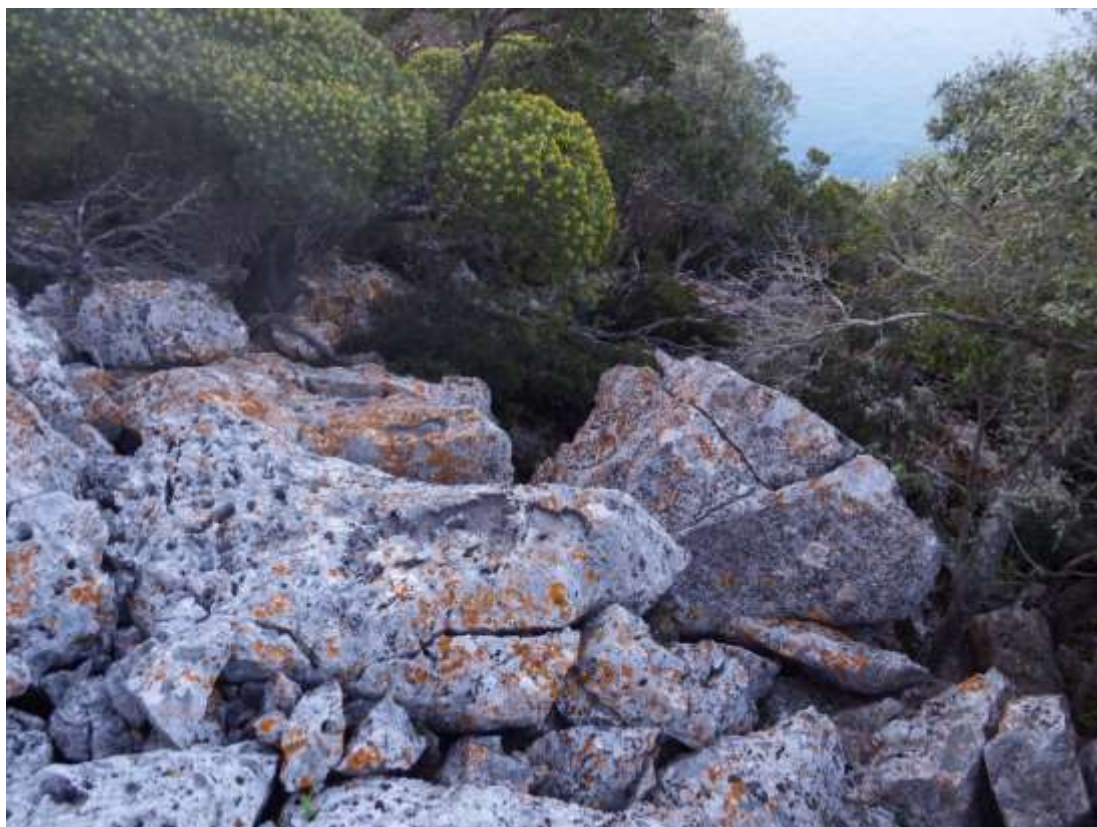# Report recommending rat eradication/control techniques on Sušac

Dr. Karen Varnham, Martin Austad

LIFE Artina, BirdLife Malta

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LIFE Artina (LIFE17 NAT/HR/000594)

Seabird Conservation Network in the Adriatic

Action A.5: Complete a feasibility study for invasive mammals eradication at seabird colonies on Sušac island within the SPA "Lastovsko otočje"

LIFE17 NAT/HR/000594 LIFE Artina

Seabird Conservation Network in the Adriatic

Report recommending rat eradication/control techniques on Sušac

Report written by:	Karen Varnham, Martin Austad
Contact:	martin.austad@birdlifemalta.org
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Data Project

Project location:	Croatia
Project start date:	September 2018
Project end date:	August 2023
Total budget:	1,921,387 EUR
EU contribution:	1,152,832 EUR
(%) of eligible costs:	60%

Data Beneficiary

Name Beneficiary:	BirdLife Malta
Contact person:	Mr. Nicholas Barbara
Postal address:	Triq Abate Rigord, 57/28, XBX 1120, Ta' Xbiex, Malta
Telephone:	+356 2134 7646
E-mail:	nicholas.barbara@birdlifemalta.org
Project Website:	http://www.lifeartina.eu/en/homepage/

Front cover illustrations: *Puffinus yelkouan* nesting habitat on Sušac island. Martin Austad

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Summary

The Yelkouan shearwater (*Puffinus yelkouan*) is a Mediterranean basin endemic listed by the IUCN as 'Vulnerable' to extinction, while the Scopoli's shearwater (*Calonectris diomedea*) is listed as 'Least Concern' (BirdLife International, 2019). The largest threat faced by both species of shearwater at their breeding colonies is predation by introduced mammalian predators such as rats (*Rattus* spp.). Predation of eggs and pulli by rats can drastically reduce the annual reproductive success of colonies and endanger their long term viability (Gaudard, 2018). Introduced mammalian predators also affect gull species such as Audouin's gull (Gallo-Orsi, 2003), currently listed as 'Least Concern' (BirdLife International, 2019).

