



BIRD HAZARD AT BEN-GURION AIRPORT

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General

Israel's largest Int'l Airport lays in a rather moderate and comfortable weather region, which creates very good conditions for the development of fauna and flora, both natural and cultivated including birds. Like other regions in the country birds of various kinds and species live in this area. Among which resident's, wintering and summering ones. Some live in the region the whole year and others are wintering, summering or passing by.

The Birds

A) Winter months (October - April)

Hundreds of thousands of birds of various biotops winter in the country. Many of them appear in the airport's region, the most problematic to aviation are the following:

- 1) Gulls: mostly black headed gulls (*Larus ridibundus*), some Herring gulls (*L. argentatus*) and black backed gulls (*L. fuscus*).

This population starts to appear in October, their numbers increasing within a short time and reaches some ten of thousands in the area.

Their activity is mostly evident in two major ways:

- 1.1 They commute each morning at sunrise to their feeding sources which are scattered throughout the region and mainly to the "Hiria" garbage dump located about 4 km's west of the airport on the prolonged center line of runway 12-30. Many of these gulls continue their flight to the "Modiin" garbage dump located about 4 km's east of the airport and along the prolonged center line of runway 08-26. Towards sunset, the gulls, fly back, more or less along the same path to the roost area on the mediteranean beach. This daily movement takes place at an altitude of up to 1000 feet and in rather large, flocks numbering hundreds and some times thousands of birds.

1.2 Feeding and resting activity during the day hours - in various places around the airport, but mostly in Hiria - when from time to time the gulls take off and hover at an altitude of up to 3000 feet, using hot air "thermics" over the final approach flight path of runway 12.

In rainy days when the runways are wet and bright, Gulls are expected to land for their rest on the runways. They may also land on water reservoirs and pools, or on the fields in the area. Especially attractive are fields covered with plastic sheets and shaw gloosy.

2. Lapwings (*Vanellus vanellus*): The Lapwings normally appear in the airport region in November and scatter in small flocks in the fields along the runways. Cultivated, open fields or fields covered with low vegetation are more attractive for them. Than the Lapwings may cross the runways or stay close to them including for the night rest. In the last few years it seems that the number of Lapwings wintering in the area has sharply decreased and do not exceed a few hundreds.

3. Ducks: Tens or even hundreds of Teals (*Anas crecca*) and Mallards (*Anas platyhunchos*) appear normally in October and stay in open drainage tranches or ponds.

Since any suspicious change causes their take off, their movement is mostly unexpected. In their fast flight they may cross runways, even those which are rather far from their rest places.

4. Passerines: Although the danger from these birds is rather limited, problems are expected from few kinds which appear in large flocks like the skylark (*Alauda arvensis*) the Starling (*Sturnus vulgaris*) ect.

5) Spring month (March - April)

In this season the mass movement of migrating birds is expected - among which some large birds like Pelicans (*Felicanus onocrotalus*), Storks (*Ciconia Ciconia*) and various Raptors. They usually pass in large flocks but some times as singles also.

This movement highly increases in very hot days when the easterly wind "pushes" the birds westbound and they use the hot air "thermics" to continue their glide northbound. In these cases the flight altitudes may vary from a few tens up to a few thousands of feet. Some flocks of storks and Black kite (*Milvus migrans*) have discovered lately the two garbage dumps due to the large amount of food available.

From time to time a large flock of migrating birds may land for rest in fields surrounding the runways.

C) Summer month (April - August)

The numbers of birds in this season are normally small though the activity of the residents and summering birds is very intensive and connected to breeding and rearing their offsprings.

1) Spur winged plover: (*Hoplopterus spinosus*). This population is rather stable in the region but their danger is mainly in the summer season since they build their nests on the ground in open fields and many times close to runways and the new born chicks might walk on runway surfaces looking for food with their parents accompanying them for protection.

2) Stone Curlew: (*Burhinus oediconemus*). Their behaviour is very similar to the previous one although it's population is rather smaller and stays during the summer only.

3) Turtle dove: (*Streptopelia turtur*). The activity of this bird is evident all over during the summer. It's danger comes mainly when they fly to and from their feeding sources. This bird eats seeds scattered in open fields some of them along the runways, a fact which causes them to cross the runways in flight. Collared doves (*S. decaocto*) and pigeons were observed some times.

4) Raptors: The Kestrel (*Falco tinnunculus*) is the most active raptor, while at night the Barn Owl (*Tyto alba*) is the most active one. The danger of Raptors to aircraft is mainly when they try to catch the offsprings of other birds or when they look for voles and other small animals in the fields close to runways.

D) Fall month (August - September)

This is the great southbound migration period, which defers from the spring migration in the combination of species, then numbers, the flight paths and the amount of time they use to stay in the region.

The numbers of Raptor is now much greater and many use to land for roost in the forests and woods surrounding the airport.

In these cases low flight might take place across the final approach flight path and on the runways.

