SAND MARTIN

Ripariariparia

SandMartin (*Riparia riparia*)

The sand martin belongs to the family Hirundinidae. It is much less known than the barn swallow and the common house martin, since it does not spend as much time near people, neither it nests in human dwellings. The sand martin nests in steep river banks, excavation and aboveground pits. They often raise their youngs surrounded by the noise from heavy machinery.

Identification

The sand martin is one of the smallest swallows in Europe – it is even smaller than a sparrow. Unlike its relatives, the sand martin has a short, moderately incised tail. The upper body is dark brown, the bottom is creamy white. Brown stripe divides the white neck and the belly. The beak is short and wide. The wings are all-brown. Sexes are alike.

The call of a sand martin is short, rough and creaky. They "speak" the most next to the nesting wall. There, the individuals exchange important information about food, proximity of a mating partner or a predator.

Geographical Distribution

The sand martin lives in most parts of Europe, North America and vast areas of Asia. It is a migratory bird, it spends the winters in tropical zones. European populations spend winters in Africa. Our sand martins start migrating in high summer. They fly over the Mediterranean down to tropical Africa. In the spring, in Slovakia usually from April on, they return to their nesting spots.

In Slovakia, they can be found from lowlands to wide valleys of Carpathians, up to 700 m above sea level. Originally, the sand martins lived in natural alluvial country, abundant with steep river banks constantly renewed by the river. Since majority of our rivers have been regulated, nowadays, the sand martins nest in walls formed by human activities. For example, they use walls created during gravel and sand extractions.

Wintering sites and migratory routes of our sand martins are still unknown. Despite massive efforts in bird ringing in 20th century (up to 100,000 ringed birds!), only one wintering site was revealed – Lake Chad in Africa.

Behaviour and Ecology

The sand martin is a social bird adapted to life in large colonies. While their relatives, swallows and house martins can sometimes be seen alone, the sand martins almost always fly in flocks that lack any kind of organization. They typically fly together, back and forth above the water level or nearby the nesting wall. Their distinctive twittering voice often gives away their location.

Parents bring the food in a form of little insect packages. Further the hunting site from the nest, larger the package.

Feeding

The sand martin feeds on small flying insects. The heartiest food source is insects swarming nearby the rivers. The sand martins hunt Diptera (mosquitoes, midges, flies, etc.), adult mayflies, caddis flies, and stoneflies. They avoid eating large hymenopterans, such as bees, wasps or bumblebees.

The Family Life of Sand Martins

The life of a sand martin is really fast. These tiny birds face risky situations all the time. No wonder their reproductive behaviour is exceptionally flexible. The main goal is to produce as many viable youngs as possible. For example, males can mate when only 9 months old, and females even earlier. A week before the youngs get to the nesting hole entrance for the first time, their mother is already interested in nesting again. Occasionally, they form a new couple with another male while still feeding the youngs from the first brood. On the top of that, the male protects the female while she lays eggs, and at the same time, he breeds with other females. However, he does not help raising the nestlings from the other brood.

Nesting Habitat

The sand martins nest in steep sandy or loamy walls. A minimal or no vegetation on the wall and right under, is a must. They prefer newly exposed materials, easier to dig to. In recent years, their nesting opportunities have been depending largely on human activities. They find suitable conditions in aboveground pits, road grooves, recently open mounds, etc. Depending on the quality and size of the wall, one wall can host tenths, hundreds or even thousands nesting pairs.

By estimates, only 4 – 5% of nests in Czech Republic is located in natural sites. The rest is built in anthropogenic objects (sandpits, recently uncovered soils). The sand martin lives in urban environment, as well. They were found nesting in drainage holes, and between stones or panels on paved banks of regulated rivers.

Mating

If the weather is good, the first flights at a wall occur in second half of April. At first, single individuals meet at the nesting site. Shortly after come the typical mating ritual and formation of couples. Before the mating occurs, the male needs to lure the female into the nesting hole. Luring the female consists of showing off the flight acrobatics resembling movements of a butterfly. Male energetically calls the female, calling attention to the nesting hole. The proof of acceptance is a night spent together in the nesting hole.

