

# Still existing: Mass mortality of White Storks (*Ciconia ciconia*) near Sharm El Sheikh (Sinai, Egypt)

JAN SCHIMKAT

Ring recovery report of the Banding Centre Hiddensee no. 10/2013

## 1 Introduction

Egypt, including the Sinai Peninsula stretching into the Red Sea, has an outstanding importance for the White Stork as passage area. The majority of Storks which is migrating on the eastern route to East and Southeast Africa is crossing this desert area during autumn and spring migration. Annually, this involves at least 400.000-500.000 birds (Schulz 1988), in the 1990s up to over 700.000 individuals were estimated (Schimkat 2004). As parts of Egypt the fertile Nile Valley and the Strait of Gubal - an approximately 25 km wide section of the Gulf of Suez between the Sinai Peninsula and the African part of Egypt – present two of the most important bottlenecks in the whole White Stork migration area. Birds pass these two bottlenecks by narrow front migration (Schulz 1988). Hence, threats in this area have an even bigger impact on the whole population of eastern migrating White Storks.

## 2 Observations

While staying in Sinai, the sewage ponds of Sharm El Sheikh were visited on 26 October 2008, which is a popular destination for bird-watchers. On the previous days, individual weakened White Storks were already seen in the urban area of Sharm El Sheikh and in the national park Ras Mohammed, located on the extreme southern point of the Sinai Peninsula. They were standing around or were already sitting on their intertarsal joints. Also, the cadavers of three Storks were easily found in the national park. This was in contrast to hundreds of dead White Storks that were lying in the desert around the sewage ponds or in the sewage plant. From any position, one could count at least 20 dead birds. An observation from the car on a test route of 800 m around the sewage pond resulted in 99 dead birds. An intensive area-wide observation probably would have resulted in a tenfold value.

In the morning of 26 October about 700 White Storks were standing on the dams of the sewage ponds (among them also two Great White Pelicans (*Pelecanus onocrotalus*)), while there were about 300 White Storks in the afternoon. Some of them were clearly in a weakened state. However, the majority was (still) able to fly. Groups took off regularly from the sewage ponds, circled over the desert, landed again or glided in big flocks of 300-500 individuals over the first mountain (Jebel Khashab) of Mount Sinai to the north of the sewage ponds. Altogether, about 1600-2000 White Storks could be seen in this area on 26 October. However, the flocks did not depart northwards for their autumn migration, but frequently came back to the sewage ponds. This behaviour attracted raptors, among others at least three juvenile Imperial Eagles (*Aquila heliaca*) as well as about five Lesser Spotted (*Aquila pomarina*) and Greater Spotted Eagles (*Aquila clanga*), which circled between the Storks. On 18 and 20 October 2009, a similar observation could be made: at least 1500 White Storks were standing around the sewage ponds or circled further north. More precisely, at the sewage ponds many of them concentrated at the inlet pipes of the wastewater and were drinking the water. Numerous other Storks seemed weakened and dirty from the wastewater, several others also had injuries on their primary feathers. There were about 200 dead Storks right at the sewage

ponds (often eaten by raptors and dogs), among them the two Hiddensee-banded-birds (Elsa-rings) H 9369 and H 8334 (among about 50 examined dead Storks). These were young birds of the same year, born in Saxony (Großdubrau near Bautzen) and Saxony-Anhalt (Beuster near Stendal). In the year 2010, the situation of the White Storks has not improved. From 11 to 13 October 261 dead White Storks were counted in and around the sewage plant. The approximately 3000 White Storks, staying at the sewage ponds during daytime, were spending the night at the southern mountain side of the nearby Mount Sinai which is only a few hundred meters away. Thus, only the White Storks which became weaker over the day and the dying ones remained.

