



POROČILO ZA ŠIRŠO JAVNOST

LAYMAN'S REPORT

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Obnova in ohranjanje habitatov in ptic v
naravnem rezervatu Škocjanski zatok

Restoring and conserving habitats and birds
in the Škocjanski zatok Nature Reserve





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1. Ozadje projekta

Škocjanski zatok je največje brakično (polslano) mokrišče v Sloveniji. S svojo okolico predstavlja posebnost med slovenskimi ekosistemi, kar pogojujejo predvsem neposredna bližina morja, mediteransko podnebje in submediteranska vegetacija kakor tudi sama ureditev in razsežnost zatoka. Različne globine brakične lagune ter velika raznovrstnost življenjskih okolij - od zamočvirjenih travnikov, plitvin in polojev, bibavičnega pasu, obrežja in polslanih mlak do trstičij in sladkovodnega močvirja - omogočajo veliko pestrost rastlinskih in živalskih vrst.

V 80. letih prejšnjega stoletja je Občina Koper nameravala Škocjanski zatok popolnoma zasuti in pridobljeno območje nameniti urbanizaciji. V laguno Škocjanskega zatoka je bilo odloženih vsaj 280.000 kubičnih metrov blata, ki je bilo izkopano pri gradnji Luke Koper. Poleg tega sta bili preusmerjeni obe reki, ki sta se dotlej izlivali v Škocjanski zatok: Badaševica in levi razbremenilnik Rižane - Ara. Tako je Škocjanski zatok popolnoma izgubil vire sladke vode. Območje je bilo razglašeno za odlagališče gradbenega materiala, kamor so dejansko odlagali odpadke vseh vrst, od organskih snovi do avtomobilov. Vanj so bile speljane tudi komunalne odplake, kar je prispevalo k še dodatni degradaciji tega edinstvenega ekosistema. S tem je bil uničen velik del redkih življenjskih okolij, kjer so gnezstile in se prehranjevale ogrožene vrste ptic. Ptice, ki se prehranjujejo s potapljanjem, so iz zatoka popolnoma izginile, saj se je odloženo blato razlilo po vsej laguni in uničilo prvotno dno. To sta le dva najbolj izstopajoča primera, ki jasno kažeta, da so bile posledice za živi svet Škocjanskega zatoka usodne.

Tri izmed štirih ključnih groženj, ki smo jih izpostavili pri pripravi projekta leta 2000, so posledice zgoraj opisanih uničevalskih posegov v preteklosti, in sicer:



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1. Project background

Škocjanski zatok is the largest brackish wetland in Slovenia. Together with its surrounding areas, the wetland is an ecosystem of great value to Slovenia, its uniqueness deriving from proximity to the sea, Mediterranean climate and submediterranean vegetation, as well as its organisation and size. Various depths of the brackish lagoon and high diversity of habitats – ranging from wet meadows, shallows and mudflats, tidal areas, shores and a brackish marsh to reedbeds and a freshwater marsh – provide for high diversity of plant and animal species.

Back in the 1980s, the Municipality of Koper intended to fill up the brackish lagoon completely for urbanisation purposes. Consequently, more than 280,000 cubic metres of mud, dredged during the construction of the nearby Port of Koper, were poured in the lagoon. Both rivers flowing into the lagoon were diverted – the Badaševica river and the left discharging channel of the Rižana river, named Ara. As a consequence, Škocjanski zatok completely lost its freshwater sources. The

area was declared a construction material disposal site, where all kinds of waste were disposed, ranging from organic waste to cars. Sewage waters were diverted into the lagoon, which caused additional degradation of this unique ecosystem. This led to the destruction of a substantial part of the rare habitats, serving as nesting and feeding grounds for endangered birds. Diving birds disappeared completely from the area as the dredged mud had spread throughout the lagoon, destroying the original lagoon floor. These are only two examples that clearly indicate the devastating impact on wildlife brought about by the described adverse measures.

Three out of four main threats, outlined in the project preparation in 2000, are the consequences

- nezadosten dotok in mešanje sladke in morske vode v polslani laguni,
- organsko onesnaženje sedimenta v laguni in
- izguba gnezditvenih habitatov.

Na podlagi naravovarstvenih prizadevanj okoljsko osveščenih posameznikov in organizacij je bil zatok prvič zavarovan leta 1993, kot državni naravni rezervat pa je bilo območje razglašeno z Zakonom o naravnem rezervatu Škocjanski zatok, ki ga je spomladi 1998 sprejel Državni zbor Republike Slovenije. Zavarovanje temelji predvsem na izjemni biotski pestrosti ekosistema v času pred uničevanjem, o kateri pričajo naslednji podatki: na območju Škocjanskega zatoka in bližnje okolice je živelo 41% vseh slovenskih vrst dvoživk, 41% vseh vrst plazilcev, 55% vseh v Sloveniji opaženih vrst ptic in 36% v Sloveniji živečih vrst sesalcev. Na teh osnovah je bilo območje razglašeno tudi kot ekološko pomembno območje in naravna vrednota.

Med izvedbo projekta je bil z Uredbo o posebnih varstvenih območjih (območjih Natura 2000) Škocjanski zatok leta 2004 uvrščen tudi med območja Natura 2000, in sicer kot posebno varstveno območje in potencialno posebno ohranitveno območje.

2. Cilji in namen projekta

Osnovni cilj projekta je bil obnoviti, povečati in ohraniti življenjska okolja oziroma habitate ogroženih živalskih in rastlinskih vrst v naravnem rezervatu Škocjanski zatok po industrijski degradaciji v 80. letih preteklega stoletja. Namen je bil ustvariti primerne pogoje za varstvo ptic, tako gnezdil iz Dodatka I Direktive o pticah kot tudi nacionalno ogroženih ptic selivk in drugih vrst ter tako dolgoročno zagotoviti njihovo ugodno ohranitveno stanje.



PROJEKTNO OBMOČJE

Projektno območje obsega osrednji del naravnega rezervata Škocjanski zatok z izjemo območja ob Jezercu in nekaterih obrobni delov rezervata in je veliko približno 115 hektarjev.

PROJECT AREA

The project area of approx. 115 hectares extends over the central part of the Škocjanski zatok Nature Reserve, while the Jezerce area and some peripheral areas are excluded.

of the past degradation processes, described above:

- insufficient inflow and circulation of fresh and salt water in the brackish lagoon,
- organic pollution of mud accumulated in the lagoon and
- loss of breeding habitats.

