

The Politics of Land Management in Medieval Islam: The Northern Jordan Survey, 2004*

Today's Jordan suffers from chronic water shortages and a degraded landscape, the legacy of centuries of environmental decline, the direct result of destruction of forests and heavy grazing (al-Eisawi 1985: 56; Ahmad 1989).¹ Historians have attributed the worst of this process to natural and political events that combined in the 15th century AD to weaken Jordan's agricultural base by disrupting markets and destroying village life. They cite "gaps" in the settlement record and references to widespread banditry in written sources as evidence that villages were abandoned on a regional scale and that the tax base had eroded (an argument made most strongly in Brown 1992).

Although entrenched in Jordanian historiography, this model is simplistic and does not do justice to the myriad of other, more cultural, factors that may have been at work. Recent archaeological and archival research suggest that rural provincial administration and indigenous farming practices weakened village structure, on the short term, and negatively impacted the environment on the long term.

In the fourteenth century the Mamluks invested heavily in the infrastructure and agriculture of Transjordan. Yet, in spite of the prosperity and the obvious financial benefit gained from this region, the Egyptian government neglected large parts of Jordan during the fifteenth century (Walker 2003). This political and economic "pull-out" had a mixed effect throughout the region. While in some regions of the country villages were abandoned for perma-

nent settlement and experienced agricultural decline, other areas continued to be productive, grew rapidly in population in the early sixteenth century, and continued to thrive until the Mandate period (Walker 2004b). In short, this period witnessed important shifts in land management regionally, the effects of which can be identified in some of the most pressing socio-political problems in Jordan today, such as water conflicts, demographic pressures, and volatile agricultural markets.

This paper suggests to what degree human factors impacted the country's physical environment during the critical watershed of the 15th century. It is argued that imperial land management policies and local agricultural practices, both responding to the complex relationships between the Egyptian government and Jordanian villages, led to an uneven economic and ecological recovery after the political turmoil of the late Mamluk period and account for the demographic shifts identified in archaeological surveys.

Debate over Mamluk decline

The decline of the Mamluk Empire as a whole is an issue of heated debate among historians of medieval Islam (Walker 2004a). While most historians agree that changing patterns of international trade, military weakness, political corruption, and the Black Death all contributed to the gradual collapse of Egypt in the 15th century, few scholars have explored the role the political structure and government policies had in the general economic

* This survey, conducted between 29 September and 10 October, 2003, was supported by a grant from the Oklahoma Humanities Council. Findings, opinions, and conclusions do not necessarily represent the views of the OHC or the NEH. Further funding was provided by Oklahoma State University. The author expresses her gratitude to Jordanian Department of Antiquities, Dr. Ismail

Melhem (DAJ Representative), the Umm Qays Museum and Directorate, AOCR, the Royal Jordanian Geographic Centre, and the Municipalities of Malkā and Ḥibrāṣ for their support of and interest in this project.

¹ For recent policy recommendations to stem this decline, see Burrell 1986.

malaise of the period (Levanoni 1995). Much of the traditional focus on natural disasters and political conflict has to do with the kind of sources used, largely dynastic chronicles. The same is true of Jordanian historiography. There is little doubt that the amiral rebellions of the fifteenth century had a ruinous effect on many political centers in southern Syria (Shawkat 2002). However, by relying heavily on chronicles, which naturally emphasize political events in the region, as source material and by not coordinating the work of historians with that of archaeologists working in the country, Jordan's cultural history for the period has been largely neglected. In short, the social factors behind long-term developments, such as environmental and demographic decline, are passed over in favor of political and climatic deterministic models for such processes.

Human factors behind the decline of village life become apparent by consulting alternative bodies of primary data. Mamluk-period waqfiyyāt (written contracts recording the endowment of income-producing properties for social services) and early Ottoman *daftar*s (tax registers) are rich sources of information on the medieval Jordanian landscape, agricultural markets, yield and profit, indigenous farming techniques, village structure, and demographics. In addition to these written sources, there are now growing databases of pollen and phytoliths, the result of well-designed geological and hydrological projects. Such archaeoenvironmental studies, combined with regional archaeological surveys, are identifying ways in which the local faunal population was greatly transformed by traditional farming methods (van Zeist and Heeres 1973; Banning 1985; Schoenwetter and Geyer 2000; Cordova and Lehman 2003). Analyses of archived documents combined with such laboratory work are creating a different picture of rural Jordan than was previously available. New models, therefore, must be developed to account for the transformation of landscape and demographic decline that have become hallmarks of the late Mamluk and Ottoman

periods in Jordan.