E) Throughout the year

The bird's residents population include many species among which those already mentioned in the summer season and others which do not place special hazards to aviation and thus not mentioned.

1) Chukar Partridge (*Alectoris chukar*): This bird lives in the airport in flocks and families counting together a few hundreds and capable of bearing many chicks.

Their activity looking for food (which is usually vegetarian) is normally by foot and takes place in the early morning and late Afternoon. When they do fly for some reason they are expected to cross runways at an altitude not exceeding 30 feet and thus placing a real hazard to aircraft due to their rather high weight.

(500 - 700 gms).

2) Cattle Egret - (*Bubulcus ibis*): This bird uses to cross or get close to runways while flying to and from feeding sources in fields, garbage dumps and other places where they may find small creatures and food remains. They mostly fly in small flocks or as singles. This movement which normally do not exceed 100 feet greatly increases during the breeding period since one of their preferred nestling places is located a few kilometers from the runways.

- 3) Hooded Crow (*Corvus corone cornix*): The resident population amounts to about 50 birds and is very active in the airport, where they find a rich variety of food, like remains of flight catering which might fall on the ramps, corps of dead birds, hare's carcasses (which were hit by aircraft, Pecan nuts from a large plantation adjacent to one of the runways. (the birds use to collect the nuts and bring them to the runway in order to hit and open them for food. As part of this activity the crows cross runways at an altitude of up to 100 feet.
- 4) Pigeons (*Columba livia/domestica*): The local population includes a few hundreds of birds which use various instalations like hangars and storage halls for rest and breeding. They find food in various places among which fields along the runways especialy when they are covered with crops like corn, beans or wheat. More pigeons are added to this population from near by villiages, thus creating a rather heavy movement, especialy during the seading and crops collecting season, over the runways at an altitude of up to 100 feet.

Ways used to diminish Birds hazards

A bird strike prevention unit operates on a permanent basis and throughout the year at Ben-Gurion Airport. The unit is funded through a bilateral contract by the Airports Authority and operated by the Israeli Nature Reserves Authority. The unit collaborates with all the parties concerned and supervises all other airports of the Airports Authority as well.

The basic activities of the unit are the following:

1. Daily inspections of the runways and the fields surrounding them during which the birds movements are observed. Any activity that might endanger the flights is reported immediately to the control tower.

2. Farmers cultivating the land surrounding the runways are signed on a contract with the Airports Authority.

According to this contract they are allowed to grow only those crops that are approved by the Authority as per the unit instructions.

The daily inspections are used to control the activity of the farmers and to ensure that they do adhere to the instructions.

The major element in the decision on the approval of permitted crops is the avoidance of any kind of food that may attract birds.

3. When birds which might place any hazard to aviation are observed various systems are operated immediately:

- Transmit of distress calls or other voices by means of a permanent device installed in the fields, or a mobile one from a vehicle.

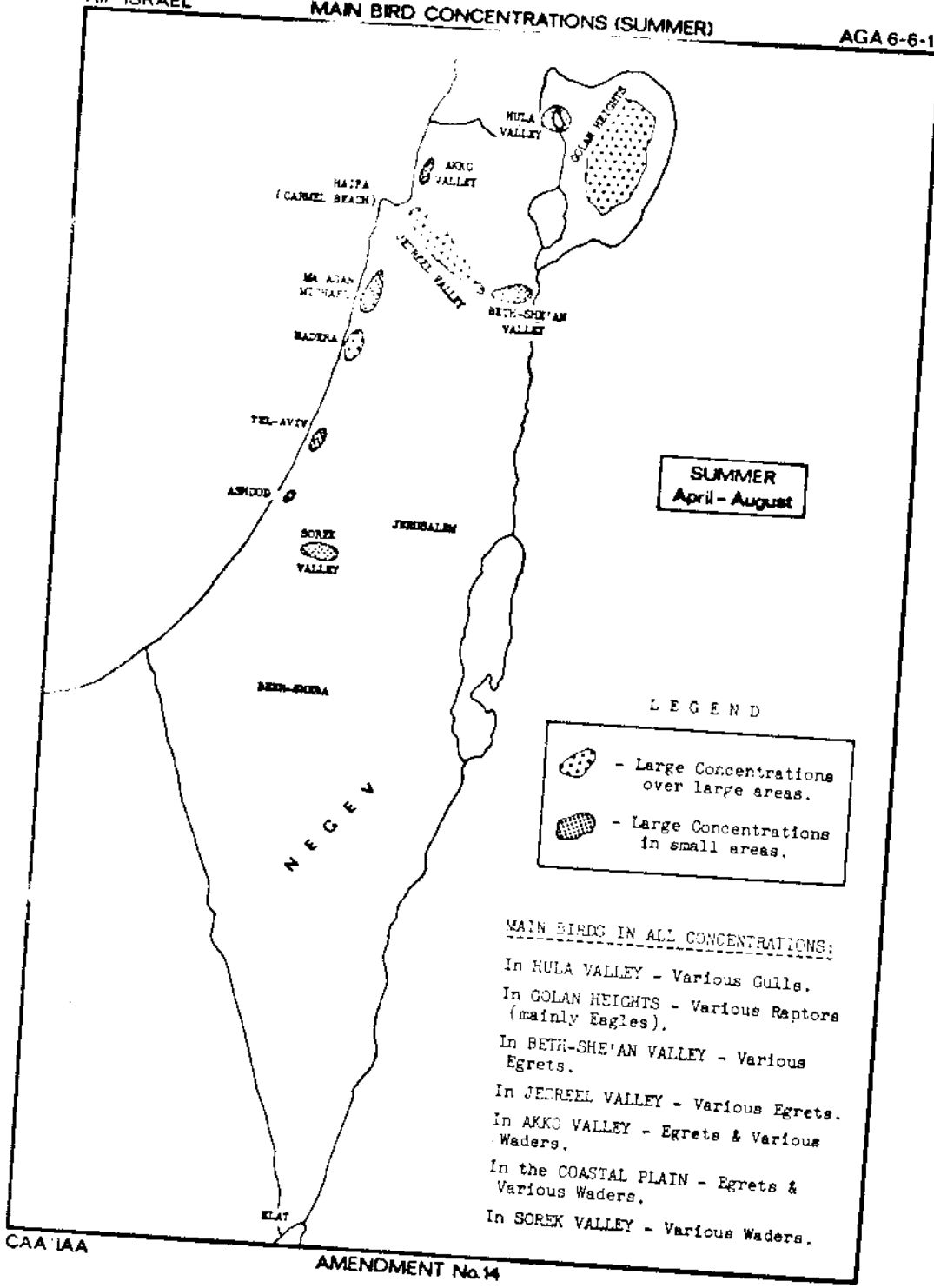
- Gas canons of different kinds are activated.

