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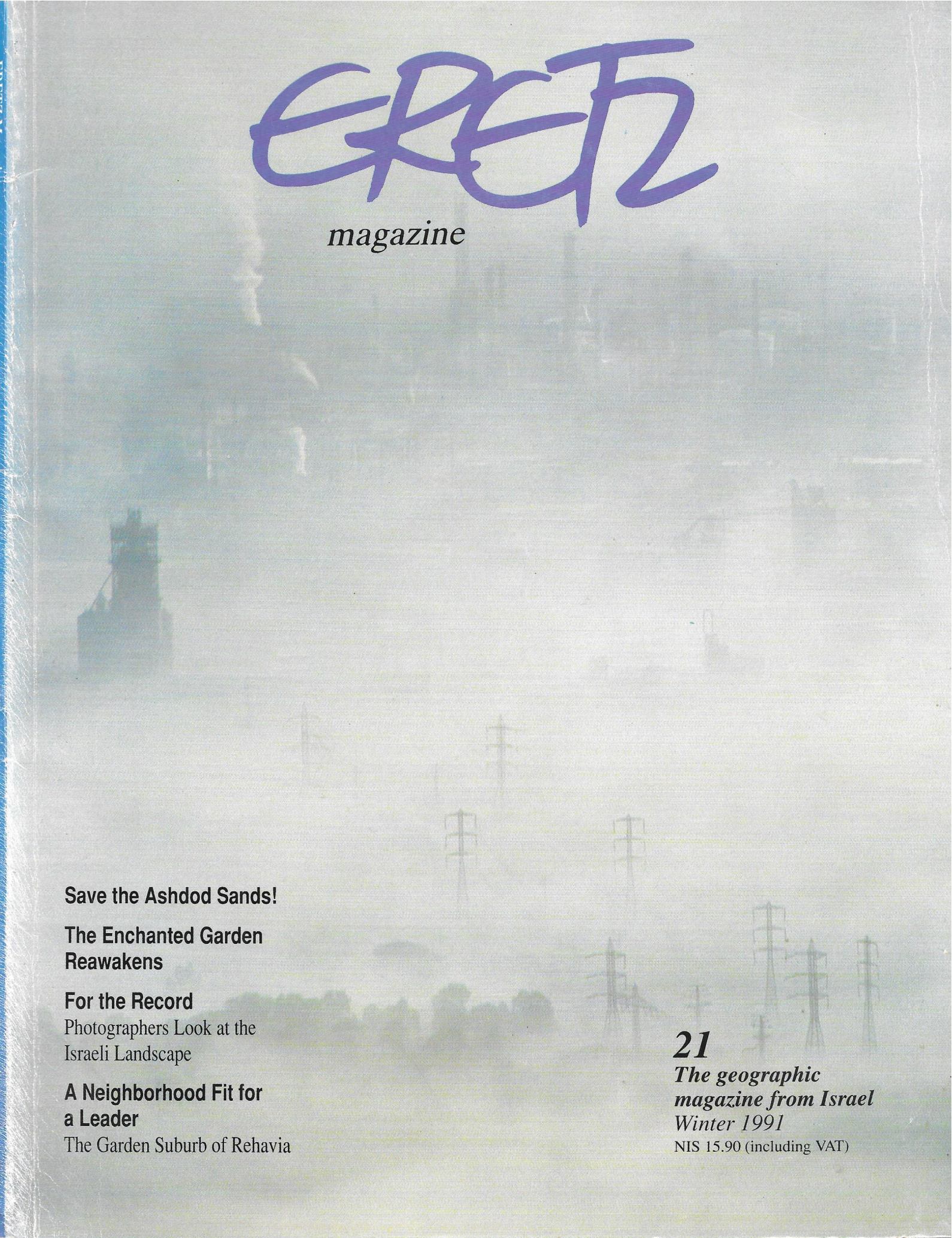

Save the Ashdod Sands!

