

und *S. atricapilla*). Vogelwarte 27: 73–134. • Lack, D. (1963): Migration across the southern North Sea studied by radar. Part 4. Autumn. Ibis 105: 1–54. • Leisler, B. (1972): Artmerkmale am Fuß adulter Teich- und Sumpfrohrsänger (*Acrocephalus scirpaceus*, *A. palustris*) und ihre Funktion. J. Orn. 113: 366–373. • MacArthur, R. H., & A. T. MacArthur (1974): On the use of mist nets for population studies of birds. Proc. Nat. Acad. Sci. USA 71: 3230–3233. • Matthews, G. V. T. (1968): Bird Navigation. University Press, Cambridge. • Möller, H. U. S., & F. D. Petersen (1972): Hesselø 1971. Feltornithologen 14: 154–157. • Moreau, R. E. (1969): The recurrence in winter quarters (Ortstreue) of trans-Sahara migrants. Bird Study 16: 108–110. • Nisbet, I. C. T., & W. H. Drury (1968): Short-term effects of weather on bird migration: a field study using multivariate statistics. Animal Behaviour 16: 496–530. • Payevsky, V. A. (1974): Principal results of bird ringing obtained by the Rybachy Biological Station. Mater. Conf. Study Conserv. Migratory Birds Baltic Basin, Tallinn, 56–58. • Perdeck, A. C. (1958): Two types of orientation in migrating starlings, *Sturnus vulgaris* L., and chaffinches, *Fringilla coelebs* L., as revealed by displacement experiments. Ardea 46: 1–37. • Ders. (1970): The standard direction of the Scandinavian chaffinch during autumn migration throughout its area of passage. Ardea 58: 142–170. • Rabøl, J. (1969): Orientation of autumn migrating garden warblers (*Sylvia borin*) after displacement from Western Denmark (Blavand) to Eastern Sweden (Ottenby). A preliminary experiment. Dansk Orn. Foren. Tidsskr. 63: 93–104. • Ricklefs, R. E. (1973): Fecundity, mortality and avian demography. In: Breeding biology of birds (herausgeg. v. D. S. Farner), 366–435. Nat. Acad. Sci., Washington. • Robbins, C. S., & W. T. v. Velzen (1970): Progress report on the North American breeding bird survey. Bird Census Work Environmental Monitoring. Bull. Ecol. Res. Comm. Nr. 9: 22–30. • Schifferli, A. (1973): 50 Jahre Schweizerische Vogelwarte Sempach. Bericht 1973 der Schweizerischen Vogelwarte Sempach. • Schütz, E. (1971): Grundriß der Vogelzugskunde. Parey, Berlin & Hamburg. • Steidinger, P. (1972): Der Einfluß des Windes auf die Richtung des nächtlichen Vogelzuges. Orn. Beob. 69: 20–39. • Svensson, L. (1970): Identification Guide to European Passerines. Naturhistoriska Riksmuseet, Stockholm. • Wiltschko, W., & E. Gwinner (1974): Evidence for an innate magnetic compass in garden warblers. Naturwiss. 61: 406. • Winkler, M., J. Reichholf & H. Schmidt (1973): Die Fangstatistik von Rohrsängern und Grasmücken (*Sylviidae*) im Ismaninger Teichgebiet von 1958 bis 1971. Anz. Orn. Ges. Bayern 12: 198–209. • Zink, G. (1958): Funde beringter Mäusebussarde (*Buteo buteo*) aus Hessen und Rheinland-Pfalz. Vogelring 27: 103–110. • Ders. (1973): Der Zug europäischer Singvögel. Vogelzug-Verlag, Möggingen.

Anschrift der Verfasser:

Dr. P. Berthold und R. Schlenker, D-776 Schloß Moeggingen, Vogelwarte Radolfzell.

Die Vogelwarte 28, 1975: 123–131

## The White Stork (*Ciconia ciconia*) in Israel

By Heinrich Mendelsohn

One of the most conspicuous elements of wild life in Israel is the white stork. The large numbers of migrating storks are very impressive, especially along the Jordan Valley, which is the main migration route because of the favourable aerodynamic conditions prevailing in it. During spring storks migrate, however, also through other parts of Israel, occasionally in very large numbers. For instance on April 4<sup>th</sup>, 1966 at least 10 000 storks passed over Tel Aviv between 11.00 to 11.30 in the morning, arriving from SSE and, changing direction, continued towards N. Probably more swarms passed during this migration wave through the Tel Aviv area, as storks were seen in the fields around Tel Aviv during the following day and smaller swarms passed over Tel Aviv also on April 5<sup>th</sup>. Such a strong migration in the coastal plain is quite exceptional and may be connected with a strong east wind (chamsin) that prevailed from April 3<sup>rd</sup> to 5<sup>th</sup>. The hot eastern winds may perhaps cause the appearance of larger than normal swarms of migrating storks in the coastal plain (FISCHER, quoted by SCHÜZ 1954), but they are not imperative for migration

