African Odyssey Project – Black Stork Migration and Ecology Presented on the Internet

Miroslav Bobek¹ and Jaroslav Simek²
¹Czech Radio, Vinohradska 12, 120 99 Prague 2, Czech Republic
²University of South Bohemia, Faculty of Biological Sciences, Branisovska 31, 370 05, Ceske Budejovice, Czech Republic

Abstract

The African Odyssey project focuses on studying the migration and ecology of the black stork (Ciconia nigra) as well as serving to popularise and educate. From 1995-2000, a total of 17 black storks in the Czech Republic were equipped with satellite (PTT) and VHF transmitters. Several expeditions were undertaken to the African winter-grounds. Storks were observed also at their nesting-places. The Czech Radio has always served as a main medium to popularise an issue. The project was also put on the Internet in 1997, where the “African Odyssey” website (http://capi.internet.cz) offers up-to-date textual information enhanced with visual and audio material as well as a complex archive. The webpages “Storks online” (http://capi.fido.cz) contain the co-ordinates of observed birds and online generated maps. Within this project, the video transmission of nesting was carried out on the Internet. A non-public application called “Stork laboratory” enables the team members to archive and process satellite localisation and solve problematic data interpretations. The development of new interactive pages in the domain rozhlas.cz is currently being prepared.

Résumé

Background

Despite the black stork breeding grounds being spread over vast areas from Western Europe to East Asia, it is considered to be a rare species almost everywhere. In Europe, the most numerous populations are found in Baltic countries, whereas at the western limit of the breeding grounds it is very rare. At present, about 300 pairs breed in the Czech Republic. Due to its rarity, the black stork is protected legally throughout Europe. The main wintering grounds of the European population are spread across a belt of sub-Saharan Africa roughly contained within 10 and 15 degrees of northern latitude. The black stork is a soaring species relying on thermals during migration. Three different routes between Europe and Africa are known: one, leading through Spain and the Gibraltar Straits to the West-African wintering grounds is used by the western and part of the Central-European population; a second, leading through the Balkan peninsula and Middle East to the East and Central-African wintering grounds, is used by the eastern and part of the Central-European population; and the third and least used route leads through Italy, probably to the Central-African wintering grounds. Until recently, only a very small number of ringing recoveries of black storks was known from their African wintering grounds, not only from the Czech Republic but also from the whole of Europe. Moreover, data on the migration strategy of particular individuals were unavailable.

The study of the migration and ecology of the rare black stork and the simultaneous regular presentation of new findings to the broad public, as a tool to raise public awareness about this species, became the main goal of the African Odyssey project. The project thus combines two approaches, i.e. pure science and scientific popularisation–education, that merge in the goals of nature conservation. Scientists and science publicists have collaborated in its implementation.

Black stork migration was monitored by means of satellite transmitters (PTTs) using the ARGOS data processing system. All the PTTs were equipped with VHF transmitters, enabling small-scale monitoring directly in the field. In total, 17 black storks were fitted with these transmitters in the Czech Republic between 1995 to 2000. Some were monitored for several additional years (a female called Kristyna for 4 years). Tracking the storks involved all of the known migration routes. Four birds used the eastern route to Nigeria, Central African Republic and Ethiopia; four flew via the western migration flyway to Senegal, Mauritania and Mali. One bird using this latter route ended its migration in southern Spain. Only one young stork used the southern route through Italy, and it did not reach the African continent. Several expeditions were undertaken to observe the satellite-monitored birds, either in their winter-grounds in sub-Saharan Africa (Senegal, Mauritania, Mali, Chad and Ethiopia), or during their stopovers in Europe and northern Africa.
Results
Four Years on the Internet

The medium for publication of the African Odyssey project was from its start almost exclusively that of Czech Radio broadcasting. Radio programs and stories were pre-prepared in a standard way, with live inputs by means of satellite phone from each expedition. With the help of the Internet, a door for many unpredicted opportunities gradually opened.

From the beginning of 1997, first texts, maps and pictures of the African Odyssey appeared on the server of Radio Prague (http://www.radio.cz). It also became possible to place sound files in RealAudio format on the web page, containing transcripts of live input from the expedition to Ethiopia in January and February 1997. The structure of the page at the time as well as the organisational framework did not allow the addition of up-dated information, and graphics were also inappropriate.

And that was why an Internet site “African Odyssey” (http://capi.internet.cz) was launched in summer 1997, and is continuously being updated. Topical texts, pictures and sounds are published on its front page almost daily. Any visitor is sure to find a large archive of schedules, texts, photos, animations and sound files that serve to illustrate various aspects of the project. These pages reach high positions in Internet popularity lists (the greatest number of visits was reached in October 1998, when one of the storks was shot down in France) as far as Czech web pages dedicated to nature and science are concerned. These pages are visited mostly by students, educators, scientists, nature-conservationists, journalists and technicians, but also by pensioners learning to use the Internet in general. These pages are also often mentioned in the public media. As they contain brief extracts in English, German, French, Spanish and Russian, ornithologists and nature lovers from the USA, Spain, Belgium, France and other countries refer to them as well.

