

Pollen analytic results of well sediments from Qatar

Morten Fischer Mortensen and
Catherine Jessen

Jnl. Nr. A9310

Report Nr. 61/2014

Environmental Archaeology and Materials Science,
Conservation and Archaeological Sciences
The National Museum of Denmark

Pollen analytic results of well sediments from Qatar

Morten Fischer Mortensen and Catherine Jessen

Introduction

Sediment samples from a series of wells were taken in connection with the archaeological excavations at an abandoned pearl fishing village in Qatar. The well sediments were analysed due to the absence of any natural organic sources in the local area in an attempt to gain insight into the local environmental conditions during the activity period of the village. The initial scan of the sediments showed that they contained relatively well preserved pollen but in very low concentrations.

Samples

Eight sub-samples from the sandy sediments were selected from the archaeological excavation. The initial scan of the pollen showed that 5 of these samples contained sufficient material for further pollen analysis.

Methods

The samples were prepared using standard methods (Fægri and Iversen, 1979) with an extended treatment by hydrofluoric acid due to the high sand content. Identification was using Fægri and Iversen (1979), Moore and Webb (1991) with reference to Norton *et al.* (2009).

Resultater

Table 1. Pollen counts

Taxa	English name	Sample NNU	702-4 M73373	702-8 M73379	702-11 M73374	4 M73375	11 M73376
<i>Alnus</i>	Alder	Trees			1		1
<i>Pinus</i>	Pine				1		1
<i>Quercus</i>	Oak			1	1		
<i>Artemisia</i>	Wormwood	Terrestrial			2		
Asteraceae	Aster family	herbs					
<i>Centaurea t.</i>	Knapweed				1		
Caryophyllaceae	Carnation					1	
Chenopodiaceae	Goosefoot		10	5	134	56	27
<i>Dryopteris</i>	Fern		2				
Fabaceae/	Spurge						
<i>Euphorbia t.</i>						1	
<i>Lotus t.</i>	Birdsfoot trefoil						3
<i>Nerium oleander</i>	Oleander						1
<i>Plantago t.</i>	Plantain				2		
Poaceae	Grass family		2	2	35	4	3
<i>Rumex acetosa</i>	Common sorrel						
Cereal ?					1		
Apiaceae	Parsley family	Wetland			1		
Cyperaceae	Sedge family	plants			1		
<i>Senecio t.</i>	Ragwort				6		
Unidentified			5		13	10	5
Charcoal			2		21		
Total terrestrial pollen			14	8	178	62	36

