Seminar
Conservation of Island Breeding Birds: Challenges and Best Practices

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Abstracts

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The Project is financed by the EU LIFE Programme, the Ministry of Environment of the Republic of Lithuania and Project partners.

Conservation Status of the Common and Little Terns in Lithuania and the Key Areas for Their Conservation

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Common and Little terns were considered as regularly breeding species since the first bird reviews of Lithuania. However, both species are restricted by the availability of suitable sites for nesting, with fragmented their distribution. For the first time the abundance of the species breeding populations was assessed at the very end of the 20th century, with estimation of 5.000-7.000 pairs of the Common tern and 400-500 pairs of the Little tern. Lately, the inventory and monitoring of the breeding Common and Little terns were conducted several times with re-assessment of the status of the species populations more accurately. The breeding population of the Common tern was estimated 1800-2500 pairs in 2018, with a 20% negative trend in a short term (the last 6 years) and a 50-65% negative trend in a long-term period (since the 80-ies of the 20th century). It was estimated that 500-700 pairs bred in the SPAs network at that time. The breeding population estimation of the Little tern accounted for 150-200 pairs in 2018 with a 25% negative trend in a short term period and a 40-50% negative trend in a long-term period, including 25-100 pairs breeding in the SPAs network.

In 2018-2023 the Lithuanian Ornithological Society with partners implemented the EU LIFE Programme project Adjustment of Key Stakeholders' Capacity for Improvement of Common and Little Terns Conservation Status in Lithuania" (LIFE17 NAT/LT/000545), which covers 12 project areas: all SPAs designated for protection of breeding Common and Little terns as well as three more potential site for species conservation. Basing on the monitoring data, as the result of the regular maintenance of the natural habitats as well as creation of new nesting sites for both tern species in all Project areas, the populations of breeding Common and Little terns have increased significantly within the SPAs network during the implementation of the Project. The significant increase in the number of breeding terns was registered in the majority of the Project sites, although, a negative trend was reported in some of the areas due to different reasons.

The Project is financed by the EU LIFE Programme, the Ministry of Environment of the Republic of Lithuania and Project partners.

Common Tern in Upper Vistula Valley - LIFE.VISTULA.PL

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The Common Tern in the Upper Vistula Valley (southern Poland) breeds in fishponds, dammed reservoirs, gravel pits and on special floating platforms. Over the past decades, ornithologists have monitored its population and threats to its habitat. The size of the population has varied from year to year and has reached a maximum of 450 pairs at 28 sites. The main threats that have been identified are: flooding of the colony during water surges on the largest reservoir - Goczałkowicki Reservoir and overgrowth of islands.

Project "LIFE16 NAT / PL / 000766 Protection of the habitats of wetland birds in the Upper Vistula Valley" (acronym: LIFE.VISTULA.PL), whose aim is to protect and improve the habitat of wetland birds, in particular Night Heron (Nycticorax nycticorax) and Common Tern (Sterna hirundo). The activities will be carried out in four Natura 2000 areas located in the Silesian and Lesser Poland Voivodships. The project is implemented thanks to the financial support of the European Union and the National Fund for Environmental Protection and Water Management. The total value of the project is EUR 4 315 534.

The project included the construction of new islands on ponds and on Goczałkowice Reservoir, as well as reinforced islands on ponds and gravel pits. Innovative technology and materials were used. One of cooperator was Pietrucha Group which is the global leader in manufacturing and distribution of high quality EcoLock vinyl sheet piling, broadly used in the civil engineering sector. Vinyl sheet piles are an environmentally friendly, lightweight and extremely durable.

Our project can be also an example of effective cooperation between people from different backgrounds such as fishermen, ornithologists, state wildlife protection officials, environmental organizations and local officials. The first monitoring results show an increase in the number of breeding Common Terns and their breeding success.

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LIFE on the Edge – restoring habitat for terns and waders in England

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The UK has lost more than 15% of intertidal habitat, 46% of shingle and 18% of dunes since 1945 due to coastal development and sea level rise. The remaining habitats are considered in poor condition. As the loss of habitat continues, this will likely impact both the breeding and wintering populations of waterbirds and seabirds.