as supposed by FISCHER. In the Jordan Valley, in the Negev (the southern desert) and in Sinai, thermals and other air currents make migration possible on any day.

In the Jordan Valley it is possible on some days during the spring migration to see tens of thousands of storks migrating northwards, soaring up in rising air currents and gliding northwards, slowly losing height until they reach another rising air current. Spring migration begins in late February and continues until the end of April. An early spring record was, for instance, a swarm flying to the north over the Huleh Valley on February 22<sup>nd</sup> 1963. Autumn migration that continues from end of July to mid-September is less conspicuous, and southwards migrating storks are then seen only in the Jordan Valley, as the autumn migration passes more to the east than spring migration (MEINERTZHAGEN, 1930). The earliest record for autumn migration was a flock flying southwards over the Dead Sea on July 23<sup>rd</sup>, 1939.

It is worthwhile to mention that not only storks of the subspecies *Ciconia c. ciconia* occur in Israel. Occasionally specimens occur that are conspicuous because of their large size, and apparently belong to *C. c. asiatica*. According to SCHÜZ (1963) this subspecies winters in Pakistan and eastwards to Burma and Assam. One male, however, found locally and kept at the wildlife research center of Tel Aviv University, has a wing length of 653 mm and a bill length of 220 mm. He is mated to an also quite large female, which is, however, not a definite *C. c. asiatica*. Their male offspring are as big as their father. Fig. 1 shows this specimen together with a female *C. c. ciconia*, emphasizing the difference in size.

Besides during migration storks occur, however, round the year in Israel. These storks, probably mostly immature birds (LIBBERT 1954, SCHÜZ 1955), live in the plains of northern and central Israel. During the summer they are seen mostly in agricultural areas, in irrigated fields, near fishponds and water reservoirs. After the onset of the winter rains, they spread also to other, now green and wet areas. Besides on invertebrates, reptiles and rodents, these storks feed occasionally also on garbage dumps. In at least one case, a flock of these resident storks had discovered an ample food supply: discarded one-day old male chicks which were thrown on the garbage dump of a village and provided the storks with an easily available source of food.

The numbers of these non-breeding resident storks are not exactly known as far as the time between spring and autumn migration is concerned, but they seem to increase from year to year. This has been proved for the wintering storks, as they have regularly been counted as from 1967 during the regular water fowl counts which are carried out every year by rangers of the Nature Reserves Authority and of the Society for Protection of Nature as well as by many volunteers. These counts are made twice each year in January and show a steady and considerable increase of wintering storks (SUAREZ 1974):

420	365	1 000	1 545	2 100	1 710	2 990	2 830	3 577
1967	1968	1969	1970	1971	1972	1973	1974	1975

It is supposed that this increase is a real one, as birds as conspicuous as storks have probably not been overlooked even during the first counts, when the people carrying out the counts had not yet much experience.

The reasons for this increase may be several:

- 1) Protection: Storks were legally protected already during the time of the English Mandatory Government, but notwithstanding were quite often shot, as also occurs in other countries of the Near East (SCHÜZ 1955), as this protection was not enforced. From 1954 almost all wild birds are protected in Israel by law, (be-

