

# LiveDrava - Riparian Ecosystem Restoration of the Lower Drava River in Slovenia

N°3

## IN A NUTSHELL

### Identity of the organisation

Organisation: DOPPS – BirdLife Slovenia

Website: <http://livedrava.ptice.si/>

Contact: Damijan DENAC, director,  
damijan.denac@dopps.si

### Site identity

Site: Lower Drava River, encompassing Natura 2000 site Drava and Ormož Basin Nature Reserve

Location: Alluvial plain called "Dravska ravan" in NE Slovenia between Maribor and Središče ob Dravi, encompassing Lake Ptuj and Ormož Basin Nature Reserve., SI

Specificities: Due to 3 hydro-power plants, natural dynamic of Drava River was heavily altered, and in Ormož wastewater basins of a Sugar Factory were abandoned.

Challenges: To preserve and enlarge populations of Natura 2000 species, to improve and restore habitat types with unfavourable conservation status.

Status: Ormož Basin Nature Reserve is managed and owned by DOPPS. Included in Natura 2000 area Drava and designated a Nature Reserve (Official Gazette of the Republic of Slovenia, no. 23, 5.5.2017, 3441-3445).

Lower Drava River - important ecological area (IEA) and a Natura 2000 site.



Areas: Woodland area, Wet area, Aquatic environment (rivers).

Action type: Creation of ecosystems/areas, Management, Restoration or rehabilitation (towards the ecosystems historical trend or repairing key functions).

Action framework: Climate change adaptation, Management of nature areas, Natura 2000, Spatial planning works.

## History and context

The natural dynamics of the Drava River was heavily altered after the building of hydro-power plants at the project area – Natura 2000 area “Drava” (SI5000011 & SI3000220) between Maribor and Središče ob Dravi. Most of the water was diverted into the channels, while the prevailing discharges in the old riverbed were reduced drastically. Extensive network of river branches gradually diminished, the majority of them now remain unconnected to the main river and gravel bars are overgrowing. These changes caused the lack of suitable breeding/spawning habitat of several species. Sand Martin and Kingfisher are scarce as their requirements for large sand banks are not met. Alluvial forests (91E0\*) were degraded and fish species like Bitterling, Asp, Spined Loach lost their habitats as well. Water-maintenance works on the Drava River intended to secure flood protection of humans and infrastructure, often lacked firm justification in the past and were destructive to biodiversity.

In 1977 the Sugar Factory in Ormož (TSO) was constructed and soon after its construction, the factory's wastewater basins began to host various waterbird species as

breeders and migrants in significant numbers. An area of exceptional importance for birds at the national and wider scale was formed.

In 2006, due to sugar reform of the EU, TSO was closed. Immediately, DOPPS started activities for the conservation of the wetland and establishment of a nature reserve in the area of the basins.



*Overview of sugar factory, its lagoons, lake Ptuj and Drava area (Source: DOPPS - BirdLife Slovenia)*

## Presentation of the project

### Issues and objectives



Even though the natural dynamic of the Drava River was heavily altered after the construction of three hydro-power plants, some natural characteristics of this lowland river were still preserved. Due to large area of Drava River with its river branches, dry grasslands in the middle of a flooded forest, gravel bars, diverse river banks and other natural specificities with some artificial water bodies, such as accumulation lakes, are making this riparian ecosystem

home to numerous (Natura 2000) species. Abandoned wastewater basins of Sugar Factory in Ormož (TSO d.d.) were restored as a semi-natural wetland with a constant supply of water which happened to be one of the key wetlands in Slovenia for a safe migration route of waterbirds.



