

The Byzantine to Early Islamic Period in Southern Jordan: Changes and Challenges

Introduction

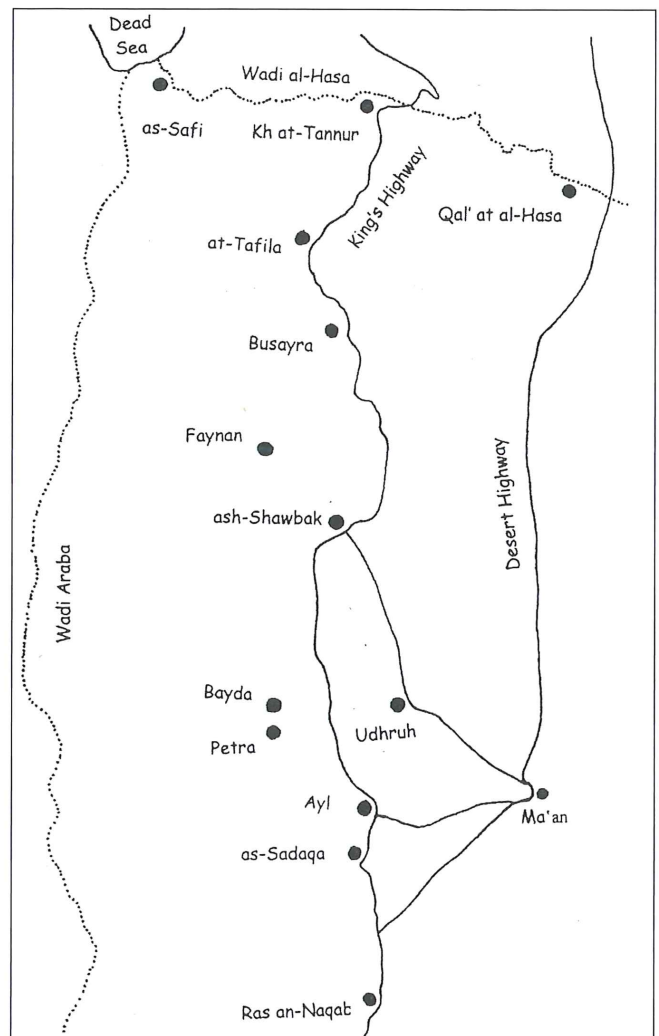
This paper considers the evidence, both literary and archaeological, for the changes and consequent challenges that took place in the southern portion of the Transjordanian Plateau, in the area from Wādī al-Ḥasā in the north to Rās an-Naqab in the south (FIG. 1), between the Byzantine (AD 324-640) and the Early Islamic (AD 640-1099) periods. It indicates that there was continuity between the Byzantine period and the previous Roman one (63BC-AD 324). However, there was a shift in the local economy from international exchange and caravan traffic towards local exchange. Technological ability, especially in the field of hydraulic engineering, continued during the Byzantine period.

Relative to the Early Islamic period, there is evidence that this was a time when the area was 'emptying out' in terms of human occupation. Moreover, the desert regions were no longer used for pastoralism.

Why the changes between the two periods? Moreover, what were the challenges faced by those who remained in and / or frequented the area during the transition from the Byzantine to the Early Islamic period? What were the challenges faced by the inhabitants of the area as they dealt with changes in climate, a new political power in the region and cultural changes from Christianity to Islam?

Geography, Climate and Soils

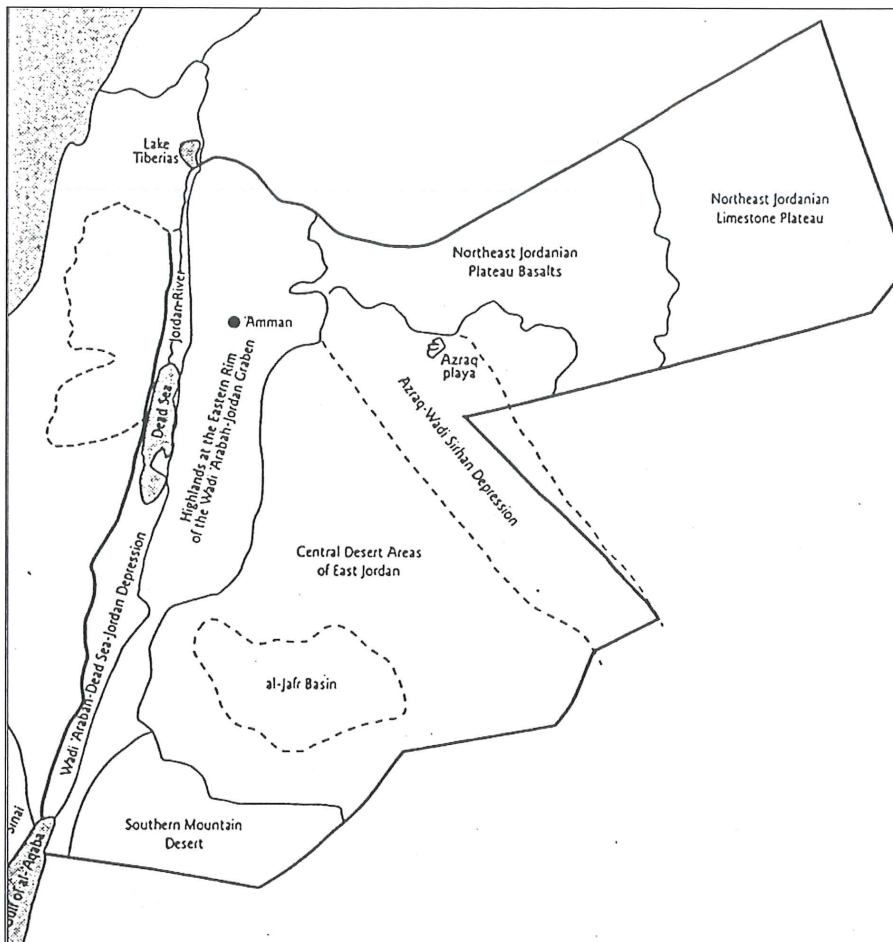
The area, measuring *ca.* 110 (north-south) km from Wādī al-Ḥasā to Rās an-Naqab, by *ca.* 50 (east-west) km from Ma'ān towards the eastern part of Wādī 'Arabah, is, for the most part, the southern part of the Highlands at the Eastern Rim of the Wādī 'Arabah-Jordan Graben, frequently referred to as the Mountain Ridge and Northern



1. Area of Interest from Wādī al-Ḥasā to Rās an-Naqab.

Highlands East of the Rift Valley (Bender 1975; MacDonald 2000: 24-26, fig. 2) (FIG. 2).

