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Circulation: Yael Sofios
Publisher: Eretz Inc.
Typesetting: Zohar Ltd.
Typesetting Consultant: Shlomo Perets
Plates: Printone
Printing: Havatzelet

Eretz is published every three months by Eretz Ha-Tzvi Inc., 5 Avida Street, 94268 Jerusalem, Israel.

Subscription Services: P.O.B. 11286, Gilo Post Office, Jerusalem, Israel.

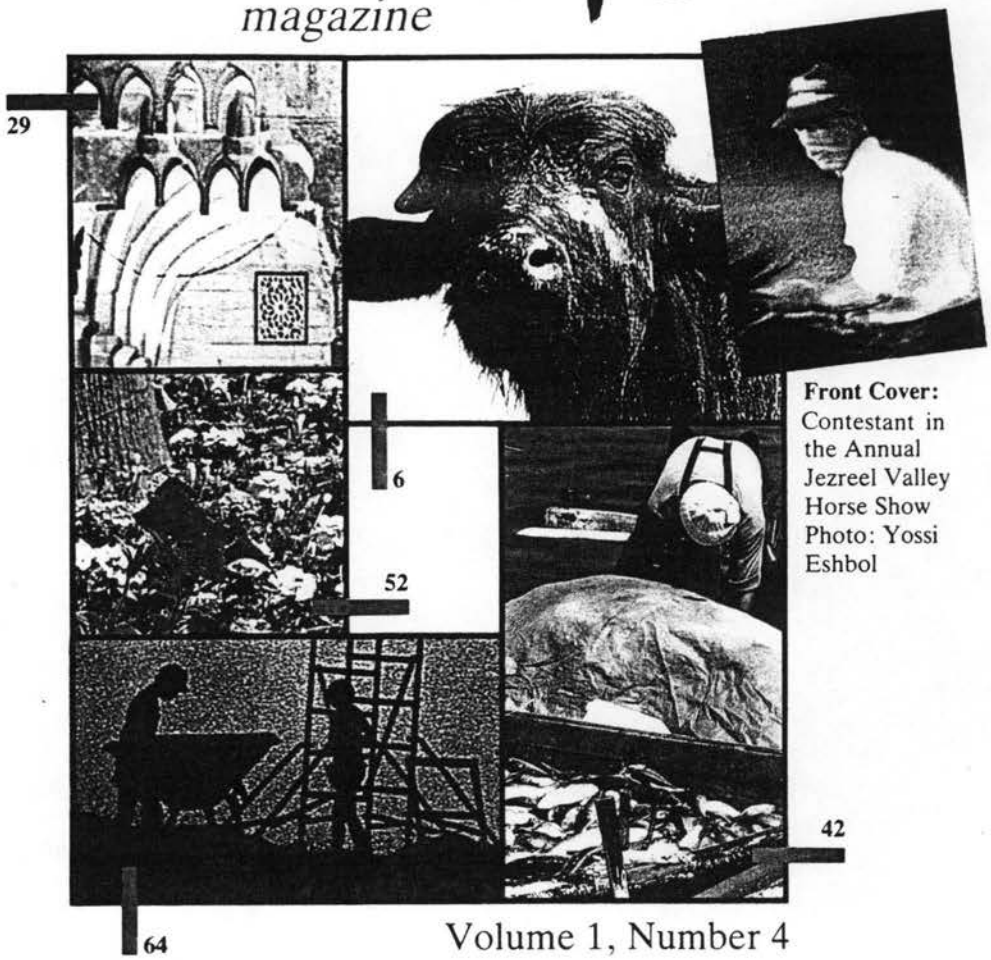
Business Office: 5 Avida Street, 94268 Jerusalem, Israel (02) 248090, (02) 248443

Please address manuscripts, comments, photographs, and letters to: **ERETZ Magazine, P.O.B. 11286, Gilo Post Office, Jerusalem, Israel.**

Annual subscriptions to ERETZ Magazine :

Israel: NIS 20* **U.S.A.: $18**
U.K.: 12 **Canada: $25**
Australia: $26
***Subscriptions purchased in Israel for overseas : NIS 31 (VAT included)**

ERETZ magazine



Front Cover: Contestant in the Annual Jezreel Valley Horse Show Photo: Yossi Eshbol

Volume 1, Number 4

by Uzi Paz
Photography: Yossi Eshbol

Vest-Pocket Swamp

Life among the Bulrushes in the Hula Nature Reserve

Adapted from the entry "Hula Reserve" in *Eretz Hazvi Vehayael* ("Land of the Gazelle and the Ibex"), by Uzi Paz, published by Massada Ltd. and the Nature Reserves Authority.

