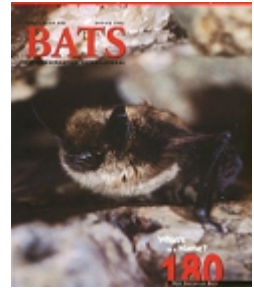


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The Bats of Israel
Conservationists Make Steady Progress
Benny Shalmon & Carmi Korine

Dedicated to the late Professor Heinrich Mendelssohn



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A dedicated corps of biologists and conservationists is pushing Israel, despite a faltering start a half-century ago, toward real progress in protecting a surprisingly diverse assemblage of bats. Yet great challenges remain.

Despite its size – 8,100 square miles (21,000 square kilometers), a bit smaller than New Jersey – Israel boasts 32 species of insectivorous bats, plus the long-beleaguered Egyptian fruit bat (*Rousettus aegyptiacus*).

Neither this rich diversity of bats nor its disastrous decline was understood or appreciated until the 1970s, when it was documented by biologist David Makin, an early BCI member. He and his mentor, the legendary wildlife zoologist Heinrich Mendelssohn of Tel Aviv University, are due much of the credit for initially awakening Israelis to the grave threats facing these important mammals. Other young scientists have since joined in.

But the story begins decades earlier. Research from the 1940s to the '60s was characterized mostly by innocent ignorance of bats' diversity and richness. Bats were collected for scientific research in numbers that often ignored their ability to recover from the resulting loss. They were often snatched indiscriminately from maternity caves, downed with shotguns, and snagged in nets.

The Ministry of Agriculture, meanwhile, was hearing complaints of fruit-bat damage to such crops as loquat, date, guava, and pear. The ministry's Department of Plant Protection and Inspection began fumigating caves in 1955 with an insecticide (since found to be carcinogenic) to exterminate fruit bats.

Many of the fumigated caves contained, along with fruit bats, large colonies of insectivorous bats, which do not eat fruit but do consume great quantities of insects, many of them damaging agricultural pests. As often happens in such eradication programs around the world, not only were great numbers of fruit bats killed (needlessly), but so, too, were many large colonies of purely beneficial insect-eating bats.

The worst declines came in Mediterranean habitats: in Mount Carmel and Northern Galilee. Etzba Cave at Mt. Carmel contained thousands of insectivorous bats of six species in the 1940s; by the '70s, only a few hundred bats of three species remained. A 1992 survey found but two individuals of a single species. The Mediterranean horseshoe bat (*Rhinolophus euryale*) and Blasius' horseshoe bat (*R. blasii*) disappeared from Mt. Carmel in the '50s and '60s, Geoffroy's myotis (*Myotis emarginatus*) and the long-fingered myotis (*Myotis nattereri*) in the '70s. Only such house- and crack-dwelling bats as Kuhl's pipistrelle (*Pipistrellus kuhlii*) and the European free-tailed bat (*Tadarida teniotis*) survived with good populations in the Mediterranean area.

Israel enacted wildlife protection laws in 1955 and 1976 to ban hunting of all mammals except those classified as game animals or pests. The Egyptian fruit bat was among the latter.

Makin's 1974-76 survey revealed the richness of Israel's bats and documented the causes of their devastating decline (see *BATS*, Winter 1985). For years afterward, he and Mendelssohn 'raised hell' in articles, lectures, radio interviews, and meetings demanding protection for insect-eating bats.

They achieved some success. In 1988, Makin demonstrated a safe, effective alternative to cave fumigation: the use of nets to capture and remove fruit bats from caves. With help from the World Conservation Union and a letter-writing campaign by BCI members worldwide, fumigations were halted throughout Israel later that year.

Our efforts to protect Israel's fruit bats continue. In 1996, one of us (Carmi Korine) surveyed the diets of fruit bats in Mediterranean habitats, with results that challenge the still-widespread view that these bats are major pests and describe other options for controlling fruit-bat damage. Bat droppings collected in Carmel National Park in 1993-95 showed that although fruit bats sometimes eat four commercially grown fruit species, they also eat native plants, which depend on bats for pollination and seed dispersal.

Three main methods are used now to protect Israel's commercial orchards from fruit bats. Each has strengths and weaknesses, and long-term studies are needed to find the most efficient strategy.

Crops are covered with nets to keep bats and birds away from the fruit. Since 1990-91, fruit bats have been caught in mist nets set around loquat and litchi plantations during periods of high feeding activity; netted fruit bats are culled. Fruitgrowers in northern Israel are working with sonic animal scares to control fruit bats. Although inexpensive, the long-term effectiveness is not yet clear.

Since 1987, Israel's Mammal Information Center has been a driving force for bat conservation. Public education efforts include radio, television, and newspaper interviews, the publication of articles and booklets, and a popular bat exhibit. BCI's audiovisual program, *Bats: Myth and Reality*, was translated into Hebrew and shown at schools. Our work with the Nature and Parks Authority, meanwhile, led to new protection for sensitive roost sites.

The center also gathers data on bats through surveys and research. The surveys revealed the status of Israel's 32 species of insectivorous bats: One species is locally extinct; four are critically endangered; 16 are endangered; eight are vulnerable; two are near threatened; and there is too little information to determine the status of one species.

A burst of research by graduate students is spurring new conservation efforts. Yohay Carmel demonstrated the need to protect feeding sites, as well as roosts, in the Upper Galilee. Yom Tov and Racheli Feldman identified the foraging area and food types of bats in the Dead Sea region. Asaf Tsoar modeled the distribution of insectivorous bats in Israel, while Korine, Berry Pinshow and their students examined ecology and conservation of bats in the Negev Desert.

Israel's small band of bat researchers has made progress, but we must expand our efforts. Insectivorous bats face grave threats from increasing human population. We must continue documenting and informing the public of the value of our bats and what their loss would mean for the nation's environment.

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All articles in this issue:

- [What's in a Name?](#)
- [The Bats of Israel](#)
- [Tracking Woodland Bats](#)
- [The Vampire's Gift](#)
- [A Children's Crusade](#)
- [Bats Lose an Old Friend](#)
- [BCI Earns Top Rating Among Nonprofits](#)