového dřeva napadeného pilořitkou listnáčovou. První výskyt na Moravě uvádí Holý (2008). Druh *I. rufipes* je uveden pouze v Mikulově (1989) seznamu, bez uvedení konkrétních lokalit.

V této práci shrnujeme poznatky o výskytu čeledi Ibaliidae z České republiky. Zdrojem dat jsou především dokladové exempláře uložené v muzejích a soukromých sbírkách. V případě, že jsme nebyli schopni dohledat dokladové jedince, byly použity publikované údaje. Ve dvou případech jsme použili místo dokladových exemplářů fotografie *I. leucospoides* z webových stránek.

Nejčastěji se vyskytujícím druhem s 36 dokladovými jedinci je *I. leucospoides* (plus 3 záznamy z literatury, 7 ex. s nedostatečně lokalizovanými údaji a desítky pozorovaných jedinců). Dospělci *I. leucospoides* létají v pozdním létě od července do září od nížin po horské smrkové lesy. *I. jakowlewi* je ve sbírkách zastoupena pouze 5 exempláři. Létá od května do června a nejvyšší zaznamenaná nadmořská výška byla 443 m. Od druhu *I. rufipes* je známo 12 jedinců. Dospělci létají v květnu – červenci od nížin do středních poloh, ale vzhledem k údajům z okolních států (Spradbery 1970) lze očekávat nálezy i z nejvyšších poloh pohraničních pohoří.

Nadčed' Cynipoidea nebyla zahrnuta v Červeném seznamu České republiky (Farkač et al. 2005). Vyhodnocením shromážděných údajů navrhuje zahrnout všechny druhy čeledi Ibaliidae do kategorie zranitelné (VU).



Fig. 4. *Ibalia leucospoides*, male. Jeseníky PLA, Kouty nad Desnou, by the Hlučivá Desná river, 2.viii.2010, photo by S. Krejčík (www.meloidae.com).
Obr. 4. *Ibalia leucospoides*, samec. CHKO Jeseníky, Kouty nad Desnou, Hlučivá Desná, 2.VIII.2010, foto S. Krejčík (www.meloidae.com).



Fig. 5. *Ibalia jakowlewi*, female. Velký Osek, wood of Bačov, 2008, reared from *Betula* log, photo by K. Holý.
Obr. 5. *Ibalia jakowlewi*, samice. Velký Osek, les Bačov, 2008, vychována z březového kmene, foto K. Holý.



Fig. 6. *Ibalia rufipes*, female. Hluboká nad Vltavou, 20.vii.1978, photo by K. Holý.
Obr. 6. *Ibalia rufipes*, samice. Hluboká nad Vltavou, 20.VII.1978, foto K. Holý.