

BUMA THE BARN OWL

The Farmer's Friend



Buma the Barn Owl on the right
(the youngest nestling, no. 7).



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Amir Ezer is one of the foremost bird and nature photographers in Israel. He is a Sergeant-Major/Standing Officer in the Israeli Navy, spending every spare moment of his free time photographing birds and in activities contributing to the Barn Owl and Kestrel enterprise. Amir is also a professional tree climber, and he initiated a project to put up dozens of nest boxes on tall treetops in the Jezreel Valley. He has a son and a daughter, and lives in Afula.



Amir in his naval uniform.



Amir attaching a nest box at a height of 15 meters.



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BUMA THE BARN OWL - The Farmer's Friend | By: Yossi Leshem Photos: Amir Ezer

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בומה התנשמת ידידות החקלאי

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For additional information on the Barn Owl enterprise and other ornithological activities see www.birds.org.il or email yleshem@post.tau.ac.il

Purchasing this book contributes to the protection of birds and their habitats in Israel and to promoting education and research on birds through the 'Hoopoe Foundation'.



My dad in a hunting flight over the fields of Kibbutz Sde Eliyahu

ISBN 978-965-92011-0-5



BUMA THE BARN OWL The Farmer's Friend

By: Yossi Leshem | Photos: Amir Ezer





When will Dad get here with another rodent? My stomach's really growling!

This book is dedicated to Yossi Leshem's six beloved grandchildren – Nadav, Yoav, Noa, Alon, Naama and Nir. The first three have a grandma and grandpa on Kibbutz Sde Eliyahu – the kibbutz of Buma the Barn Owl.

The book is also dedicated to Amir Ezer's two children – Itai and Nitzan, who followed in their father's footsteps and became sworn Barn Owl enthusiasts.

An Arabic Proverb:

Follow in the path of the Barn Owl and you will be met with destruction.

In light of the initiative we are altering the words:

Follow in the path of the Barn Owl and you will be met with good fortune.

פתגם ערבי:

לך בעקבות התנשמת ותגיע לחרבן

בעקבות המיזם אנו משנים את האמרה:

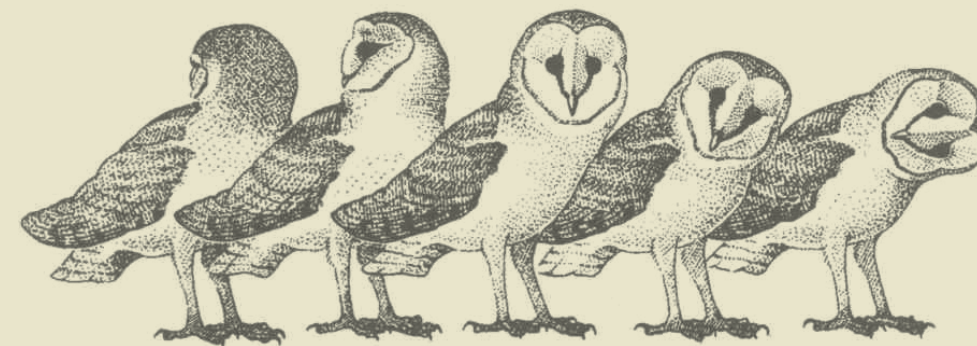
לך בעקבות התנשמת ותגיע להצלחה

يوجد مثل عربي:

الحق البوم بدلك على الخراب.

على اثر المشروع نغيّر المثل:

الحق البوم بدلك على النجاح.





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This book was written in Hebrew, translated into Arabic, and now its third edition is being published in English. An especially heartfelt thanks is extended to Geoffrey and Jackie Simmonds the heads of the Legacy Project, Tel-Aviv University who contributed to the publishing of this book, together with another anonymous donor from Israel. Without their significant help, this book would never have been completed.

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The 'Hoopoe Foundation' was established in 2011, with the aim of promoting educational and scientific activities for the conservation of birds and their habitats in Israel. Racheli and Moshe Yanai were actively involved in establishing and developing the Foundation over the course of ten years; without their help this book could not have been published.

A special thanks to everyone who contributed to promoting and developing the national enterprise for the use of Barn Owls and Kestrels as biological pest control agents in agriculture: Prof. Heinrich Mendelssohn and Prof. Eitan Tchernov (both of blessed memory) were the first partners in realizing this vision, together with Prof. Yossi Leshem; Yigal Sela, Ofer Bahat, Eli Hoter, and Yehuda Weiss (of blessed memory) who began the enterprise on Kibbutz Neot Mordechai. Yehuda Weiss fell in the 1982 Lebanon War, and did not see his vision become a reality.

Additional acknowledgements to Kibbutz Sde Eliyahu, which has hosted us whole-heartedly for the past 30 years; to Hanoch Pleser – the kibbutz pioneer, and the organic vineyard coordinator; Shauli Aviel, who accompanied the enterprise throughout – a very seminal figure in its success and in developing connections with the farmers; Dr Motti Charter, the scientific coordinator; Dr. Yoav Motro from the Ministry of Agriculture's plant protection division, whose role was central and highly vital in promoting the enterprise; Kobi Merom, who holds the world record for ringing Barn Owls; Noam Weiss; Itai

Shimshon; Sameh Darawshi, coordinator of the Arab sector of the enterprise; Dan Alon, Director of the Israel Ornithological Center; all the hundreds of farmers who were engaged in the enterprise; Orit Noked, former Minister of Agriculture, and her predecessor Shalom Simchon, together with Yossi Yishai, former Director-General of the Ministry, and his predecessor Yael Sha'altiel – without whose help the enterprise would not have come to fruition; Miriam Freund, Director of the Ministry of Agriculture's plant protection division; Gilad Erdan, former Minister for the Environment, and Alona Karo, former Manager Director of his office; Dr Yeshayahu Bar Or, Deputy Manager of the office, and Dr. Shlomo Kapua, partner to the enterprise; our many friends in Jordan and the Palestinian Authority, and in particular Imad Atrash, Director, Palestine Wildlife Society and General Mansour Abu-Rashid, Chairman, Amman Center for Peace & Development (ACPD). To all these and the many more – too many to be named – we offer our tremendous gratitude.

Yossi Leshem and Amir Ezer



Racheli and Moshe Yanai with four potential Barn Owl lovers...



Table of Contents

Introduction..... 7

Chapter 1: Buma shatters two myths 10

Chapter 2: Who are my relatives? 14

Chapter 3: We are adapted to hunting in the dark 20

Chapter 4: Our history and that of our neighbors, the farmers..... 26

Chapter 5: The Common Kestrel joins the mission..... 43

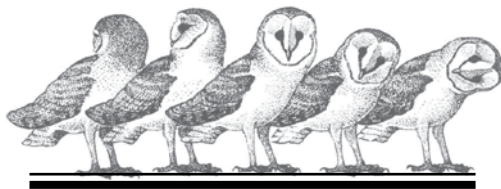
Chapter 6: ‘And they shall beat their swords into plowshares,
and their spears into pruning hooks’ (Isaiah 2:4)..... 47

Chapter 7: Our Jordanian and Palestinian neighbors join us..... 50

Chapter 8: Promoting the enterprise among the Arab-Israeli sector..... 58

Chapter 9: The Barn Owl’s future in the children's hands 61

Chapter 10: A very hopeful ending 66



Introduction

Hello there, children, I’m a baby Barn Owl (or a ‘nestling’ in my language). My name is Buma and I’m three months old.

I’ve only just fledged from my parents’ nest on Kibbutz Sde Eliyahu in the Bet Shean Valley. My parents called me Buma, which is the word for Barn Owl in Arabic. Our kibbutz is very close to the Jordanian border, and my parents sometimes cross it. The Jordanian farmers also build nest boxes for Barn Owls in their fields, and my parents thought that Buma was a splendid name that everyone would recognize: Israelis, our Jordanian neighbors to the east of the kibbutz, and also the Palestinians who live to the south of the kibbutz’s agricultural fields.

By the way, the humans living close to our nest box can’t just simply cross the border; they can only cross through the official crossing points. However, we the Barn Owls don’t need to worry at all about the man-made borders. We fly wherever we want. If there is food somewhere that is suitable for us – mainly rodents, and various species of mice – then that’s where we fly. I’m sure you already understand what fun it is to be a bird, and not have to worry

about borders and we can fly wherever we feel like it!

This year, six brothers and sisters were born before me (I’m the littlest). All seven of us managed to fledge safely from the nest. If you peek at the back of the book, you’ll see a beautiful photograph of all of us – I’m the one on the right, and all my grown-up siblings are already 'sitting up' straight and posing for Amir Ezer, the photographer.

It wasn’t easy for Mom and Dad to raise seven nestlings because we are all, with no exception, constantly ravenous (which means very hungry). When Dad comes every half hour or three-quarters of an hour with a rodent in his beak, there’s a frantic struggle in the nest. All my voracious (which means being very hungry all the time) brothers straighten themselves up and make loud huffing sounds to attract Dad’s attention. Dad is the one who usually hunts the mice, brings them to Mom in the nest box, and she decides who is going to get dinner. It’s important that you know that our daily routine is completely opposite to that of humans. Most of the daytime hours we sleep or rest, and at night, when humans sleep, we are active.



Dad goes out at nighttime to prey on the rodents (preying means killing the animal that will be our food), and so scientists and nature conservationists call us 'nocturnal birds of prey'.

When Dad arrives with dinner, when we hear him fly in and he is just about to land, and when we can also see him, we all start huffing loudly: 'pshhhhhhhh...tshhhhhhhh.' These sounds, which resemble those made by a kid with a cold, are what gives us our name in Hebrew 'tinshemet', which comes from the word "to breathe" in Hebrew. (Can you hear the 'pshhhhh'?); and in English, our full name is 'White Barn Owl', from the scientific Latin name, *Tyto alba*, which means "white owl" because we are bright white on our underside. Later, I'll tell you how we got our full name, the "Barn Owl".

