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.

USING TRAPS TO CONTROL PIGEON AND CROW POPULATIONS IN AIRFIELDS

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ABSTRACT

The *Columba livin is* a common pigeon species that has adapted to a wide range of habitats and living conditions, and is highly resistant to varying climatic changes. In most places in the world it is non-migratory throughout most of the year, and because of its high reproductive rate (Goodwin and Derek, 1967), it has become a damage-causing nuisance. Efforts are being make worldwide to prevent or at least control that damage.
In airfields, this bird presents a serious safety problem to both the structures and the airspace above them. The high acidity of the birds' secretions is particularly damaging to equipment.
The hooded crow (Comas *corone cornix)* is also a species with a high reproductive rate which has adapted to a wide range of habitats, and in recent years it has become a pest in all parts of Israel; crow populations located in airfields pose a risk when planes take off and land. However, it should be noted that to date no crow-related incidents with planes have been reported in Israel, apparently as a result of the fact that crows are fast learners and their acquired knowledge has taught them to beware of planes.
Airfields have two main attractions for crows:

1) The large number of eucalyptus trees planted around the bases, which provide them with places to roost, sleep and nest;
2) The food distributed to the guard dogs along the fences.

Forest Ecological Solutions, Ltd. developed and implements mechanical traps to capture both species birds on a massive scale in populated areas. No toxic materials are used and no environmental residue is left. The method is environmentally friendly, and has been successfully applied in a continuing project at six Israel Air Force bases for four and a half consecutive years.

(Keywords: pigeons, hooded crows, traps, trapping)

1. BACKGROUND

Man's environmental intervention frequently leads to the extinction of certain species of animals in populated areas. At the same time, because of a lack of natural enemies, other species multiply rapidly, often with the inadvertent help of humans, who provide them with household waste products and nesting and incubation spaces.

These species have spent many generations in proximity with humans. In small numbers they do not cause damage, and, in fact, often provide an aesthetic element when limited to the horizon. In large numbers, however, they can become a serious nuisance.

The *Columba livin* pigeon, a member of this group, is a bird that adapts well to a wide range of circumstances and is exceptional in its ability to survive in various climatic and living conditions (Cramt, 1977). Within six weeks of mating, two pigeons can produce a pair of chick which have excellent chances for survival. This leads to a very high reproductive rate.

Large pigeon populations located in a specific area can become a serious nuisance to people by virtue of the noise they make, and cause damage to structures and equipment by depositing dirt. In airfields, in addition to causing damage to equipment, they create safety problems and endanger human life.

There are several methods for overcoming pigeon-related nuisances and damage, and they can be classified into two main areas: pigeon removal and pigeon-population control. Some of the methods for pigeon removal include the use of springs, glues, ultrasonic machines and structure sealing. These methods deal with the problem at specific locations. Methods of population control include hunting, poisoning and trapping.

It should be noted that when pigeons are poisoned, the entire area is affected by the toxic substances used, and use of poison on the birds can lead to the subsequent poisoning of other living things.

In addition to pigeons, our company has dealt with trapping hooded crows in Israeli Air Force bases since the beginning of 1998. Except for two of these bases, where the crow population is insignificant, the bases are plagued by flocks ranging in size from several dozen to several hundred. The Air Force decided not to take unnecessary risks but rather to trap the birds before a tragedy occurred (as previously mentioned, no incidents involving this species of bird have been recorded). Our aim was to develop efficient methods for limiting the populations of these two species of birds without causing environmental damage or using toxic substances.

2. METHOD

The method developed by Forest Ecological Solutions, Ltd. is based on pigeon behavior patterns as exhibited over time and a wide geographical range. The study of these patterns led to the development of a method that utilizes knowledge of differences in behavior patterns caused by seasonal changes (nutrition, nesting) and which are affected by amounts of food and the weather conditions at different times of the year.

A vast amount of knowledge acquired about socialization among and within flocks and among individual birds was used in the development of these traps. The system is environment-friendly because it uses no toxic substances, and thus does not introduce poisons into the food chains of other animals. It also keeps treated areas clean and prevents them from becoming carcass-infested.

The method is based on a system of mechanical traps developed by Mr. Zvi Horesh, and has been patented in Israel (#105892, June 2,1993, System for Bird Trapping). The basic principle which guided the developer was the desire to control the problem on an environmental rather than local level.

Pigeons are attracted to the traps from a radius of 100 meters or more (Authors note: This is determined by marking bands on pigeons' legs.). The trapped birds are held in humane conditions (being provided with food, water and shade) and every few days are removed from the traps while still alive. The traps are set in such a way as not to disturb normal activities at the treatment site.

Because of the special nature of work with animals, requiring a response to specific needs and behavior, continuous, careful monitoring of the traps is necessary. Incorrect handling will affect trap effectiveness and prevent successful site treatment.

Experience has taught us that to achieve maximal results, intensive effort must be invested during the initial phase with extensive follow-up to assure a continued low level of infestation. The work is done at different hours with staggered visits and using different types of bait to suit the varying conditions of the treated areas.

The method used to trap hooded crows is similar to that used with pigeons. Traps are placed on the ground throughout the area and provided with optimal conditions, including food, water and shade. Crow traps are large compared to pigeon traps: 2 meters (6 feet) in height and 4 meters (12 feet) in length.

Here as well, the method provides an environmental solution, with flocks of crows being attracted to the traps from a radius of several hundred meters. The trapped birds are removed every few days.