LIFE on the Edge is a 4-year EU LIFE Nature project (2020-2024), coordinated by the RSPB in partnership with the National Trust, focusing on improving the quality of nine coastal sites in England, while also building their long-term resilience. The project is using innovative techniques such as using dredged materials to recharge shingle habitats, restore salt- and freshwater marshes and create new islands within coastal lagoons. This has resulted in improved breeding success of several species including the return of others which haven't nested there in a decade. Increased number of roosting waders and geese have also been recorded on site during their migration.

Another key priority has been to engage directly with local communities and visitors on the coast with the aim to reduce disturbance. More widely, we are also networking with managers from other sites as part of the Beach Nesting Bird Programme to exchange knowledge, improve our solutions and compile guidance on management approaches. By 2024, we will have identified future opportunities and developed specific recommendations for wider scale and longer-term coastal habitat management in the project areas. More information is available at www.projectlote.life or @projectLOTE on social media.

The Project is financed by the EU LIFE Programme, the Ministry of Environment of the Republic of Lithuania and Project partners.

Breeding of Common Terns and other waterbirds on artificial floating islands in Czechia

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Most critical drivers of population change, such as reproduction success, are strongly affected by the environmental conditions at the breeding site. The lack of suitable nesting sites leads to both inter- and intra-specific competition for this critical resource and lower reproduction success. Generally, the duck species reach higher reproduction success, esp. lower clutch predation risk of the duck species is recorded in Black-headed Gull and Common Tern colonies, providing protection against nest predators.

Common Tern *Sterna hirundo* is a regularly breeding species in the Czechia. The breeding was confirmed in 5.3 % of mapping squares, revealing the increasing trend. Population size was estimated at 100-200 breeding pairs in 1973–77, 250–300 breeding pairs in 1985–89, 400–600 pairs in 2001–03 and 600–800 pairs in 2014–19. On the contrary, the number of breeding pairs of Black-headed Gull *Chroicocephalus ridibundus* decreased from 200,000–350,000 in 1973–77 to 20,000–40,000 pairs in 2014–19. This decrease could be explained by changes in breeding habitat as well as a decline of suitable invertivore food for gull chicks. The collapse of Black-headed Gull breeding colonies is highlighted as one of the factors negatively affecting population changes of diving ducks, especially. Common Pochard *Aythya ferina* and Tufted Duck *Aythya fuligula* .

In this context, we initiated the Norway Grants project focusing on the implementation of a network of floating artificial islands in man-made fishponds to provide breeding opportunities for waterbird species of interest (esp. Common Pochard, Tufted Duck, Black-headed Gull, and Common Tern). The floating islands enable meeting the breeding site requirements of all these species. This intervention (as Nature-Based Solution) will improve the ecological value of intensively managed freshwater wetlands, which are critical for supporting populations of many waterbird species.

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Protection of Common Tern in South Moravian Region – 2008–2023

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The presentation presents data on measures realized to support the Common Tern's (*Sterna hirundo*) breeding in the South Moravian Region in 2008–2023. We have been providing monitoring since the beginning. Initially, all actions were carried out by volunteers. Although financial support was later obtained, the measures could not have been carried out without active cooperation with volunteers.

In 2007, terns nested in the area of interest in a single location, on crumbling concrete bridge piers covering an area of approximately 143m^2 (79 pairs). The following year only 34 pairs nested there. Two artificial floating islands of 9 m^2 were installed for the first time at two other sites. In total, 53 pairs of terns nested in South Moravia in 2008. Starting this year, activities to support this species have started.

At the beginning of the 2014 breeding season, the total area of 839.8 m^2 was arranged for breeding of the Common Tern in the South Moravian Region. Altogether, 12 artificial islands or wooden rafts on pillars with the total area of 94 m^2 were installed in 2008–2014. We set the breeding population of the terns this year at 205–208 breeding pairs.