*Lagoon and sugar factory of Ormož (Source: DOPPS - BirdLife Slovenia)*

The project aimed to preserve and enlarge populations of species listed in Annex I of the Birds Directive (birds typical for lowland rivers) and Annex II of the Habitats Directive (fishes and beetles) by managing alluvial forest habitats (Annex I, Habitats Directive) along the Lower Drava River in Slovenia. The project also aimed to improve cooperation between the most important stakeholders along the river and to inform the public about the natural value of these Natura 2000 sites and the importance of their conservation. Specific objectives include:

- Transformation of 61 ha of former wastewater basins into a semi-natural wetland as a stopover site for migrating birds (Ormož Basins);
- Habitat management of forest stands to improve the status of around 15 ha of alluvial forests;
- Establishment of a grazing system;
- Removal of illegally built fishing and hunting platforms to reduce hunting pressure;
- Creation of two new artificial breeding islands for Common Terns (total surface area 2100 m<sup>2</sup>);
- Opening up and restoration of three side arms of the Drava River (total length of 3.8 km);
- Preparation of the river banks to allow breeding by the kingfisher (*Alcedo atthis*) and sand martin (*Riparia riparia*);
- Management of gravel bars for Little Ringed Plover and Common Sandpiper (10 ha);
- A reduction of human disturbance at the gravel bars.

## Human and material resources



DOPPS staff: 1 project manager, 1 financial manager, 2 education & public relations officers, 2 ornithologists, 1 warden, and 2 project assistants

VGB (Vodnogospodarski biro Maribor d.o.o; associated beneficiary) staff: 1 hydrology expert, 1 hydraulics and sediment transport expert, 1 GIS expert, 1 habitat expert, 5 designers, 2 environment experts, 1 coordinator

DRAVA (Vodnogospodarsko podjetje Ptuj, d.d. (associated beneficiary)); staff: 1 coordinator, 2 technicians, 1 responsible construction leader, 1 foreman, 5 semi- skilled workers

PTUJ (Urban Municipality of Ptuj (associated beneficiary)) staff: 1 coordinator

Material resources: Rubber boat with motor, small rubber boat, 5 binoculars, 2 telescopes, PC, car trailer for boat transportation, tractor with equipment, 1 motor sphyte (brushcutter), 2 motor chains, software MIKE 21C, MIKE 11, MIKEFLOOD, equipment for ringing birds, grazing infrastructure – stable, electric fences, visitor infrastructure – observation tower, observation hides, parking, information boards

Animals: 10 water buffalos for grazing management in Ormož Basins Nature Reserve. Purchased from Neusiedler See – Seewinkel National Park in Austria after thorough analysis of conditions (water habitats, reed, neophytes) and grazing requirements. Turned to be right choice as we are able to create quality waterbird habitats through grazing management. Due to own reproduction since introduction, 16 animals are present at the moment at site.

## Creation, restoration methods



*Volunteers recreating the sandbank along the Drava - LiveDrava, SI. (Source: DOPPS - BirdLife Slovenia)*

The project entails human intervention to restore ecological functioning, namely: grazing of wastewater basins, restoration of sand embankment, removal of illegal hunting and fishing platforms, reopening of side arms, removal of riprap, removing vegetation from overgrown gravel bars, creating new water inflow to the Ormož basins. For these last, engineers decided to project a pipeline with capacity max 240 L/sec instead of a ditch for the water inflow in Ormož Basins.

The project also entails land management, with the purchase and long-term lease (25 y) of the land. 6.9 ha of riparian flooded forest were purchased and a parcel of 6,747 m<sup>2</sup> leased..

Conservation management of the breeding islands at Lake Ptuj and preparation of river banks for breeding of Kingfisher and Sand Martin was done. Two 1000 m<sup>2</sup> islands were built according to DOPPS instructions, hopefully permanently solving the demanding Common Tern conservation issue. To get even better insight into the breeding colony, a remote camera recording system was established on the breeding island that will serve for future monitoring. With the management the entire (100%) population of two Natura 2000 qualifying species at SPA Drava was possible – Common Tern and Sand Martin, and 25% of the Kingfisher population.

