

***Myrmica curvithorax* (Hymenoptera: Formicidae) in the Czech Republic:
a contribution to the knowledge of its distribution and biology**

**Príspevek k rozšíření a biologii *Myrmica curvithorax* (Hymenoptera: Formicidae)
v České republice**

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Abstract. The biology of the West Palearctic species *Myrmica curvithorax* Bondroit, 1920 is poorly known. In general, it inhabits salt marshes and xerothermous grasslands, especially patches with low, thin vegetation. The presence of *M. curvithorax* at three localities in the Czech Republic has been previously documented and published; specimens from another 10 localities are in the collections of P. Pech and P. Werner. *Myrmica curvithorax* occurs mainly in dry, sunny, human-altered grassy biotopes. Seventeen nests were found to contain on average 400 workers and 0.6 queen (maximum numbers were 1231 workers and 5 wingless queens). *Myrmica curvithorax* seems to be an oligogynous species, and most nests had no queen.

INTRODUCTION

Myrmica curvithorax Bondroit, 1920 is a little known ant species distributed from Central Europe to the Altai Mts. (Radchenko & Elmes 2010; Seifert 1988). The taxonomic history of this species is complicated (see Radchenko & Elmes (2010)). In the last two decades, some authors have called it *Myrmica salina* Ruzscky, 1905 (e.g. Seifert 1988, 2002, 2007; Radchenko et al. 2004), whereas others used *Myrmica slovaca* Sadil, 1952 (e.g. Czechowski 2009). The latter name was recently synonymised with *Myrmica curvithorax* Bondroit, 1920 by Radchenko & Elmes (2010), and Seifert (2011) confirmed this synonymy (whereas *M. salina* Ruzscky, 1905 is another species).

The ecological requirements of *M. curvithorax* are unique among *Myrmica* ants: it is a dry and sun loving species that tolerates high salinity and high ground water levels. According to Seifert (2002) it is adapted to the environment of Siberian and Central Asian solonchaks. *Myrmica curvithorax* is very rare in Central Europe, although it can reach high densities at some sites (Seifert 1988, 2002, 2007). In general, it inhabits salt marshes and xerothermous grasslands, especially patches with low, thin vegetation (Seifert 1988, 2007; Radchenko et al. 2004). Apart from salt marshes, *M. curvithorax* is also abundant in some military training areas where it lives on the margins of ponds (Seifert 2002). Its presence in the vicinity of human settlements has also been reported (Seifert 2007; Steiner et al. 2003; Zettel et al. 2008). Tartally (2005) refers to the presence of *M. curvithorax* on a former rice field, at the time of sampling a slightly salinised marshy meadow. According to Seifert (2002), extreme seasonal variations in humidity and temperature, and low vegetation cover are much more important factors for *M. curvithorax* than the level of salinity.

Other aspects of the biology of *M. curvithorax* are poorly known. According to Seifert (1988) and Assing (1987) it is a monogynous species with no more than 1000 workers per nest. Maximum nest density is 0,25 nest/m², and maximum dominance 64%. *M. curvithorax* is highly aggressive towards other *Myrmica* species.

MATERIAL AND METHODS

There are very few published records of *M. curvithorax* from the Czech Republic (Sadil 1952; Bezděčková & Bezděčka 2011; Seifert 2002). Several unpublished records exist in museums and private collections, for example Seifert (1988) refers to six localities for *M. curvithorax* in the former Czechoslovakia, and Bezděčka (1996) reports *M. curvithorax* from South Moravia (without any details). In this paper I present both published and unpublished records of *M. curvithorax* in the Czech Republic from my personal collection and from the collection of P. Werner (Praha, Czech Republic), and several notes on the biology of *M. curvithorax*.

The faunistic grid mapping system follows the Central European system of floristic and faunistic data mapping according to Ehrendorfen & Hamann (1965). The map fields are delimited by longitudinal parallels and meridians. Each field has an approximate area of 11,2 x 12 km and is identified by a four-figure numerical code where the first two figures identify the row and the last two the column (Bogusch et al. 2007).

