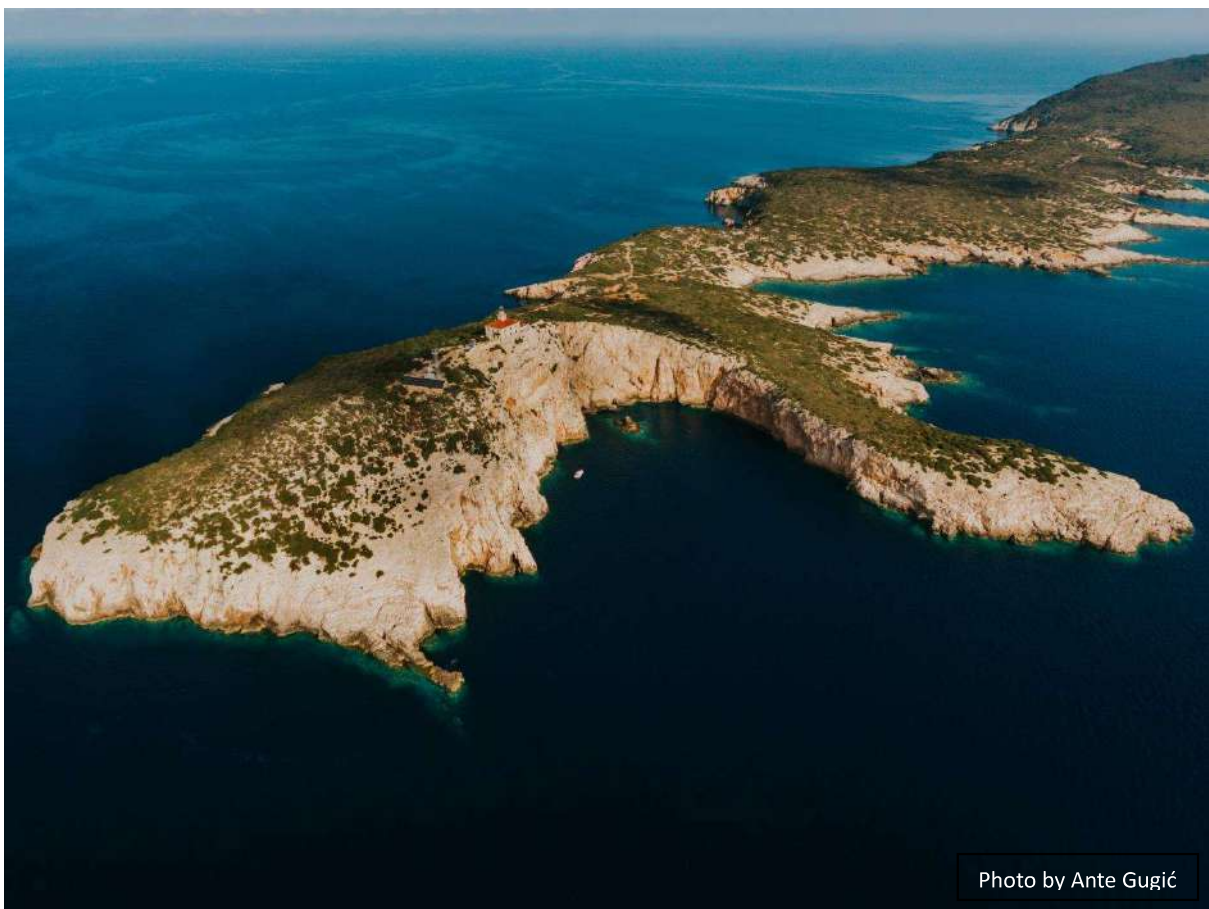


On site cliff access assessment on Sušac island for the purposes of potential ground-based eradication of black rats *Rattus rattus*

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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”

A feasibility study for black rat eradication on Sušac deemed a ground-based approach feasible but presented a number of logistical difficulties (Austad et al. 2020). One of the challenges identified as requiring further on-site investigation was whether various vegetated ledges on the island's cliffs could be reached by staff in order to place rodenticide during the potential eradication. During a ground-based eradication bait stations with anticoagulant rodenticide would be placed in a grid covering all sites potentially holding rats across the island and checked every few days across an approximately 6-month period.

The authors had not been able to assess cliff access extensively during the feasibility study and most of the assessment had been carried out remotely based on images of the cliffs. The photographic assessment identified 22 to 30 abseil routes and twelve locations thought to require scrambling and finally one extensive cliff area that would potentially require a via ferrata set up.