Habitat management in the softwood forest stands was carried out in Ormož Basins as well. Dead wood experiment was performed to improve habitat for endangered saproxylic beetle fauna. App. 40m<sup>3</sup> of non-native hybrid poplars were logged at the Ormož Basins site. Dead trunks were left at two forest surfaces according to the project in such way that 30-40 and 10-20% increase of dead wood in the forest stands was created.

The problem of illegal hunting has been present at Lake Ormož for many years, causing significant reductions in wintering waterbirds, thus reducing the value of SPA Drava as well. A promotion campaign started, 2500



*Ormož Lagoons in progressive renaturation (Source: DOPPS - BirdLife Slovenia)*

leaflets and 2000 posters were printed and distributed. A legal procedure to remove illegal objects at Lake Ormož started in Croatia, as well as field control. One particular case was reported to the police and lawbreaker was sent to trial. Lake Ormož is one of three sites where regular 10-day monitoring was carried out, registering bird populations and negative human impacts. Ormož Basins became state nature reserve and by governmental decree hunting is not allowed at the site.



After more than a decade, the hamster (*Cricetus cricetus*) was again discovered in Sep 2014, in its only site in Slovenia within the proposed Nature park area, giving an additional nature-conservation argument to the Nature Park. Apart from the already mentioned creation of sand banks for Sand Martin and Kingfisher, three other concrete conservation actions are carried out in the river bed: To improve the habitat for Little Ringed Plover, 6 large overgrown gravel bars of total surface 10 ha were cleaned twice in an innovative way – action; 3 closed river branches were opened to improve the endangered target fish species priority habitat type and to enhance the foraging habitat of Kingfisher and Little Sandpiper; human disturbance at 7 gravel bars were reduced with placing of barriers or excavation of ditches.

Grazing management was established in Ormož Basins NR. Sub-contractor delivered a detailed grazing plan and according to this study the grazing system was established in the basins. 12,700m of fences were erected and a stable was built. Five water buffalos were released in the area in 2014 and additional 5 in 2016 and they turned out to be very effective, controlling vegetation even more than expected. Restoration works in the basins – new water supply was built and restoration of habitats carried out - habitats for breeding and migratory birds were created (5 large islands, 77 small islands, 1,753m of channels excavated).

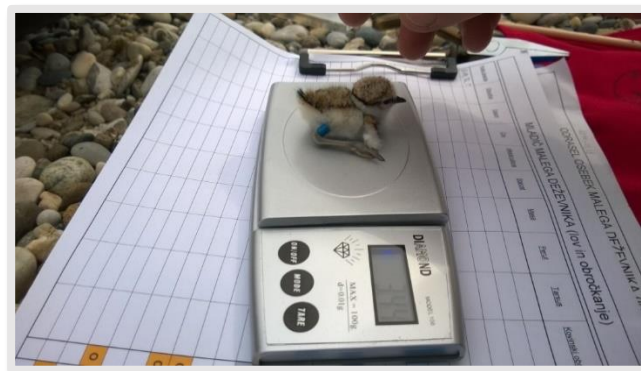
### Monitoring and evaluation methods



Complete monitoring was established in the very beginning for all target species, to be able to quantify the conservation effects.

Different types of bird indicators/specific monitoring were carried out in the project. Monitoring of waterbirds at Lake Ptuj and Lake Ormož was carried out by regular total counts during entire project period in 10-day intervals. Monitoring of all qualifying species for SPA Drava at Ormož Basins NR was carried out using mapping method annually between 2013-2017. Monitoring of the breeding numbers of Common Tern and Black-headed Gull was carried out during two visits (first in April - gulls, second

in May - terns) in the managed breeding colonies every year. Monitoring of breeding riverbed birds was done using rubber boat without use of engine. Two to three counts were carried out every year in the riverbed of Drava River between Maribor and Zavrč. For this purpose entire section was divided into 3 sectors. Upon our request Slovenian Environment Agency (ARSO) issued us a permission (no. 35601-53/2013 – 4, dated 18th Apr 2013) for the performance of ecological study on Little Ringed Plover. In the study, capture-recapture, colour ringing and placing of geolocators was done. Field work was carried out between early April and early August in years 2014, 2015, 2016. In total, 177 nests were found (most in early stage of incubation or during egg-laying) and their fate followed in 4-day intervals until hatching or failure.