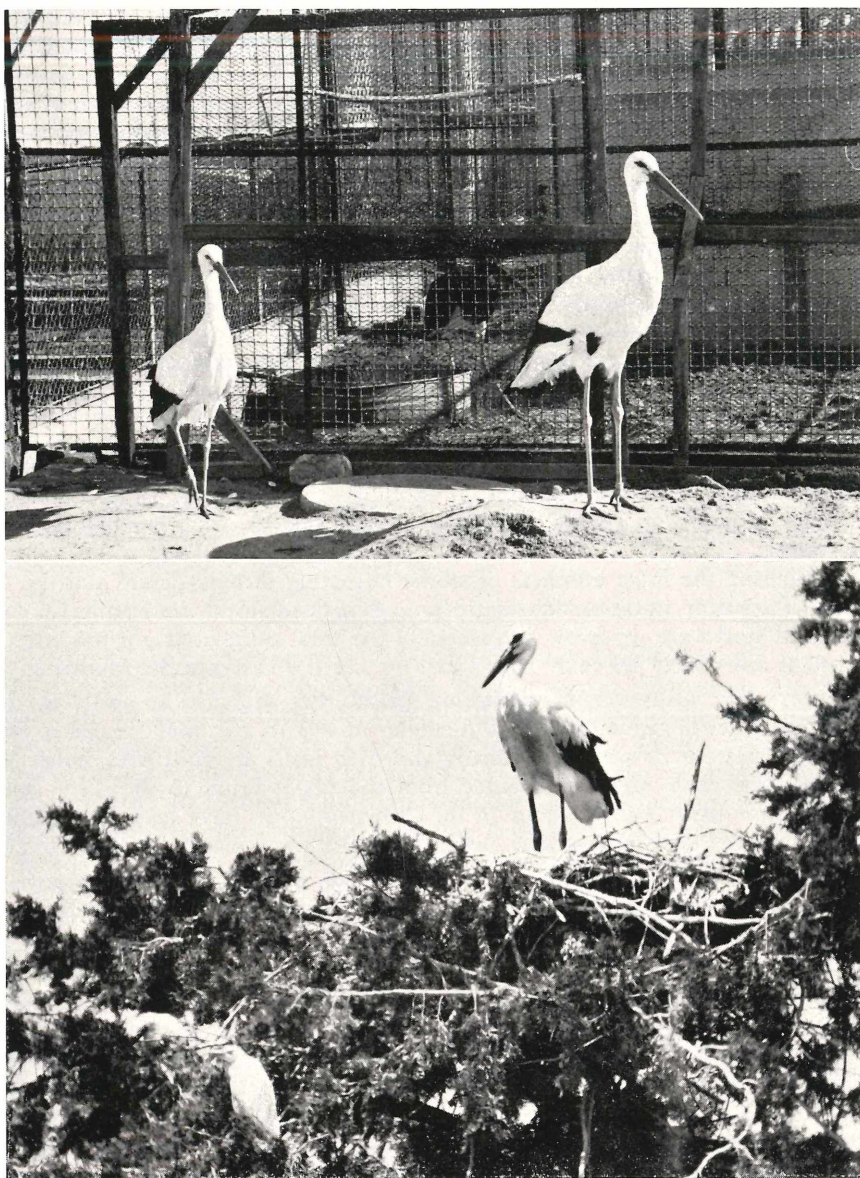


Fig. 1: Comparison of two subspecies of White Stork occurring in Israel: *C. c. ciconia* ♀ on the left, *C. c. asiatica* ♂ on the right.

Fig. 2: Cattle egrets (*Bubulcus ibis*) nesting near the nest of the White Stork at Beer Tuvia, 1973 (fot.: A. SHOUB).

sides a few game birds and a few species considered as pests), and this protection is more or less adequately enforced. In any case, almost no cases of storks being shot occur now\*.

\*) M. RIEGEL & W. WINKEL (1971) Über Todesursachen beim Weißstorch an Hand von Ringfundangaben; Vogelwarte 26: 128–135, for Israel mention as cause of death 28 × „unknown“ and 2 × „unmittelbare Verfolgung“. — Editors.

- 2) **Increase of irrigated agriculture** Irrigated crops provide feeding areas, of which alfalfa (*Medicago sativa*) fields seem to be especially productive for storks, as they are often seen feeding in them, mainly after the fields have been cut. According to remnants found in stomachs and in regurgitated pellets, species on which storks feed in irrigated fields are, among others, caterpillars of Noctuid moths (of which *Spodoptera littoralis* is a common and important agricultural pest), mole crickets (*Gryllotalpa*) and voles (*Microtus guentheri*). In non-irrigated areas the pellets are mainly composed of remnants of Tenebrionid beetles and grasshoppers.
- 3) **Increase of water areas:** The resident storks are apparently dependent on the availability of water and during the summer are generally seen not far from water, fishponds, water reservoirs etc. The area of fishponds has not been much enlarged within the last years, during which the resident stork population showed the above mentioned spectacular increase, but many new water reservoirs have been established.

SCHÜZ (1960), mentions that the storks wintering in South Africa are largely distributed singly or in small groups. It is remarkable, that the storks resident in Israel occur generally in groups of a few to several dozens, when feeding as well as when resting.