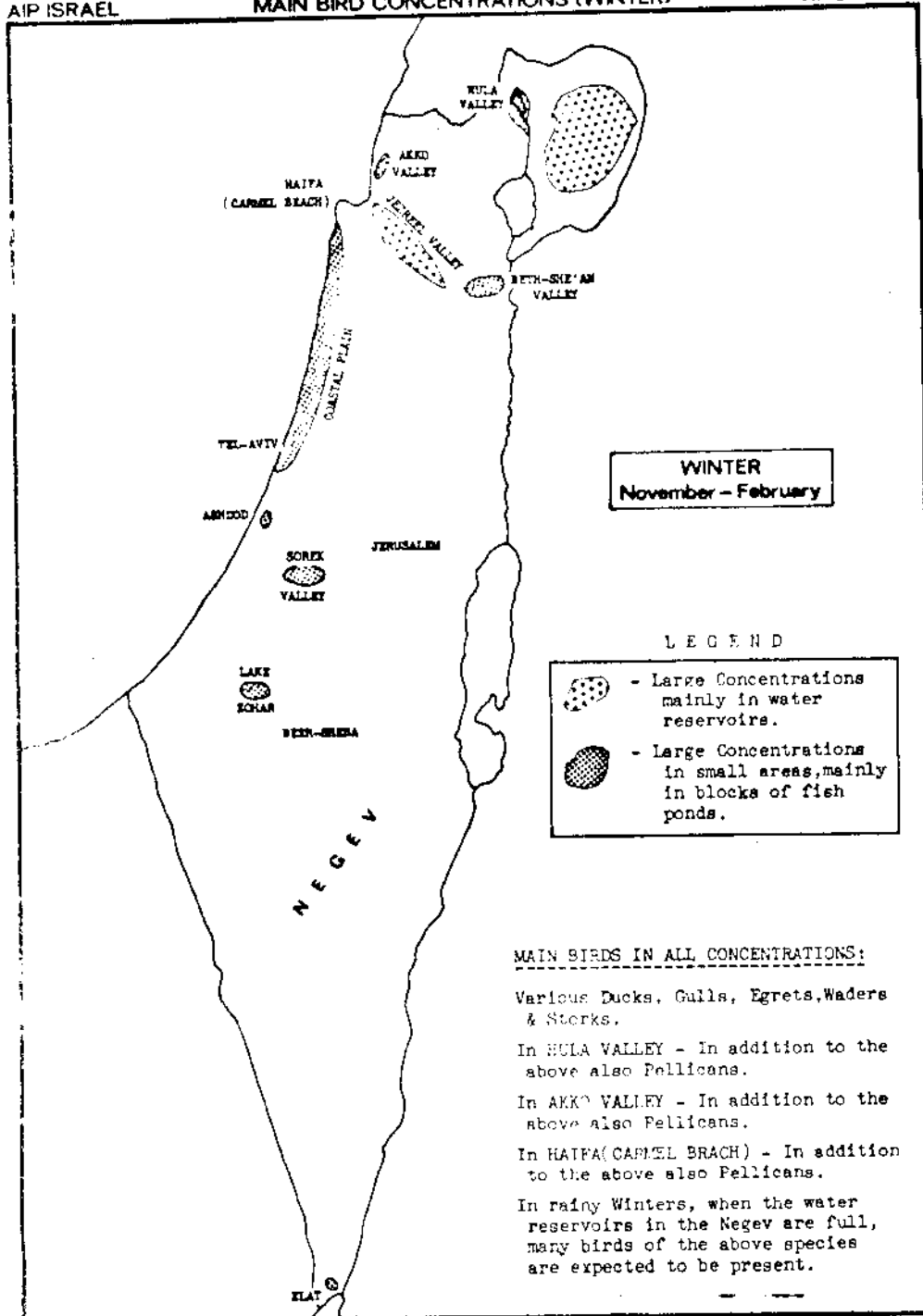
- Shell crackers from a gun or rifle are fired.

