

THE LÓDŹ ATLAS

Sheet XII: Natural heritage: The Fauna

Janusz Markowski, Janusz Hejdak, Tomasz Janiszewski, Jan Krzysztof Kowalczyk,
Zbigniew Wojciechowski & Piotr Zieliński

To date, within the area of Łódź, identified have been 2609 invertebrate species, i.e. approx. 20–25% of their potential composition (Markowski et al 1998). Out of the 2244 species of insects, the best recognised are *Psocoptera* (booklice) – 40 species, 57% of those found in Poland; *Lepidoptera* butterflies and moths – 658 and 22.5% respectively; among the *Diptera* (flies), the best recognised are *Syrphidae hoverflies* – 186 species and 50%; the *Coleoptera* (beetles) include snout weevils *Curculionidae*: 247 and 30%; ladybirds *Coccinellidae* – 38 and 46%; and *Hymenoptera - Sphecidae* – 125 and 60%. Among the outstanding groups of invertebrates, those well-examined include snails *Gastropoda* – 51 and 23%, and water fleas *Cladocera* – 38 and 39.6% (Markowski et al 1998).

The core of the invertebrate fauna are the species widely spread over the Central European Lowlands. Next to them, there exist the species representing the adjacent zoogeographical provinces. Some examples of the Atlantic elements include the woodlouse *Oniscus asellus*, clothes moth *Tinea pallescensella*, an andrena bee *Andrena armata*; taiga, the bumblebee *Bombus sibiricus*, and the hoverfly *Xylota coeruleiventris*; boreal, the hoverfly *Eristalis oestracea*, and the caddis fly *Tricholeiochiton fagesii*; mountain-boreal, the centipede *Lithobius curtipes*, the small heath bumblebee *Bombus jonellus*, the weevil *Scleropterus serratus* and snail *Nesovitrea petronella*; mountain: *Trachysphaera costata*, the ground beetle *Carabus linnaei*, weevil *Otiorrhynchus scaber*, hoverfly *Dasyphyrus frumentum*; sub-Mediterranean and sub-Pontian: Yellow V moth *Oinophila v-flava*; the ants *Camponotus fallax* and *Dolichoderus quadripunctatus*; the bee *Proanthidium oblongatum*; hoverfly *Volucella zonaria* (photo 1), the beetle *Ceroconia schaefferi*; robber fly *Dasyphagon diadema*, velvet ant *Paramyrmosa brunnipes* (Markowski et al 1998).

Being a metropolitan and industrial centre with well-developed international business contacts, Łódź has always been a destination for the various pests, frequently first-time arrivals in Poland, brought in imported food and textile raw materials. Some of them, e.g. the lesser grain borer *Rhyzopertha dominica*, long-headed flour beetle *Latheticus oryzae*, as well as the bean weevil *Acanthoscelides obtectus* have become part of the Polish fauna (Markowski et al 1998).

Forest areas and large parks boast a rich and diversified fauna. Special attention should be paid to the invertebrates living in Lagiewnicki Forest. Although only a few taxonomic groups have been studied, approximately 1000 species have been identified, e.g. over 400 species of butterflies and moths, 131 aculeata stinging wasps, 158 hoverflies, 19 robber flies *Asilidae*, 76 weevils, 17 ladybirds, and 15 booklice. Moreover, impressive butterflies such as swallowtail *Papilio machaon* and the purple emperor *Apatura ilia* are present in this forest habitat. (Markowski et al 1998).