The model adopted for this study is that of political ecology. This area of inquiry, as adapted to the Northern Jordan Survey, combines research methods culled from the disciplines of history, archaeology, geography, and geology and makes use of technologies originally developed in microbiology and electrical engineering to reconstruct the totality of human behavior that has transformed the environment.² The frame of reference for environmental studies in political ecology is that nexus where state control (official land management policies) and local practice (farming and cropping methods, settlement patterns, water management) intersect. While natural phenomena, such as temperature change and droughts, are certainly important factors, written documents of the period suggest that market pressures and peculiarities of the provincial administration had more of a long-term impact on village life and agriculture in general.

Climatic Change

Archaeologists studying late medieval Jordan have traditionally attributed the apparent abandonment of villages in agriculturally-rich regions in the fifteenth century to natural disasters (earthquakes, droughts, locusts, floods), plague, and Bedouin predations (Ghawanmeh 1985 and 1992; Brown 1984; Kareem 2000: 12 and 16-17). While many of these disasters were local events, their effects exaggerated by written sources, the physical sciences have corroborated one climatic factor that would have regionally impacted the most water-intensive cultivation: an episode of reduced rainfall after 1300 or 1400AD (Frumkin, Magaritz, Carmi, and Zak 1991: 199).³ Supporting this picture is a peak in the arboreal pollen curve during the period 1100-1300AD from several boreholes in Israel, which would result from higher overall rainfall, higher humidity, and a richer vegetation (particularly in terms of oak forests and olive trees) than exists today, followed by a reduced rainfall in succeeding centuries (Horowitz 1974: 413).⁴ Palaeoclimatic proxy data

² The combination of soil samples, ground-penetrating radar, and geological surveys have been adopted in several recent archaeoenvironmental surveys in northern Jordan (Wādī Ziqlāb - Banning 1985) and the Jordan River Valley (Ṭawāḥīn as-Sukkar and Khirbat ash-Shaykh 'Isā- Photos-Jones *et al.* 2002). While we were unable to utilize GPR this season, as originally planned, we hope to incorporate this technology in locating subterranean walls and water installations in future seasons.

³ I am grateful to Dr. Burton McDonald of St. Francis Xavier Col-

lege for sharing with me these sources.

⁴ More recent analysis of pollen from deep cores in the Dead Sea indicates longer trends, for the whole of the Islamic period: reduced rainfall accompanying an overall decline in agriculture, triggering forest rejuvenation and increased nomadism (Heim *et al.* 1997). Forest growth, then, can indicate either improved climatic conditions or abandonment of cultivated fields, and is an ambiguous factor in assessing agricultural conditions over the long term.

from the White Nile and the United States West suggests that the draught of the fifteenth century was, moreover, international in scope, (Wigand, n.d.). Alternative readings of the palaeoclimatic data, however, come to very different conclusions. Butzer, on the basis of geomorphological evidence, posits shorter, alternating cycles of increased and decreased rainfall from 1100-1900AD (following Shehadeh 1985: 28). In short, the years of drought recorded in written sources of the late fourteenth and fifteenth centuries likely describe short periods of reduced rainfall. Therefore, draught cannot characterize the entire fifteenth century. Nonetheless, Palmer reminds us that Mediterranean and semi-arid climates regularly experience annual variation in rainfall, which can be quite serious at times, in addition to multiple-year cycles of drought (Palmer 1998: 132). One year of insufficient rainfall would seriously impact the most water-dependant crops in rain-fed areas, causing the wheat harvest for that year, for example, to fail.

Both the phenomenon of demographic decline and the explanations for it, however, should now be reconsidered. While there were shifts in settlements in the Karak highlands, for example, recent fieldwork indicates that the local rural economy was doing generally well, and that some villages, such as Khirbat Fāris on the Karak plateau and al-Rujum (Sughur) in the southern Ghawr, may have been occupied well into Ottoman times, (McQuitty 1997; Whitcomb 1992: 116). If this is the case, then climatic change did not disrupt settlement, nor was there a universal abandonment, or large-scale relocation, of villages, as was once believed. Years of draught on their own do not account for the decline in village life reflected in archaeological surveys. Failed agrarian policies, however, may have exacerbated the economic suffering caused by draught, which together disrupted village life in some places. Inconsistent and short-sighted rural administration is one such example of poor management by the state.