About a month after hatching, when we had already grown a bit, and my siblings and I began to replace our white down with feathers, I started getting curious about our surroundings and we peeked out of the nest box. Mom then told us that we play a very important role in biological pest control in the agricultural fields. Our neighbors, the humans, who already understood the importance of this role about 30 years ago, built nest boxes for Barn Owls on Kibbutz Sde Eliyahu (60 boxes!), and we have

the privilege of growing up on the first kibbutz in Israel that made friends with Barn Owls. Honestly, we didn't really understand what Mom was talking about: What is a farmer, what is biological pest control, what is a 'kibbutznik', but we were too embarrassed to ask... we made a 'listening face' and tried to concentrate on Mom's 'educational' explanations, but then Dad arrived with a mouse in his beak and we all went back to quarrelling over dinner as usual, despite the late hour – nearly midnight...

My brothers and sisters weren't very interested in Mom's long stories and spent most of their time preening their feathers, resting and non-stop quarrelling. I, however, the youngest of the seven, was really fascinated by the stories and so my family nicknamed me the 'Ms. Night-Wise', which I really liked.

We, the Barn Owls, don't know how to write, but we have a special skill for seeing and hearing at night – ten times better than humans. I listened closely to Mom's stories and remembered them all. I decided to tell them and spread the Barn Owl heritage to all the children, who don't get to see us up close. If you enjoy my stories, you are invited to meet me or my family in agricultural fields throughout Israel, and to help us in our important task: reducing the use

of pesticides, because they cause a lot of harm to us, the Barn Owls, to creatures of the wild, and to humans, by polluting the water sources and the soil.

Mom also told me that twice a year millions of migrating birds cross Israel (five hundred million!) on their way from Europe and Asia to Africa and back. It's hard to imagine such a vast number of

birds. They too, are harmed by the pesticides, and thousands of migrating birds are poisoned by them and die.

Come and fly with me in your imagination. Follow me, and you will get to see the wonderful world of Buma the Barn Owl up close, or call me by my nickname, Ms. Night-Wise.





Chapter 1

Buma Shatters Two Myths



As I've already told you, we the Barn Owls belong to the family of owls. Throughout thousands of years of history, there has been a strong bond between humankind and owls in general, and Barn Owls in particular. In France, paintings of Tawny Owls (relatives of ours) were found on the walls of caves, which were once inhabited by prehistoric man, 8,000 years ago. At the dawn of agriculture in the Fertile Crescent in the Eastern Mediterranean, man began to grow grain – wheat and barley. They destroyed the natural forests, replacing them with agricultural crops that attracted thousands of rodents to the fields. The rodents caused a lot of damage to agriculture and spread diseases. In the wake of the rodents came the nocturnal predators, especially the Barn Owls, which began to nest in water holes, barns and attics, and formed a bond with human habitats. So now you know how we got the name 'Barn Owl'.

Soon I will tell you about our nocturnal lifestyle, about our hunting methods and how we became connected to farmers; but first I have to shatter two myths that people tell about us, the Barn Owls, and all other owls.



A Barn Owl's face, with its eyes at the front of its head. It looks a little like a human face.



The image of a Little Owl on an ancient Greek coin as a symbol of wisdom; derived from the Latin name of Athena, the goddess of wisdom



Owls also appear as symbols of wisdom, knowledge and intelligence in the Israeli Defense Forces. For example, the soldiers in the Reconnaissance Unit - which collects information - wear a badge with a Barn Owl in flight.



The magical owl, with eyes in the front of his head, symbolizes wisdom for the Canadian Inuit (Eskimos) (painting by Inuit artists, Canada, 1981). Rights: Artist of Cape Dorset, Canada. Reproduced with permission of the West Baffin Island Eskimo Co-operative Limited.

One myth is that we are wise. The eyes of most birds are situated at the sides of their head, but our eyes are at the front (I'll explain why later on). This fact makes our face appear 'human', because human eyes, too, are at the front of their head, and so prehistoric man thought that we symbolized wisdom. The Latin name of a smaller relative of ours, the Little Owl, is *Athena noctua*, which means 'The Nocturnal Athena'. Athena was the goddess of wisdom in Greek mythology, and her image appeared on many ancient coins.

However, I learned from the researchers at Tel-Aviv University and the Hebrew University in Jerusalem, that owls - including Barn Owls - are no wiser than any other bird. Their eyes are at the front of their head simply so that they can have three-dimensional vision (patience, I'll explain this too, in a bit).



An owl represented as accompanying the forces of evil attacking innocent people (painting by the Spanish artist Francisco Goya).



Owls and bats - an eerie and frightening symbol (painting by the Spanish artist Francisco Goya).

The second myth really annoys me: We appear in the culture and folklore of many nations, together with other owls, as a symbol of dark powers and evil. In the Bible, the prophet Isaiah prophesized the destruction of the Temple by the Babylonians and said: '...and their houses shall be full of doleful creatures; and owls shall dwell there, and satyrs shall dance there' (Isaiah 13:21). In Jewish tradition, as well as in Roman folklore, the owl is presented as a synonym (meaning another word) for black magic and evil, and the sight of an



owl in flight was considered a sign of impending destruction and ruin. Some Muslims believe that the Barn Owl symbolizes ghosts seeking revenge, while some Bedouin believe that if a Barn Owl or other owl approaches their tent and calls out (perhaps a hoot), someone in the family might be doomed to die.

Of course, all these myths and beliefs are nonsense and have no scientific basis. The reason such stories were created is clear: You humans lose your self-confidence at night when it's dark - when you walk in the dark and can't see well, and everything seems scary. We owls fly silently at night, so that the mice can't hear us and we can surprise them and prey on them. We are also white. If you suddenly noticed something light-colored flying swiftly and silently by, you would probably be quite startled.

Our vocalizations (the sounds we make) at night also seem strange and scary to you, and so in your imagination you relate us to forces of evil and witchcraft, and THAT'S REALLY NOT TRUE! You, humans, are much bigger cowards than us owls.

Now, why does that annoy me? Because in the end, we really help control pests in the fields and we feel that we are the farmers' friends; we feel at home with them, and are their true partners.



In many paintings of many cultures and traditions owls are featured perched on a witch's shoulder, alongside the forces of black magic and darkness (painting of a Barn Owl: Tuvia Kurtz).



Chapter 2

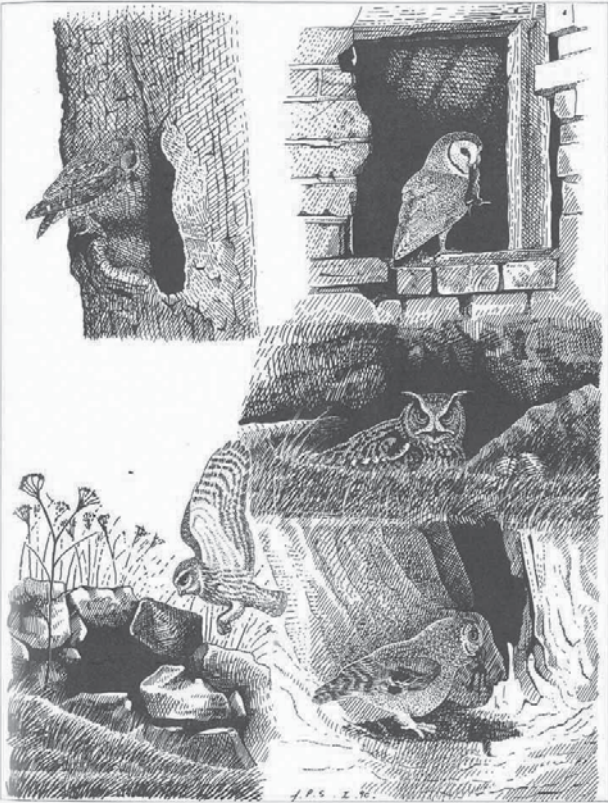
Who Are My Relatives?



Owls are common on every continent in the world, except for Antarctica. Their body size varies from 12 centimeters – the dwarf Little Owl in Central America, and up to 70 centimeters – the Eurasian Eagle Owl in the Himalayan Mountains. We don't have any family connection to the diurnal (daytime) birds of prey, such as the vultures, eagles, falcons or hawks; although they too, like us, catch their prey in their powerful claws.