RESULTS

Distribution in the Czech Republic. Collections belonging to myself (in Hradec Králové) and Werner (in Praha) contain samples from ten localities in the Czech Republic; additionally, there are three records in the literature. Other samples, possibly deposited in the collections of museums or other myrmecologists, are not included in the following overview (Fig. 1):

- 1) Chomutov (5546b; 50.45°N, 13.4°E), 1.viii.1951 (Sadil 1952).
- 2) Praha-Košíře, Kotlářka (5952a; 50.069°N, 14.361°E), viii.1984, 1 queen, 3 workers, Kašpárek lgt., P. Werner det. et coll.; 14.vi.2008, many workers, P. Werner lgt., det. et coll.; 6.v.2011, 1 queen, 63 workers, P. Pech lgt., det. et coll., hand sampling, short, mowed, sunny, dry sward near petrol station in the town.
- 3) Praha-Prosek (5852d; 50.117°N, 14.483°E), 11.vii.1979, 2 workers, Z. Kolečka lgt., P. Werner det. et coll.
- 4) Praha 8, Bedřichovská street (5852d; 50.126°N, 14.479°E), 28.vi.2009, 5 workers, V. Vohralík lgt., P. Werner det. et coll.
- 5) Přelouč, Slavíkovy ostrovy (5959a; 50.033°N, 15.55°E), 10.–12.viii.2006, 1 worker, Boubertlová lgt., P. Werner det. et coll., sugar bait, former field – a meadow at the time of sampling.
- 6) Zliv (6952a; 49.067°N, 14.35°E), 2010–2011, 20 queens, 82 males, several thousand workers, P. Pech lgt., det. et coll., hand sampling, several short, mowed, and sunny swards and small parks among apartment buildings in the town.
- 7) Praha-Strašnice, Skalka housing estate (5953a; 50.069°N; 14.509°E), 22.vii.2009, 15.ix.2010 and 6.v.2011, 4 queens, 2 males, circa two thousand workers, P. Pech lgt., det. et coll., hand sampling, short, mowed, sunny turf in a park in the town.
- 8) Kopidlno (5657d; 50.317°N; 15.25°E), 27.vi.2011 and 14.x.2012, 1 queen, many workers, P. Pech lgt., det. et coll., hand sampling, short, mowed, sunny, and dry sward and meadows (former fields) near a petrol station near the town.
- 9) Opatovice (5860d; 50.1°N, 15.817°E), 13.–15.vi.2010, 10 workers, Tropek et Černá lgt., P. Pech det. et coll., yellow pan traps, short turf on revitalised coal ash settling basin.

10) Milovice, Benátecký vrch (5755c; 50.233°N, 14.883°E), 4.viii.2009, 2 workers, Čížek et Zámečník lgt., P. Pech det. et coll., pitfall traps, xerothermous grassland slope in a former military training area.

11) Oškobrh (5857c; 50.133°N, 15.217 °E), 2009, 1 worker, Čížek et Zámečník lgt., P. Pech det. et coll., pitfall traps, ancient and medieval marlstone quarry, the trap was probably situated on a dry and south-facing slope.

12) Sedlec u Mikulova, Slanisko u Nesytu (7266a; 48.767°N, 16.7°E), 19.vi.2010, natural salt marsh (Bezděčková & Bezděčka 2011).

13) Pouzdřany, 11.viii.1936 (7065d; 48.93333°N, 16.61667°E) (Seifert 2002).

Site preference. According to my observations, *M. curvithorax* is rare in natural habitats in the Czech Republic and mainly inhabits human-altered biotopes. Its presence has been recorded on short and sunny swards in towns and on road verges, a revitalised coal ash settling basin, a former military training area, a former field and natural salinas. P. Amcha found two nests in crevices in pavement in Praha-Košíře, Kotlářka (P. Amcha, pers. comm.). It seems that *M. curvithorax* often nests in *Festuca trachyphylla* turfs (Zliv, Praha-Košíře, Kopidlno) but I have no precise data to support this. In general, *M. curvithorax* prefers moderately dry or dry, sunny biotopes, but I have found several nests in a slightly shaded site among trees in Zliv. Herbs and trees were recorded on one *M. curvithorax* site in Zliv: *Achillea millefolium*, *Dactylis glomerata*, *Festuca trachyphylla*, *Hypericum perforatum*, *Lotus corniculatus*, *Lolium perenne*, *Pinus nigra*, *Plantago lanceolata*, *Potentilla argentea*, *Sorbus aucuparia*, *Taraxacum officinale* agg., *Trifolium repens*.