ERETZ - AUTUMN 1986

One day in late October 1957, giant dredges drew out the steel bars that had been inserted along the southern edge of the Hula swamp about five years earlier. A torrent of brown, muddy water burst into canals leading to the Jordan River and rushed down to the Sea of Galilee.

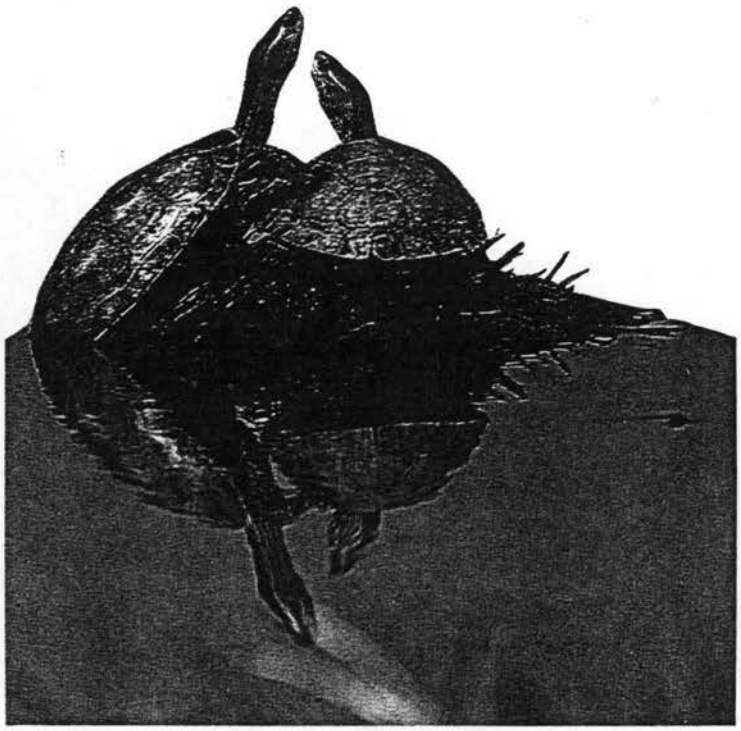
Soon not a trace remained of the Hula Lake, which had covered about five square miles and the swamp surrounding it, huge by Israeli standards at about nineteen square miles in winter.

The dream of draining the Hula swamp had become a reality. Cotton and alfalfa fields, vegetable gardens, and plantations replaced the reeds and papyrus plants, and the pier which had been used by the lake's fishermen was marooned in a sea of agricultural crops.

The Jewish National Fund (JNF), the organization responsible for the victory over the swamp, could take the credit for a tremendous achievement in the new state's efforts toward making the wilderness flourish.

But the land of Israel and, in fact, the world, lost a rare scenic gem. For a swamp is not only a wasted piece of land and breeding grounds for malaria-spreading mosquitoes: it is also a priceless natural treasure. This is particularly true of a hot, dry country like Israel, whose few other swamps were drained in the 1920s and '30s. In fact, the Hula swamp was the only one in Israel that was totally deserving of its name.

The Hula Valley is part of the Syrian-African Rift, the fissure in the earth's crust that runs from Turkey to Tanzania, passing through the entire length of Israel. The lake was formed later, by volcanic eruptions on the Golan Heights during the Pleistocene Age, about four million years ago.



Many Caspian terrapins can be seen in the reserve in the warm hours of the day.

The lava that filled part of the valley formed a high ridge, or sill, south of the modern town of Rosh Pina, preventing the Jordan River and its tributaries from flowing southward to the Sea of Galilee.

The waters of the Jordan accumulated behind the sill, and the Hula Lake was created. To this day the lines of its ancient shores can be seen in the northern part of the Hula Valley.

Then the water began to spill over the basalt barrier; it eroded the rock, creating a deep, narrow cleft through which the lake slowly drained southward. For thousands of years the lake and the swamps around it underwent this prolonged natural drying process; the modern drainage operation simply accelerated it.