### **3 Discussion**

The precarious situation of the White Storks in the South of the Sinai Peninsula and especially the cases of death at the sewage ponds have been known for more than 20 years (see for example, Bruns & Kempf 1989, Kinzelbach 1990). In the meantime, there has been no improvement of the state of knowledge and particularly of the local situation to achieve a minimisation of mortality. Therefore, the statements by Schulz (1988) still generally apply which declare that many birds weaken after staying a few days and cannot fly anymore or even walk normally and eventually die. "According to Bleys, almost always 40 White Stork cadavers were found around the sewage farms during autumn migration. Hence, several hundred birds probably die there every autumn. Besides the White Storks, three Corvids and three Vultures (species undefined), which perished after eating from White Stork cadavers, were found close by the sewage farms. [...] The true cause of death has not been resolved yet. Probably several factors interact: the White Storks are exhausted after crossing the Sinai and in a bad condition. As a result, they are more prone to diseases, such as botulism, which they can contract from the water of the sewage farms." (Schulz 1988)

Ornithologists who are familiar with this problem often are of the opinion that these birds are mainly "migration failures" appearing in this dead end of bird migration between the Near East and Africa, (cf. Kinzelbach 1990). Therefore, these losses would have to be taken since the majority of east migrating White Storks, flying over the Sinai Peninsula, cross the Gulf of Suez about 70 km further north on the level of El Tor in the direction of Gebel El Zeit (Schüz 1971, Schulz 1988, 1994).

The Storks that get to Sharm El Sheikh did not adhere to a Northeast-Southwest-direction after flying over the migration funnel at Eilat (Israel) on the northern end of the Gulf of Aqaba. In contrast, they followed the Sinai Peninsula (50km) – parallel to the geological boundary of the Gulf of Aqaba – too far in the southern direction. Here, Cape (Ras) Mohammed looms, as a continuation of the flat desert-like coastal plain, almost 10 km into the Red Sea in a southerly direction and separates the Gulf of Aqaba from the Gulf of Suez. Unfortunately, this is not an ideal take-off position for migratory birds, which require beneficial thermal conditions. On the one hand, the eastern coast of the Red Sea is with about 60 km quite far away. On the other hand, the Cape is just a fossil coral reef formation that towers out of the sea. Consequently, Cape (Ras) Mohammed presents a unfavourable starting position for birds using soaring and gliding flights than, for example, the mountainous Cap Bon in Tunisia or the Rock of Gibraltar.

Current own observations on migrating raptors confirm this low suitability of the International Bird Area (IBA) Ras Mohammed as a "bridgehead" for terrestrial-bound migratory birds to Africa. Single raptors, probably wanting to migrate, were mainly circling over the desert mountains at the northern

park entrance (most of them immature or juvenile Bonelli's Eagles (*Hieraetus fasciatus*), Short-toed Eagles (*Circaetus gallicus*), Steppe Eagles (*Aquila nipalensis*) and Greater Spotted Eagles (*Aquila clanga*)). After overviewing the geographical position, they repeatedly seemed to move back inland. North returning migration can often be observed in autumn at Ras Mohammed, not only with big Eagle species and Black (*Ciconia nigra*) and White Storks, but also with Black Kites (*Milvus migrans*), Levant Sparrowhawks (*Accipiter brevipes*), Eurasian Sparrowhawks (*Accipiter nisus*) and Booted Eagles (*Hieraetus pennatus*). In contrast, passerine birds like Barn Swallow (*Hirundo rustica*), Rock Martin (*Ptyonoprogne fuligula*) and White Wagtail (*Motacilla alba*) can more frequently be seen migrating offshore in the direction of the western coast of the Red Sea, which are then hunted by the local Sooty Falcon (*Falco concolor*). Bird behaviour like this - the indecisive stay and the partial take-off combined with a return of the birds using thermals - is known from many "bridgeheads of bird migration", thus also from Cap Bon in the Mediterranean Sea (Kisling et al. 1994, Schimkat 1999). This illustrates the timidity of large birds which use soaring and gliding flights, for the dangers of crossing the sea.