As a result of concentrated conservation efforts of dedicated individuals and organisations, the area was protected in 1993 for the first time and designated a nature reserve under the Škocjanski zatok Nature Reserve Act, adopted by the Slovene Parliament in spring 1998. The designation was based upon exceptional biodiversity of the ecosystem before degradation, supported by the following data: 41% of all Slovenian amphibians, 41% of all reptiles, 55% of bird species and 36% of mammals living in Slovenia were present at Škocjanski zatok and its adjacent area. Based on the same evidence, the area was also declared an ecologically important area and a natural value under national legislation. During the project implementation period, the area was declared a Natura 2000 site under the Decree on special protected areas (Natura 2000 areas) as a special protected area (SPA) and listed as a potential site of Community interest (pSCI).

2. Project objectives

The principal objective of the project was to restore, enhance and conserve habitats of endangered animal and plant species in the Škocjanski zatok Nature Reserve after the industrial degradation in the 1980s. The purpose of the project was to create suitable conditions for the protection of birds, ranging from the breeding species listed on Annex I of the Birds Directive to the nationally endangered migratory and other birds and thus ensure their favourable conservation status in the long term.

Other project objectives of considerable importance are elimination of the consequences of existing environmental burdens (mostly past pollution and degradation of the area), increase of fresh and sea water inflow to the lagoon and the related improvement of the ecological conditions in the lagoon. The project was also aimed at raising the environmental awareness of the local people and strengthening the positive public image of the reserve as well as sustainable development of Koper and its surroundings.

3. Foreseen solutions

In planning project activities, DOPPS and the representatives of the Ministry of the Environment and Spatial Planning (MoE) wished to substantially contribute to the elimination of threats. With view to achieving this, planning and implementation

Poleg tega velja med cilji izpostaviti še odpravo posledic starih okoljskih bremen (predvsem preteklega onesnaževanja in uničevanja zatoka), povečanje dotoka sladke in morske vode v laguno in s tem izboljšanje ekoloških razmer v laguni. Projekt je bil namenjen tudi okoljskemu osveščanju lokalnega prebivalstva, krepitvi pozitivne podobe rezervata v javnosti ter trajnostnemu razvoju Kopra in okolice.

3. Predvidene rešitve

Projektne aktivnosti smo skupaj s predstavniki Ministrstva za okolje in prostor (MOP) načrtovali tako, da bistveno prispevajo k odpravi groženj. Med njimi je nedvomno najpomembnejše načrtovanje in izvedba obnove in povečanja življenjskih okolij v rezervatu. Predvideni ukrepi so bili naslednji:

- Za izboljšanje dotoka sladke in morske vode v laguno smo predvideli čiščenje izlivnega dela levega razbremenilnika Rižane - Are ter vgradnjo zapornic na morskem kanalu.
- Odstranjevanje 200.000 kubičnih metrov blata iz lagune in obnova habitatov na robu lagune (plitvin, polojev ter slanih muljastih tal, hkrati z oblikovanjem otočkov v laguni) so bili namenjeni odpravi vseh ključnih groženj v brakičnem delu rezervata.
- Z oblikovanjem sladkovodnega močvirja na Bertoški bonifiki smo nameravali ustvariti gnezditvena življenjska okolja kot nadomestilo za tista, ki so bila uničena pred dvajsetimi leti. Hkrati smo predvideli tudi izgradnjo krožne učne poti okoli celotnega sladkovodnega močvirja in zastiralnih nasipov ter jarkov vzdolž poti. Te ureditve so ključni element preprečevanja motenja živega sveta zaradi prisotnosti obiskovalcev, hkrati pa jim omogočajo dostop in kakovostno doživljanje narave.
- Obnovo rezervata smo podprli s številnimi ozaveščevalnimi in izobraževalnimi akcijami, sodelovanjem z upravljavci mokrišč ter stalnim monitoringom ptic, kakovosti vode in hidroloških parametrov (nivojev vode) ter raziskavami. V projekt smo vključili tudi izdelavo načrta upravljanja za petletno obdobje po zaključku projekta.

of habitat restoration within the reserve was set as the most important activity to be carried out in the course of the project. The foreseen activities were as follows:

- Cleaning of the outlet of the Ara, the left discharging channel of the Rižana, and mounting of a sluice system on the sea channel were foreseen in order to improve the inflow of fresh and sea water to the lagoon.
- Removal of 200,000 cubic meters of mud from the lagoon accompanied with restoration of habitats along the lagoon borders (shallow areas, mudflats of different heights, and creation of islets within the lagoon) were aiming to eliminate all the major threats in the brackish part of the reserve.
- Creation of a freshwater marsh in the Bertoška bonifika area was aiming to set up the breeding habitats in order to replace similar habitats lost twenty years ago. Additionally, a circular education trail was planned to be designed and put up around the entire freshwater marsh, together with parallel screening embankments and channels. These are the key elements of preventing disturbance of wildlife caused by visitors, and as such also provide access to the area and high quality nature experience.
- Reserve restoration was supported by numerous awareness-raising and education actions, co-operation with other wetland managers and regular monitoring of birds, water quality and hydrological parameters (water levels) as well as research work. The elaboration of a five-year management plan covering the period after the completion of the project has also been included.

4. Project results and experience gained

The restoration of the Škocjanski zatok Nature Reserve, that is its water management and



landscape regulation, is a pilot project in Slovenia – no comparable experience had been available on such activities and preceding procedures prior to the beginning of the project. Owing to prior developments in the area, the attitude towards nature and its conservation had to be changed first, in particular the attitude of the local decision-makers. A further problem was the changing legislation in Slovenia in the fifteen years from the independence and before Slovenia's accession to the EU. The procedures at the ministerial

4. Doseženi rezultati in pridobljene izkušnje

Obnova Škocjanskega zatoka oziroma njegova vodnogospodarska in krajinska ureditev je za Slovenijo pilotni projekt - s tovrstnimi deli in predhodnimi postopki v našem prostoru doslej ni bilo primerljivih izkušenj. Zaradi zgodovine območja je bila v prvi fazi potrebna sprememba odnosa do narave in njenega ohranjanja, predvsem s strani lokalnih odločevalcev. Dodaten problem je predstavljala spreminjajoča se zakonodaja v Sloveniji v zadnjih petnajstih letih, torej po osamosvojitvi in pred vstopom v Evropsko unijo. Postopki na ravni ministrstev so od nas zahtevali, da smo v številnih primerih orali ledino in zato za izvedbo posameznih aktivnosti porabili bistveno več časa, kot smo predvidevali. Zato smo morali projekt dvakrat podaljšati in prvotno načrtovano obdobje izvajanja s treh let podvojiti na šest. Neglede na to pa smo uspeli kakovostno izvesti vse načrtane aktivnosti in doseči pričakovane rezultate.

