

Removing Hiriya Garbage Dump, Israel - A Test Case

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ABSTRACT

Contrary to the international rules of ICAO, the Hiriya garbage dump was established in 1952, located 4.5 kilometers from Ben Gurion International Airport, Israel. For more than 20 years, changing governments have not succeeded in executing decisions to remove such a site with the potential of a national flight safety disaster. Tens of thousands of gulls and other bird species use Hiriya for six months a year. This article analyzes the dangers and stages that have finally initiated the process of moving the dump to an alternative site.

Keywords: Aerodromes, civilian aviation, birdstrikes, mishap investigation

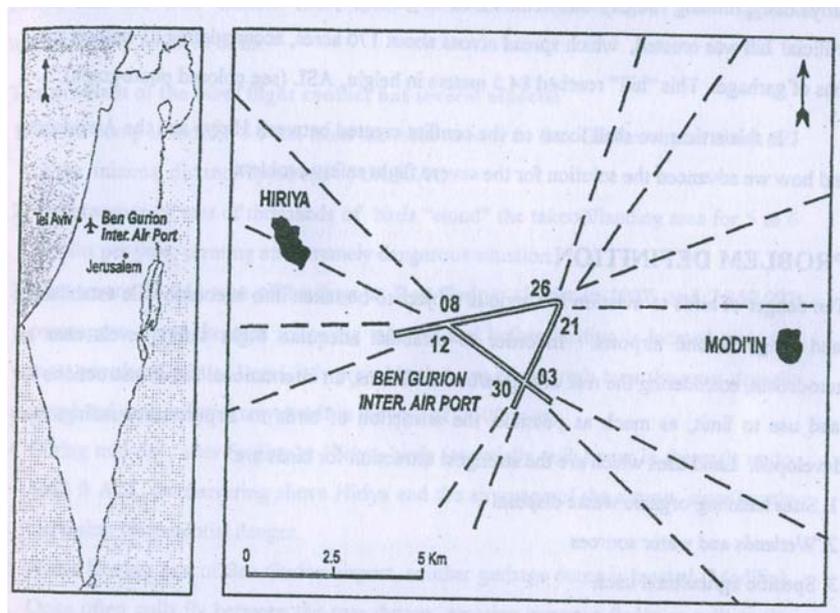
INTRODUCTION

One of the most difficult environmental problems facing Israel is the handling of waste, which is steadily increasing due to an increase in the standard of living and population size. The quantity of waste generated in Israel is about 12,000 tons per day, totaling more than four million tons per year. This waste is transferred to hundreds ^{all} unregulated dumps, most of which cause serious environmental dangers, specifically polluting water and land sources, as well as creating air pollution and causing a threat to flight safety. During the last 20 years, various attempts to solve the problems were made. In 1974, work on a national plan for waste removal began (TAMA16), which was approved in 1989 - 15 years later. Actually, until today, not even one central landfill has been established in place of active unregulated sites, especially around central Israel.

During the preparation of TAMA16, about 150 possible substitute sites were examined, out of which 18 were chosen (5 central and 13 local) for various garbage disposal sites. It was decided that until operation of these sites, waste will be transferred from the unorganized dumps to the ones chosen for the TAMA16 national program. This decision was reached in order to close other unregulated dumps in the quickest possible way. This move enabled the closure of about 200 ^{unregulated} sites - about half of the sites designated for closure.

The Hiriya dump was established in 1952 on land defined at a juncture point between several local municipalities, with no legal owner (Figure 1). The location was meant to be used as a site for waste disposal for the most heavily populated area in Israel. In July 1966, a plant for the manufacturing of compost was built in Hiriya in order to efficiently use large amounts of waste on the site. This plant had to be closed after only three years of operation, having become a sanitation health hazard, as well as producing strong offensive odors. In July 1969 an association of the large municipalities for garbage disposal was established, including the municipalities of Tel Aviv, Ramat Gan, Bnei Brak, Holon, Bat Yam, Givataim and Azur. This association of municipalities was to jointly look after waste transfer and disposal at Hiriya.

Figure 1: Ben Gurion International Airport location and the location of the Hiriya and Modi'in dumps, including the high risk area of take-off/landing.



At the end of the 1970's, the regional committee and the Ministry of the Interior decided to close Hiriya no later than 1983, following major problems of air, soil and water pollution, fires and danger to flight safety at Ben Gurion International Airport.