At the beginning of the twentieth century, the Hula Lake and swamps were considered the private property of the Ottoman sultan. After the sultan was overthrown in 1908, the property changed hands several times, until it was acquired in 1933 by Yehoshua Hankin, the Zionist movement's chief land purchaser, for 192,000 pounds sterling.

Though a plan for the drying out of the swamps was formulated by the JNF several years later, implementation was delayed by the outbreak of World War II, the Jewish nationalists' struggle against the British mandatory authorities, and the War of Independence. The actual work did not begin until 1951.

Today the wisdom of draining the Hula swamp is questioned, but initially it was regarded as a highly prestigious project for the young State and a fitting way to mark the JNF's fiftieth anniversary.

The nation had great hopes for the undertaking. It would eliminate the threat of malaria (which had, in fact, been brought under control several years earlier), provide additional agricultural land, and increase Israel's water reserves by preventing evaporation.

Much of the enthusiasm centered around peat – swamp soil, used as a raw material for heating purposes, for the manufacture of such products as insulation materials, and for the improvement of various types of soil.

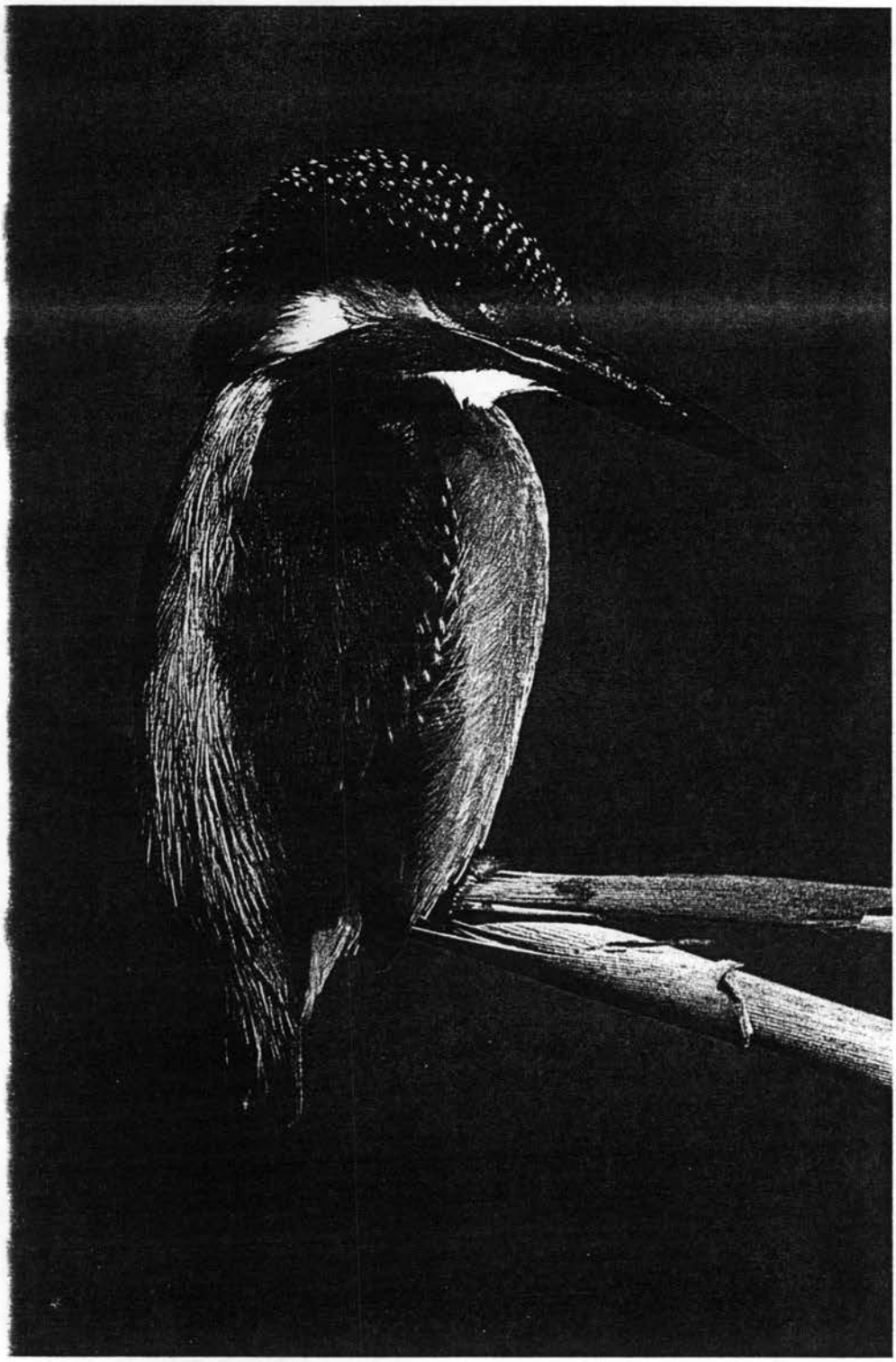
(These hopes were ultimately disappointed: the land proved less desirable than had been expected, the project had virtually no impact on Israel's water supply, and the peat was inferior.)

