

Rewetting the Vinogradovo Floodplain, Moscow Region, Russia: a project in support of wader populations

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The abandonment of farmland on the Vinogradovo Floodplain of the River Moskva in the 1990s and reduced water levels led to overgrowth of vegetation and loss of important habitat for waders and other waterbirds. We report the first results of conservation actions to improve wader habitats, principally by controlled rewetting of the floodplain and preventing fires in spring. In the first year, 2012, the numbers of a variety of waders increased. In 2013, a period of heavy summer rain led to increased flooding and a decline in some species, especially Northern Lapwing *Vanellus vanellus*, Marsh Sandpiper *Tringa stagnatilis* and Black-tailed Godwit *Limosa limosa*, and an increase in species that prefer wetter conditions, such as Great Snipe *Gallinago media* and Common Snipe *G. gallinago*. Future rewetting activities and bird population monitoring will show whether such conservation actions have long-term benefits.

INTRODUCTION

The Vinogradovo Floodplain of the River Moskva (Fig. 1), an area of about 50 km² and 70 km south of Moscow City is an Important Bird Area and the most important site for breeding waders in the Moscow region. The mosaic of small lakes, floodplain marshes, meadows and grasslands in combination with traditional forms of farming made this area very important for breeding waterbirds and wet grassland birds in the 19th and 20th centuries. Large populations of waders, terns and gulls, including large local populations of five key wader species occurred there. Some of the species are globally near-threatened (NT), rare in Central European Russia and/or included in the Red Data Book of the Moscow region: Redshank *Tringa totanus*, Marsh Sandpiper *Tringa stagnatilis*, Ruff *Philomachus pugnax*, Great Snipe (NT) *Gallinago media* and Black-tailed Godwit (NT) *Limosa limosa*.

Most typical wet grassland birds are declining in Europe (e.g. BirdLife International 2004, Hötter *et al.* 2007). In particular, Great Snipe and Ruff have decreased across Europe (AEWA 2004, Zöckler 2002). The Vinogradovo Floodplain was the only area in the Moscow Region where Ruff bred until the mid 1990s. It also hosted the largest congregation of breeding Great Snipes, Redshanks and Black-tailed Godwits and was a stronghold of Marsh Sandpipers (Zubakin *et al.* 1998).

But by the end of the 1990s, grazing and use of arable land ceased completely. Only ca. 15%–20% of the area of hay meadows were still used for haymaking. The cessation of agricultural activity led to an overgrowth of vegetation in the meadows with tall weed and bushes. Water tables were still kept low and this led to severe spring burning of dry

grass over large areas. Important wader habitat was lost and numbers declined, especially in dry years with low spring floods and early drainage of the floodplain, as for an example in 2006. With the abandonment of agriculture, rewetting the area seemed to be an obvious choice to improve the habitats for many waterbirds, including breeding populations of several waders and terns.

REWETTING THE FLOODPLAIN

In 2012 and 2013, a pilot project was carried out on the Vinogradovo Floodplain by Birds Russia to rewet key areas for breeding waders and prevent spring fires. Flooding in the southern part of the floodplain in 2012 was achieved by closing the main sluice in the lower reaches of the River Nerskaya, a tributary of the River Moskva, to retain the floodwater over the entire vegetation-growing period. The prolonged closing of this sluice from May until the end of October led to the flooding of areas which otherwise would quickly run dry when spring flooding receded, as it did when the sluice was not closed in previous years (Fig. 1). The flooded area comprised 232 ha in 2012 and 294 ha in 2013. In another 850 ha the groundwater levels were raised and this became favourable for breeding waders. Additional damming of drainage channels created a separate rewetted area, 'Popova Shlypa', in the west of the floodplain (Fig. 1).

Monitoring was carried out in 2012 and 2013 and compared with data that were obtained from surveys in previous years, starting in 2006. Before 2006, no breeding bird surveys were carried out in the flood-affected areas. However, regular observations made in some core areas up to 2000 revealed a steady decline in almost all wader



Fig. 1. The Vinogradovo Floodplain of the River Moskva and areas in which rewetting activities were carried out in 2012 and 2013.

Key: 1. Sluice in the lower reaches of river Nerskaya; 2. Old destroyed dam in the drainage ditch; 3. Site 'Popova Shlypa'; 4. New dam in the drainage ditch.

species. It was this that ultimately led to the rewetting activities. In 2011, a first attempt to close the sluice was halted by administrative constraints, but experience was gained from a few weeks of higher water levels.