Most of the population breeds on artificial floating islands or islands with active management. Other (natural) nesting sites, such as on the floating driftwood, are very rare and are isolated cases. The islands are mowed or gravel is placed on them, and the former bridge piers have been rebuilt. The relatively short-term and unstable wooden floating islands are being replaced by concrete floating ones.

The active care of the tern and the area of floating and maintained islands is gradually increasing with a maximum in 2023: 1123 m^2. There were 20 floating islands with an area of 334 m^2. In this year, 243–244 pairs were detected. However, the breeding season was strongly affected by avian influenza. More than half of the pairs were unsuccessful and some birds did not breed. The maximum was recorded in 2022 when 384–388 pairs nested.

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Conservation Challenges of Velvet Scoters Breeding in the Caucasus

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In accordance with historical data, Velvet Scoter *Melanitta fusca* once had a widespread breeding distribution throughout the Caucasus region, but recent studies indicate that this population has declined significantly and is now restricted to a single small breeding site at Lake Tabatskuri in Georgia. The first survey in 2017 found that c. 25-35 pairs were still present at Lake Tabatskuri, but fewer pairs actually nested at the lake due to human disturbance and the removal of eggs by local fishermen. Collaboration with protected areas and the local community has stopped egg collecting on the island and contributed increase in the number of nesting birds on the island. However, the scoters' reproductive success has remained poor because of the high predation rate on the eggs by Armenian Gulls *Larus armenicus* and Marsh Harrier *Circus aerginosus* and duckling mortality due to predation by the Gulls soon after hatching and drowning in fishing nets. Limiting the nests of Gulls on the island and restricting fishing in the important areas of the Scoters' ducklings increased the overall nesting success of the Scoter and supported an increase in Scoters' overall reproductive success as well. However, lower gull numbers probably have resulted in the Marsh Harriers having better access to nesting scoters, and in 2020, three sitting females were predated on their nests. Against that, in 2020 grass growth in the island was very poor, making it easier in some areas for aerial predators to detect scoters sitting on nests. However, the gulls take a very heavy toll on the scoters breeding at Lake Tabatskuri, especially on the ducklings, even if it is during a short time "window" when they are small. Hence, the long-term survival of this tiny population of Velvet Scoter remains at risk and needs greater investment in long-term surveys and active conservation to safeguard its future in the Caucasus.

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Terns of Pomorie Lake: breeding habitat restoration and implications for conservation

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Pomorie Lagoon is a natural hyper saline lagoon situated along the Bulgarian Black Sea coast, partly-modified by human activities for sea salt harvest and medicinal mud use. Its position along Europe's second biggest bird flyway Via Pontica make it important stopover during migration. Site's checklist counts more than 297 bird species, 70 of these breeding. The wetland is the only regular breeding site in Bulgaria for Sandwich tern (*Thalasseus sandvicensis*) and second most important for Avocet (*Recurvirostra avosetta*), Black-winged stilt (*Himantopus himantopus*), Kentish plover (*Charadrius alexandrinus*), Common tern (*Sterna hirrundo*), Little tern (*Sterna albifrons*), and Shelduck (*Tadorna tadorna*). Green Balkans NGO (Bulgaria) implements long-term program for restoration of water birds' habitat since 1996. Restored part of concrete dike was first success that led to increase of Sandwich terns breeding at the site from 6 to 450 pairs in period 1996 – 1999. Wood and silt islet adjacent to concrete dike was created in 2001 – 2008, followed by large 4000 m^2 ground pebble-covered island in 2013. Seven wooden platforms were made in the period 2012-2017 and 2022. These efforts ensured constant breeding colony of Sandwich terns numbering 900 – 2500 pairs together with Avocets, Common and Little terns on wood-silt islet. Occasionally rarer breeders were recorded like Gull-billed tern, Slender-billed and Mediterranean gull at the ground pebble-covered island in 2013-2017. Regular maintenance is required as proven by recent active restoration of wood- silt islet within LIFE19/NAT/BG/000804 LIFE FOR POMORIE LAGOON project that helped restore Sandwich tern and Avocet numbers that were in decline. Colour ringing scheme revealed wintering grounds of Sandwich terns from Pomorie Lake to be the whole Mediterranean Sea. Ring reading confirmed importance of site for terns with identified 33 Sandwich terns from 8 countries and 28 Common terns from 4 countries during migration and breeding.