In May 1998, a website called “Kristyna live” (http://kristyna.rozhlas.cz) was started. One could watch live video transmission from the nests of black storks for 86 days. All this video was archived both in analogue on videotapes and digitally on CD-R media. These pages drew an enormous number of visits not only from the Czech Republic, but also from other countries. During the live transmission, visitors from nearly 90 countries opened the pages through their internet browsers. One year later we placed video and audio files (Real Audio/Video and MPEG format) on the “African Odyssey” pages on a weekly basis. These multimedia files showed screens from other nests and were primarily created for a television documentary by Bayerischer Rundfunk. (In summer 2000, a technological follow-up transpired in the form of the live transmission of a birth and first days of life of a northern white rhino baby in a zoo – see http://www.rozhlas.cz/mlade - and similarly, live transmission brought news from the nest of peregrine falcons breeding in downtown Prague in spring 2001 – see http://www.rozhlas.cz/sokoli).

Interactive web pages “Storks online” (http://capi.fido.cz) were created in September 1998. Up-to-date co-ordinates of observed black storks are published there from “Stork
Above: Flying black stork Zuzana with satellite transmitter (Photo: Khalil Baalbaki)
Below: Black stork Kristýna with her babies on the nest (Photo: Jan Petrů)
Radio-monitoring at Dominika's wintering ground in Mauritania (Photo: Khalil Baalbaki).

Young black storks with transmitters under the nest. (Photo Jiří Petr)

Drawing “Black Stork Kristyna in Africa” made by 7 year old child in drawing competition “African Odyssey” (Drawing by Jakub Zuzánek)
laboratory” several times a day. Any internet visitor can see simple maps and current position of individual storks, their whole passage or a selected part only, including distances the storks have flown, etc. Our experience has shown that for the broad public, individual texts enhanced with static maps, pictures and other objects (such as the “African Odyssey” pages use) are much more appealing than the interactive sites.

Finally, in December 1999, a website called “Expedition to West Africa” (http://praha.rozhlas.cz/capi) was created on the occasion of an expedition to the winter-grounds of observed black storks. These pages led to subsequent daily online reports from Senegal, Mauritania and Mali, not only in Czech, English, French and German texts, but also visual and audio ones (audio records also enhanced live input from the expedition in radio broadcasts, and photos appeared in the press). All pages dedicated to the “African Odyssey” project are interconnected, while the homepage is “African Odyssey” (http://capi.internet.cz).

As far as the “African Odyssey” project is concerned, using the Internet to inform the public is complemented by the equally important sharing of the information within the team and processing of the data. In January 1999 we started to use a non-public application called “Stork laboratory”, which contains all the satellite locations (dates, times, co-ordinates, technical data, sensor measuring). This is linked to other applications, including map generator, which projects selected co-ordinates onto simple maps and thus makes processing the data quicker and easier. Individual team members are also able to create various partial files or add notes to those files that are accessible to the others. At the same time, the “Stork laboratory” enables us to download new satellite locations of observed birds from the Argos system in Toulouse by means of the Internet. These downloads occur either automatically at regular intervals (usually hourly during the migration) or manually by clicking the appropriate link. The data are written to the database and sent to the team members’ mobile phones. Last but not least, up-to-date information from the “laboratory” is published on the “Storks online” web pages.

In the year 2000, an “Internet division” was established by Czech Radio, and the Datasec company began developing an editorial system to manage its Internet sites, utilising the most advanced technologies (XML). The organisational and technical basis was set and will soon be able to conjoin all the public Internet pages of “African Odyssey” in the domain rozhlas.cz and enable their future development. The new address of these pages will be http://www.rozhlas.cz/odysea. Members of the team have started to analyse a new version of interactive pages, which will use higher quality map backgrounds, offer additional information and become more user friendly. At the same time, we will attempt to develop an advanced version of “Stork laboratory” and other applications.

Conclusions

During the years of the “African Odyssey” project, a great deal of knowledge relating to black stork migration and ecology and the problems of conservation was accumulated. Mainly due to the Internet, the project inspired enormous interest in the broad public,
and raised public awareness about the black stork and different aspects of its life, as well as about general phenomena of bird migration. Surprisingly, the public showed greatest interest in verbal news and comments presented in the form of a frequent diary. This diary, highlighting the important or interesting aspects, and sometimes emotionally presented, was more welcome than technically based applications like automatically generated maps. Individual birds - or bird-families - became the main “characters” of “series” with continuing episodes. People could easily identify with particular birds and names of particular storks became very well known. The possibility of repeated monitoring of several storks heightened public interest in the project. The above mentioned “series” also opened up a wide range of possible links. Thanks to the storks we could make use of modern technologies, popularise the basic research and introduce the geography and culture of distant countries.

Acknowledgement

The Internet pages mentioned above would not exist without the extremely valuable help of programmers Ivo Hulínsky and Martin Straka, and webmaster Lenka Hampapová. The “African Odyssey” project would never have transpired without the unselfish endeavors of Frantisek Pojer, Magdaléna Pilná, Lubomír Peske and Jan Petru.

The main body in charge of financing the project (through sponsorship) was the public Czech Radio. The project was supervised by the Czech Academy of Sciences.
Above: (1998) Kristyná, the famous Black Stork from the Czech Republic followed for four years by transmitters received by Argos Satellite, is released to embark on its new journey to Africa (Photo: K. Baalbaki). Map: Several routes of Black Storks from the Czech Republic as revealed by satellite telemetry (courtesy: Miroslav Bobek, source: HOS Kartografik, Bánov u Uh. Brodova).