- Coloured vanes, weather cochs or small wind mills are placed.

In those locations where the activity of low flying birds is expected like chukars which cross the runways, 3 meters high nets are placed along the runway to prevent the flight across it.

- In open drainage tranchs and other places where water may accunulate strings are put over the water to prevent waterfowe from landing.
 - In special cicrumstances permission are granted for hunters, who are allowed subject to the nature preservation low and under supervision to hunt partridges, pigeons and sometimes ducks.
4. In the two garbage dumps and especialy in Hiria special activity takes place. The most effective tool is a radio controlled aircraft. These activities help to prevent the Gulls and Storks from flying over the final approach of runway 12.
 5. The unit is also engaged in other activities such as:
 - of hunted or hid birds are exemined in order to learn more about the birds prefered food.
 - Birds remains are collected immidietly after every reported strike in order to identify the bird which caused the strike.
 6. The unit collects all the relevant data including bird striks and observations on which research and many practical conclusions are based,
 7. From time to time experiments with new possible tools are executed such as wires causing electrical shock used to scare pigeons, or the use of cannon nitting in order to catch large numbers of birds in their concentration sites like Gulls or Storks.
 8. The unit colaborats with various bodies abroad, especialy the B.S.C.E with which we exchange information. We regularly take part in the periodical me tting of the B.S.C.E, a fact that contributes to our achievements at the airport.