Agrarian policies of the Mamluk state

The region of Transjordan constituted one complete Mamluk province (Karak Province), in addition to the southernmost districts of Damascus Province.

The region was initially of strategic importance to the Egyptian state — the *hajj* and postal routes ran through its interior — but it gained in economic value in the fourteenth century with state investment in select agricultural enterprises, namely cane sugar plantations, olive oil export, and grains. This investment seems to have coincided with the cadastral survey and redistribution of amiral *iqtā'āt*, Sultan an-Nāṣir Muḥammad's *rawk* of 1313-1325, and had mixed effects on rural life throughout Jordan.⁵ Those districts with the heaviest state investment in infrastructure, such as the Jordan River Valley with its sugar plantations, were transformed into either sultanic or amiral estates and prospered for much of the fourteenth century (Walker 2004b). Many of these estates (*iqtā'āt*) were subsequently made *waqf* for social services, primarily schools (*madrasa(s)*) in Damascus, Jerusalem, and Cairo (Walker 2003: 244ff). The endowment of Jordanian farms reached a peak at the end of the fourteenth century.

Whether this frenzy of endowments in the early Burji Mamluk period represents a period of economic prosperity or political instability is a matter of debate. The endowing of *iqtā'āt* is both related to dependable agricultural revenues and the desire to protect land holdings from confiscation by the state. Those endowed estates dependant on state investment and international markets, such as the sugar industry, went into decline over the course of the fifteenth century.⁶ Others less dependant on state initiative and geared towards more regional markets — estates producing olive oil, for example — as well as those with a wider agricultural base survived the political turmoil of the period. The fate of large towns at the turn of the fifteenth century was also precarious. Most largish settlements in Jordan were administrative centers of some sort: district or provincial capitals. Mamluk administration of the Transjordan was fluid, at best, with the rotation of rural district capitals among two or three towns or villages and provincial and district borders often adjusted (Walker 2003: 242). Such irregularities in provincial administration, at least for Jordan, may have been one response to the complicated role played by local tribes in the amiral power struggles of the day (Walker 2003: 245). Ḥisbān is a case in point. Made the capital of the Balqā' dur-

⁵ For the impact of this survey on Egyptian agriculture and village life, see Sato 1997: 237.

⁶ Kareem 2000: 15-17. Nimrīn seems to be one exception to settlements in the Jordan Valley, likely because of its multi-crop indus-

try and its location on an important east-west corridor that allowed for transport of agricultural goods, of all kinds, across the river (Flanagan *et al.* 1992: 106).

ing an-Nāṣir Muḥammad's third reign, it benefited from the good political relations of local tribes with the sultan. However, the citadel was abandoned in the latter part of the fourteenth century, when the capital was moved to 'Ammān, and the village was gradually deserted sometime in the fifteenth century (Walker 2001 and 2003: 249-259).

The long-term economic decline of Jordan during the Late Mamluk period is, then, partially related, to the structure of relationships between Cairo (or Damascus) and Jordanian villages and tribesmen. Jordanian villages experienced the mixed benefits of an uneven investment in local agriculture by the Mamluk state, which was quite exploitative. Some regions, such as the Jordan Valley and central and southern Jordan, experienced a noticeable reduction in settlement, arguably the result of the withdrawal of state political and financial support and reduced rainfall in arid districts. On the other hand, written sources indicate that northern Jordan witnessed little change in settlement and continued to enjoy a viable and secure agricultural base.

Northern Jordan Survey⁷

To account for these anomalies, Oklahoma State University conducted a brief, two-week exploratory survey of select villages in Samar District the beginning of October 2003. This region of the country was targeted because of its successful history of market agriculture in medieval and modern times, its well developed network of roads, the extensive historical documentation about local crops and land in written sources from the Mamluk period to present, and the potential for recovery of pollen remains for soil and environmental history. The specific goals of the 2003 field season were threefold: to document land use from the Middle Islamic period until today, to quantify environmental change and developments in cropping patterns, and to assess the potential of the study area for long-term research on the Mamluk and Ottoman

periods.