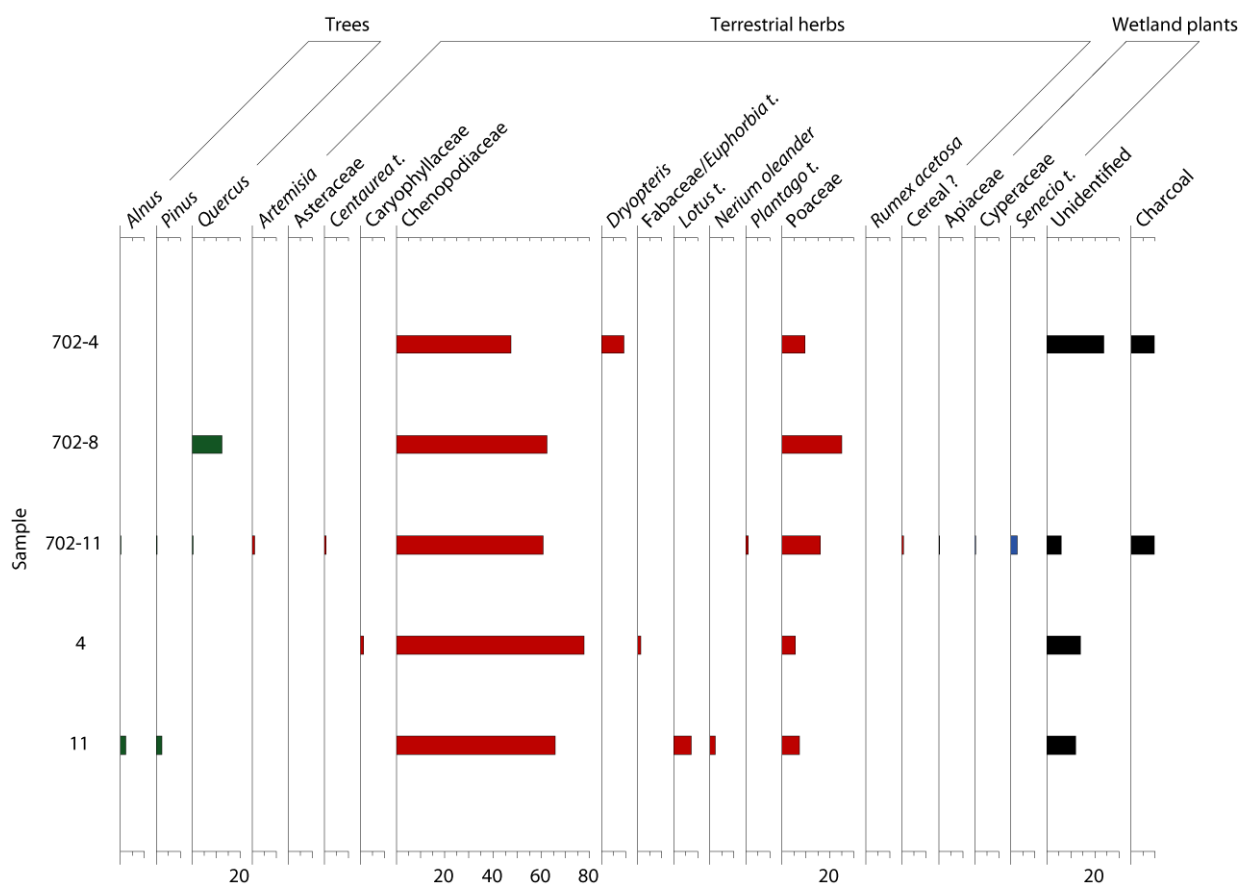


Fig 1. Pollen percentage diagram based on total terrestrial pollen sum.

Discussion and conclusion

Pollen and macrofossils deposited in small basins generally reflect the local vegetation together with a small percentage of windblown pollen from more distant regions. Sedimentary deposition in artificial basins, such as wells, is more influenced by human disturbance than natural basins. During the lifetime of a well, they can be used as drinking water sources for humans and animals, washing, soaking, retting, waste disposal and also ritual deposits. Wells infill quickly so may be repeatedly dredged and cleared of sediments. The extant sediments will therefore represent a combination of the activities from the vicinity of the wells after the final dredging. The pollen and macrofossils captured in the sediments will often represent both the local vegetation and the plant material associated with human activity around the well.

The pollen composition in the 5 analysed samples show a similar spectra of terrestrial herbs associated with dry environments. The 2 dominant pollen types are from the Chenopodiaceae (Goosefoot) and the Poaceae (Grass) families. Both of these families

contain taxa which are well suited to dry, saline environments such as coastal salt marshes and dry sandy sediments. The pollen composition seen in the samples is similar to the present environment around the site and may have been associated with the wells due to the more favourable, moister, environment. The 2 pollen types can only be identified to the family level and not to either genus or species. Many plants belonging to these 2 families are found in Qatar of which some are indigenous and some introduced (Norton *et al.* 2009). As the analysed sediments are only c. 100 years old, it is likely that many of the modern plant types would have been the same as those found during the lifetime of the village.

The occasional pollen from trees such as *Alnus* (Alder), *Pinus* (Pine) and *Quercus* (Oak), all of which are wind pollinators, represent long distance transport of pollen originating from trees in far field regions.

There are few indicators of cultural activity in the sediments with the exception of charcoal micro-particles which must be associated with activity in the local area. One possible pollen of cultivated grain was found in one sample but otherwise we believe the pollen in the wells originated from the local vegetation.

References

Fægri, K og Iversen, J. 1989. Textbook of Pollen Analysis, 4th ed. John Wiley and Sons, Chichester.

Moore, P. D., Webb, J. A. and Collinson, M.E. 1991. Pollen Analysis. 3rd ed. Blackwell Scientific Publications, Oxford. pp 216.

Norton, J.A., Abdul Majid, S., Allan, D.R., Al Safran, M., Böer, B. and Richer, R. (2009). An illustrated checklist of the flora of Qatar. Browndown Publications, Gosport, UK.