



Left: Entrance to a communal tomb of the Umm an Nar Period (2700-2000 BC) at al Ayn

Until recently, Oman's rich history was only partly documented. GIS is helping write the missing pages, as **PAUL YULE** explains

GIScovering the past in Oman

When the mainstream of archaeological research in the Sultanate of Oman began in 1972, virtually nothing was known of its successive ancient cultures. In 1977, the German Archaeological Oman Expedition began to identify and locate the ancient copper mines of Magan/Makkan, long known from cuneiform tablets written in the Sumerian and Akkadian languages. The texts date from the mid third to early second millennia BC and reveal the economic importance of copper. Indeed, the Sumerians mythologised Magan, Dilmun (Bahrain and its hinterland), and Meluhha (lower Indus), as lands of plenty.

Magan's location in Oman and south-west Iran became clear only in the 1980s. Archaeologists had already roughly dated the successive cultures mentioned above, but those of the subsequent final Pre-Islamic period eluded them. In 1980, G.Weisgerber and B.Vogt excavated a grave that contained significant finds. Here, in a Pre-Islamic cemetery at Samad al Shan, 140 km south of the capital Masqat, handmade pottery and lathe-turned stone bowls were unearthed, together with iron weapons. Excavation continued, revealing many - even hundreds - of such graves.

By-product

Our GIS began in the late 1980s simply as a by-product of research on the Samad Culture and evolved as a card file to structure references and projects relating to 1,159 archaeological sites in the entire Gulf area. This catalogues the place names; geographic coordinates; type of site; periods represented; whether excavated or surveyed; year(s) worked; nationality of investigators, and site-related literature.

The database can present, select, and sort attributes in literally any way. For example, generating a chronological or geographic distribution for sites of a particular kind or period.

Geodata sources

A great many archaeological sites on the Arabian/Persian Gulf littoral have been nominally known for some time, but their documentation varies, ranging from the elaborate,^{1,2} to the

sketchy or non-existent. Moreover, the maps available in the specialist literature are small in scale, vary in quality, and are in different projections.

Two main map series of the Sultanate serve our GIS needs. These are the K668 and K6611 maps in 1:100,000 scale, and also the 1404 series in 1:500,000 scale. All can be read in both Universal Transverse Mercator (UTM) and spherical coordinates. Some prefer to cite a third system - the alphanumeric grid references (taken from the margins of the 100,000 maps) - although this is less precise. In the pre-GPS era (prior to the 1991 Gulf War) the reading of references from the 100,000 mapping was tedious and mistakes of varying magnitude impeded the work.

Mapping activity gathered momentum in the late 1980s in line with fieldwork. The need to standardise data became more intense and a major task was transliteration of Arabic place names into Latin suitable for the database. Despite considerable problems, the "Gazetteer for Oman" from the US Defense Mapping Agency became available in the mid-1980s to speed this process.³ Its content was later made accessible to scholars and the general public alike.⁴

GIS guidelines

Since the sites listed in the GIS (see table facing page) were first compiled to track and tally the activities of local and foreign archaeological missions, some sites are listed more than once. Certain small sites are not strictly listed according to expedition. After the date, a ">" means that the site was worked on more than one season. "<" means that the site was discovered or studied prior to or during the year cited. In certain cases the coordinates published differ from those originally reported. Depending on where one in the Sultanate measures, a degree lies between 190 and 210 km in width, a minute from about 3.1 to 3.5 km width. Mistakes in the one minute range are easily possible, depending on the kind of data available.

After coordinates and map references follow the dates of the sites: "A"= aceramic, "P"= Parthian/Hellenistic, and "?"= unknown.