The area of study focused on the villages of Malkā and Ḥibrāṣ, two of the most important settlements in northern Jordan in the fourteenth century. We conducted an architectural and archaeological survey, combined with surface collection of pottery and soil collection, in three sites within this study universe: Khirbat Malkā,⁸ Wādī 'Ayn 'Aṭīyya⁹ (a major source of water for Malkā village), and "Old Ḥibrāṣ"¹⁰, in the central eastern part of the modern village.¹¹ Malkā and Ḥibrāṣ figure prominently in Ottoman tax registers of the sixteenth century and traveller's accounts of the nineteenth.¹² Moreover, Mamluk Malkā is described in detail in an unpublished *waqfiyyah*, still in scroll form, in *Dār al-Wathā'iq* in Cairo.

Although the analysis of this document is still at a preliminary stage, the following observations can be made.¹³ The document records the endowment of several urban properties and rural estates in Egypt and Greater Syria owned by the Mamluk sultan Barqūq in 796AH/1393AD. The recipient of the endowment of these properties is a *madrasah* (Islamic law school) that the sultan had recently built in the heart of Cairo. The parchment scroll is handwritten in semi-voweled *naskhī* in a form of legal Arabic used by the Egyptian chancery of this period and, from the facsimile copy available for study, appears to be adequately preserved, with limited water and insect damage.¹⁴ Folia 18-21 of this 2.5 meter-long scroll describe the village of "Ḥay Malkā" at the end of the century and document in some detail the dimensions of the medieval village, the countryside's topography and water sources, the village's taxable agricultural production, and a few of its noteworthy monuments (including the village mosque) and roads. The text also notes what fields, buildings, and installations, such as presses (*ma'āṣir* — presumably for olive oil) have fallen into disuse. Neighboring villages are named, such as 'Ayn 'Aṭīyya, as they constitute the borders of

⁷ This preliminary report builds on Walker, n.d.

⁸ JADIS site number 2223.016; UTM (of collection area) 36 75648 E and 3618329 N; elevation ca. 400m above sea level.

⁹ UTM 36 234584 E and 399745 N; elevation ca. 350m above sea level.

¹⁰ JADIS 2223.007 — "Hebras"; UTM (of historical mosques) 36 766500 E and 361880 N; elevation 460m above sea level. This is the oldest part of the village, located to the northeast of the Municipality and close to Wādī Ḥibrāṣ.

¹¹ A "site" for the purposes of this project, is a historically documented village that still retains its place name today. The villages

of Malkā and Ḥibrāṣ were first documented in Arabic sources of the fourteenth century (Walker 2004). According to the *waqfiyya* of 1392, 'Ayn 'Aṭīyya ('Ayn 'Aṭā) was a village at the southwestern boundary of Malkā's estates (folia 18-21). Today it refers only to the spring, the lands watered by it, and a 1/2km stretch of Wādī 'Ayn 'Aṭīyya from the beginning of the valley.

¹² For a list of written sources, see Walker 2004b.

¹³ The project director is currently preparing this manuscript for publication. For the published preliminary analysis of this document, see Walker 2004b.

¹⁴ The scroll was restored by the *Dār al-Wathā'iq* in 2001.

the village estate. According to the *waqfiyyah* the village produced mostly olive oil and wine. It is an invaluable document and one that is ideally suited to an agricultural study of this sort.

Malkā

We identified seventeen features at Khirbat Malkā, the site described in the *waqfiyyah*. The majority of these features were installations related to water diversion and storage or processing of wine and olive oil, were originally Roman or Byzantine constructions, and many reused in the Mamluk period.¹⁵ The centrality of wine and olive oil to the local economy is reflected in the *waqfiyyah*, which makes numerous references to vineyards and presses.

A series of olive oil presses was located in Cave 12; surface collection of sherds included Late Byzantine, Umayyad, Mamluk and Ottoman wares (KM.12). At 13.6 meters wide, 11 meters deep, and 2.14 meters high (from the current floor level), this was the largest of the caves identified this season. Structurally, this industrial complex is quite similar to underground plants in the Galilee and Golan, as one excavated example of an olive press in the Galilee at Horvat Din'ila, dated to the fourteenth century, demonstrates (Frankel 1985: 113).¹⁶ Six shafts, the slots for wooden press beams, were carved deeply into the cave's northern wall surface. Two deep holes, each ten cm wide, supported the end of the vertical support for a screw-and-weight olive press. Almost directly below the northernmost of the two ceiling holes was a broken basalt millstone, 1.5 meters in diameter and 30cm thick. The worn edge was the narrow surface, clearly illustrating its use as a vertical grinding stone, of the sort associated with mortars used to crush large quantities of olives and driven by animals (donkeys). According to calculations made for similar weighted lever plants at Hellenistic Maresha, six hectares of

olive groves would have supported this single plant at Malkā and could have produced 13,000-27,000 liters of olive oil annually. Of this amount, over 10,000 liters were surplus, exceeding the needs of local consumption, and were thus available for export (Sagiv and Kloner 1996: 276-277).¹⁷

