Conservation of White Storks
(*Ciconia ciconia*) in Lithuania

LIFE07 NAT/LT/000531

Action E.5 Monitoring of project achievements

Monitoring report III

Occupancy of artificial nesting platforms installed during the project before April 2012

Vilnius, 2013

Introduction

Installation of artificial nesting platforms on overhead electricity line poles (Actions C.1 and C.2) and on roofs of buildings (Action C.3) were the key concrete conservation actions of the project, aimed at directly improving the nesting conditions of the project's target species – the White Stork. When installing nesting platforms on overhead electricity line poles, the existing White Stork nests were removed in all cases, whereas in case of wooden nesting platforms on roofs of buildings a more flexible approach was adopted after the first breeding season following the first season of platform installation, which will be described below in more detail. The primary aim of the project monitoring action (Action E.5) was to assess the effectiveness of the concrete conservation measures, implemented during the project, *i.e*. to assess the success of the platform installation on overhead electricity line poles and on roofs of buildings. The success of these White Stork nest management measures was measured by the occupancy rate of the installed artificial nesting platforms, *i.e*. the percentage of the newly installed nesting platforms, occupied by White Storks. The occupancy of a nesting platform was assessed by the presence of a White Stork nest, irrespective of whether the birds actually nested successfully or not. On the other hand, platforms, which were visited by birds, but where no nest was built, were considered unoccupied. Since breeding success was not assessed during the monitoring of installed nesting platforms, monitoring fieldworks were carried out throughout the year, weather conditions permitting.

Based on the previous experience with the installation of artificial nesting platforms on overhead electricity line poles in Lithuania, the expected occupancy rate of platforms installed during the project on overhead electricity line poles was set at 85–90% in the project proposal. Although no previous experience with the occupancy rate of platforms installed on roofs of buildings existed, the expected occupancy rate was considered the same as for the platforms on overhead electricity line poles – 85–90%. The lowest platform occupancy rate, below which the removal of the existing White Stork nests would be halted, and the platforms would be installed in the vicinity of the existing nests without removing them, was set at 75% in the project proposal.

Monitoring of platform occupancy

Installation of artificial nesting platforms both on overhead electricity line poles and on roofs of buildings started after the breeding season of 2009, *i.e*. during the non-breeding season of 2009– 2010, and continued during the following three non-breeding seasons – 2010–2011, 2011–2012 and 2012–2013. During the first post-installation season, occupancy of the majority of artificial nesting platforms, installed before the breeding season of 2010, was recorded during the second season of White Stork nest inventory (Action A.1), carried out by the Institute of Ecology. Nesting platforms not visited during the inventory fieldworks in that season were visited separately, while occupancy of some nesting platforms, installed on roofs of buildings, was double-checked by contacting the owners of buildings. In the following years, *i.e*. 2011–2013, monitoring of installed nesting platforms was carried out by the project staff of the Institute of Ecology (Senior Researcher and Researcher/GIS expert) throughout the year, weather and other project engagements permitting.

Monitoring of platforms on overhead electricity line poles

In total, before the start of White Stork breeding season in 2012 (*i.e.* before April 2012), 2908 artificial nesting platforms were installed on overhead electricity line poles in different municipalities of Lithuania (Table 1; Fig. 1).

Table 1. Number of platforms, installed before the breeding season of 2012 on overhead electricity line poles in different municipalities of the country.