Building the Nesting Hole

Building a nest is an exceptionally demanding task. The nest is placed inside a hole. The male starts to dig it by himself, but both partners finish the works. At first, the birds dig with their beaks, later on with their feet, too. Deep in the hole, there is a nesting chamber with the nest itself. The nest is made of vegetable material, such as roots and straws, and it is padded with feathers or fur. Depending on the soil type and weather, intense digging can take up to 3 – 4 days; finalizing can take up to two weeks.

How to Recognize an Inhabited Nesting Wall?

- there are recently uncovered parts of clay, sand or gravel on a nesting wall;
- the wall is well visible and not overgrown with vegetation; there are holes dug into the wall;
- during the nesting season, an active wall is often visited by sand martins, the birds fly into the holes;
- there are sand martins flying nearby, making a specific call;
- depending on the size of the wall, sand martins can be observed flying next to the wall.

It seems some sand martins are talented builders. It was revealed they can dig holes with two entrances or even two nesting chambers.

Caring for the Offspring

In Slovakia, sand martins nest once or twice a year. Female lays 5 – 6 eggs, less often only four, and rarely seven eggs. The female lays eggs every day, but she incubates them only after the last one is laid. The siblings hatch at the same time. During the day, both parents incubate the eggs, in the night it is usually the female. Males spend the nights in empty holes or in the vicinity, e.g. in reed growth. It takes about 14 – 15 days for the eggs to hatch. The youngs are naked and helpless, both parents feed them. Young birds leave the nest when about 22 days old. For some time, they keep returning to the nesting hole. Later on, they sleep in the reed growths. They become completely independent when about 30 days old.

Threats

Suitable conditions for successful breeding are crucial to the survival of entire populations and for the species itself. The sand martin is not different. While the species is well adjusted to negative impacts of natural environmental factors – after all, they spent generations adapting – the birds are often helpless when facing sudden changes caused by human activities.

The sand martin, too, is threatened the most by human activities, which cause degradation or a complete loss of natural nesting opportunities – steep river banks and naturally eroded steep loessial or sandy walls.

What is that river had in the past, but now it's missing? Why there are no numerous colonies of sand martins in the banks of Danube or Morava?

- The most palpable reason is **the loss of river dynamics** in alluvial ecosystems – 19th and 20th century was characterized by massive river regulations. Straightening the main stream, cutting off meanders and entire river branch systems, building the dams and diverting the water to artificial channels — All that affected the Danube, and partially the Morava. All side branches cut off of the main stream were progressively filled with fine sediments, and degraded. As a result, there are dying rests of arms and branches, mostly overgrown and filled with deposits.
- Another nail in the coffin for the birds nesting in steep river banks were **quarry stone embankments**. During the river regulations in 19th and 20th century, the majority of Danube and Morava banks was fortified with quarry stone even in zones, where it was not necessary, including natural beaches and islands. Bird species that require steep and eroded banks and walls cannot nest in these embankments at all.

- The lack of traditional meadow management along the rivers and river islands has a negative effect on steep and eroded river banks or loessial and sandy walls. In the past, these places were grazed and the country was a diverse mosaic of river arms, vast meadows and alluvial forests. The absence of **traditional grazing** resulted in decreased size of grasslands, thus decreasing the diversity and the scenic beauty along the Danube and Morava.

These man-made alterations force the birds to find alternative nesting spots (aboveground pits, road grooves), where the walls are, unfortunately, often destroyed. Walls located in e.g. an active quarry are threatened by direct opencast that would destroy the nests, the eggs and kill the youngs.

Like all other animals, sand martins are threatened by natural environmental factors, mostly bad weather and predators. Heavy rains and elevated water levels can cause a wall to fall and destroy the nests of the entire colony. With long rainy periods and cold weather, insects become less active. That may cause the youngs to starve. The predators are yet another danger. Foxes and badgers can dig into the nesting holes, destroy the eggs and kill the youngs. However, the sand martins have spent long time adapting to these disturbances and under normal circumstances, they are able to recover from the loss.