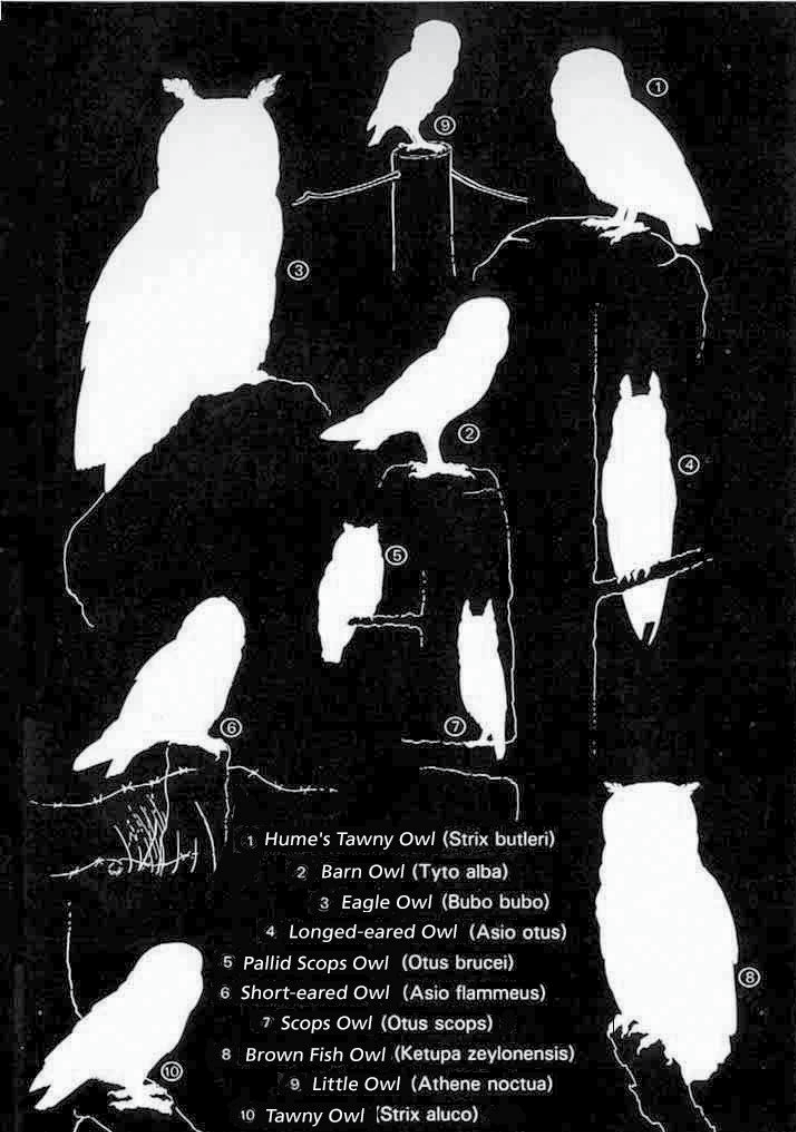
Worldwide, there are 130 species of owls, and in Israel, there are ten.

Different owls prefer different nesting places: the Barn Owl (top right) often nests in barns and other buildings; the Scops Owl (top left) usually nests in holes in tree trunks; the Eagle Owl (middle) nests in holes or caves in cliffs or on the ground; the Hume's Tawny Owl (bottom right) nests in nooks and crannies in desert cliffs; the Little Owl (bottom left) nests in crannies between rocks, in caves or nooks.



I'll tell you briefly about my ten relatives, the owls in Israel, so that you can get acquainted:

- 1. The Barn Owl** is resident in Israel (that is, we stay in Israel all year round and don't migrate), mainly in agricultural fields in the Mediterranean regions and less in the desert.
- 2. The Eagle Owl** is the largest owl in Israel. It nests in caves and cliffs, and can even catch hares and foxes, and loves to eat hedgehogs. In desert regions, there is a sub-species, smaller than the northern Eagle Owl.
- 3. The Brown Fish Owl** has been extinct in our country since 1975. It is a very large bird (almost as big as an Eagle Owl), and it used to feed mainly on fish and crabs that it caught in flowing streams, in The Sea of Galilee, and in the Hula Valley.
- 4. The Long-Eared Owl** uses nests in trees that have been abandoned by crows or small nesting baskets (see photo). It has perfect camouflage colors and a pair of prominent 'ears' – which are actually feathers. Hundreds of pairs nest along the coastal plain, in the northern valleys and the western Negev.
- 5. The Short-Eared Owl** resembles the Long-Eared Owl but without the prominent 'ears', and it nests on the ground. It has black circles surround its eyes. It makes a 'pit stop' in the country during migration and it is a rare nester in the northern valleys.



The ten species of owls in Israel, differing in size and shape, as illustrated in this silhouette painting.



6. The Scops Owl is the smallest owl in Israel. It has a prominent fringe of feathers on its head, and with its perfect camouflage coloring, it resembles a piece of wood bark. It nests in tree trunks and feeds mainly on insects. It makes a sharp, high-pitched sound that can be easily identified. It is very common in Israel.

7. The Pallid Scops Owl is a desert species, yellowish-grey in color, with delicate plumage. It is common in Iran and Saudi Arabia. It too, nests in tree trunks and feeds on insects, but is much rarer than its relative, the Scops Owl.

8. The Little Owl is a little bigger than its friend the Scops Owl and has prominent yellow eyes. It is resident throughout Israel and is diurnal as well as nocturnal. It nests in stone walls and feeds mainly on insects and small mammals.

9. The Tawny Owl is medium-sized. It is found in forest and woodland areas in the Galilee, the Golan Heights, the Carmel Mountains, the valleys, and northern Samaria. It is spotted grey in color. It feeds mainly on woodland birds.

10. The Hume's Tawny Owl is considered one of the rarest owls in the world, but in Israel, it is common in the Judean Desert, the Negev and the Eilat Mountains, and in almost every wadi (ravine in Arabic) where there are cliffs and water. The Hume's Tawny Owl also nests in the Sinai Desert, in Jordan and in the Arabian Peninsula. Its eyes are orange, and it is smaller than the Tawny Owl and its breast is relatively lighter in color. It feeds mainly on insects (including scorpions!), and on desert birds and rodents.



*Silhouette of a Pallid Scops Owl
(painting: James Smith)*



Long-Eared Owl in nest basket



Pallid Scops Owl (photo: Yossi Eshbol)



Scops Owl



Barn Owl



Eagle Owl (painting: Trevor Boyer)



Little Owl



Tawny Owl (photo: David Hosking)



Hume's Tawny Owl (photo: Roni Livneh)



Brown Fish Owl (photo: Tom Conzemius)



Short-eared Owl (photo: David Hosking)



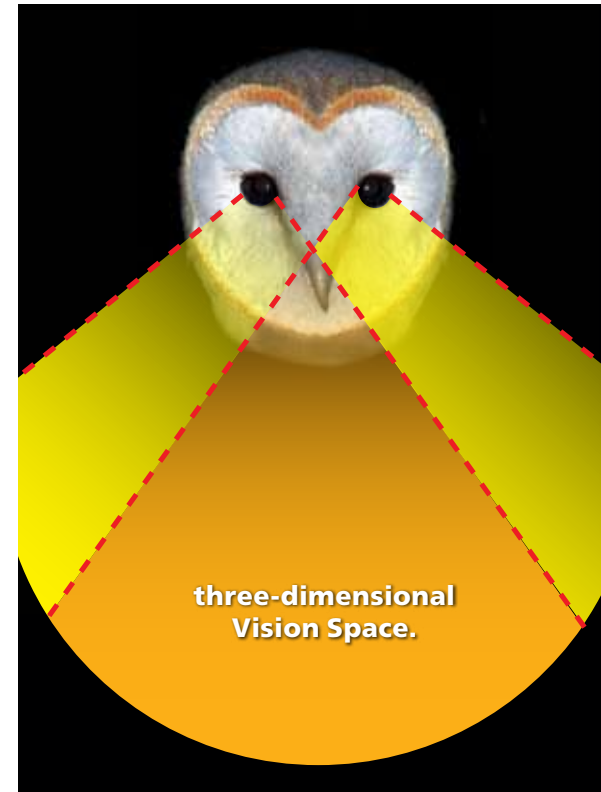
Chapter 3

We Are Adapted to Hunting in the Dark

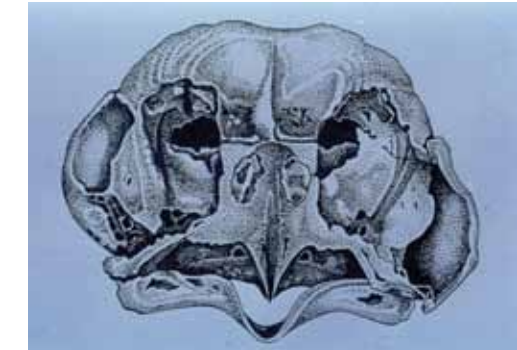


Our prominent characteristics are reflected in the name of our family, the 'nocturnal birds of prey': we catch our prey by night, in the dark. Our bodies are perfectly suited to carry out the task:

Our eyes are very large and act like the shutter in an old-fashioned camera – at night there is very little light, but we can greatly increase the size of our pupils and can distinguish even the faintest light that helps us detect our prey. As you already learned, our eyes are located in the front of our head, and so the angle of vision of one eye overlaps that of the other eye: this overlap gives us three-dimensional (stereoscopic) vision of the prey, enabling us to estimate the distance to the prey and catch it precisely. We can't allow ourselves to miss our target, because if we do it will make its escape into the nearest hole, and – we'll have lost our chance for our evening feast!



The overlapping field of vision of the two Barn Owl eyes provides it with three-dimensional vision.



A Barn Owl skull: notice the right ear opening is higher than that of the left ear (painting: James Smith).

Our sense of hearing, is highly developed: Rodents have to move very, very quietly to protect themselves in the fields, so we, the Barn Owls, develop a very sharp sense of hearing in order to hear them moving about and then we catch them. Scientists in England carried out an experiment in which they covered the eyes of a Barn Owl with a piece of opaque material (that's material that you can't see through). Even with its eyes covered, the Barn Owl succeeded in catching a mouse from a distance of 30 meters (!), using its sense of hearing that enabled it to pick up the mouse's movements on the ground. We, the Barn Owls, can hear twenty times better than humans – even better than dogs and cats, which also have very sharp hearing.

Our face is flat and the arrangement of our feathers makes it seem heart-shaped. Our entire face is like a satellite dish, that picks up sound waves and channeling them into our ears.

Our left ear is placed just a little lower than the right one, so that we can pick up the source of sound from a three-dimensional space with high accuracy. In fact, our most reliable and accurate hunting tool is our ears, not our eyes.

