

ibex), wild boar, and similar mammals, along with an occasional leopard, wolf, jackal, hyena, or fox. A considerable baboon population is found in the woodlands of Asir in southwestern Arabia. Hundreds of hamadryas baboons scurry through the brush among the granite knobs of the national park along the escarpment west of Abha; they are heedless of park visitors but nimbly steal any food left unattended.

The gazelle population of the Syrian and Arabian deserts has declined precipitously, primarily as a result of hunting with rifles from cross-country vehicles. As endangered species, gazelle and oryx (a type of antelope) are now protected. In small numbers, oryx can survive in the arid Rub al-Khali, mainly because they require no water except moisture from the leaves they eat, particularly from early-morning dew. During the 1990s, some governments in the eastern Arabian Peninsula initiated programs for the preservation, scientific breeding, and restoration of the gazelle and oryx populations. By 2004, the programs showed notable success, and the Arabian oryx facility in Oman has been declared a World Heritage Site.

The numerous domesticated animals of the Middle East—including sheep, camels, goats, donkeys, and cattle—are of great economic significance and are discussed in connection with land use in Chapter 5.

Some Common Types. The smaller mammals are much more numerous than the larger animals in both species and population and include hare, squirrel, hedgehog, honey badger, mongoose, and many species of rodents (jerboa, gerbil, hamster, field mouse, sand rat). The many species of reptiles include few harmful types, but there are a few vipers, cobras, and adders.

Lizards, represented by dozens of species, are common in all parts of the Middle East. One common lizard of the Arabian Desert

is the burrowing *dabb*, or spiny-tailed lizard, a heavy-bodied herbivorous species that grows to 18–20 in./45–50 cm and is eaten by the Bedouins. The longer but slimmer *waral*, or desert monitor, is carnivorous and more aggressive; unlike the *dabb*, it is not considered edible. The small *tuhayhi*, an agamid lizard, seeks protection by vibrating its body and sinking into loose sand. The sand-swimming skink and other lizards also use submergence in sand as a temperature-regulating device, since lizards—and many other animals—must maintain body temperature within a fairly narrow range. Stinging scorpions are especially numerous in the more arid areas. Since they are nocturnal, they can generally be avoided by the exercise of reasonable care.

Birds. The Middle East has traditionally been rich in bird life and is estimated to have at least 500 species. During spring and fall, the great eastern Mediterranean flyway is used by many flocks of migrating birds. The narrowness of the corridor affords an exceptional opportunity for bird observation but also adds to the vulnerability of the migrating birds to hunters. Marshes along the many coasts attract thousands of waterfowl, and many game birds are present, although now in reduced numbers. Among the common birds of prey are the falcons, traditionally used by Bedouins for hunting. The sport of hunting with falcons has increasingly become a popular pastime in the Arabian Peninsula and the drier areas of the Fertile Crescent. Field birds are especially numerous along the Nile Valley, and cotes for pigeons and doves are a common sight around villages. Doves, which are rarely hunted, are seen everywhere outside the cities in Israel. A variety of songbirds frequent the forests of the Pontic Mountains of northern Turkey and the Elburz in Iran, and birds are often referred to in Persian literature.

Insects. Some insects in the region are major pests and dangers to health. Malaria-spreading mosquitoes remain a serious problem despite intensive pesticide programs. Flies (*Diptera*) are not only a widespread nuisance but also a serious health threat, since they spread eye diseases as well as gastrointestinal disorders. Incredibly, passengers in a vehicle traveling the open desert far from any settlement who stop for a picnic will almost immediately find themselves besieged by dozens of persistent flies. There were formerly plagues of locusts, sometimes catastrophic, but concerted action has reduced the locust danger to a minimum; however, in 2003–2004, locusts swarmed in Northwest Africa, and small swarms descended on Cyprus, Lebanon, and Israel.

Having surveyed the major aspects of the natural environment, this study turns next to the other side of the coin to examine human patterns.

NOTES

1. Technical terms not explained in the text are defined in the Glossary. See also the simplified geological time chart at the end of the book.

2. The theory of plate tectonics has been a major focus of earth science since the late 1950s. Simplified presentations are given in most leading atlases, and evolving aspects are discussed periodically in many journals, such as *Scientific American*. See National Geographic Society 1983 and 2004. No single work in English covers the geomorphology of the Middle East and the peripheral areas, but see Brown and Coleman 1972; U.S. Geological Survey 1966–1967, 1975, and 1989; Said 1962; and the very technical Dixon and Robertson 1984. Vita-Finzi 1986 is scien-

tific yet readable and uses many examples and illustrations from the Middle East and North Africa.

3. Two or three National Geographic Society maps would be very useful, especially "Heart of the Middle East," 2002, with an excellent space landscape image map on the reverse. Also useful is "Afghanistan, Pakistan, and the Middle East," 2003. Any good atlas would also be helpful.

4. The term "Horn of Arabia" was used for the first time of which I am aware by Erhard F. Gabriel in Gabriel 1988, 233.

5. See Cullen 1999, which includes a very useful National Geographic map supplement.

6. Both rivers are examined in detail in Kolars and Mitchell 1991. See also Rogers and Lydon 1994 (which has a good bibliography); Ventner 1998; Soffer 1999; and Biswas et al. 1997.

7. Kreiger 1988 is a readable account of several aspects of the Dead Sea and includes a useful bibliography.

8. Factors and elements of Middle East climate are examined in Taha et al. 1981 and Rudloff 1981. Interesting data are in the Arabian American Oil Company, n.d. (c. 1978), which is unfortunately hard to find. Detailed data for individual major regional stations are available from the National Climatic Data Center web site, ncdc.noaa.gov/oa/climate/afghan/, with factors discussed in the respective country narratives. Additional climate maps and diagrams may be found in most good world atlases.

9. Mandaville 1990, quoting data from Saudi Arabia's Ministry of Agriculture and Water.

10. Several sources describe the system, including the readily available *Goode's World Atlas*, 1999.

11. See Zohary 1962 and others of his many studies. Hills 1966 has general coverage of vegetation in arid lands. The interrelationships between plants and soils are also examined in Hills. Two sheets of UNESCO's "Soil Map of the World" cover the Middle East: VII-1 and V-2. A major recent contribution to the study of the flora of eastern Arabia is Mandaville 1990.

12. Mandaville 1990, 16; Schulz and Whitney 1986; and Mandaville n.d.