In 1989, one of the decisions of the national planning program (TAMA16) was to move Hiriya 45 kilometers to the south, however this was not implemented. In 1991, the National Committee for Planning and Construction decided to close Hiriya by December 1995. This decision was backed by the former government. The Hiriya garbage dump was to be transferred to Dudaim dump, in southern Israel, 6 km north of Beer-Sheba. A powerful public campaign led by Beer Sheba's -Mayor, stopped this process.

The subject was discussed (the second time) by the new Likud government which decided to close Hiriya by December 1997. This decision was also not implemented. Following intensive activities described here, 1998 brought the much needed change - and the Hiriya garbage dump is now in the process of being moved to other locations and will be completely closed on August 31, 1998. Hiriya is located approximately 4.5 kilometers west, north west of Ben Gurion Airport. It is being used by 13 central municipalities. Up to 1998, about 3,000 tons of garbage reached Hiriya daily, totaling roughly one million tons of garbage per year. Throughout the years, an artificial hill was created, which spread across about 170 acres, accumulating 25 million cubic tons of garbage. This "hill" reached 84.5 meters in height, ASL (see colored photograph). In this article we shall focus on the conflict created between Hiriya and the Aerodrome and how we advanced the solution for the severe flight safety problem.

PROBLEM DEFINITION

The danger of birds to aviation is a serious subject to be taken into account while establishing land usage around airports. In order to establish adequate flight safety levels near an aerodrome, considering the risk of planes/bird collisions, an international set of instructions for land use to limit, as much as possible, the attraction of birds to airport surroundings was developed. Land uses which are the strongest attraction for birds are:

1. Sites handling organic waste disposal
2. Wetlands and water sources
3. Specific agricultural uses.

The International Civil Aviation Organization (ICAO) defined international regulations establishing limitations on areas close to airports in a radius of eight miles for an international airport, such as Ben Gurion. An A level danger area is a limited radius of three kilometers; a B level danger area is eight kilometers, and a limited funnel of 13 km as a continuation line to the runway. Hiriya's proximity to the airport is against all ICAO regulations.

As soon as Hiriya was established, huge flocks of birds began to feed off the organic matter at the site. The birds' presence reached peaks during migratory seasons - (September to November, March to May). The problem became most acute during the wintering season (October to March) as tens of thousands of birds reached Hiriya daily. The various bird species includes, white storks (*Ciconia ciconia*), black kites (*Milvus migrans*), hundreds of herons and egrets especially cattle egrets (*Bubulcus ibis*) and hooded crows (*Corvus corone cornix*). The main problem is the various species of gulls especially the black headed gull (*Larus ridibundus*). Gull counts in Hiriya, that were occasionally conducted, showed between 15,000 to 130,000 gulls per day, depending on the season, hour, weather changes, food availability and size of the wintering bird population, all of which change from year to year. The black headed gulls roost at night on the Mediterranean, west of the coast line and in the morning fly to Hiriya and the Ben Gurion TMA area. The total population of wintering gulls is approximately 350,000 birds.

The problem of the bird/ flight conflict has several aspects:

1. Hiriya dump is located 4.5 km from the main runway in Ben Gurion airport about 1/3 of the minimal distance approved by the ICAO.
2. The presence of tens of thousands of birds "cloud" the takeoff/landing area for 5 to 6 months per year, creating an extremely dangerous situation.
3. There were 53,044 take-off/landings at Ben Gurion Airport in 1997- and 7,359,092 passengers. Since the area following take-off and before landing is located over the most populated part of Israel, it is probable that one plane crash over the most densely populated area in Israel may result in the loss of 1500 lives.
4. During mid-day, after feeding at Hiriya, birds (especially gulls) soar in thermals up to 5000 ft AGL, maneuvering above Hiriya and the air space of the airport, significantly increasing the potential danger.
5. About five km east of Ben Gurion airport, another garbage dump is located (Modi'in). Quite often gulls fly between the two dumps, crossing runways freely as well as the final approach, descent and takeoff areas.
6. During overcast days and rainy days, thousands of Mulls maneuver in low flight, right above the runways, quite often landing on the runways.
7. In ILS (Instrument Landing System) flights, the approach conus is 3° - the safety limit of the dump height is 60 meters. Paradoxically, Hiriya was allowed to grow to a height of 84.5

meters. The Israeli governments were unable to hinder the development of such a dangerous situation.