Considering the huge numbers of storks migrating through Israel and the large numbers of resident storks-casualties are rare. Few dead storks are found. Of course not all dead storks are reported, but probably the total number is not more than, at the most, a few dozen per year. The causes of death are the following:

- 1) **Drowning:** Occasionally storks are found that drowned in wells in desert areas. These wells generally have a diameter of 1½ to 2 m and are either carved into soft limestone or are dug vertically and their walls are built with stones. They may be quite deep, and the distance from the upper brink to the water surface may be from about 2 m to about 10 m. Drowned storks have been found only in wells in which the water level was close to the brink and clearly visible from above.
- 2) **Exhaustion:** Some of the storks found dead, mainly in the desert areas, are extremely thin and probably died from lack of food and water. These storks were probably detained during their migration through the African and Sinai desert areas and were not able to continue migration, when they eventually reached southern Israel. Occasionally such storks were found still alive. Notwithstanding that they are extremely thin, weighing about 2 kg only or even less, and are sometimes too weak to stand or to feed, they recover quickly when force-fed and watered for a few days, they regain normal weight in about three weeks and can be released.
- 3) **Injuries:** Among the few casualties, many are storks found with broken wings. SCHÜZ & SZIJJ (1960) state that one of the causes of the decrease of the stork in west-central Europe are „Drahtverluste“ Storks apparently break their wings easily, as witnessed by the author when he went through a field in which a swarm of storks was feeding. When approached to a distance of 30 to 40 m, the storks which were in the way of the observer flew up, flew low over the ground and alighted after about 100 m. One of the low-flying storks hit a cattle-fence, became entangled among the wires, disentangled itself and stood there with a drooping wing. Examination showed that the humerus was broken. The stork, which was in excellent physical condition, had flown straight into the fence without trying to avoid the collision.
- 4) **Pesticides** Pesticides are thought to be one of the causes for the decrease of White Storks in certain areas. This does not seem to be the case in Israel. Notwithstanding that Israel has one of the highest pesticide consumptions, per capita

of human population as well as per area unit, no mortality of White Storks could so far be attributed to pesticides. The resident population of non-breeding storks lives in agricultural areas in which large quantities of pesticides are applied, but they do not seem to be affected. The pair, that nested successfully in 1973 and 1974, does not show any negative influence of the high pesticide level in the surroundings on its fertility. Some other bird species, that also live in agricultural surroundings and also feed on invertebrates and vertebrates, as the Whitebreasted Kingfisher (*Halcyon smyrnensis*) and the Cattle Egret (*Bubulcus ibis*), also do not seem to suffer from pesticides, as their fertility is good and populations are increasing with increasing areas of irrigated agriculture (MENDELSSOHN 1972). Still, they may carry in their tissues certain amounts of chlorinated hydrocarbons. This has been found in cattle egrets, that have been found dead under their roost in winter, after prolonged periods of low temperatures, heavy rain and high winds. These dead cattle egrets had no fat reserves, but up to 40 p. p. m. of chlorinated hydrocarbons have been found in their brains. In these birds the pesticides, stored in the fat, entered the bloodstream when the fat reserves were used up, and accumulated in the brain. No such mortality has been recorded for White Storks, probably because they, owing to their size, suffer less from exposure than the small cattle egrets. The recent trend in Israel, to restrict the use of persistent pesticides, will further reduce the risks to bird life.

### Breeding in Israel

Contrary to the increasing numbers of resident non-breeding storks, nesting attempts have so far been but sporadic. For the present century the distribution and status of breeding populations of White Storks in Mediterranean countries is quite well known. They seem to increase in North Africa (BOUET 1959) and seem to increase in Spain (BERNIS 1954) as well\*). A decrease was noted for the Greek populations (MARTENS 1966) and for some areas in Turkey (KUMERLOEVE 1966). They decreased in Syria, for they formerly nested in Damascus and perhaps also in other parts of southern Syria, but discontinued to do so (SCHÜZ & GEHLHOFF 1967). In recent years, storks nest only in north-eastern Syria (KUMERLOEVE 1967, SCHÜZ and GEHLHOFF 1967). In connection with the recent nesting in Israel, it is remarkable that storks do not nest in the Mediterranean coastal plain of south-eastern Turkey (KUMERLOEVE 1966).

According to the Bible, storks have nested in Israel (SCHÜZ and GEHLHOFF 1967). TRISTRAM (1885) states that a few pairs breed on ruins of deserted cities.