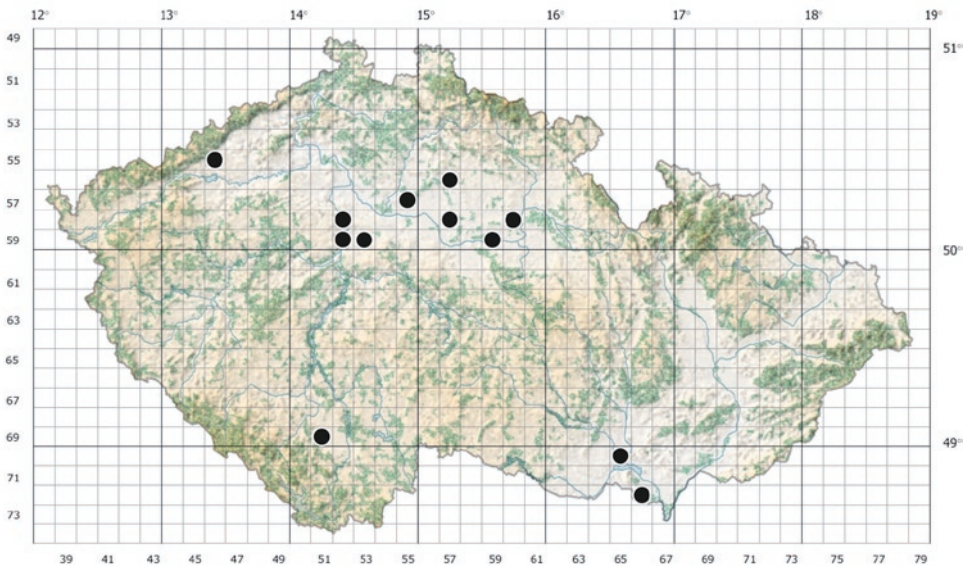


Fig. 1. The distribution of *Myrmica curvithorax* in the Czech Republic based on Sadil (1952), Seifert (2002), Bezděčková & Bezděčka (2011) and the collections of P. Pech and P. Werner.

Obr. 1. Rozšíření mravence *Myrmica curvithorax* v České republice podle Sadila (1952), Seiferta (2002), Bezděčkové & Bezděčky (2011) a soukromých sbírek P. Pecha a P. Wernera.

Table 1. Contents of several excavated *Myrmica curvithorax* nests. Legend: + – presence; – – absence; ? – unknown.
 Tabulka 1. Obsah vykopaných hnízd *Myrmica curvithorax*. Legend: + – přítomnost, – – nepřítomnost; ? – stav neznámý.

Locality/Lokalita	Date/ Datum	Workers/ Dělnice	Winged queens/ Okřídlené královny	Wingless queens/ Bezkrídle královny	Males/ Samci	Larvae/ Larvy	Pupae/ Kukly	Eggs/ Vajíčka	Myrmecophiles/ Myrmekofilové
Zliv	9.vi.2010	193	0	0	16	46	79	+	<i>Atelura formicaria</i> Heyden, 1853, aphids
Zliv	9.vi.2010	625	0	2	0	+	+	+	
Zliv	9.vi.2010	0	0	28	0	–	–	–	
Zliv	9.vi.2010	641	0	1	0	+	+	+	
Zliv	13.vi.2010	221	0	0	43	+	+	–	<i>A. formicaria</i> ; <i>Platyarthrus hoffmannseggii</i> Brandt, 1833
Zliv	13.vi.2010	1006	6	2	11	+	+	+	
Zliv	13.vi.2010	653	0	0	0	+	+	–	
Zliv	13.vi.2010	218	0	5	0	+	+	?	
Zliv	15.vi.2011	630	0	0	0	+	+	+	
Praha-Strašnice	15.vi.2010	63	0	0	0	–	35	–	aphids
Praha-Strašnice	15.vi.2010	1231	0	0	1	+	+	?	
Praha-Strašnice	6.v.2011	457	0	0	0	87	–	?	
Praha-Strašnice	6.v.2011	303	0	0	0	+	–	?	
Praha-Strašnice	6.v.2011	12	0	0	0	–	–	?	
Praha-Strašnice	6.v.2011	18	0	0	0	–	–	?	
Praha-Košíře	6.v.2011	34	0	0	0	–	–	–	
Kopidlno	27.vi.2011	38	0	1	0	16	23	+	
Kopidlno	14.x.2012	467	0	0	0	+	–	–	

