

Going, Going, Gone

A History of Israel's Biodiversity

And God said: 'Let the earth bring forth living creatures, each according to its kind; animal and creepers, and beast of the land each according to its kind'.... And God saw that it was good.

—(Genesis 1:25)

Introduction to the Natural Wonders of the Holy Land

The Bible is filled with wildlife.¹ After generic descriptions of the biodiversity in the Garden of Eden, and then on Noah's ark, the narrative focuses on the Land of Israel itself. The Bible metaphorically speaks of a 'Land of Milk and Honey'. But zoologists with more taxonomical inclinations would more aptly call it a land of mammals, reptiles, fish, birds, and amphibians. From asses and antelope to vipers and vultures; from bears and bees to wolves, worms, and wild goats, Scripture literally teems with life. Samson combats lions while Daniel calms them down. Botanists could refer to the dozens of plants and trees mentioned in the Bible, some of whose identities we can only guess at today.

Years later, ecologists can explain this extraordinary species richness as a function of the unique location of this tiny land (containing only 22,000 km²—roughly half the size of Costa Rica) that serves as a

bridge between the continents of Europe, Africa, and Asia, and their contrasting assemblages of flora and fauna. Moreover, the extraordinarily steep rain gradient, that runs from as little as 10 mm of rain/year in the jejune drylands of the south, to 700 mm/year in the temperate lands of the Galilee only 300 kilometres away, allows for an idiosyncratic mixing of species, and extraordinary variety within a very small area.²

Unfortunately, modern natural history for Israel's non-human residents has taken a turn for the worse. A 2013 report by the Society for the Protection of Nature in Israel (SPNI), the country's largest environmental non-governmental organization (NGO) describes alarming trends: 23 per cent of the freshwater fish are endangered, and 83 per cent of the country's amphibians, 35 per cent of the reptiles, 60 per cent of the mammals, and 30 per cent of the plants are declining and heading towards extinction.³

There are many proximate reasons or 'direct drivers' behind the Holy Land's alarming loss of biodiversity. But all share a common denominator: as more people sprawled out across the countryside, with their ecologically unfriendly habits, there was less and less room for the other creatures that call Israel home.⁴ Against all odds, much remains today. But unless public policies and demographic trends change, Israel's natural history will be one of a biological paradise lost.

Life in Palestine after the Romans: Erosion and Abuse

The number of people living in Palestine (as the land of Israel was typically called from the Roman occupation until 1948) over the ages, has always waxed and waned, responding to the vicissitudes of warfare, disease, famine, and political oppression. Some ancient historians reported millions of residents living throughout the countryside.⁵ Archaeologists and historians today, however, tend to dismiss these claims as inflated.⁶ During the Iron Age, there may have been over 100,000 residents in the country, although these numbers soon shrunk by two-thirds. The human population during the tumultuous Roman rule (including the years when Jesus was born and lived) at its peak probably reached 1 million, and even swelled a little beyond that, several hundred years later, during the Byzantine period. But the litany of conquerors and

internecine violence, oppressive policies, land degradation, malaria,⁷ and unimaginably bad hygiene barely allowed local denizens to replace themselves. During most of the past millennium, the population in Israel rarely exceeded 300,000.⁸ Such a long and turbulent human past arguably provides Israel with more archaeological and historical sites per square kilometre than any place on earth.

As long as the population of the country was modest, most ecosystems flourished. To be sure, thousands of years of human settlement had already begun to take its toll. Even though the land was dispersedly settled, massive abuse of the soil took place due to relentless overgrazing, deforestation, and imprudent cultivation degraded the land's fertility. Erosion was epidemic and catastrophic in its dimensions. When Walter Clay Lowdermilk, a senior soil scientist at the U.S. Department of Agriculture came to the Levant in a fact-finding mission during the 1930s, he described what was by then an 'age-old' phenomenon:

Here before our eyes the remarkable red earth soil of Palestine was being ripped from the slopes and swept into the blue of the Mediterranean to a dirty brown as far as the eye could see. We could well understand how many centuries this type of erosion had wasted the neglected lands. It is estimated that over three feet of soil has been swept from the uplands of Palestine after the breakdown of terrace agriculture.⁹

