Bat Species of the Years 2016 and 2017

Noctule (*Nyctalus noctula*)

Facts compiled for BatLife Europe by
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Biology and distribution

The Noctule (*Nyctalus noctula*) is a large bat, weighing up to 30g (21–30g). It is a fast open space flier with long and narrow wings and a wingspan of about 35 centimetres. The fur colour of the common Noctule is typically rufous-brown with a slightly paler colouration on the underside. This bat can live up to 12 years.

Fig. 1: Bat of the years 2016 and 2017: Noctule (*Nyctalus noctula*). © Branko Karapandza

The distribution of the Noctule covers most of Europe, though in Northern Europe the range is limited, and the species is far rarer in the Iberia as compared to the other Southern Peninsulas. The breeding areas of the Noctules are mainly in north-eastern and northern Central Europe, but the mating and wintering areas are mainly in southern and central parts of Europe.

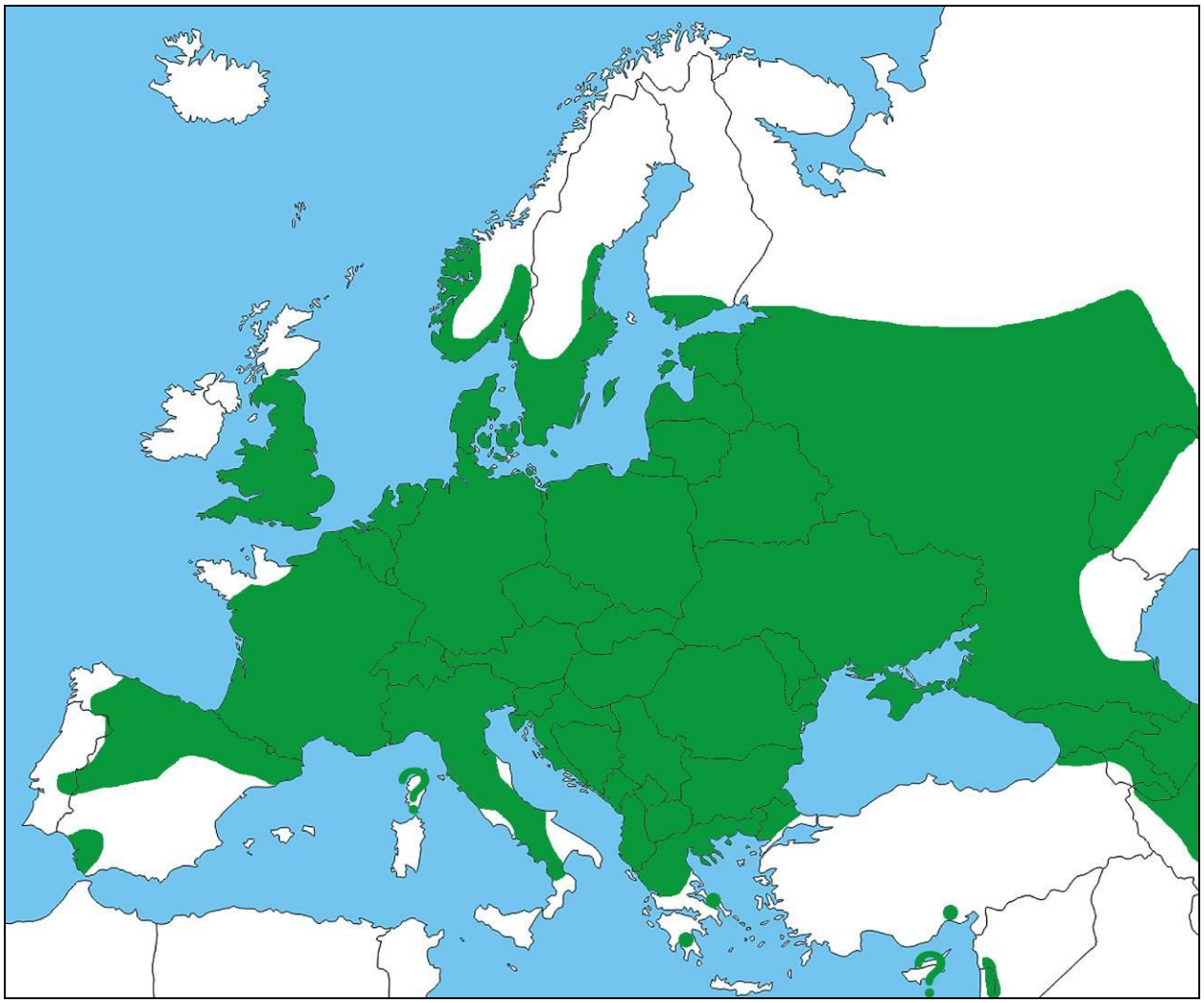

Fig. 2: Distribution of Noctule (*Nyctalus noctula*) in Europe. Map © C. Dietz.

Ecology

Noctules emerge fairly early from their roosts, sometimes even in the afternoon and when there is still day light. They fly fast and high in open spaces, typically above tree crowns, at heights of up to 50 metres. The Noctule usually makes steep dives to catch insects which it usually eats on the wing. This species uses a variety of feeding habitats; forests, water bodies and even cities but always hunts in open spaces and never gets close to the ground.

The diet of the Noctule contains Diptera, bugs, caddis flies, beetles and moths. Noctules can take advantage of mass emergences of certain prey items, such as dung beetles.

The echolocation calls of Noctules are loud and low in frequency, enabling the sound to travel long distances. The peak frequency is usually around 20 kHz, which is within the upper limit of the audible range for some, usually only young, people. In flight, as with other *Nyctalus* species, they often alternate higher and lower frequencies, giving a characteristic 'plip-plop' sound when heard through an ultrasonic detector. There is, however, plasticity in the calls, depending on the habitat. Social calls include the shrill mating calls by males used to attract females.

Mating behaviour / reproduction

During spring, Noctules form mixed colonies in tree holes, buildings and bat boxes. In the summer, females form nursery roosts of 20 to 60 bats. Typical roosting sites are trees but they also use tall buildings. Roosts can be changed several times during the summer. The young are born in June or July. Noctule females can sometimes give birth to twins (even triplets), but they usually only have one pup each year. During the summer, males live solitarily or they can form small male groups.