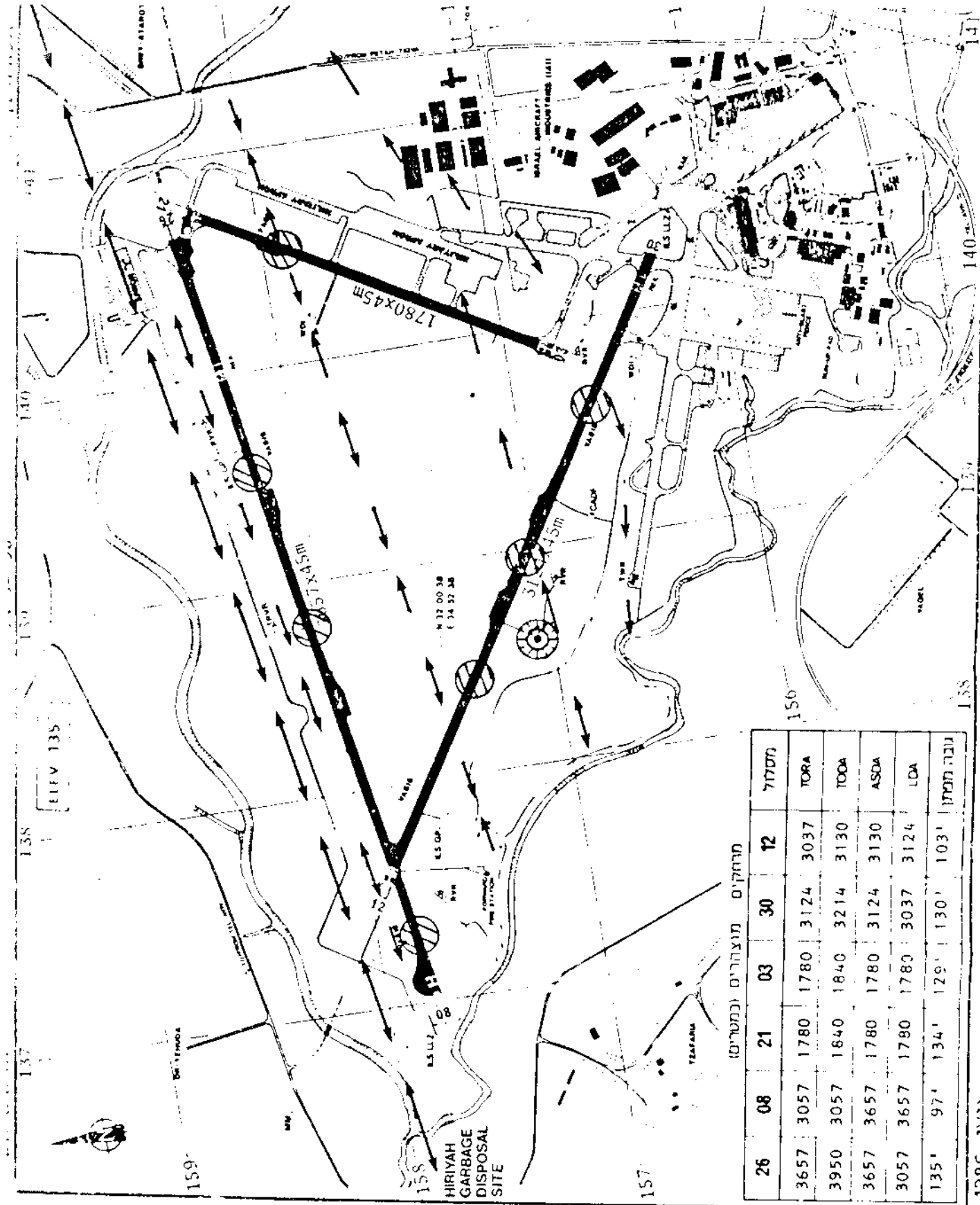
BEN-GURION AIRPORT

CHART I - WINTER BIRD MOVEMENT

REGULAR GULLS MOVEMENT DURING MORNING & EVENING HOURS BETWEEN THE GARBAGE DUMPS.

GULLS MOVEMENT OVER RUNWAYS ESPECIALLY DURING RAINY EVENINGS & MORNINGS IN ADDITION TO THE ABOVE MOVEMENTS.

RESTING SITES FOR GULLS & BEETLES EXPECTED ON RAINY DAYS AMONG THE RUNWAYS AND ADJACENT FIELDS.



		תחילים מוצהרים (כתמים)						
26	08	21	03	30	12	תסודר		
3657	3057	1780	1780	3124	3037	TORA		
3950	3057	1840	1840	3214	3130	TOOA		
3657	3657	1780	1780	3124	3130	ASOA		
3057	3657	1790	1780	3037	3124	LDA		
135'	97'	134'	129'	130'	103'	ענה תחתון		