The Israel Airport Authority (IAA) has been collecting data on bird strike related air collisions since 1982. Data is collected only within the airport borders. In figures 2a and 2b (see color page) data of 11 years is summarized (1987-1997). Although the data collected is only Partial, it can be clearly seen that:

1. Collisions caused by gulls account for 4-20% per year, of total bird strikes.
2. Gull related collisions occur during the seven months of the wintering period for gulls.

SOLUTIONS AND ACTION PLANS

From the given data it seems that such a dangerous situation should not have been allowed to exist. Paradoxically, both governments (Likud and Labor) did not succeed in executing a clear cut decision. In our opinion, the solution for this problem is connected to the administration of five different government ministers (Transportation, Environment, Interior, Finance, National Infrastructure), several municipalities and the union of the most influential municipalities in Israel who operated Hiriya, with a financial profit. Each sought its own needs and interests. For example, the Minister of Transportation, for personal reasons, did not agree to lead this campaign. Similarly, the IAA and El-A1 Israel national carrier, who works under the responsibility of the Minister of Transportation although they sent documents, they were reluctant to take a leading role in this campaign.

Obviously such problems should be solved by the Prime Minister, who can exercise his authority and activate the decision taken. For such a scenario, several steps were taken:

1. The second author of this article, as the General Director in the Ministry of Environment, has stated very clearly, that her primary test for success in her position, will be transferring the Hiriya dump. Therefore, she led the process, dealing with six other Ministries, examining different alternatives of other dumps to implement the decision, and allocating appropriate government funds to cover the cost of the new solutions.
2. The first author of this article, under the auspices of the leading 'Non Governmental Organization: the Society for the Protection of Nature in Israel (SPNI) and Tel Aviv University initiated a public campaign. The campaign gathered momentum and was well covered by the media. The idea was to focus mainly on a clear cut statement - we were lucky not to be facing a national disaster, such as the possibility of a Jumbo packed with passengers crashing on Tel Aviv and resulting in approximately 1500 deaths. At the time, Israelis were particularly sensitive to such a disaster, since a few months before the campaign two Air Force transport helicopters collided and 73 soldiers died. This tragedy was on the national agenda for a long time. We approached TV broadcasting stations, radio and the press. During: 1997, hundreds of media items were presented and the subject received public support across the board including that of a number of members of the Knesset from both sides of the political spectrum e.g. Mr. Gideon Ezra of the Likud and Mr. Yossi Sarid of Meretz, the former Minister of the Environment. One of the leading journalists, Mr. Tommy Lapid, even produced a radio program at the best rating time on 14.11.97, simulating a real disaster with 465 dead - which made a strong impact on listeners, and brought the subject vividly to life. A full color poster was produced by the IAA and Civil Aviation with the sub-title "How long will luck play the leading role? Remove Hiriya immediately". The poster with this slogan was framed and given to all six ministers and directors in charge of Hiriya's activation (see color pages).

Following the public campaign and intensive work by the second co-author, the Minister for Transportation changed his mind and accepted our recommendation to close Israeli air space for several hours every day, when tens of thousands of gulls were continuously riding thermals above Hiriya - until a final decision would be reached regarding Hiriya's removal. The Beer Sheva Municipality turned to the High Court, to prevent Hiriya's removal to the Dudaim alternative dump and lost the case.

At this time, the first author returned from Ethiopia where, at the invitation of the Ethiopian Air Force Commander, he acted as an adviser for bird strike mishaps, bringing back from Ethiopia impressive photos of a Boeing 737 that crashed after takeoff because of 15 speckled pigeons, causing the death of 35 people. These photos were enlarged and provided to the Minister of Transportation, who presented them at a Government session. These Photographs, according to his feedback, created a strong impression on the Prime Minister and his government.

Around the middle of December, as the public campaign reached its full impact, it was clear to us that Hiriya would not be closed, in spite of the 31.12.97 government decision. At that time, we received

assistance from the heavens: on 16/12/97, heavy rains caused thousands of tons of soil to collapse in Hiriya, which started to block the main Ayalon ravine, at the foot of Hiriya, causing a threat of major flooding in the area. This event together with continued pressure regarding birds strikes, finally brought the direct involvement of the Prime Minister in solving the problem.

