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A Wall Cavity as a Diurnal Retreat Site for Young Natterjack Toads

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Abstract: First and second year Natterjack toads (*Epidalea calamita*) were detected around a building near the Dutch coastal dunes, using a brick wall cavity as a communal diurnal retreat site from spring until autumn, with the suspicion of this also being a winter refuge. Only juveniles and animals in their second year were seen. Bigger specimens were unable to enter due to the metal mesh in front of the openings.

Keywords: Anthropogenic habitat, shelter, mesh, hibernation.

Genç Haçlı Kara Kurbağaları İçin Diurnal Sığınak Alanı Olarak Bir Duvar Boşluğu

Öz: Birinci ve ikinci yılındaki Haçlı Kara kurbağaları (*Epidalea calamita*)'nın Hollanda kıyı kumullarının yakınında ilkbahardan sonbahara kadar bir binanın tuğla duvarında yer alan bir boşluğu ortak diurnal sığınak olarak kullandıkları tespit edilmiş ve aynı zamanda bu sığınağın kış sığınağı olabileceğinden şüphelenilmiştir. Sadece juveniller ve ikinci yılındaki bireyler gözlenmiştir. Daha büyük örnekler boşluğun önündeki metal ağdan dolayı girememiştir.

Anahtar kelimeler: Antropojenik habitat, barınak, ağ, hibernasyon.

In 2018, we were inspecting a development project in Wassenaar, the Netherlands. The request was to assess if there would be any legal consequences for the demolition of the redundant buildings and the construction of new buildings on the same lot. This was located in an area directly positioned against Dutch coastal dunes with several dune lakes nearby. In this ecological survey, in order to determine the presence of protected species, Natterjack toads, *Epidalea calamita* (Laurenti, 1768), were found dwelling in the area after sunset. Up to two dozen of them were observed on several occasions from May 20 until September 25. As part of a bat survey, we surveyed the area also during evening hours when we stumbled upon an unusual shelter for toads. Around sunset, some specimens were observed behind a protective wire mesh that was attached to the foot of a brick wall with four weep holes in a row (Fig. 1). We witnessed exiting and entering the wall cavity by relatively big toads through the mesh with square holes of just 11.4 x 11.4 mm inner dimension (Fig. 2). During the progressing evening hours, more and more specimens were seen wiggling and pushing their bodies in and out of the weep holes. Spontaneously, we could not help but comparing these animals to pygmy versions of the escape artist Houdini or a locked-up octopus, slipping through narrow spaces with their relatively big bodies. Some toads were observed trying to squeeze through several openings before finding one to pass through. Their head width sets the limits, with the skull being the non-flexible structure. On the last visit, in autumn, a toad that had obviously grown too large to fit got stuck in the mesh. We rescued it by gently pushing it backward (Fig. 3). At the end of the season, juvenile Natterjack toads reach a snout-vent length of approximately 23.5-37.0 mm (Drobenkov, 2018) and

Figure 1. Entrances to the wall cavity at ground level.

Figure 2. A second-year Natterjack toad entering the wall cavity through a narrow mesh.

supposedly do not feed and grow during winter. The specimens seen in spring fit in the age cohort of second year animals. Later in the season, juveniles were also present, recognizable by their smaller size. These have been dispersing and migrating after metamorphosis from the dune lakes and are not reproductively active during

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the first two years, thus living in terrestrial habitat all year round. Head width in adult Natterjack toads is given by Drobenkov (2018) as between 17-21 mm and (of males only) as 18.3±0.35 mm by Pikulik (1995). Adults clearly are unable to pass this mesh as the holes' maximum diagonal width of 16 mm is less than their head width. We expect that some of the second-year animals also developed heads that were too big to pass the mesh at the end of season. Hence, the wall cavity is of importance to first- and second-year animals during the active season. We also presume that the first- and (a part of the) second-year animals have their winter refuge in the same wall cavity. Natterjack toads are known to use all kind of shelters including man-made structures, like the stone embankments found by radio-tracking in Spain (Miaud & Sanuy, 2005). Introduced artificial materials are readily used as a temporary shelter by several toad species and; in fact, cover boards are practiced as an inventory help (Kordges, 2009). A wall cavity represents an unusual residence for which we could not find any comparative observation in the literature.

Figure 3. A grown second-year Natterjack toad got stuck in the mesh on September 24.

A Dutch national law (Wet natuurbescherming) implements the regulations of the European Habitats Directive. According to this national law, it is forbidden to intentionally kill, capture, and disturb specimens of species listed in Annex IV of the Directive and to deteriorate or destroy breeding sites or resting areas of these species. The Natterjack toad is listed in Annex IV. If one or more of the regulations are expected to be violated by the new building development, it then requires an exemption process with appropriate measures to mitigate the negative impact. Careful demolition is required to prevent unnecessary killing of individuals. Removal of the mesh and building a pitfall construction will be suggested to safely catch all animals trying to pass through the openings, resulting in a wall cavity void of protected animals prior to demolition works begin.

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