Work got under way in March 1951. The first step was to deepen and adjust the Jordan River bed south of the Hula Lake, so that the river could flow uninterruptedly to the Sea of Galilee.

The area in which the work was to be done had been declared a demilitarized zone in the truce agreements between Israel and Syria at the end of the War of Independence. Nevertheless, the Syrians constantly attempted to sabotage the operation, and several workers were killed in the process.

After the matter was debated in the United Nations Security Council, Israel was allowed to continue with the project, but it was subject to harsh restrictions and many technical difficulties. The riverbed work ceased two years later, and was completed only in 1971, after the Syrian threat

In its first days of life the night heron chick looks like a visitor from outer space.



The bold colors of the kingfisher adorn the reserve in autumn and winter. Usually the bird can be seen on a branch "observation post" in the water, keeping an eye out for small fish.

had been removed as a result of the Six Day War.

The plan for the drainage of the swamp itself called for the digging of two main canals that would convey the water through the swamp to the Jordan River. The difficult job of excavating in muddy terrain was done with the aid of special dredges which drew up the mud by means of suction.

In order to keep the dredges afloat, the water level had to be maintained throughout the work. For this purpose, a dam was constructed on the southern edge of the lake. The dredges slowly advanced to the heart of the swamp and the canals began to be marked out on the landscape.

The imminent destruction of the swamp alarmed nature lovers and many scientists in Israel, and they joined forces in an attempt to persuade the authorities to save at least a small part of it.

The notion of leaving a section of a swamp in its natural form was revolutionary in Israel at the time. Some even viewed the proposal to "perpetuate the wilderness" as a danger to the Zionist enterprise – a plot to push the Jews into the sea, in order to leave the land of Israel to the flora and fauna.

So alien was the idea, in fact, that when the naturalists wrote letters promoting their cause, they had to invent a Hebrew word for "nature reserve."