*Characterized puppy small plover during weighing (Source: DOPPS - BirdLife Slovenia)*

Beetle monitoring revealed that all together more than 170 beetle taxa were recorded in the area, among them 87 saproxylic. Besides *Cucujus cinnaberinus*, six additional important nature-conservation species were found in the dry part of the Ormož Basins Nature Reserve. One specie was recorded for the first time for Slovene beetle fauna - *Acupalpus interstitialis*.

After the abolition of illegal hunting at Lake Ormož, the populations of overwintering waterbirds significantly recovered. In the autumns and winters (Sep-Jan) of 2012/2013-2014/2015, only 2,300-4,300 waterbirds were recorded on the lake on average, whereas in the first season after the hunting abolition (2015/2016), this

number rose to 7 300 waterbirds, with the highest numbers in November even exceeding 10,000 individuals.

As a result of island's management, 118 pairs of Common Tern bred at Lake Ptuj in 2017, which is the largest number in the last 14 years. Black-headed Gull increased even more. In 2017 its population at SPA Drava was 853 breeding pairs – all at the Lake Ptuj on the managed island.



*Bearded Tit (Panurus biarmicus), female & Common tern (Sterna Hirundo) (Source: DOPPS - BirdLife Slovenia)*

Manual creation of breeding walls at the riverbanks significantly helped populations of Sand Martin and Kingfisher. With this management together with side arms restorations 5 new breeding pairs (BP) of Kingfisher was established which is increase of SPA population by 25%. Besides Kingfisher, Sand Martin benefited from the management, too. Efforts yielded an average of 574 BP of Sand Martins (in the 2013-2017 period), which is a threefold increase of the SPA population compared to the long-term average of 194 pairs in the 2000-2012 period.

Removal of woody vegetation from overgrown gravel bars resulted in an average 17 (35%) more breeding pairs of Little Ringed Plover and 6 (15%) of Common Sandpiper. Disturbances like illegal driving at the gravel bars were prevented at 7 sites. Ditches and road barriers were used and informative boards always placed to explain the meaning of the action. That way the disturbances were reduced for the first time ever on the SPA Drava and resulted in 4 (8%) new BP of Little Ringed Plover and 1 (2.5%) of Common Sandpiper.

In Ormož Basin Nature Reserve, during the spring migration, Wood Sandpiper and Ruff were again present after several years of non-appearance, indicating the area started functioning as the stopover site for shorebirds again. Breeding of Ferruginous duck, Garganey and Shoveler is expected in the future. Little Grebe, Marsh Harrier, Water Rail, Spotted Crake, Moorhen, Coot, Lapwing and Little Ringed Plover were already confirmed as breeders. White-tailed Eagle is regularly present at the area. Occurrence of all species is a direct result of the restoration. Water beetles were not directly targeted species for the basins, however monitoring revealed that the basins became the most important site for water beetles in Slovenia, holding at the moment largest number of endangered species! In restored river branch, species Graphoderus billineatus was not confirmed yet, but for the first time in the area the plant species Water Violet *Hottonia palustris* was found, which is promising for the beetle as it is ecologically connected to this plant species. Quantitative data for the saproxylic beetles cannot be evaluated yet, but both species Hermit beetle (*Osmoderma eremita*) and Cucujus cinnaberinus were found at the project area.

Fish monitoring revealed that the ecological conditions for the fish species improved after the carried out restoration of the three river branches. The Bitterling population became more stable and less vulnerable. The preservation of cut-off channels, side arms and deep sections of the Drava is crucial for the successful conservation of Bitterlings, Spined Loach and Asp. Sampling proved the presence of the majority of expected species, but for the first time at Drava River the Golden Spined Loach (*Sabanejewia balcanica*) was found. It is listed among Annex II species of Habitat Directive.