Municipality	Number of platforms	Municipality	Number of platforms
Akmenė	19	Panevėžys	61
Alytus	88	Pasvalys	8
Anykščiai	87	Plungė	32
Biržai	64	Prienai	42
Druskininkai	8	Radviliškis	24
Elektrėnai	6	Raseiniai	71
Ignalina	58	Rietavas	17
Jonava	20	Rokiškis	82
Joniškis	18	Šakiai	130
Jurbarkas	47	Šalčininkai	37
Kaišiadorys	40	Šiauliai	64
Kalvarija	90	Šilalė	50
Kaunas	38	Šilutė	23
Kazlų Rūda	35	Širvintos	20
Kėdainiai	43	Skuodas	28
Kelmė	40	Švenčionys	68
Klaipėda	58	Tauragė	15
Kretinga	27	Telšiai	56
Kupiškis	62	Trakai	45
Lazdijai	175	Ukmergė	122
Marijampolė	43	Utena	153
Mažeikiai	68	Varėna	87
Molėtai	124	Vilkaviškis	217
Pagėgiai	31	Vilnius	28
Pakruojis	26	Zarasai	113

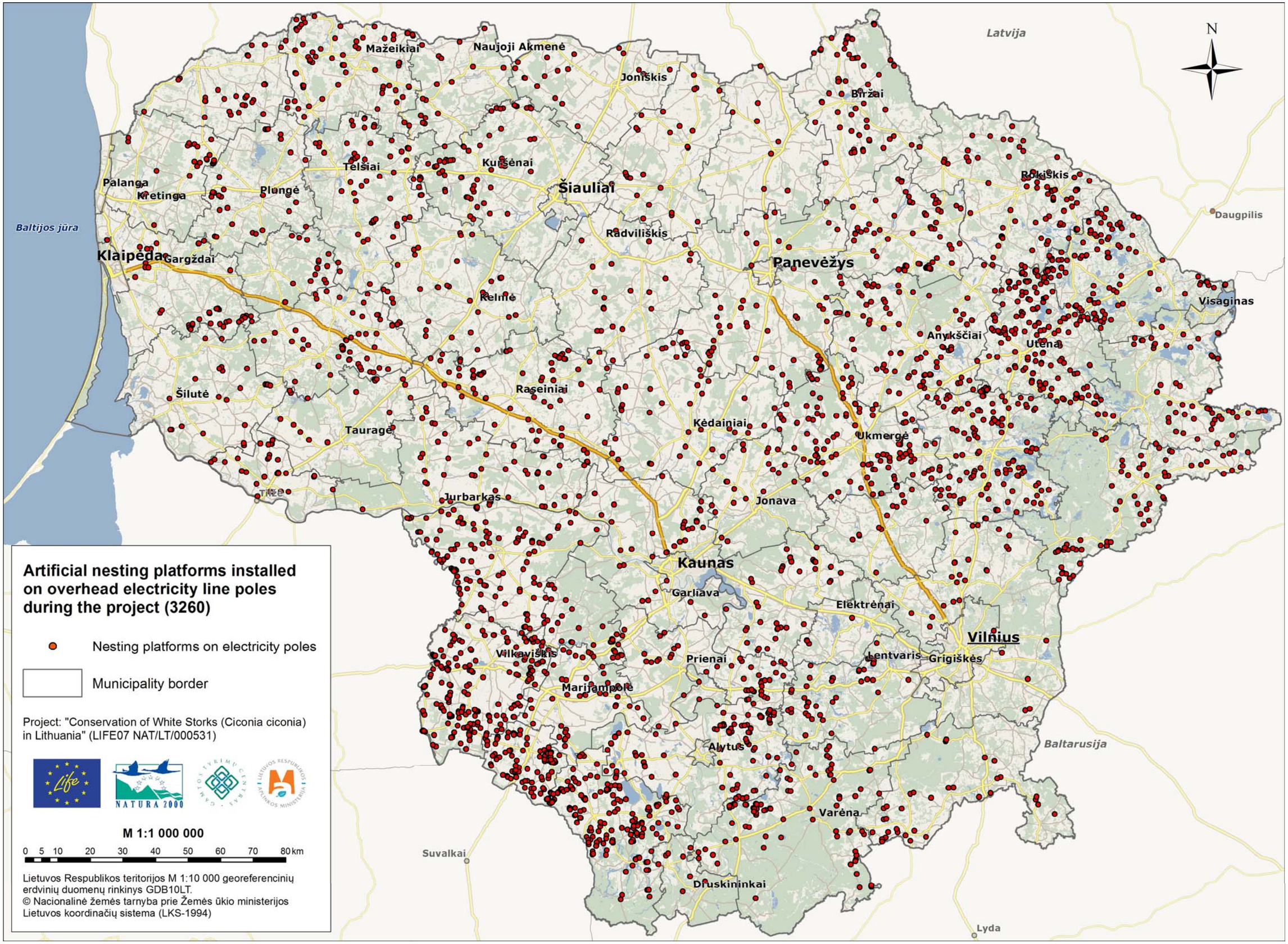
Since the number of artificial nesting platforms installed before the breeding season of 2012 was more than 1.5 times higher than the originally planned total number of platforms (1760) and the occupancy rate, observed during the first two seasons, was exceptionally high, a sample of approximately 60% of the installed platforms was visited during the monitoring fieldworks in different municipalities. Some of the platforms were visited several times during the monitoring fieldwork.