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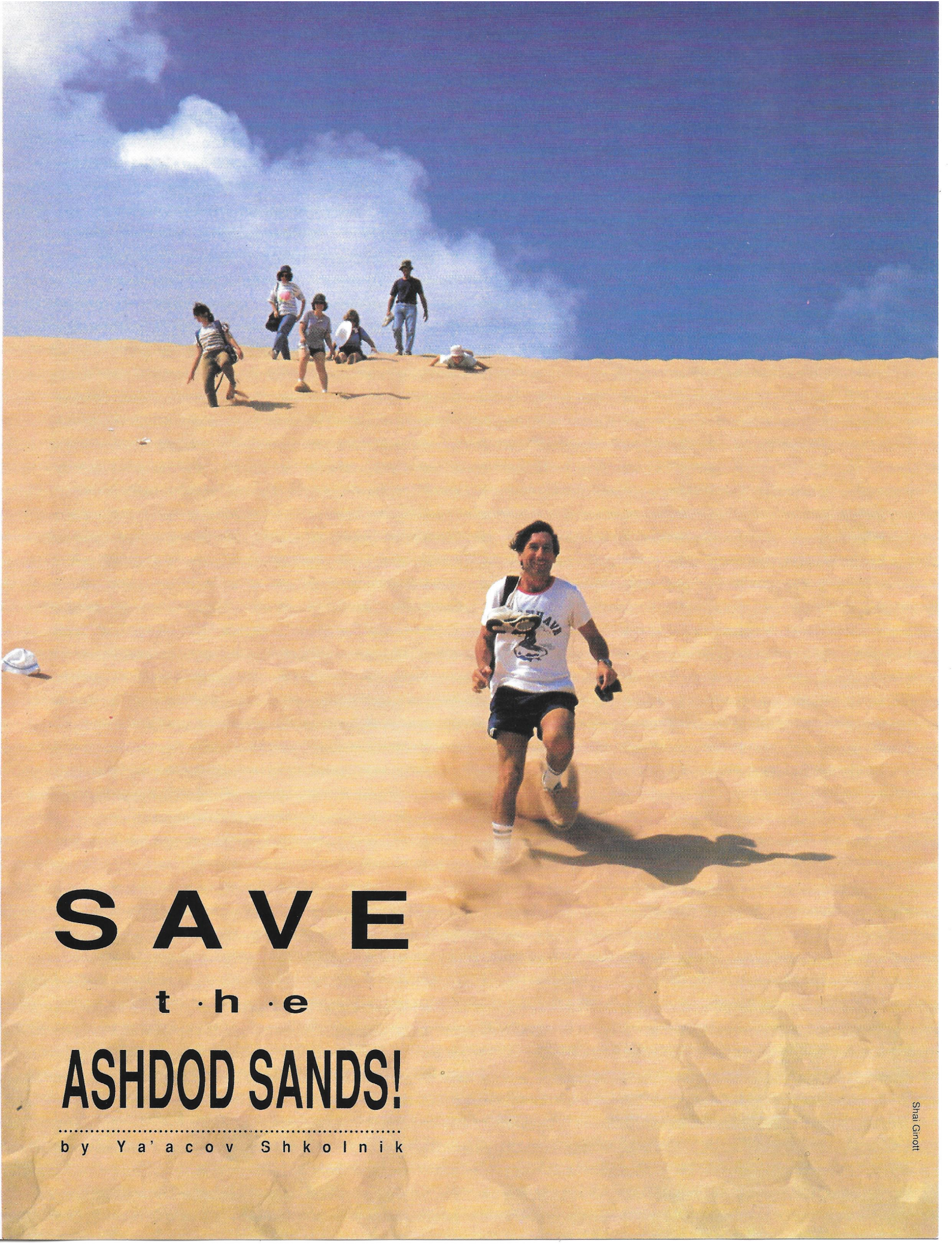

SAVE t·h·e ASHDOD SANDS!

by Ya'acov Shkolnik

Shai Ginott

A century ago, many Jewish pioneers in the land of Israel were felled by the fever of malaria. That disease has been eradicated, but another fever is raging today in the minds of the bureaucrats and it cannot be cured by quinine.

The architects who prepared the master plan for Ashdod in 1959 can be forgiven for what they did. The creation of a city on the sandy expanse near the Arab town of Isdud was considered the beginning of the redemption of the people of Israel. Isdud's residents were among the main instigators of riots during the pre-War of Independence period. Even more to the point, during the war itself, it was at Isdud that the Israel Defense Forces finally succeeded in stopping the Egyptian expeditionary forces from reaching Tel Aviv, only 25 kilometers away.

The city was planned for an area of about 10,000 acres, which was to accommodate 250,000 residents. The plan divided the area into squares, with lines that were nearly ruler-straight. It wasn't necessary to move mountains. The site contained nothing but sand dunes, which were not considered part of the landscape.

Those first planners can be forgiven because they probably did not know what we know today: sand has enormous environmental, scientific, and economic value.

In 1982, I went out for the first time in my life to the sandy area south of Ashdod. My intention was to chart the flora, as part of my master's thesis mapping the plant life in the southern part of the Coastal Plain. I could not believe my eyes. Here, 30 kilometers from Tel Aviv, a vast sea of smooth white sand stretched before me; in Israeli terms, it went on forever.

I went back and reported what I had seen to the Nature Conservation Department of the Society for the Protection of Nature in Israel. Nobody believed even a quarter of what I described to them, but they eventually agreed to let me take them on a tour of the place. It was a nice Saturday, the sun was shining, so what was there to lose?