More recent information is available for the present century. In 1903, J. AHARONI found White Storks nesting near Jerash in Transjordan (personal communication), but no more detailed information could be obtained. Before the first world war, a pair was nesting on the minaret of a mosque in Gaza. The minaret and the nest were destroyed in 1917 by war activities (Colonel MEINERTZHAGEN, personal communication). The arid, sandy surroundings of Gaza do not seem to be good stork country, and no information was available on the breeding success of this pair.

Another, better documented nesting attempt took place in April 1951. A pair built a nest on a ruined building, a former glass factory at Tantura (Dor, 32.34 N 34.54 E), about 20 km south of Haifa. The factory had been built in 1898, worked for only a few years and was then deserted. The building was about 8 m high. The surroundings are good stork country, heavy agricultural soil with irrigated fields and fishponds nearby. The pair laid five eggs, but abandoned the nest in mid-May. At

\*] This statement does not hold true for the recent time. F. BERNIS tells in letters (1974, 1975) to E. SCHÜZ from a heavy loss in Spain since 1957 — Editors.

that time there was a heavy heat-spell (Chamsin) with air temperatures of 35° C – 36° C, which is exceptionally high for the coastal plain. Possibly the storks abandoned the nest because of heat stress, but the possibility of human disturbance by well-meaning „nature-lovers“ cannot be excluded. The eggs in the deserted nest were all fertile and the embryos were due to hatch within a day or so, one egg actually having been chipped.

A successful, but not detected nesting occurred perhaps in 1962. On August 12<sup>th</sup> of that year, an emaciated stork was found with a broken wing, near Mishmar HaNegev (31.21 N 34.43 E), about 70 km south of Tel Aviv. This stork was very young and probably had only recently left the nest. The bill was still very short (only 127 mm long), more black than red and the bird still had nestling down on head, neck and wings. This stork was probably reared in a nest not far from the place where it had been found, for it is highly improbable that such a young bird had already begun migration.

Another nesting attempt, as well documented as the Tantura case, took place in 1970 in the northern Hula Valley (33.34 S 34.39 E). On April 15, a pair of storks was seen building on a dead Eucalyptus tree, about 10 m high. Incubation began on April 30<sup>th</sup>. On May 6<sup>th</sup>, the incubating bird was attacked by migrating black kites (*Milvus migrans*). It defended itself and during the fight that developed, the eggs were kicked out of the nest. In any case, one egg and remains of a second were found beneath the tree (J. LEV-ARI and E. HURWITZ, personal communication). In this case too, the possibility cannot be ruled out, that human disturbance was the cause of the failure. It seems highly improbable that kites would attack an adult stork, but perhaps the kites were attracted to the nest and eggs, when the incubating stork was forced by a human intruder to leave the nest. The kites would have continued their attempts to prey on the contents of the nest when the stork returned and tried to defend it. The area in which this nesting attempt was made is flat, heavy soil, with irrigated fields and rich in water, ditches, fish ponds etc.

The last known nesting attempt was made in 1973 near Beer Toviyya (Beer Tuviah, 31.44 S 34.44 E) a village about 30 km south of Tel Aviv. Again, the area is heavy agricultural soil, with many irrigated fields and a water reservoir not far away. This case was detected by Mr. Z. CHORESH, a ranger of the Nature Reserves Authority, who protected the nest, observed the birds and persuaded the farmers not to approach the nest in order not to disturb the storks. Because of high diurnal temperatures and strong sun insolation, even a short absence of the parents from the nest would be lethal for eggs and small nestlings. Mr. CHORESH saw the pair building in mid-April, on the broken top of a cypress tree that stood in a row of similar trees in the midst of arable fields. This nest was only five meters above the ground. The number of eggs is unknown, as the nest was not climbed and it was impossible to look into it from the surroundings. Incubation began at the end of April and two nestlings were seen at the beginning of June, but one of them soon disappeared. The remaining one was estimated to be three weeks old when it was photographed on June 12<sup>th</sup>. It was fully grown, but still had a black bill on July 12<sup>th</sup>. At the end of July it left the nest and returned to it until mid-August, when it and the parents disappeared. While the storks were breeding, several pairs of cattle egrets (*Bubulcus ibis*) from a nearby colony built nests near and beneath the nest of the storks (Fig. 2).