Baha El Din (1999) estimated that 30% of in total 87,700 White Storks took off from Ras Mohammed in 1989. A portion of these birds, which still has to be quantified, dies while travelling, sinks into the Red Sea or is killed due to accidents with offshore oil-well derricks of the oil industry (Schulz 1988, 1994, Kinzelbach 1990). However, another unknown portion of these birds is able to cope with these and far greater distances over the open sea. This probably also includes three immature Lesser Spotted Eagles, which were observed in October 2007. Using flapping flight, they came from the direction of the sea at about 40 km south of the coastal town El Qesir, while they were strongly attacked by a local Osprey pair (*Pandion haliaetus*) (own observation). The Red Sea is 190 km wide at this point. For the Mediterranean Sea it was also determined that soaring birds like the Lesser Spotted Eagle and White Storks are able to fly across the water, in few cases even at its widest points. However, other birds were observed to drown while crossing the Red or Mediterranean Sea (for Lesser Spotted Eagles see Meyburg & Meyburg 2009). The anthropogenic losses, such as from the sewage ponds of Sharm El Sheikh, have to be added to these mainly naturally caused losses.

Kinzelbach (1990) rated the mass mortality of White Storks with 700-800 dead individuals in Sharm El Sheikh in autumn 1989 rather as an exception. Nevertheless, new data indicate a different direction. Analysis of available observation reports of the sewage ponds in Sharm El Sheikh revealed deaths of several hundred individuals (at least 300) from August to September (Wallace 2002), an increase of almost 2000 individuals during September until late October (Baumgart 2005, own observations) and a decline in cases of death from November to February (travel reports on the internet, especially [www.osme.com](http://www.osme.com), own observations). My own field trips to the sewage ponds of Sharm El Sheikh in February 2004 revealed two weakened White Storks and - without taking a closer look - the discovery of 21 dead birds. However, the majority of the cadavers were probably already eaten by scavengers to that point of time.

Consequently, it is reasonable to assume that annually at least 2000 White Storks "go astray" in the area of the sewage ponds of Sharm El Sheikh, mainly caused by the attracting effect of the water. The majority of them dies due to food shortage, anthropogenic disturbances, such as quad drivers and hunters, and threats like sewage, garbage or overhead lines. The Sinai Wildlife Project, in which veterinarians have taken care of weakened and ill Storks in Sharm El Sheikh since 1994, had to take care of up to 2000 to 3000 individuals for weeks at peak times (Tegtmeyer 2006). Therefore, Sharm

El Sheikh has to be called “hotspot of mortality” (Schulz 1994) for White Storks migrating to their wintering grounds.

Further, numerous losses, mainly caused by starving and dying of thirst, can be found on the western side of the Red Sea to the north of Hurghada. In the future, human activity might lead to even more losses due to construction of wind farms at the desert mountains on the bay of El Zait, which lies exactly within the main migration route of White Storks and Raptors (Hilgerloh 2008).

In addition, the traditional but illegal hunting of White Storks still exists in the Nubian part of Egypt. A young, educated Nubian man, who works at a dive centre in Sharm El Sheikh, told me in detail about one of his annual experiences when hunting White Storks, which rest in the Nile valley near Assuan. During a single hunt, the whole flock of about 200-300 White Storks would be killed. In spring especially the “fat” (and thus extra nourishing) White Storks are hunted (cf. also Berthold et al. 2001). However, the hunting success is rather low since the birds barely rest at this time. An analysis of the causes of death of Hiddensee-banded-Storks in Egypt has shown that over 60% of found dead individuals can be explained by human hunting.