IZDELAVA PROJEKTNE DOKUMENTACIJE ZA OBNOVO REZERVATA IN NAČRT UPRAVLJANJA

- V letih 2003 in 2004 je Inštitut RS za vode na podlagi naročila Agencije RS za okolje izdelal projektno dokumentacijo za obnovo Škocjanskega zatoka z naslovom Krajinske in vodnogospodarske ureditve naravnega rezervata Škocjanski zatok. V letih od 2004 do 2006 je potekalo tudi pridobivanje potrebnih zemljišč s sklepanjem služnostnih pogodb z njihovimi lastniki.
- Na podlagi javnega razpisa je bila kot najugodnejši izvajalec za izvedbo del izbrana družba SCT d.d., tripartitna pogodba med izvajalcem, MOP in DOPPS pa podpisana konec novembra 2005.
- Konec julija 2006 je bilo izdano gradbeno dovoljenje in tako pridobljene vse podlage za izvedbo aktivnosti.
- Poleg zgoraj naštetih aktivnosti smo v okviru projekta izdelali tudi Načrt upravljanja (program varstva in razvoja) naravnega rezervata Škocjanski zatok za obdobje 2007 - 2011, v katerem smo med drugim natančno opredelili ukrepe za obnovo, ponovno vzpostavitev in upravljanje habitatov v rezervatu, izgradnjo parkovne infrastrukture, delo z obiskovalci, promocijo kot tudi učinkovito upravljanje in vodenje rezervata. Načrt upravljanja je ob koncu projekta potrdila slovenska vlada.

IZBOLJŠANJE DOTOKA VODE V LAGUNO

- V prvih letih uresničevanja projekta



level required a lot of spadework to be done in many cases and therefore the implementation of some activities took much more time than anticipated. In the light of the above, we applied for two extensions of project duration and, in the end, the project took six years instead of the original three. Nevertheless, all the foreseen activities were carried out successfully and the expected results were achieved.

ELABORATION OF THE RESTORATION PROJECT TECHNICAL BLUE-PRINTS AND MANAGEMENT PLAN

- In 2003 and 2004, the Institute for Water of the Republic of Slovenia elaborated the restoration project technical blueprints entitled Landscape and water-management organization of Škocjanski zatok NR following an order by the Environmental Agency. In the period from 2004 to 2006, the necessary land was acquired on the basis of easement agreements with the land-owners.
- In a successful public tender, the company SCT d.d. was selected as the preferred sub-contractor, while the tripartite contract between the sub-contractor, MoE and DOPPS was signed at the end of November 2005.
- At the end of July 2006, the construction permit was issued and thus all the necessary permissions were obtained to carry out the activities.
- Besides the above listed activities, the Management Plan (Conservation and Development Program) for the Škocjanski zatok NR for period 2007–2011 was elaborated. The Plan provides detailed elaboration of all the actions necessary to restore and manage the habitats in the reserve, construct visitor facilities and carry out visitor management, promotion as well as efficient management of the reserve.

The Management Plan was adopted by the Slovenian Government at the end of the project.

IMPROVEMENT OF WATER INFLOW TO THE LAGOON

- In the first years of project implementation, our basic concern was to ensure sufficient freshwater inflow from the left discharging channel of the Rižana to the lagoon. Following an agreement with the local office of the Environmental Agency, the activities were strengthened in 2002, upgrading the existing sluice system on the Ara channel to accumulate some water for the dry period. In the summer of 2003, the foreseen cleaning of the Ara channel's mouth, where the accumulated sediment had blocked the water flow in the dry season, was carried out. Approximately 3900 cubic metres of sediment was removed from the mouth and from the short section of the Ara channel within the

nam je glavno skrb predstavljalo zagotavljanje zadostnega dotoka vode po levem razbremenilniku Rižane v laguno. V letu 2002 smo kot dodatno aktivnost v dogovoru s koprsko izpostavo Agencije RS za okolje zvišali obstoječi zapornični sistem na Ari in tako pridobili manjšo akumulacijo vode za sušna obdobja. V projektu predvidena izvedba čiščenja izlivnega dela Are, kjer je nakopičen sediment onemogočal pretok vode v sušnih mesecih, je stekla poleti 2003. Iz samega ustja in krajšega odseka struge Are v rezervatu je bilo odstranjenih približno 3.900 kubičnih metrov sedimenta. Tako je bil izboljšán dotok vode, pa tudi pogoji za uspevanje trstičja na izlivu Are.

- Za prihodnje upravljanje je izjemnega pomena tudi izgradnja zaporničnega sistema na morskem kanalu, ki je bila zaključena junija 2007. Dodatno so po zaključku projekta izvajalci vgradili tudi zapornice (hidromehansko opremo), ki nam bodo omogočale popolno upravljanje z nivoji vode v laguni.

UPRAVLJANJE IN HABITATNA UREDITEV SLADKOVODNEGA MOČVIRJA NA BERTOŠKI BONIFIKI

- Od leta 2001 dalje smo vsaj enkrat letno kosili oziroma mulčali opuščena kmetijska zemljišča na Bertoški bonifiki. Rastlinski material smo v začetnih letih stalno odvažali, da bi odstranili čimveč biomase in ustvarili čimboljše pogoje za predvideno sladkovodno močvirje. Leta 2002 smo odstranili tudi opuščeni sadovnjak hrušk in breskev, ki se je razprostiral na treh hektarjih površin.

- Ureditev sladkovodnega močvirja na Bertoški bonifiki je potekala od začetka 2006 do marca 2007. Oblikovanih je bilo 13,5 hektarjev odprtih vodnih površin različnih globin s trstičjem in otočki ter 13 hektarjev vlažnih travnikov. Material, ki so ga izkopal pri oblikovanju habitatov, so izvajalci sproti vgrajevali v zastiralne nasipe ob nastajajoči krožni učni poti, ki bodo omogočali, da bodo obiskovalci čim manj motili življenje v zatoku. Po celotnem območju bonifike so vgradili načrtovane jaške, zapornice in sifone,

reserve. The water inflow increased significantly, leading to improved conditions for reedbed development at the mouth of the Ara channel.