The area of interest is a peripheral one in the sense that it is a region in which the resources needed to support human life are minimal. As such, it was marginal for farming from the Pre-



2. Major Morphological Units.

Pottery Neolithic onwards. It 'filled up' only when other, richer-in-resources areas filled up first, and it 'emptied out' whenever more favoured lands were available (Harlan 1988). As is pointed out below, archaeological evidence supports this 'filling up' and 'emptying out' of the area – in terms of human occupation – over the millennia (MacDonald *et al.* 1988, 1992, 2004, 2010; Barnes *et al.* 1995; 'Amr *et al.* 1997, 1998, 2000; Barker *et al.* 1997, 1998, 2007; 'Amr and Momani 2001; Tholbecq 2001; Abudanh 2004, 2006; Whiting *et al.* 2008, 2009; see also Bikai 1993: 524-27).

The recognition that the area is a peripheral one is crucial for an understanding of the changes in human population within it. Even a slight change in the deterioration of resources, e.g. a decrease in rainfall and / or a period of drought, can have dire consequences for those dependent on these resources.

Wādī al-Ḥasā, the northern boundary of the area, has generally been seen as one of the natural divisions of Jordan. Occasionally, it is seen as

one of the political, ethnic and / or administrative boundaries as well. Moreover, it is also one of the main water-sources of the area. Rās an-Naqab, in the south, is located on the edge of the escarpment at an elevation of *ca.* 1500m. From the top to the base of this escarpment there is a drop of *ca.* 600m over a horizontal distance of 1000m.

The area under discussion is geographically distinct. Its central part is mountainous. From here, elevations drop precipitously to the Wādī 'Arabah – Dead Sea – Jordan Depression on the west while, on the east, they drop gradually towards Ma'ān. Agricultural activity is possible only in the central part of the territory while pastoralism can be carried out during winter and spring months in its western and eastern parts.

The Highlands at the Eastern Rim of the Wādī 'Arabah - Jordan Graben as far south as ash-Shawbak are dominated by a Mediterranean climate, which ranges from sub-humid (> 600mm pa precipitation; average January = 3 °C; average August = 27-33 °C) to semi-arid (300-600mm pa precipita-

tion; average January = 3-7 °C; average August = 30-35°C) (Bender 1974: 187). From April to October, the temperature in the Mediterranean zone has dry summers with an average maximum annual temperature of 38.8 °C. Winter lasts from November to March, with an average minimum annual temperature of 0.5 °C.

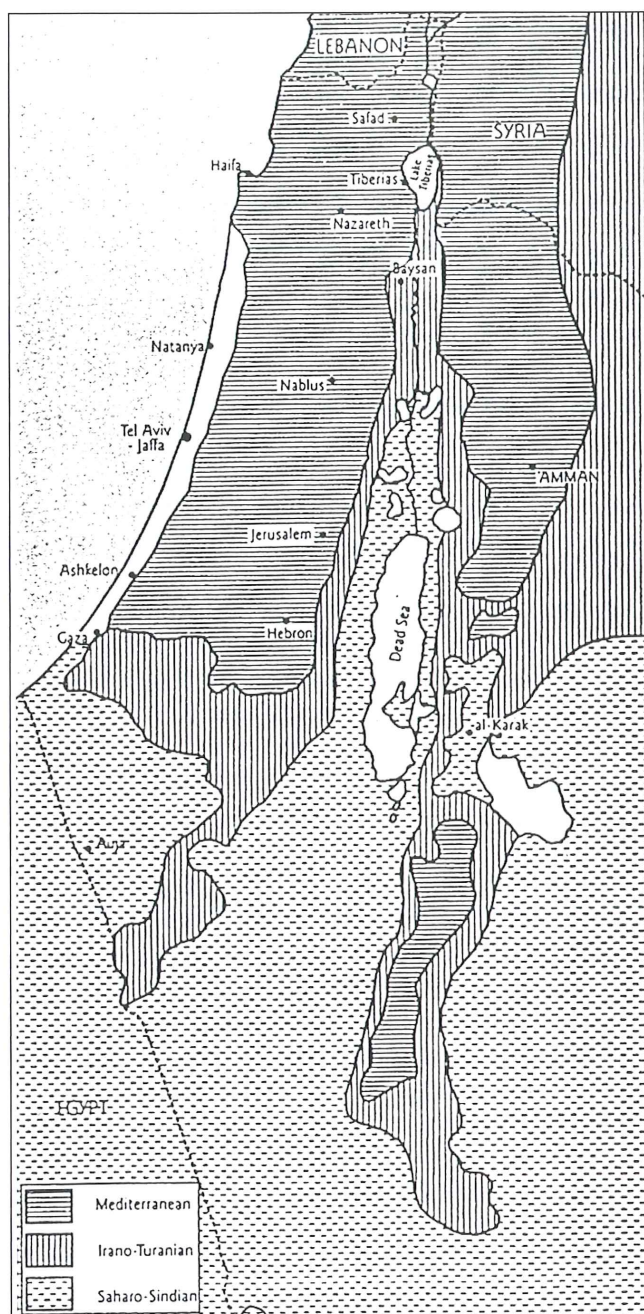
Annual precipitation is *ca.* 300 mm at ash-Shawbak. South of here, rainfall is less than this, being sufficient to permit no more than a single line of villages along the Eastern Rim of the Wādī 'Arabah - Jordan Graben (Baly 1974: 61; MacDonald 2000: 32, fig. 4).

The region east and south of the area with Mediterranean climate (MacDonald 2000: 32, fig. 4) is a transitional zone. Here, in this semi-arid region, the average annual maximum temperature is > 40 °C and the average annual minimum temperature -1.6 °C; the average annual rainfall is between 50 and 300mm (Baly 1974: 61). The part of this zone which is immediately east of the highlands and, at times, close to the fields and farming villages is often referred to as steppeland; it is more often pastoral than agricultural. In times of drought, *bedouin* moved from the desert to these steppes, where dry grass provides pasture (Hütteroth and Abdulfattah 1977: 62).