The overall occupancy rate of nesting platforms, installed during the project on overhead electricity line poles in Lithuania was 86.2%. Only in 5 municipalities occupancy rate of nesting platforms on overhead electricity line poles was below 80%, while in 20 municipalities occupancy rate exceeded 90%. Such a high occupancy rate of artificial nesting

platforms on overhead electricity poles, already observed during the first season of platform monitoring, may be explained by the fact that all these platforms were installed in place of relatively new, occupied (during the previous breeding season) nests, therefore returning White Storks, which are characterised by high nest-site fidelity, readily occupied the artificial breeding platforms in place of their former nest. Thus it can be confidently stated, that installation of artificial nesting platforms on overhead electricity line poles was a very effective White Stork nest management measure. Furthermore, throughout the duration of the project, no failed nesting platforms on overhead electricity line poles were observed or reported, confirming that design of the platforms is reliable and durable (Figs 4–11).

One distinctive, although statistically not tested feature, observed during the three years of platform monitoring, was that platforms, installed on overhead electricity line poles and not occupied during the breeding season following the installation, in many cases remained unoccupied also during the following years. The likely explanation of this phenomenon is that such platforms were installed in place of nests where birds did not breed successfully in the season prior to platform installation – either these nests were built by inexperienced birds that failed to breed or where birds nested unsuccessfully and hence abandoned the nest site. Therefore, if economically feasible (considering uninstallation costs), such unoccupied nesting platforms may be removed if unoccupied for more than three years and installed elsewhere in place of nests on overhead electricity line poles. On the other hand, taking into account the observed continued increase in White Stork population in Lithuania and the tendency for these birds to settle on overhead electricity line poles, it is likely that even such platforms will be occupied in the long run, particularly if the farming practices in the vicinity will sustain favourable feeding conditions for the species.

Figure 1 (next page). Distribution of artificial nesting platforms on overhead electricity line poles installed during the project.


Artificial nesting platforms installed on overhead electricity line poles during the project (3260)
Nesting platforms on electricity poles
Municipality border
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Garliava
Elektrėnai
Vilnius
Vilkaviškis
Prienai
Lentvaris
Grigiškės
Marijampolė
Alytus
Varėna
Druskininkai

Monitoring of platforms on roofs of buildings

In total, before the start of White Stork breeding season in 2012 (*i.e.* before April 2012), 479 artificial nesting platforms were installed on roofs of buildings in different municipalities of Lithuania (Table 2; Fig. 2). About 20 wooden platforms, installed on roofs of buildings, were destroyed during the project due to various reasons – storms, crumbling buildings, fire. Where, possible (*i.e.* if buildings were not destroyed), such platforms were replaced or fixed under the warranty, or will be replaced in the near future. The remaining installed platforms showed no excessive wear during the project, which indicates that the design of these platforms is reliable, although placement of these platforms on roofs may be improved in the future (Figs 12–17). Experience during the project has shown that a relatively low weight of unoccupied wooden platforms (*i.e.* without White Stork nests) in certain cases makes them susceptible to extremely strong winds, during which they may be blown to the ground and damaged. The solution for this potential issue could be placing of additional weights on their "legs" during the installation or, if the roofing material and the construction of the roof allow it, fixing them to the roof construction.