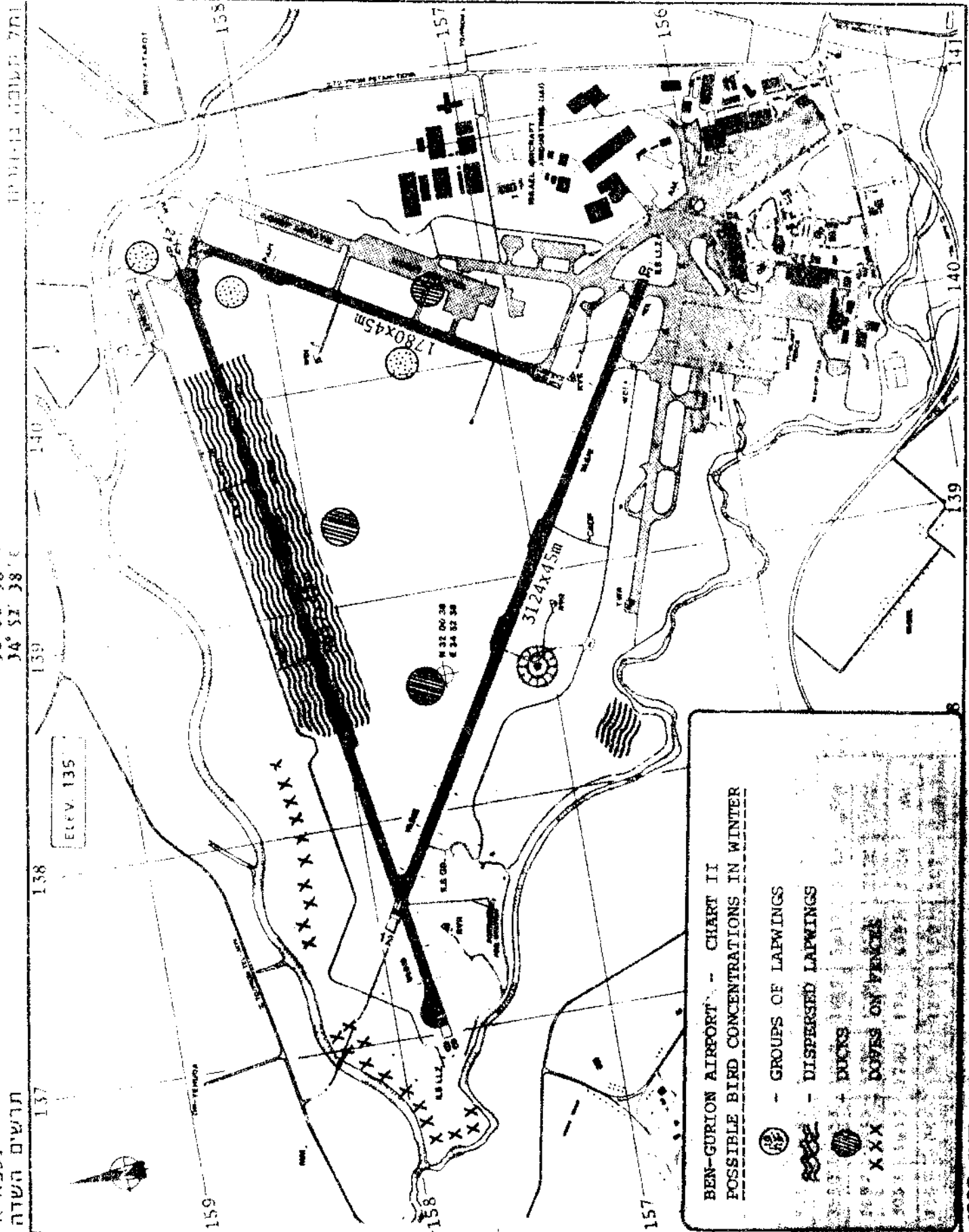
1986 נוא

רשימת/חטיבות ממצאים

דכון מס' 8

נתונים
תורשים השדה

32° 00' 38" N
34° 52' 38" E



BEN-GURION AIRPORT -- CHART II
POSSIBLE BIRD CONCENTRATIONS IN WINTER

- GROUPS OF LAPWINGS
- DISPERSED LAPWINGS
- DUCKS
- DOVES ON FENCES

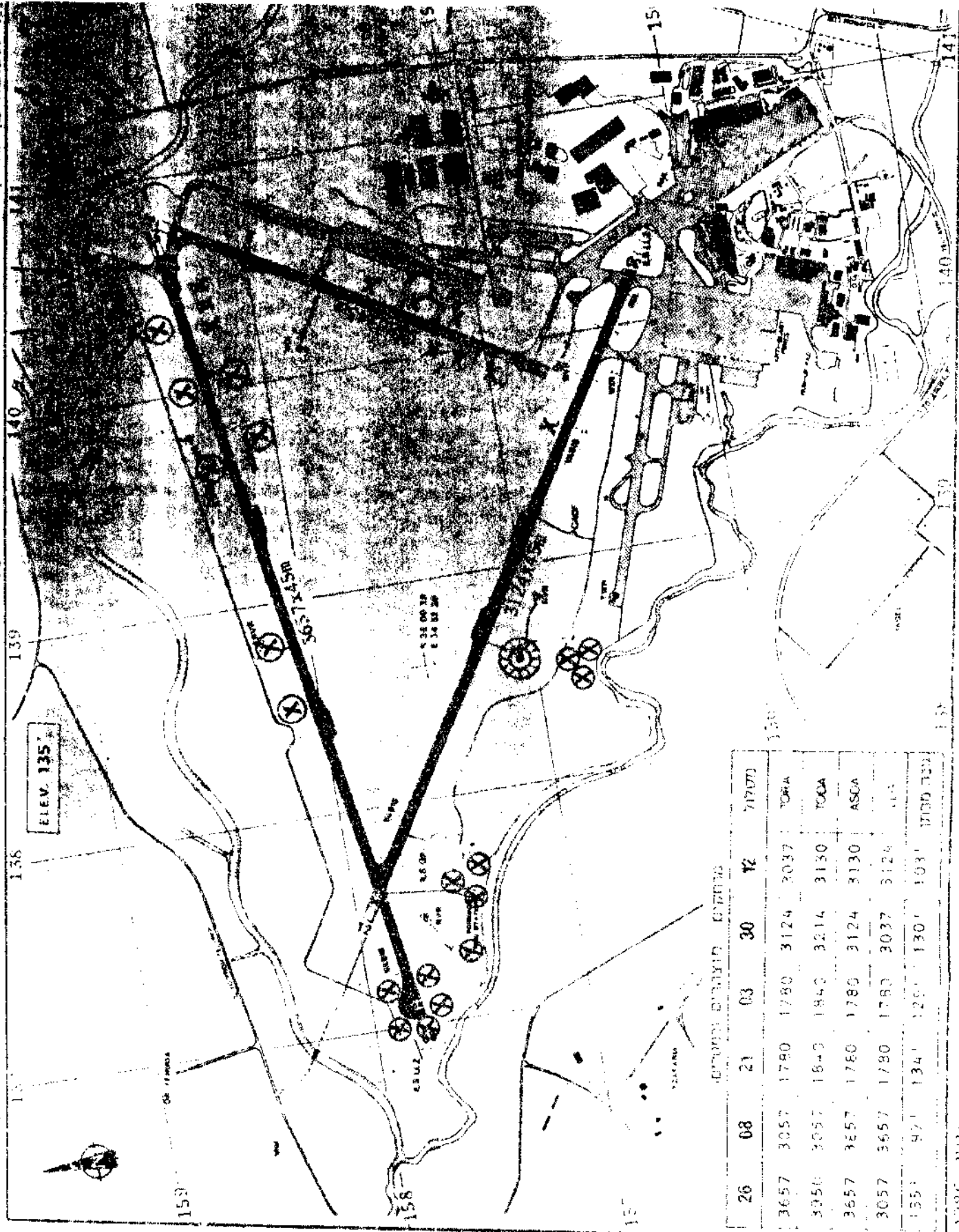
מאי 1986

השרת/הטיות ממצעים

מדכון מס' 8