As indicated above, the area is a peripheral one. This is due to the fact that the northern part of the territory, as far south as ash-Shawbak, is at the southern extremity of the Mediterranean climate zone, while its southern part is in a semi-arid one (MacDonald 2000: 32, fig. 4). These climate zones determine - to a large extent - the soils, *viz.* Red and Yellow Mediterranean and Yellow Steppe (MacDonald 2000: 35, fig. 5), in the territory of interest and what can be grown in them (FIG. 3).

Red Mediterranean soils cover extensive areas in the Highlands at the East Rim of the Wādī 'Arabah - Jordan Graben. They are found as far south as ash-Shawbak. They are well-suited to the cultivation of cereals, tomatoes, melons and tobacco in flat locations, as well as grapes, olives, kernel- and stone-fruits and wood-land in more mountainous areas.

Yellow Mediterranean soil is a transitional type between Red Mediterranean and Yellow Steppe soils (Moormann 1959). It is confined to the cooler part of the semi-arid climatic zone, with annual precipitation of between 250 and 350 mm. It is found in the southern extension of the Highlands at



3. Plant Geographical Territories.

the East Rim of the Wādī 'Arabah - Jordan Graben between ash-Shawbak and Rās an-Naqab (Bender 1974: 189; MacDonald 2000: 35, fig. 5). It can be used for cereal production, using the dry-farming system, and also for grazing. With irrigation, more intensive cultivation would be possible (Bender 1974: 189).

Yellow Steppe soils are found on the western and eastern slopes of the Highlands at the East Rim of the Wādī 'Arabah - Jordan Graben in southern Jordan. They are used for barley production and /

or pasture land; their yields, as with Yellow Mediterranean soils, can be improved by intensive irrigation (Bender 1974: 190).

Elevations in the central part of the area range from *ca.* 1800 m in the Jibāl ash-Sharāh Mountains, north-east of Petra and Wādī Mūsā, to less than 1500m at Rās an-Naqab. To the west, as indicated above, elevations drop precipitously towards the Rift Valley. To the east the land drops gradually towards Ma‘ān, which is at an elevation of 1100m.

Ancient Climates

The present climate is not necessarily indicative of past climatic conditions. However, we do use the present climate as an indicator of whether or not the past was ‘wetter than’ and / or ‘cooler than’ the present.

Knowledge of past climates in different archaeological periods is important, since climate can have a direct effect on which plants can grow in a specific area, as well as on the availability of land for farming and / or pasturage. In other words, climate affects soil productivity, and changes in climate can lead to prosperity or famine (MacDonald 2000: 33).

What must be noted in relation to past climates is that through time there would have been shifts in the distribution of African *vs.* Asian biotypes. Thus, pastoralists and farmers may have moved with these shifts in plant distribution.

Turning now to the Byzantine period, Frumkin *et al.* (1994: 323, fig. 6) see its beginning as one in which the climate was significantly drier than during the first centuries BC and AD. In their opinion, the climate became more arid over the course of the period (Frumkin *et al.* 1994: 323, fig. 6; Frumkin 1997: 240, fig. 22-4; see also Mattingly *et al.* 2007: 335, fig. 10.36). Relative to the Islamic periods, paleoclimatic research points to two humid intervals that occurred in our area of interest after the Byzantine period. They are the Mamluk period (12th-14th centuries) and late Ottoman period (19th and early 20th centuries) (Issar 1998: 125; see also Mattingly *et al.* 2007: 335, fig. 10.36). It would, therefore, seem that the Early Islamic period was relatively arid, continuing the trend from the previous period.

Literary Evidence for Byzantine (AD 324-640) and Early Islamic (AD 640-1099) Presence in the Area

Literary evidence for Byzantine presence in the

southern part of the Transjordanian Plateau is not extensive. One exception, however, is the site of Petra.

Bishops are attested at Petra from the fourth century onwards. The names of a number of them are known, since some attended church councils in that and subsequent centuries. A number of references also provide information to the effect that Petra was a place of banishment for exiled ecclesiastical leaders in the fifth and sixth centuries (Fiema and Frösén 2008: 12).

An inscription in the Urn Tomb within Petra commemorates its conversion into a church in AD 446 (Fiema and Frösén 2008: 12).

Byzantine documents, referred to as both the ‘Petra Papyri’ and the ‘Petra Scrolls’, were uncovered in 1993 during the American Center of Oriental Research’s excavation of the Church of St Mary – frequently referred to as the Petra Church (late fifth - early seventh century). The texts cover a period of some 50 years between AD 528 and 578 (or perhaps AD 582). They are economic documents, dealing with the possession, disposition and acquisition of real estate and other types of property. The documents mention numerous places around Petra. They reveal the active and rich social and economic life of the city and its agricultural hinterland and indicate that land-ownership was the backbone of Byzantine Petra’s society (Bikai 1996: 489).

Petra Papyrus Inventory 6, dated 15 June AD 573 (or earlier), mentions the existence of “the Monastery (Holy House) of our Lord the Saint High Priest Aaron” outside the city of Petra (Gagos and Frösén 1998: 477; Frösén and Fiema 2004: 7; Fiema and Frösén 2008: 12). The ruins of a Byzantine monastery on Jabal Hārūn, where Christian presence is reported up until the beginning of the 13th century (Fiema and Frösén 2008), are the best candidate for this monastery.

John Moschus (late sixth - early seventh century) recounts the “saying” of Abba John of Petra to him and Sophronios (Moschus 1992: 94, ch. 113) and also mentions Abba Athenogenes, Bishop of Petra (chs 127, 128 and 129; Moschus 1992: 103-7). (On one or more of his various sojourns, John Moschus could have visited Petra.)

Udhruh was second on the Beersheba Edict list of tax-paying towns in the province of *Palestina Tertia* during the Byzantine period (Abudanh 2006: i).

The site of Bala / Sigor / Soora / Zoar / Zogora

/ Zoora is of importance to Eusebius and Jerome. Both have multiple entries for it, under various names (Taylor *et al.* 2003: 31, 54). It is depicted on the sixth-century Mādabā Mosaic Map as a large walled building with an arched entrance and three towers. Alliata identifies the “Balak also Segor, now Zoara” of the map with Ghawr aṣ-Ṣāfī (1999: 58).

Bishops from Zoar are known for the fourth, fifth and sixth centuries. Musonius, one of them, attended church councils in the fifth century (Le Quien 1740: 737-746; see also Geyer 1898: 54).