Table 2. Number of platforms, installed before the breeding season of 2012 on roofs of buildings in different municipalities of the country.

Municipality	Number of platforms	Municipality	Number of platforms
Akmenė	2	Pakruojis	2
Alytus	18	Panevėžys	8
Anykščiai	5	Plungė	5
Biržai	5	Prienai	20
Elektrėnai	7	Rietavas	12
Ignalina	6	Rokiškis	17
Jonava	2	Šakiai	6
Joniškis	1	Šalčininkai	4
Jurbarkas	11	Šiauliai	5
Kaišiadorys	4	Šilalė	21
Kalvarija	9	Šilutė	43
Kazlų Rūda	2	Širvintos	6
Kaunas	4	Švenčionys	34
Kėdainiai	2	Tauragė	54
Kelmė	17	Telšiai	12
Klaipėda	1	Trakai	4
Kupiškis	4	Ukmergė	8
Lazdijai	9	Utena	15
Marijampolė	25	Varėna	4
Mažeikiai	7	Vilkaviškis	21
Molėtai	18	Vilnius	13
Pagėgiai	2	Zarasai	4

Already during the first seasons of platform monitoring, it was observed that the occupancy rate of artificial nesting platforms on roofs of buildings was low – approximately 30%. Such a

low occupancy rate triggered a change in the strategy of platform installation on roofs, which was adopted starting with the second season of platform installation – nests, selected for management, but occupied during the breeding season preceding platform installation, were no longer removed, but platforms were installed in the vicinity of the existing nests (Fig. 18). Existing nests were removed only if they were unoccupied for at least two previous breeding seasons, or if they were in such a bad condition that they posed a real threat to the property, human safety or birds themselves during the subsequent breeding season.

Because of this observed low occupancy rate, all nesting platforms, installed on roofs of buildings, were monitored during the project. The final overall occupancy rate, registered during the monitoring of these platforms, was 28.7% – pretty much the same as observed during the previous seasons. Such a low occupancy rate of the installed wooden platforms on roofs of buildings most probably resulted from the fact that the majority of platforms were installed in place of already abandoned nests of White Storks, and it can be now suggested that these nests were probably abandoned previously not only because of the poor condition of the nest itself, but also because of the unfavourable changes in the surrounding feeding habitats (*e.g.* land abandonment or, on the contrary, intensification of farming), therefore, platforms installed in such cases are likely to be occupied if the conditions become favourable for White Storks again, or if the expanding White Stork population results in birds occupying below-optimum habitats in the future. Furthermore, in cases were new platforms were installed in the vicinity of the existing nests without removing them, birds in many cases were initially reluctant to trade their long-term nests for the new nest sites, but it is expected that they will move to the nesting platforms as the existing nests continue to deteriorate, and thus the occupancy rate of wooden platforms is expected to increase during the coming years after the end of the project.

Management of nests in trees

Twenty nests in trees in critical condition, primarily due to overgrowing with branches around the nest thus rendering nests inaccessible to White Storks, were managed during the last year of the project (Figs 19–20). No monitoring of their occupancy after the management was carried out because they were managed already after the last breeding season, covered by the project. The locations of the managed nests in trees is presented in Figure 3.

Figure 2 (next page). Distribution of artificial nesting platforms on roofs of buildings installed during the project.

Figure 3 (page 9). Location of nests in trees managed during the project.