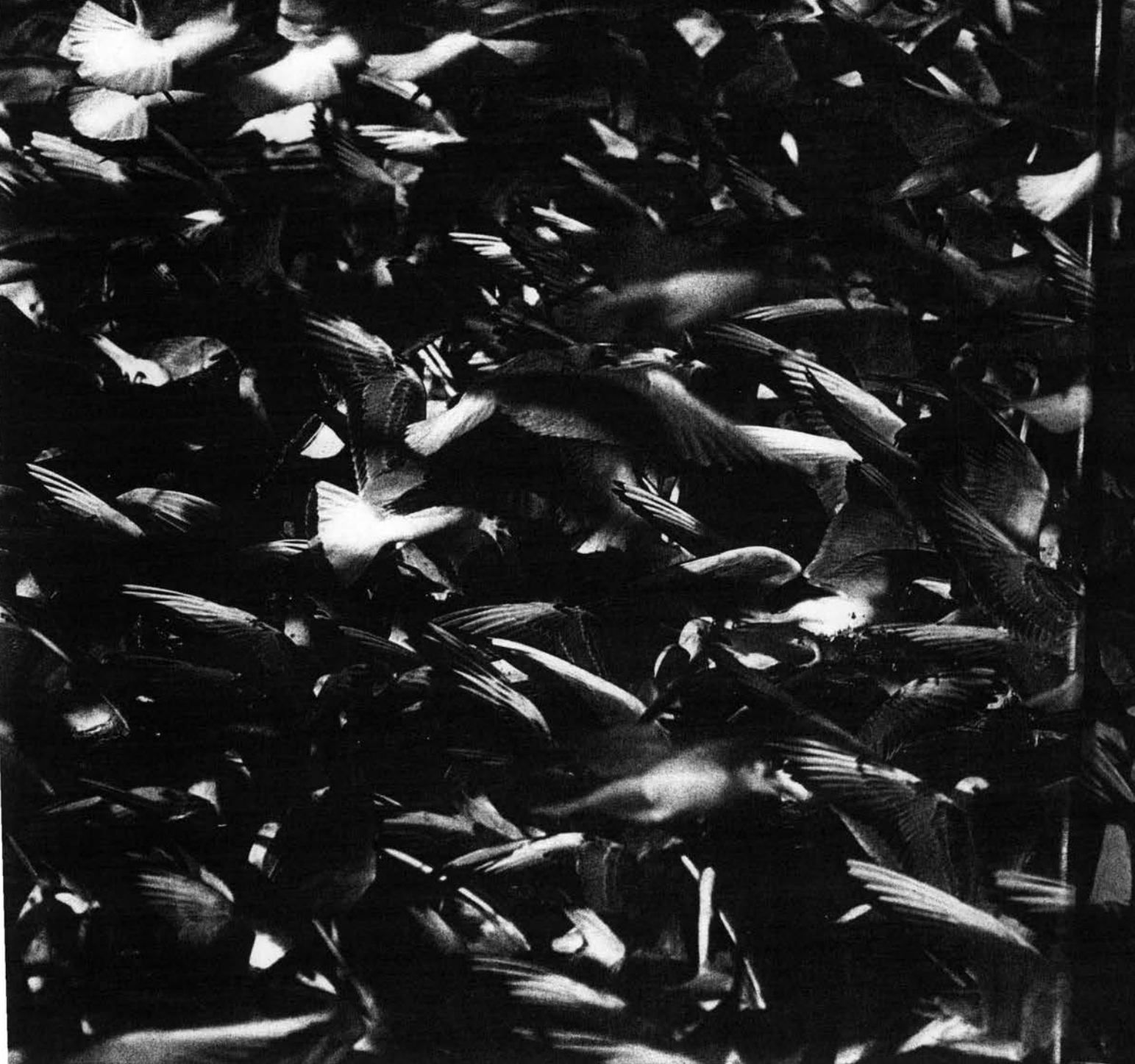
The group soon decided to establish an organization that would actively fight for conservation, and in 1953 the Society for the Protection of Nature in Israel (SPNI) was founded.

The SPNI organized demonstrations and rallied public support for the conservation of Israel's natural heritage and eventually their efforts bore fruit: about 1,100 acres of the Hula swamps were set aside for a nature reserve. (Due to a water shortage, this figure was reduced to about 800 acres several years later.)

Once the proposal was finally approved, the JNF erected soil embankments around the designated site in order to maintain the water level, and dug a feeder canal.

In 1964 the Hula was legally declared Israel's first nature reserve, under the new Law of National Parks and Nature Reserves. About three years later, the reserve was included together with twelve other Israeli nature reserves, in the United Nations list of the most important and well-known nature reserves and national parks throughout the world.

The swamp that Israel's naturalists fought to protect was the habitat of multitudes of species of flora and fauna, many of which – in the absence of other swamps – could be found nowhere else in Israel. One creature apparently existed nowhere else in the world: the *Discoglossus nigriventer*, an amphibian similar to the toad. Only five specimens were found, and since



1955, no further traces of it have been discovered.

Here African flora and fauna at the northernmost edge of their area of habitation could be found alongside European flora and fauna at the southernmost edge of theirs – a rare combination and a unique opportunity to see such a vast variety of animals and plants in one place.

White water lilies, which grow in reservoirs throughout Europe, bloomed in the shade of the papyrus plant, which migrated to Israel from East African river banks.

A great reed warbler, the largest of the warblers, nested in the swamp, far south of its other nesting places, alongside the clamorous reed warbler, which came only as far north as this point. It was the only incident in the world of the two nesting alongside each other.

The lake, the swamp, and the nearby wells accommodated over one hundred species of fish.

For waterfowl, the Hula Lake region was a vital way-station on the migration route from Europe to Africa and back. For tens of thousands of birds of over one hundred species, it served as a winter dwelling. Birds of about thirty species nested there several of them, including the grea crested grebe, the grey heron, th marsh harrier, the ferruginous duck and the black tern, nested nowher else in Israel, and were far south all their other known nesting places

Among the mammals were jung cats and otters. The otters were common that local (human) residen would trap about one hundred them each winter. But zoologists we especially interested in the wat vole. Despite all their efforts, th did not find a single specimen a where in the swamp, though they h

Masses of blackheaded gulls arrive from Europe in the autumn and are drawn to all of the bodies of water in the country.