After a half-hour of looking around, they came to a firm conclusion: they had found what was so sorely lacking in Israel - about 17 square kilometers of sand. It was the only area in the country in which it was still possible to preserve an ecosystem of shifting sands on the Coastal Plain. Moreover, scientifically and environmentally speaking, it was one of the most unique ecosystems in Israel. It was clear that part of the area had to be earmarked for development of the city of Ashdod; even so, they thought that something would remain for the animals and the plants - and especially for the humans.

There is nobody in the general public who will fight the sand's battles. The Mediterranean forest is fortunate from this standpoint. It is clear to all that the Carmel is a beautiful landscape, and there is no doubt of the importance of protecting it. But the sands of the Coastal Plain, which have inestimable scientific value, have had very little publicity.

The main components of the sands of the Coastal Plain are quartz (over 90%), calcium carbonate (up to 10%), and various minerals, including magnetite, which contains iron. The sand originates in the mountains of Ethiopia, which are comprised of granite and Nubian sandstone. The Nile River carried the sand to the Mediterranean Sea, whose currents then transported it to the Israeli coast.

The Aswan Dam in Egypt poses a special problem for this process, since it blocks the flow of the sand and prevents it from reaching the sea. Nevertheless, sand continues to flow toward the beaches of Israel, perhaps from sand reserves on the ocean floor.

The sands of the Coastal Plain derive their uniqueness from a combination of

Ya'acov Shkolnik

The *Allium telavivense (shum tel aviv)*, endemic to the Coastal Plain sands.

There is nobody in the general public who will fight the sand's battles.

Ya'acov Shkolnik is a botanist, tour guide, and journalist.

factors. For one they are a very recent geological feature. It is estimated that they began to reach the Coastal Plain only about a million and a half years ago. The sand that we see now on the Coastal Plain is of later vintage, as evidenced by the fact that certain sites that are only centuries old are totally covered with sand.

The sand is completely different in character from the Mediterranean soils that border it to the east. Arid soil conditions develop in its upper layers, and it constitutes a geological island in a Mediterranean climatic zone. Another singular characteristic is the fact that the sands of the Coastal Plain are a direct continuation of the desert sands of the Negev and Sinai. Moreover, there is a gradient in the average annual amount of deposits along the coast from north to south.

As a result of these factors, unique biological conditions developed in the sands of the Coastal Plain. Plants whose distribution is Saharo-Arabian, such as the single-seed wormwood and the white broom, succeeded in migrating to the area because of the arid soil conditions that prevail there. On the other hand, some plants with a Mediterranean distribution reached the Coastal Plain and managed to sustain themselves in the sand. The migrating plants are subject to new selection processes. In adapting to a somewhat different environment, some plants undergo evolutionary changes and even develop into new species, endemic to Israel's Coastal Plain.

If we examine the distribution of endemic species in the land of Israel, we will discover a remarkable situation: twenty-five percent of these species grow on the Coastal Plain, even though its size falls far short of a quarter of the total area of Israel. If we confine ourselves to the sandy areas, we will find about 10% of Israel's endemic species - a very impressive proportion. These species are all represented in the sands of Ashdod.

What is also interesting about these species is the fact that most of them are neo-endemic - that is, young endemic species deriving from Mediterranean or desert species. It is easy to discover, for example, that a Jaffa groundsel, which grows in the sands, is very similar to the spring groundsel, which grows all over the Coastal Plain, except that it is a little hairier and fleshier.

Moreover, as certain species make their way along the gradient, their appearance gradually changes. The edges of the branches of the *Convolvulus secundus (havalbal hahof* in Hebrew, which is literally translated as "shore bindweed"), become thornier in the south. By the time the plant reaches the sands of Sinai, it has become the *havalbal tzamir*, literally translated as "woolly bindweed" (known scientifically as the *Convolvulus lanatus*).

The same applies to the animals in the sands. A bit more evolutionary patience is required, since animals (that is, mammals) do not usually change their appearance as quickly as plants. Nevertheless, an endemic species has emerged - the Anderson's gerbil, known in Hebrew as *gerbil hahof* ("shore gerbil"). Furthermore, populations of its relative, the greater Egyptian gerbil, or *gerbil haholot* ("sand gerbil"), have exhibited changes in chromosome counts, which may be a stage in the creation of new species.

For some animal species, the sands of the Coastal Plain serve as the northernmost border of distribution in the world. Until the 1930s, the reptile known as the desert monitor (*Varanus griseus griseus*), the greater Egyptian gerbil, and another rodent, the jerboa, reached the Yarkon River, but did not succeed in crossing it. They have since been annihilated in that area, and the Rishon Le-Zion sands now serve as their border. It can be assumed that these animals will die out in that locale as well, as a result of the intensive development work going on there.

Every expanse of sand on the Coastal Plain of Israel is a test tube of nature, with evolutionary processes taking place right before our eyes. From a purely scientific standpoint, at least a representative

The

Caesarea sands are fading away before our eyes.