Artificial nesting platforms installed on roofs of buildings during the project (500)
Nesting platforms on roofs of buildings
Municipality border
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Grigiškės
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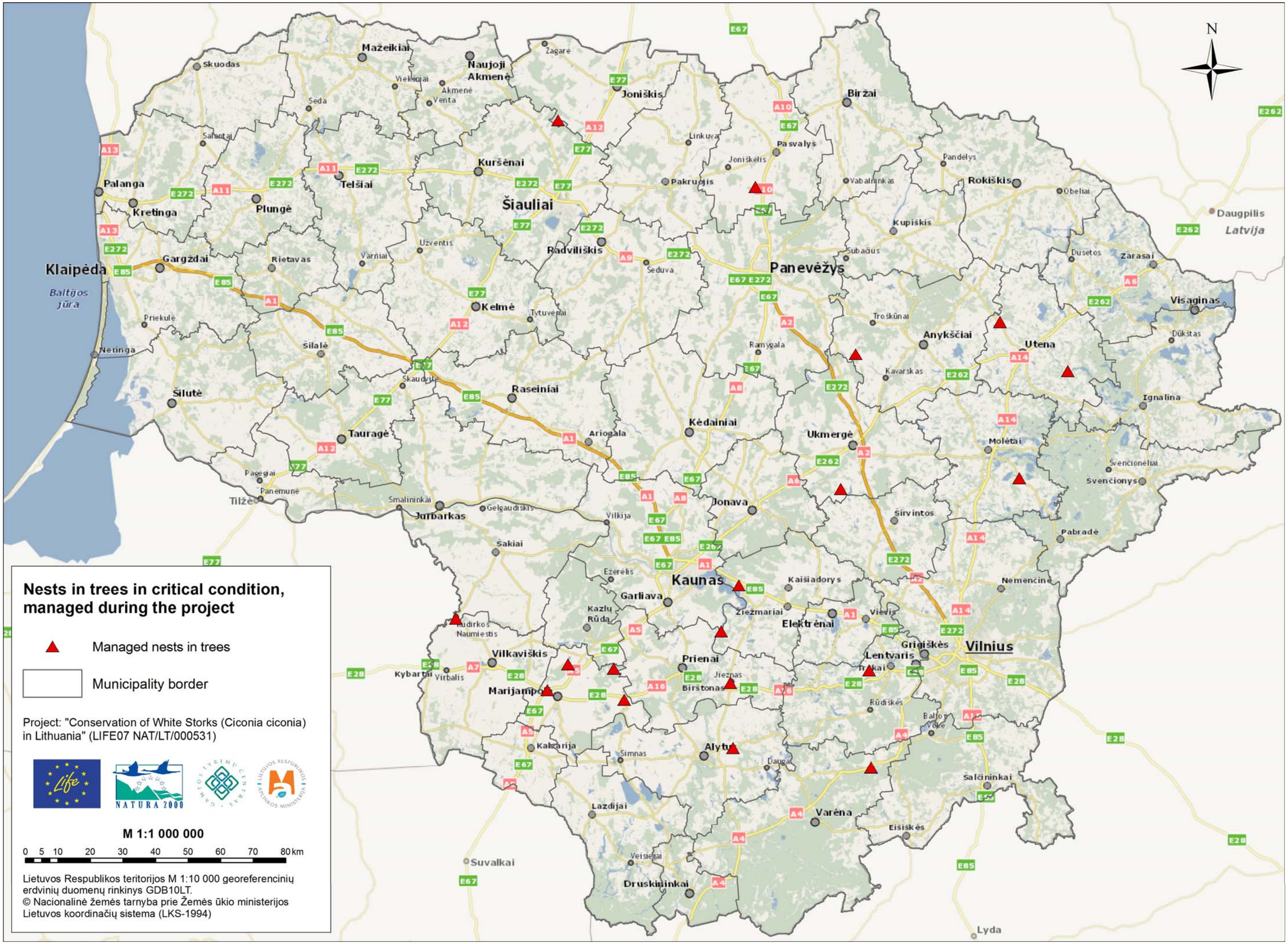
Alytus
Varėna
Druskininkai