The results of the socio-economic study indicate an increase in the social acceptance of project activities, which confirms that communication and educational activities have had a positive effect in the adoption of NATURA 2000 area as an opportunity zone, and was not perceived as an obstacle. The results of all included target groups showed an increased awareness of the term Natura 2000 and an increased knowledge regarding the

protected areas. A socio-economic study made at the beginning and at the end of the project proved that the project significantly improved the public's knowledge of

the Natura 2000 network, LIVEDRAVA project, Ormož Basins as an important bird area and DOPPS, as well as support to the Ormož Basins NR.

## Description

### Facilitation



As a Life project, reporting was to be done to the EC on a regular basis using prescribed approach and formats. 5 reports were prepared – one inception report, one midterm report, two progress reports and one final report.

The project also included a communication and education strategy towards schools and the public with lectures, field excursions and exhibitions, public events, but also documentary film, videoclips, brochures, booklets and articles in newspapers (see <http://livedrava.ptice.si/>).

Volunteers, especially faculty students, were included in many actions, like management of breeding islands for Common Tern, preparing breeding banks for Sand Martin and Kingfisher, management of Ormož Basins NR, events etc.

### Partners



- **Technical:** water engineering company – VGB, water maintenance company – DRAVA, Urban municipality of Ptuj
- **Scientific:** DOPPS – Birdlife Slovenia
- **Financial:** European Commission, DEM – short name of Dravske elektrarne Maribor d.o.o., Municipality Ormož, MOP – Ministry of Environment and Spatial Planning

### Costs and financing



The total budget was 4.098.910 € with EU contribution of 2.033.455 €. This includes 1,3 million for personnel, 1 million for assistance, 1 million for infrastructure, 270.000 for equipment, 91.000 for consumables.



*Work on the river bank and aerial photos before and after restoration (Source: LiveDrava layman's report, 2018)*

Timetable



ACTION TIMETABLE

2012 (Sep-Dec) & 2013	2014	2015	2016	2017
<p>Technical blue-prints for restoration works (ecological engineering measures)</p> <p>Technical blue-prints for the Ormož Basins Nature Reserve visitor facilities</p> <p>Guidelines for sustainable water management of the Drava for the national Danube River basin management plan for the period from 2016-21</p> <p>Geodetic survey and marking out the land (demarcation)</p> <p>Purchase of flooded forest fragment</p> <p>Conservation management of the breeding islands at Lake Ptuj</p> <p>Web site of the project</p> <p>Setting up the basic facilities in Ormož Basins Nature Reserve (the temporary project office)</p> <p>Management of gravel bars for the breeding of the Little Ringed Plover</p>	<p>Hydraulic analysis – flood and sediment transport modelling</p> <p>Habitat management in the softwood forest stands in Ormož Basins Nature Reserve</p> <p>Removal of illegally built fishing and hunting platforms at Lake Ormož</p> <p>Restoration of the river branches</p> <p>Preparation of the river banks for breeding of Kingfisher and Sand Martin</p> <p>Impact of project actions on bird species</p> <p>Impact of project actions on beetle species</p> <p>Setting-up the basic visitor facilities at Lake Ptuj</p> <p>Study of the socio-economic impact of the project actions</p> <p>Production and distribution of project publications</p> <p>Project educational program</p> <p>Public presentations and excursions</p> <p>Networking with other projects</p>	<p>Restoration of Ormož Basins &amp; river branches &amp; reduction of human disturbance</p> <p>Hydraulic analysis – flood and sediment transport modelling</p> <p>Technical blue-prints for the Ormož Basins Nature Reserve visitor facilities</p> <p>Management plan, restoration of the habitats for waterbirds &amp; detailed grazing plan for Ormož Basins Nature Reserve - Guidelines for sustainable water management of Drava River for the national Danube River basin management plan for period 2016-2021</p> <p>Lease of a single parcel to reach the integrity of the restored area</p> <p>Construction of water supply and regulation system &amp; establishment of the grazing system for long-term wetland management in Ormož Basins Nature Reserve</p> <p>Creation of new artificial breeding island for Common Terns at Lake Ptuj &amp; conservation management</p> <p>Preparation of the river banks for breeding of Kingfisher and Sand Martin</p>	<p>Management plan for Ormož Basins Nature Reserve &amp; Establishment of a grazing system for long-term and sustainable wetland management</p> <p>Guidelines for sustainable water management of Drava River for the national Danube River basin management plan for period 2016-2021</p> <p>Conservation management of the breeding islands at Lake Ptuj</p> <p>Declaration of Ormož Basins Nature Reserve and Nature park at the Drava River between Ormož and Središče ob Dravi</p> <p>Restoration of the river branches</p> <p>Preparation of the river banks for breeding of Kingfisher and Sand Martin &amp; reduction of human disturbance</p> <p>Impact of project actions on bird &amp; fish species</p> <p>Production and distribution of a documentary film of project publications</p> <p>Networking with other projects</p> <p>Project educational programme</p>	<p>Declaration of Ormož Basins Nature Reserve.</p> <p>Evaluation of the habitat and species monitoring results (ecosystem approach)</p> <p>Layman's report</p> <p>Production and distribution of project publications</p> <p>Audit</p> <p>After-LIFE Conservation Plan</p>

