Enhancing ecosystems and conserving biodiversity in the context of climate change in Škocjanski zatok Nature Reserve

Interreg CENTRAL EUROPE

Co-funded by the European Union

ReCo

Workshop: *Enhancing ecological connectivity through habitat restoration – key insights and lessons from the ReCo project*

On-line | 21 Februar 2025 |

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Source: DOPPS, 2021

Basic Data

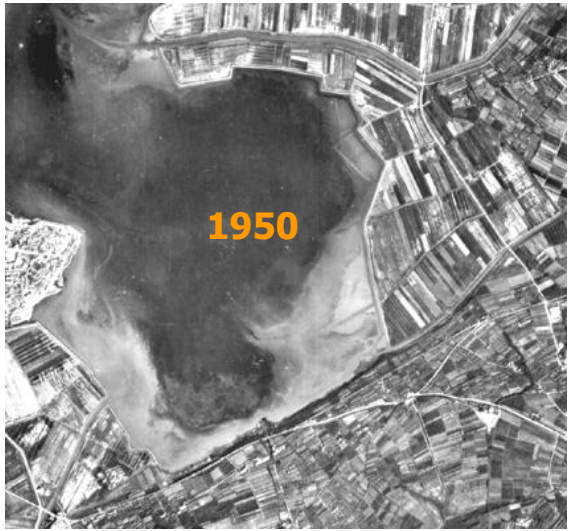
- Škocjanski zatok is the largest brackish wetland in Slovenia, covering 122,7 ha
- **Location:** nearby coastal town of Koper (Slovenia), neighbouring port and other urban areas – therefore urban wetland
- **Biodiversity:** rich fauna and flora, number of rare and endangered Slovenian species: 41% amphibians, 41% reptiles, over 61% birds, 36% mammals
- **Designations (SLO):** state nature reserve, open to the public and ecologically important area
- **Designations (EU):** Natura 2000 site upon Bird‘s and Habitat Directives, as such a part of European green infrastucture
- **Management:** DOPPS-BirdLife Slovenia (1999-2029), first case in Slovenia that an NGO was granted a mangement licence over the protected area

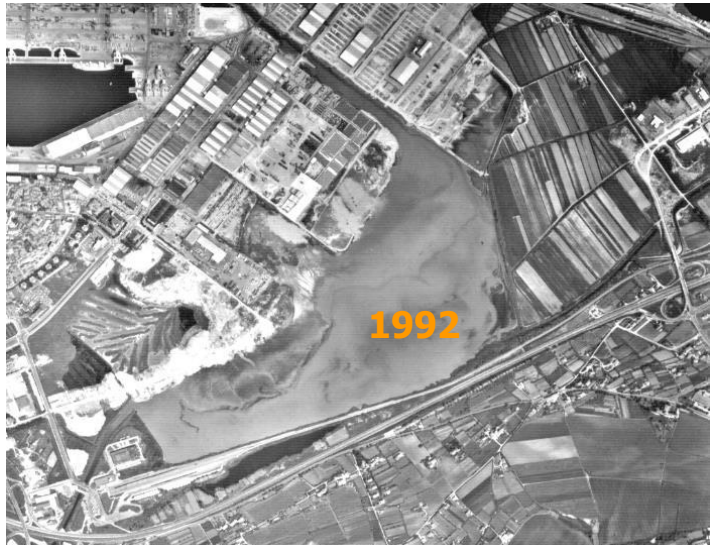
The reserve consists of two parts:

- **a brackish lagoon** with breeding islets, saltmarshes and mudflats overgrown with a variety of halophytic plants and
- **a freshwater marsh** with wet meadows, open water areas surrounded by reeds and thermophile shrubs