Indeed, Israel's northern Negev region contains ancient well shafts that jut out high above the surface, bereft of any surrounding soil, revealing soil loss well over two metres in height. The result is a landscape and ecosystem where the biota is entirely different from the original lands settled in the days of old. The environmental degradation surely did little to enrich the country's non-human inhabitants, and especially the ever-vulnerable vegetation and trees. Over time, they paid a heavy price for human activities which invariably took from the land but did little to renew it.¹⁰ Nonetheless, with hunting at modest levels, the vast variety of species and ecosystems did surprisingly well. Throughout the land, diverse and novel ecosystems emerged, which, although hardly 'wilderness', were relatively stable and endowed with significant species richness. This situation is hardly unique to Israel. Examples abound, from the pine invasions of the species-rich fynbos shrublands

in South Africa, to the rain-shadow tussock grasslands of New Zealand, where new assemblages, with their own idiosyncratic ecological characteristics, have permanently supplanted original ecosystems.¹¹

Besides the natural world which serves as a backdrop to Biblical narratives, in the Talmud and other religious texts penned in the Holy Land, there are intermittent reports from travellers that survive, describing the natural world of Palestine over the centuries. The processes of ecological restoration appear to have waxed and waned with the inclinations of the conquering armies and their occupying forces. For example, the Crusader period (1095–291) appears to be one when many deforested lands steadily saw regeneration through the growth of woodlands; albeit they took a somewhat different form than the original ancient forests.¹² The subsequent Mamluk rule, between 1250 and 1516, however, appears to have been especially devastating, as their methods were particularly ruthless—sparing neither humans, fauna, nor flora.¹³

Among the most famous depictions of Palestine's natural world were those penned by Henry Baker Tristram, a British priest who visited Palestine four times during the years between 1858 and 1881. Tristram's writings, later published in some five separate volumes upon his return to England, contain detailed descriptions of animals and plants that he met along the way.¹⁴ Although professionally, he always remained a man of the cloth and his children were missionaries, he was an early supporter of Darwin (and Wallace's) theories of evolution. Tristram's knowledge, exceptional intuition, and talent for writing provides a thorough cataloguing of the natural history of Palestine just as the sun began to set on the Ottoman Empire at the end of the nineteenth century.

What we learn is that Palestine was home to a rich array of all kinds of animals: African mega fauna served as the high predators with cheetahs, leopards, bears, hyenas, and crocodiles enjoying a rich variety of prey.¹⁵ Many species at the time were unknown (there are six bird species and a couple of gerbils since named after Tristram himself.)

The reason why so many animals thrived was not only the low density of humans and their general interference, but also the relatively low availability of firearms for hunting. As guns became more available towards the end of the eighteenth century, hunting took on new dimensions. The population of Dorcas gazelles—a 'keystone species',

which had always been a mainstay of the local ecosystems—became greatly depleted, with only 400 gazelles surviving by the mid-twentieth century. Many other species were not so lucky: for instance, reptiles such as the Levant viper and the Nile crocodile, and the European pond turtle did not make it.¹⁶ Neither did the speedy cheetah, the local ‘Caucasian’ squirrel, the ‘water rats’ (European water voles), the lovely white onyxes, or the imposing ‘Syrian bear’ that once roamed the Golan Heights.¹⁷ The local population of lions presumably was hunted out of existence long before this especially lethal period for mammals began, during the end of the Ottoman Empire, at the turn of the twentieth century, continuing throughout the British Mandate until the mid-twentieth century.

With the advent of British colonial rule, came a strong conservation ideology. Accordingly, the first half of the twentieth century should have been a time of prosperity for the land of Israel’s natural systems. It was not. The British administration that oversaw the Mandate in Palestine between 1918 and 1948 was actually keenly aware of Israel’s unique natural systems, and was eager to repair them. Much of the impulse behind their efforts that established almost 200 forest reserves, protecting over 56,534 hectares of open spaces, involved the desire to restore the natural history of Palestine to its earlier, Biblical, splendour.¹⁸ Even so, in retrospect, there are many reasons why British rule was not the healthiest for Israel’s ecosystems.