3. RESULTS

The effectiveness of the method can be seen from the data collected at the four Israeli air bases where trapping begun on January 1, 1993, and the two where it was begun on January 1, 1996, in all cases continuing to this date. The sites are located in two geographical regions: desert and coast. It should be noted that each of the sites is in an agricultural area having large pigeon populations. From the graphs presented in Figures 1 through 4, the following can be seen:

1) The number of pigeons trapped during the intensive initial phase (January 1993 to January, 1994) was greater than the number observed before the project began.
2) The ongoing rate of trapping in the extended follow-up phases is proportional to the rate of influx of new flocks into the area.
3) In the winter and early spring months there is increased trapping activity, in contrast to a lower rate during summer and autumn months.
4) The initial and final observations and accumulated number of pigeons trapped during the treatment period are summarized in the following table:

1993-1998	Initial Number Observed	Final Number Observed	Accumulated Number Trapped
Air base 1	1,500	100	5,456
Air base 2	500	50	3,083
Air base 3	1,000	150	2,986
Air base 4	2,000	100	6,046
1.1.98 -- 30.4.98			
Air base 5	1,000	500	658
1.11.97 -- 30.4.98			
Air base 6	1,000	500	382

With regard to hooded crows, a sufficient amount of data has yet to be amassed, since we have been working to reduce the Air Force base hooded crow populations for only a relatively short period of time. A few dozen birds have been trapped at all the bases and we are currently adapting the traps to prevailing conditions, taking into consideration bird number, size, site location and bait type, according to each air base. Environmental factors dictate which of the aforementioned elements will used, and how.

4. SUMMARY

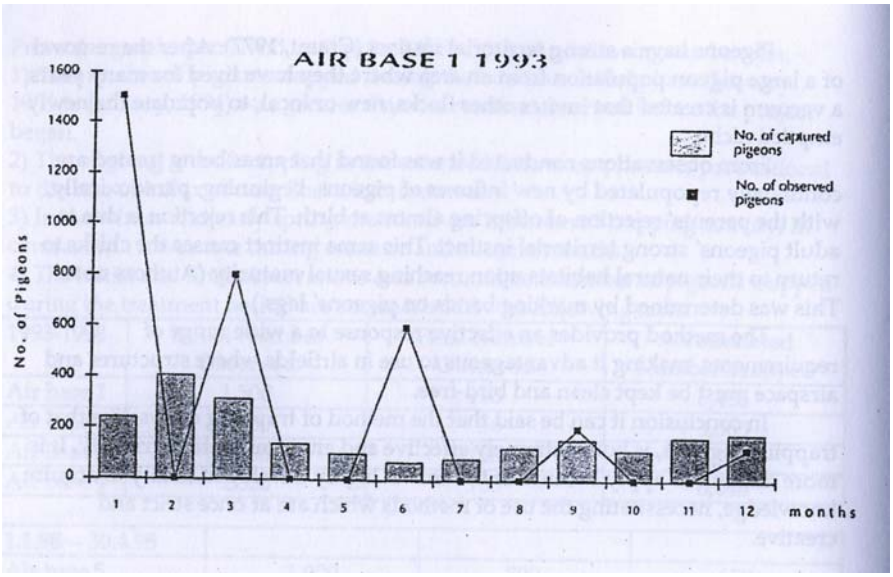
The following observations can be made:

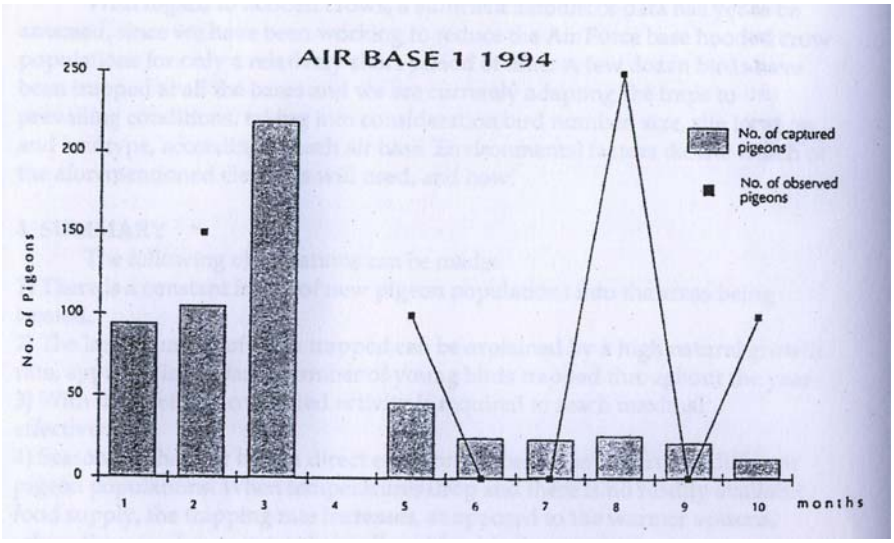
1) There is a constant influx of new pigeon populations into the areas being treated.
2) The large number of birds trapped can be explained by a high natural growth rate, apparent in the large number of young birds trapped throughout the year.
3) With this method, continued activity is required to reach maximal effectiveness.
4) Seasons of the year have a direct effect on the behavior patterns of different pigeon populations. When temperatures drop and there is no readily available food supply, the trapping rate increases, as opposed to the warmer seasons, where there are larger natural supplies of food in the area.