Out of their overall number found in the area of Łódź, 32 invertebrate species are legally protected, including the bumblebees: large garden bumble bee, *Bombus ruderatus*, short-haired bumble bee *Bombus subterraneus*; ground beetles: *Carabus linnaei* and *Calosoma inquisitor*; and the bee beetle *Trichius fasciatus*. Two species - the hermit beetle *Osmodesma eremita* (photo 2), and the garden bumblebee are listed in Polska Czerwona Księga Zwierząt (Polish Red Data Book of Animals) (ed. Głowaciński 1992a), while another eleven invertebrates have been added to the national red list of endangered species, e.g. the ichneumon fly *Megarhyssa perlata*, the ant *Camponotus piceus*, bee *Proanthidium*, and the aforementioned bumblebees (Głowaciński 1992b). Three impressive species of ground beetles have disappeared from the city: the chafer *Copris lunaris*, stag-beetle *Lucanus cervus*, and the musk beetle *Aromia moschata* (Markowski et al 1998). The latter two are associated with a forest habitat. On the other hand, the household fauna is expanding e.g. pharaoh ant *Monomorium pharaonis* and harvestman *Pholcus phalangioides*. Also on the increase is the number of species of open habitats, such as railway areas and various wastelands. The latter have been settled by the paper wasp *Polistes gallicus* (photo 3), a species formerly found within the city limits in the 1940s. It was re-recorded in Arturówka in 1989 and in the following years in the area of Łódź-Widzew railway station, and on the meadows



Photo 1. Hoverfly *Volucella zonaria* – an impressive wasp-like fly, whose larvae develop in the nests of social wasps. A thermophilic species, found even in the centre of the city. (photo by M. Mastalerz)



Photo 2. *Osmodesma eremita* – an impressive beetle whose larvae live in rotting deciduous trees. An endangered species listed in Polish Red Data Book of Animals, in the city of Łódź only found in Lagiewnicki Forest. Legally protected (photo by M. Mastalerz)



Photo 3. *Polistes gallicus* – a thermophilic social wasp, building uncovered single-comb nests. Currently common in the city, even in the centre. (photo by M. Mastalerz)



Photo 4. *Argiope bruennichi* wasp spider – an impressive spider, recently enlarging its population and habitat. Lives in warm herb-rich meadows in the river valleys – Legally protected. (photo by A. Abraszewska-Kowalczyk)

by the River Łagiewniczanka. At present, this species is often encountered in the city, even in the city centre. Another hymenoptera – *Polistes nimpha*, previously found in many places in the southern part of Poland, was encountered here for the first time in 2001 and recorded at a few locations (map 1) (Kurzac, Michalski, oral information). Wasp spider *Argiope bruennichi* (photo 4) has been observed first time in 1999 in the Botanic Garden and then in further years (Kurzac, oral information). In 2001 it was observed near the Opolska street.

Literature and source

Markowski J., Wojciechowski Z., Kowalczyk J.K., Tranda E., Śliwiński Z., Soszyński B., 1998, Fauna Łodzi, Fundacja „Człowiek i Środowisko”, Łódź, s. 110.
Głowiński Z. (red.), 1992a, Polska czerwona księga zwierząt, PWRiL, Warszawa.
Głowiński Z. (red.), 1992b, Czerwona lista zwierząt ginących w Polsce, Zakład Ochrony Przyrody i Zasobów Naturalnych PAN w Krakowie, Kraków.

On the basis of the data collected in 1995–2001, 179 species of land vertebrates were identified: 11 amphibians, 4 reptiles, 125 breeding birds (see the legends to maps 3 and 4) and 39 mammals (Markowski et al 1998). Out of this number, 139 species are legally protected, while three, great crested newt *Triturus cristatus*, parti-coloured bat *Vesperilio murinus* and lesser noctule *Nyctalus leisleri* are seriously endangered and listed in the 'Polish Red Data Book of Animals' (Głowaciński 2001).