Water began to seep through the embankments into the drainage canals. On summer days, only about a third of the area of the reserve functioned as a swamp; the rest dried and cracked and was covered with weeds, thistles, and briars. Moreover, the water that came into the reserve after flowing through the agricultural lands and fish ponds was not as clean as the original swamp water.

As a result, many habitats disappeared from the reserve. Numerous plants were destroyed – among them, all of those whose only habitat in Israel was the Hula swamp. Nor did many species of fish remain. Only the catfish, which originated in the rivers and lakes of East Africa, adjusted without difficulty to the new conditions in the reserve – and have even flourished there.

The catfish have become a nuisance, in fact: because they eat everything, they are very active predators, and many a young duck, tern, and heron has ended its life in a catfish's mouth.

The carps, brought to Israel in the 1930s to be bred in the fish ponds and later added to the Hula Lake, also adapted well to the reserve.

Several birds, including the great-crested grebe, grey heron, pygmy cormorant, and black tern, did not withstand the changes and no longer nest in Israel. Others, such as the mallard, ferruginous duck, and marbled teal, moved from the swamp to fish ponds and sewage throughout the country.

A thorough rehabilitation job was obviously needed, if the reserve was to suit its purpose. Three years of planning followed, and in 1971 the hydrological renewal began. It was halted in the summer of 1975, and still has not been completed. In the course of the work, ponds were dug and huge quantities of soil were moved.

Most of the soil embankments have been rebuilt and their slopes fortified with stone to protect them against battering by the waves. Dams have been erected, enabling complete control over the water levels throughout the reserve, and islands for nesting have been installed. A network of floating paths and hidden observation towers has been created and a visitors' center is currently nearing completion.

Today, the visitor to the reserve is drawn into the atmosphere of a true

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come across about fifty skulls of water voles in owls' nests in the Hula area.

The initiators thought that the very designation of the reserve would be enough to preserve the lush world of the Hula swamp, and that they would succeed in gathering within its confines all of the plants and animals that had once lived there. But they soon realized that they were mistaken.

swamp: the rustling of the water as birds and fish flit around the papyrus plants, yellow water lilies, and willow trees, and the constant humming and chirping of a variety of insects and birds, piercing the heavy air yet adding to the feeling of remoteness and tranquility.

The Hula reserve contains the largest and northernmost natural concentration of papyrus in the world outside of Africa. Papyrus, "gift of the Nile" in ancient Greek, was used by the ancient Egyptians for numerous purposes. They ate its soft rootstocks, and built boats, baskets, ropes, and cradles from its stems. Thatched roofs, smaller baskets, and sandals were made from the stems' green peel, and from the white, soft, absorbent core of the papyrus, the Egyptians produced the first paper.

Papyrus, a tropical plant, is sensitive to cold. In the wintertime its stalks freeze and their refreshing green color turns to shades of brown and yellow. When spring comes, the papyrus flourishes again.

A belt of reeds surrounds the papyrus area from the west, south, and north. They are particularly striking at the end of autumn, when their white, airy blossoms sway in the wind.

Another element which adds to the atmosphere of the reserve is its herd of water buffalo. These animals were once a standard sight at every swamp in Israel and in the Yarkon River as well. They served the local farmers as beasts of burden, but by the late 1940s, with the modernization of agriculture, they had disappeared from the country.

The water buffalo belongs to one of the species of wild ox found in southeast Asia. Since it has thin hair and very few sweat glands, its body cannot adapt to extreme cold and excessive heat; it copes with the heat by wallowing in water and mud several hours a day.

Before its arrival at the reserve the water buffalo was sorely missed, and not only because of its importance in the landscape. It is a voracious eater of reeds; in its absence, these aggressive plants dominated the reserve, to the exclusion of many other types of vegetation.

All attempts to obtain water buffalo ended in failure until the conclusion of the Six Day War, when about two hundred were found in an area which was previously Syrian-held territory, the Bethsaida Valley, near the northeastern shore of the Sea of Galilee. About sixty were brought to the reserve, and after a brief period of adjustment they began to wallow in its waters and graze in its grasslands, as if it had always been their home. They ate the reeds with gusto and soon an assortment of plants was able to grow.