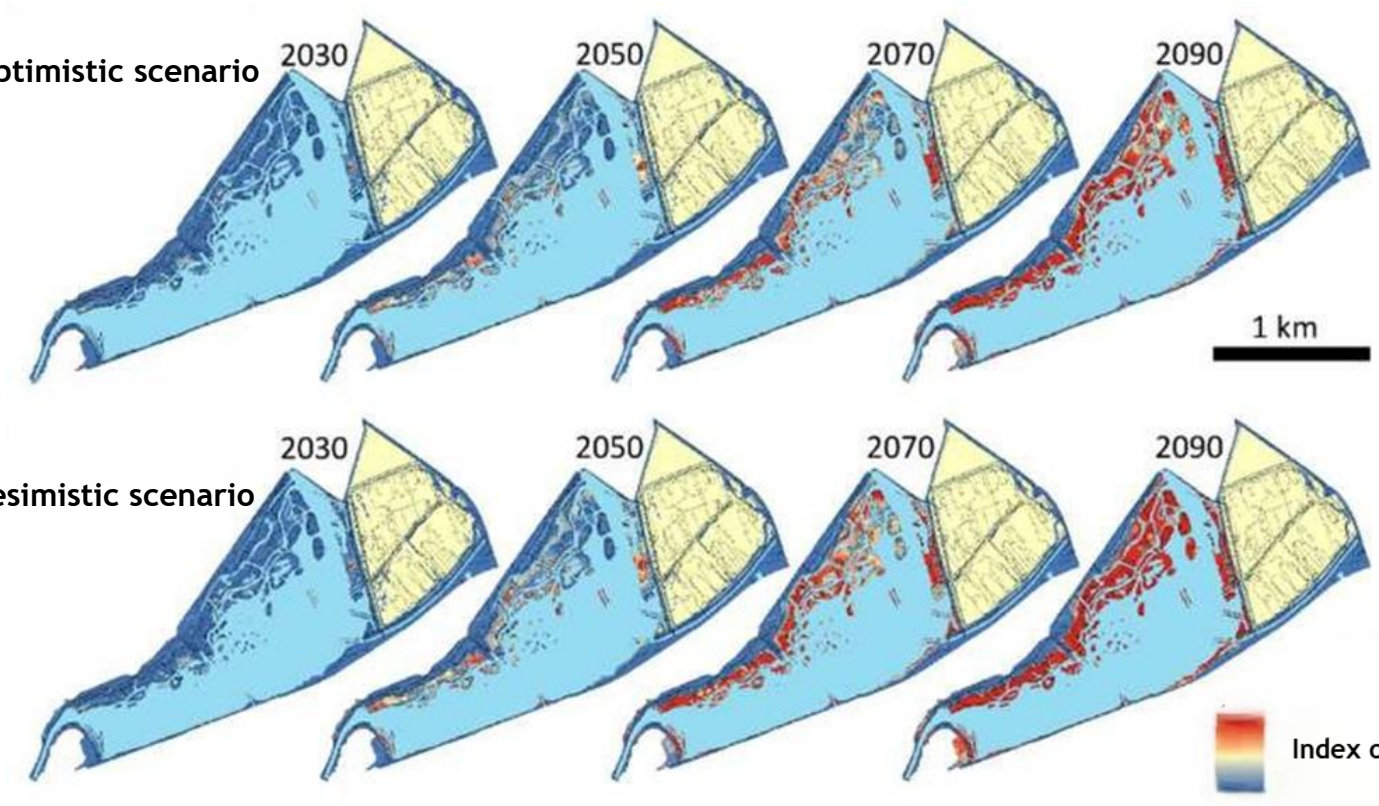
Škocjanski zatok Nature Reserve formation

Source: GURS, 1954-2014





Climate vulnerability of Škocjanski zatok Nature Reserve



Study included three climate factors:
- sea level rise
- future temperature
- precipitation

Future climate vulnerability of Škocjanski zatok NR habitats according to optimistic and pessimistic carbon footprint scenarios (*Ivajnšič, D., Kaligarič, M., 2014*)

Problem

Škocjanski zatok is one of the coastal wetlands where studies on the impact of climate change have shown high habitat vulnerability in the brackish part of the reserve. This means that the habitats will gradually shrink, consequently affecting the fauna dependent on them, with birds being the most impacted. Over time, the lagoon could gradually transform into a more marine-like environment.

Mediterranean and thermo-Atlantic halophilus scrub (*Sarcocornetea fruticosi*)

Mudflats and sandflats not covered by sea water at low tide

Salicornia and other annual plants colonizing mud and sand

Mediterranean salt meadows (*Juncetalia maritimi*)

Solution

To mitigate these effects, it is essential to create sufficient areas for targeted halophytic habitat types, either by artificially constructing new mudflats or elevating existing ones.

Common tern (*Sterna hirundo*)

Kentish plover (*Charadrius alexandrinus*)

Little tern (*Sternula albifrons*)

Joint Pilot Action in the ReCo project

- the Joint Pilot Action encompassed the construction of two mudflats, covering a total area of 420 m² and formed at different micro-altitudes, with the aim of spontaneous development of targeted habitat types, taking into account the succession process
- the material for constructing new mudflats was obtained by deepening the secondary channels within the brackish lagoon (sediment from the lagoon bottom)
- mudflats were created in the central part of the lagoon, surrounded by areas of deep water to prevent access of terrestrial predators
- the excavation of lagoon sediment was carried out with a floating excavator equipped with a grabber and a high-pressure pump for transporting sediment from the lagoon's bottom, assisted by an additional floating excavator with a long arm to hold the sediment transport pipe in the designated location intended for the creation of the new mudflats
- the composition of the output material was 80% sediment and 20% water (the low water content in the sediment prevents surface erosion, and the sediment's consistency is denser and more suitable for creating new muddy area
- dredging the lagoon sediment also enhanced water circulation within the lagoon and reduced the isolation of peripheral habitats as wel as mitigating the risk of lagoon eutrophication