The most frequently encountered amphibians are the common frog *Rana temporaria* and common toad *Bufo bufo*, both of which mate in quite large numbers in forest ponds on the city's outskirts. The following species can be found in smaller numbers and in the rural-urban fringe only: common spade foot *Pelobates fuscus*, moor frog *Rana arvalis* (photo 1), pool frog *Rana lessonae*, common water frog *Rana esculenta*. The latter one is a hybrid form of the marsh frog *Rana ridibunda* and the pool frog. The locations of the smooth newt *Triturus vulgaris* and the European green toad *Bufo viridis* (map 2) are closest to the city centre. The rarest species in the city are the great crested newt *Triturus cristatus*, European tree frog *Hyla arborea*, and the European fire-bellied toad *Bombina bombina*, whose numbers and habitats tend to decrease. The city has been abandoned by the marsh frog and natterjack toad *Bufo calamita* – still recorded here in the 1980s (Markowski et al 1998, Zielinski et al 1998).

As far as reptiles are concerned, the sand lizard *Lacerta agilis*, common lizard *Lacerta vivipara*, slow-worm *Anguis fragilis* (photo 2) and grass snake *Natrix natrix* can be found. These species are exposed to extinction due to their low numbers and very limited habitats. Two other reptile species have become extinct already, i.e. the European pond terrapin *Emys orbicularis* and the adder *Vipera berus*. The terrapin was observed in the area of Chocianowice in the 1930s (Markowski et al 1998) and the adder could be found in Lagiewnicki Forest until the mid-1950s.

The distribution of mammals, especially insectivores, bats and rodents, has only been partially studied to date. The data presented in this study are the findings of fauna research in selected places. The majority of the mammals present are associated with forests, parks and clumps of trees, and for this reason most records come from the city's rural-urban fringe (map 2). Some species, e.g. the East European hedgehog *Erinaceus roumanicus*, red squirrel *Sciurus vulgaris*, or the striped field mouse *Apodemus agrarius* (photo 3) are also found in city parks, e.g. 3 Maja, Źródłiska I and II, cemeteries e.g. Doly and Żydowski, as well as allotments. Beech marten *Martes foina*, primarily inhabiting mountainous terrains, has recently moved to cities. In Łódź, it occupies abandoned industrial buildings, attics of houses and garages both in the city centre and on the outskirts. Intensive traffic is one factor that strongly limits the number of species in the city. A lot of records refer to specimens killed by cars (Markowski et al 1998). In the city centre it is also possible to find synanthropes: brown rat *Rattus norvegicus* (it finally had forced out the black rat *Rattus rattus* in the 1950s) and the house mouse *Mus musculus*. Serotine *Eptesicus serotinus*, brown long-eared bat *Plecotus auritus*, grey long-eared bat *Plecotus austriacus*, pipistrelle *Pipistrellus pipistrellus*, greater mouse-eared bat *Myotis myotis*, and parti-coloured bat *Vesperilio murinus* seek shelter in attics and lofts. In Lagiewnicki Forest, there lives the noctule *Nyctalus noctula* and, quite rare in Poland, lesser noctule *Nyctalus leisleri* (photo 4). On the borders between dense and dispersed built-up areas predatory mammals can be found: polecat *Mustela putorius* (in 1986 in the warehouses in Wojska Polskiego Street next to Lagiewnicka Street), weasel *Mustela nivalis* (several times in the area of the Great Theatre), fox *Vulpes vulpes* (seen several times in Zarzewo in the quadrant between Łodowa, Przybyszewskiego, Piernicza, and Jędrzejowska Streets). Roe deer *Capreolus capreolus* can be found in forests and fields, and comes in large numbers in Lagiewnicki Forest. Its population has shown a range of adjustments to enhanced human penetration, e.g. giving birth in crop farming areas adjacent to forests or marshes. Small herds can be observed in Janów, Widzew-Wschód, and in the Botanic Garden as well.