Recent excavations at Khirbat ash-Shaykh ‘Isā, in the Southern Ghawrs immediately south of Wādī al-Ḥasā, and surveys in its neighborhood have resulted in the discovery of 700 inscribed funerary stelae – mostly from illicit digging. More than 400 of these stelae have been recorded and date to the fourth - sixth centuries AD (Meimarīs and Kritikakou-Nikolaropoulou 2005). Around 90 percent are in Greek, while the rest are in Jewish Aramaic (Politis 1998: 635, fig. 5). These finds provide additional evidence for Byzantine presence in the area.

A Byzantine-period hermitage is located just north of Khirbat ash-Shaykh ‘Isā, at the mouth of the Wādī al-Ḥasā gorge and on its north bank (MacDonald *et al.* 1992; Politis 2001). A Greek inscription scratched on a wall of the hermitage reads: “O Lord God of this holy place, come to the help of your servant” (Saller and Bagatti 1949: 195). The hermitage could have been associated with the important site of Dayr ‘Ayn ‘Abāṭa / Lot’s Cave, just to the north (Politis *et al.* 2005: 315, fig. 1).

Farther south, in Wādī Faynān, textual evidence indicates that the area was important during the Byzantine period. Athanasius provides information to the effect that later Christian “heretics” were condemned to the place in the mid-fourth century (*Historia Arianorum* 60; see also Gustafson 1994; Mattingly *et al.* 2007: 333). Bishops of *Phaino* are mentioned in Church councils and synods of AD 431, 449, 518 and 536. Moreover, a Bishop Theodore is attested in AD 587-588 in an inscription associated with a church at the site (Sarte 1993: 142 and 145-146, no. 109; Mattingly *et al.* 2007: 333; Newson *et al.* 2007: 351). In time, the site of Faynān became an important site of pilgrimage (Freeman and Ewan 1998: 68).

We now turn our attention to literary evidence relating to the Early Islamic presence in the area. First of all, we turn to Udhruh.

In AD 657, 25 years after the death of the Prophet Mohammed, Udhruh was the scene of a historic conference. The arbiters between Mu‘āwiya and ‘Alī, two caliphs, met there (Yāqūt, *Mu‘jam al-Buldān* I: 174-75). Hasan ibn Abī Tālib submitted to Mu‘āwiya there in 661 (Al-Tabarī: 198; Schick 1995: 469). This resulted in the establishment of the Umayyad Dynasty by Mu‘āwiya in Damascus. ‘Alī ibn ‘Abd Allāh ibn ‘Abbās and the other Abbasids first came here, but soon left to settle in Ḥumayma (Al-Bakrī: 130; Schick 1995: 469). From the above, it is clear that Muslims were at Udhruh at the beginning of the Islamic period.

In the 10th century a monk of Udhruh is recorded in a manuscript and the site continues to be mentioned by geographers in the Late Islamic period (Killick 1989: 577-578).

An Early Abbasid inscription dated to “Sunday of Jamada al-Akhir of the year 170” (AH 170-AD 787) was recovered from the site of Khirbat an-Nawāfla, located in the north-western sector of the town of Wādī Mūsā. This is the only known inscription dated to the Early Abbasid period (AD 750 - 878) from the southern Bilād ash-Shām (Jordan and Palestine) (‘Amr *et al.* 2000: 241-42).

Archaeological Evidence for Byzantine Presence in the Area

After an ‘emptying out’ at the end of the Iron II period (1000-539BC), which continued into the Persian (539-332BC) and Hellenistic (332-63BC) periods, the Roman (and Nabataean) period (63BC-AD 324) was one when the southern part of the Transjordanian plateau was ‘filling up’ again. A number of factors are responsible for this. Among them would have been an improvement in climate, with a tendency towards increased humidity at the beginning of the second century BC. This trend continued during the first half of the Roman period (see above). Thus, in the southern Levant, the Early Roman period (63 BC-AD 135) coincided with a relatively wet phase (Frumkin *et al.* 1991, fig. 12; Frumkin 1997: 244) which reached its peak at *ca.* AD 90. In the second century AD, the climate began to dry out (Frumkin *et al.* 1994, fig. 6; Frumkin 1997, fig. 22-4; see also Mattingly *et al.* 2007: 335, fig. 10.36). Also in the Early Roman period, in addition to a wetter climate, there were improved technologies for the mining and smelting of the ore available in the region of Wādī Faynān in the ‘Arabah. Improved technologies were also seen in

the field of hydraulic engineering and agriculture. There was continued interest in and promotion of the spice trade. Moreover, there was a stable imperial power. A combination of these factors would have been responsible for the increased population.

Attention is now turned to the Byzantine and Early Islamic periods. These are treated chronologically. Excavated sites which bear witness to Byzantine presence are examined first, followed by regional surveys.

Walmsley *et al.* excavated a mono-apsidal church, with nave-paving and mosaics in the aisles and narthex, at Gharandal (Byzantine *Arindela*, Early Islamic *'Arandal*) south-east of Buṣayra. They date the church to approximately the fifth-eighth centuries (1999: 464).

Without being specific about the occupation of Udhruh during the periods in question, Killick states:

“The Byzantine and Islamic periods are illustrated by an extensive reconstruction and re-arrangement of the site. Doors are blocked, interval towers have their horse-shoe plan squared with fallen blocks, the *Principia* suffered a complete re-modelling and in several parts of the town, previous occupation levels are entirely dug out to give way to a complexity of walls. The Nabataean kiln outside the walled town was filled with debris and blocks of bedrock and the Byzantine settlers erected several houses on top of the kiln...” (1989: 579).

Within Petra, there is abundant evidence for a Christian presence. For example, excavations by the American Center of Oriental Research, Amman in the 1990s and early years of the present century have resulted in the uncovering of three ecclesiastical structures: the Church of Saint Mary or the ‘Petra Church’ (late fifth-early seventh century), the Ridge Church (sixth century, probably destroyed in the earthquake of AD 551) and the Blue Chapel (late fifth or early sixth century). In addition, as previously mentioned, an inscription in the Urn Tomb within Petra commemorates its conversion into a church in AD 446. Moreover, the ad-Dayr (“Monastery”) monument also indicates Christian presence.