Particularly problematic for classification and dating are

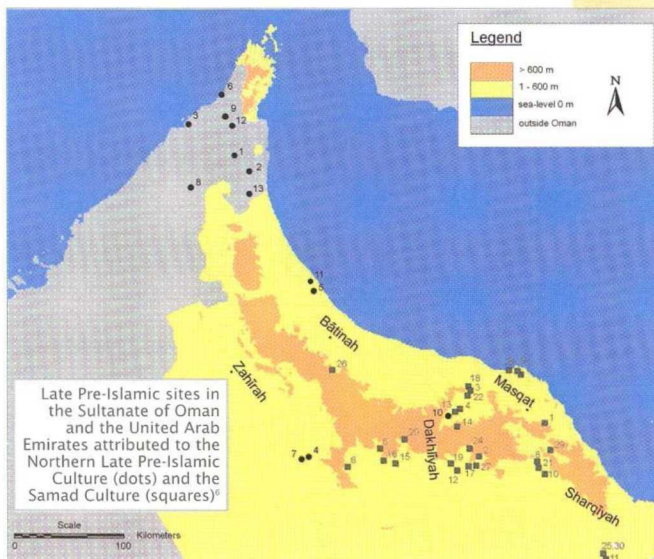


Site	Year	East	North	K 6611	A	P	?	Publication	Surv	Land
Ainam, W	1976<	57°47'	20°09'	NF 40-15E		x		Thomas 1929a 108	+	Brit
Ainam, W	1976<	57°47'	20°09'	NF 40-15E		x		de Cardi et al 1977 30-1	+	Brit
Ghadun, W	1983>	56°42'	18°42'	NF 40-6C			x	Biagi 1988 site W Ghadun. 290	-	Ital
Gharm, W 2	1983>	57°31'	18°50'	NF 40-3E			x	Biagi 1988 site WG2. 290	-	Ital
Gharm, W 1	1983>	57°31'	18°50'	NF 40-3E			x	Biagi 1988 site WG1. 290	-	Ital
Haitam, W 2	1983>	56°54'	18°46'	NE 40-6C			x	Biagi 1988 site W Haitam 2. 290	-	Ital
Haitam, W 1	1983>	56°56'	18°47'	NE 40-6C			x	Salm 1988 18 site 001	-	Oman
Haitam, W 3	1983>	56°50'	18°45'	NE 40-6C			x	Biagi 1988 site W Haitam 3. 290	-	Ital
Lakabi	1983>	56°30'	18°13'	NE 40-6F			x	Salm 1988 18 site 006	-	Oman
Lisq, W	1983>	56°38'	18°38'	NF 40-6C			x	Biagi 1988 site W Lisq. 290	-	Ital
Madrakah Island 6	1983>	57°49'	19°04'	NE 40-3B	x			Biagi 1988 site WDK6. 290	*	Ital
Madrakah Island 5	1983>	57°49'	19°04'	NE 40-3B	x			Biagi 1988 site WDK5. 290	*	Ital
Qadailah	1976<	57°47'	20°09'	NF 40-15E			x	de Cardi et al 1977 30-1	+	Brit
Ras al Khaluf	1983>	57°40'	19°38'	NF 40-3B	x			Biagi 1988 site KLF1. 290	/	Ital
Ras Madrasah 1	1983>	57°48'	19°04'	NE 40-3B			x	Biagi 1988 site MDK1. 290	+	Ital
Ras Madrasah 2	1983>	57°48'	19°04'	NE 40-3B			x	Biagi 1988 site MDK2. 290	-	Ital
Ras Madrasah 3	1983>	57°48'	19°03'	NE 40-3B	x		x	Biagi 1988 site MDK3. 290	/	Ital
Ras Madrasah 4	1983>	57°48'	19°04'	NE 40-3B	x		x	Biagi 1988 site MDK4. 290	/	Ital
Ras Madrasah 7	1983>	57°48'	19°03'	NE 40-3B	x		x	Biagi 1988 site MDK7. 290	/	Ital
Ras Madrasah 8	1983>	57°47'	19°00'	NE 40-3B			x	Biagi 1988 site MDK8. 290	-	Ital
Ras Madrasah 9	1983>	57°46'	18°59'	NE 40-3B	x			Biagi 1988 site MDK9. 290	*	Ital
Saiwan	1984	57°31'	20°59'	NF 40-15E			x	Biagi 1994 81-	*	Ital
Sarab, W	1929	57°49'	20°11'	NF 40-15E			x	Thomas 1929a 108	+	Brit
Sawqirah 2	1983>	56°31'	18°09'	NF 40-6F			x	Salm 1988 18 site 008	-	Oman
Sawqirah 3	1983>	56°32'	18°09'	NF 40-6F			x	Salm 1988 18 site 009	+	Oman
Sawqirah 4	1983>	56°32'	18°07'	NF 40-6F			x	Salm 1988 18 site 010	+	Oman
Sawqirah 1	1983>	56°31'	18°09'	NF 40-6F			x	Biagi 1988 site Sawqirah. 290	-	Ital
Umayri, W										
west J Salakh	1947	56°20'	21°40'	NF 40-6B			x	Thesiger 1950 167 n 55	-	Brit

total: 28 23.05.2000
Abbreviated list of the archaeological sites in the province al Wusta contained in the GIS (after [5]).

the terms "cairns" and "beehive tombs" often cited in the sources. The first is neither unequivocally definable nor datable, and the second can date to the Hafit and/or Umm an Nar Period.

The dates of certain sites, e.g. the cemetery at Amlah, al Fueda (of the Northern Pre-Islamic Culture from centuries around the time of Christ), are not specified if they do not fall into a major category. Triliths (an alignment of standing stones) have been assigned to the Samad Period for purely chronological reasons. They are identified with a "t" in the data list. Similarly, shell middens are dated as "aceramic" and are also classified with finds ("f"). The bibliography cites the first or first major mention of the site. Further to the right, the next columns indicate whether the site is known from a survey ("Surv") or excavation ("Exca"). The symbol "a" indicates finds and "+" contexts which are not graves. "/" means that both of the former were encountered. "-" indicates graves. "-/" means that graves with settlement contexts were registered.



addition is the so-called Late Northern Pre-Islamic Culture (LNPC), as at Amlah/al Fueda.⁶

As new data become available, our GIS is reviewed and updated. One must be careful how the GPS instrument is set in the field (seconds or decimal places) before including new readings. Since GPS Selective Availability" was removed in May of last year, the opportunity was taken to continue fieldwork and update the GPS readings of poorly-documented sites. Similar work is in progress in other countries on the Gulf littoral, the results of which are for publication at a later date.

REFERENCES

1. Doe, D. B. Gazetteer, Journal of Oman Studies 2, 1976, 148-187
2. Doe, D. B., Gazetteer of Sites in Oman, 1976, Journal of Oman Studies 3.1, 1977, 35-57
3. Defense Mapping Agency, Gazetteer of Oman, Washington, D.C., 1983
4. <http://www.nima.mil>. Geonet Names Server
5. <http://www.geocities.com/Athens/Forum/9539>
6. P. Yule: "Amla, al Zahira: - Späteisenzeitliche Gräberfelder (Late Iron Age graves)", in: Paul Yule (ed.), Studies in the Archaeology of the Sultanate of Oman, Deutsches Archäologisches Institut, Orientabteilung, Orient-Archäologie, vol. 2 (Rahden 1999) 121—186

ACKNOWLEDGEMENTS

Since 1994 the Institute for Prehistory of the University of Heidelberg has conducted the described work in Oman. We thank our colleagues from the Ministry for National Heritage and Culture, who have cooperated with us over the years, in particular Dr. Ali b. Ahmed b. Bakhit al Shanfari.

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