- Construction of the sluice system in the sea channel, which was finished in June 2007, is of high importance for future reserve management. After the end of the project, sluice gates (hydromechanic part) were mounted, allowing full water level management in the lagoon.



MANAGEMENT AND CREATION OF THE FRESHWATER MARSH IN BERTOŠKA BONIFIKA

- From 2001 on, we have regularly mowed or mulched the abandoned farmland in Bertoška bonifika at least once per year. The organic mass was removed in the first few years in order to establish suitable ecological conditions for the foreseen freshwater marsh. In 2002, the abandoned pear and peach orchard, covering three hectares of land, was also removed.

- The creation of a freshwater marsh in the Bertoška bonifika area was carried out between the beginning of 2006 and March 2007. 13,5 hectares of open water areas of various water depths with reedbeds and nesting islets were formed as well as 13 hectares of wet meadows. The excavated material was used to construct screening embankments along the newly formed circular education trail, aiming to prevent disturbance of wildlife caused by visitors. The foreseen water management infrastructure was mounted all around the area, including sluices, shafts and air traps. Water inflow channels were cleaned and regulated. At the same time, the main sluice system was installed to ensure water inflow from the Ara to the freshwater marsh, and a dam on the Ara was built, aiming to prevent the flood tide from entering the freshwater part of the reserve.

- Over two-kilometer-long circular education trail was constructed, laid out along the border of the freshwater part of the reserve. Ponds of various sizes and forms were created along the trail, which are now already inhabited by invertebrates and amphibians. Furthermore, these ponds are models that help visitors get a closer look at the life in the marsh.

- Many birds nested in or at least occupied the newly established freshwater marsh and the success of habitat restoration was already evident during the first breeding season. Among



namenjene upravljanju vodnega režima ter očistili in uredili dovodne jarke. Vgrajene so bile tudi glavne zapornice za dotok vode iz Are v sladkovodni del rezervata in prag na Ari, namenjen preprečevanju vdora plime v sladkovodni del rezervata.

- Hkrati je bila zgrajena tudi več kot dva kilometra dolga krožna učna pot, ki poteka po robu sladkovodnega dela rezervata. Ob poti so bile urejene mlake različnih velikosti in oblik, ki jih že naseljujejo nevretenčarji in dvoživke, obiskovalci pa si lahko od blizu ogledajo te zanimive modele življenja v močvirju.

- Uspešnost izvedenih del je potrdila že prva gnezdilna sezona, saj je v novo nastalem sladkovodnem delu rezervata gnezdilo in se zadrževalo veliko število ptic. Med gnezdilkami naj omenimo 5 gnezdečih parov čapljič (*Ixobrychus minutus*), vsaj 15 parov rakarjev (*Acrocephalus arundinaceus*), 20 parov srpičnih trstnic (*Acrocephalus scirpaceus*) in okoli 15 parov malih ponirkov (*Tachybaptus ruficollis*), kar je za rezervat izjemen uspeh in kaže, da bo v zelo kratkem času ponovno pridobil svoj pomen za gnezdenje ogroženih vrst ptic.

ODSTRANJEVANJE 200.000 KUBIČNIH METROV SEDIMENTA IZ LAGUNE TER UREDITEV POLOJEV, PLITVIN IN OTOKOV

- V letu 2007 so bili izvedeni najdražji in tehnično najbolj zahtevni posegi, in sicer odstranitev 200.000 kubičnih metrov sedimenta iz lagune ter oblikovanje robnih lagunskih habitatov. Vsa obsežna pripravljala dela za ureditev deponije na Ankaranski bonifiki ter postavitve cevovoda so bila v večji meri dokončana že leta 2006.

- Odstranjevanje sedimenta ali refuliranje je izvajal izkušen italijanski podizvajalec s plovnim sesalnim bagrom. Za izvedbo del je bil potreben visok nivo vode, tako za plovbo bagra kot tudi za mešanje z izkopanim blatom, ki so ga v zimsko-pomladanskem obdobju zagotavljali izključno z dotokom iz Rižane. Na deponijo je bila prečrpana predvidena količina sedimenta, še dodatni pa je bil uporabljen za oblikovanje robnih lagunskih habitatov.

- Oblikovanje robnih habitatov vzdolž zahodne obale lagune je potekalo hkrati z odstranjevanjem blata iz lagune. Urejenih je bilo okoli 20 hektarjev polojev, otočkov in višjih muljasto-peščenih tal, ki že postajajo življenjski prostor rastlinskih in živalskih vrst, varovanih na evropskem

breeders, 5 breeding pairs of Little Bittern (*Ixobrychus minutus*), at least 15 pairs of Great Reed Warbler (*Acrocephalus arundinaceus*), 20 pairs of Reed Warbler (*Acrocephalus scirpaceus*) and about 15 pairs of Little Grebe (*Tachybaptus ruficollis*) should be mentioned. The presence of all these birds is an excellent success for the reserve, indicating that in the short-term period, the reserve will resume its importance as an endangered birds breeding site.



REMOVAL OF 200,000 CUBIC METRES OF SEDIMENT FROM THE LAGOON AND CREATION OF MUDFLATS, SHALLOW WATERS AND ISLETS

- In 2007, the most expensive and technically most demanding activities were carried out: the removal of 200,000 cubic meters of sediment from the lagoon and creation of habitats along the lagoon borders. All the extensive preparation works for setting up the disposal site in the Ankaranska bonifika area as well as the pipeline were mostly completed in 2006.

- Sediment removal or dredging was carried out by an experienced Italian sub-contractor using a dredger. High water levels in the lagoon were necessary for the implementation of works, e.g. coasting and mixing with the dredged sediment, although in winter and spring, the needed water was supplied mainly from the inflow of the Rižana. The foreseen quantity of sediment was dredged to the disposal site whereas additional quantities of sediment were removed in order to create the coastal lagoon habitats.

- Creation of coastal habitats on the western lagoon coast was carried out simultaneously with sediment dredging. Approximately 20 hectares of mudflats and islets were formed, already becoming the living space of many plant and animal species protected at the European level. Along the edges of the areas of future mudflats and islets, the barriers were put up first, consisting of excavated sediment which was very solid due to the high proportion of silt.