Early 20th century archaeological explorations on the peak of Jabal Hārūn, to the south-west of Petra, uncovered evidence for the existence of an early Christian church at the place where a Muslim shrine (*wali*) is presently located (Peterman and Schick 1996: 475-477). Following up on this work,

Peterman and Schick also examined the remains of a monastic complex on a plateau just below and to the west of the peak (1996: 473-475). More recently, the Finnish Jabal Harūn Project (FJHP) has excavated this complex and has established that the complex consists of a church, chapel and associated quarters, including a possible hostel, dating to between the late fifth and eighth centuries AD, possibly continuing up to Crusader times (12th century AD) (Frösén and Fiema 2004: 6). The FJHP found evidence that the church was dedicated to Saint Aaron (Fiema and Frösén 2008).

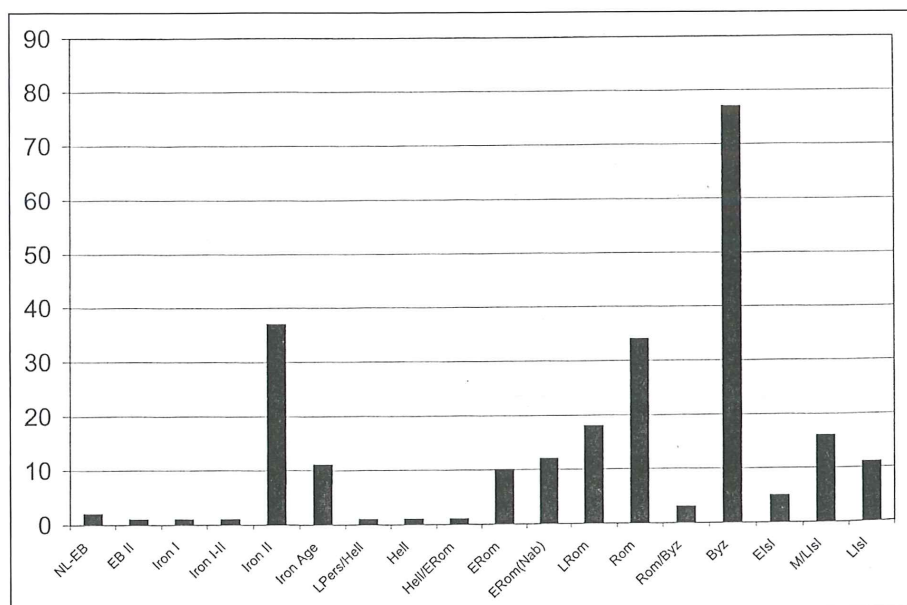
Attention is now turned to the regional surveys carried out in the area. The ones on the plateau will be discussed first. This will be followed by a consideration of similar work in the Wādī ‘Arabah – Dead Sea – Jordan Depression.

In 1979 - 1983, the Wādī al-Ḥasā Archaeological Survey (WHAS) project team members collected Byzantine-period sherds from 125 sites. At 52 of these sites, Byzantine sherds were predominant (MacDonald *et al.* 1988: 232-238, 239, fig. 60). In addition, what they identified as Late Roman-Byzantine, Byzantine-Umayyad and Byzantine / Mamluk sherds were collected at a number of other sites (MacDonald *et al.* 1988: 232-249).

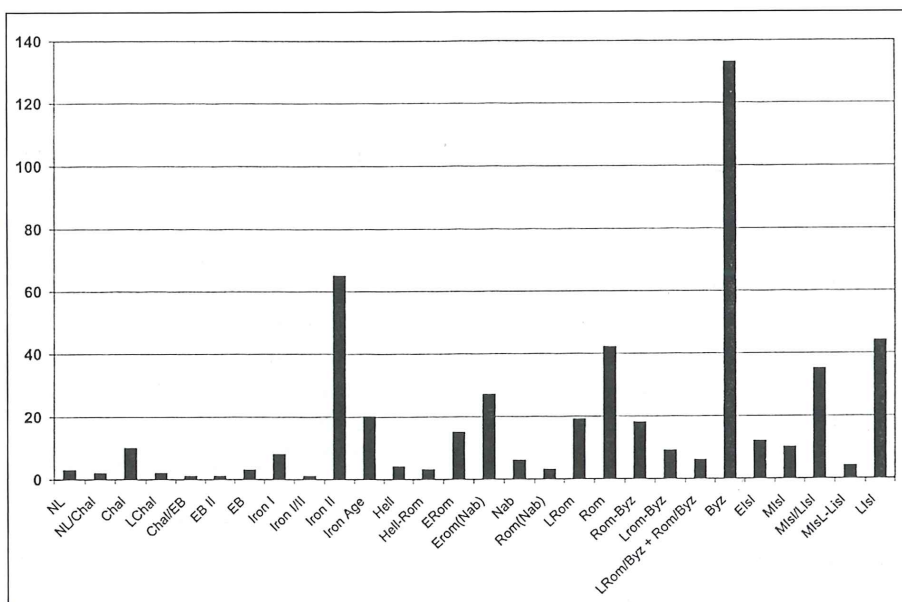
During the at-Ṭafīla-Buṣayra Archaeological Survey (TBAS) project (1999-2001), when random squares were transected, team members collected Byzantine ceramics at the majority (*viz.* 52.86 percent) of those in Zones 1, 2 and 3, and Buṣayra (MacDonald *et al.* 2004: 61-62) (FIG. 4). In addition, they collected sherds of the same period at slightly more than 50 percent of the 290 sites investigated (MacDonald *et al.* 2004: 61-62, fig. 25) (FIG. 5).

Sites of the Byzantine period are found throughout the survey area. They consist of agricultural villages, farms and camping / pastoral sites. It would appear that the resources of the area were fully exploited during the period (MacDonald *et al.* 2004: 65).