We can rotate our head 180 degrees, thanks to our flexible neck. Our body can therefore remain motionless while our head turns in all directions to pick up the source of a sound – even on the darkest night, even without moonlight.



Our face is flat and appears heart-shaped. Here I am at the age of 5 weeks, and you can already see the feathers that form the heart shape.



Nocturnal birds of prey can rotate their heads 180 degrees – upwards too!



My mom bringing a vole to our nest box and rotating her head backwards with the vole in her beak.



The 'comb' at the end of the flight feathers, unique to owls, muffles the sound of flight.



A Barn Owl leg with long, sharp talons for catching the prey.

Our feathers are soft and downy; at the edge of our flight feathers, we have a sort of comb, which muffles the noise made by our wings in flight.

Another very important hunting tool is our legs – we have very long, sharp nails (talons in our language), strong leg muscles and very strong claws (two claws point forward and two point backwards). We can surprise our prey and catch it with tremendous strength.

After catching the rodent, we swallow it whole – in one gulp – and for this, we have a beak that is able to open very wide indeed. We eat the whole prey, and what our stomach can't digest – feathers, hair, bones, teeth, and nails – we regurgitate after about nine hours, in a small lump called a pellet. Researchers of Barn Owls can collect these pellets from the nest boxes and from Mom and Dad's roosting points near the nest, and study them to learn about what food we eat. From studies in Israel, it seems that one pair of Barn Owls and their nestlings consume each year between 2,000-6,000 rodents. Hard to believe, huh? That's why humans decided to call us 'pest control agents'.



Nine Great Tit nestlings, all the same size, in a nest box



A Great Tit perches on the entrance to its nest box. The Great Tit nests in holes in tree trunks. The small round opening of the nest box resembles the opening in the tree trunk.

Why are there differences in size of the brothers and sisters in our family, in comparison with our neighbor in the nearby nest boxes – the Great Tit?

When I grew up a little and began to look around, I noticed an interesting fact: among us, the nestlings in my family, there are prominent differences in size, unlike the Great Tit nestlings. The Great Tits are small, colorful songbirds that sing sweetly, and they build nests (different than ours) in the same area. In their nests, all the nestlings are the same size! I couldn't understand why. My mom, who always has an answer to everything, told me a long story about the reasons for our differences:



Among Barn Owl nestlings, you can see a big difference in size between the oldest and youngest.

We, the Barn Owls, are completely dependent on our main source of food, the rodents. The rodent population, however, changes from year to year: There are years when they multiply quickly (a female vole can give birth to five or six pups every 21 days, throughout the entire year), and so we have plenty of food. In such years, the Barn Owls lay more eggs and fledge more nestlings. However, unlike Great Tits – which lay one egg every day and the mom begins to brood them only when all five or six have been laid – the Barn Owl Mom lays an egg every two days and begins to brood immediately with the first egg. As a result, the nestlings hatch at two-day intervals. When I hatched, after six siblings in our family, my oldest brother was already 12 days old (two days x 6), and so he was a lot bigger than me. The sibling that hatched after him was 10 days older than me, and so on.



Barn Owl pellets collected from their nest box.

How does this happen? When Dad brings a mouse to the nest, Mom gives it to the strongest nestling that yells the loudest. Therefore, in the years when there are lots of rodents, we all get to have dinner; but I'm always, always, the last to get fed! In years when our parents see there aren't enough rodents for everyone, the littlest ones don't get any food, and they die, but the big ones survive. This might sound cruel, but it's the only way to succeed in raising at least some of the nestlings in a large family.

Unlike us, the Great Tit nestlings feed on insects, which don't change much in number from year to year, so they all hatch together, enjoy the insects and they leave the nest together. This also shortens the time that the nest is exposed to the danger of a predator that might discover it.



A black rat



A common jird



A field mouse



A vole

(photos: Amikam Shoob)



Chapter 4

Our History and that of Our Neighbors, the Farmers



Before I tell you how my great-grandfather and great-grandmother arrived at the nest boxes on Kibbutz Sde Eliyahu, right after the farmers, I want to tell you a little about this very special kibbutz. It was founded on May 7th, 1939, according to the 'Tower and Stockade' system, by immigrant Jews from Germany. Shauli, one of the veteran kibbutz members, is also the central figure on the kibbutz in promoting pest control using Barn Owls. While he was attaching a ring to my leg and to the legs of my six siblings, he hosted 4th-grade pupils from a school in the Galilee and told them the story of the kibbutz:

Pioneers from Germany founded Kibbutz Sde Eliyahu in the Bet Shean Valley, despite the British Mandatory Government, which controlled the land at the time, prohibiting Jews from establishing new settlements. The pioneers outsmarted the British and prepared all the structures in advance – a watchtower, dining room, houses and a stockade (wall) – all from wood that could be quickly assembled. It was all prefabricated in the center of the country, and in the course of only one night, the entire complex was erected. The old Turkish law (from Shauli's stories, I learned that the Turks were here even before the British) stated that it was forbidden to destroy a settlement if it had all been erected in one night. They called this method 'Tower and Stockade', and other kibbutzim were founded in this way in the Bet Shean Valley, including Tirat Zvi, Nir David and others. Kibbutz Sde Eliyahu belongs to the religious kibbutz movement. Though the kibbutz members follow a religious way of life, they are tolerant of others who do not share their beliefs.

From Kibbutz Sde Eliyahu the vision of organic agriculture and environmentally friendly agriculture spread throughout Israel. Mario Levy, a kibbutz member, led the way to this change, and also established the Association of Organic Farmers in Israel. In addition to organic farming, a dairy farm, field crops, and a fish farm, there is a large factory that produces spices and the Bio-Bee enterprise that focuses on biological pest control using insects, and breeds bumble bees for pollination in greenhouses and orchards.

How, actually, did the special 'love story' begin between Kibbutz Sde Eliyahu and the Barn Owls? I'm going to tell you all about it, because it's a really thrilling success story!

The conflict between the rodents and the farmers

Since the beginning of agriculture, man has been dealing with all sorts of pests, especially insects and rodents that cause tremendous damage to their crops. Since the development of modern farming, crop yields have increased, as well as their quality. This made food more available for the pests, and as a result, their population increased as well. International research assessed that the annual crop destruction caused by pests is approximately 35% of all the crops (seeds, fruit, vegetables, etc.) worldwide. Farmers usually control the pests with extremely hazardous pesticides, harming the eco-system. There are pesticides that harm wildlife that are not the target of the pest control, and some of the poisons filter down into the water and soil, impairing the quality of the water and soil and endangering the exposed population. There are poisons that stick to plants, and hence harm the wildlife that are nurtured by those plants either directly or indirectly (for instance, alfalfa that has been sprayed and then fed to cattle might contaminate the milk that we drink).



Mom on watch, perched on a signpost in the organic fields of Kibbutz Sde Eliyahu (photo: Uriah Shahak).

Chapter 4: **Our History and that of Our Neighbors, the Farmers**



BUMA THE BARN OWL The Farmer's Friend

Some pesticides persist in the environment for a long time and their residues will remain in the bodies of the poisoned animals and break down very slowly. When a predator eats an animal with pesticide residues in its body, it is poisoned as well. This kind of secondary contamination has wiped out entire populations of owls and diurnal birds of prey – mainly the Barn Owl – the natural predator of the rodent.

Chemical pesticides and the damage they cause in Israel

During the 1950s, use of pesticides increased in Israel, and the outcome was grim. The damage caused by the pests did not stop, and the status of the birds of prey, the natural enemy of the rodents worsened. Entire species that had previously nested in northern Israel became extinct, and others are still endangered. Many birds of prey were wiped out in the Hula Valley alfalfa fields. Alfalfa fields are the ideal habitat of the voles, and alfalfa is a perennial crop that voles favor. Plowing the fields destroys the vole's habitat and reduces its population; however, this only occurs once every three to four years, during which time, the voles can multiply undisturbed.

This has paved the way for the vole to become the number one pest of the alfalfa fields, and farmers decided to wage war against them. Extermination was carried out by scattering 'bait' (wheat kernels covered with thallium sulfate). The bait was spread out in larger quantities than needed to kill them, and thus, the voles and other rodents absorbed far more poison than the tiny amount that was needed. Thallium is a slow-acting poison, and its primary effect is paralysis. The poisoned rodents become lethargic and cannot reach their tunnels, thus becoming easy prey for the birds. The predators prey on the poisoned rodents, and suffer from secondary poisoning, become paralyzed, and die.

Professor Mendelssohn, a prominent 20th-century Israeli zoologist, estimated that an entire population of wintering birds of prey was wiped out as a result of thallium-sulfate poisoning from 1950 to 1955. Continual large doses of the poisoned bait harmed mostly the vole's predators, thus disrupting a vital balance between the vole population and that of its predator – a balance that had existed for many millennia. Even the hardier species of birds of prey were almost entirely wiped out in the years that followed.



The natural forest and woodland converted into agricultural fields.



Waiting at the entrance to the nest on the Yogev Farm for Mom and Dad to bring another rodent. The lights in the background are from the town of Yokneam.



A Griffon Vulture nesting in Gamla, poisoned by farmers (photo: Eyal Bartov).



A young Imperial Eagle poisoned in the Hula Valley. This species is in danger of extinction worldwide (photo: Yossi Eshbol)



The tractor plowing the fields attracts migrating storks, wintering Black Kites and Egrets that feed on the rodents exposed by the plow (photo: Yossi Eshbol).