The lack of ecological expertise among the colonial government, and the focus on planting forests that lacked indigenous integrity and diversity, meant that many policies were misguided. The considerable enthusiasm for ‘the hunt’ among the British male administrators themselves meant that serious regulation of hunting was never a meaningful part of the government’s conservation strategy.¹⁹ The ecological restoration that they did pursue, all too often, was an exercise in theoretical planning. When the Mandate came to a close in 1948, very little remained of the millions of trees their hundreds of government foresters had planted. Losses were primarily due to the vandalism and arson of the local Arab community that resisted the colonial forestry proscriptions, which excluded them from lands they had always seen as public rangelands for their herds of goats and sheep. The modest culture of hunting that was tolerated and even encouraged, obliterated several large mammal species.²⁰

Nature Rallies Back: Preservation in Israel

When the State of Israel was established in 1948, it inherited a countryside that was largely unpopulated. Prior to the resulting military conflict, the local population almost reached 2 million residents.²¹

With the hostilities leading to an exodus of most of the Arab majority, there were hardly a million people living in the country, and many more animals. Aerial photographs and maps from the time show that the newly declared country was hardly located on pristine countryside. Rather, it bore the signs of the aforementioned millennia of abuse, and the more recent introduction of firearms. Almost all of the original woodlands were extirpated, and desertification was advanced in many areas.²² The crocodiles, bears, cheetahs, and ostriches had all essentially disappeared, joining a previous generation of extinct fallow deer, wild asses, and onyxes.

Immediately upon receiving independence, the government acceded to requests by Israel's leading zoology professor, Heinrich Mendelssohn, to ban hunting, given the traumatized state of natural systems after years of armed conflict.²³ This preference for the 'hunted' over the 'hunter' continues until this very day. In the decades following Israel's independence, there was still little information about the state of local biodiversity. For instance, it was thought that the ibex (the Biblical wild goat) and local leopards had been hunted into extinction. In fact, they had not; under the continued protection of Israel's new hunting legislation, the public was delighted when they began to make an appearance. For many years, their populations seemed to rebound and remain stable.²⁴

Strict regulation of hunting was only part of the Israeli government's ecological interventions. The country's primary policies to protect biodiversity involved 'set asides'. After innumerable proposals and considerable parliamentary debate, in August 1963, Israel's Parliament, the Knesset, passed the National Parks and Nature Reserve Law.²⁵ The legislation created separate nature reserve and national park authorities with the twin mandates of preserving habitats and heritage sites, respectively.

For some thirty years, it was the minister of agriculture who oversaw the independent Nature Reserves Authority, even as the minister of interior signed off on the protected status of dozens of nature reserves as

part of National Masterplan 'Number 8'. Today under the plan, roughly 250 reserves are located on about a quarter of the country's lands. Most of the reserves are quite small by international standards, with the largest in the sprawling, southern desert regions not exceeding 40,000 hectares—roughly a tenth of the size of other countries' significant national parks, such as Yosemite. In the centre and northern Galilee regions, reserves tend to be far smaller: the largest, Mount Meron is slightly less than 10,000 hectares in area.

From the enactment of the initial statutory provisions over fifty years ago, regulations are stringent in Israel's reserves: there is no construction, few paved roads, and frequently no camping or hiking off the trails. Humans presumably are visitors to these protected zones, which typically are closed around sunset to give the animals a modicum of respite. Soon after the enactment of the law, it became clear that animals and plants move around, and that it was important to protect them even outside the confines of the newly declared reserves. A list of 'Protected Natural Assets' was compiled and codified as regulations, which protected wildflowers, trees, and all sorts of creatures, prohibiting their being taken in any form.²⁶

In addition, about 8 per cent of Israel's lands, located primarily in the centre and north of the country, are designated as forests. In these statutory woodlands, constraints on development are not quite as stringent, but they continue to serve as critical habitats and ecological corridors. The forests were originally planted as conifer monocultures, and were vulnerable to massive pest infestation and collapse. But over the years, new policies mandated the planting of more diverse stands, relying primarily on indigenous non-conifer species.²⁷ As the succession process unfolds, more natural assemblages of trees make for more stable and richer forest ecosystems.

