

Controlling rat population with barn owl artificial nests

Reactivating farmers on abandoned land in Deneia, Cyprus.



Barn owl natural nest.
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Barn owl artificial nest in Deneia, Cyprus.
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/// Context ///

The community of Deneia is located just west of the city of Nicosia, capital of Cyprus, with large portions of its lands situated within and adjacent to the United Nations “Buffer Zone” of the Ceasefire-Line; one of the main reasons for abandonment of Deneia’s very large areas of agricultural land by its residents and farmers. When some tried to reactivate their agricultural crops, they faced a huge problem – even beyond that of the occupation of their lands by a third-country army – as in the previous 15 years this community suffered a serious problem related to the uncontrolled population of rodents.

After many attempts and many chemicals, that started to create other problems, the Community authority proceeded to implement a nature-based solution: it “joined forces” with

the Barn Owls, and through intensive nesting the results are still impressive to this day, helping many other communities that were facing the same problem to solve it with a tailored-to-need application. The idea of balancing and respecting the food-chain has also inspired the use of other species to deal with other threats in a natural fit-for-purpose way.

Barn owls (*Tyto alba*) are nocturnal birds of prey known for their effectiveness in controlling rodent populations. By providing suitable nesting sites, it is possible to harness their natural predatory behaviour to manage rat populations in agricultural and urban environments. The Barn Owl is found on all continents except Antarctica and occupies a wide range of habitats and altitudes, including deserts, grasslands, forests, agricultural fields and urban areas.

/// Solution for a Resilient Future ///

Studies on Barn Owl diet show that they feed almost exclusively on rodents, with 96% of their diet comprised of rodents like rats, mice and shrews. As a result, a single Barn Owl can catch and eat up to 1000 rodents per year. During the breeding season, Barn Owls mainly hunt within a short 1 km radius around their nest, sometimes ranging up to 4.5 km away.

Benefits of using barn owls for pest control:

1. **Natural Predators:** Barn owls are skilled hunters that primarily feed on rodents such as mice, rats, voles, and shrews.
2. **Effective Hunters:** Barn owls have excellent nocturnal vision and acute hearing, allowing them to locate and capture prey with precision.

3. **Low Environmental Impact:** Unlike chemical pesticides, barn owls pose no harm to the environment, non-target species, or human health.

4. **Cost-Effective:** Implementing barn owl nest boxes for rodent control can be a cost-effective long-term solution compared to ongoing pesticide use.

Implementing barn owl artificial nests

- **Artificial Box Placement:** Nest boxes were installed in strategic locations where rats are known to frequent, and cameras were also installed to give further data
- **Design and Construction:** Nests were designed specifically for the particular bird, its biology and needs, using Marine Plywood that is resistant to weather conditions

- **Monitoring and Maintenance:** The team regularly monitored the nest for necessary maintenance and avoid nesting of other species. Data were collected from the cameras and valuable results were recorded.

Habitat Management: In collaboration with the Community, the Team decided to minimize walls and barriers made fully of concrete, and to replace them by installing gabions, which favour the free movement, hunting and breeding of wildlife species; hence fostering the occurrence of balance in a natural unhindered cycle.

Education and Outreach: In the Community, many training and information seminars were held for the population, as well as the inclusion of residents, farmers and young people in the efforts to build the nests, install and monitor them. At the same time, the neighbouring communities of Mammari

and Kokkinotrimithia participated in the implementation of the project, to which the project was extended to this day, population is so large that it must be expanded. The schools of the area also had a special participation, either with painting or essay competitions for a better understanding of the project, while there were not a few times that other mayors and community leaders of Cyprus visited the community for information and education, proceeding in turn to their own communities the designs and installation of corresponding projects.

Collaboration: The established group had as key members: the Community Authority, a wildlife manager, the Government's Game and Wildlife Service, as well as a representative from the civic society organization of "BirdLife Cyprus".



Artificial nest and barn owl.

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Barn owl chick in the artificial nest.

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/// Always Moving Forward ///

Because of this pilot project and its results, the Community today has been freed from large rodent populations and their consequences, and as a result has eliminated the use of chemicals and pesticides in crops to protect wildlife and its habitats. An estimated 70% of Deneia's farmers are practicing organic farming, and the aim is to reach 100% in the next five years. Based on the above, more people who want to engage in organic farming choose this particular community both for activity and permanent residency. The education, culture and awareness cultivated helps the inhabitants in the whole range of their daily decisions, thus promoting more and more nature-based solutions.

Recently, in January 2023, Deneia Community received an award supported by the Office of the Environment Commissioner of the Republic of Cyprus, regarding the Community's Overall Environmental Activity, hence becoming an example to be followed by many other communities in Cyprus.

Encouraging Barn Owls as a biological rodent control is a method widely used in other countries. In Israel, this method has been successfully used since the 80s, reducing rodenticide use by 80% since 2006. Today, Israel has more than 4,500 nest boxes installed around the country.

Further information

- Contact Information: Christakis Panayiotou (Community Leader), Haris Nicolaou – Ministry of Agriculture (wildlife specialist), Pantelis Hadjigeros (Director of Wildlife Service, and BirdLife Cyprus)
- Barn Owl Project. <https://birdlifecyprus.org/projects/barn-owl-project/> (Accessed 14 May 2024)

Authors: Klelia Vasiliou, Pierantonios Papazoglou and Georges Boustras (European University Cyprus-CERIDES) | **Partners:** EUC – European University Cyprus



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