The mortality during migration and on the wintering grounds considerably regulates the population dynamics of the White Storks (Bairlein 1991, Schaub et al. 2005). For the protection of the species it is therefore important to investigate the situation in Egypt and to take immediate action to reduce the mortality caused by local human intervention. All ornithologists who are familiar with this topic, question if the White Stork losses in this area are significant. They demand to differentiate acceptable natural cases of death (e.g. by “migration deviators” or inexperienced young birds) from cases which are affected by anthropogenic impacts and to minimize the latter. Unfortunately, a clear differentiation between anthropogenic and naturally caused mortality is not possible anymore. Because of the intensive land use in the northern migration area, for example in the Israeli Hula Valley, many roosting places where the White Storks could regain energy have been lost. Therefore, many White Storks (and raptors) have to move on with worse physical conditions. Moreover, in Sinai numerous White Storks (but above all raptors) have gun wounds (from Lebanon, South Turkey or Syria, cf. e.g. Kaatz 2004, Meyburg 2005, Meyburg & Meyburg 2009) or injuries due to foraging on dumping grounds and thus are handicapped in their further migration. Probably the majority of these disabled birds will end up at the artificial water expanses of the sewage plant in Sharm El Sheikh, dying in the geographical and ecological “trap” of South Sinai. Seen from a species protection perspective, an allegedly “natural” mass extinction of birds called “migration failures” cannot be accepted especially since these losses affect the population.

Based on the observations above, annual losses of (maximum) 2000 White Storks in Sharm El Sheikh can be estimated. For whole Egypt, own investigations and information from Schulz (1988) resulted in about 5000 to 10,000 Storks dying every year. This is approximately 1 % of the world population of east migrating White Storks (Schimkat 2004). Certainly, even higher impacts in this region occur to the Lesser Spotted Eagle because every (adult) bird is important considering the small population (cf. Böhner & Langgemach 2005). In 2008, 27 dead individuals were found around the sewage ponds at Sharm El Sheikh (Meyburg et al. 2008). Other populations of *Aquila*-species and Black Storks might be affected as well. From 11 to 13 October 2010, a dead Grey Heron (*Ardea cinerea*) as well as Black Kites, Short-toed Eagles, Greater Spotted Eagles and Lesser Spotted Eagles were spotted drinking at the sewage (own observation).

Bruns & Kempf (1989) and Kinzelbach (1990) have already critically evaluated the sewage ponds of Sharm El Sheikh and requested a number of measures, which are at least partly fulfilled by now. However, it is now very urgent to intensively investigate and minimize the negative impacts of the “new” sewage plant (built in the 1990s) on migrating and local breeding birds, such as Lichtenstein’s Sandgrouses (*Pterocles lichtensteinii*), Crowned Sandgrouses (*Pterocles coronatus*), and Spotted Sandgrouses (*Pterocles senegallus*), which drink from the ponds regularly. Does the water, which is constantly drunk from the sewage ponds by Storks, Raptors, Ducks, Shorebirds, Waders, Cormorants, Herons and other birds, have a toxic effect? Does the effect differ depending on the species? The water expanses and green areas of the sewage ponds surely attract the (weakened) birds migrating over Mount Sinai as roostingplace. Nevertheless, without providing adequate foraging areas, the birds become even weaker. Is it possible to minimize or eliminate this dangerous attraction? Should a “healthy” but completely human dependant wetland be created in this area? When will the construction of a modern sewage plant, which would decrease anthropogenically caused bird losses, begin?

The questions above lead to another extensive topic: the impacts of the newly built hotel complexes on the Egyptian shore. Examinations should focus on how they affect the local avifauna and migrating birds (Hering & Hering 2005) and which measures of conservation should preferably be realized. It can be assumed that these direct landscaping measures will over the short-term alter the avifauna more than the proceeding climate change and its impacts.