Following independence in 1948, for much of Israel's history, this profound commitment to conservation yielded exceptional results: species abundance rebounded. The country eventually would absorb over 3 million immigrants, who were introduced to the new conservation norms of the young Zionist state.²⁸ As a network of nature reserves was declared in rapid succession, it provided a home to an astonishing variety of life systems. Israel's nascent environmental community was well aware of the great national parks of the United States. It preferred these 'leave-only-your-footprints-take-only-your-memories'

sanctuaries as a model—where humans were guests rather than active landscape architects—to the ‘Forest Reserves’ which had been introduced, with only limited success, during the British Mandate.²⁹ As the ecosystems recovered, the ecosystem services they provided grew healthier over time.

Israelis’ natural inclination to hike and take excursions into nature found dozens of new destinations as immigrants and veteran citizens got to know the many wonderful natural treasures of the country during the weekends or on holidays. One expression of this commitment to conservation was the very robust and often aggressive civil society that emerged to protect the environment. Chief among the conservation NGOs remains the SPNI. Founded largely by nature-loving kibbutz members in June 1954, the organization had no trouble attracting members from all walks of life, and soon became the country’s largest NGO with tens of thousands of paid members, wielding considerable influence among decision-makers. A vibrant and diverse ‘green’ interest group emerged to consolidate these conservation gains, and seek even greater protection for the creatures and plants living in the land.³⁰

During the country’s first fifty years, Israeli biodiversity even made something of a comeback. Several animals that had gone extinct locally were reintroduced through the ‘Hai Bar’ programme.³¹ The fallow deer, not seen locally since the Crusader days, was found in a tiny surviving population in Iran. A small herd was then flown into the country from Iran, and became the core of this captive breeding programme that eventually was large enough for a release into reserves in the Galilee and the Judean hills. Wild asses once again roam the desert terrain around the Mitspeh Ramon makhtesh. The country cheered in November 2011, when a pair of painted frogs reappeared. The frog was thought to have become globally extinct after its wetlands habitat was drained, and this was the first sighting in some fifty years.³²

The 1960s, 1970s, and the 1980s were golden years for biodiversity and its protection in Israel. Strong legal protection, competent institutional capacity, and enthusiastic public support, all contributed to a collective sense of purpose and ecological restoration. When Israelis looked over their borders to those of neighbouring Arab countries, they saw that their country was not only literally greener due to an 800 per cent increase in forest cover, but had far greater number of

fauna species due to the protection they had received. The assemblage of plants and animals in the country was undoubtedly different from that which inspired prophets thousands of years earlier during the days of old. However, these novel Israeli ecosystems were still compelling, inspirational places where evolutionary processes continued to unfold, and where animals were largely safe from the heavy hand of human progress and hunting.

During the second half of the twentieth century, the world began to pay more attention to the global biodiversity crisis and massive loss of species. In 1992, the nations of the world sent representatives to Rio de Janeiro to inaugurate the United Nations Biodiversity Convention.³³ With impressive conservation institutions and regulatory infrastructure already in place, Israel did not hesitate to sign on to this new international commitment to take significant measures to prevent species loss. Nonetheless, due to the intervention of other affected ministries who were less enthusiastic about conservation, and an unfortunate apathy among a long litany of environmental ministers, it would take a full eighteen years for the Ministry of Environment to publish an Action Plan as required under the treaty.³⁴

Israel Faces the Sixth Extinction

When Israel joined the Organisation for Economic Co-operation and Development (OECD) in 2010, the international organization's constant monitoring offered a rare opportunity to evaluate the country's performance in a number of areas relative to other developed countries. In 2011, the first environmental report was issued that assessed the state of biodiversity in Israel. The country has a range of well-known, significant environmental problems: from groundwater contamination to high greenhouse gas emissions. Nature protection was thought to be a happy exception—an area where the country excelled due to strong public policy. But the results of the data collected by the OECD analysts came out surprisingly negative: already thirty-four vertebrates had become extinct. These numbers turned out to be just the tip of the proverbial iceberg.