The situation is similar farther south in the territory of the Ayl to Rās an-Naqab Archaeological Survey (ARNAS) project (2005 - 2007). Here, Byzantine sites are again a common occurrence (MacDonald *et al.* 2005: 288, 2006: 116-117). Survey team members collected Byzantine sherds from 216 or 55.53 percent of the sites recorded. In addition, they collected Classical (Hellenistic - Byzantine) sherds from 20 or 5.14 percent of the



4. Ceramic, cultural-temporal units represented in Zones 1, 2 and 3, and Buşayra.



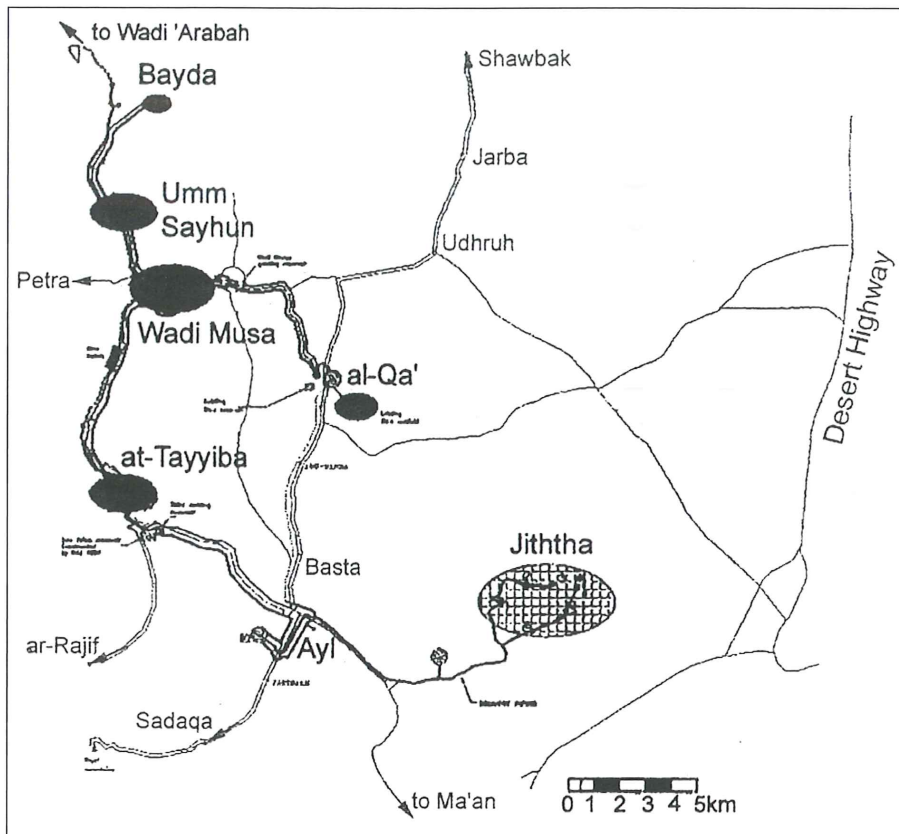
5. Ceramic, cultural-temporal units represented at TBAS Sites.

sites. The Byzantine sites in this area, like those in the areas of the WHAS and the TBAS projects, are – for the most part – related to agricultural and pastoral pursuits.

Tholbecq's Jibāl ash-Sharāh Survey (1996-1997) in the area of the Wādī Mūsā drainage basin reports limited Byzantine presence with several hamlets still occupied (2001: 405). He states: "... the concentration of Byzantine sites seems at first sight slightly different from that of the eastern zone around Udhrūḥ which was apparently more intensively settled during these periods than Jabal ash-Sharāh" (2001: 405).

The surveys and salvage excavations of 'Amr *et*

al., carried out in 1996 and 1998-2000 in association with the Wādī Mūsā Water Supply and Wastewater Project (WMWSWP), covered an area of 60km – in which *ca.* 300km of pipe-line was laid – including sectors of al-Bayḍā, Umm Ṣayḥūn, Wādī Mūsā, aṭ-Ṭayba, Ayl, Jiththa and al-Qā' (= Dhahiyat al-Amīr Rāshid) ('Amr *et al.* 1996, 1997, 1998, 2000, 2001) (FIG. 6). The project's team members investigated 132 sites. They collected Nabataean pottery at 50 percent of sites, while Byzantine ($n = 20$), Late Roman / Early Byzantine ($n = 9$), Nabataean-Byzantine ($n = 2$) and Late Byzantine-Early Islamic ($n = 1$) pottery was identified at 24 percent of them. Thus, the evidence from the WMWSWP



6. Schematic plan of the Wādī Mūsā Water Supply and Wastewater Project area.

indicates that the landscape was exploited by an agricultural society and that the Byzantine period is well represented ('Amr *et al.* 1998; 'Amr and al-Momani 2001).

Abudanh's (2004, 2006, 2007) study of "settlement patterns and the military organization in the region of Udhruf in the Roman and Byzantine periods" indicates that "the number of sites occupied during the Byzantine period is twice the number of sites settled during the Late Roman period but about half the number of sites occupied in the Nabataean and Early Roman periods" (2006: 216). These Byzantine sites were concentrated in the vicinities of the major settlement sites, e.g. Khirbat al-Mulghān, Khirbat al-Jarba, Udhruf, Khirbat al-Fuqayy, Jabal at-Ṭāḥūnah and Ṣadaqa (Abudanh 2006: 216-219).

Finally, the South Jordan Iron Age II Survey and Excavation Project (SJIAP) of Whiting *et al.* (2009: 280), which was carried out in 2004, 2005 and 2006, reports Roman / Byzantine remains in all environmental zones of her survey area (see also Whiting *et al.* 2008).

Turning our attention now to the Southern Ghawrs, east of the plateau, and first to the territory covered by the Southern Ghawrs and Northeast

'Arabah Archaeological Survey (SGNAS) (1986-1987) project team members, it is evident that Byzantine period sites are by far the most common within the project's territory. However, the evidence for Byzantine presence does not come only from the collections of the SGNAS project (MacDonald *et al.* 1992: 97-112), but also from the documentation of Byzantine tombs in the Southern Ghawrs by Politis *et al.* (e.g. Politis 1998: 628, 631, fig. 5; Meimaris and Kritikakou-Nikolaropoulou 2005).

While the Southern Ghawrs are noted for their Christian heritage, there is evidence for churches throughout the territory of interest. For example, a hermitage in Wādī 'Afrā (MacDonald 1980; MacDonald *et al.* 1988: 243-244), recycled Greek inscriptions at both at-Ṭafila and Buṣayra (Gagos 2004: 421-22) which probably came from churches, and toponyms with the name 'Dayr' most probably all testify to such presence.