Project was completed: 31/12/2017



Overall assessment



Riparian ecosystem of the Drava River has been degraded in the past, with populations of riparian ecosystem and qualifying Natura 2000 species either decreasing or disappearing. DOPPS have been active in the area ever since the establishment in 1979. Several threats or larger

problems contributing to the degradation have been recognized and placed at the centre of our nature conservation actions within the project. During the implementation of the project we attempted to demonstrate the importance of ecosystem services provided to mankind free of charge, too. Project LIVEDRAVA is finished but nature conservation and striving for public welfare along Drava River continue.

STRONG POINTS

- Successful partnership between research organisation and private companies
- Consideration of local context
- Use of local wild plant species (genetic diversity, adaptability to local conditions...)
- The ephemeral wet areas amongst open flower-rich habitat that was trialed at roof level represented many of the habitat features that are typically associated with marshland areas of brownfield sites (e.g. wetland plant species, pollen and nectar sources, ephemeral wet areas) Success in restoration of endangered species
- Wide network of volunteers - volunteers were engaged in several project activities and can be counted on for the recurring management activities
- Achieved policy uptake of sustainable water management into the legislation
- Strengthen cooperation and communication between most important stake-holders in the project area.
- Communication and educational activities have had a positive effect in the perception of NATURA 2000 and nature conservation in the public

WEAK POINTS

- Unfortunately, despite all the efforts, formal Nature Park declaration was not reached
- Network of volunteers is listed under strong points but it should be pointed out too that it might happen that in the future with rising demands for volunteer work the "supply will not reach the demand".
- Traditionally, inspection service in Slovenia do not work, especially when laws regarding nature are violated. This is a weak point if we would like to continue reducing disturbances at gravel bars as violations must be sanctioned to achieve the effect. E.g. an illegal moto-cross polygon appeared in one of our project sites in Natura 2000. The case was reported to the inspection service, but as expected, without any effect.

IMPROVEMENTS - ADVISES

- The largest risk for the project came from inside. One of the partners, Institute of the Republic of Slovenia for Nature Conservation, left the project in the beginning as their expectations and conditions were not met, therefore caused troubles to the project. However, the rest of the partnership remained stable and secured all the actions. Advice would be to select project partners in advance very carefully.

## Perspectives

### Continuation



Eight projects were so far applied or prepared directly following LIVEDRAVA activities, 5 were confirmed, 1 rejected, 2 are in evaluation procedure.