The report calculated that roughly 33 per cent of the country's vertebrate species are endangered. The depleted numbers of amphibians are particularly alarming; five of seven endemic species including the fire

salamander are considered to be endangered. Of the 105 mammal species for which data are available, 56 per cent (fifty-nine species) are listed as threatened. Several, such as the local leopard species, are in critical condition and on the verge of local extinction. A full thirty-five of 105 reptile species are considered endangered, notwithstanding heroic efforts to save the charismatic green turtle. In addition, six of thirty-two endemic freshwater fish are considered to be in danger of disappearing—among them the Yarkon bleak (*Acanthobrama telavivensis*), which rallied from 150 individuals due to reintroduction of some 9,000 fish in 2006, most of whose descendants appear to have survived.³⁵ A 2017 survey found that the bleak comprised 11 per cent of the fish surveyed in the central Yarkon segments, but the species still faces an uncertain future.³⁶ In addition, some thirty-nine of 210 nesting birds, including the lovely lesser kestrel are defined as endangered.³⁷ The exploitation of the country's water sources has led to considerable extinctions among species in aquatic habitats.

What is the reason for this dramatic change in performance, and the dismal and discouraging present picture? The public in Israel is extremely engaged in outdoor activities: from hiking and camping to rock climbing and cycling, millions of Israelis visit the country's forests and nature reserves each year.

From the country's inception, love of nature is considered to be an integral part of the expression of patriotism, and school curricula include 'love of homeland' classes with annual trips to inculcate the next generation in their natural heritage. This passion was an important aspect of Zionism—the Jewish national movement that founded the country—and appears to be relatively unique in its intensity. It is manifested in the country's diverse and very robust environmental movement. Yet it seems that Israeli biodiversity, once a paragon of the ability of conservation intervention to stem negative trends, has gone into freefall.

After all, in 2014, Israel's Nature and Parks Authority commissioned a review of its activities by an international committee of experts. The conservation agency received kudos from the international evaluation of its scientific competency and the professionalism of its efforts. Unfortunately, the report emphasized institutional 'outputs' as opposed to 'outcomes'.³⁸ While conservation officials are highly competent, professional, and passionate about their mission, trends

suggest that they are failing. The reasons can be found buried in the detailed, official government documents analysing Israel's biodiversity record.

A 2009 report by the Israeli government submitted to the UN Biodiversity Convention, for example, offers a general list of challenges facing biodiversity protection efforts. These are similar to the problems faced by conservation agencies worldwide. They include 'habitat loss, fragmentation and degradation, increase in the number of invasive species, harmful behaviour patterns such as pollution and over-exploitation of resources. A sequence of drought years increased the pressures on natural ecosystems'.³⁹

Israel's *National Action Plan for Biodiversity Protection* places the blame on statutory inadequacies, citing two fundamental flaws in present legislation, which encumber biodiversity preservation efforts:

Israel's biodiversity suffers from two limitations of the existing legislation. The first is that the National Parks and Nature Reserves Law and the Wildlife Protection Law are designated for 'nature protection,' which is similar but not identical to 'biodiversity conservation and management.' Hence these laws provide solutions for individual species more than they support remedial action for the entire biodiversity and for whole ecosystems under threat. In contrast, all other relevant legal instruments do not address biodiversity at all, but are directed at physical components such as land and water for human use, usually detached from the functionality of biodiversity in the provision of human needs. The second limitation is that the existing legislation imposes restrictions and bans on actions that constitute 'threats' to biodiversity instead of obligating authorities to initiate actions, such as government programs for protecting ecosystems and their biodiversity, or mechanisms for granting 'endangered' legal status to threatened species, ecosystems and their services, all within a framework of a consolidated and comprehensive national biodiversity policy.⁴⁰

Yet, existing authorizing legislation for the Nature and Parks Authority surpasses that of many countries that are doing a far better job of preserving species diversity. The reason why Israel's remarkable species richness and robust ecological systems are slipping away, ultimately, is systemic. Existing legislation addresses 'symptoms' rather than causes. The country offers an extreme demonstration of the generic axiom: 'More people, less nature'.

