Introduction

Jeff Albert, Magnus Bernhardsson, and Roger Kenna
Yale University

Scholars recognize at least two profoundly important characteristics that have combined to give the Middle East its enduring importance in world history. First, the region has been a wellspring of major civilizations and religions, and second, it is located at the junction of Asia, Europe and Africa, and has long contributed to important exchanges of goods and ideas. A less discussed, but crucial thread woven into the tapestry of Middle Eastern history is the long and complex relationship between the region’s natural environments and its human inhabitants.

If one conceives of “the environment” as the physical, chemical, and biological integrity of natural ecosystems, the contemporary Middle East can certainly be thought of as a place in crisis. Burgeoning human populations and rising standards of living are testing the limits of plant, water, and air resources, while sensitive territories are placed increasingly at risk. At the same time, pastoral lifestyles which have survived for centuries are now threatened, and international tensions are compounded by pressing environmental issues such as water scarcity and pollution.

Notwithstanding the serious environmental threats currently facing the region, however, it can be argued that Middle Eastern peoples, in fact, were among the first to become privy to the sensitivity of natural environments.

There are clear historical examples of the consideration paid by the region’s pre-modern residents to the fragility of nature, and the lessons that that fragility has taught. The Fertile Crescent was home to one of the original departures from hunting and gathering to sedentary cultivation, and it has been posited that soil salinization from irrigation played a central role in the demise of Sumer in the second millennium BCE (Jacobsen and Adams 1958). But as Paul Ward English points out in these pages, groundwater has also been sustainably extracted for centuries with the use of self-regulating chain wells, known as qanats. Indeed, the venerable age of the civilizations of the Middle East requires that the notion of “environment” be defined in ways very different from how it has been presented in the modern West. Sharif Elmusa, a contributor to this volume who grew up in the region, once remarked that the first thing that comes to mind when he thinks of “nature” is a plowed field, not a tract of wilderness.

Early 20th century scientific models of human-environment interactions focused on disturbance and recovery, as though the environment were a passive receiver of human action. Later formulations
conceived of an interface of natural systems and social systems, a partial intersection of two sets (Bormann et al. 1993). Others have gone farther still, disputing that any portion of the natural system is isolated from human influences, asserting that even apparently “virgin” environments show evidence of human impact (Vogt et al. 1997). They place emphasis on ecosystem “legacies,” signs of the momentum of a natural system, which have been imparted to it by the history of its interaction with humans. Middle Eastern history, many would claim, supports this view.

Despite such a long history of human-environment interaction, the Middle East is an area of surprising biological diversity. Although the stereotype of the Middle East as a barren landscape is predominant, the reality is quite different. The area that was Mandate Palestine, for example, is host to nearly 90 plant species/1000 km² (more than double that of the United States). Located at the juncture of several major terrestrial ecosystems (including the temperate grasslands of Mesopotamia, the Mediterranean semi-desert and arid grasslands, the sclerophyllous woodlands and shrublands of the Lebanese and Turkish coasts, and the deserts of Sinai and Arabia), the region hosts over 500 species of migrating, wintering and resident birds (well above 15 species/1000 km², an order of magnitude greater than most of Europe) (Leshem 1996).

A desire to better understand the relationship between humans and nature in an area which has been continuously settled for millenia inspired us to convene “Transformations of Middle Eastern Natural Environments: Legacies and Lessons,” a conference which took place between October 30 and November 1, 1997, at Yale University, sponsored by the Council on Middle East Studies at the Yale Center for International and Area Studies. The event included well over 70 participants from the Middle East, Europe, and North America (a list of panels and participants can be found at the end of the volume). In organizing this conference, we sought to focus attention on the following questions:

- What are the key elements that define Middle Eastern natural environments?
- What are the core issues of environmental change in the Middle East as the 21st century approaches?
- How have the human inhabitants of the Middle East interacted with these environments and how have both sides changed in the process?
- How can perceptions of the value of natural resources, as well as the belief systems reflecting these values, be characterized?
- Do our assessments of environmental legacies enable us to propose lessons to guide future policies? If so, what lessons can we offer?
The event’s earnest attempt to answer these questions spawned the volume you hold in your hands.