Biological pest control in the Hula Valley – an unsuccessful experiment

In 1981, in a joint endeavor, people from Tel-Aviv University, The Hebrew University in Jerusalem, and members of the Society of the Protection of Nature in Israel, decided to put an end to the catastrophic situation and offered the alfalfa farmers in the Hula Valley a reasonable alternative: controlling the vole population using Barn Owls. The site for the experiment was an alfalfa field that had a large population of voles in Kibbutz Naot Mordechai. With the consent of the kibbutz members, wooden nest boxes were built on 2.5-meter poles, then placed in the fields. Four pairs of Barn Owls were brought from the Tel-Aviv University Zoological Garden in order to adjust to their new environment.

The kibbutz members agreed to make every effort not to poison the field, and The Society for the Protection of Nature in Israel promised to send young volunteers to help in the event of vole overpopulation. After a short period of acclimation, the Barn Owls were released, but after a short time, four of them were found dead in the kibbutz area. One year later, in 1982, a similar experiment was carried out. After a three-week

Chapter 4: **Our History and that of Our Neighbors, the Farmers**



BUMA THE BARN OWL The Farmer's Friend

period of acclimation, longer than in the previous experiment, the owls were released. A number of the Barn Owls remained and there were even a few from the wild that had found their way to the nest boxes. However, during Passover of that year, a harmful pesticide (Azodrin) was spread in the field, harming mammals, storks, and many species of birds of prey, including four of the Barn Owls that had participated in the experiment. Following that incident, two nest boxes disappeared and a third – that had also been occupied by Barn Owls – was torn down. The experiment had failed!

Biological control in Sde Eliyahu – beginning in the orchards

Following these events (which I heard about from Mom), in 1983, members of the Society for the Protection of Nature in Israel approached Kibbutz Sde Eliyahu requesting that they take on a similar experiment. The kibbutz allocates a relatively large area for bio-organic agriculture. At that time it contained dates, grapes, field crops and vegetables. The researchers assumed that due to the complete absence of pesticides there would be no risk to the Barn Owls of secondary poisoning.

At the same time, the kibbutz was suffering from damage caused by various rodents in the vegetable plots as well as in the date plantation and pomegranate orchard. The farmers responded favorably to the enterprise and that same year 14 nest boxes were erected, occupied by 14 pairs of Barn Owls from the Zoological Garden at Tel-Aviv University. After confining them to the nest boxes for a period, the Barn Owls were released. However, although nesting failed that year, to our surprise, other Barn Owls from the wild came to nest in the boxes the following year.

After a few years of Barn-Owl activity in the orchard and its surroundings, it became clear that the damage to the dates and pomegranates had been greatly reduced. The farmers asked for more nest boxes, and so 60 such boxes were erected in the kibbutz fields. I hatched in one of those boxes! Lucky me!

Biological pest control at Sde Eliyahu – the problem with alfalfa

The damage caused by the voles to the alfalfa crops was severe: the bare patches increased in size until there was almost nothing left to harvest and everything had to be replanted after 18 months – instead of the usual



Nest boxes in the fields of Kibbutz Sde Eliyahu. In the background – the Jordanian village of Mashra'a, at the foot of the Gilad Mountains.

3-4 years. A large population of Barn Owls fed on this plot but even they didn't manage to get rid of the voles due to the voles' high reproduction rate. It seemed that it might not be possible to grow alfalfa. Because the number of nest boxes occupied by Barn Owls had increased every year and so had the number of fledglings, it was decided to add more boxes to the system.



The sprinkler system watering the field crops serves the Black Kites as an excellent observation post from which to hunt voles or to rest in the middle of the day.

In addition to these, look-out and rest perches were erected in the alfalfa fields, to make it easier for all the birds of prey to hunt in the area. In the fall of that year, a change could already be seen: the Barn Owls' increased predation pressure was felt in the fields, and only minor damage was caused to the new alfalfa crops in my kibbutz.

A biological balance had been achieved between predator and prey, in other words, between the Barn Owls and the rodents, and the rodent population decreased. The people involved in the enterprise were worried that the reduction in voles, the prey, would lead to a reduction in the Barn Owl population too – to the extent that they would not be able to provide an immediate solution to the vole problem when the latter populations recovered. To our surprise, we discovered that the Barn Owls had changed their menu, and their food now included birds, caught in other orchards and plantations in the area. In the fall of 2002, when the vole population in Sde Eliyahu had increased once more, the Barn Owls reacted quickly: the number of nestlings doubled and the predation pressure was sufficient to limit the vole population, which maintained numbers that didn't pose a threat to the crop.



A nestling at the nest box entrance, with its mom on watch on the roof of the box and its dad arriving from the fields.

Chapter 4: Our History and that of Our Neighbors, the Farmers

In the fall of 1997, the farmers in the Bet Shean Valley sprayed their vole-infested alfalfa fields with pesticides forbidden for use against rodents – to guard the fields against voles. Two areas, quite separate from one another, were sprayed at two different times, which caused severe environmental damage. Dozens of birds of prey, mainly Kites and Barn Owls, and hundreds of songbirds were killed through secondary poisoning. The incident, which marked the height of the conflict between farmer and nature in this respect, caused pandemonium.

Following this unfortunate event, it was decided to organize a meeting to discuss and find ways to prevent it from happening again. In March of 1998, a meeting was held in the Bet Shean Valley between representatives of the Ministry of Agriculture, under the auspices (in charge of) of the then Deputy Prime Minister, Raphael Eitan, who was also Minister of the Environment and Minister of Agriculture. The farmers' representatives claimed that without the use of deadly poisons it would not be possible to overcome the plague of voles in the valley. Representatives from the academic world, along with other participants in the discussion, explained how the use of these materials was dangerous and destructive to both humankind and the environment. The Sde Eliyahu representative, Shauli Aviel, described the model currently used by his kibbutz. The proposal was made to try out the 'Sde Eliyahu model' with some improvements suggested by the various speakers. Ever since that meeting, all the alfalfa growers in the valley changed their approach, added nest boxes, and employed various means that I will tell you about shortly. The poisoning in the valley ceased and no more damage was caused to the environment. It should be noted that maximal use of nest boxes (over 80%) is not always a good thing; it just means that there is so much food (rodents) that the number of nest sites at the location is not sufficient for all the barn owls which come to feed on the rodents. This is not a good situation, and new nest boxes should be put up immediately.

Later on, I'll tell you about the Common Kestrel that joined our 'task force'. In 2008 it was decided to make the Barn Owl story a country-wide enterprise, and to incorporate it in every agricultural region in Israel.

Members of the Society for the Protection of Nature in Israel and Tel-Aviv University initiated a unique project, with the help of funding from the 'Bracha Foundation', and succeeded in persuading the Minister of Agriculture and the Director-General of the Ministry, as well as the Minister of the Environment and the Director-General of the Ministry to make this a national enterprise. I, Buma the Barn Owl, hatched from my egg, on my kibbutz, thanks to this enterprise.



The water tower at Kibbutz Tirat Zvi, on the roof of which the Barn Owls nested, and where the Internet camera was placed.



The nestlings at night, as seen online via the infrared camera on the www.birds.org.il website.



The online camera showing the Barn Owl family on the water tower roof.

Chapter 4: Our History and that of Our Neighbors, the Farmers

Happily, all the participants joined the enterprise: the farmers, government offices, public representatives, and academics, and it became an outstanding example of a successful collaboration!

The idea was simple: to greatly increase the number of nest boxes for Barn Owls in the agricultural fields in seven regions in Israel, and within three years to double their number – from 730 nest boxes (already active in the area in 2007) to 1,500. To realize this vision and convince the farmers of the importance of nest boxes for Barn Owls and their contribution to a significant reduction in the use of pesticides, a steering committee was established representing all the participating groups, and the seven regions were determined. Each region had its appointed coordinator to work with the farmers, short films and explanatory brochures were distributed, study days were held for hundreds of farmers, and the subject was discussed in the newspapers and on the radio and television. A website was created too (www.birds.org.il), to learn about the subject first hand.

In order to convince the many farmers that we, the Barn Owls, were indeed the best possible pest control agents of rodents in the area, the leaders of the enterprise placed an online camera in the nest of a family member of mine. This relative had nested for many years on the roof of the old water tower at Kibbutz Tirat Zvi, only about 3 kilometers south of my own nest box. The camera broadcasted even by night (using an infrared lens), using the exact same principle as I use to see at night! The exhausted farmers, returning after a day's work in the fields, could thus observe the family of Barn Owls 24 hours a day (yes, exactly like the 'Big Brother' show on your television), and to see that every 30-50 minutes the dad would bring a vole, a mouse or a rat to feed his offspring.

By the way, I think I've already told you that in the first month after we hatched from our eggs, my dad was the one who hunted the rodents and my mom stayed with us in the nest box – guarded us, kept us warm, and fed us. However, I still haven't told you that when we grew up a little and it was no longer necessary to brood the eggs or keep us warm, Mom joined Dad in hunting and bringing food to the nest. Working together, Mom and Dad succeeded to provide my six hungry siblings and me with enough food for us all, so that we could develop and fledge from the nest.

I heard that the website with the camera was very successful, and received 600,000 hits during the nesting season! I also found out that even outside the nesting season you can watch lots of archived clips of the site.



A Barn Owl ring. Each country has a representative (in Israel it's Tel-Aviv University), so you can get information on Barn Owls that were caught or found in different countries all over the world.



The title page of the internet site www.birds.org.il.

Do you want to hear a great story – a true one – that I heard? In 2010, there were loads of rodents in the fields, and the pair of Barn Owls on the water tower succeeded in fledging three generations of nestlings, from January to October of the same year. From the first generation, nine nestlings hatched, from the second – five nestlings, and from the third – three nestlings, because by then there were already fewer mice in the fields, meaning less food. The pair of Barn Owls on the water tower was thus able to breed an unusual family, with many offspring. A hiker who understood Barn Owls reported that because the water tower was situated at the heart of the kibbutz and among houses, hundreds of sparrows, doves, and pigeons flew around, so the Barn Owl pair could also hunt and feed on these birds.