On February 10<sup>th</sup>, 1974 Mr. CHORESH saw a stork on the same nest, which on March 4<sup>th</sup> was joined by a second one. Incubation began earlier this year, at the beginning of April, and on June 4<sup>th</sup> three fully feathered nestlings were seen on the nest, occasionally flapping their wings, about one week prior to fledging. All three fledged successfully. The importance of water at a not too great distance from the

nest, in a hot climate, was emphasized with this pair which was seen watering its young often, so that it was not difficult to photograph this activity. During the hot hours of the day, adults and nestlings spent much time regulating their body temperature by open-bill panting. Only larger food items fed by the parents to the nestlings could be seen by the observer, as for instance snakes and mice. This pair fed, apparently, also on garbage dumps, for it was seen to feed the nestlings with chicken intestines, probably obtained from such places.

1975 the nest in Beer Tuvia was again occupied and during the first week of May at least 2 nestlings were seen, about two weeks old.

In the same year (1975) an additional nest was found, near Tirat Zevi (32.25 N 35.30 E), in the Jordan valley, about 65 km SE of Haifa. This area is again flat agricultural area on heavy soil, with large areas of irrigated fields and fish ponds. The nest is also on an Eucalyptus tree, about 12 m high, and during the first week of May eggs are still incubated.

In Raman-Gan, a suburb of Tel-Aviv, is a small Safari park ( $1\frac{1}{2}$  km<sup>2</sup>) with two ponds, in which pelecans, flamingoes and some water fowl are kept; wild ducks, gulls etc. live here too, especially in winter. A heronry with *Bubulcus ibis*, *N. nycticorax* and *Egretta garzetta* established itself in a pine grove near these ponds. Since 1974 a flock of about 30 storks roost here on some isolated trees, the branches of which are pruned, so that the trees are flat-topped. The storks do most of their feeding on a large garbage dump at a distance of about 2 km. This spring (1975) seven pairs began to build nests on these trees. Only one nest was completed and no eggs were laid, but the fact of this attempt to establish a colony seems worthwhile mentioning.

### Discussion

The human population explosion causes far reaching ecological changes in vast areas and influences by way of these changes the ornithology, as well as by direct influence (overhunting, pesticides etc.). Some species profit by these changes, their populations increase and may become pests, other, less adaptable ones, may decrease or disappear altogether.

The White Stork is a species that seems to be well adapted to the agricultural landscape, as far as it is tolerated by the human population. Such a large and conspicuous bird is easily exterminated, as stated by MARTENS (1966) for a certain period in Greece. Persecution may be the reason that the stork disappeared from France and Italy. The recent decrease in west-central and northern Europe is, considering the general area of distribution, a local phenomenon, caused apparently by climatic as well as by technological factors (SCHÜZ 1967, SCHÜZ & SZIJJ 1960). Changes, detrimental to other birds, may be advantageous for the stork, as described by STEINBACHER (1963) for the drained lake Fetzara area in Algier.

The area of Israel was formerly not good stork country. From April onwards the country was dry and the few rivers and swamps were largely inaccessible to storks, the rivers because of the mostly very steep banks, and the swamps and partly the rivers because of the high and dense vegetation (*Phragmites*, *Typha*, *Cyperus* sp. sp. etc.), that surrounded them. There were almost no areas of irrigated agriculture. Now there are many fishponds and water reservoirs with sloping banks available, which provide easy access to water and an ample food supply as well. Large areas of irrigated pasture, alfalfa and vegetable fields provide additional feeding areas. This improvement of the situation, from the viewpoint of the stork, is reflected in the above mentioned increase in the numbers of resident storks, as well as in the recent breeding success.

It is of course not known, if the nesting storks were migrating ones, that, attracted by favourable conditions, settled and nested or if they originated from the



resident immature ones. The breeding season in Israel is not different from that in other areas where the White Stork nests, contrary to the situation of the stork nesting in South Africa (Broekhuysen 1971). These storks, which probably originated from the wintering migratory population, as storks do not stay in South Africa over the summer, had to adapt their reproductive cycle to the changed photoperiodism. If the storks that recently reared successfully their young in Israel originated from the resident immature ones, it might be expected that more pairs might do so in the future, consequently to the recent increase of the resident non-breeding population.

### Summary

The recent situation of the White Stork in Israel is described. Some data on migration are given. A resident population of non-breeding, probably immature, storks increased considerably in recent years. The reasons for this increase are discussed. Breeding attempts are described. Losses of White Storks in Israel are relatively small. Occurrence of the Asian subspecies *Ciconia c. asiatica* is mentioned.