The mating system of the Noctule includes small harems; a group of females that a male has attracted to a tree hole or other roost. The males establish mating roosts at the end of summer. They produce strong scent and "song"-echolocation calls which they emit while flying or from the roost. A single male can attract up to 20 females to his harem, but a group of five is more typical. The females stay in the male's roost for a couple of days. Mating takes place in these roosts which males defend against other males.

Migration

Noctules are long-distance migrants, adapted to seasonal climatic changes. They undertake large-scale movements presumably to escape harsh environmental conditions and low levels of food resources. The autumn migration occurs from early September onwards. Recovery data from banded bats highlight travel distances of up to 1500 km. The main direction of migration in the autumn is towards southwestern parts of Europe.

Threats

A major threat for the species is the growing wind energy industry. Many Noctules are killed by the wind turbines, either by direct collision with the blades or from the impact of a rapid change in air pressure, a barotrauma. Stable isotope analysis revealed that individuals found dead at German wind farms likely originated from northern Baltic countries and Russia demonstrating the wide-scale impact of wind farms for the species.

Other actions that may harm Noctules include clearing up old trees with cavities, as these provide important roost sites, and renovations of buildings with bat roosts.

Fig. 3: Dayflying noctules (*Nyctalus noctula*) in the direct vicinity of a windfarm in Europe. © S. Wegleitner

Conservation Status

The Noctule is assessed as Least Concern (LC) both globally and at the European level. It is protected under the EU Habitats Directive 92/43/CEE (Annex IV). Furthermore, this species is listed in the United Nations convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979) via the EUROBATS agreement (London, 1991).

For effective species protection, establishment of wind farms in forests, at key migration corridors and coastal crossing points should be avoided. On forestry, trees with cavities should be saved as they are important roosts for Noctules and other bat species.

Fig. 4: Noctule (*Nyctalus noctula*) emerging from his tree roost. © M. Celuch