Wādī 'Ayn 'Aṭīyya

The survey team walked the entire length of this valley and recorded terrace walls and dams, probably Late Ottoman in date (AA.1); a spring used from the Mamluk through modern periods ('Ayn 'Aṭīyya — AA.2); and a rock cut shelter equipped with its own spring (AA.3), likely used from the Late Ottoman through modern periods. The valley bottom is currently cultivated in olive trees, pomegranate groves, and isolated patches of yellow squash (*jira'*); wild grasses, wild corn, lilac, mint, fig, and natural herbs (such as oregano and phageon) grow wild here and provide forage for goats. The valley was probably once forested, as stands of wild oak, macquis, and scrub pine are still visible. The local government has developed this valley in recent years and has succeeded in its revitalization. The Natural Resources Water Authority of Bani Kināna District constructed concrete canals to carry water from the spring across the valley floor as recently as seven months ago.

There is clear evidence, however, of much earlier agricultural use of the valley floor in the form of dams, terrace and field walls,¹⁸ and channels and drains cut into the bedrock on the lower slopes. At this point it is impossible to date these structures, except in the most general terms. Surface pottery on the valley floor was rare; most of the sherds were Byzantine in date and were from erosional contexts. Soil samples were taken from several of these features, as well as the spring and modern groves.

¹⁵ These included rock cut installations in bedrock used for water diversion and storage (KM.2 and KM.3) and possible wine presses (KM.4, KM.5, and KM.10); an initial reading of pottery from cleaning KM.4 was Roman, Byzantine and Mamluk. The bedrock plateau above Wādī 'Ayn Sukkar also produced extensive limestone quarries (KM.1 and KM.9 — dates unknown at this point); three tombs in natural caves, all robbed of their original contents and originally Roman or Byzantine in date (KM.6, KM.7, and KM.8 — published parallels in Waterhouse 1998); and a single-chamber tomb, likely Late Roman or Early Byzantine (3rd/4th c.) in date, with dromos entrance bearing crosses and a Greek inscription, a relatively recent donkey burial, and three arcosolea, (KM.11).

¹⁶ For structural parallels of the lever-weight and screw presses

from Byzantine Cyprus and Roman through Islamic Palestine, see Frankel 1985, 1988; Hadjisavvas 1990, 1992; Frankel 1999; and Sagiv and Kloner 1996.

¹⁷ This is based on a conservative population estimate of 150 people, arrived at by using figures from an Ottoman census of 1596-7. The census records 27 families (*khane*) and 15 bachelors (*mufrad*) (Bakhit 1989: 22, Table I). A peasant family, for the purposes of Ottoman tax registers, consisted of a nuclear family (mother, father, and children) (Inalcik 1994: 144). Our modest estimate is deliberately low at a five-member household.

¹⁸ The most recent of these marks the northern end of the valley. According to a shepherd tending his flocks there, the field walls were built 15-20 years ago. The walls at the southern end of the valley appear to be much older than this.

Ḥibrāṣ

One day was devoted to an architectural survey of the historical district of Ḥibrāṣ village, eight kilometers east of Malkā, as a preliminary step in documenting the physical development of the medieval settlement. Old farmsteads, ranging in date from the Mandate period through the 1950s, were recorded, as well as a formal architectural study of a pair of historical mosques, one built inside the other, nearby. The larger of the two, in construction and plan, resembles other mosques of ‘Ajlūn District dated to the thirteenth and fourteenth centuries.¹⁹ Such chronology is supported by an inscription on a tall, rectangular minaret that once abutted the north wall of the mosque. The inscription records that an amir of Sultan Qalawūn added the minaret in 686AH/1287AD (Ghawanmeh 1986a: 59; Meinecke 1992: 65, entry #43; ‘Abaydat 1996: 22).