### Zusammenfassung: Der Weißstorch in Israel

Der Weißstorch ist in Israel ein häufiger Durchzügler. Er fällt im Frühjahr mehr auf als im Herbst, und die Wegzügler halten sich mehr östlich (Jordan-Tal und Transjordanien) als die Heimzügler. Bemerkenswert ist der Nachweis eines besonders großen Stückes, das als *C. c. asiatica* anzusprechen ist (Abb. 1). Störche weilen das ganze Jahr über in Israel, und die regelmäßigen Januar-Zählungen zeigen eine erstaunliche Vermehrung dieser Gast-Störche (Tabelle). Der planmäßige Schutz und die Zunahme bewässerter landwirtschaftlicher Flächen (besonders beliebt sind Luzernefelder mit Noctuiden-Gradationen) und der offenen Fisch- und Stau-Teiche bedeuten einen Gewinn auch für den Storch. Verlust-Ursachen können sein: Brunnen, in denen bisweilen Störche ertrinken, vor allem aber Erschöpfung wahrscheinlich nach Zug über die Wüste (doch können sich solche Vögel bei Wasser und Nahrung wieder gut erholen) und Unglücksfälle wie das Fliegen gegen Drähte (Beispiel: in einem Viehzaun). Die in Israel in Menge angewandten Pestizide scheinen den Störchen nicht zu schaden (siehe hier 27, 1973: 147). Neuerdings, nach langer Pause, ist die Art auch wieder Brutvogel im Gebiet, so 1951 bei Haifa (Gelege verlassen). 1962 fand man 70 km S von Tel Aviv einen Jungstorch, der nicht weit davon erbrütet sein muß. 1970 kam es im nördlichen Hula-Tal zu einem Gelege, das verloren ging. 1973, 1974 und 1975 fand eine erfolgreiche Brut 30 km S von Tel Aviv statt. Zusätzliche Brutversuche werden für 1975 erwähnt. Angesichts der ökologischen Veränderungen ist die Aussicht auf eine Mehrung des Bestandes nicht ungünstig.

### References

- Bernis, F. (1954): Über Demographie und Ökologie des Weißen Storches in Spanien. Vogelwarte 17: 158–161. • Bouet, G. (1959): Une mission ornithologique en Algérie en 1955. Nouvelles recherches sur les Cigognes. Oiseau 26: 227–240. • Broekhuysen, G. (1971): White Storks breeding in the Bredasdorp District, most southern Part of the Wintering Quarters. Vogelwarte 26: 164–169. • Johansen, H. (1954): Über den turkestanischen Weißstorch (*Ciconia ciconia asiatica*). Vogelwarte 17: 162. • Kumerloewe, H. (1966): Zu Brutverbreitung und Durchzug des Weißstorchs in Kleinasien. Vogelwarte 23: 221–224. • Id. (1967): Recherches sur l'avifaune de la republique arabe syrienne. Alauda, 35: 243–266. • Libbert, W. (1954): Wo verbleiben die Weißstörche aller Altersstufen in den Brutmonaten: Vogelwarte 17: 100–113. • Martens, J. (1966): Brutvorkommen und Zugverhalten des Weißstorchs in Griechenland. Vogelwarte 23: 191–208. • Meinertzhagen, R.: Nicoll's Bird of Egypt. Hugh Rees, London, 1930. • Mendelssohn, H. (1972): The Impact of Pesticides on Bird Life in Israel. International Council for Bird Preservation. XI. Bulletin: 75–104. • Sauter, U., & E. Schüz (1954): Bestandsveränderungen beim Weißstorch: Dritte Übersicht, 1939–1953. Vogelwarte 17: 81–100. • Schüz, E. (1954): Schädigt der Ausfall des Chamsins den Heimzug des Weißstorchs? Vogelwarte 17: 166–168. • Id. (1955): Vom Zug des Weißstorchs im Raum Syrien bis Ägypten. Vogelwarte 18: 5–13. • Id. (1960): Die Verteilung des Weißstorchs im südafrikanischen Ruheziel. Vogelwarte 20: 205–222. • Id. (1963): Über die Zugscheiden des Weißstorchs in Afrika, Ukraine und Asien. Vogelwarte 22: 65–70. • Id. (1967): Verbreitungsgrenzen der Westrasse des Weißstorchs (*C. c. ciconia*). Vogelwarte 24: 116–122. • Schüz, E., & W. Gehlhoff (1967): Die Brutverbreitung des Weißstorchs im Vorderen und Mittleren Orient. Vogelwarte 24: 48–63. • Schüz, E., & J. Szijj (1960a): Vorläufiger Bericht über die Internationale Bestandsaufnahme des Weißstorchs 1958. Vogel-