Nests in trees in critical condition, managed during the project
Managed nests in trees
Municipality border
Project: "Conservation of White Storks (Ciconia ciconia) in Lithuania" (LIFE07 NAT/LT/000531)
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Garliava
Elektrėnai
Vilnius
Grigiškės
Lentvaris
Trakai
Prienai
Alytus
Marijampolė
Vilkaviškis
Kybartai
Druskininkai
Lazdijai
Varėna
Eišiškės
Salčininkai
Šalčininkai
Švenčionėliai
Švenčionys
Pabradė
Nemenčinė
Daugpilis
Latvija
Lyda
Suvalkai

Conclusions

Monitoring of artificial nesting platforms, installed on overhead electricity line poles during the project, revealed a consistently high occupancy rate of 86.2% by breeding White Storks. This suggests that overall, the 3260 artificial nesting platforms, installed by the end of the project, will provide safe nesting places for at least 2810 pairs of breeding White Storks in Lithuania, which constitute almost 15% of the total breeding population of White Storks in Lithuania. It should also be pointed out that the increased number of the installed nesting platforms on overhead electricity line poles from the planned 1760 to 3260 increased the number of potentially occupied nest-sites by almost 1300.

Both the design of artificial nesting platforms for the overhead electricity line poles, and their installation method proved to be reliable and may be used in the future in Lithuania and in other countries, where White Stork conservation faces similar problems, without any modifications.

Monitoring of artificial nesting platforms, installed on roofs of buildings during the project, revealed a rather low occupancy rate of *ca*. 30% by breeding White Storks. The possible reasons for such a low occupancy rate include possible deterioration of feeding habitats in the vicinity of previously abandoned White Stork nests that were replaced with an artificial nesting platform, and high nest-fidelity of White Storks, resulting in the reluctance of birds to move from an old nest, albeit in poor condition, onto a newly installed nesting platform in the vicinity. However, it is expected that the occupancy rate of the nesting platforms on roofs will increase in the future as the old nests deteriorate further and the birds will move onto nesting platforms or if farming practices change in the surroundings of previously abandoned nests, improving the feeding habitats for White Storks.

However, it is important to note, that only less than 100 out of 500 installed platforms on roofs were in fact installed in place of recently occupied White Stork nests during the first platform installation season, whereas the remaining platforms were installed in addition to the occupied nests or in place of nests that had been abandoned for some time. Thus even the occupancy rate of 30% represents *ca*. 150 occupied nests on the new nesting platforms, which suggests that this management measure indeed increased the number of breeding pairs of White Storks on the roofs of buildings, and this number is expected to increase further in the coming years.

The design of wooden nesting platforms for the roofs of buildings, used during the project, proved to be reliable and platforms were stable enough to support heavy nests of White Storks. However, installation techniques of these platforms on roofs of buildings could be further updates and improved, particularly paying attention to the anchoring or fastening of these platforms to the roof construction, where it is possible, in order to further minimise the damage to the platforms caused by strong winds. This is mostly applicable to platforms installed in areas prone to high winds.

Figure 4. Occupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 5. Occupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 6. Occupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 7. Occupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 8. Unoccupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 9. Unoccupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 10. Unoccupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 11. Unoccupied White Stork nesting platform on an electricity pole, recorded during the monitoring.

Figure 12. Occupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 13. Occupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 14. Occupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 15. Occupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 16. Unoccupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 17. Unoccupied White Stork nesting platform on the roof of a building, recorded during the monitoring.

Figure 18. New nesting platform installed next to an occupied White Stork nest in poor condition without removing the nest (note the damaged roof under the nest).

Figure 19. White Stork nest in a tree in critical condition before management.

Figure 20. White Stork nest in a tree after management.