Despite all the legitimate concerns (Kinzelbach 1990), people have taken care of injured or weakened Storks in Sharm El Sheikh for many years (Brunn 1981, Tegtmeier 2006). Moreover, they constructed further bird attracting artificial but nutrient-poor “wetlands” (e.g. golf courses and irrigated green areas around the numerous hotel complexes). At the same time, the food and resting conditions in the northern countries of the Near East (apart from Israel), are probably getting worse. This can be explained, for example, by the worsening water scarcity (e.g. Posener 2009) advanced by the draining of the bogs of the Hula Lake. Stronger efforts on the renaturation of the natural wetlands especially in the Levant (e.g. in the Israeli Hula valley) may improve the situation in South Sinai, because the numbers of weakened Storks will be reduced. Additionally, the prohibition of hunting birds in the northern migration areas contributes to defusing the situation in Sharm El Sheikh. White Storks belong to the species of birds which assimilate hardly any food during autumn migration (from the arid regions in South-eastern Europe onwards), but mainly need calm, protected roosting places as well as places to stay overnight (Berthold et al. 2000, Berthold et al. 2001). Sharm El Sheikh can be seen as such a particularly important area, wherefore conditions for White Storks should be optimised within the context of the “Convention on the Conservation of Migratory Species of Wild Animals” (Bonn Convention). When starting from their breeding areas, a good constitution of the birds is important, as well, to ensure overcoming of the long migration across the sea and desert areas of the Near East and the Sahara to the first Sahelian roosting places. Higher survival rates of young Polish Storks (Schaub et al. 2005) are very likely caused by the different quality of Polish and East German breeding areas. The reason, why especially young birds are often not able to cope with strains of migration, is probably (also) a bad constitution before and at the beginning of migration in Europe (Kaatz 2004).

#### 4 Summarised conclusions

1. The death of annually at least 1000 White Storks in the South of the Sinai Peninsula, with particular mortality at the sewage ponds of Sharm El Sheikh, is not an exception (Schulz 1988, 1994, Kinzelbach 1990) but normality.
2. The extreme South of the Sinai Peninsula is not just a geographic “dead end” for Storks and Raptors on the migration route to their wintering areas, but also an artificial ecological trap (unsecured sewage ponds, green areas contaminated by pesticides and poor in food).
3. Natural and anthropogenically caused deaths can hardly be separated because of the local situation as well as the overall situation (restriction of flying caused by gun wounds, weakened constitution caused by the absence of suitable roosting places) in the Near East.
4. Known for more than 20 years, the predominantly anthropogenic caused mass losses of the White Stork and big Raptors at the sewage ponds of Sharm El Sheikh have not yet been minimised.
5. These losses are considerable for the affected White Stork and Lesser Spotted Eagle populations.
6. There are at least 300-1000 White Stork losses annually in Assuan due to illegal hunting. In Egypt, the protection of the White Stork given by law is still not implemented.
7. The assertion of at least 1000 to 2000 dead White Storks per year in Egypt (Schulz 1988) could thus increase by a tenfold.
8. The state of Egypt as “key country” for the migration of Storks and Raptors urgently needs international support for its species conservation efforts. This also holds for further conflict-prone areas along the migration route.
9. Within the context of the “Convention on the Conservation of Migratory Species of Wild Animals” (CMS, Bonn Convention), Sharm El Sheikh is a special stepping stone where Storks and other migrating birds should be protected from anthropogenically caused dangers. Furthermore, appropriate roosting places should be created.
10. Nutritious German breeding areas have to be conserved and newly created to ensure a good constitution of the White Storks, especially of the young birds, for the migration to East and South Africa.

#### References

- Baha El Din, M. (1999): White Stork Migration in Egypt. –  
[http://bergenhusen.nabu.de/m03\\_04/01681.html](http://bergenhusen.nabu.de/m03_04/01681.html) [Accessed 13 September 2007]
- Bairlein, F. (1991): Population studies of White Storks (*Ciconia ciconia*) in Europe. In: Perrins, C.M., J.-D. Lebreton & G.J.M. Hirons (Hrsg.): Bird Population Studies. Relevance to Conservation and Management, Oxford University Press: S.207-229.
- Baumgart, M. (2005): Reisebericht Südsinai, Ägypten, 15.-29. September 2005.
- Berthold, P. Fiedler, W. & U. Querner (2000): White Stork (*Ciconia ciconia*) Migration Studies: Basic Research Devoted to Conservation Measures. Global Environ. Res. 4 (2000) 2: 133-141.