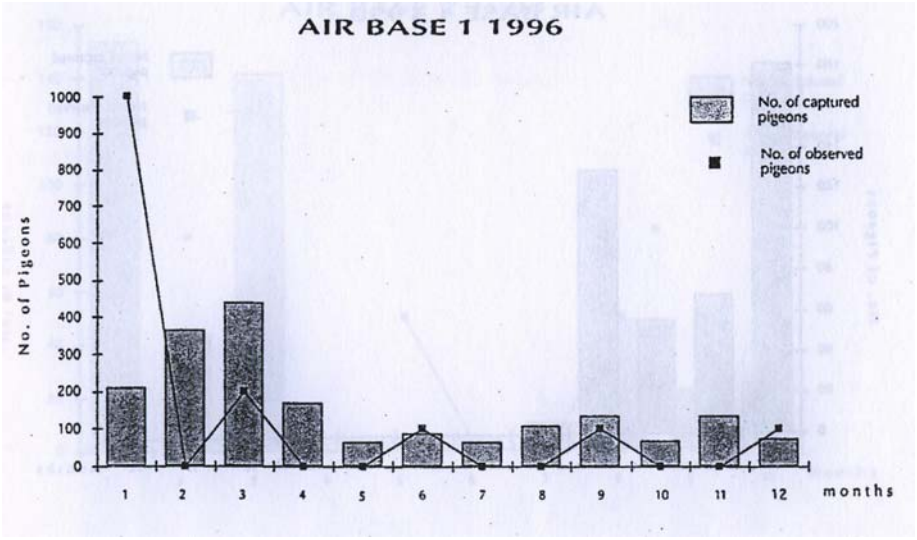
Pigeons have a strong territorial instinct (Cramt, 1977). After the removal of a large pigeon population from an area where they have lived for many years, a vacuum is created that invites other flocks, new or local, to populate the newly emptied niche.

From observations conducted it was found that areas being treated are continually repopulated by new influxes of pigeons, beginning, paradoxically, with the parents' rejection of offspring almost at birth. This rejection is due to adult pigeons' strong territorial instinct. This same instinct causes the chicks to return to their natural habitats upon reaching sexual maturity (Authors note: This was determined by marking bands on pigeons' legs.)

The method provides an effective response to a wide range of requirements, making it advantageous to use in airfields where structures and airspace must be kept clean and bird-free.
In conclusion it can be said that the method of trapping crows, like that of trapping pigeons, is both extremely effective and environmentally friendly. It is more difficult to apply because of the crows' highly developed ability to acquire knowledge, necessitating the use of methods which are at once strict and creative.



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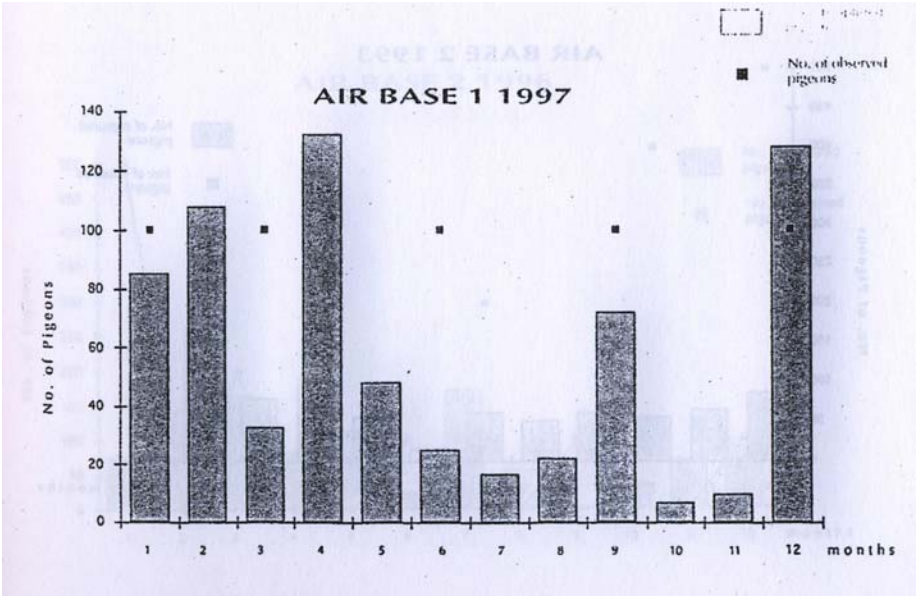
No. of captured pigeons
No. of observed pigeons
No. of Pigeons
1000
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12
months