Size and composition of colony. I dug and searched in a total of 17 nests at the following localities: Kopidlno, Praha-Strašnice, Praha-Košíře, Zliv. All the nests were frozen and subsequently I noted the number of adults, the number or the presence/absence of preimaginal stages, and the presence/absence of myrmecophiles (see below) (Table 1).

Most nests (more than 70%) were queenless. On the other hand, I found one “nest” with 28 queens and no workers. Besides this queen aggregation, the nests contained on average 400 workers and 0.6 queen per nest (at maximum 1231 workers and 5 wingless queens). The low number of males and winged queens recorded in the nests examined was due to the timing of this research, as they are in the pupal stage in May and have already left the nests by September.

Nest density. I studied nest density at two sites in Zliv: Zliv A is a short sward in a park partly shaded by a *Pinus* tree. Zliv B is a short and sunny sward on a road verge, ca. 500 m from Zliv A. At Zliv A I searched an experimental plot (12 m²) using a garden rake for ant nests on 8.viii.2010 and again on 9.ix.2010. At Zliv B I searched 8 m² on 11.viii.2010 only. During the first examination, *M. curvithorax* workers were widespread in the upper layer of ground and it was relatively difficult to decide whether or not, and which worker aggregations represented nests. Therefore, I distinguished between aggregations (more than 5) of workers only and workers with sexual individuals and/or preimaginal stadia. The aggregations of many workers without brood might indicate something other than a nest e.g. a site where aphids are tended. In August the nest density was more than three nests per m² at both sites if all aggregations of workers were counted as nests, but 1.0 (Zliv A) and 0.5 (Zliv B) nest per m² if only workers with brood and/or sexual individuals were counted. In September I searched Zliv A only. The number of nests was lower (2.25 and 0.75 nest/m², respectively) (Table 2).

These nest densities are very high compared with what is suggested by the literature. It seems that *M. curvithorax* can reach such high nest densities only locally and in some populations (see below).

The changing amount of nests, the absence of wingless queens in more than 2/3 of the nests, and the changes in the average amount of workers per nest (low numbers in spring and summer, high numbers in autumn, see Table 1) indicate the existence of seasonal polydomy in *M. curvithorax*, although more data are needed to study this phenomenon properly.

Table 2. Nest densities of *Myrmica curvithorax* in two sites in Zliv in 2010. Legend: NestAll – numbers of all aggregations of workers (more than five) per square metre; NestRed – numbers of aggregations of more than five workers with sexual individuals and/or preimaginal stadia per square metre.

Tabulka 2. Hustoty hnízd *Myrmica curvithorax* na dvou lokalitách ve Zlivi v roce 2010. Legenda: NestAll – počet všech shluků (více než pěti) dělnic na čtvereční metr; NestRed – počet shluků více než pěti dělnic, které zároveň obsahovaly pohlavní jedince nebo plod, na čtvereční metr.