Among confirmed projects is Interreg Slovenia-Croatia project "ČIGRA" (Čigra meaning in Slovene and Croatian "Tern") that started in Sep 2017 and will end in Feb 2020 (<http://ptice.si/cigra-2017-2020/>). LIFE results – guidelines for Tern management – were of significant importance



*Lagoon as a rest area for birds (Source: DOPPS - BirdLife Slovenia)*

during the project preparation as LIFE experiences of Tern conservation will be transferred to Croatian colleagues within the ČIGRA project. Besides knowledge transfer and Common Tern database, DOPPS will continue conservation management of the islands, promote Tern's conservation through international education camp with young, organize Tern "open-days", place additional education boards at Lake Ptuj, publish magazine dedicated to Common Tern, continue and extend research within the ČIGRA project. So in the next 3 years of after-LIFE period we will even intensify our work on Common Tern including conservation, research, promotion/education and capacity building aspects.

DOPPS is registered as agriculture holding (KMG ID 100325669) and successfully applied "Ecological farming" measures. Parcels in the Ormož Basins NR are included in the measure (<http://rkg.gov.si/GERK/WebView/>, GERK ID 5466544), as we carry out conservation management with grazing. Annual subsidy is expected.

The Nature Reserve has been declared and governmental decree adopted. The decree defines that the Ministry should hire "caretaker" of the site who should prepare management plan, control the regime, and implement conservation management. Payment of the service is foreseen. DOPPS – BirdLife Slovenia, the legal owner of the site with extensive references in conservation management, signed the contract with the Ministry as the caretaker. This way the basic funding for the functioning of the reserve is secured in the after-LIFE period.

### Transposability



Many such areas exist along most of EU rivers and could deserve similar management approach to increase local diversity, especially of endangered species.

Guidelines for sustainable water management of Drava River were presented and available to relevant expert audience, and we strongly believe they will serve as model for similar initiatives in Slovenia and throughout the EU. Therefore, we argue that strong added value of the entire project is corroborated through high replication potential of these Guidelines and their orientation towards the implementation of EU policies. Achievement of policy uptake were presented in details at the LIFE conference in Zagreb on 2nd Feb 2018 organized by Ministry of Environment and energy of Croatia under LIFE14 CAP/HR/14 project.

## Publications

- Project Reports: Progress Report (2015), Midterm Report (2014), Inception Report (2013)
- Layman's report, [http://livedrava.ptice.si/wp-content/uploads/2018/01/2018\\_12\\_1\\_LIVEDRAVA\\_Laymans\\_report\\_web\\_v2.pdf](http://livedrava.ptice.si/wp-content/uploads/2018/01/2018_12_1_LIVEDRAVA_Laymans_report_web_v2.pdf)
- Ormož Basin Nature Reserve (Guide), [http://livedrava.ptice.si/wp-content/uploads/2017/06/2017\\_16\\_6\\_UradnilistRS\\_023\\_2017\\_NROL.pdf](http://livedrava.ptice.si/wp-content/uploads/2017/06/2017_16_6_UradnilistRS_023_2017_NROL.pdf)
- Naravni rezervat Ormoške lagune (Guide), [http://livedrava.ptice.si/wp-content/uploads/2014/09/2017\\_9\\_11\\_NROL\\_vodnik\\_2017\\_ANG\\_splet.pdf](http://livedrava.ptice.si/wp-content/uploads/2014/09/2017_9_11_NROL_vodnik_2017_ANG_splet.pdf)
- Drava River – Nature's Gift for Every Generation, [http://livedrava.ptice.si/wp-content/uploads/2014/09/Drava\\_brosura\\_22x18\\_web.pdf](http://livedrava.ptice.si/wp-content/uploads/2014/09/Drava_brosura_22x18_web.pdf)
- Naturschutzgebiet Ormoške lagune



*Cleaning a pebble island (Source: DOPPS - BirdLife Slovenia)*



*Sand martin nests on a created sand shore (Source: DOPPS - BirdLife Slovenia)*

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