The large rodent known as the coypu is also very much in evidence in the reserve, and can sometimes be seen swimming across the canals. Several have become so accustomed to humans that they go on gnawing at the vegetation on the embankments even when the visitor is standing close enough to see their large, rust-red incisors.

"The catfish have become a nuisance."

The coypu, South American in origin, was brought to Israel for its fur, but because of the hot climate, the quality of the fur deteriorated. The animals escaped from captivity, thrived, and spread to many areas throughout Israel.

Other mammals – the wild boar, wildcat, and otter, for example – are more elusive. They are active mainly at night and are extremely wary during the day. Only the martens are an exception to some extent, and can be seen in the daytime as well.

As if to make up for the mammals' low profile, the water tortoises are highly visible, especially in the spring and summer, when they bask on the embankments, on the roots of the papyrus, and on other "rafts." The moment a human approaches, however, they dive into the water and vanish.

Today, as in the days when the swamp was in its full glory, the birds are the main attraction. Each season, a different array of birds can be observed.

Summer days are quiet and calm. About twenty species of bird nest throughout the reserve in summer, but they seem to recognize the weight of their responsibility and their time is not available for idle exhibitions. Thus it is difficult to catch a glimpse of the mallard, marbled teal, moustached warbler, and others.

It is also hard to find the nest of the yellow wagtail, whose only nesting places in Israel are the grasslands of the Hula swamp. A bit more noticeable are the white wagtails, a few of which do not join the many wagtails that fly on to Europe in the spring after spending the winter in Israel. Those that stay behind remain in the reserve and in other isolated spots and nest, often in boxes that were installed specially for them on the surface of the water.

The cettis warbler can be *heard*, at least: sometimes it bursts into a vibrato song and its voice carries great distances.

The Savi's warbler, a small, grey bird, also makes its presence felt in song, but the untrained ear will have trouble determining whether the creature making the humming sound is a grasshopper or a bird.

It is easier to find the mallards and the marbled teals, which for many years ignored the reserve and preferred the fish ponds. The black-winged stilts and the spur-winged lapwings, which returned to the area only after the reserve was rehabilitated, are also in sight.

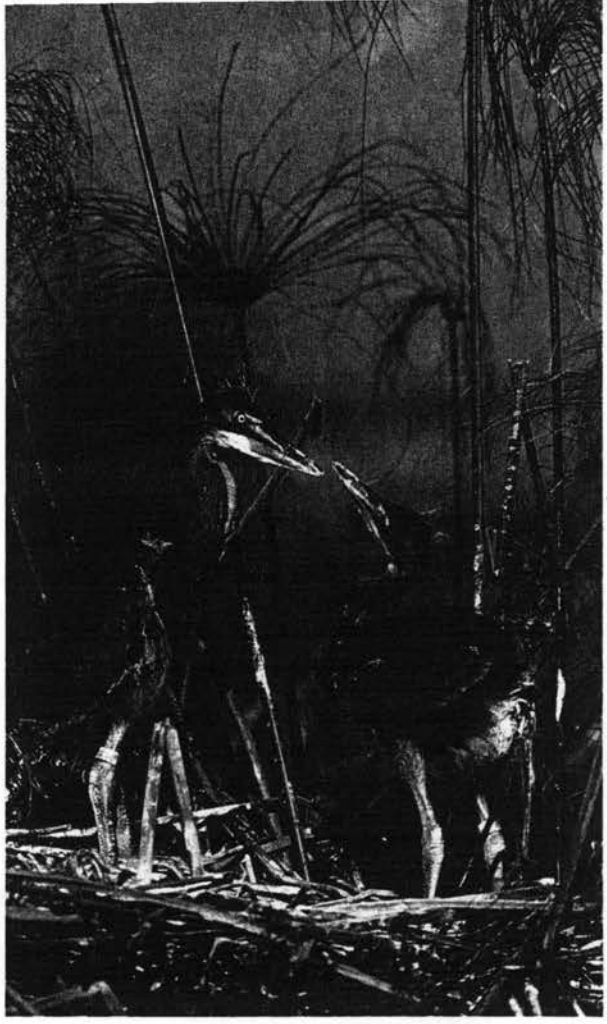
The floating path affords a view of the aviary that was built for a pair of white-tailed eagles to help them become acclimated to the reserve. A pair of these eagles nested on the edges of the Hula Valley until the mid-1950s, and another pair nested in the foothills of Mount Gilboa, north of Samaria, but the birds were annihilated. Following successful attempts to rehabilitate eagles in England, similar efforts are being made in the Hula reserve.