Source: DOPPS, 2024
LEGENDA
Nova muljasta otočka projekt ReCo
Meje NR Škocjanski zatok
0
100
200 m

Photo: Stanislav Valand

Photo: Stanislav Valand

Photo: Stanislav Valand

Photo: Borut Mozetič


Photo: Stanislav Valand


Photo: Bojana Lipej


Photo: Stanislav Valand

Indicators and monitoring of Joint Pilot Action

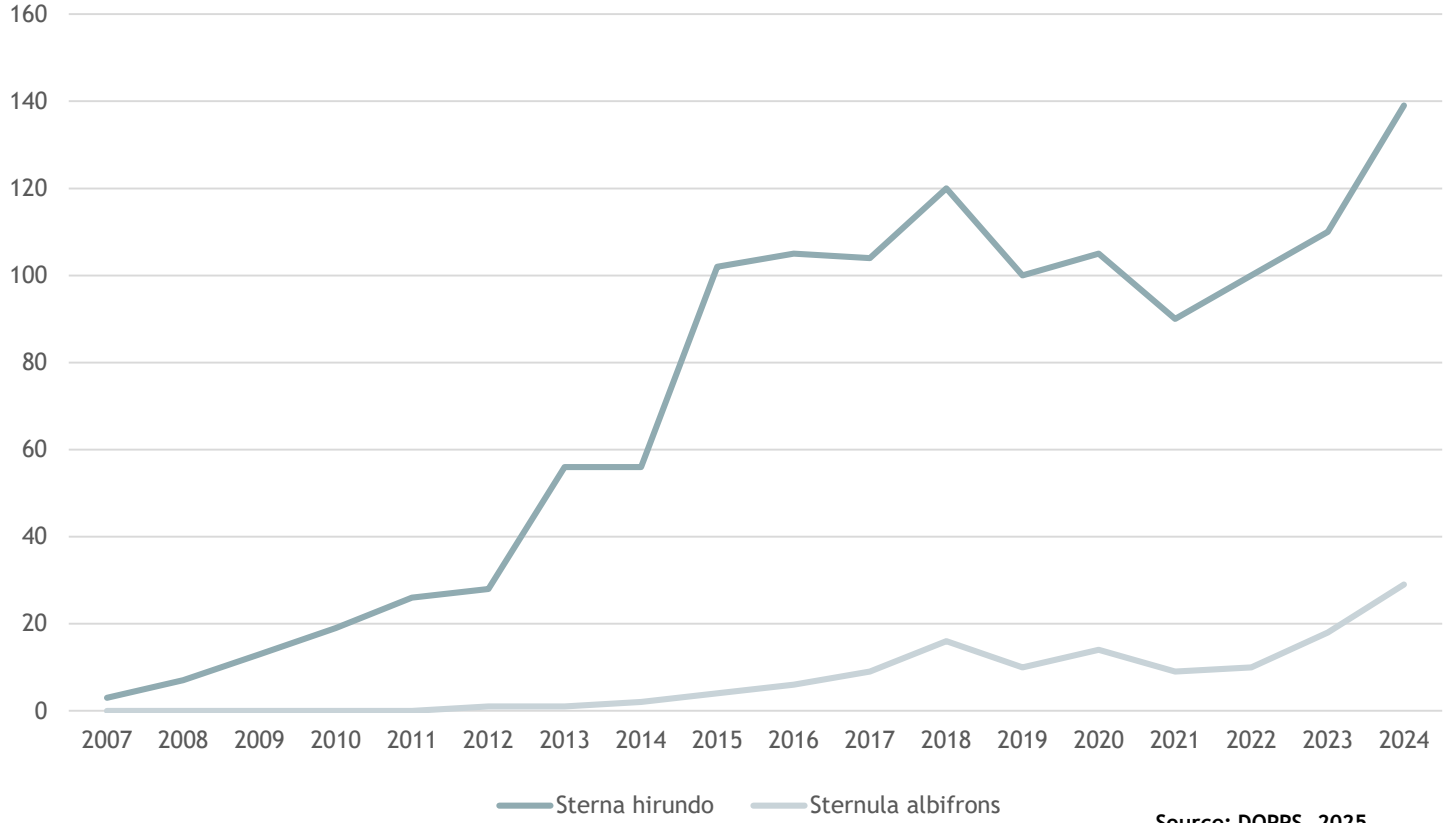
Monitoring of birds in 2024 (27. 5. and 28. 6. 2024)