The structure reuses limestone blocks, perhaps entire walls, and basalt columns and capitals from a Byzantine church on the site. Although the interior plan is not clear, given the later construction of the second mosque, it appears that three aisles of columns running parallel to the *qibla* supported a triple barrel vaulted ceiling. The sanctuary was 25.5 meters long and 10.5 meters wide, originally contained three *miḥrāb*(s), although only two remain, and was entered through doors in the north and east walls.²⁰ The minaret of 1287 was, apparently, a slightly later addition.

Close inspection of the remains of the smaller mosque indicates that it was built within the remains of the Mamluk structure, replacing a segment of the *qibla* wall in the process. Although the roof is missing,²¹ the form of the low-sprung arches and their masonry technique are almost identical to abandoned farmhouses nearby, which are only a couple of generations old. In addition, the basalt steps built into the exterior face of the rebuilt section of the *qibla* wall seem to be a later reinforcement of that wall and have parallels in the exterior stair-

cases of nineteenth-century homes in the ruins of Umm Qays, as does the random use of basalt blocks in exterior walls. The ruined mosque described in Steuernagel’s survey of the 1926 may have been the original Mamluk mosque, perhaps still in use earlier in the nineteenth century (Steuernagel 1926: 155-156).²² According to local residents of modern Ḥibrāṣ, calls to prayer were held from either the roof of the “Ottoman” mosque or from the Mamluk minaret until the 1950s, when residents began to relocate to new homes built to the southwest.²³ The minaret was dynamited by Palestinian *fidā’iyīn* in the 1970s, and it was at this point that the mosque was abandoned for Friday prayers.

Human action in environmental decline — pollen analysis

In order to identify the human, rather than purely climatic, factors behind environmental developments in the region, we took twelve soil samples for palynological analysis from each of the three sites in our survey. While the laboratory work is still in progress, four samples have been read and the following observations can be made (Cordova n.d. throughout).²⁴ Sample 10 was taken from the chronologically earliest context: mortar from the *qibla* wall of the Mamluk mosque at Ḥibrāṣ. Evergreen oak (*Quercus calliprinos*) and pistachio (*Pistacia*), common components of the northwestern Jordan’s woodlands, were identified in small quantities, in addition to various herbs and weeds, such as sage, thorny burnet (*Sarcopoterium spinosum* — a kind of rose), daisies (*Serratula*, *Aster*, and *Centaurea*), plantain (*Plantago*), and “snow-on-the-mountain” (*Euphorbia*). However, at 15-25% of the sample, olive (*Olea europaea*) was most abundant, indicating intense cultivation of olives in otherwise fallow and abandoned fields.

Sample 4 was removed from the mortar of a terrace wall in Wādī ‘Ayn ‘Aṭīyya. Although the wall could not be dated with certainty, — we did

¹⁹ For a detailed discussion of this point, see Walker 2004b. Published parallels from ‘Ajlūn can be found in Ghawanmeh 1986b; Walmsley 1997; and MacKenzie 2002.

²⁰ The existence of a third *miḥrāb* to the southeast is suggested by the asymmetrical arrangement of the other *miḥrābs* and by parallels with contemporary mosques near ‘Ajlūn.

²¹ Roofs of traditional architecture in northern Jordan was often removed and carried to a new location, in the case of moving to another village, or lifted and reused in a new structure nearby. They were constructed, moreover, of wooden beams covered with thatch and then plastered; such materials will not last long in

relatively wet environment of the region.

²² In the late nineteenth century medieval mosques were still being used by congregations in ‘Ajlūn and Salt, and others in Irbid and Karak were in secondary use for purposes other than worship, (Rogan 1999: 36-37; Buckingham 1825: 42).

²³ Information on the modern history of the village and the historical mosques were obtained from local residents and the Municipality.

²⁴ No pollen was identified in Sample 1, which was removed from a plastered trough in a cave in Wādī ‘Ayn ‘Aṭīyya. Pollen is notoriously difficult to recover in Jordan, because of special environmental conditions, (personal communication, Dr. Cordova).

not dismantle it to recover sherds — comparison of its construction and the size of its enclosed olive trees with more recent terraces indicated that it was likely built in the Late Ottoman or Mandate period. Olive (*Olea europaea*) represented 15-20% of the total pollen in this sample. The sample also included herbaceous pollen, oak (*Quercus calliprinos* and *Quercus ithaburensis*) and pine. The herbs represented were those at home in the desert and salty ground (*Suaeda*- and *Noaea*-type herbs and *Ephreda*) and others commonly retrieved from animal dung, together suggesting overgrazing.