RESULTS

The results of surveys carried out during 2006–2013 show that the numbers of key breeding species increased in the rewetted area in 2012, particularly Northern Lapwing *Vanellus vanellus*, Common Snipe *Gallinago gallinago*, Great Snipe, White-winged Tern *Chlidonias leucopterus* and Black Tern *Chlidonias niger* (Table 1).

The number of Marsh Sandpipers increased only a little in 2012 and dropped in 2013, due to a summer flood. The number of Redshanks did not change and Black-tailed Godwits disappeared completely, due to overgrowing vegetation. An important result of the rewetting was the reappearance of Ruff, which bred in the floodplain for the first time since 2001. It is evident from the survey data that the second abnormally high summer flood in 2013 led to a

significant decrease in Northern Lapwings and Marsh Sandpipers and the disappearance of the few remaining Black-tailed Godwits (Table 1). Ruff did not breed again. However, the numbers of Common Snipes and Great Snipes, which can both make nests in very wet sites, showed a substantial further increase. Despite the detrimental effect of the summer flood on some breeding waders, the effect on breeding terns and gulls was clearly very beneficial, and resulted in the highest counts of White-winged Terns and Black Terns in all the years surveyed (Table 1).

It is important to note that other bird species also benefited from the rewetting of the Vinogradovo Floodplain. These include four breeding pairs of Great Bittern *Botaurus stellaris*, three individual Great Cormorants *Phalacrocorax carbo*, which stayed on the floodplain for the whole of the 2013 summer, and an adult White-tailed Eagle *Haliaeetus albicilla*, which was recorded regularly in both 2012 and 2013. Great Cormorants have never bred in the Moscow region, so the occurrence of three could lead to breeding in future years. Similarly, White-tailed Eagle is an extremely rare breeding species in Central European Russia, and is included in the Red Data Book of the Russian Federation.

DISCUSSION

This paper describes the first results of rewetting the Vinogradovo Floodplain in 2012 and 2013. Although the period is too short to assess any long-term effect, already we can demonstrate that rewetting has improved the habitats for a number of important wader species which are rare in European Russia and elsewhere in Europe. Due to the delay in the flow of floodwater through the sluice, which acts as a bottleneck, wet sites with short grass and patches of open ground were formed, which are suitable for breeding waders (Fig. 2). The numbers of breeding Northern Lapwings, Marsh Sandpipers, Common Snipes and Great Snipes, as well as Black Terns and White-winged Terns, have increased and Little Gulls have started to breed. Numbers of Northern Lapwings and Marsh Sandpipers declined due to flooding caused by heavy rain in summer 2013 but these species are expected to recover as long as high water levels are maintained without being made excessive by summer floods.

The globally near-threatened Great Snipe has particularly benefited from the rewetting project. At the beginning of the 20th century, the number of Great Snipes in the Moscow region had already declined sharply (Polyakov 1924), and by the 1990s it was at risk of local extinction. The main reason for this decline was the drainage of fens and grass-bog areas, and the ploughing of floodplain meadows. In the second half of the 1990s, there were only three areas in the whole Moscow region where Great Snipe leks could be found (Zubakin *et al.* 1998). The largest population was on the Vinogradovo Floodplain where there were three to five leks in the mid-1980s, each of them containing 9–70 birds (Zubakin *et al.* 1988). Now, several new Great Snipe leks have appeared on the floodplain and there has also been an increase in the number of displaying males in open areas within high unmown grass, where the ground is covered by carpets of dead aquatic vegetation. The reasons for these changes are the high and long-lasting flooding at Vinogradovo and the rewetting activities. No similar increases in Great Snipe populations have been recorded at nearby floodplain marshes, such as the Oka River Floodplain where periods of high and low floods have occurred in the same years as at Vinogradovo, but without rewetting actions covering the entire breeding season (Sviridova & Koltsov 2005).

The record of Ruff breeding in 2012 is promising as this species has not bred in the Moscow region since 2001. At least 15 permanent leks and about 100 breeding female Ruff (Reeves) were recorded in the first half of the 1980s (Zubakin *et al.* 1988) and there were still over 50 females in the 1990s, but by 2001 only one or two females were left (Zubakin *et al.* 1998). It remains to be seen whether, with continued spring flooding and higher water levels, the species will recolonise the area.