To inform better on the potential cliff access, the author joined BIOM staff on a brief site visit to Sušac 23-25th March 2022. The following is a summary of observations while walking on top of the cliff and/or passing below the cliffs in a boat, taking notes especially at the sections identified during the photographic assessment. All points referred to in text are marked on the map in Figure 1.

The cliffs below the lighthouse point 1 (42.7500, 16.4902) were deemed feasible to abseil in order to reach vegetated ledges and caves, and three abseil routes were identified (Figure 2). However, there were not sufficient natural anchors for any of the abseils and bolts placed by a professional would be required for rope access. Care would be needed at some sections with loose rocks further down the cliff. However, at point 2 (42.74898, 16.4888) abseiling was not deemed safe due to loose rock and it is suggested to lower down bait instead. Bait could be placed inside bamboo and lowered down on fixed lines.

The cliffs at point 3 (42.7596, 16.5275) were not deemed safe to abseil due to loose rocks and stones in upper parts of the cliffs. The cliff top is particularly degraded seemingly due to the overgrazing by sheep. Indeed, even reaching the top of the cliff required particular care. Due to the frequent visits required in an eradication, safety cables should be placed on the slope down to and along the cliff top, from where fieldworks could lower down bait onto cliff ledges.

Cliffs at point 4 (42.7648, 16.5361) were only observed from onboard a boat, but are clearly overhanging with loose rocks making abseiling not recommended. If the cliff top can be safely reached bait should be lowered down. Same applied for the cliff sections at the following points: point 5 (42.7737, 16.5155) and point 6 (42.7737, 16.5115).

The areas at point 7 (42.7580, 16.4925); point 8 (42.7555 16.4915) were accessed by scrambling from land and vegetated areas reached. Therefore, there is no need to reach these areas by abseiling as expected during photographic assessment.

Vegetation on cliff faces at point 9 (42.7578, 16.4921) can be more efficiently baited by lowering down bait from the cliff top rather than abseiling. Likewise, abseiling at point 10 (42.75443, 16.48966) and point 11 (42.7529, 16.4907) should be avoided due to loose rock

down the cliff, but bait can be safely lowered down from the cliff top. Bait can be lowered down on vegetated ledges at point 12 (42.749715, 16.4868).

The section of cliff at point 13 (42.7524, 16.4900), requires two abseils and anchor bolt instalment. Further sections of the cliff were reached by scrambling, but one location is best baited by lowering down bait from the top (Figure 3).

The area identified as potentially requiring a via ferrata (Point 14, 42.77352, 16.51455) (Appendix 1 Figure 2 in Austad et al. 2020), was accessed from the sea by scrambling up. The rock was good with no to little loose rock. Access could be made safer by installing small sections of via ferrata cables to make sure fieldworkers can work even while carrying loads, but probably do not need to be as extensive as first planned. The costs of the via ferrata might therefore be less than budgeted, but would be reallocated to areas described above needing safety cables on top of cliffs. Access from the land, which would probably be the common way fieldworkers would access to ensure sea conditions do not hamper the operation, needs further assessment. However, if small sections of abseils are needed the rock seemed sufficiently good for safe rope access.