In exposed areas where higher erosion rates are expected, the barriers were additionally palisaded. The lagoon sediment was dredged to such areas to the appropriate height and thus the suitable ground for halophytes was formed. On the newly established grounds, three pairs of Kentish Plover (*Charadrius alexandrinus*) and two pairs of Black-winged Stilt (*Himantopus himantopus*) bred during the implementation of restoration works.

- Upon the instructions of the DOPPS reserve wardens, the sub-contractor paid special

nivoju. Območja bodočih polojev in otočkov so predhodno zamejili z izkopanim blatom, ki je zaradi visokega deleža mulja izredno kompaktno, na izpostavljenih delih pa so robove dodatno utrdili s koli.

V tako pripravljene predele so izvajalci prečrpali lagunsko blato do ustrezne višine in tako oblikovali primerna rastišča za slanuše. Na novo oblikovanih površinah so že med izvedbo del gnezdili trije pari beločelega deževnika (*Charadrius alexandrinus*) in dva para polojnika (*Himantopus himantopus*).

- Posebno pozornost je izvajalec med izvedbo del po navodilih naravovarstvenega nadzora DOPPS namenil ohranjanju in zaščiti obstoječih habitatov, ki služijo kot semenska banka za ponovno naselitev rastlinskih združb na oblikovanih površinah. Zaloga semen slanuš je ogromna tudi v obstoječem mulju, tako da naslednjo vegetacijsko sezono pričakujemo intenzivno razrast slanuš enoletnic in trajnic, ki sestavljajo na evropskem nivoju zavarovane habitatne tipe.



Glavna gradnika združb slanuš enoletnic sta osočnik (*Salicornia europea*) in obrežna lobodka (*Suaeda maritima*), medtem ko grmičasti členkar (*Artrocnum fruticosum*), ozkolistna mrežica (*Limonium angustifolium*) in lobodovec (*Halimione portulacoides*) tvorijo združbe slanuš trajnic.

PROMOCIJA, IZOBRAŽEVANJE IN OZAVEŠČANJE

- Zaposleni v rezervatu smo veliko energije vlagali v neposredno komunikacijo z lokalnim prebivalstvom. V času projekta smo organizirali 40 predavanj in predstavitev zatoka in sorodnih tem, 17 vodenih izletov v rezervat in do leta 2006 preko 40 vodenih izletov za lokalne šole. Tako je že pred in med obnovo rezervat na vodenih izletih obiskalo preko 3.000 ljudi, med katerimi je bilo največ šolskih skupin. Aktivno smo se udeleževali javnih in individualnih sestankov ter o napredku projekta stalno obveščali tudi medije.

- Na spletni strani www.skocjanski-zatok.org lahko tako domači kot tudi tuji obiskovalci najdejo glavne informacije o rezervatu, njegovem živem svetu, aktualnih projektih in dogodkih v slovenskem, angleškem in italijanskem jeziku.

- Izdali smo 7 številčk biltena naravnega rezervata Škocjanski zatok in

attention to protect the existing habitats, which will serve as a seed bank for repopulation of plant communities on the formed grounds. A huge amount of halophytic seeds is also available in the existing silt. Intensive growth of halophytic annuals and perennials that form the EU protected habitat types can therefore be expected in the next vegetation season. The main species in the communities of halophytic annual plants are Glasswort (*Salicornia europea*) and Sea Blite (*Suaeda maritima*), while the Froggrass (*Artrocnum fruticosum*), Sea Lavender (*Limonium angustifolium*) and Sea Purslane (*Halimione portulacoides*) form the communities of halophytic perennials.

PROMOTION, EDUCATION AND AWARENESS-RAISING

- The reserve staff has devoted considerable efforts to direct communication with the local community. During the project time, 40 presentations of the reserve and similar subjects were carried out in Koper, and there were 17 guided tours to the reserve and over 40 guided tours for schools before 2006. As a result, over 3,000 people, mostly school children, visited the reserve before and during the restoration. We have actively participated at public and individual meetings and informed the media about the progress of the project.

- The web page www.skocjanski-zatok.org contains basic information about the reserve, its wildlife, current projects and events in Slovene, English and Italian language.

- Seven editions of the Škocjanski zatok NR newsletter were issued in order to present the news from the reserve to the local public in the first project years.

- An educational documentary video was filmed and a publication was issued upon project completion, both containing a presentation of the reserve and its wildlife, focusing mostly on the past degradation and the long-awaited restoration and reestablishment of the green heart of the Slovenian coast, as the project can poetically be named.

PROJECT CO-ORDINATION AND MONITORING

- The project was co-ordinated by DOPPS – BirdLife Slovenia staff in co-operation with the responsible representatives of the project partner, the Ministry of the Environment and Spatial Planning.

- In 2002, an informal network of North-Adriatic Wetlands' managers was established, aiming to bring together the wetlands managers from Italy and Slovenia to exchange experience and to enable joint promotion of the areas. The idea was well accepted among the potential partners and today the network joins the managers from the Po Delta wetlands, Venice lagoon, Friuli Venezia Giulia wetlands to Slovenian protected areas on the coast and in hinterland. Through

v njem predvsem v začetnih letih lokalnemu prebivalstvu predstavili dogajanje v rezervatu.

- Posneli smo izobraževalni dokumentarni film in na koncu projekta izdali publikacijo o rezervatu, njegovem naravnem bogastvu ter nič kaj vzpodbudni zgodovini in, končno, o obnovi in ureditvi oaze na pragu Kopra, kot lahko bolj poetično poimenujemo uresničevanje tega projekta.

KOORDINACIJA PROJEKTA IN MONITORING

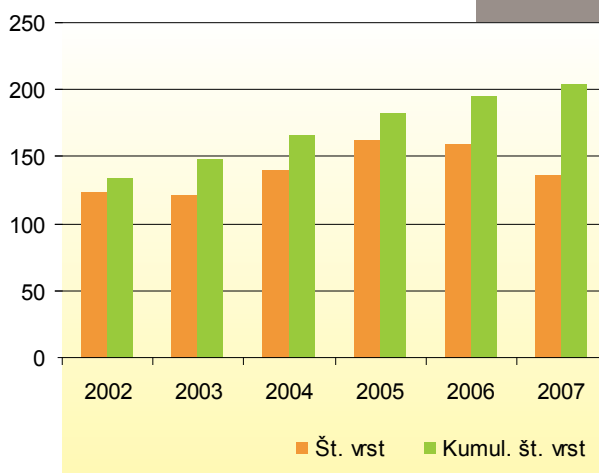
- Projekt smo zaposleni na DOPPS koordinirali skupaj z odgovornimi predstavniki partnerja, Ministrstva za okolje in prostor.