Currently, Redshank is a scarce breeder in the Moscow region, with a population that is mostly restricted to the eastern part (Zubakin *et al.* 1998). The largest local population ever recorded was of 50–55 breeding pairs on the Vinogradovo Floodplain in 1983 (Zubakin *et al.* 1988).

Marsh Sandpipers mainly inhabit the northern and eastern parts of the Moscow region where numbers slowly declined during the second half of the 19th century (Zubakin *et al.* 1998). In the 1980s and 1990s, breeding was only confirmed for the Vinogradovo Floodplain, where there were 65–70 pairs, and at a few other localities with one to eight pairs (Zubakin *et al.* 1988, Zubakin *et al.* 1998).

The rewetting of the Vinogradovo Floodplain has not favoured the breeding of Black-tailed Godwits. The abandonment of grazing and any agricultural land use and the changes in vegetation that have followed have created an unfavourable habitat for this species. The largest Black-tailed Godwit breeding site in the Moscow region used to be the Vinogradovo Floodplain, where 100–120 pairs bred on hay meadows and pastures during 1985–1988 (Zubakin *et al.* 1988).

In 2012, our first attempts at rewetting were augmented by large and long-lasting spring floods, which had a very positive influence on the numbers of breeding waders.

Conditions in the spring of 2013 were abnormal. Spring floods in the last ten days of April were extremely high, the highest in the period 1990–2013. Almost the whole of the Vinogradovo Floodplain was flooded for two weeks. The sluice gate was closed on 15 May to keep water levels sufficiently high on the floodplain. But in the last ten days of May a large area was flooded again due to very heavy rain and a large-scale release of water from the storage reservoirs in the upper part of the Moskva River. The peak of the second flood was on 29–30 May. Such an unusual flood

Table 1. Numbers of key breeding species in the ca. 850 ha rewetted meadow area of Vinogradovo Floodplain of the River Moskva that was influenced by flooding in 2012 and 2013. Data are the number of breeding pairs, except in respect of Ruff (number of breeding females) and Great Snipe (number of displaying males). No monitoring was carried out in 2009 or 2010.

Species	2006	2007	2008	2011	2012	2013
Northern Lapwing <i>Vanellus vanellus</i>	20	44	35–44	35–37	54–58	14–16
Redshank <i>Tringa totanus</i>	3	3	4–6	1–2	2	2–4
Marsh Sandpiper <i>Tringa stagnatilis</i>	4	13	14–17	15–18	18–20	6–8
Ruff <i>Philomachus pugnax</i>	0	0	0	0	1	0
Common Snipe <i>Gallinago gallinago</i>	32	27	33–35	25	43	56–58
Great Snipe <i>Gallinago media</i>	15–20	18–26	11–17	5–6	30–40	48–57
Black-tailed Godwit <i>Limosa limosa</i>	1–2	3	3–6	3	3	0
Little Gull <i>Larus minutus</i>	0	0	0	0	5–6	2–3
White-winged Tern <i>Chlidonias leucopterus</i>	No data	No data	No data	155–175	725–850	290–370
Black Tern <i>Chlidonias niger</i>	No data	No data	No data	40–50	40–50	160–200



Fig. 2. A wet site with short grass in the Vinogradovo Floodplain of the River Moskva, suitable for breeding Northern Lapwings and Marsh Sandpipers.

event has never been recorded in Vinogradovo before. We hoped that the closed sluice would prevent additional flooding and save the nests of ground-breeding birds, including waders. However, the water gushed onto the floodplain from the river bank and through a big gap in the protecting embankment that had appeared during the first flood. Emergency measures were taken in an attempt to alleviate the negative influence of the second flood. After that we organized the opening of one gate of the sluice again after the second peak, but it did not help as the water level was very high and many nests must have already been destroyed. Two high floods and the prolonged closing of the sluice led to the flooding of areas, which had quickly become dry in previous years.

The effects of the rewetting project that we have recorded to date give only a short-term perspective. Only future monitoring will show whether rewetting really has long-term benefits.

Our activities have created considerable interest among local communities. Without their support and that of the water board and hunting associations, the rewetting could not have been implemented successfully. In view of our experience, it is probable that with the cooperation of the Voskresensk Hunting Society, rewetting in support of wader populations will be continued for at least the next few years and may be extended to other parts of the Vinogradovo Floodplain and possibly other suitable sites in European Russia.

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