Food markets

The discovery of new mammal species still continues. To date about 5000 species from this taxonomic group have been described worldwide, but some scientists predict that, based on the frequency with which new species are found, the number of mammal species will increase to about 8000. Although most discoveries are of small animals, like rodents, bats, monkeys, tenrecs and lemurs, large mammals are still also added to the list. Like the black-faced mangabey (*Lophocebus kipunji*), recently discovered in the highlands of Tanzania, that reaches almost one metre in height and weighs up to 16 kilograms. And what to say about the discovery of a new bovid species – the Vu Quang ox (*Pseudoryx nghetinhensis*) – as well as two muntjac species – the giant muntjac (*Megamuntiacus vuquangensis)* and the Truong Son muntjac (*Megamuntiacus vuquangensis*) – in the forests of Vietnam in the 1990s. And only last year a giant peccary, not yet officially named, was discovered in the Amazonian rainforests of Brazil.

It may be the dream of every zoologist to discover a mammal species that has not been known to science before. While describing new invertebrate species seems relatively easy – just spray a single tree in a tropical rainforest with detergent (only shaking is perhaps a still better option…) and a variety of new species will literally rain down – the discovery of new mammal species is often associated with adventurous expeditions deep into pristine habitats. But this is not necessarily a precondition for success. As shown in the last decades, many new mammal species have been simply 'discovered' during visits to local food markets. Marmosets in Brazil (e.g. *Callithrix humilis, Callithrix manicorensis* and *Callithrix acariensis*), the Panay cloudrat (*Crateromys heaneyi*) on the Philippines, and the Laotian rock rat (*Laonastes aenigmamus*) in Laos: they have all been found at local markets where hunters offered their catch. The discovery of the latter must have been an especially thrilling experience, because this was not only a new species but also a so far undiscovered mammalian family. The last report of a new family of mammals had been in 1974, when the Kitti's hog-nosed bat (*Craseonycteris thonglongyai*) – the only known genus and species of the Craseonycteridae-family – was found along the Khwae Noi River ("River Kwai") in western Thailand.

Perhaps less spectacular, but nevertheless adding species to the list of mammals, is the discovery of new species through studying already described species in more detail. The development of genetic techniques has made large a contribution to the discovery of new species. Analysis of genetic material of elephants, for example, revealed that, not one but, two species exist on the African continent: *Loxodonta africana*, which roams the savannas, and the forest-dwelling *Loxodonta cyclotis*. The latter had long been seen as a subspecies of the savanna-elephant, but based on DNA-analysis it was concluded that the two species must have split off from each other about

2.5 million years ago. Similar cases exist on other continents, even in Europe: it is only a few decades ago (1970) that the whiskered bat (*Myotis mystacinus*) and Brandt's bat (*Myotis brandtii*) were split. Not surprising, our knowledge of the distribution and ecology of these species is still fragmented (as shown by Mostert et al. in this issue). Furthermore, it was not until 1997 that a distinction was made, based on DNA studies, between the common pipistrelle (*Pipistrellus pipistrellus*) and the Soprano pipistrelle (*Pipistrellus pygmaeus*).

But genetics is not the only helpful tool for distinguishing species. In other cases new species or subspecies have been recognised as a result of ecological research. Research into the migration patterns of fin whales (*Balaenoptera physalis*) off the coast of Italy showed that the animals did not pass the Gibraltar Straits, as had long been assumed. There was no exchange between the Mediterranean population of fin whales and fin whale populations in the Atlantic. DNA-analyses confirmed that there was no genetic kinship between fin whales on either side of the Gibraltar Straits. Eventually, the Italian fin whale was recognised as a different subspecies.

Although not adding new species to science, the rediscovery of species that were believed to be extinct is also highly important, as is the discovery of species at places they have not been found before. In 1988 it was assumed that the rhinoceros species (*Rhinoceros sondaicus annamiticus*) in Vietnam, a subspecies of the Javan rhinoceros, was extirpated. Due to reports of local inhabitants, however, doubts were rising. Remote camera systems were set up, and in 1999 the species was photographed in one of the remote corners of a national park in the south of the country. Currently the estimate is that eight specimens of this species survived.

The search for mammals will continue. Not only because of the urge to complete the list of what species exist, but also to acquire more knowledge about where species occur and how populations develop, as illustrated by the comprehensive study on distribution patterns of badgers in the Netherlands by Van Moll in this issue. But remember: high-tech genetic analyses, long-term ecological research or sophisticated remote camera systems are not necessarily needed to discover a new mammal species… just visit the local food market during your next holiday!