- Leta 2002 smo ustanovili neformalno mrežo upravljavcev severno-jadranskih mokrišč, katere namen je združevanje upravljavcev mokrišč iz Italije in Slovenije, izmenjava izkušenj in skupna promocija območij. Ideja je bila med sedanjimi partnerji v mreži odlično sprejeta, saj so se vanjo vključili upravljavci območij od izliva reke Pad, Beneških lagun in mokrišč Furlanije Julijske krajine do slovenskih zavarovanih območij na Obali in v zaledju. S povezovanjem upravljavcev mokrišč na mednarodni ravni smo projekt oplemenitili z znanji, ki so v sosednji Italiji že preizkušena in dostopna.

- Uspešnost projektnih aktivnosti v rezervatu dokazujejo rezultati spremljanja stanja biotskih in abiotskih parametrov. Stalno je potekalo spremljanje stanja ptic, kakovosti vode in hidroloških parametrov, kar je bilo po drugi strani skupaj z raziskavami osnova za načrtovanje ukrepov. Med slednjimi naj omenimo raziskavo ribjih populacij v zatoku in raziskavo potencialne sposobnosti naravne repopulacije rezervata. Ob zaključku projekta smo izvedli še kartiranje novonastalih habitatnih tipov v Škocjanskem zatoku, ki je pokazalo, da smo z izvedbo projekta pridobili načrtovane habitatne tipe v pričakovanem obsegu. Število vrst ptic pa se je z opaženih 132 vrst leta 2002 do leta 2007 povečalo na 204 vrste.

5. Družbeno-ekonomsko okolje projekta

Naravni rezervat Škocjanski zatok se nahaja v urbanem okolju, od tod tudi popularno ime oaza na pragu Kopra. Prebivalci Kopra, ki se iz



GRAF 1: Rast števila vrst ptic v NR Škocjanski zatok v obdobju 2002 - 07
GRAPH 1: Bird species increase in Škocjanski zatok NR in the period from 2002-07

networking at international level, the project has benefited from the knowledge that had been tested and available in the neighbouring Italy.

- The success of project activities in the reserve is supported by the results of the monitoring of biotic and abiotic parameters. Monitoring of birds, water quality and hydrological parameters (water levels) was regularly carried out and in the first stage, it was the basis for restoration planning together with the research work. Among those, the fish population survey should be mentioned as well as the survey on potential natural repopulation capability of the reserve. Just before the project was completed, habitat mapping was also carried out, showing that the restoration resulted in the forming of all the expected habitat types in the planned size. The number of recorded bird species has increased from 132 species back in 2002 to 204 species in 2007.

5. Socio-economic context of the project

The Škocjanski zatok Nature Reserve is located within a dense urban environment, which gave it its popular name "Oasis on the Doorstep of Koper". The residents of the town of Koper, which is developing from a predominantly trading town to a university center, need green areas and space for relaxation and recreation. Before the project started, the majority of residents were in favour of the idea of reserve restoration, but also sceptical because of the length of time needed to prepare the restoration project. We can assume that the promotional and awareness-raising activities within

this project have brought the future functions of the reserve closer to the local people. Many of them have recognized its real value and become active holders of part of the responsibility for the nature conservation on their doorstep.

For the Municipality of Koper, the designation of Škocjanski zatok as a state nature reserve certainly was unacceptable in the beginning. In the course of preparations for the reserve restoration, however, the attitude of the Municipality has improved significantly, thanks to the on-going co-operation of the reserve manager and the competent ministry. Nowadays, the City Municipality of Koper started to support the reserve and understand it as an advantage in its future development. During project duration, we co-operated with the Municipality in re-introducing the autochthonous Istrian cattle breed. In 2007, they invited DOPPS



pretežno trgovskega razvija tudi v univerzitetno središče, potrebujejo zelene površine oziroma prostor za sprostitev in rekreacijo. Pred začetkom izvajanja projekta so bili ideji ureditve naravnega rezervata v zatoku naklonjeni, pa vendarle zaradi dolgotrajnosti pripravljanih korakov na začetek urejanja tudi precej skeptični. Lahko rečemo, da je Koprčanom in okoličanom prav izvedba promocijskih in ozaveščevalnih aktivnosti tega projekta približala prihodnje funkcije Škocjanskega zatoka. Mnogi so v tem času že uspeli spoznati njegovo pravo vrednost in postali aktivni nosilci dela odgovornosti za ohranitev narave na svojem pragu.

Za Občino Koper je bilo zavarovanje Škocjanskega zatoka kot naravnega rezervata državnega pomena v začetku nedvomno nesprejemljivo dejanje. Odnos pa se je skozi vsa leta priprav na obnovo območja ob stalnem sodelovanju upravljavca in okoljskega ministrstva izboljševal. Dandanes lahko rečemo, da je Mestna občina Koper začela podpirati rezervat in da ga vidi kot prednost v prihodnjem razvoju. V času projekta je DOPPS z občino sodeloval pri ponovni naselitvi avtohtone pasme istrskega goveda, v letu 2007 pa so nas povabili k sodelovanju tudi pri kandidaturi Kopra za evropsko kulturno prestolnico 2012.

6. Prispevek k Naturi 2000 in ohranjanju narave

Obalna mokrišča so na naši kratki in večinoma strmi obali prava redkost. Zato je toliko večji njihov nacionalni pomen in potreba po dolgoročnem ohranjanju in upravljanju, saj je v obe območji – Škocjanski zatok



– BirdLife Slovenia to participate in the bid of Koper to become the European Culture Capital 2012.

6. Contribution to Natura 2000 and nature conservation

Coastal wetlands are a rarity of Slovenian short and steep coastline. Consequently, their national importance is very high as is the need for their long-term conservation and management, especially because both wetland areas – Škocjanski zatok and Sečovlje Salina – have been adversely affected by man since the distant past. Just in time, Slovenia took over responsibility for protecting its national natural values and designated both of them as protected areas. Both Slovenian coastal wetlands were proposed as Natura 2000 sites (as Special Protected Areas) by DOPPS – BirdLife Slovenia and received their designation in 2004.