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Terns in Latvia - population status and nesting sites

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At present six tern species breed in Latvia. Common Tern is one of the, 1100-2300 pairs in 2013-2018, decreasing. Less than 20% of the population breed at NATURA2000 sites.

Since 1983, terns have been known to nest on man-made structures (roofs and port infrastructure objects). One of the largest concentrations of nesting terns on roofs was in Ķīpsala, center of Riga, where first breeding pairs had been recorded in 1983 and in the 2010s up to 600 pairs (mostly Common Terns, up to 5-10 pairs of Arctic Terns and up to 30 pairs of Little Terns) nested on six low roofs. Up till 2023 almost all these roofs have been reconstructed, becoming not suitable for terns. For this reason number of nesting terns on these roofs has decreased to 18 pairs. A small part of them have moved to nest in other places in Riga and its surroundings

Little Tern :70-100 pairs in 2013-2018, decreasing, about half of the population nests in NATURA sites. All colonies confined to Daugava river islets and seacoast beaches. In recent years only one beach site colony is known. Arctic Tern: 5-20 pairs in 2013-2018, decreasing. Breeding sites recently confined to port areas closed to visitors. In order to reduce recreation disturbance, visiting bans have been established in three seacoast areas for the nesting period in 2022 and 2023.

On the other hand – Chlidonias terns are increasing: Black Tern (2800-3900 pairs in 2013-2018, increasing, about one third of the population breeds in NATURA2000 sites), White-winged Tern (120-350 pairs in 2013-2018, increasing, all known colonies are in NATURA2000 sites) and Whiskered Tern (5-50 pairs, increasing, all known colonies are in NATURA2000 sites).

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Studies of Common Terns in Croatia

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The Common Tern in Croatia inhabits both freshwater and marine habitats. Freshwater habitats are confined to large rivers: Sava and Drava and surrounding gravel pits. Marine colonies are situated on small inhabited islands along the Adriatic coast. The total Croatian population is estimated to be 400-700 pairs.

The study of the freshwater Common Tern population started in 2012. Light-level geolocator study revealed for the first time the eastern flyway of the inland populations, wintering in the Mozambique channel. Studies based on GPS loggers enabled the identification of the main foraging areas and showed the importance of shallow river topography for tern foraging. It was also the basis of the study of adult prospecting movements, showing that actively breeding adults also visit conspecific colonies. Inland colonies are threatened by flooding and succession of vegetation. The main colony near Zagreb, hosting 120-140 breeding pairs, was regularly managed by removing the vegetation. In 2018 and 2022, the gravel layers were added to increase the height of the island. The breeding platform was built in 2018, hosting 35-65 breeding pairs. In 2023, the avian flu completely destroyed that colony. Activities were founded by two public institutions for nature protection and the Interreg Slovenia-Croatia programme.

In 2021, the research was expanded to marine habitats, funded by the Croatian Science Foundation. We are studying the differences between freshwater and marine populations in migration routes and wintering sites, foraging activities during migration, breeding home range and foraging flight metrics, post-breeding dispersion, clutch and egg characteristics, and nest attendance.

Our research also included genetic studies using neutral and adaptive genetic markers from breeding colonies in five European countries. Mitochondrial DNA control region and microsatellite loci showed lack of differentiation among the colonies, suggesting high connectivity, while genes of the Major Histocompatibility Complex (MHC) showed high genetic diversity.