The sand martins have adjusted to the noise in quarries. It seems they are not bothered by the heavy machinery in active quarries at all.

Conservation

In European Union, the sand martin is protected under NATURA2000 network. Out of 41 Special Protection Areas in Slovakia, the sand martin is protected in five areas that are nesting sites to a significant part of the population.

What is NATURA2000?

NATURA2000 covers two types of protected areas:

- Special Protection Areas (SPA, Special Protection Areas) – declared by the Birds Directive,
- Special Areas of Conservation (SAC, Special Areas of Conservation) – declared by the Habitats Directive. Birds are not counted here among the species of plants and animals, since in their case the procedure is according to the older directive.

A target species – a key species for which the Special Protection Area (SPA) is declared in order to assure their protection and proper management of their habitats. Target species are mostly those endangered within the entire European Union, plus some species of national importance and groups of migratory bird species.

1% species – an endangered species not considered target in the respective SPA, however, their numbers represent more than 1% of national population and they are subject to protection in these areas. This provides more efficient protection within the existing SPA network.

Conservation of the sand martin in Slovakia falls under the Act No. 543/2002 Coll. on Nature and Landscape Protection that treats legal aspects of animal conservation, including the birds. The Nature and Landscape Protection in Slovakia covers protection of species and areas. The protection of species covers protected animal species. The protection of areas is indirect, via the Landscape Protection.

All wild birds, with exception of feral pigeons, are protected under the Nature and Landscape Protection Act. They cannot be disturbed, touched or otherwise harmed. Their breeding sites, including the nests and nesting habitats, and different stages of development (e.g. eggs) are also protected. If the law is violated, the perpetrator can get fined or imprisoned, depending on the social damage and character of the crime.

In 2011, a steep river bank on Danube in Chľaba village was restored within the LIFE Danube Birds Conservation Project. The year before, there was no nesting couple registered in Slovak stretch of Danube. In the following nesting season in 2012, 970 couples nested in the wall. An international monitoring revealed it to be the largest nesting colony on Danube from Germany to Serbia in 2012.

What Needs to be Done so the Sand Martins Can Nest in River Banks Again?

There are several ways to help sand martins return to their natural nesting sites – river banks, open loessial or sandy walls. Long-term measures are the most efficient for the species and the entire ecosystems —Measures that allow natural processes to restore steep river banks on one shore, and create beautiful natural gravel or sandy beaches on the other one, or down the stream.

- From a long-term perspective, the most efficient measure is **restoring the river dynamics** where possible. That means letting the water flow wherever needed – open the side branches that were cut off, reconnect them to the main stream, restore the meanders and let the water raise and drop naturally. In restored branches, or even better, in entire river stretches, the water only needs a few years to restore the habitats that have been degrading for decades. Steep river banks form spontaneously and quickly. Sand martins and other species are quick to find them and use them for nesting.
- **Removing the embankments** wherever not necessary. Removing the longest stretches of the paving or stone fortification possible is imperative for improvement of the conditions for the birds that nest in steep banks and walls.
- From a long-term perspective, it is beneficial to restore **the traditional extensive grazing** along the rivers.

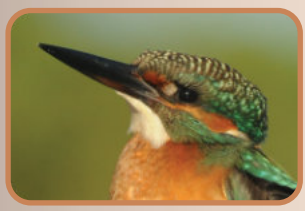
Another good year in terms of nesting was 2021. Thanks to LIFE Bee Sand Fish Project and a collaboration of conservationists and water managers, steep river banks in Petržalka, Bratislava were restored. After the restoration, more than 500 couples were found nesting in the locations, where nesting had been confirmed in the past.