The implementation of this project has substantially contributed towards establishing a favourable conservation status of habitats and birds in Škocjanski zatok. As a project result, the habitats which are recognized as rare and endangered on the national as well as EU levels, have been restored and enhanced, thereby ensuring favourable conditions for the increase in the number of species and populations of birds in the reserve, which are again nationally or EU important.

The restoration of the lagoon and enhancement of the habitats along its borders were a considerable step towards ensuring that in the future the number of species and populations of breeding and wintering birds in the reserve will increase significantly. The most important breeding species in the brackish part of the reserve is undeniably the Kentish

in Sečoveljske soline – že v preteklosti usodno posegel človek. Slovenija se je pravočasno zavedla odgovornosti za ohranjanje svojih naravnih vrednot in je obe območji razglasila za zavarovani območji narave. Obe slovenski obalni mokrišči sta bili s strani DOPPS uvrščeni med strokovne predloge območij Natura 2000, natančneje posebnih območij varstva, in leta 2004 že razglašeni kot območji Natura 2000. Prav izvedba tega projekta je bistveno prispevala k vzpostavitvi ugodnega ohranitvenega stanja habitatov in vrst v Škocjanskem zatoku, saj so bili obnovljeni in povečani habitati, ki so redki in ogroženi v slovenskem kot tudi evropskem merilu. S tem so bili dani ustrezni pogoji za povečanje števila vrst in populacij ptic v rezervatu, pri katerih gre prav tako za nacionalno in evropsko pomembne vrste.

S poglobitvijo lagune in povečanjem habitatov ob njej smo bistveno pripomogli k temu, da bo v prihodnje v brakičnem delu rezervata gneznilo in prezimovalo večje število vrst in populacij ptic. Najpomembnejša gnezdilka tega dela rezervata je nedvomno beločeli deževnik (*Charadrius alexandrinus*), ki je bil pred izvedbo projekta v zatoku zaradi pomanjkanja primernih gnezditvenih habitatov zelo ogrožena vrsta. Večina habitatov z obrobja lagune, ki smo jih obnovili in povečali v okviru projekta, se nahaja v Dodatku I Direktive o habitatih. Ta Sloveniji nalaga nalogo trajnega ohranjanja teh redkih in dragocenih življenjskih okolij. Oblikovanje sladkovodnega močvirja kot nadomestnega gnezditvenega habitata za močvirja zahodno od lagune, ki so bila popolnoma uničena v obdobju 1983 - 1990, pa prinaša izboljšanje ohranitvenega stanja vrst iz Dodatka I Direktive o pticah, predvsem čapljici (*Ixobrychus minutus*), polojniku (*Himantopus himantopus*) in vrstam s podobnimi ekološkimi zahtevami.

7. Trajnost dosežkov projekta

Z dokončanjem projekta so bila izvedena glavna obnovitvena dela v rezervatu in zopet oblikovana v preteklosti uničena življenjska okolja. S tem pa ureditev rezervata še zdaleč ni končana. V okviru drugih projektov smo se že med izvajanjem tega projekta na DOPPS lotili priprav na gradnjo parkovne infrastrukture - centra za obiskovalce s spremljajočo infrastrukturo in opazovalnic. Leta 2005 smo razpisali javni natečaj za pridobitev arhitekturnih rešitev objektov in ga uspešno zaključili spomladi 2006.



Plover (*Charadrius alexandrinus*), which had locally been seriously endangered before the implementation of the project due to the lack of suitable breeding habitats. Most of the habitats at the lagoon borders, which were restored or enhanced within the project, are listed at Annex I of the Habitat Directive. Through these documents, the state is bound to ensure permanent conservation of rare and precious habitats. The creation of the freshwater marsh as a substitute breeding habitat for the marsh west of the lagoon, which was destroyed in the period 1983–90, brings the improvement of the conservation status for Birds Directive Annex I species, such as Little Bittern (*Ixobrychus minutus*), Black-winged Stilt (*Himantopus himantopus*) and species with similar ecological demands.

7. Durability of project results

Within this project, the main restoration works were carried out in the reserve and the habitats destroyed during the past degradation were restored. Nevertheless, the reserve is still far from being completed. Simultaneously with the implementation of this project but financed from other sources, DOPPS – BirdLife Slovenia started with the preparations for the construction of visitor facilities – a visitor centre with all the corresponding facilities and hides. Back in 2005, we carried out a public competition for the architectural design of the buildings, which was successfully completed in spring 2006. At the time when the education trail was constructed, four observation spots were formed and equipped along the trail. The necessary funding was obtained through the successful applications for co-financing from the Community Initiative Program INTERREG IIIA Slovenia – Italy 2000 – 2006. The technical blue-prints for the visitor facilities are being finalised at the time of the completion of this project and the permits will be applied for soon thereafter.

The adoption of the Škocjanski zatok Nature Reserve Management Plan for the period 2007 – 2011 by the Government is the best guarantee that the development and management of the reserve will continue after the completion of this project. The restored habitats will require regular maintenance and

Hkrati z izgradnjo poti so bila v rezervatu že urejena načrtovana štiri opazovališča ob krožni učni poti. Potrebna sredstva smo zagotovili z uspešnimi kandidaturami za sofinanciranje iz Programa pobude Skupnosti INTERREG IIIA Slovenija – Italija 2000 – 2006. Skoraj istočasno z zaključkom tega projekta zaključujemo tudi izdelavo projektne dokumentacije za objekte in začnemo s pridobivanjem gradbenega dovoljenja.

Vladna potrditev načrta upravljanja naravnega rezervata Škocjanski zatok za obdobje 2007 - 2011 je najboljšo zagotovilo, da se bo urejanje in upravljanje rezervata nadaljevalo tudi po zaključku projekta. Izvedene rešitve v okviru projekta bodo v prihodnje zahtevale redno vzdrževanje in upravljanje. Za to bo poskrbel DOPPS kot upravljavec rezervata. Upravljalne aktivnosti se sofinancirajo iz sredstev državnega proračuna. Poleg tega bo po dokončni ureditvi rezervat lahko ustvarjal tudi lastne prihodke, pretežno od storitev obiskovalcem, iz katerih se bo sofinanciral upravljalni del aktivnosti.