Ya'acov Shkolnik

The sand is the only habitat of the *Echiochilon fruticosum* (*bar achna'i sihani*).

portion of each expanse should be preserved, but of course this is not possible. We should, however, preserve the area with the best chance of retaining ecological stability, so that its unique vegetation and wildlife can be saved from extinction.

What size tract is required for a nature reserve of this kind? From 2,000 to 2,500 acres, says zoologist Heinrich Mendelsohn, who is in the forefront of the wildlife preservation movement in Israel. Considering the fact that one desert monitor needs a subsistence area of about 250 acres, it is clear that Prof. Mendelsohn is not exaggerating.

Ashdod
is the only coastal city in Israel that does not have a single tourist hotel.

The sands of Ashdod meet these criteria more fully than any other expanse of sands on the Coastal Plain. With a length of about 5 kilometers, and a width of about 4 kilometers from the sea to Tel Ashdod, they constitute the largest sandy tract on the plain. They are delimited along the coast by a low kurkar ridge, whose height is usually between 10 and 20 meters above sea level. To the east, the sands are delimited by a long strip of imposing sycamore trees.

Apart from large fields of sand at different degrees of stabilization, the Ashdod expanse contains an element that no longer exists in other sandy areas in Israel: shifting sand dunes with a characteristic shape, known by its Arabic name, *barhan* ("crescent-shaped"). (Since shifting sands are prevalent in the Arab countries and scientific research into sand dunes was first pursued in those lands, many terms relating to the morphology of dunes are drawn from Arabic.)

A *barhan* is a dune with an asymmetric profile. The windward side has a gentle slope, created by the windswept sands. The other side is steep, and when the angle of its slope exceeds 35 degrees, the sand begins to slide down, pulled by the force of gravity. The slope on the leeward side stabilizes at an angle of 32 to 33 degrees. When the wind is blowing in only one direction, the sands on the periphery are transported more rapidly than those in the central part of the dune because of the sand deposits on the leeward side. As a result, the *barhan* assumes its crescent shape.

"The Great Dune," apparently the largest *barhan* in Israel, can be found in the Ashdod sands. It is about 250 meters long and has a 35-meter-long slope. The immense sycamore trees, the soft white sand, and the profusion of flora and fauna, make a visit to the dune a memorable experience - and numerous hikers are indeed attracted to the spot.

There are other areas in Israel where sand dunes can still be found in their natural state, but they are extremely small. North of the Yarkon River, apart from tiny plots, nothing has remained. The Caesarea sands, which covered more than 5 square kilometers, are fading away before our eyes as new buildings are erected.

Most of the sandy expanses were south of the Yarkon River. But these areas are no longer available to the nature-loving public. The majority of the sandy areas of Rishon Le-Zion are now occupied by an army base and a plant for purifying local wastes, and the surrounding sands are being covered by high-rise buildings.

An atomic reactor has been built in the sands of Yavne. The many visitors who come to the tiny piece of sandy area left around the ancient structure known as Nebi Rubin demonstrate the strong need for a natural landscape in the very center of the country.

The Nitzanim sands now encompass a military firing zone, and the kurkar ridge beside them is pitted with the scars of abandoned quarries. All that remains is a small, lovely area on both sides of Nahal Avtach, and this is covered with dunes at various levels of stabilization. The settlements of Netiv Ha'asara and El Sinai were built in the sands of Zikim, and another part is used for farmland.

The importance of the Ashdod sands can be seen most clearly in this context. Not only is the tract the largest sandy area in Israel, but it is also the least damaged, has the greatest quantity of sand, and contains landscape units that are not found in other places.

In Israel of the 1990s, officials continue to operate from the same mind-set that may or may not have been right for the 1950s. Procurers continue to exploit the untamable passion of the developers for virgin land, and when quality of life is perceived as lawns and villas, the preservation of nature and landscape becomes a matter for eccentrics.

More than 20,000 dwelling units can be built in Ashdod without harming additional sandy areas. This construction would double the population of Ashdod, which is now about 80,000. Tourism could be one of the city's major sources of employment. Development of Ashdod's beautiful beach, archaeological sites, and sand dunes as a nature reserve could make it a thriving center of tourism. But Ashdod is the only coastal city in Israel that does not have a single tourist hotel.

The city fathers and representatives of the Ministry of Housing promised that they would try to postpone construction in the sandy areas for as long a time as possible. But barely had the words left their lips when approval was given, in January 1991, for the construction of a new section, the Yod Gimmel Quarter, in the heart of the sands.

The houses going up in the Yod Gimmel Quarter are blocking the supply of sand to the Great Dune. Even though the development authorities have promised to preserve as much as they can of the sand dune itself, all that remains is for a tractor driver to inadvertently level it once and for all. □