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Monitoring and conservation of Common Tern (Sterna hirundo) in Slovakia

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Since 2000, we started monitoring and protection of Common Terns in Slovakia. The population was 591 breeding pairs at least in 2022. The largest breeding population is in SPA Dunajské luhy. More than 300 pairs are regularly breeding here. Approximately 90% of the population is breeding on 2 small signpost islands, the rest of population on Bird Island. The population is threatened by the invasive alien species - American mink, which has destroyed several colonies in the past. Since 2016, we eliminated dozens of minks in this area. Another threat is disturbance by people (recreationists, fishermen, workers). The second important site is SPA Dubnické štrkovisko. Common Terns are breeding here since 1999, at least (15 b.p.). The maximum was in 2009 (287 pairs). Since then, the number of breeding pairs has been decreasing, only 60 pairs in 2022. The reasons are the floods in breeding season and the presence of wild boars that predate the nests on the islands. In the last decade, stable population of 60-80 pairs have been breeding at the Adamovské štrkoviská, part of the SPA Záhorské Pomoravie. Population of 10-50 pairs is breeding on Bird Island in SPA Sĺňava. An important breeding site is SPA Horná Orava, the only population in Slovakia that is increasing, more than 90 pairs in 2022. In 2023 bred at least 20 pairs on new floating islands at SPA Kráľová. In Liptovská Mara dam is population of Common Terns regularly destroyed by fluctuations of water level. We are doing management during the winter season at almost all locations. We are cutting vegetation on islands and remove the biomass. We covered some islands with water-permeable foil to prevent the overgrowth of plants. We are mainly monitoring the population by using a drones.

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Telemetry of Waterbirds – Current State and Future Perspectives

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Telemetry has become a standard tool when studying birds and its use is increasing every year. There is a wide range of technologies allowing to study bird movements, behaviour and ecology. GPS-GSM is probably the most common and convenient telemetry method. Waterbirds are a specific group of birds that pose certain challenges when tracking them, which should be recognized and addressed by technical and often species-specific solutions. Recent developments of bird telemetry tools distinguish by minimization of equipment size, increasing number of available features and focus on recording sensor data in addition to position logging. For the future we expect further minimization and more intense data logging if breakthroughs are seen in reduced energy consumption by electronic components, increased efficiency of solar panels and improved energy storage. Initial data processing on board of telemetric devices is another direction that will be increasingly seen in the future. Finally, we should recognize a need for development of better methods for transmitter attachment on birds and improved species-specific knowledge, so that negative effects are minimized when studying them.

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The Israeli Terns Project: Using Remotely Controlled Cameras for Study and Conservation

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Two species of terns breeding in northern Israel, Common and Little Terns. The population of Common Tern comprises approximately 1,300 pairs, while the Little Tern population consists of 200 pairs. The primary treatments for both of species include the reduction of breeding habitats, terrestrial predators, disease outbreaks, and intra- and inter-species competition. Over the past 50 years, the population of terns in Israel has shown an increase, yet a decline in the number of breeding colonies has been documented. Presently, approximately 90% of the terns in Israel are concentrated within a single dense colony at Atlit salt pools. This situation may elevate the vulnerability of the tern population, especially during disease outbreaks, as well as in cases where predators infiltrate the colony. The Israeli Terns Project commenced its operations in 2010. Over the course of 14 seasons, approximately 14,000 terns were marked with metal and coded rings. In the last three years, a systematic deployment of remotely controlled cameras located within the breeding colony has been initiated. These cameras enable continuous monitoring and the collection of high-quality data throughout the breeding season. Our findings emphasize the importance of Atlit salt pools as a stopover site for Common Terns migrating between breeding areas in Eastern and Central Europe and wintering grounds in Eastern and South Africa. In the future, enhancing and optimizing the utilization of these cameras holds the potential to improve the monitoring capacity of the breeding tern population.

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GPS tracking of breeding Common terns in Lithuania: new knowledge about foraging strategy and local movements

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Common terns are often restricted by the availability of suitable sites for breeding. This species is obligatory colony breeder, which can be established on exposed islands on a variety of aquatic habitats: lakes, rivers, fish ponds and flooded peatlands. Conservation effort for this species is usually focussed on management and protection of such islands, sometimes including the waterbody surrounding them. The objective of our study was to find out how far common terns travel from their colonies for feeding during the breeding period. We used GPS telemetry and successfully tracked 58 common terns from 6 colonies located in different habitat types in Lithuania. The results showed high individual variation in terms of foraging flight direction, waterbody targeted and distance flown. Despite high variability between individuals, there was high consistency in foraging habits at individual level. Only few birds consistently foraged in close proximity to the colony, while the majority regularly endured on longer foraging trips up to 20 km away from the colony to different waterbodies. In several cases some birds travelled as far as 50 km and even farther with repeated flights to the same waterbodies. We conclude that the majority of the inland breeding common terns regularly use a variety of waterbodies within a 20 km radius around their colonies.