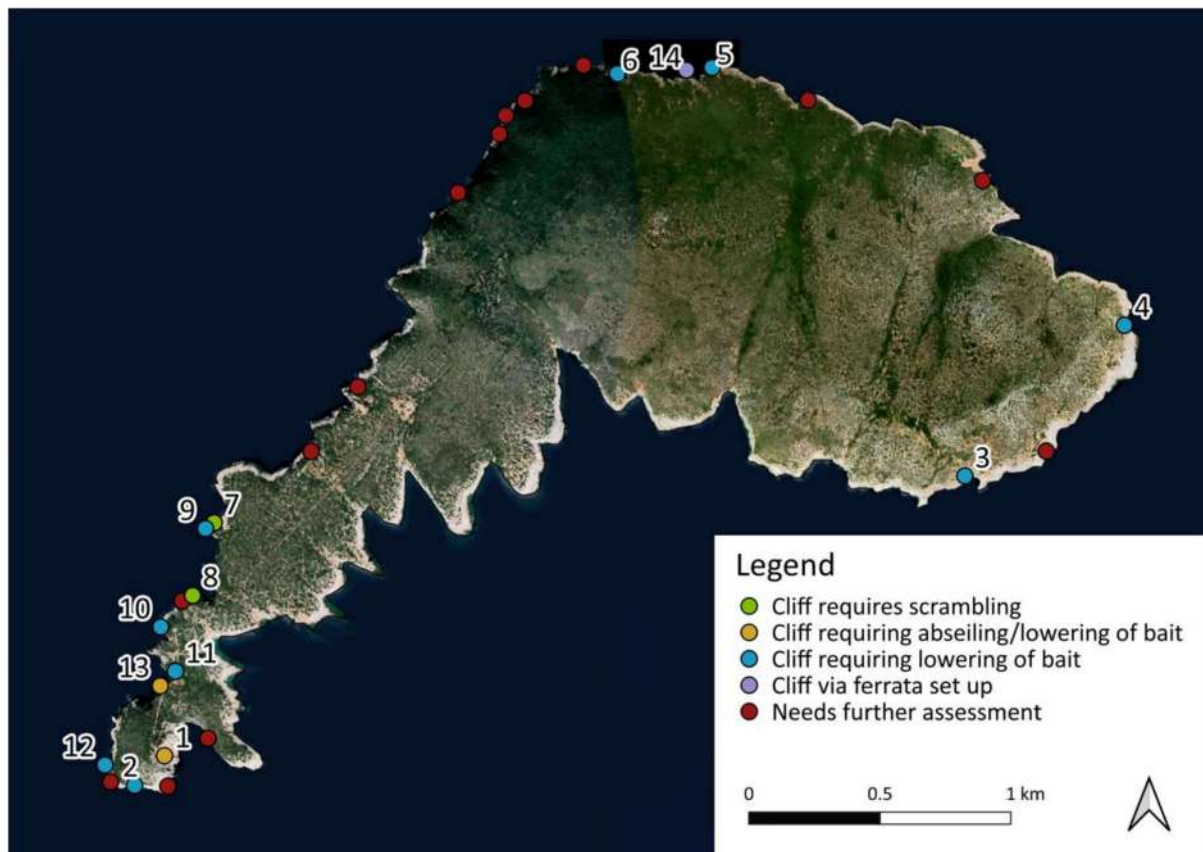


Figure 1. Map of Sušac island, Lastovo Archipelago, as mapped during a site visit in March 2022 to assess cliff access in relation to a ground-based eradication of black rats. All point numbers are referred to in text, while cliffs or boulder screes at all points marked with 'Needs further assessment' were not sufficiently surveyed.



Figure 2. Three abseil routes required to place bait stations inside caves or on vegetated ledges, in the case of a ground-based eradication of black rats on Sušac island, Lastovo. Routes were updated from the photographic assessment carried out during the feasibility study (Austad et al. 2020), following an on-site visit.



Figure 3. Two abseil routes, in addition to scrambling and lowering of bait deemed necessary during a ground-based eradication of black rats on Sušac island, Lastovo. Routes were updated from the photographic assessment carried out during the feasibility study (Austad et al. 2020), following an on-site visit.

In conclusion, the site visit carried out in March 2022 did not disprove technical feasibility of a ground-based approach. The cliff sections surveyed, taken the necessary anchor bolts and cables are installed and recruitment of trained personnel are deemed accessible. However, the operation would in several locations rely on lowering down of bait in bamboo containers on fixed lines. Using such a method, rather than fieldworkers abseiling down the cliffs, would reduce the risk of injury from loose rock on cliff faces. Securing of fieldworkers on the cliff top would be needed for safe access to the cliff edge and while lowering down bait. This approach has been successfully used on Tremiti Islands.

A feasibility study for an aerial eradication found the approach to be technically feasible (Sposimo 2022). Taken that legal requirements are met an aerial broadcast method across the island and onto the cliffs would be less complex and costly.

The need for updated assessments in case of a ground-based approach:

- The site visit described above was constrained by time and other field assessments and not all sections were surveyed.
- In the lack of natural anchors, the author could not abseil down cliffs and further obstacles might be identified while doing so.
- Presence of rats in the nine sea caves identified on images (Austad et al. 2020), or the potential of these caves to hold rats and therefore the need to bait them was not explored.
- Assessment by rope access professional certified to place bolts, anchors and via ferrata.
- The erosion caused by the unchecked feral sheep population is likely to increase since the years of the survey described in this report.

References

- Austad, M., Varnham, K., Engelen, D., Ječmenica, B., Kapelj, S. (2020). Feasibility study for the removal of black rats *Rattus rattus* from the island of Sušac, Croatia. LIFE Artina (LIFE17 NAT/HR/000594): Action A5 report. BirdLife Malta. 63 pp.
- Sposimo, P. 2022. Trip report Sušac Island, Croatia: Feasibility study of black rat (*Rattus rattus*) eradication by means of aerial baiting. NEMO Ltd. 10 pp.