- Berthold, P., Bosche, W.V., Fiedler, W., Gorney, E., Kaatz, M., Leshem, Y., Nowak, E. & U. Querner (2001): Der Zug des Weißstorchs (*Ciconia ciconia*): eine besondere Zugform auf Grund neuer Ergebnisse. – J. Orn. 142 : 73-92.
- Böhner, J. & T. Langgemach (2005): Warum kommt es auf jeden einzelnen Schreiadler *Aquila pomarina* in Brandenburg an? Ergebnisse einer Populationsmodellierung. - Vogelwelt 125: 271-281.
- Bruns, H.A. & N. Kempf (1989): Weißstorchverluste im Südsinai/Ägypten – Ausmaß, Ursachen und Gegenmaßnahmen. Projektbericht für den WMF und DBV, 62 S.
- Brunn, B. (1981): Aufpäppeln in der Wüste – Ranger helfen entkräfteten Störchen. – Wir und die Vögel 13 (Sept/Okt): 12-13.
- Hering, J. & H. Hering (2005): Aktuelles Problem: Zugvögel in Hotelanlagen am Roten Meer. Der Falke 52: 223-225.
- Hilgerloh, G. (2008): Die Wüste an der Bucht von El Zait (Ägypten): ein Flaschenhals des Vogelzuges von globaler Bedeutung. – Vogelwarte 46, S. 361
- Kaatz, M. (2004): Der Zug des Weißstorches *Ciconia ciconia* auf der europäischen Ostroute über den Nahen Osten nach Afrika. Diss. Halle-Witteberg
- Kinzelbach, R. (1990): Unglücksfälle ziehender Weißstörche (*Ciconia ciconia*) bei Sharm El Sheik (Ägypten: Süd-Sinai). Projektbericht für das BMZ, 22 S.
- Meyburg, B.-U. (2005): Zug und Verfolgung der Greifvögel in der südlichen Türkei. Orn. Mitt. 57: 12-16. <http://www.Raptor-Research.de/>
- Meyburg, B.-U. & C. Meyburg (2009): Wanderung mit Rucksack – Satellitentelemetrie bei Vögeln. Falke 56: 256-263. <http://www.Raptor-Research.de/>
- Meyburg, B.-U., K. Graszynski, T. Langgemach, P. Sömmer & U. Bergmanis (2008): Cainism, nestling management in Germany in 2004-2007 and satellite tracking of juveniles in the Lesser Spotted Eagle (*Aquila pomarina*). Slovak Raptor Journal 2: 53-72. <http://www.Raptor-Research.de/>
- Posener, A. (2009): Über den Jordan. – Welt am Sonntag, S. 94 am 20.12.2009
- Schaub, M., Kania, W. & U. Köppen (2005): Variation of primary production during winter induces synchrony in survival rates in migratory White Storks *Ciconia ciconia*. – Journal of Animal Ecology 74: 656 – 666
- Schimkat, J. (1999): Beobachtungen zur Brutvogelwelt und zum Zuggeschehen am Nordrand der Sahara in Tunesien. Veränderte Fassung eines Vortrages auf der 3. Sächsischen Ornithologentagung des NABU vom 27. – 28.03.1998 in Pressel (Dübener Heide). Actitis 43 (1999): 83-110.
- Schimkat, J. (2004): Sind die Bestände der ostziehenden Weißstörche (*Ciconia ciconia*) stabil? Actitis 39 (2004): 75-108

- Schulz, H. (1988): Weißstorchzug – Ökologie, Gefährdung und Schutz des Weißstorchs in Afrika und Nahost. Weikersheim
- Schulz, H. (1994): Zur Bestandssituation des Weißstorchs – Neue Perspektiven für den „Vogel des Jahres 1994“? – Berichte zum Vogelschutz 32: 7-18.
- Schüz, E. (1971): Grundriss der Vogelzugskunde. – Hamburg, S. 390
- Tegtmeyer, G.M. (2006): Störche in Not. – Natürlich 10/2006, S. 16-21
- Wallace, M. & G. Wallace (2002): Short notes on birding Sharm el Sheikh Egypt, 10.-17. September 2002. – [www.birdtours.co.uk/tripreports/egypt9/egy-sept02.htm](http://www.birdtours.co.uk/tripreports/egypt9/egy-sept02.htm) [Accessed 2 February 2007]