		August/Srpen	September/Září
Zliv A	NestAll	3.67	2.25
	NestRed	1.08	0.75
Zliv B	NestAll	3.37	-
	NestRed	0.50	-

Nest construction. The maximum depth of nests was about 10–12 cm. Most *M. curvithorax* nests I saw had no aboveground construction. On several occasions, it was extremely hard to find the nest: I observed workers running at ground level, but the entrance (a simple hole)

was hardly visible and the exact location of the nest was almost undetectable without using a garden rake. On the other hand some nests had small (up to five cm), but clearly visible, aboveground soil constructions. These aboveground constructions seem to be constructed mainly during the spring and summer, as I observed none in the autumn. I recorded one particular nest in decayed wood (a piece of branch) in soil just below ground level.

Interspecific relationships. Several ant species shared *M. curvithorax* biotopes (I found *Lasius niger* (Linnaeus, 1758), *L. flavus* (Fabricius, 1782), *Formica cunicularia* Latreille, 1798, *F. rufibarbis* Fabricius, 1793, *M. rugulosa* Nylander, 1849, *M. schencki* Viereck, 1903, *Solenopsis fugax* (Latreille, 1798) and *Tetramorium* sp.). Two of the *M. curvithorax* nests examined contained *S. fugax* workers. I observed two different patterns in *M. curvithorax* nest distribution in relation to the distribution of other ants: 1) In Zliv, *M. curvithorax* seemed to be very aggressive towards other ants, all other species (except *L. flavus*) being rare, in fact nearly absent, in sites where the *M. curvithorax* was abundant. The border between *M. curvithorax* dominated (and species poor) sites and sites with more diverse ant fauna but without *M. curvithorax* colonies was relatively sharp and clear. Though the total extent of the sward in Zliv B was circa 30 m², *M. curvithorax* occurred in only 8 m² of it. Surprisingly, I noted neither botanical nor any other visible differences between the “*M. curvithorax* zone” and the rest of the swards. 2) On the other hand, *M. curvithorax* nests in Kopidlno were dispersed over an area exceeding 1,5 ha with no conspicuous aggregation nor easily visible effect on other ants.

Several *M. curvithorax* nests contained the corpses of *L. flavus* (in chambers with larvae); additionally, I observed *M. curvithorax* workers attacking *L. flavus* workers in the field several times. *M. curvithorax* probably regularly hunts and eats *L. flavus*. Once (in Zliv A) *M. curvithorax* attacked a nest of *L. niger* that I had damaged while taking a sample of workers. In this attack *M. curvithorax* captured and killed several *L. niger* larvae, pupae, and workers and transported them to their own nest; the rest of the *L. niger* workers put up no defence and escaped underground.

Miscellaneous. I noted several incidents of swarming: 22.vii.2009 (Praha, Na Skalce), 10.viii.2010 and 9.ix.2010 (both Zliv), but it is probable that I did not note all the swarming taking place. I observed the movement of a whole colony in Praha-Košíře at noon 6.v.2011. Several hundred workers moved with larvae and two queens over a distance of ca. 3 metres. Concerning myrmecophiles, I recorded *Atelura formicaria* Heyden, 1853, *Platyarthrus hoffmannseggii* Brandt, 1833 and undetermined aphids inside nests (Table 1).

DISCUSSION

It is often quite difficult to detect the presence of *M. curvithorax* and to find its nests. The workers do not behave conspicuously and nests without above-ground constructions can be easily overlooked. Except during swarming it is usually necessary to spend several hours on your knees in the close vicinity of streets, pavements, and bus stops with many staring people. Moreover, *M. curvithorax* is sometimes very locally distributed: nests might be concentrated in high densities in a small area, whereas the rest (possibly the majority) of the locality hosts no or almost no *M. curvithorax* nests. All these factors possibly contribute to the rarity of *M. curvithorax* records.