In addition to all the information provided to the farmers, the leaders of the enterprise put together a team of scientists and bird watchers who monitored the Barn Owl population in the nest boxes. They noted how many eggs were laid, how many nestlings hatched and fledged, they weighed the nestlings, and measured



Like I told you, the Barn Owl family feed on 2,000 to 6,000 rodents every year. What an achievement! (graphics: Anastasia Arad).

their wings, tail, beak and talons (so that they could know the exact age of each nestling). All the nestlings and adults were ringed, and each ring was given a personal number. All the information was fed into a computer, and could then be analyzed and thoroughly studied.

The researchers also carried out surveys in order to learn about the size of the rodent populations in the agricultural fields. These surveys were led by Yoav Motro from the Plant Protection Division of the Ministry of Agriculture, and a large group of students analyzed tens of thousands of pellets regurgitated by the Barn Owls. By analyzing the contents of these pellets, it could be determined what type of rodent had been eaten; for example, looking at the structure of the skull or teeth found in the pellet, they could learn what our main source of food was.

By analyzing the pellets and other studies, it seems that one pair of Barn Owls and their nestlings feed on 2,000 to 6,000 rodents every year.

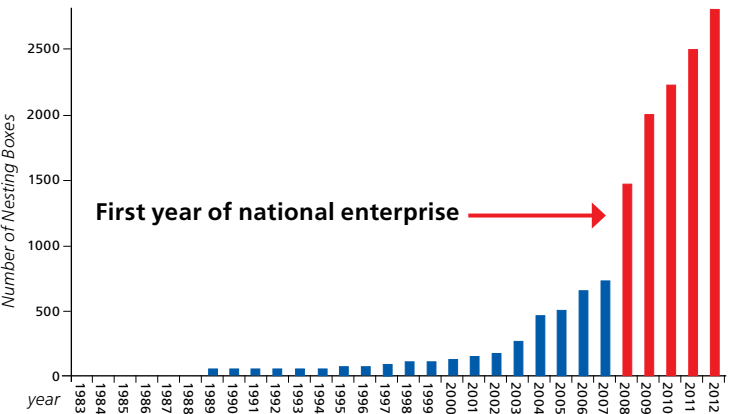
Using a GPS (Global Positioning System) device, the researchers mapped all the nest boxes in Israel, the Palestinian Authority and Jordan. Today it's possible to monitor every single pair of Barn Owls that have



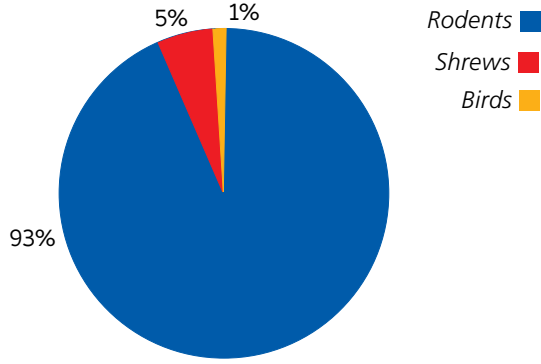
Shauli Aviel and Dr Motti Charter putting up nest boxes at Kibbutz Sde Eliyahu.



National distribution of nest boxes. Using a GPS device reveals their precise locations – 3,000 nest boxes!



Following the success of the national enterprise, the number of nest boxes in Israel rose from 730 in 2007 to 3,000 in 2013.



Analysis of the Barn Owl pellets for one year (2011).



Motti erects a new nest box, with its entrance at the top, together with farmers from the Hula Valley (photo: Ori Peleg).



That's it – the 'English nest box' ready for another pair of Barn Owls in the Hula Valley (photo: Kobi Merom).

nested since the beginning of the project, to know how many nestlings they have produced each year, when the mom began to brood, what agricultural field they nested in, and what was grown in that field.

Just imagine: today the researchers can provide me, the cute little Barn Owl, with my entire history since my parents first arrived in the area thirty years ago, and I can do a real 'roots' project!

The researchers agreed on the number of nest boxes to be erected throughout Israel since the beginning of the enterprise in 1983. I hatched from my egg in 2012, and I'm proud to tell you that the number of nest boxes in the country reached a record high that year.

Throughout the years, the researchers were often surprised to see that the nestlings beginning to climb out to the 'observation deck' at the front were falling to the ground, and so were exposed to predators such as jackals, foxes, and even snakes. Motti and Amir therefore, began to build nest boxes similar to those developed in England, with the entry hole at the top of the box. In our new nest boxes we, the nestlings, can perch on the 'observation deck' only after we are able to fly, and there's much less chance of falling. It's nice to know that the people who initiated the project worry about us even when they're building the nest boxes!

Chapter 5

The Common Kestrel Joins the Mission



I heard this from Mom too: In 2000, a completely new type of nest box was being erected at Sde Eliyahu – nest boxes for the Common Kestrel. It seems that the Kestrel is a natural counterpart to us Barn Owls for the rodent control mission. I'll tell you a little about it.

The Kestrel is a small diurnal bird of prey, very common in Europe, western Asia and North Africa. In Israel, it's considered the most common resident bird of prey, although there are also populations of Kestrels that winter in the country. The Kestrel inhabits many different types of breeding places, including those made by humans. It can be found in the heart of great cities, in agricultural areas, and in open areas of the plains.



A Common Kestrel (male).



A female Common Kestrel hovering while hunting voles during the day (photo: Yossi Eshbol).

It has a long tail and long pointed wings. The male looks different than the female: he has a bluish-gray head and chestnut-colored back speckled with black, while she is sandy-brown all over. The male and female both have a bluish-gray beak with a black tip, dark flight feathers, a dark stripe decorating the end of the tail, black talons and orange-yellow legs.

Kestrels are omni-predators; that is, they hunt a variety of small animals: various rodents, small birds that may reach the size of a pigeon (songbird nestlings make easy prey for them), various reptiles, such as lizards and chameleons, insects and arthropods. In urban areas, the Kestrel's menu is mostly small birds, while in



Different nest boxes than those of the Barn Owl were set up for the Common Kestrel. The photo shows five nestlings before fledging from the nest box in the Jezreel Valley.

agricultural areas it is mostly made up of rodents, like the vole, which is the main agricultural pest and their preferred food. You probably understand why the Kestrel is a much-desired guest in agricultural regions!

Like the other raptors, the Common Kestrel also relies on its sense of sight to detect its prey. It identifies the prey visually, but is also helped by other visual signs, such as the ultra-violet reflection of the rodents' urine, which creates a kind of trail along the rodents' route.

Kestrels have three methods of seeking food: hovering, soaring and gliding, and scanning the area from

an observation point. The Kestrel likes to hover against the wind at exactly the right speed and remain 'suspended' in order to detect its favorite prey – rodents. Sometimes it flies lower and hovers above the prey in order to better identify and locate it. It then swoops swiftly downwards, its wings gathered in, and from the height of about one meter above the ground, it raises its wings to brake and extends its talons forward. The soaring and gliding method are used mainly when hunting birds. Sometimes the Kestrel also hunts from an observation point on a treetop or the roof of a nest box in the field. When the Kestrel catches its prey, it stuns it with a strong blow of its beak to the head, and chokes it using the long, strong talons on its legs.

The Common Kestrel has only one breeding cycle a year. It nests between February and August, depending on the region. Kestrels don't build their own nests but look for a 'ready-made' one: fissures in rocks and hollow tree trunks serve as natural nesting sites, as well as nests abandoned by other birds (mostly crows), and even attics and empty planters. Kestrels like to nest year after year in the same nest, unless that nest was disturbed the previous year. The female lays three to seven eggs at two-day intervals, according to the availability of food in the area. Brooding begins after the second or third egg has been laid. One pair of Kestrels tending to their nestlings preys on up to 20 rodents a day. Although the Kestrel feeds on a variety of small animals, it prefers to hunt rodents, as hunting and eating them uses less energy than the energy gained from them.

Researchers from Tel-Aviv University decided to erect nest boxes in the fields for the Kestrels too, because the Barn Owls hunt rodents by night, while the Kestrels do so by day. Rodents are therefore subject to predator pressure 24 hours a day.

Motti Charter, from Tel-Aviv University, came to live in Israel from the United States, and he carried out the work for his M.Sc. degree on the Kestrels, beginning in the date plantations of Kibbutz Sde Eliyahu. At the same time, Yoav Motro of Hebrew University was doing his PhD research on the Barn Owls in the fields of Sde Eliyahu. The enterprise slowly grew and spread to other regions in Israel and, as they say, the Barn Owls 'spread their wings'. In the Lachish region, 70 nest boxes were erected for Barn Owls and the Common Kestrel, 250 in the Bet Shean Valley, and the first nest boxes were also set up in the Golan Heights, the Hula Valley, and the western Negev.



Chapter 6

**'And they shall beat their swords
into plowshares, and their spears
into pruning hooks; nation shall not
lift up sword against nation, neither
shall they learn war any more'**

(Isaiah 2:4)



This wonderful verse from the Prophet Isaiah in the Bible deals with the End of the Days, when tools of war such as swords and spears will be turned into agricultural tools and there will be no more war... I wish!

My dad told us that in recent years, when he flew at night to hunt rodents for us in the agricultural fields, he suddenly noticed a new type of nest box in the fields, completely different from the



A nest box made from an ammunition crate attached to a date palm on the Ram-On cooperative farm.