Our endeavor first required a definition of the region in question. What is the “Middle East?” We opted for an exceedingly broad and inclusive operational definition of the term. The geographic bounds, which are indicated in Figure 1, encompasses peoples who are linked by physiography, climate and culture.

The breadth of the central questions articulated above was such that only an extremely diverse collection of scholars and practitioners could be hoped to make progress toward answers. By consequence, the conference and the volume drew from a wide spectrum of disciplines, ranging from climatology and marine ecology on the one end to cultural studies and art history on the other, with plant genetics, agronomy, fisheries management, regional planning, geography, climate change, remote sensing technology, international
relations, political science, human ecology, history, demography, and anthropology all falling somewhere between.¹

In this volume, to answer the first question about what key elements define the environment of the Middle East, Michael Mann and Raymond Bradley, co-authors of an important recent study performing historic global climate reconstructions (Mann et al. 1998), provide an assessment of the global climate patterns which are best correlated with mesoscale variations in the Middle East. They emphasize (implicitly) that one major element of the environment of the Middle East is the variability of temperature and rainfall.

Variability of the biotic factors (as opposed to abiotic climate factors) is also investigated in these pages. Keith Cressman, in his essay, considers modern efforts to understand and defend against one biotic factor in particular, the plague of biblical antiquity, the desert locust. Amir Afkhami evaluates a different plague—cholera in Iran—and demonstrates how its transmission was facilitated, ironically, by the qanat system, an otherwise efficient and environmentally benign hydraulic technology.

Additional important elements of the Middle Eastern environment are water scarcity, and as a partial result, conflict. John Waterbury and Dale Whittington investigate both questions in their assessment of a resource once deemed so vast as to be infinite: the River Nile. Growing populations make the status quo arrangement, Egyptian dominance, a far less certain question than in decades past.

Another river basin, the Jordan, is the subject of another set of studies which focus on the elements of scarcity and conflict. Uri Shamir provides reflections on recent water agreements between the Israelis and the Palestinians and Jordanians, respectively, while Aaron Wolf presents the historical context for Arab and Israeli hydrostrategies, as well as a proposed refutation of the “hydraulic imperative” hypothesis. Sharif Elmusa targets his essay on a specific proposal for regional accommodation, the fabled “Johnston Plan,” and in investigating its evolution, makes an argument for its modern application.

Several core issues of environmental change—our second central question—emerge from the papers in the volume. Onn Winckler surveys population trends and government responses, with a focus on the Arab countries of the region. His assessment is a sobering one. Prominent among the core issues in the region are food production and the ability to meet the demands of rising populations. A. A. Jaradat, on the other hand, offers an overview of the historic role the Fertile Crescent has played in modern agriculture worldwide, as well as the opportunities associated with agricultural transformations and the reduction of genetic biodiversity.

¹ Due to the multiple disciplines represented and their often distinct jargons, we decided to allow for a variety of terms in describing the area we define as the Middle East. The reader will therefore encounter several terms, such as Middle East and North Africa (MENA), Near East, or West Asia North Africa (WANA). Those terms were the choice of the authors.
Kouchoukos et al., in describing the tools available for monitoring land use and land cover change, provide additional insights into agricultural change—principally irrigation and the expansion of cultivation into marginal areas. These changes are sufficiently widespread and dramatic that they can be understood using images resolved from satellite platforms. J. A. Allan, in his work on the political economy of water, considers the water/food nexus and the role of international trade in the avoidance of violent conflict over water.

Also noteworthy among the core issues in the region is the integrity of the marine environment. Pearson et al. present a case study of oil pollution in the Gulf of Oman, highlighting the sensitivity of marine resources and the ease with which they can be impaired. Menakhem Ben-Yami and Izzat Feidi offer discussions of a particular marine resource, the fishery, Ben-Yami focusing on the eastern Mediterranean and Feidi on the development challenges fisheries pose to communities throughout the Arab world.