warte 20: 253–257. • Id. (1960b): Bestandsveränderungen beim Weißstorch: Vierte Übersicht, 1954–1958. Vogelwarte 20: 258–273. • Steinbacher, J. (1963): Der Fetzara-See in Nordost-Algerien früher und heute. Vogelwarte 22: 70–74. • Suarez, Sh. (1974): Report on waterfowl counts. Nature Reserves Authority. (in Hebrew). • Tristram, H. B.: The Fauna and Flora of Palestine. Palestine Exploration Fund, London, 1885.

Anschrift des Verfassers:

Prof. Dr. H. Mendelssohn, Zool. Institut d. Univers. Tel-Aviv, Herzl-Str. 155, Tel-Aviv, Israel.

Die Vogelwarte 28, 1975: 131–134

## Zum Wegzug des Weißstorchs (*Ciconia ciconia*) im israelischen Küstengebiet

Von Dietrich Hummel

### I. Einleitung

Der Schmalfrontzug des Weißstorches von den europäischen Brutgebieten nach Afrika und zurück ist durch unzählige Beobachtungen und durch viele Ringfunde sehr gut bekannt. Der neueste Stand des Wissens ist bei BAUER & GLUTZ v. BLOTZHEIM (1966) und bei SCHÜZ (1971) niedergelegt. Für den Verlauf des Zuges der „Oststörche“ im Bereich von Palästina ergibt sich daraus folgendes Bild:

**Wegzug** Nach der Südwendung am Golf von Iskenderun am NE-Ende des Mittelmeeres (vgl. HECKENROTH 1968) folgen die Störche einem System von hintereinanderliegenden und nach S weisenden Tälern der Flüsse Oronte, Litani und Jordan zum Toten Meer und fliegen von dort durch das Aravatal zum Golf von Akaba. Die Sinaihalbinsel wird vorwiegend im Süden durchquert, und nach dem Überfliegen des Golfs von Suez in der Gegend von El Tor erreichen die Störche bei etwa 28° N Afrika. Beim Wegzug ist die Schmalfront im Bereich von Palästina sehr ausgeprägt und hauptsächlich auf die nähere Umgebung der im Landesinnern verlaufenden Leitlinie beschränkt. Nach SCHÜZ (1955, 1971) fehlen beim Wegzug Störche im Küstenraum Libanon – Israel ganz.

**Heimzug:** Die Hauptmasse der heimziehenden Störche folgt der Wegzugroute in umgekehrter Richtung. Es ist aber unverkennbar, daß sich die Schmalfront im Bereich des Golfs von Suez verbreitert. Ein nicht unbeträchtlicher Teil der Heimkehrer überquert den Golf von Suez nördlich von El Tor und gelangt in den Norden der Sinaihalbinsel. Dadurch breitet sich der Zugstrom beim Heimzug bis an die Mittelmeerküste aus. Nach SCHÜZ (1955, 1971) wird im Küstenraum Israel – Libanon in jedem Frühjahr lebhafter Zug von Störchen beobachtet.

### II. Beobachtungen

Im Spätsommer 1974 hielt ich mich vom 16. 8. bis zum 4. 9. 1974 in Israel auf. Etwa eine Woche verbrachte ich in Haifa. In der übrigen Zeit bereiste ich das Land und unternahm mehrtägige Fahrten ans Tote Meer und an den Golf von Akaba sowie durch die Wüsten Negev und Sinai.

Mein Aufenthalt in Israel fiel in die Zeit des beginnenden Wegzugs der Weißstörche. Obwohl ich mich insgesamt längere Zeit im Bereich der Schmalfront bei Jericho, am Toten Meer, im Aravatal, in der Wüste Sinai und am Golf von Suez bei El Tor aufhielt, konnte ich dort Störche nicht beobachten. Dagegen gelangen mir einige Feststellungen von Weißstörchen im Küstenbereich Israels und in der Negev-Wüste:

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Vogelwarte - Zeitschrift für Vogelkunde](#)

Jahr/Year: 1975

Band/Volume: [28 1975](#)

Autor(en)/Author(s): Mendelssohn Heinrich

Artikel/Article: [The White Stork \(\*Ciconia ciconia\*\) in Israel 123-131](#)