No. of observed pigeons
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No. of Pigeons
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100
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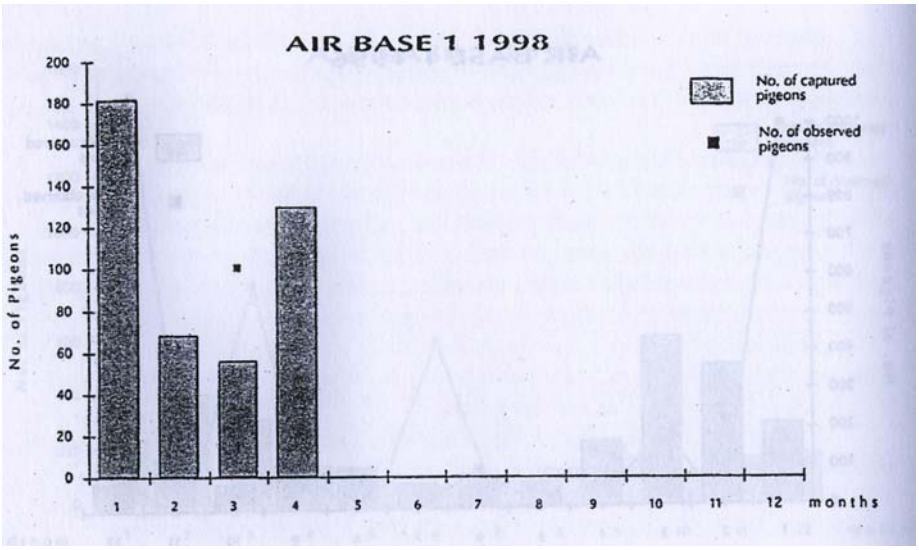
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12
months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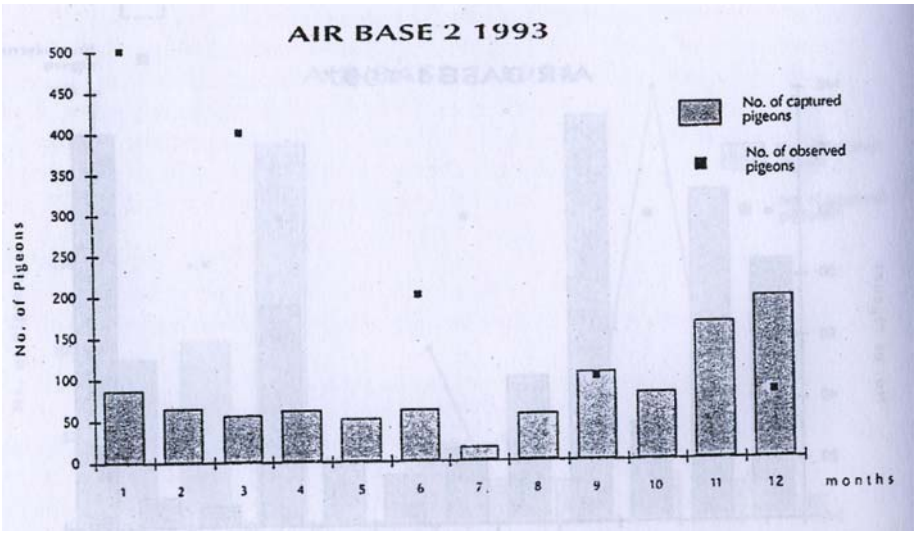
No. of captured pigeons
No. of observed pigeons
No. of Pigeons
200
180
160
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12
months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No. of Pigeons
500
450
400
350
300
250
200
150
100
50
0