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REFERENCES

- ASSING V. 1987: Zur Kenntniss der Ameisenfauna des Neusiedlergebietes. *Burgeländische Heimatblätter* **49**: 74–90.
- BEZDĚČKA P. 1996: První příspěvek k poznání mravenců jihovýchodní Moravy (Hymenoptera: Formicidae). (The first contribution to the knowledge of the ants from the south-eastern Moravia (Hymenoptera, Formicidae)). *Sborník Přírodovědného klubu v Uh. Hradišti* **1**: 70–74 (in Czech, English abstract).
- BEZDĚČKOVÁ K. & BEZDĚČKA P. 2011: First records of the myrmecophilous fungus *Rickia wasmannii* (Ascomycetes: Laboulbeniales) in the Czech Republic. *Acta Musei Moraviae, Scientiae Biologicae* (Brno) **96**: 193–197.
- BOGUSCH P., STRAKAJ. & KMENT P. 2007: Annotated check-list of the Aculeata (Hymenoptera) of the Czech Republic and Slovakia. Komentovaný seznam žahadlových blanokřídlých (Hymenoptera, Aculeata) České Republiky a Slovenska. *Acta Entomologica Musei Nationalis Pragae Supplementum* **11**: 1–300 (in English and Czech).
- CZECHOWSKI W. 2009: *Myrmica slovacica* Sadil and *Myrmica deplanata* Emery rather than *M. salina* Ruzski and *M. lacustris* Ruzski (Hymenoptera: Formicidae) in Poland. *Polish Journal of Entomology* **78**: 315–317.
- RADCHENKO A. & ELMES G. W. 2010: *Myrmica* ants (Hymenoptera, Formicidae) of the Old World. *Fauna Mundi* **3**: 1–789.
- RADCHENKO A., STANKIEWICZ A. & SIELEZNIOW M. 2004: First record of *Myrmica salina* Ruzski (Hymenoptera: Formicidae) for Poland. *Fragmenta Faunistica* **47**: 55–58.
- SADIL J. 1952: A revision of the Czechoslovak forms of the genus *Myrmica* Latr. (Hym.). *Sborník Entomologického Oddělení Národního Muzea v Praze* **27** (1951): 233–278.
- SEIFERT B. 1988: A taxonomic revision of the *Myrmica* species of Europe, Asia Minor and Caucasia (Hymenoptera, Formicidae). *Abhandlungen und Berichte des Naturkundemuseums Görlitz* **62**: 1–75.
- SEIFERT B. 2002: The „type“ of *Myrmica bessarabica* Nasonov 1889 and the identity of *Myrmica salina* Ruzski 1905 (Hymenoptera, Formicidae, Myrmicinae). *Mitteilungen der Münchner Entomologischen Gesellschaft* **92**: 93–100.
- SEIFERT B. 2007: *Die Ameisen Mittel- und Nordeuropas*. Lutra Verlags- und Vertriebsgesellschaft, Tauer, 368 pp.
- SEIFERT B. 2011: A taxonomic revision of the Eurasian *Myrmica salina* species complex (Hymenoptera: Formicidae). *Soil Organisms* **83**: 169–186.
- STEINER F. M., SCHLICK-STEINER B. C., SCHÖDL S. & ZETTEL H. 2003: Neues zur Kenntniss der Ameisen Wiens (Hymenoptera: Formicidae). *Myrmecologische Nachrichten* **5**: 31–35.
- TARTALLY A. 2005: *Myrmica salina* (Hymenoptera: Formicidae) as a host of *Maculinea alcon* (Lepidoptera: Lycaenidae). *Sociobiology* **46**: 1–5.
- ZETTEL H., ZIMMERMANN D., SORGER D. M. & WIESBAUER H. 2008: Aculeate Hymenoptera am 8. Weiner Tag der Artenvielfalt 2008. *Sabulosi* **1**: 1–10.

SOUHRN

Myrmica curvithorax Sadil, 1952 je málo známým druhem mravence. Jeho areál sahá od střední Evropy po Altaj, přičemž je snad primárně adaptován na život na středoasijských slaniscích a solončákách (Seifert 2002). Ve střední Evropě je vzácný, žije zde ponejvíce na slaniscích a suchopárech s minimem vegetace (Radchenko et al. 2004; Radchenko & Elmes 2010; Seifert 1988, 2007). Biologie *M. curvithorax* je málo známa. Jisté je, že toleruje vysokou salinitu a extrémní výkyvy teplot i vlhkosti. Podle literatury (Assing 1987; Seifert

1988) jde o monogynní druh s poměrně malým počtem dělnic v hnízdě (do 1000) a maximální hnízdní hustotou 0,25 hnízda/m². K jiným druhům mravenců je velmi agresivní (Seifert 1988, 2007).