The OECD report was succinct in its assessment:

Israel's biodiversity is subject to serious pressures from several sources: habitat fragmentation, the introduction of invasive species, over-exploitation of natural resources, and pollution. *Demographic changes*, economic development and climate change are the main drivers of these pressures.⁴¹

The report was reserved and understated in its analysis. Yet, the upshot of the OECD evaluation appears to be clear. Israel's demographic growth is extremely rapid. In 1950, there were but 1 million people in the country. Since then, the country's population has grown by 1 million people each decade. Today, Israel has over 8 million citizens. During the country's first years, immigration was the major engine of demographic growth. Since that time, a high birth rate has been the major reason.⁴² (Jordan has also seen its population swell as it absorbed millions of refugees during the past seven decades. As the country grew from 500,000 to 9.5 million people during the same period, widespread hunting was never regulated. The ecological results were catastrophic).⁴³

The government officials who prepared their report also acknowledge that 'Accelerated development and population growth, together with the effects of climate change, are the major driving forces behind the main threats to the local biodiversity.'⁴⁴

Israel's total fertility rate (TFR) has reached 3.0 children per family on average—almost 50 per cent higher than the next developed country, New Zealand, whose TFR is only 2.2. This is not a coincidence. Government policies actually encourage large families, and provide pro-natal subsidies, from generous child allowances to direct grants to new mothers. Not only is demographic stability nowhere in sight, the birth rate continues to increase with religious communities reaching average fertility levels of 6.5. This demographic policy, and the population proliferation it spawns, are undermining conservation efforts and unravelling the achievements of the past.⁴⁵

The OECD report makes it quite clear in its assessment that population growth is responsible for a range of environmental insults, especially to natural systems. When looking at the decimation of local wetland species it explains: 'Population pressures, continued construction activities and climate change will likely contribute to the continuation of this trend unless policy action is taken'.⁴⁶ People require

housing, roads, and places of employment. As more of them become more prosperous, habitats are sacrificed for new neighbourhoods, communities, and highways.

Housing is the quintessential example of a *direct driver*, which takes massive toll on open spaces and the habitats, where public policy focuses on 'symptoms' rather than addressing root causes. Without even considering whether it might be well to begin controlling 'demand', the government strategy, regardless of the political parties forming the coalition, involves an expansion of supply.

Israel's housing crisis is very real to be sure. Here are the present figures: At the end of 2013, there were roughly 2.4 million apartments in Israel—and 2.5 million households. Some 25 per cent Israelis live in rented apartments. From the start of the new millennium, estate prices increased rapidly. In inflation-adjusted terms, Israeli home prices increased 82.1 per cent between 2006 and 2016, second only to Hong Kong internationally.⁴⁷ The informed prediction of Israel's leading economics periodical is that they will double in a decade.⁴⁸ The rental market is comparable: In 2013, tenants in the centre of Israel were paying 50 per cent more to their landlords on average than they were five years earlier. An Israeli needs to save 191 months of the average national salary to buy a basic five-room apartment, twice the number of salaries it takes in other OECD countries, and six times higher than the amount required in Sweden.⁴⁹

The recent pressures are hardly the first time that the country has faced an acute housing crisis. In July 1990, 'Emergency Legislation' was passed to streamline construction in light of the deluge of one million Russian Jewish immigrants who headed for Israel with the fall of the iron curtain.⁵⁰ The government 'pulled out all the stops' and began to build.

Perhaps the greatest environmental setback of the period came in the form of this 'Emergency Legislation', which essentially eviscerated Israel's Planning and Building system. Dominated by government development interests, the new emergency committees created by the law expedited approval of hundreds of thousands of housing units, with precious little interest in such details as environmental impact statements or the sensitivity of affected habitats. The Ministry of Environment did not hesitate to report the damage, but was politically helpless to mitigate it.⁵¹

Twenty years later, following a massive protest during the summer of 2011 against the aforementioned housing shortage, similar legislation was passed. This time a ‘National Planning and Construction for Priority Housing Areas Committee’ was established. Given authority to override existing master plans, potential areas for new neighbourhoods and towns were identified with practically no regard for the ecological assets on site. Indeed, notwithstanding a hue and cry from the general public, iconic forests such as Beit Keshet and Begin, along with Jerusalem’s lovely biodiversity hotspot, Mitzpeh Naftoah, have been tentatively rezoned for residential uses.