Farther to the south in Wādī 'Arabah, the work of Hauptmann and Weisgerber (1992: 65) as well as that of the British Institute at 'Ammān for Archaeology and History (BIAAH) in Wādī Faynān uncovered ample evidence for Byzantine presence (Barnes *et al.* 1995, 2007; Barker *et al.* 1997, 1998,

2007; Finlater *et al.* 1998; Freeman and McEwan 1998; see also Musil 1907: 290, fig. 160, 291, fig. 161, 294-295; Glueck 1935: 32-35). The region was a place of intensive settlement and copper smelting during the Roman and Byzantine periods. The remains of five or six churches (Creighton *et al.* 2007: 198-199), Roman and Byzantine pottery associated with a wide range of funerary features spread over the landscape (Mattingly *et al.* 2007: 326), hundreds of gravestones engraved with crosses (Mattingly *et al.* 2007: 326) and human skeleton remains dating to the fourth-seventh centuries of some of those who lived and worked at the ancient copper mines and furnaces of Wādī Faynān (Grattan *et al.* 2005; Mattingly *et al.* 2007: 333) all indicate the importance of the area in the Byzantine period.

Archaeological Evidence for Early Islamic (AD 640-1099) Presence

Evidence for Early Islamic (AD 640-1099) presence is sparse on the Transjordanian Plateau between Wādī al-Ḥasā and Rās an-Naqab. The basis for this assertion is the evidence from both excavations and surveys. The situation for the Southern Ghawrs is somewhat different. Once again, I will begin with the excavated sites and then turn to the regional surveys.

Regarding the site of Gharandal during the Early Islamic period, Walmsley *et al.* excavated yellow clay fill within the Byzantine church in which dividing walls were erected around the late eighth to tenth centuries. According to the excavators, the church itself was dismantled and its apse intentionally demolished in the ninth or tenth century (Walmsley *et al.* 1999: 464). They have dated houses and rough stone walls at the site to the 11th-13th centuries (Walmsley *et al.* 1999: 463). It appears that there was not much more than squatter occupation at the site in the Early Islamic period.

Petra, the most important city in southern Jordan for centuries, seems to have lost its significance in the Early Islamic period (Fiema 2002: 239). Within the city itself, only squatter occupation of earlier buildings is reported (Schick *et al.* 1993: 59, 60).

Just outside Petra, an Early Islamic settlement is attested to in what is now the north-western part of the town of Wadi Musa. Here, the excavations at Khirbat an-Nawāfla (Wādī Mūsā 9) by 'Amr *et al.* in 1997-1998 have yielded data for settlement from the first century BC to the Ottoman period, with

only two short gaps in the late third century AD and sometime during the Late Islamic period. This site is especially significant for the Early Islamic period ('Amr *et al.* 1998: 519-520, 2000: 233).

Killick (1989: 577) reports that there were town houses at Udhrūḥ during the Islamic period. Although he is not specific regarding dating, he seems to view this occupation as a continuation of Byzantine occupation at the site (see above).

Attention is now turned to the regional surveys. The discussion will once again progress from north to south.

WHAS project team members identified Early Islamic-period ceramics at only six sites (MacDonald *et al.* 1988: 250). For the most part, these sites are located in the eastern part of the survey territory. This indicates that there was little in the way of settlement immediately south of Wādī al-Ḥasā during the period in question.

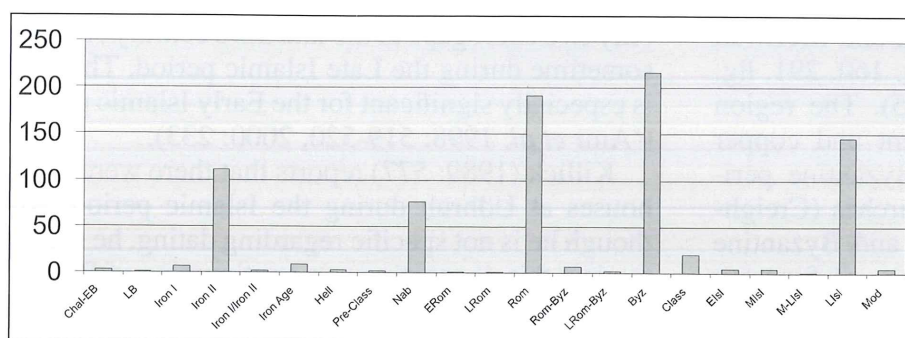
Based on the Early Islamic-period ceramics which TBAS team members collected from the random squares transected and at the sites recorded, a decline in population appears to have taken place during the period. This changed during the Middle and Late Islamic periods (MacDonald *et al.* 2004: 65) (see FIGS. 4 and 5).

ARNAS team members collected Early Islamic sherds from only five of 389 sites investigated (MacDonald *et al.* in press) (FIG. 7).

Tholbecq, commenting on the Islamic period in the Jibāl ash-Sharāḥ area, states: "according to the first surface collection of sherds, there seems to be a gap in occupation of the Jabal from the eighth century AD to the Ottoman period" (2001: 405).

WMWSWP survey team members identified Early Islamic (n = 4), Late Byzantine-Early Islamic (n = 1), Umayyad (n = 1) and Abbasid (late eighth century) (n = 1) at only 5 percent of the 132 sites they recorded.

Concerning the Early Islamic period, Abudanh states that "... the general view indicates a decline in the human settlement" (2006: 223). He recorded 20 sites as having been occupied during this period. Most of these sites were also occupied during the Late Byzantine period. He states (Abudanh 2006: 223): "The settlement pattern in the study area during the period under discussion is more or less restricted to the area between Udhrūḥ and Ma'an, particularly around Udhrūḥ ... even though Early Islamic settlement is attested elsewhere in the study area".



7. Ceramic periods represented at AR-NAS Sites.

SJIAP reports by Whiting *et al.* note that “off-site transects revealed a general background ‘noise’ of Nabataean to Late Byzantine / Early Islamic ceramics” (2009: 282).

In the Southern Ghawrs, however, the situation is somewhat different. There appears to have been a human presence in the Southern Ghawrs throughout the Islamic period. Here, during the later Early and Middle Islamic periods, the inhabitants were engaged in the growing and processing of indigo and sugar cane, especially in the area of aş-Şāfi (Whitcomb 1992: 116-117; Politis 1998; Politis *et al.* 2005, 2009).

Work by the BIAAH in Wādī Faynān indicates that the settlement at Khirbat Faynān may have been deserted during the Early Islamic period (Barnes *et al.* 1995; Barker *et al.* 1997, 1998; Findlater *et al.* 1998; Freeman and McEwan 1998; Newson *et al.* 2007: 351). There is, however, evidence for a brief revival of copper production in the region during the Ayyubid / Mamluk period (Barnes *et al.* 1995; Barker *et al.* 1997, 1998; Findlater *et al.* 1998; Freeman and McEwan 1998; Newson *et al.* 2007: 352, 363). A minor episode of smelting in the region has been radiocarbon dated to *ca.* BP 530-330 (Grattan *et al.* 2007). In the 13th century, there is the possibility that lead was smelted in addition to copper (Grattan *et al.* 2007: 90).