Photo 1. Mating moor frogs *Rana arvalis* – ooviparous, the female delivers tiny, yet entirely self-sufficient offspring in early spring (photo by J. Hejdak)



Photo 2. Slow-worm *Anguis fragilis* – ovoviparous, the female delivers tiny, yet entirely self-sufficient offspring in early spring (photo by J. Hejdak)



Photo 3. Striped field mouse *Apodemus agrarius* – a thermophilic social wasp, building uncovered single-comb nests. Currently common in the city, even in the centre. (photo by A. Abraszewska-Kowalczyk)



Photo 4. Common noctule *Nyctalus noctula* – reproductive colonies are usually found in large holes of old trees (photo by J. Hejdak)

Since the late 1980s, the wild boar *Sus scrofa* has been found in Lagiewnicki Forest, whose population reaches the number of 30 specimens. In the 1980s and 1990s the elk (*Alces alces*) was sporadically encountered there, too.

Several rare bat species can be found within the city limits of Łódź, e.g. the noctule, as well as large ungulate mammals, e.g. the roe deer and wild boar, which is definitely one of the most interesting nature facts.

The red squirrel *Sciurus vulgaris* which, until 1970, used to live in Sienkiewicza Park, has disappeared from the green areas of Łódź's inner-city. At present, it can be encountered in larger parks and tree-grown areas outside the inner-city, as well as in the rural-urban fringe. Other animal species that can be found on the outskirts of the city also include: the rabbit *Oryctolagus cuniculus*, and the hare *Lepus europaeus* which sometimes causes damage to allotments. Five species of bats have been recorded in Lagiewnicki Forest, including the common noctule *Nyctalus noctula*. The pine marten *Martes martes*, and the increasingly rare badger *Meles meles*, have been observed here as well (Tranda and others, 1983).

Literature and source

Markowski J., Wojciechowski Z., Kowalczyk J.K., Tranda E., Śliwiński Z., Soszyński B., 1988, Fauna Łodzi, Fundacja „Człowiek i Środowisko”, Łódź, s. 110.
Głowiński Z. (red.), 2001, Polska czerwona księga zwierząt, PWRiL, Warszawa.

Within the administrative boundaries of Łódź there nest 119 bird species (Markowski et al 1998). Like other major cities, Łódź undergoes continuous and dynamic processes that both enrich and impoverish the avifauna. The former of these processes are most conspicuous in the inner-city, whereas the latter are prevalent in the suburban zone. These are the localities where the majority of the species nest, with the northern part that incorporates Lagiewnicki Forest, as well as the dampest western areas being particularly opulent in this respect (map 4). On the city outskirts bird communities are very similar to those found in the exurban zone. A large number of species is associated with the still significant variety of natural habitats in the rural-urban fringe. The municipal forests have preserved a sizeable number of species characteristic of exurban forests. Some of the examples include the buzzard *Buteo buteo* (photo 1), goshawk *Accipiter gentilis* (photo 2), sparrowhawk *Accipiter nisus*, long-eared owl *Asio otus*, tawny owl *Strix aluco*, green woodpecker *Picus viridis*, black woodpecker *Dryocopus martius*, raven *Corvus corax*, and some of the rarest species, e.g. the middle spotted woodpecker *Dendrocopos medius* and the red-breasted flycatcher *Ficedula parva*. The tawny pipit *Anthus campestris*, associated with dry and sandy open areas, is a rare and declining species. The quail *Coturnix coturnix*, corn-crake *Crex crex*, lapwing *Vanellus vanellus*, meadow pipit *Anthus pratensis*, and the grasshopper warbler *Locustella naevia* nest on the surviving tiny boggy meadows, and so does the penduline tit *Remiz pendulinus* which normally nests by water reservoirs. One of the bird species most endangered by the urbanisation processes is the white stork *Ciconia ciconia* (photo 4), mainly associated with boggy meadows. Some of the rarer species nesting in Łódź are the barred warbler *Sylvia nisoria*, found in isolated low vegetation areas with trees, bushes and open spaces, and the little bittern *Ixobrychus minutus* which nests in the reed beds of strongly eutrophic ponds (map 3).