Moreover, the areas will become **more attractive for tourism**, which is an added value of these measures. A river without ugly and impassable fortifications is more attractive and much safer place not only for animals, but also for people who wish to access the water or take a walk along the picturesque shore to recharge their batteries. **Grazing** nearby the river makes the place more appealing just by simple presence of the animals. At the same time, a grazed meadow makes for easier access to the river. Grazing along the river is an exceptionally powerful tool to **contain spreading of invasive plants** that spread quickly along our streams.

All these measures are considered suitable solutions to **improve flooding capacity of rivers**. What is it good for? It means the area between the dykes will be able to absorb more water, shall the flood come. That is a great help during a flood – it will slow down and flatten the flood wave, thus mitigating its negative impacts.

How Can You Help?

The most efficient way the general public can support sand martins, is preserving the existing and newly formed nesting walls. This is especially important for nesting colonies located in active quarries and threatened by direct elimination of the nests (opencasts, or slides). The nesting colonies formed on construction sites face the same danger. Therefore, it is necessary to report an active colony to nature conservation authorities, and users and owners of the location, and to include photographs. It is recommended to inform the respective authorities if any interventions to the wall are done during the nesting, e.g. during extractions, constructions or alterations to river banks.


Restoration of nesting and feeding habitats of Sand Martin, Kingfisher and European Bee-eater in Danube-Morava region

EU LIFE Programme under European Commission is there to improve the status of endangered species and habitats. LIFE Projects implement restoration measures in Natura 2000 locations.
The BeeSandFish is one of these projects. As the name suggests, it aims to protect and restore nesting sites and hunting habitats of three interesting bird species – the sand martin (Riparia riparia), the common kingfisher (Alcedo atthis) and the European bee-eater (Merops apiaster). What do they have in common? A specific way of nesting in steep river banks or walls.

Four organizations collaborated closely on the project: BROZ – the Regional Association for Nature Conservation and Sustainable Development as the main partner and coordinator, while experts from Water Research Institute prepared the studies on restoration of water regime in Danube branches, wetlands, and restoration of steep river banks. Project documentation and necessary engineering works were carried out by experts from VODOHOSPODÁRSKA VÝSTAVBA, š.p. Throughout the project, the specialists from The Faculty of Natural Sciences of Comenius University, Bratislava (PRIF UK) monitored the target species and fish, as well as socio-economic impacts of the project.

The achieved results – in particular, restored steep river banks, restored nesting walls, reconnected river branches with restored water regime, return of autochthonous tree species to river banks and return of grazing and mowing to the alluvial meadows can all be seen on the project:

www.broz.sk/BeeSandFish

Bibliography

Glotzheim von G. & Bauer K.M. (1985). Handbuch der Vögel Mitteleuropas. Band 10/II. Aula-Verlag, Wiesbaden.
Heneberg, P. a Kovář, V. (2007). Hnízdění břehule říční (Riparia riparia) v uměle vytvořených dutinách. Sylvia 43: 123–138.
Hudec, K. a Šťastný, K. (2005). Riparia riparia – Brehule říční. In: Ptáci – Aves. Fauna ČR, díl 3/I. Academia, Praha.
Karaska, D., Trnka, A., Krištín, A., Ridzoň, J. (2015). Chránené vtáčie územia Slovenska. ŠOPSR, Banská Bystrica, 380 pp.
http://spolocnebrehy.vtaky.sk/ brehula-hneda
SOS/BirdlifeSlovensko (2013). Metodika systematického dlhodobého monitoringu výberových druhov vtákov v CHVÚ. ŠOPSR, Banská Bystrica, 180 pp.

The project is supported by the European Commission within the LIFENature program and the Ministry of the Environment of the Slovak Republic. Issued for the purposes of the LIFE12project NAT/SK/001137.

Text: Soňa Nuhlíčková, Karolína Sobeková
Photo: archív BROZ, B. Molnár, J. Svetlík, T. Szép, S. Stobart, M. Suopajärvi, D. J. Field, B. Pasca, M. Bohuš
Graphic design: Ján Svetlík – DUDOK
Release year: 2022

ISBN: 978-80-89915-19-4

Contact: BROZ–Bratislavské regionálne ochranárske združenie

www.broz.sk