The Late Byzantine and Islamic coins reported from the Faynān area show a wide gap between the last Byzantine issues of the mid-seventh century and a number of Ayyubid and Mamluk issues of the 13th and 14th centuries (Kind *et al.* 2005: 179-183, 188-189). There is an absence of any coins relating to the period AD 668-1210. This is in keeping with the general absence of diagnostic pottery for the same time period (Newson *et al.* 2007: 363). According to the assessment of the BIAAH team, the implications are that settlement at Khirbat Faynān did not endure during this time on any significant scale (Newson *et al.* 2007: 363).

In conclusion, there is evidence – both literary and artifactual – of significant human habitation in the area from Wādī al-Ḥasā in the north to Rās an-Naqab in the south throughout the Byzantine period. On the other hand, there appears to have been a decline in settlement from the Byzantine period into the Early Islamic one. The reasons for this must now be considered.

Reasons for the Settlement and Decline in Settlement in the Byzantine and Early Islamic Periods Respectively

The last centuries of the Byzantine presence in Palestine were ones of natural disaster and conquest. Regarding the former, a series of earthquakes – some of which were both extensive and destructive – affected areas of Palestine from the mid-sixth to the late eighth centuries (Russell 1985; Guidoboni *et al.* 1994: 332-371). In addition, a series of plagues in the last half of the sixth century and in 627 killed thousands of people (Michael the Syrian, II, 412 [trans.]; IV, 409 [text]; Shoshan 2002: 3). As for conquests, the Sassanian Persians captured the area in 614 and occupied it until 628 (Schick 1995: 20-48). In Schick’s view, this was a blow from which the Christians of the area never fully recovered (1995: 20; see also Donner 1981: 99-100; Avni 2010). This conquest was followed by the Muslim invasion of the region in the 630s (Donner 1981: 111-155). All the above-listed natural catastrophes and conquests would have had a devastating effect on the Byzantine population in the area under consideration.

In addition, a number of other factors can be set forth to explain the decrease in human settlement in the area of interest from the Byzantine into the Early Islamic periods. These include climate change, a shift in the political situation, economic changes and cultural changes. We will now look at their validity.

Some explain the decrease in human habitation

in the area as the result of climate (see above). Specifically, for the seventh century – the end of the Byzantine and beginning of the Early Islamic periods – a series of data, such as the encroachment of sand dunes and a rise in sea level as a result of the melting of ice-sheets, attest to the beginning of a hot, dry period and a reduction in rainfall (Issar 1995, 1998; Hirschfeld 2004: 133). It would therefore seem that the Early Islamic period was arid, continuing the trend from the previous period.

As was pointed out at the beginning of this paper, the area is a peripheral one and much of it lies in semi-arid zones. Here, environmental deterioration, whether through a decline in precipitation or overgrazing, may have led to the most dramatic response among agro-pastoralists (Hill 2006: 11). Specifically, as indicated previously, annual precipitation at ash-Shawbak is *ca.* 300 mm. It decreases as one proceeds southwards to Rās an-Naqab and as one goes either east or west from the Highlands at the Eastern Rim of the Wādī ‘Arabah - Jordan Graben. Thus, even a small decrease in annual precipitation, for example of 50mm, could be catastrophic for the area and those who attempted to live there. As is often said: “No plants, no humans!”

With a decrease in rainfall, people would have migrated as a way of adapting to environmental change. A modern-day example consists of current studies on the number of people who will be displaced as a result of climate change by around 2050. The estimate of the number of migrants ranges from 50 million (United Nations University Institute for Environment and Human Security) to 200 million (International Organization for Migration and Stern Review). Just as climatic deterioration can severely impact migration today it could equally as well have had an influence on migration during and following the Byzantine period.

A change in the political situation is another explanation for the ‘emptying out’ of the area of interest in the Early Islamic period. With the Islamic conquests, beginning in the first half of the seventh century, power in the region shifted from Constantinople to Damascus and then Baghdad. Owing to these changes in political fortunes, many people may have wished to move from the area.

A present-day example is the case of Jerusalem. According to Israeli academic sources, there were 29,350 Christians in Jerusalem in 1944. There is now only one-third of that number in the city. The same can be said about Beit Jala, Bethlehem and

Ramallah, where more inhabitants are found in *di-aspōra* communities, e.g. in Honduras, Chile and the United States, than in Palestine. Emigration figures from various surveys conducted since 1990 in Jerusalem and the Palestinian territories indicate that twice the number of Christians leave in comparison to the general Palestinian population. The reasons for this are varied and interdependent: the issue of peace and war, continued political and economic instability owing to Israeli occupation, and the nature of the society and the kind of social and political system that Palestinians want.

From a purely economic point of view, Abudanh sees the decline of settlement in the Early Islamic period in the countryside of Petra as being linked to the decline of Petra itself, which gradually lost its importance as an administrative and trade centre. If this was the case, agricultural products from communities living in the hills east of Petra would have lost an important market. This situation might have led to a shift in the nature of society, from agricultural to pastoral, or even to semi-nomadic (Abudanh 2006: 224-225).

Abudanh also sees cultural change as a factor responsible for the decrease in human occupation of the area in the Early Islamic period. Beginning in the later part of the first half of the seventh century, most of the inhabitants of the wider Bilad ash-Sham region accepted Islam and started to follow its teachings. During the Early Islamic conquests, many of the regions’ inhabitants joined the Muslim army and consequently moved to new areas to take part in the Holy War. Others migrated to urban centres to study the new religion with scholars who were based in the major cities (al-Mubarakpuri 1995; Abudanh 2006: 225).

Conclusion

On the basis of both literary and archaeological evidence, there appears to have been a shift in settlement patterns during the Late Byzantine to Umayyad period. While some sites such as Zughar in Ghawr aş-Şāfī flourished, others seem to have declined. The sites of Petra and Khirbat Faynān are good examples of the latter.

Any number of the factors outlined above, including natural disaster, conquest, a deterioration in climate as far as precipitation is concerned, shifts in political power, economics and cultural change, could have been responsible for the decline in settlement in the southern part of the Transjordanian

Plateau between the Byzantine and Early Islamic periods.

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