No. of captured pigeons
No. of observed pigeons
1
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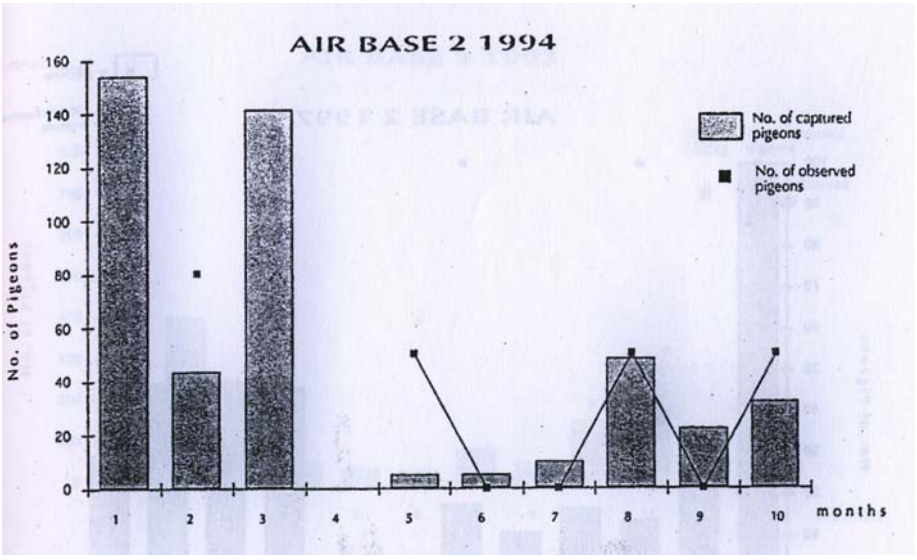
11
12
months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No. of Pigeons
160
140
120
100
80
60
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No. of captured pigeons
No. of observed pigeons
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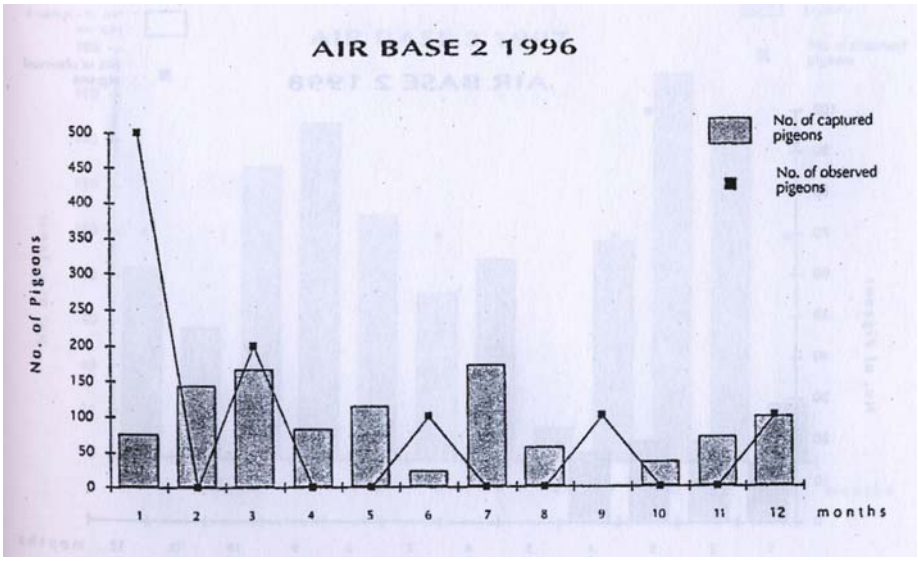
months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No. of Pigeons
500
450
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250
200
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100
