

Kuhl's pipistrelle, *Pipistrellus kuhlii* (Kuhl, 1817) or *Pipistrellus lepidus* Blyth, 1845, in Central Poland – accidental record or a result of expansion?

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With 3 figures

The European range of *Pipistrellus kuhlii* (Kuhl, 1817) mainly covers the southern part of the continent. The most northward sites in the western part of Europe are situated in southern England, northern France, southern Germany and Austria (VERNIER & BOGDANOWICZ 2000, BOGDANOWICZ 2004). In Eastern Europe new sites have recently been discovered in central Ukraine (GODLEVSKY et al. 2000, MERZLIKIN & LEBIED 2001, GAVRIS & KOCERZ-HINSKAJA 2002, SACHANOWICZ et al. 2006). Three individuals were also recorded in Central Europe in 2004-2006, one in Slovakia (CEL'UCH & ŠEVČÍK 2006), one in Romania (IFRIM & VALENCIUC 2006) and one in southern Poland (SACHANOWICZ et al. 2006).

On 22 Dec. 2004, a male of *P. kuhlii* was recorded in Warsaw (Central Poland: 52°15'N,

20°55'E). The bat was found on a staircase of a nine-storey building. Its right forearm was 36.00 mm long, the left forearm measured 36.02 mm. The fur on its back was of a noticeably lighter colour than in *Pipistrellus nathusii* with an admixture of yellow, especially around the head. There was a noticeable edge of patagium and tail membrane which displayed a particularly visible broad, bright white stripe. Its width was the smallest at the edge of the tail membrane and largest (up to 0.6 cm) in 1/3 distance between the V finger and the hind leg (Fig. 1 and 2).

Thus the Warsaw record is chronologically the first finding of this species in Poland and the northernmost locality on the continent (SACHANOWICZ et al. 2006). The distance from the nearest known site is remarkable: ca. 240 km



Fig. 1. Portrait of *Pipistrellus kuhlii* in the found individual.



Fig. 2. Colouration of the head, edge of patagium and tail membrane in the found individual of *Pipistrellus kuhlii*.

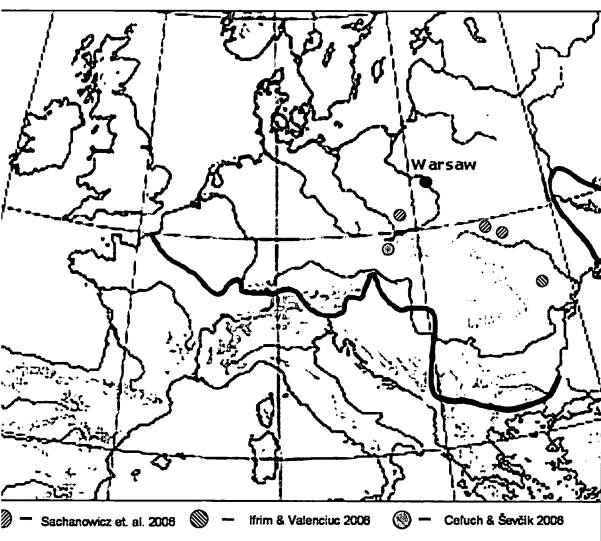


Fig. 3. Range of *Pipistrellus kuhlii* (after BOGDANOWICZ 2004) and new localities found after 2004 (CEL'UCH & ŠEVČÍK 2006, IFRIM & VALENCIU 2006, SACHANOWICZ et al. 2006).

from the locality in the southern part of the country (Fig. 3).

This finding could constitute evidence of a hypothesis of a natural dispersion of *P. kuhlii*. Its presence in a large city might also support this claim. In Europe it is known as the most synanthropic species of bats (RAKHMATULINA 1983, HAFFNER & STUTZ 1986, BOGDANOWICZ 2004), frequently occurring in large cities. For example in Padua (northern Italy) it is one of the dominant bat species (VERNIER 1995). The assumption of the northern expansion of *P. kuhlii* is confirmed by reports from Russia and Ukraine. Since 1970s, a rapid increase in the number of sites and expansion of the geographic range of this species was noted in these locations (STRELKOV et al. 1985, GODLEVSKY et al. 2000). As early as 1999, in Kiev, there were six individuals of *P. kuhlii* noted hibernating in two places. The natural expansion was predicted in Russia and Ukraine due to the high rate of changes occurring in that part of the range (STRELKOV et al. 1985, GODLEVSKY et al. 2000). The individual found in Warsaw could belong to such still increasingly numerous and expanding populations. They are probably overcrowded which results in intensive dis-

persal of individuals in various directions. The climate warming in Europe resulting in more frequent mild winters in Poland may also constitute an important factor.

Another hypothesis claiming that the bat was brought by a human being e. g. transported by car, train or airplane cannot be completely rejected. The fact that the bat was found in a large city with developed communication possibilities to major European cities stands to support this claim. Moreover, the bat was found during hibernation – so it is possible that it has chosen a winter roost in an unused means of transport. In the winter of 1989 there was report of a case of transporting *P. kuhlii* in a truck from northern Italy to the Netherlands (LINA 1990).

The existence of stable populations of *P. kuhlii* in central Poland is hardly probable now, however this does not exclude such a possibility in the future should the dispersal of animals from breeding areas maintain or intensify. In Warsaw the conditions for this species are favourable since the ecologically close *Pipistrellus pipistrellus* is rare there (STUTZ & HAFFNER 1995, LESIŃSKI et al. 2001) and does not form a stable urban population as it does in other large European cities like Brno (GAISLER & BAUEROVÁ 1985/86, GAISLER et al. 1998), Berlin (HAENSEL 1982), London (MICKLEBURGH 1987) or Madrid (BENZAL & MORENO 1989).

Recent genetic study on *P. kuhlii* showed significant differences between populations from western and eastern Europe (MAYER et al. 2007). The Ukrainian bats probably represent a new species – *Pipistrellus lepidus* Blyth, 1845. External features of the individual found in Warsaw suggest that it came from eastern population, and, if the status of new species will be confirmed, it should be classified as *P. lepidus*.

Summary

The most northern locality of *Pipistrellus kuhlii* was recorded in Warsaw (Central Poland), ca. 240 km from the

nearest known locality. A male of this species hibernating in a building was found on 22 Dec. 2004. This finding confirms the expansion of the European range of *P. kuhlii* (or *P. lepidus* if its status as a separate species will be confirmed) to the north that has been recently observed.

Zusammenfassung

Weißbrandfledermaus, *Pipistrellus kuhlii* (Kuhl, 1817) or *Pipistrellus lepidus* Blyth, 1845, im zentralen Polen – Zufallsfund oder Ergebnis einer aktuellen Expansions?

Es wird über den nördlichsten Fund der Weißbrandfledermaus (*Pipistrellus kuhlii*) in Warschau (zentrales Polen) berichtet, etwa 240 km von der nächstgelegenen bekannten Lokalität entfernt. Ein ♂, in einem Gebäude überwintert, wurde am 22.XII.2004 entdeckt. Dieser Fund dokumentiert die Expansion von *P. kuhlii* (oder *P. lepidus*, wenn deren Status als eigenständige Art anerkannt wird) nach Norden, was gegenwärtig beobachtet werden kann.

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