Mortar from the *qibla* wall of the Late Ottoman/Mandate-period mosque in Ḥibrāṣ constituted our Sample 11, which produced mainly herbaceous pollens: a weed in the daisy family (*Solidago*), a steppe herb (*Knautia*) and various mints (members of the *Labiatae* family). Oak and olive were present but rare, suggesting a receding of the forest cover. The readings, in all, represent either a dry period or human-induced degradation. Although reduced forests are often associated with an expansion in cultivation, as forests are cleared for fields, the predominance of weeds may indicate abandoned fields.

The pollen analysis, while still at a preliminary stage, supports the model of environmental decline proposed above. No cereal pollen was identified in any of the samples. Olive was more common in earlier samples and is predominantly associated with Malkā, which adopted a more or less mono-crop culture as early as the Mamluk period. Although the database is small, steppe pollens and weeds indicate a gradual abandonment of fields and overall reduction in cultivation. Whether this was the result of climatic change, as traditionally believed, or more the outcome of state management of rural lands calculated for high revenues, as suggested in this paper, can only be verified independently through continued soil analysis. Nonetheless, by combining a careful reading of documents related to rural estates with archaeological survey and palynology, it does appear that decisions made seven hundred years ago about how the land would be used — what planted and for what financial purpose — impacted the rural landscape of northern Jordan in the long-term.

Conclusions

Northern Jordan provides an important lesson in

how paradigms to explain “decline” need to be adjusted when considering different geographical regions and different sources of data. While certain regions of Jordan were gradually abandoned through the fifteenth century, much of the remainder of country retained viable local market and a productive agricultural base.²⁵ Northern Jordan not only survived the political vicissitudes of the late Mamluk period, but, on many levels, its villages thrived. Using the examples of Malkā and Ḥibrāṣ, one can argue that there was no wholesale collapse of village life or of agriculture in the fifteenth century, merely a shift in marketing and subsistence. The trend towards mono-crop production (centered on olive oil) is apparent at Malkā in the fourteenth century and further develops through the Ottoman period and into modern times. This village was a sultanic estate and was overshadowed by neighboring Ḥibrāṣ, which had a population double its size in the Mamluk period. Nonetheless, Malkā, in time, became a more prosperous village. The ceramic record from the 2003 survey documents the continued settlement of Malkā from the thirteenth through nineteenth centuries. Mamluk Ḥibrāṣ, on the other hand, received special attention from the state. It had, at one time, two mosques, and, in its environs, several *zāwiya*(s), was the largest village in the region, and enjoyed economic prominence because of its market. In the early Ottoman period this village was divided into amiral estates, which were primarily based on wheat and barley taxes. By the late Ottoman period, the population had been reduced to such an extent that it did not require such a large mosque for its congregation, so the villagers built a much smaller one inside the ruins of the medieval *jami*. Many fields were abandoned. Today the village is defined by more or less subsistence agriculture and a more diverse agricultural base than exists at Malkā (Walker 2004b: 11-13).

Was it climatic change that set into motion these trends? Was it political turmoil or Bedouin attacks on villages? The axiomatic “Bedouin predation” explanation for settlement abatement in Late Islamic Jordan does not do justice to the regional differences in settlement history and clear examples of agricultural success in the late Mamluk and Ottoman periods. The land-use history of northern Jordan suggests, instead, that state land policies, markets, and conscious economic decisions by vil-

²⁵ For the general decline of settlement on the Karak plateau, see

Miller 1991 and Brown 1984.

lagers may have as much to do with the settlement fluctuations as security issues. The shift from the lowlands to the highland plateaus in Karak District in the fifteenth century, for example, may in part be explained by changes in agricultural production, which responded to years of drought and economic insecurities.²⁶ An agricultural model, therefore, may be a useful one in evaluating settlement cycles. It may also be applied to environmental studies. The impact of sugar cane cultivation on the soils of the Jordan Valley, for instance, and the clearing of forests in the north for grain cultivation (such as at Ḥibrāṣ) are areas of inquiry with great potential for understanding the long-term ecological effect of imperial agricultural policies and traditional cropping practices.

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