8. Pomen in sporočilnost projekta

Z vidika obnove in ureditve Škocjanskega zatoka je bila potrditev projekta s strani Evropske komisije prelomen dogodek. Ne le, da smo na ta način pridobili dodatna sredstva za urejanje rezervata – s potrditvijo se je pripravljala faza začela prevešati v izvedbeno, kar je bilo pri tako velikem projektu obnove degradiranega naravnega okolja bistvenega pomena. Država se je tudi pred Evropsko unijo obvezala k sanaciji in ureditvi Škocjanskega zatoka v dokaj kratkem časovnem obdobju. Osnovni termiski plan je bil sicer preveč ambiciozen, vendar se je vse začelo odvijati v smeri pospešenih priprav na investicijo. Vzpostavitev ugodnega ohranitvenega stanja habitatov in vrst je jedro prihodnosti rezervata,



management. This is a task of the reserve manager, DOPPS – BirdLife Slovenia. The management activities are financed through the state budget. After the completion of the reserve, the reserve manager will generate income from provision of visitor services and will co-finance reserve management from this source.

8. Project importance and message

From the point of view of the restoration of Škocjanski zatok, the approval of this project by the European Commission was a breaking point. Not only was additional funding approved for the reserve restoration, but the preparation phase started to turn into an implementation phase, which was of crucial importance in the framework of a huge restoration project within a degraded natural area. Slovenia made a commitment to the EU to restore and arrange Škocjanski zatok in a relatively short time. The original time frame was overly ambitious, but nevertheless the preparations for the big state investment started to speed up. The establishment of a favourable conservation status of habitats and species is the core of the reserve future and the only possibility for Škocjanski zatok to regain its full worth as a natural value and an important area within the Natura 2000 network.

The value-added of reserve restoration was evident in other fields, mostly in promotion and awareness-raising activities on the one hand and in monitoring results on the other. The project substantially contributed to the effective implementation of nature protection control, as the first full-time warden of the reserve has been employed through European funding. The importance of nature protection control has also been demonstrated during the



saj le na ta način Škocjanski zatok ponovno pridobiva svojo polno vrednost kot naravna vrednota in kot pomembno območje v okviru evropske mreže Natura 2000.

Dodano vrednost obnovi rezervata je projekt prinesel tudi na drugih področjih, predvsem s promocijskimi ter ozaveščevalnimi aktivnostmi na eni in z monitoringom na drugi strani. Bistveno je pripomogel tudi pri učinkovitem izvajanju naravovarstvenega nadzora v rezervatu, saj smo z evropskimi sredstvi lahko zaposlili prvega nadzornika za polni delovni čas, poleg tega pa se je pomen tovrstnega nadzora pilotno izkazal pri samem habitatnem urejanju, ki je novost tudi za gradbeno stroko. Eden izmed pomembnih izdelkov projekta je Načrt upravljanja rezervata za obdobje 2007 - 2011, ki postavlja upravljavske smernice za ohranjanje narave v prihodnje. Nenavsezadnje pa je projekt omogočil tudi mednarodno povezovanje upravljavcev v neformalni mreži upravljavcev severno-jadranskih mokrišč Adriawet.

Program Life III je bil nedvomno eno bistvenih orodij, s katerim je Evropska skupnost omogočala dosledno izvajanje določb Direktive o habitatih in Direktive o pticah. V Škocjanskem zatoku smo prav ob pomoči tega programa zgradili trdno in uspešno partnerstvo med upravljavcem rezervata Društvom za opazovanje in proučevanje ptic Slovenije in pristojnim Ministrstvom za okolje in prostor, kakršnih je pri povezovanju vladnega in nevladnega sektorja pri nas malo. Tako smo s skupnimi močmi uresničili pilotni projekt, ki se nedvomno uvršča med prvih deset projektov obnove degradiranih naravnih območij v evropskem mediteranskem prostoru. Širno Slovenijo je njegova modelna vrednost in visoka cena obnove, saj skupni stroški krajinske in vodnogospodarske ureditve znašajo kar 3,1 milijon evrov, spomnila na pomen ohranjanje naravnih okolij v prihodnje. Tako ostaja tudi kot opomnik pred ponovnimi degradacijami narave ne le v Sloveniji, ampak tudi v širšem evropskem prostoru.

Projekt »Obnova in ohranjanje habitatov in ptic v NR Škocjanski zatok« smo ob sofinanciranju s strani finančnega instrumenta za okolje Evropske skupnosti – LIFE in družbe Luka Koper d.d. v času od 1.7.2001 do 30.6.2007 izvedli:

NOSILEC:
Društvo za opazovanje in proučevanje ptic Slovenije



PARTNER:
Ministrstvo RS za okolje in prostor



habitat restoration, which was also new for the construction branch. One of the important project outcomes is a Reserve Management Plan for the period 2007–11, providing management guidelines for nature conservation in the future. Last but not least, the project gave rise to international networking of wetlands managers within the informal network of North-Adriatic wetlands managers, called Adriawet.

Life III program was undeniably one of the principal tools of the European Community to ensure consistent implementation of the Habitat and Birds Directives. With the support of this program, DOPPS – BirdLife Slovenia and the Ministry of the Environment and Spatial Planning have created firm and successful partnership for the organisation and management of Škocjanski zatok, which is quite unique in the field of co-operation between governmental and non-governmental sectors in Slovenia. That's how we managed to implement a pilot project, which doubtlessly ranks among top ten restoration projects of degraded natural areas in the Mediterranean part of Europe. Its model value and high price of restoration, which amounted to 3.1 million euros, reminds the Slovenian public of the importance of nature conservation in the future. At the same time it remains a reminder promoting avoidance of further nature degradation not only in Slovenia, but throughout Europe.

The project »Restoring and conserving habitats and birds in Škocjanski zatok NR« was co-financed by the Financial Instrument for the Environment of the European Community – LIFE and the company Port of Koper d.d. It was implemented from 1 July 2001 to 30 June 2007 by:

BENEFICIARY:
DOPPS – BirdLife Slovenia

PARTNER:
Ministry of the Republic of Slovenia of the Environment and Spatial Planning

This Report was prepared under a project »Restoring and conserving habitats and birds in Škocjanski zatok Nature Reserve«, no. LIFE00NAT/SLO/7226, financed by the European Community's Financial Instrument for Environment - LIFE.

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