Eradication of introduced mammalian predators is a well-established conservation tool, not only aimed to secure seabird colonies on islands from predation but benefitting island biodiversity in general (e.g. Jones *et al.*, 2016). However, where complete and permanent removal is not possible, seasonal control has been shown to benefit seabird reproductive success (Lago *et al.*, 2019) , but this requires an annual effort to keep introduced mammal populations low.

The Lastovo Archipelago, Croatia, the focus of LIFE Artina LIFE17 NAT/HR/000594, is estimated to have 300 to 400 breeding pairs of Yelkouan shearwater which is 50% of the national population. The island group also has nesting Scopoli's shearwaters, with an estimation of 400 to 500 breeding pairs and Audouin's gulls with an estimation of 40 to 45 breeding pairs although annual fluctuations are strong. These amount to 30 to 70% and 100% of the total national population for the respective species. On site assessment and monitoring carried out in 2019 by LIFE Artina confirmed the presence of rats on the islets with nesting shearwaters and Audouin's gulls, including Sušac Island. Evidence of predation of rats on shearwater eggs and chicks was also found.

The aim of this report is to recommend the data collection required to develop an informed feasibility study for complete rat eradication on Sušac island. Initial results from the assessment carried out in 2019 are presented. The remoteness of Sušac and its importance for breeding seabirds makes it an attractive candidate for full scale rat eradication, however rigorous assessment to ensure such a project's feasibility should be carried out first. The necessary criteria to include in a full feasibility study, which is planned to be complete by October 2020, are as follows:

- Technically feasible – that the eradication could be achieved using currently available methods
- Sustainable and biosecure – that the rodent-free status of the island could be protected by preventing new populations of rodents from becoming established
- Socially viable – that the project is acceptable to the people of Croatia, particularly the Lastovo region
- Politically and legally viable – that the project meets the requirements of Croatian & EU law
- Environmentally viable – that rodents can be eradicated without causing unacceptable harm to other aspects of the environment
- Sufficient capacity – that the relevant personnel can be found and can commit to the duration of the project
- Financially viable – that the necessary funding can be sourced

Moreover, this report also aims to identify any feasible methods to control rats around the shearwater colonies of Sušac, in the years prior to a potential future full-scale eradication or in case the feasibility study finds that eradication is not currently feasible. These control

methods, with adjustments according to islet size and distance to other islands, can be applied to the other islands elsewhere in the Lastovo Archipelago. Such adjustments according to islet will also be tailored in this report. All eradication and control methods proposed will be accompanied with mitigation measures to reduce the possible impacts on non-target species.

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Appendix 1: Images

Appendix 1: Figure 1a & b: *High vertical cliffs surround much of the Sušac coastline*

Appendix 1: Figure 2: *Yelkouan shearwater nesting habitat on northern slopes of Sušac, where nests are found in between boulders and in fissures. Areas surrounding boulder areas have high vegetation*

Appendix 1: Figure 3: *A Yelkouan shearwater egg found on a nest check on Sušac in May 2019, which shows clear signs of having been predated by rats.*

Appendix 1: Figure 4: *A Wood mouse (*Apodemus sylvaticus*) trapped during index trapping on Sušac, September 2019*

Appendix 2: Recipes for non-toxic wax monitoring blocks

Flavoured wax blocks are simple and effective monitoring tools that can be used to detect rodents (and other species). This is the recipe provided by Wildlife Management International Ltd, the NZ-based contractors who have run many successful rat eradication projects in recent years.

Makes approximately 30 large or 60 small blocks

Equipment:

Standard 25 cm saucepan

Gas ring and gas bottle

Silicon muffin tray (12-cup standard or 24-cup mini)

Wooden spoon for mixing

Heatproof Glass jug for pouring

Each flavour is made as follows:

Chocolate wax:

Ingredients:

12 standard white wax candles/ 900g wax beads

5 heaped tablespoons of pure cocoa powder

Instructions:

Melt candles in pot, remove wicks, add cocoa powder, stir thoroughly to mix, pour into silicon tray. Just before wax sets, put hole through centre of the block (alternatively put bent paperclip for hanging in tree/vegetation)

[Note: do not use drinking chocolate as this contains milk powder and the mixture will split and burn.]

Coconut wax:

Ingredients:

12 standard white wax candles/ 900g wax beads

5 teaspoons of coconut essence (or ½ block of creamed coconut)

1 heaped tablespoon of pure cocoa powder

Instructions:

Melt candles in pot, remove wicks, add cocoa powder, stir thoroughly to mix, take off the heat and add coconut essence one spoonful at a time (taking care as the mixture will bubble and fizz). Pour into silicon tray, just before wax sets, put hole through centre of the block (alternatively put bent paperclip for hanging in tree/vegetation).

[Note: the cocoa is added to make teeth-marks easier to see on the wax block]

Peanut wax:

Ingredients:

12 standard white wax candles/ 900g wax beads

½ jar of smooth peanut butter

Instructions:

Melt candles in pot, remove wicks, add peanut butter, stir thoroughly to mix (do not leave on the high heat too long as the peanut butter can burn), pour into silicon tray, just before wax sets, put hole through centre of the block (alternatively put bent paperclip for hanging in tree/vegetation).

[Note: this wax does not last or store as long as the other types as it can spoil due to the peanut butter content]