In January 1998, the closure process began and 300 tons of waste were transported south, daily. In April, 1000 tons were removed daily. In June, 1500 tons, and at the end of August, 1998 the site is scheduled for closure by law, and the great threat to flight safety is about to be solved.

SUMMARY

We conclude that the complicated internal political conflict of interests delayed the removal of Hiriya Garbage dump for two decades. Each and everyone involved had a very clear picture of all aspects of the situation including the blatant disregard of the ICAO international laws. The final success is due to:

1. A senior leader defining the subject as a national target and personally leading the campaign.
2. Joint governmental and NGO action to lead the campaign.
3. A clear definition of the problem which attracted the media's interest - being the potential for a national disaster over Tel Aviv.
4. Presenting suitable alternatives, and finding a source of government funding.
5. Commitment to the issue for a long period of time.
6. Unexpected and excellent timing of rains causing part of the hill to collapse.

In conclusion, a bit of luck is always needed...

ACKNOWLEDGMENTS

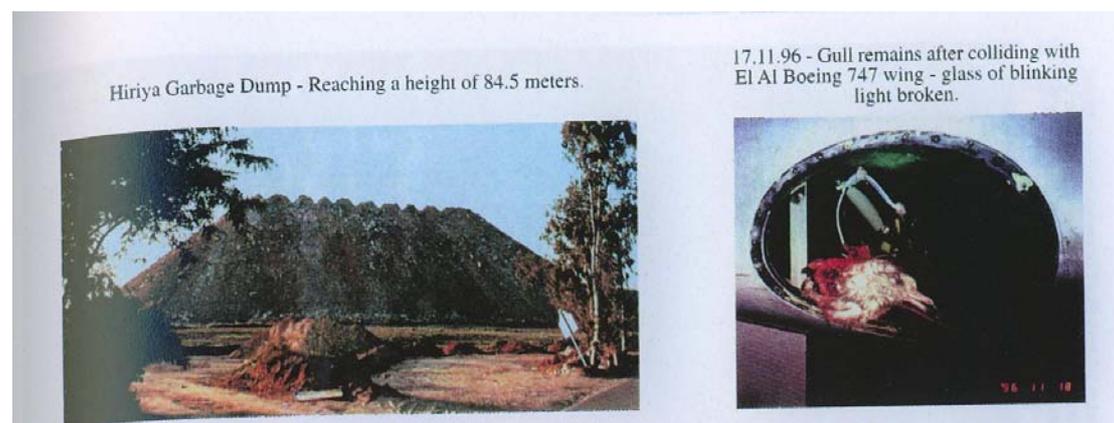
We would like to thank Dr. Ilan Nissim - Director of the Solid Waste Division at the Ministry of Environment for his help with background material, Mr. Yair Ganot, Mr. Haim Levy and his team and Uri Orlev from the Israel Airport Authority. Capt. Eelan Hight of El Al Safety, Rama Amit-Fienstein for help in translation and typing.

Our thanks to my colleagues at Tel Aviv University, and the Society for the Protection of Nature in Israel and the Ministry of Environment - for their support and cooperation, to Knesset Ministers Gideon Ezra and Yossi Sarid who led our campaign in the Knesset.