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No. of captured pigeons
No. of observed pigeons
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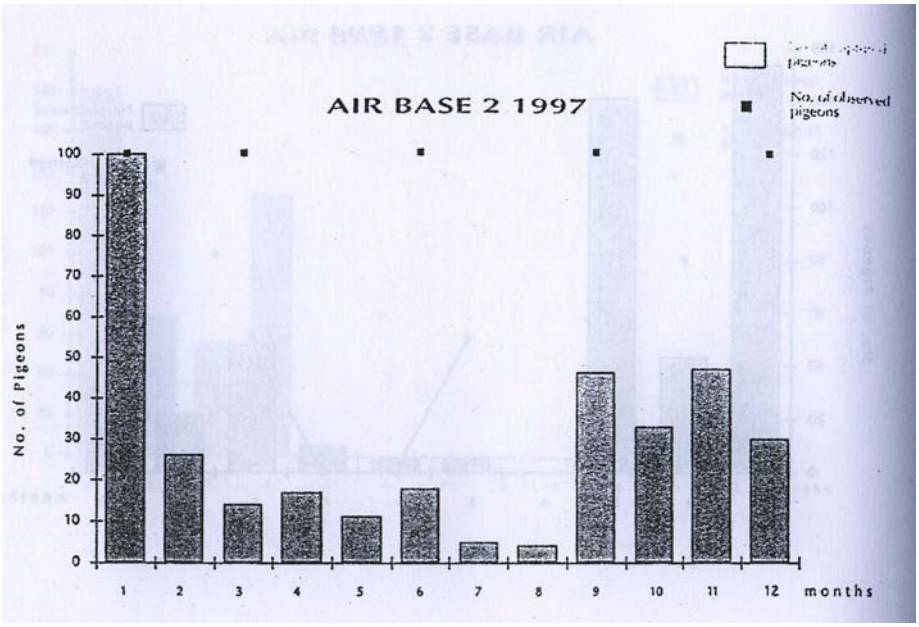
months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No. of observed pigeons
No. of Pigeons
100
90
80
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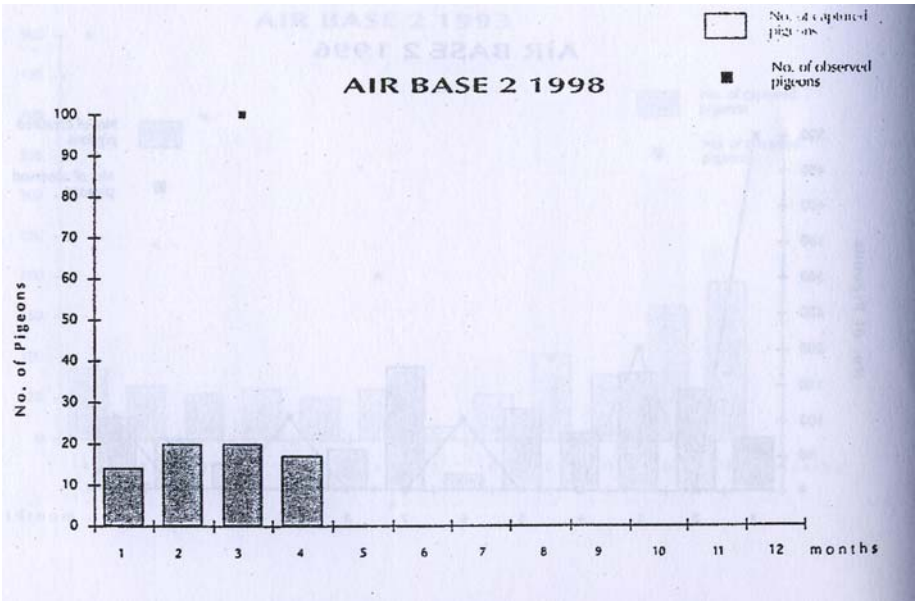
1 2 3 4 5 6 7 8 9 10 11 12 months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No. of observed pigeons
No. of Pigeons
100
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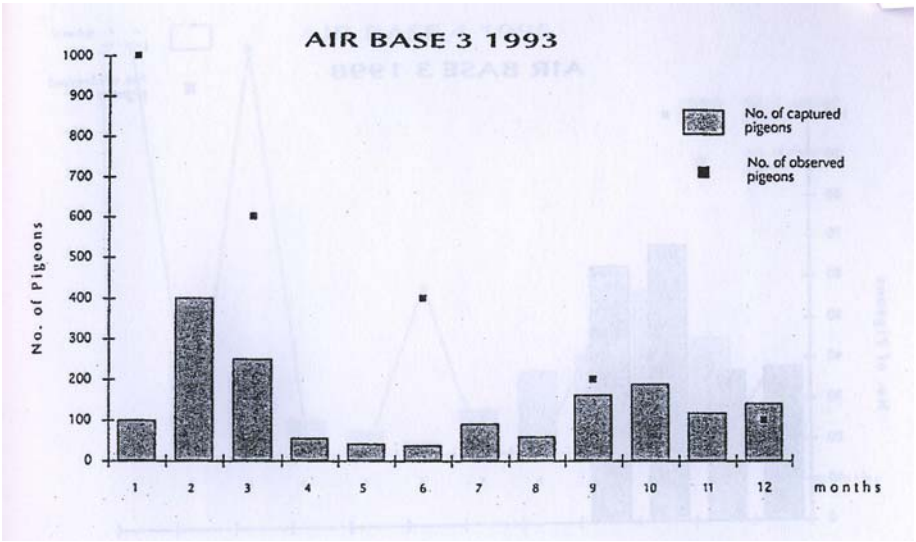
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No. of captured pigeons