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Installation of Sand Islands on the Waterways – an Opportunity for Breeding Terns and Challenges

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Common and Little terns are restricted by the availability of suitable sites for nesting. In Lithuania, Common tern colonies commonly establish on open islands of different waterbodies, while the Little tern nests mainly on islands and sandy banks of the Nemunas with up to 80% of its national population there. Therefore, the Nemunas river is of crucial importance for conservation of the Common tern and, in particular, the Little tern, with 4 SPAs designated for their protection there. Unfortunately, their conservation status was assessed as unfavourable in 2009-2019. The lack of nesting sites was noticed as the main reason of such status. The excavation of the shallow river zones during maintenance of the waterway together with a high-water level during the breeding seasons of terns have determined this scarcity.

The Lithuanian Ornithological Society implemented the EU LIFE Program project Adjustment of Key Stakeholders' Capacity for Improvement of Common and Little Terns Conservation Status in Lithuania, LIFE17 NAT/LT/000545 in 2019-2023. The project partner – The State Enterprise Lithuanian Inland Waterways Authority – poured 21 new sandy/gravel islands and beaches on the Nemunas river SPAs (total area – 2,5 ha). The formation of new islands was combined with the annual maintenance of the water transport corridor, although in some cases nature conservation authorities didn't provide relevant permissions for installation of sandy islands in the most suitable places for terns to breed. Recent monitoring data showed significantly increased number of the breeding Common and Little terns due to occupation of newly formed or restoredislands on the Nemunas river. Both tern species demonstrated very fast response with the high occupation rate during the next year already. Although, extremely high-water level on Nemunas river was important limiting factors in some years, poured higher islands have compensated scarcity of the terns' nesting sites during unfavorable hydrological conditions. Therefore, this case could be a great example how successful collaboration of nature conservation organization with national water transport authority not only eliminates serious long- term threats for breeding terns and other shore birds, but also provides new opportunities for improved protection the breeding endangered bird species in the long term.

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Conservation of Meadow Birds at the Pripyat floodplain

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The Pripyat floodplain supports significant breeding populations of waterbirds commonly associated with lowland grasslands. More than 70% of the Belarusian population of Common Ringed Plover *Charadrius hiaticula* and Terek Sandpiper *Xenus cinereus* breed on the flooded meadows of the Pripyat.

In 2008, we started monitoring breeding waders on meadows in the middle of the Pripyat floodplain. We recorded all wader nests and birds with breeding behavior in a 450 ha study area near Turov town, Gomel Region (52.04°N, 27.44°E).

From 2008 till 2014 the total numbers of the 13 breeding wader species recorded decreased significantly ($R2=0.55$, $p<0.05$). Similarly three most common breeding species had negative population trends: Northern Lapwing ($R2=0.49$, $p=0.08$), Common Ringed Plover ($R2=0.86$, $p=0.0025$) and Redshank ($R2=0.62$, $p=0.03$).

In 2014 we studied influence of different types of cleaning meadows for nesting waders and other waterbirds. On one of the islands on the part of the territory held mechanical harvesting of dry grass and bushes on the other side dry grass burns out. First results show that for nesting waders choose places where cleaning was carried out mechanically.

In 2006-2007, we started to take conservation actions (cutting of willow bushes and hay making) near Turov town in collaboration with APB-BirdLife Belarus and local authorities. Since 2014, cow grazing has been restored on the studied territory.

In 2008, the first Great Snipe *Gallinago media* leks were recorded there, and in 2014 we counted 40-50 lekking males in our study area. However, the absence of spring flooding for two consecutive years (2019-2020) has led to a significant decrease in both the number and breeding success of all waterbirds.

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