Chapter 6: **‘And they shall beat their swords into plowshares, and their spears into pruning hooks; nation shall not lift up sword against nation, neither shall they learn war any more’**

usual ones. It seems that the military industry had agreed to donate 2,000 ammunition crates to our enterprise. The idea was simple – to turn them into nest boxes for the Barn Owls and Kestrels, with a two-fold aim: to significantly reduce the cost and at the same time fulfill Isaiah’s prophecy in its 3rd-millenium version!

Chava and Uri Ravid, a family living on the Ram-On cooperative farming village in the Jezreel Valley, gave us a large shaded area next to their house, in which Motti and Amir Ezer set up a big carpentry workshop. Yuval Peleg, who also lived on the Ram-On cooperative farm, donated a truck to deliver the ammunition crates to the workshop, and they immediately began to construct the nest boxes. Amir persuaded his commanding officer in the Navy to send a group of soldiers to help with the task, and every week they came to help with sawing, gluing and painting the ammunition crates. These special nest boxes immediately began to fulfill an important role in the Barn Owl enterprise throughout the country.



The military industry donated 2,000 ammunition crates, and they were converted into nest boxes for the Barn Owls and Kestrels.



Soldiers contributing to the community and converting ammunition crates into nest boxes in the carpentry workshop on the cooperative farm Ram-On.



Amir Ezer attaching a converted ammunition box.



Brigadier-General (Reserve) Ram Shmueli, fighter pilot in the air force, receiving nest boxes for his organic crop fields.



General (Reserve) Ami Ayalon, former Commander-in-Chief of the Navy and of the General Security Services, attaching nest boxes together with General (Reserve) Itzik Eitan, formerly of the Central Command.



Wonder of wonders – the Barn Owls immediately began to nest in the converted ammunition crates.



Chapter 7

Our Jordanian and Palestinian Neighbors Join Us



You know, of course, that the white dove with an olive leaf in its beak appears in countless places as a symbol of peace. The name of the Barn Owl in Arabic – Buma – has in the last decade also become a symbol of peace, represented by us, the Barn Owls! I was so happy to learn from my parents that in 2002 a unique collaboration began with farmers from Jordan and the Palestinian Authority. Mansour Abu-Rashid, a famous Jordanian general, who took part in the wars with Israel, played a central role in the peace process in 1994, led by Yitzhak Rabin, then Prime Minister of Israel, and King Hussein of Jordan. Upon his retirement from the Jordanian army, General Mansour decided to devote his life to promoting peace in the region and founded the Amman Center for Peace and Development in Jordan. Within this framework, in 2002, as head of a group of 14 Jordanian farmers,



Retired General, Mansour Abu-Rashid from Jordan, Chair of the ACPD Organization, proudly presenting a Barn Owl as a symbol of good luck and collaboration (photo: Motti Charter).



General Mansour Abu-Rashid (left) at the ceremonial signing of the Peace Accord with Jordan, 1994 (photo: Government Press Office). In the photo are also Israeli Prime Minister, Yitzhak Rabin, and the President of the United States, Bill Clinton. To the right is King Hussein of Jordan and next to him Ezer Weizmann, President of the State of Israel.



Chapter 7: **Our Jordanian and Palestinian Neighbors Join Us**



When everybody collaborates – Jordanians, Palestinians, and Israelis – they are all happy! Right to left: General Mansour Abu-Rashid (Jordan), Imad Atrash (Palestinian Authority), and Prof. Yossi Leshem (Israel) at the ringing station in the Hula Valley

he attended a seminar on Kibbutz Sde Eliyahu, to learn about the use of Barn Owls and Kestrels as a means of biological pest control in agriculture.

In the beginning, General Mansour and the Jordanian farmers hesitated, for among some Muslims, as I've already told you, the Barn Owl was considered to portend evil. However, when they learned about the achievements of their Israeli colleagues in this area, it was decided that the enterprise would cross the border to the Kingdom of Jordan too. The same seminar was also attended by Imad Atrash, director of Palestine Wildlife Society. He was very enthusiastic about the idea, and decided to expand it to the entire Middle East.

The Government of the United States financed the collaboration, joined later by the European Union, the Israeli Ministry for Regional Cooperation, and the Ministry of Foreign Affairs, as well. Over the course of ten years, collaborative seminars were held with farmers, researchers, nature conservationists, and even with pupils. There was immense enthusiasm, and today there are 170 nest boxes for Barn Owls in Jordan and 270 in the Palestinian Authority. Educational material has been printed, as well as color posters, and short films were documented in Arabic. It was an outstanding success – not only in expanding the enterprise to other neighboring countries - but also in creating a connection between Arabs and Jews, brought together by their desire to collaborate on an environmental issue so unique to the Middle East.



A Jordanian farmer holding a Barn Owl at the seminar on Kibbutz Sde Eliyahu, held within the regional collaborative framework. Background: Shauli Aviel, national farmers' coordinator (photo: Hagai Aharon)



Chapter 7: Our Jordanian and Palestinian Neighbors Join Us

A poster in Arabic distributed to Jordanian and Palestinian farmers.



A Palestinian farmer and an Arab-Israeli farmer at the collaborative seminar on Kibbutz Sde Eliyahu (photo: Hagai Aharon).



Palestinian farmers at a gathering to attach nest boxes in the Tamun area in the Palestinian Authority (photo: Imad Atrash).



Instruction manual for Arabic-speaking farmers, on how to construct nest boxes, and background material on the initiative.



Hotel on the Dead Sea shore: the Israeli, Palestinian, and Jordanian participants in a wild dance at the end of the professional seminar on Barn Owls (photo: Yossi Leshem).



Hundreds of farmers, bird watchers, researchers, teachers, and pupils have gotten together, and on the way, have learned that the Barn Owl project also leads to developing friendships that lead to mutual visits.

Despite the complicated political situation in our region, we, the Barn Owls, have become a symbol of collaboration among farmers, nature conservationists, scientists, and pupils! The excitement and friendships that have developed among all of the partners can be seen in the photographs from the end of one professional meeting in Jordan at a hotel on the shore of the Dead Sea when everyone broke into a wild *Debka* dance.

I will tell you an exciting story about something that happened in 2012 on the nearby kibbutz, Maoz Haim, in the Bet Shean Valley, close to the border with Jordan. Kobi Merom from Kibbutz Nir David, also in the Bet Shean Valley, is one of the veteran ringers in the Barn Owl enterprise. One day, when he was checking the nest boxes on Kibbutz Maoz Haim, he was surprised to discover – according to the rings on the parents' legs – that the male had hatched from an egg in Israel, and the female from an egg in Jordan! The pair had raised seven delightful nestlings, and for the researchers this was a very special experience: for the first time they learned that we, the Barn Owls, pay no attention whatsoever to borders!



Kobi Merom proudly holding an Israeli male (left) and a Jordanian female (right) Barn Owl next to their nest box on Kibbutz Maoz Haim (photo: Motti Charter).



The seven nestlings of the mixed Jordanian-Israeli pair – Israeli father and Jordanian mother. (photo: Motti Charter)



Right: Leg of the female with the Jordanian ring; left: Leg of the male with Israeli ring.



Chapter 8

Promoting the Enterprise in the Israeli-Arab Sector



Following the successful Jordanian-Palestinian collaboration, a special activity also began in the Beit Netufa Valley, initiated by Sameh Darawshi from the Arab village of Iksal in the Galilee. In collaboration with Mekorot, the Israel National Water Company, 53 nest boxes were set up along the route of the National Water Carrier that crosses the Beit Netufa Valley in the Galilee. The boxes were placed between the security fences protecting the water channel on both sides, and so the nestlings were protected as well. The Barn Owls and Kestrels began to fly and hunt in the fields of the Arab villages in the valley: Bu'ineh-Nujidat, Kafr Manda, Arabeh, and Sakhnin. Sameh instructed the farmers, approached the Mayors of the village councils, and even persuaded the Muslim clerics to speak to the faithful in their Friday sermons in the mosque about the importance of the Barn Owls to the farmers. This enterprise too, was a great success and has expanded in recent years.



An Arab pupil and a Jewish pupil bird-watching together (photo: Effi Sharir).



Salech Omari (right), farmer and agronomist from Sandaleh, excitedly holding a Barn Owl that had nested in his field and raised seven nestlings. Sameh Darawshi (left) ringing the female and the nestlings.



A pupil from the Bir el-Amir school in Nazareth excitedly holding the first nestlings to hatch in Sandaleh within the framework of the Arab sector enterprise.



Chapter 9



The Barn Owl's Future is in the Children's Hands

Under the auspices of the farmers' initiative, it was decided to integrate the subject into the school curriculum in the agricultural regions. The pupils would go on field trips, learn the importance of biological pest control using Barn Owls and Kestrels, and in the future they would be the leaders of change in helping to persuade their parents to join the enterprise.

The curriculum, using teaching materials such as films, presentations, folders including written material developed for schools, etc., was adopted initially by 14 schools. Later on, about 100 more schools from the Northern Region, half of them from the Arab, Druze, and Bedouin sectors, joined the project under the guidance of Dr. Orna Simchon, director of the Northern Region schools. The title of the project was 'Yes to the Bird' – we say yes to biological diversity and sustainability!

The culminating event, which was one of the highpoints of the enterprise, took place in the Hula Valley with 5,000 4th-grade pupils. In addition to a questionnaire and study trips to the agricultural fields, a bird-painting

Dr. Orna Simchon, Head of Northern Israel Region, Ministry of Education, and the three winning paintings. Right to Left: First Place – Mona Amri, Sandaleh elementary school – The Barn Owl, Second Place – Fourth Grade At-Tur School, Daburiyya – Bulbul Mosaic, Third Place – Osher Shaharabani, Shazar School, Acre – The Barn Owl (photo: Hagai Aharon).