Z České republiky existují pouze tři publikované zprávy o výskytu *M. curvithorax*. Deset dalších, dosud nepublikovaných údajů obsahuje má sbírka (Hradec Králové, zkratka PP) a sbírka P. Wernera (Praha, zkratka PW). Zjednodušený přehled těchto nálezů zde udávám v pořadí lokalita-rok sběru-zdroj informací (pro kompletní údaje viz hlavní text): Chomutov (5546b), 1951, Sadil (1952); Praha-Košíře, Kotlářka (5952a), 1984, 2008, 2011, PP, PW; Praha-Prosek (5852d), 1979, PW; Praha 8, Bedřichovská ul. (5852d), 2009, PW; Praha-Strašnice, sídliště Skalka (5953a), 2009, PP; Přelouč, Slavíkovy ostrovy (5959a), 2006, PW; Zliv (6952a), 2010–2011, PP; Kopidlno (5657d), 2011–2012, PP; Opatovice (5860d), 2010, PP; Milovice, Benátecký vrch (5755c), 2009, PP; Oškobrň (5857c), 2009, PP; Sedlec u Mikulova, Slanisko u Nesytu (7266a), 2010, Bezděčková & Bezděčka (2011); Pouzdřany (7065d), 1936, Seifert (2002) (obr. 1).

Většina těchto nálezů pochází z člověkem silně pozměněných biotopů, jako jsou trávníky ve městech a na okrajích silnic.

V roce letech 2010 a 2012 jsem vykopal celkem 17 hnízd *M. curvithorax* ve čtyřech různých lokalitách (Kopidlno, Praha-Strašnice, Praha-Košíře, Zliv) a spočítal jejich obyvatele. Nepočítáme-li jedno „hnízdo“ s 28 královnami a žádnou dělnicí ani plodem, byl průměrný počet 0,6 královny a 400 dělnic v hnízdě (maximálně 5 královen a 1231 dělnic), přičemž více než dvě třetiny hnízd byly bez královny (rozumí se bezkřídle; panenské, okřídlené královny zde neuvádím). Z myrmekofilů jsem našel druhy *Atelura formicaria* Heyden, 1853, *Platyarthrus hoffmannseggii* Brandt, 1833 a blíže neurčené mšice (Tabulka 1).

Hustota hnízd se podle mého pozorování ve Zlivi v roce 2010 pohybovala mezi 0,5 a 3 hnízdy/m² v závislosti na roční době a kritériích použitých pro definici hnízda (Tabulka 2). Hnízda sama byla většinou bez nadzemní konstrukce (pouze s jednoduchým vstupním otvorem) a 10–12 cm hluboká. Ve shodě s literaturou jsem pozoroval výraznou agresivitu *M. curvithorax* vůči jiným stejně velkým mravencům, především k rodu *Lasius* a jiným druhům rodu *Myrmica*, přičemž *L. flavus* je nepochybně pravidelně loven jako kořist. Rojení jsem zaznamenal 22.VII.2009, 10.VIII.2010 a 9.IX.2011.

V protikladu k malému množství publikovaných zpráv není *M. curvithorax* patrně nijak výjimečně vzácným mravencem. Obsazuje ale biotopy, kterým se myrmekologové málokdy věnují, a tento fakt spolu s nenápadností jeho hnízd zřejmě vede k jeho častému přehlížení. Navíc tento druh vytváří na některých lokalitách velmi husté, ale zároveň velmi lokální populace, omezené třeba na několik čtverečních metrů, přestože lokalita sama je podstatně větší. Sběr *M. curvithorax* je dále obvykle nutno provádět na trávnících v blízkosti silnic a chodníků, na očích zvědavých kolemjdoucích a někdy znečištěných psími fekáliemi, což může leckoho od pátrání po něm odradit.