Photo 1. Buzzard *Buteo buteo* – the most numerous bird of prey next to the kestrel



Photo 2. Goshawk *Accipiter gentilis* – nests only in the area of Lagiewnicki Forest and Lubliniec

The increase in the number of species in the densely built-up urban area is a consequence of the following factors: interspecies competition in the rural-urban fringe, expansion from other geographical areas, as well as introductions. As a result of the interspecies competition for space, the most numerous species, especially forest birds, come into the city. Afterwards, as a consequence of adaptation, their numbers rapidly increase. That is why large numbers of certain forest species can be found in the inner-city e.g. the wood pigeon *Columba palumbus*, great tit *Parus major*, blue tit *Parus caeruleus*, blackcap *Sylvia atricapilla*, blackbird *Turdus merula*, chaffinch *Fringilla coelebs* and the hawfinch *Coccothraustes coccothraustes*. Outside the city, the marsh warbler *Acrocephalus palustris* is associated with high herbaceous vegetation and bushes in damp areas, whereas within the city a process of adaptation to drier areas with different vegetation can be observed. Furthermore, certain species from other, often remote, geographical areas can be found in Łódź. The crested lark is a species from semi-desert areas, therefore it is found in places with no (or very little) vegetation which does not hamper the bird's fast run. Consequently, it lives most willingly in new residential areas, on construction sites, and even in the neighbourhoods of intensively used sports pitches. Some examples of the species originating from the forest steppe are the magpie *Pica pica*, rook *Corvus frugilegus**, starling *Sturnus vulgaris* and the kestrel *Falco tinnunculus*. The collared dove *Streptopelia decaocto*, which comes from the Indian Peninsula and has reached Europe via Asia Minor and South-Eastern Europe, belongs in this group as well. It was first recorded in Łódź in 1951 (E. Tranda, spoken information). The species of forest steppe origin nest on trees or buildings, and feed in open spaces. The species of mountain origin, which have replaced natural rock formations with artificial ones, such as blocks of flats and other buildings, can also be found in the city. Some of the examples include the swallow *Hirundo rustica*, house martin *Delichon urbicum**, wheatear *Oenanthe oenanthe*, and the black redstart *Phoenicurus ochruros*. It is even possible to see in the city a bird from the forest tundra, the fieldfare *Turdus pilaris* which is already very numerous both in city parks and on the outskirts. The appearance of the collared flycatcher *Ficedula albicollis* and an increase in the density of the thrush nightingale *Luscinia luscinia* result from these species spreading westwards. The stonechat *Saxicola torquata*, which is spreading from the south-west, is also new. Since the bird is found in rocky areas and similar habitats, railway embankments play a very significant role in its spread. Another species that has arrived in the city is the mute swan *Cygnus olor* (photo 3).

The feral pigeon *Columba livia* is one of the introduced species. Approximately 200 specimens were brought to the area in 1955–1956 by the security guard of the Zakłady Przemysłu Bawełnianego (Cotton Works) in Ogrodowa Street, from where the species has spread to wherever compact areas of high buildings are found (map 6). In some places its concentration exceed 500 pairs per square kilometre, which causes sanitary problems. The initial period of its dispersion was very slow, e.g. it took about 12 years to reach Plac Niepodległości. At present it can be found in places far remote from the initial place introduction, but at much lower density (map 6).

Another introduced species is the pheasant, repeatedly brought by hunters to the hunting districts nearby. At present it is numerous species living on the outskirts but reaching deep into the city, even into compact development areas.

Birds make use of the city in the post-nesting period as well. Resident house sparrows *Passer domesticus*, tree sparrows *Passer montanus*, greenfinches *Chloris chloris*, blackbirds and magpies are found here all year round, very often in the same places. After nesting, in summer and autumn, starlings, jackdaws *Corvus monedula* and rooks make thousands-strong roosts in many locations around the city. This is often very burdensome to the residents living in their neighbourhood. The reasons for the formation of such bulky roosts have not been thoroughly studied yet. It is quite probable that the birds are