No. of observed pigeons
No. of Pigeons
1000
900
800
700
600
500
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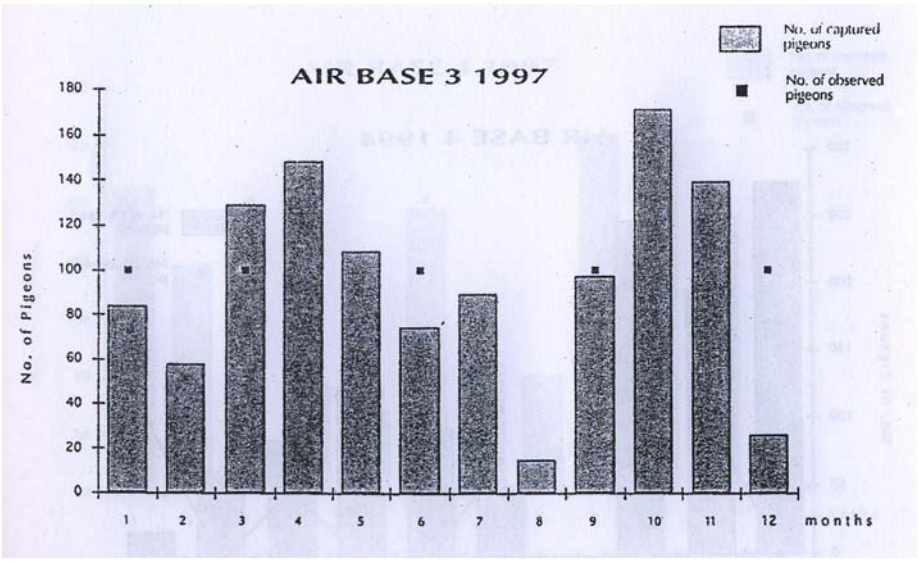
1 2 3 4 5 6 7 8 9 10 11 12 months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No. of captured pigeons
No. of observed pigeons
No. of Pigeons
0
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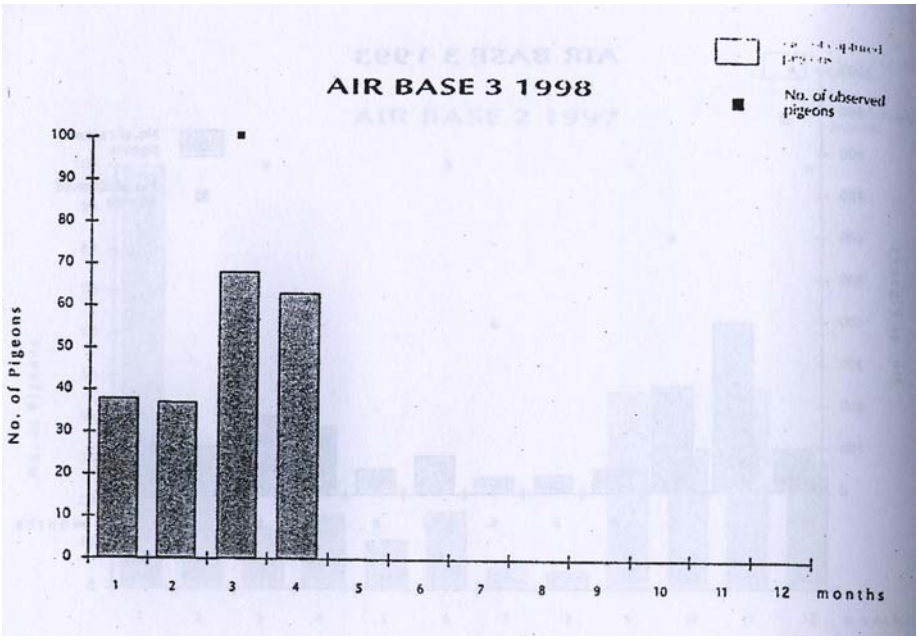
months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No. of Pigeons
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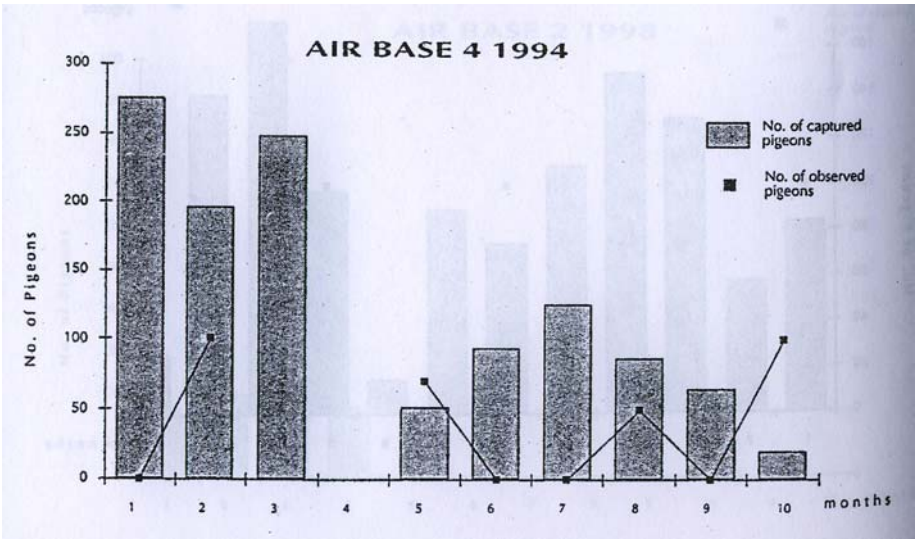
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No. of observed pigeons