A pupil looking at photographs at the 'Yes to the Bird' exhibition.



A pupil from Mitzpe Netufa in the Galilee celebrating his Bar Mitzvah with his classmates by constructing nest boxes for Barn Owls and placing them in an agricultural field at Kibbutz Kfar Ruppin in the Bet Shean Valley.

competition was held in 100 schools in the North. You might find it hard to believe, but the top three winners of the competition were paintings of Barn Owls. A special exhibition was held of all the birds in the Hula Valley, which everyone thoroughly enjoyed.

I asked my mom, "Who will continue the Barn Owl enterprise?" because our nest boxes need routine maintenance. When I look around at the kibbutz fields, I can see that many of the farmers are already growing old. Mom told me that the fate of the enterprise is in the hands of the children – they are the ones who must continue the construction of nest boxes and pay close attention to learning about nature, and it is they who will replace the adults in the enterprise. Mom also told me that once (one year before I hatched), when Yossi and Shauli hosted Shimon Peres – President of the State of Israel – on Sde Eliyahu, they removed a feathered nestling from the nest box, showed it to the President, and told him about the enterprise. The President became as excited as a child when he held the nestling in his hands. He told his hosts that he was very proud that with the Barn Owls' help a bond had been made between Jordanians, Palestinians, and Israelis through a collaborative project. It seems that if we relate to our senior ministers the same way we relate to schoolchildren – bringing them to the field to learn about the subject through a hands-on and through personal experience – they are enthusiastic and supportive, and also oblige in funding the endeavor.

The highlight of our activities was when the Government of Israel authorized the inclusion, and of course the funding for the care of the seven bird watching centers across the country, with the intent of enhancing Israel's cultural and natural heritage.



Pupils at an agricultural school watching Barn Owls nesting (photo: Hagai Aharon).





Shimon Peres, President of the State of Israel, holding a feathered Barn Owl nestling on Kibbutz Sde Eliyahu, where he learned from Shauli Aviel and Yossi Leshem about the regional collaboration (note the ring on the nestling's leg) (photo: Hagai Aharon).



The excited former Cabinet Secretary, Adv. Zvi Hauser, smiles, while holding one of my brothers near the nest box (photo: Hagai Aharon).



Governmental Ministers Committee headed by Prime Minister Benjamin Netanyahu for Enhancing the Israeli's Cultural Heritage, which approved the bird-watching program and biological diversity. The Cabinet Secretary Zvi Hauser (to the right of the Prime Minister) appears very serious indeed (photo: Moshe Milner, GPO)



The former Minister of Agriculture, Orit Noked, visiting an exhibition on Barn Owls at a large agricultural fair.



The former Minister for the Environment, Gilad Erdan, at an event at the Knesset (Israel's parliament) dedicated to reducing the use of pesticides and to present the Barn Owl enterprise.



MK Silvan Shalom, Deputy Prime Minister and Minister for Regional Cooperation and Development of the Negev and the Galilee, visiting Kibbutz Sde Eliyahu, was so excited by the encounter with the Barn Owls that he decided on the spot to join in promoting the collaborative enterprise with the Jordanians and Palestinians.



Chapter 10

A Very Hopeful Ending



As you know, I'm still only a nestling, a three-month-old baby Barn Owl, but I've managed to learn a lot, mainly from my mom, who told me about what is happening all around the country and with our neighbors to the east and south. I feel so proud to belong to a family of such special birds, which have such an important task in reducing the use of poisonous pesticides. Now I'm curious. I want to fly off to other regions and see all those vast areas for myself, where my relatives nest – in the Golan Heights, the Hula Valley, the Lachish region, and the northern Negev. I'm sure that during my night flight I will be able to see the sights, hear the sounds of the night (you remember that I have very sharp hearing). Within a year or two, when I grow up (between you and me, Barn Owls mature very quickly, about ten times as quickly as you humans), I hope to find a mate in the Hula Valley, the northern Negev, or the Jezreel Valley, and to establish my own home in Israel – a proud and splendid family of Barn Owls.

There are many other stories that will enter the 'Barn Owl Heritage', including one more my mom told me early yesterday morning, just before I fell asleep (remember – with me, everything is reversed; I sleep during the day).

The researcher Sameh Darawshi, whom I've already mentioned, was traveling through the area of Kibbutz Gat and Kibbutz Gal-On in the central plain, when he discovered a new and impressive natural phenomenon related to the Short-toed Eagle. The Short-toed Eagle is a diurnal bird of prey that spends the summer in Israel; in other words – it spends the winter in Africa and towards spring, it returns to nest in Israel. It feeds



A Short-toed Eagle swallowing a viper that it caught (photo: Yoram Shpirer)



A Short-toed Eagle with a vole in its beak that it caught behind the plow (photo: Yossi Eshbol).

mainly on snakes, from which it takes its Hebrew name = 'Hiva'ee', which means 'snake' in Aramaic. On the Judean plain in the last ten years it seems that the Short-toed Eagle has learned that when the fields are being plowed, rodents are exposed, mainly voles, which can be easily preyed upon. Dozens of Short-toed Eagles began to gather from the entire region, to fly behind the plows, dive and catch the rodents that become easy prey. Sometimes you can see up to 80 Short-toed Eagles hovering in the air and swooping down on their prey. It's a spectacular sight. Mom told me that they are so focused on the hunt, they can be watched from a distance of as little as ten meters. This was very good news for us, the Barn Owls. Perhaps now the Short-toed Eagles, too, will join us along with the Kestrels – and persuade the farmers that we are truly their friends!



I really hope that my story will encourage you to observe my family and other birds, and perhaps we will meet one day in the fields of Kibbutz Sde Eliyahu, the Hula Valley, or the Golan Heights, and we can continue to share experiences.

To end my story, I've decided to share with you the lullaby that Mom sings to me every morning, before I fall asleep. She only sings this song to me, not to my older brothers and sisters, because she thinks it suits my character. Remember? She calls me 'Ms. Night-Wise' ... My mom always says that it is important to know how to speak at least two languages, Hebrew and English, and she sings the lullaby to me one morning in Hebrew, and the next morning in English. Here it is in both English and Hebrew:

**A wise old owl sat in an oak,
the more he saw the less he spoke,
the less he spoke the more he heard,
why can't we all be like that wise old bird?**

**יִנְשׁוּף קָשִׁישׁ הָרַבָּה לְרֹאוֹת,
כָּכֵל שָׂרָאָה - דִּיבֵר פָּחוֹת.
פָּחוֹת דִּיבֵר - יוֹתֵר שָׁמַע,
מִתִּי נִגִּיעַ לְאוֹתָהּ חוֹכְמָה?**

By the way, Mom promised me that after I learn to fly and hunt by myself, she will teach me the words to the song in Arabic too.



Me, Buma the Barn Owl (this time, third from left) with my six siblings. Aren't they cute?



First case ever in Israel and in the world:

A pair of female Barn Owls raised 19 nestlings together!

Ezra Hadad, a warden with the Nature and Parks Authority and an active bird watcher for the last 20 years, has been following migrating and nesting bird populations on the Judean Plains. In early March 2013, Ezra discovered accidentally discovered a Barn Owl nest at an abandoned water pool in the Judean Plains. To his enormous surprise, he discovered that a pair of female Barn Owls were brooding the eggs and nestlings together, while one male was caring for all their needs.

Together the two female Barn Owls laid 20 eggs, which they brooded close to one another, while the male busied itself with feeding them and all the nestlings. Each day he brought between 15-20 rodents to the nest– voles, mice and gerbils, which are the main pests in agricultural fields in the nesting area. Of the 20 eggs that were laid, 19 nestlings hatched, and 16 of them fledged successfully from the nest.

The nest was documented constantly by means of a video camera and still photography and, as far as we know, this is the first ever case in Israel (and in the world) in which two female Barn Owls have been documented raising their nestlings together with one male (the phenomenon is called “polygamy” and is known from studies on Kestrels, Marsh Harriers, Ospreys, and others).

In the middle of the nesting season, Bedouin were caught trying to steal the nestlings from the nest. The nestlings were returned to the nest, but following this incident it was decided to remove the ladder affixed to the site, so that no one would attempt to reach the nest. Eventually, 16 nestlings reached independence and fledged from the nest.



Sixteen of the 19 nestlings that hatched from the eggs succeeded in fledging safely from the nest (photo: Ezra Hadad)



The female brings a rodent to the nestlings (photo: Ezra Hadad)



The two females are brooding 19 nestlings together (photo: Ezra Hadad)



Fields in the Jezreel Valley and foothills of the Gilboa Mountains.



This book is dedicated to the memory of three paratrooper officers affiliated with Kibbutz Sde Eliyahu:

Major Dubi Shamir, born February 21, 1947 on Kibbutz Sde Eliyahu; his son, **Captain Eran Shamir**, born October 28, 1974 in Mazkeret Batya; and **Major Nadav Milo**, born December 29, 1972, on Kibbutz Sde Eliyahu. The three were second- and third-generation members of the kibbutz.



Barn Owl nestlings in the Bteicha (northern Sea of Galilee) (photographed by Eran Shamir, of blessed memory, in his final year at the Keshet-Yehonatan Field School in the Golan Heights).



Major Nadav Miloh who was killed in action in Lebanon on July 6, 1997. He was commander of the engineering squadron in the paratroop brigade.



Major Dubi Shamir killed on April 17, 1977 during a training exercise in Nitzana. He was deputy commander of an anti-tank paratroop squadron in the paratroop reserve brigade.



Captain Eran Shamir killed in action in Lebanon on May 15, 1997, as deputy commander of a paratroop reconnaissance platoon. He fell 20 years after his father, Dubi, was killed in duty.