**EN-GURION AIRPORT
CHART III
SIBLE RESTING SITES
NEAR RUNWAYS
SPRING AND SUMMER)**

**SPUR-WINGED PLOVERS
AND
POVES**



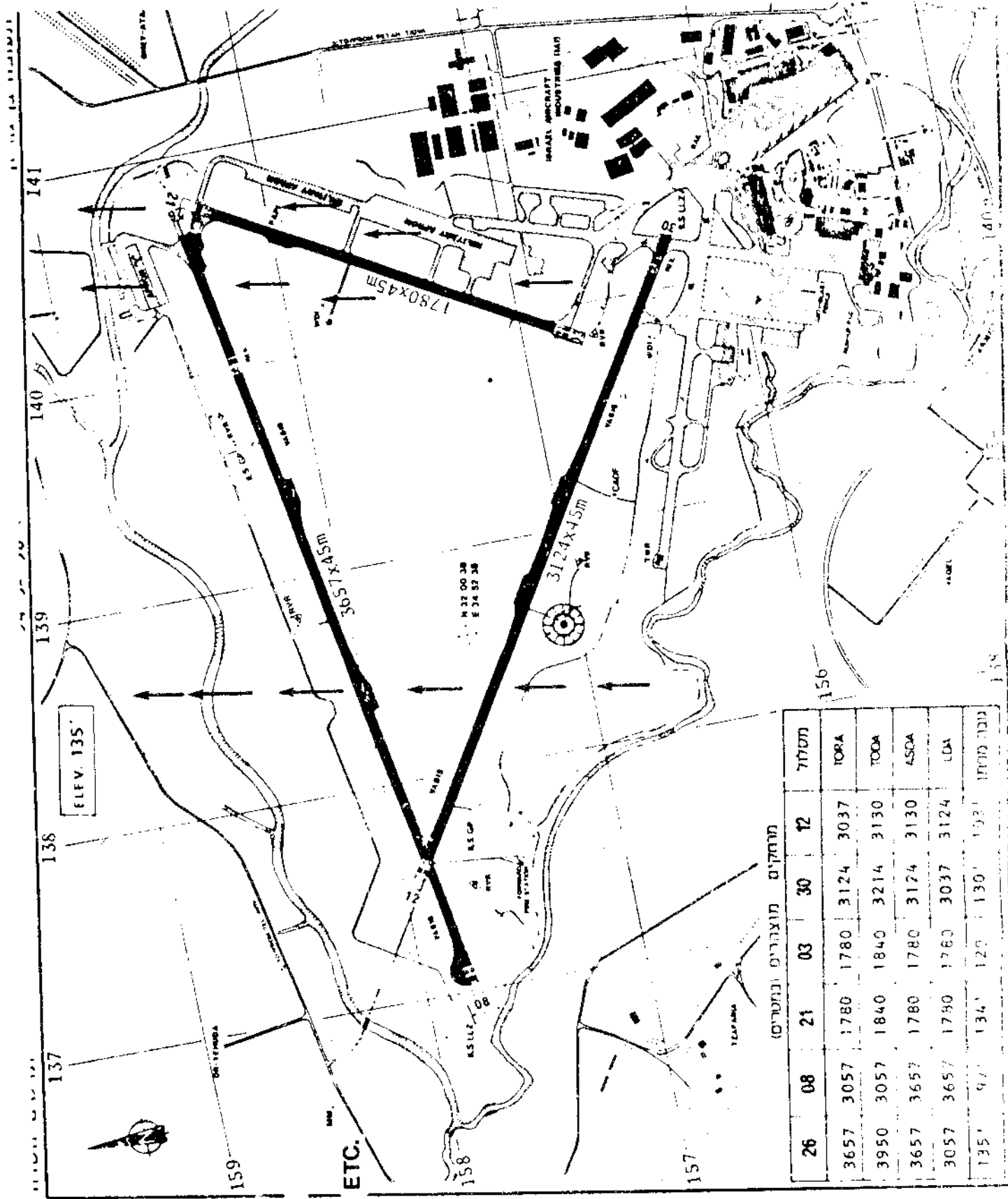
	26	08	21	03	30	12	707070
3657	3057	1780	1780	1840	3124	3037	707070
3950	3057	1840	1840	3214	3130		707070
3657	3657	1780	1780	3124	3130		707070
3057	3657	1780	1780	3037	3124		707070
1357	971	1341	1251	1301	1031		707070