The eagles in the aviary were brought to the reserve at a young age from the zoological center of Tel Aviv University in 1980. It is hoped that after they nest successfully, they will become attached to the reserve and will no longer have to be enclosed in a cage.

But the birds that are the most noticeable of all in the summertime are those that nest in colonies: common terns and herons of various kinds.

Before the swamp was drained, the common terns nested on clusters of vegetation which was uprooted in winter storms and accumulated along

"The terns were circling around helplessly."



A large heron colony nests in the reserve in the midst of the papyrus plants.

the northern banks of the lake. This vegetation did not grow in the reserve, and for several years the terns that arrived in mid-April were seen circling about helplessly. Since then, artificial rafts and special nesting islands have been installed for them and the sound of the terns' cries ringing out through the reserve attests to their successful adjustment.

The herons' colony is situated in the midst of the papyruses in the northern part of the reserve. It began several decades ago, with hundreds of pairs of purple herons; for awhile a group of grey herons nested alongside them. Pesticides sprayed into the fields to combat rodents apparently annihilated the grey herons and reduced the number of purple herons.

By 1978, however, the colony had grown to about 1,000 pairs of herons, including purple herons, squacco herons, glossy ibises, little egrets, and cattle egrets. Since then, the population has remained more or less the same.

During the autumn and spring migration periods, most of the species of water fowl which are known in Israel can be seen in the reserve. The most spectacular sight is the pelican migration. Around October, the pelicans begin to travel south from their nesting places in Europe to the lakes of East Africa, passing through the skies of the Hula Valley on their way.

When the Hula Lake still existed, they would land on the surface of the water, rest, feed, and travel on, but when the reserve was established, they refused to acknowledge it. They preferred the plentiful supply of food available in the fish ponds. Sometimes they sojourned in the cultivated fields that replaced the lake, only several hundred yards from the reserve, but they stubbornly ignored it. Over the years, though, flocks began to visit the reserve and since 1970, all migrating flocks have landed there every autumn and spring.

The first flocks of pelicans arrive from the north in the second week of October – a few dozen at first, and then, toward the end of the month, in increasing numbers, some flocks comprised of as many as 3,000 birds. The migration continues almost daily until the beginning of December.

Most flocks arrive between two and three o'clock in the afternoon, though some appear as early as noon. They take a brief spin around the reserve, check the direction of the wind, and then, like planes releasing their wheels, drop their folded legs and land.

After combing and lubricating their feathers, the pelicans settle in for the night. Upon rising the next day, they have a breakfast of fish, caught by means of a cooperative effort. They begin to ascend, one group after another, at about nine in the morning, and after several flaps of their wings, they glide southward. The mirror image of this scene occurs in spring, from late February to April, when the birds make their way back to Europe.

The reserve is nearly the sole winter home in Israel for the cormorant. It lives only on fish, which it pursues industriously, and it has therefore been stalked by fishermen . In the reserve the cormorant has found a quiet and safe asylum. About two hundred cormorants spend the winter there, perched in odd poses on poles, tree-trunks, and rafts which were specially installed for them.

Dusk is the most beautiful time of day in winter. Thousands of gulls pass above the reserve in arrowhead-like formations, pointing toward the Sea of Galilee. Then the great movement of ducks from all parts of the valley begins, and clouds of them appear in the air. Most of the ducks, sometimes as many of 10,000, land in the reserve for an overnight stay; particularly plentiful are the mallards, shovelers, pochards, tufted ducks, and, on occasion, teals.

Other overnight guests, including woodpigeons, stock doves, jackdaws, and hooded crows, congregate on the eucalyptus trees around the reserve. Dozens of hen–harriers and merlins come in from the fields, and grey herons and great white egrets gather at the edges of the swamp.

Clearly, a visit to a nature reserve is not like a tour of a museum. It is in a state of constant activity and change, and the animals and plants found within it cannot be counted, catalogued, or exhibited in a fixed position. Though the visitor can never be sure exactly what he is going to see – and sometimes he might be disappointed – the element of surprise makes the reserve all the more intriguing. On entering the Hula Nature Reserve, it is worthwhile to keep that fact in mind.