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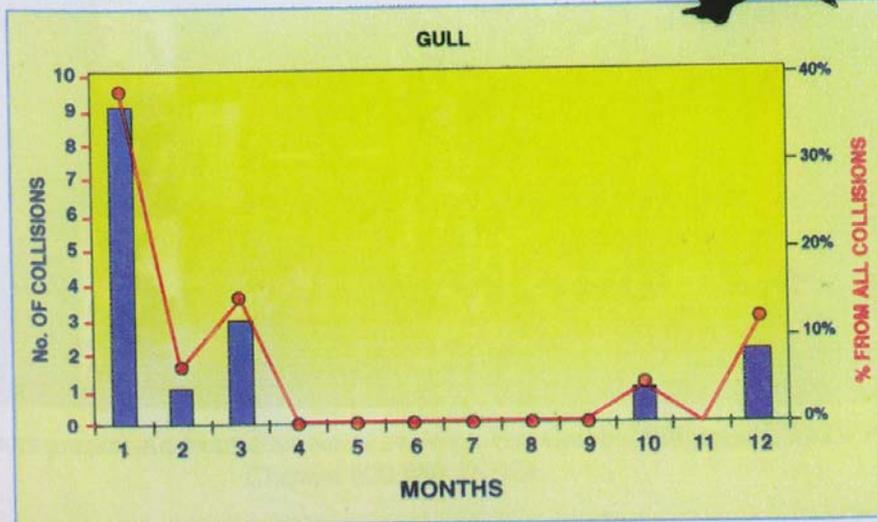
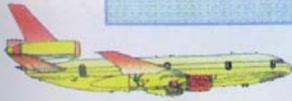
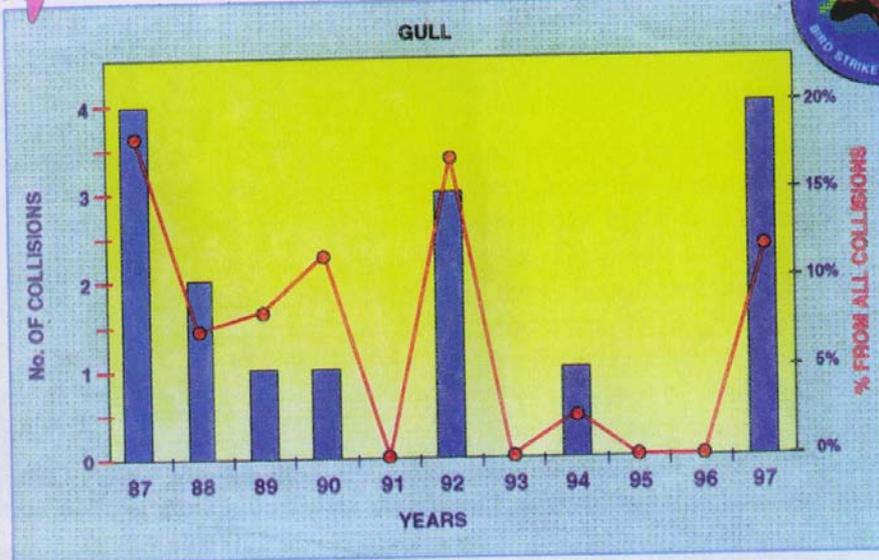




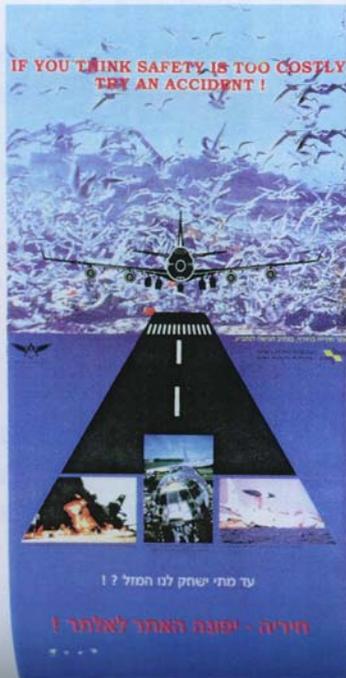
COLLISIONS WITH GULLS BETWEEN THE YEARS 1987-1997 BEN GURION INTERNATIONAL AIRPORT



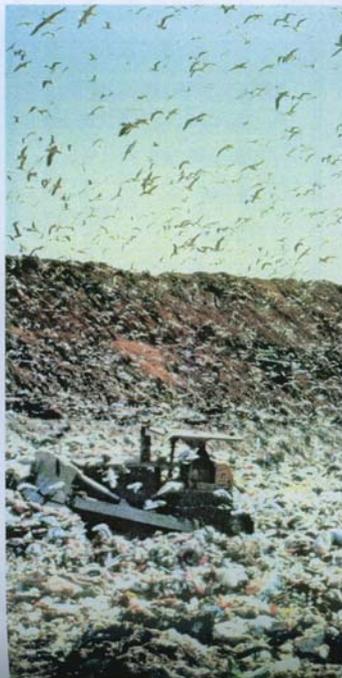
רשות שדות התעופה בישראל
Israel Airports Authority



A colored poster printed during the campaign for Hirya's removal



Black Headed Gulls above Hirya Site
(Photo: Y. Leshem)



A plane takes off from Ben Gurion International Airport towards Hirya. Vehicle of the Bird Strike Prevention Unit, Israel Airport Authority at end of runway (Photo: Lior Rubin)