Each year Israel will need to add 60,000 residential units to meet the expanding demand. It is something akin to a nation running on a treadmill, simply to stay in place. The toll on the local ecosystems in the long run will be devastating.⁵²

Nowhere is this dynamic clearer than in the new city of Modi’in. Located halfway between the Tel Aviv coastal metropolis and the greater Jerusalem capital in the hills of Judea, and twenty years after the first residents moved in, the city provides a home to 80,000 people. The problem is that there are plans to expand the city to 250,000. The land reserves for this expansion come from a critical ecological corridor, which allows the movement of large mammals in Israel’s central regions.

The city is covered on one side by the Ben Shemen forest—conifer woodlands planted over half a century ago. An inventory of the surrounding open spaces reveals a surprisingly rich variety of wildlife thriving in the woodlands including foxes, gazelles, jackals, mongooses, hyenas, wild cats, badgers, porcupines, hedgehogs, and hares.⁵³ Ecologists and planners have put forward a detailed plan describing how to preserve the corridor, which might provide these animals with the requisite genetic diversity for modest populations to survive into the future.⁵⁴ However, these visions do not seem to be of particular interest to present government planners who rarely see beyond housing quotas.

It is not just the physical usurpation of habitats. Humans also bring with them invasive species, which supplant limited resources for local animals and plants that are already under significant pressure. In a recent review by Israel’s most senior zoologist, Tel Aviv University’s Yoram Yom-Tov, over 200 invasive species of insects were identified along with twenty bird species (including the now ubiquitous common mynah,

Acridotheres tristis), all manner of fish, and a couple of mammals.⁵⁵ Pollution control efforts are focused on human needs and often leave natural systems exposed to pesticides and other contaminants. Streams and springs dry up when water is tapped for human consumption, agricultural or domestic. Israelis may love nature. Given present densities, however, they challenge its ability to survive. Yet, Israel's regulatory response has been sluggish.⁵⁶

In a review of Israel's historic efforts to preserve biodiversity, Professor Yoram Yom-Tov summarizes:

This historic review of Israel's wildlife suggests that the rise in human population in Israel has come at the expense of the other creatures of the land. Modern conservation biology policies if implemented and enforced faithfully can prevent much of this damage. We can only hope that the race between nature lovers and developers will be won by the former.⁵⁷

Ultimately, species diversity is a function of how much habitat is available. The so-called 'species-area effect' is one of the few ecological laws which appears to be highly reliable across a wide range of climates or topographies.⁵⁸ Species numbers grow geometrically as the 'island' on which they live increases in size. Because of its unique geographical features, the land of Israel came to support an unusually large number of flora and fauna species, especially given its diminutive dimensions. But as the country became cut up and fragmented into urban and suburban islands by highways and urbanized centres, the minimum amount of space required for the genetic diversity of a small animal community in many places was no longer available. These dynamics are not unique to Israel, and can be found in large countries like Australia, or considerably smaller ones such as Slovenia.⁵⁹

Cooperation with Jordan, Palestine, Lebanon, and Syria, through establishment of 'peace parks', may be able to relieve some of the pressure, and provide critical lands. Many such transboundary sanctuaries have been proposed by academics and NGOs.⁶⁰

Sadly, Israel has not yet found governmental partners who are as enthusiastic about such arrangements. On the contrary, over the past decade, uninvited influxes of refugees, contraband, and terror, have only precipitated Israel's building security walls and border fences. These greatly exacerbate existing habitat fragmentation.

Today, Israel appears to be at a crossroads. Against all odds, ecosystems survived centuries of conflict and land degradation. During the past sixty years, Israeli conservation policies largely reflected the 'state-of-the-art' in the field, and the national commitment to preservation has been significant, as manifested in the impressive network of nature reserves. But nature reserves are not inviolate. For example, the army is permitted to avail itself of many of the largest sanctuaries in the country for military manoeuvres. In the relentless search for new lands to build suburbs and cities, decision-makers can rezone declared nature reserves for residence. Ultimately, this is a political decision. People vote—and people want to live in spacious homes.

It would seem that the State of Israel must make a choice: either it can change its demographic policies and stabilize population, incentivizing life in dense but hopefully pleasant urban environments; or it can watch the slow and steady disappearance of its magnificent natural heritage. It cannot have it both ways.

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