1986

EN-GURION AIRPORT

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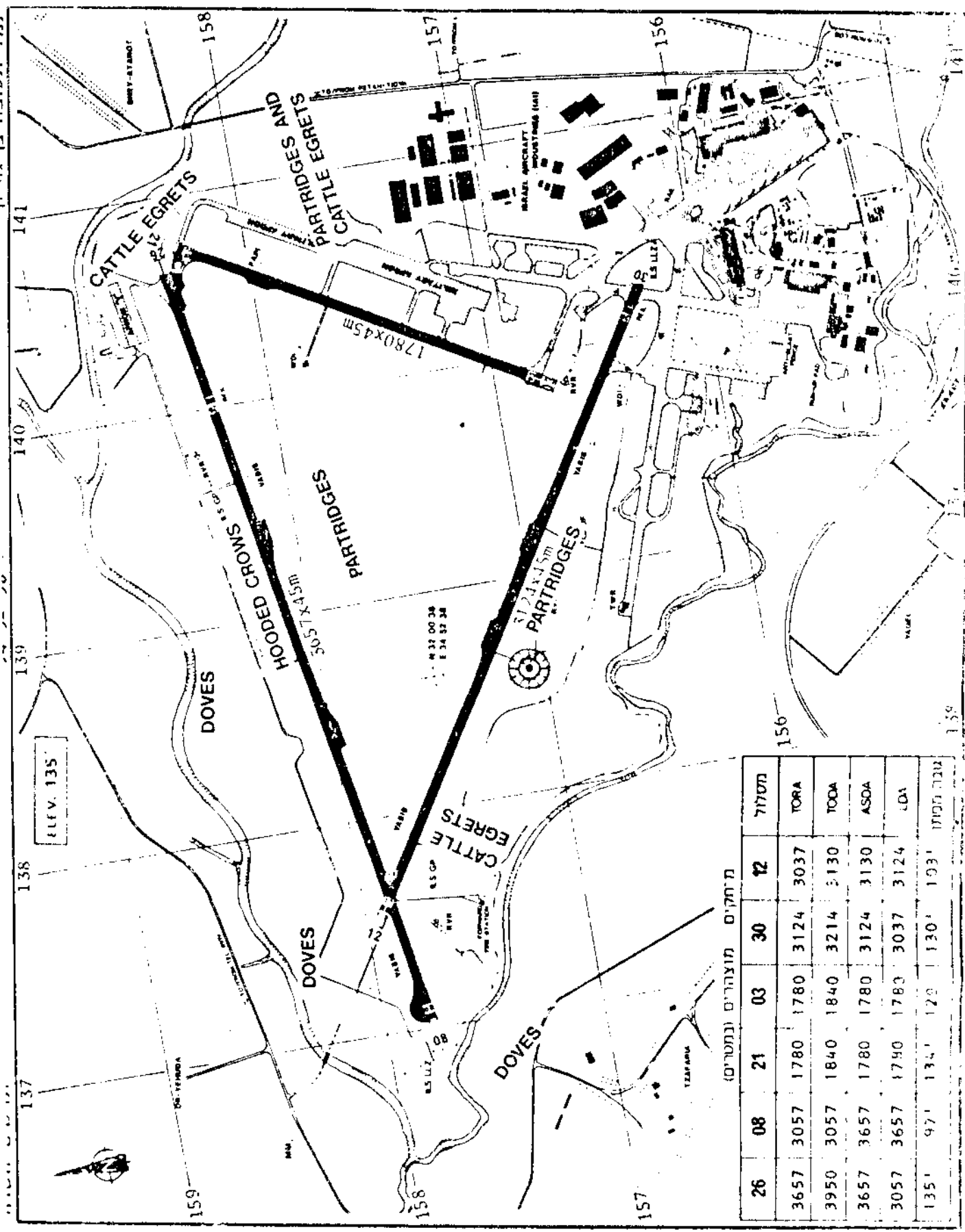
BEN-GURION AIRPORT
CHART IV
NORTHERN BIRD MIGRATION
IN SPRING (APR-MAY)
 IN HOT DAYS AND DAYS DURING
 (WHEN EASTERLY WINDS PREVAIL)
TORKS, RAPTORS, PELICANS ETC.



מסלול	מוצאים (במסלולים)					
	26	08	21	03	30	12
3657	3057	1780	1780	1840	3124	3037
3950	3057	1840	1840	1840	3214	3130
3657	3657	1780	1780	1780	3124	3130
3057	3657	1780	1780	1760	3037	3124
135'	97'	134'	120'	130'	130'	133'

1946 - 1947

**BEN-GURION AIRPORT
CHART V
BIRD RESTING SITES
(ALL YEAR ROUND)**



1986 תרפ"ו

דגמי ציפורים

8.01.77