Nesting season 2024 in the brackish lagoon

- 139 pairs of Common Tern (*Sterna hirundo*) (49 pairs on ReCo mudflats)
- 29 pairs of Little Tern (Sternula albifrons) (29 during the second monitoring - they relocated there after their previous nesting site was flooded)
- 2-4 of Kentish Plover (*Charadrius alexandrinus*) (1 pair on ReCo mudflat)
- Additionaly Black-winged stilt (*Himantopus himantopus*) (15-20 pairs) and Redshank (*Tringa totanus*) (10-15 pairs) nesting on the other mudflats

Common tern
(*Sterna hirundo*)

Growth of Breeding Populations of Common and Little Terns in the Lagoon After Habitat Restoration (2007-2024)



Source: DOPPS, 2025


LEGEND
New ReCo mudflats
27.5.2024_Nests
Little Tern
Common Tern
Source: DOPPS, 2024
0
25
50 m


Photo: Borut Mozetič

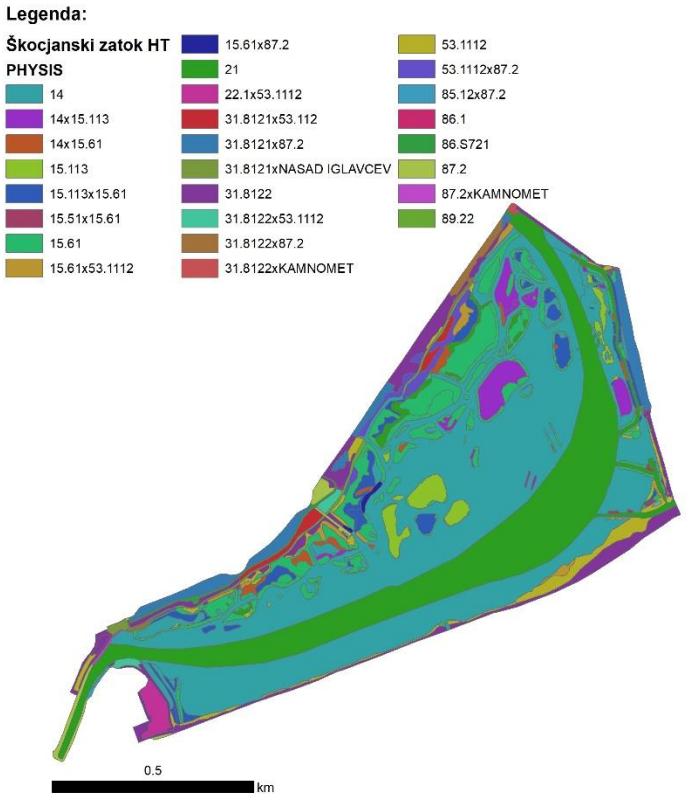

Photo: Bia Rakar


Photo: Bia Rakar

Nest of Common tern
(Sterna hirundo)

Little tern (Sternula albifrons)