No. of Pigeons
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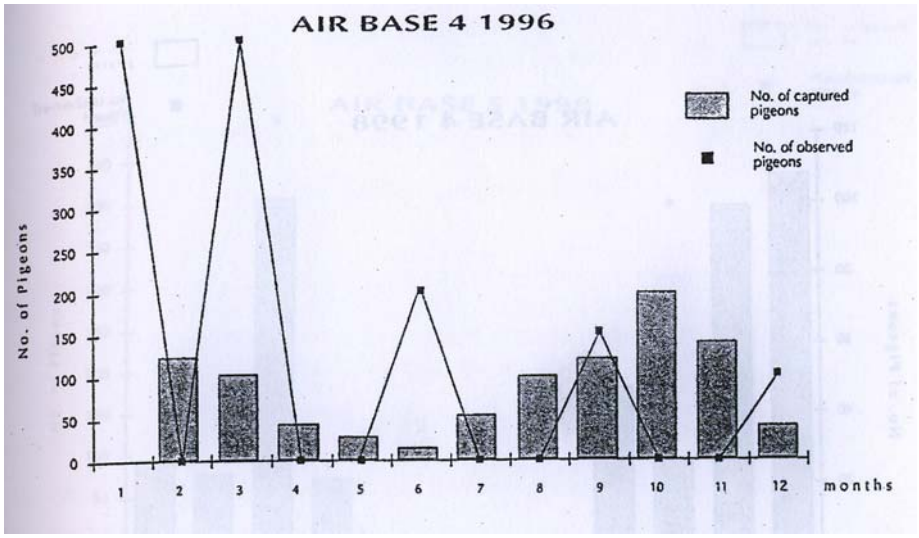
months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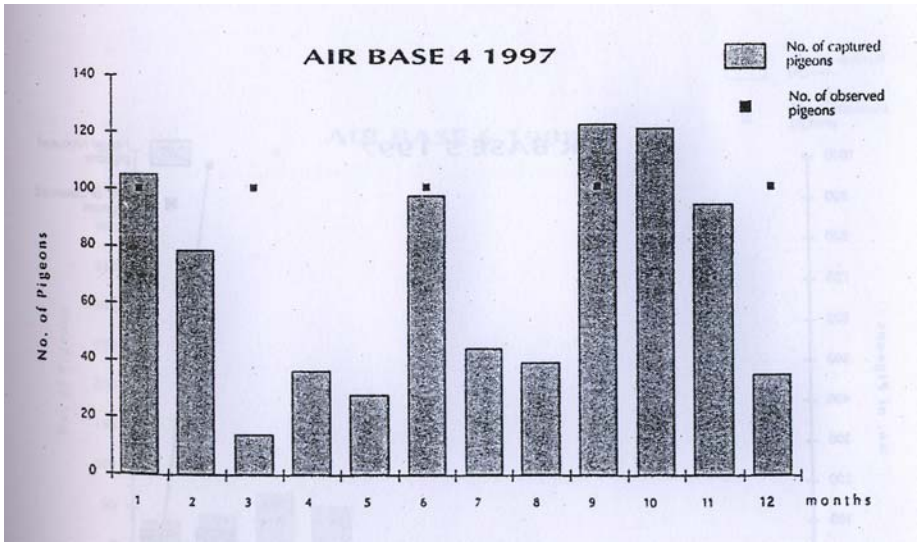
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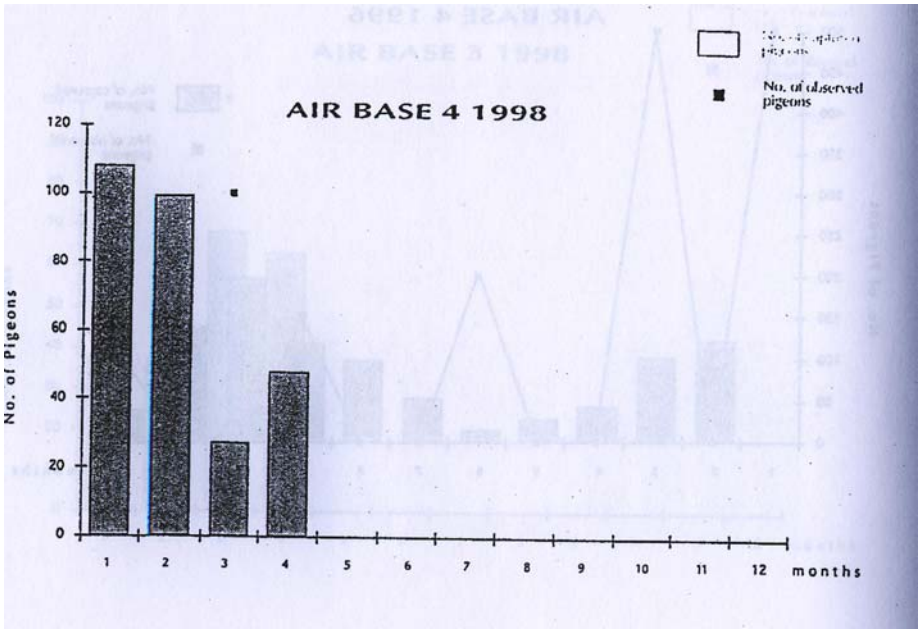
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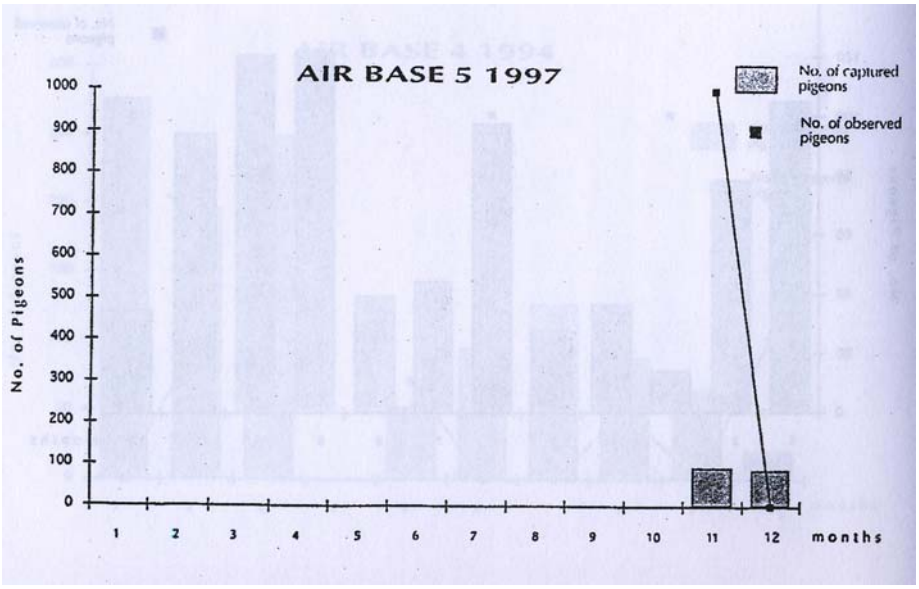
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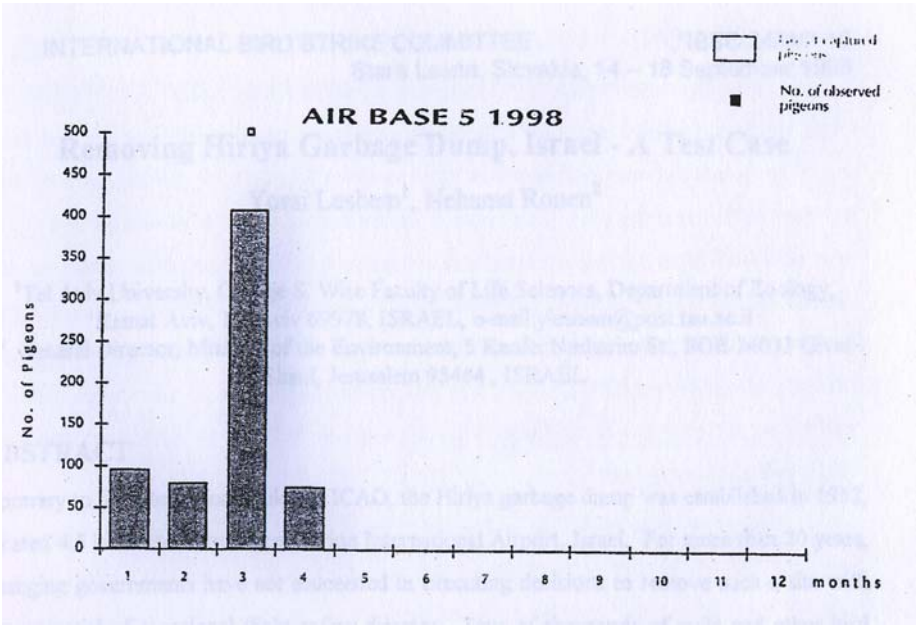
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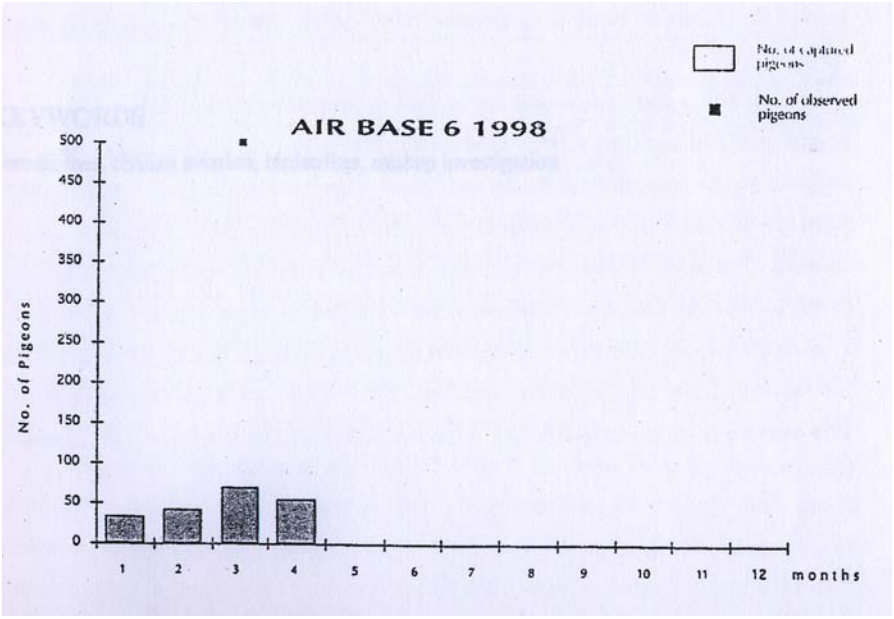
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