The interaction of humans and nature is the central theme of many of the papers presented in the volume. Peter Christensen investigates the history of irrigated agriculture with a critical eye on its limitations and the damages it wreaks on both human and natural systems. Peter Beaumont considers the massive hydrologic and agricultural implications of the Turkish Southeast Anatolia Project (GAP) for Syria and Iraq, the downstream riparians on the Tigris and Euphrates Rivers. Lois Beck and Susanne Steinmann provide case studies of nomadic peoples. Beck offers an overview of her extensive anthropological research among the Qashqa’i in Iran and their changing relation with the natural environment during momentous political changes in recent decades. Her discussion reminds us not to overlook people in any environmental analysis. Steinmann presents a critical analysis of gender-specific behaviors among the Beni Guil pastoralists in Morocco and shows how gendered resource exploitation is changed through sedentarization and urbanization. Behrooz Morvaridi considers the case of contract farming in Turkey to examine the disconnect between centralized agricultural planning and local conditions, hypothesizing that damage to land resources is attributable to the nature of the relationship between farmers and their government clients. Finally, in an examination of a profound human interference with a natural system, Daniel Golani surveys the impacts of the creation of the Suez Canal, and the subsequent interlinking of the Mediterranean and Red Seas, on fish population dynamics.

Four contributions on nature and culture offer insights into the interplay between cultural norms and the environment, with particular emphasis on the idea of the garden. Karen Polinger Foster
focuses on exotic flora and fauna in ancient times and how they served as integral components of the idea of the garden. Attilio Petruccioli examines the idea of the Islamic garden and raises important theoretical and methodological issues which will serve as useful paradigms in future research. Heidi Walcher’s contribution is a useful companion to Petruccioli’s, since her work explores several of his themes within the context of the city of Isfahan in Iran. Finally, environmental scientist Daniel Hillel utilizes his extensive knowledge of the natural environments of the Middle East to hypothesize about the advent of monotheism in the ancient Middle East. His hypothesis is one intriguing answer to our question about how perceptions of nature, and belief systems reflecting those values, can be characterized.

Finally, there is the question of legacies and lessons. Perhaps the strongest belief guiding both the conference and the volume is that good information and good communication, even across enduringly difficult political and cultural boundaries, will do more to focus attention on, and move toward solution of, environmental issues of critical importance to all inhabitants of the region than any other factors. It is toward that end, and in that spirit, that our endeavors are undertaken.

We ended our conference after three days of lectures and presentations with an open discussion, from which two wonderful memories emerged. First, Youssef Barkoudah elected not to deliver an academic address, but instead to present a heartfelt account of the landscape changes he has witnessed in the Syrian village of his childhood. His description of “the day the qanat dried up” as a result of the construction of mechanized deep wells miles away was both powerful and moving, and placed much of what was discussed during the prior three days in a very human context. Second, Daniel Hillel ended the conference with an inspiring etymological discourse on the expressions describing the natural world, inspiring shouts in Arabic, Persian, Hebrew, and English from participants in the audience. Although Yale anthropologist Frank Hole pronounced Professor Hillel’s address to have provided “closure” to our event, we are hopeful that this volume instead will open readers’ minds to the complex and varied environmental changes which have characterized the Middle East since antiquity and the importance of continuing to work in cooperation toward successfully functioning human and natural environments in the region.
REFERENCES

JEFF ALBERT is a Ph.D student at the Yale School of Forestry and Environmental Studies and one of the editors of this volume. His research interests include water quality problems associated with shared river basins and the application of remote sensing to environmental problems.

Jeff Albert, Yale School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, CT 06511. Tel: 203.432.5375; fax: 203.432.3817. E-mail: jeffrey.albert@yale.edu

MAGNUS BERNHARDSSON is a Ph.D. candidate in the Department of History at Yale University and one of the editors of this volume. His dissertation Reclaiming a plundered past: nationalism and archaeology in modern Iraq examines the religious and political implications of archaeological excavations in Iraq.

Magnus Bernhardsson. Department of History, Yale University, Hall of Graduate Studies, New Haven, CT 06520. E-mail: magnus.bernhardsson@yale.edu

ROGER KENNA is a Ph.D. candidate in the Department of History at Yale University and one of the editors of this volume. He is writing a dissertation on development in the Khuzistan region of Iran. He is currently working as a political officer for the U.S. Department of State.

Roger Kenna, P.O. Box 3010-1, R.D. 3, Brandon, VT 05733. Tel: 802.247.3306. E-mail: roger.kenna@yale.edu / roger_kenna@hotmail.com