Habitat mapping 2024



Authors: Mitja KALIGARIČ, Danijel IVAJNŠIČ in Veno Jaša GRUJIĆ, 2024

Photo: Lara Pirc

Photo: Bojana Lipej

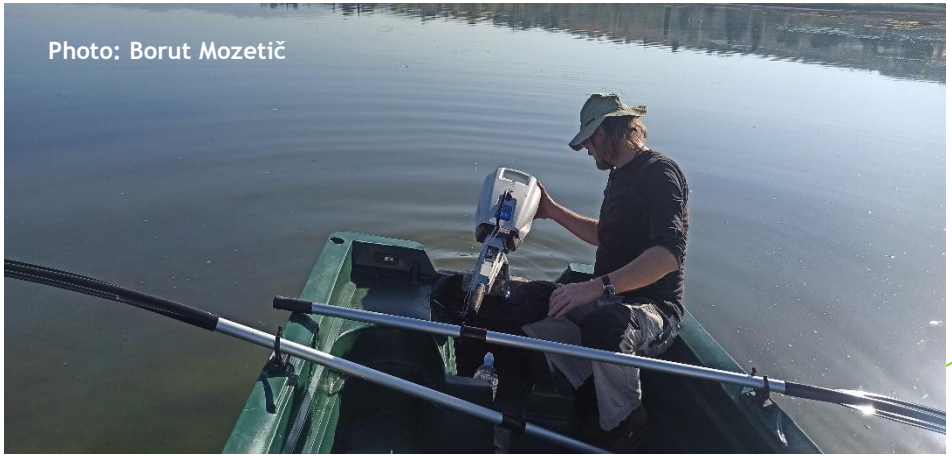


Photo: Borut Mozetič

Peer review, 5. 8. - 6. 8. 2024


Photo: Tina Kocjančič

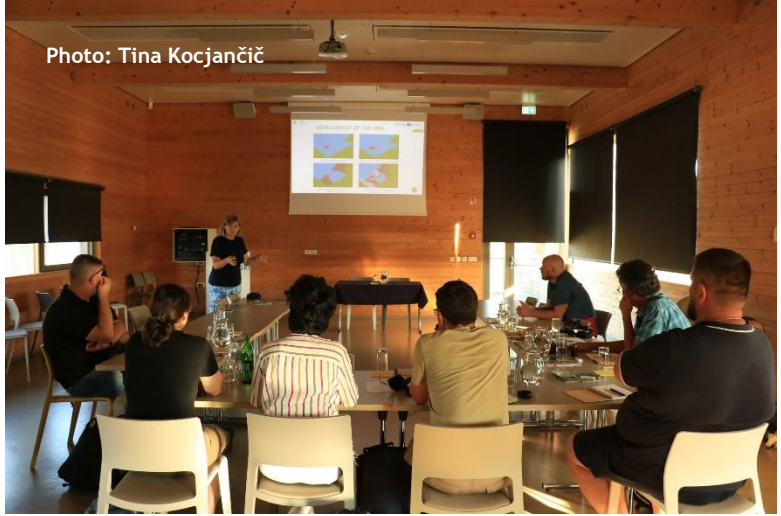


Photo: Tina Kocjančič

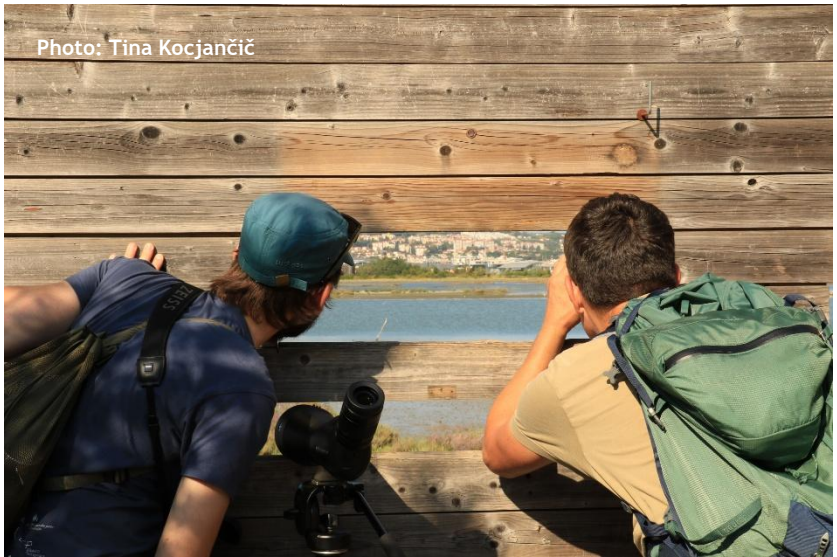


Photo: Tina Kocjančič

Stakeholder engagement

Two meetings: 12. 7. and 12. 8. 2024

All together 12 participants

(University of Primorska, Faculty for Tourism Studies, Local community-individual, Landscape park Debeli rtič, Port Koper d.d., Municipality of Koper, Koper Public Institute for Youth, Culture and Tourism, The tourism cooperative „Treasures of Istria“ and Zoosofia, care and treatment of animals Koper and Slovenian Water Agency)


Photo: Tina Kocjančič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Stakeholders meetings – main outcomes:

- stakeholders expressed satisfaction with the information about the JPA, particularly because actions are addressing climate change in Škocjanski zatok, and they appreciated the proactive efforts to mitigate environmental impacts in this area
- although the first official meeting with stakeholders occurred after the JPA was implemented, some had already been informed about it, primarily through informal conversations during private visits to the reserve and via social media – they appreciated this a lot
- stakeholders were happy to see new nesting colonies on the ReCo mudflats and are keen to hear updates on the habitat mapping process, hoping it will go well
- stakeholders, who participated in the peer review described it as a highly positive experience, feeling valued for having the opportunity to share their views not only with the reserve manager but also with project partners

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