An Overview of Paleoethnobotany

of the Indus Civilization

2005

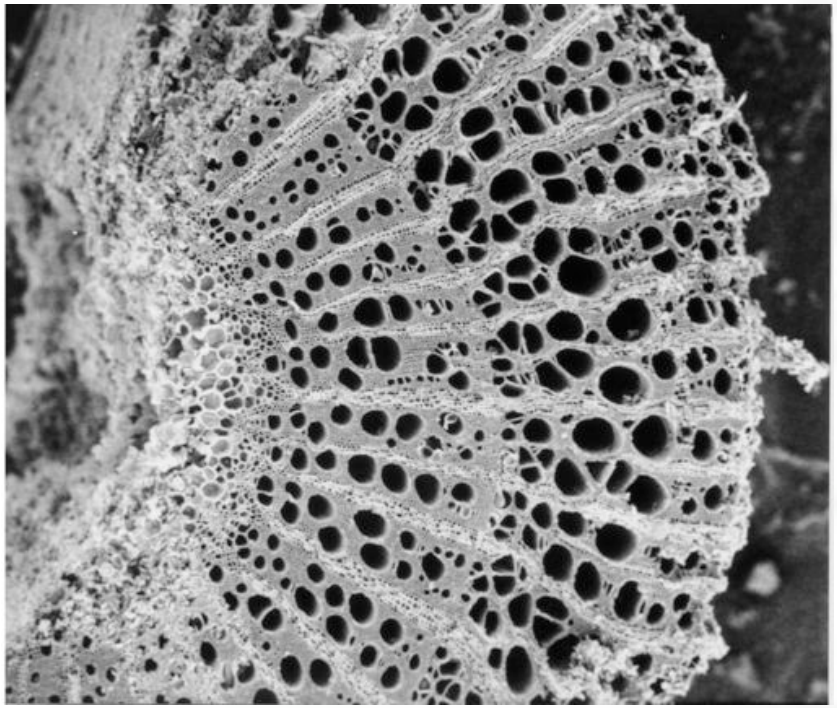
Research into Indus Civilization plant occurrences focus on one of eight strategies

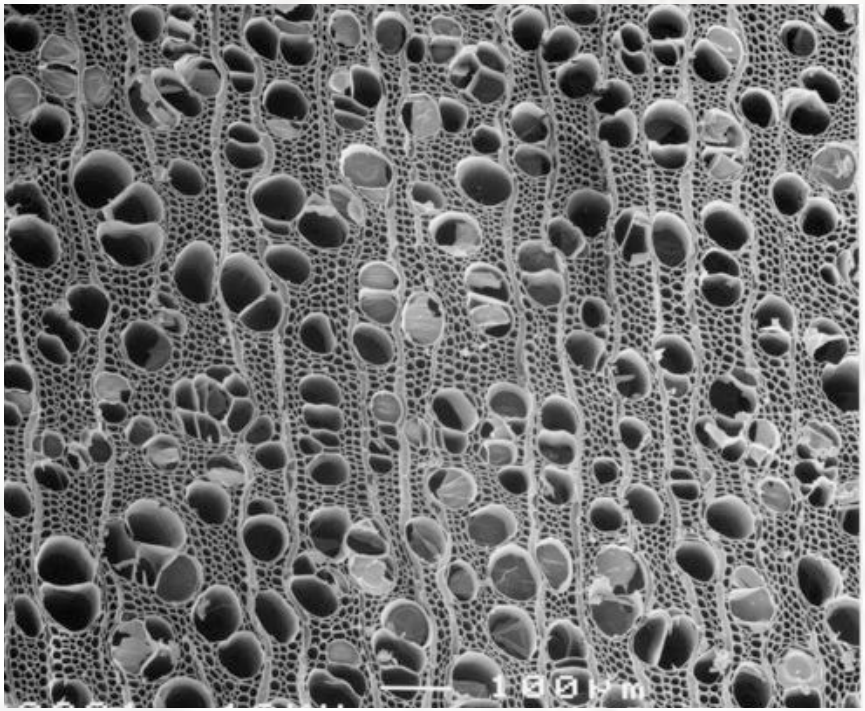
1. Wood charcoal
2. Phytoliths
3. Plant Impressions
4. Pollen
5. Inferences from Artifacts
6. Inferences from Bones
7. Ethnographic Work
8. Seeds and other identifiable plant parts

1.Wood Charcoal

Charcoal analysis provides a means to the reconstruction of vegetational histories and to the development of models of wood exploitation patterns.

Early indications are that wood use did change during the Indus civilization.





Images courtesy of M. Tengberg and S. Thiébault

2. Phytoliths

Phytolith analysis has identified the appearance of plants not identified through other means at sites like Harappa.

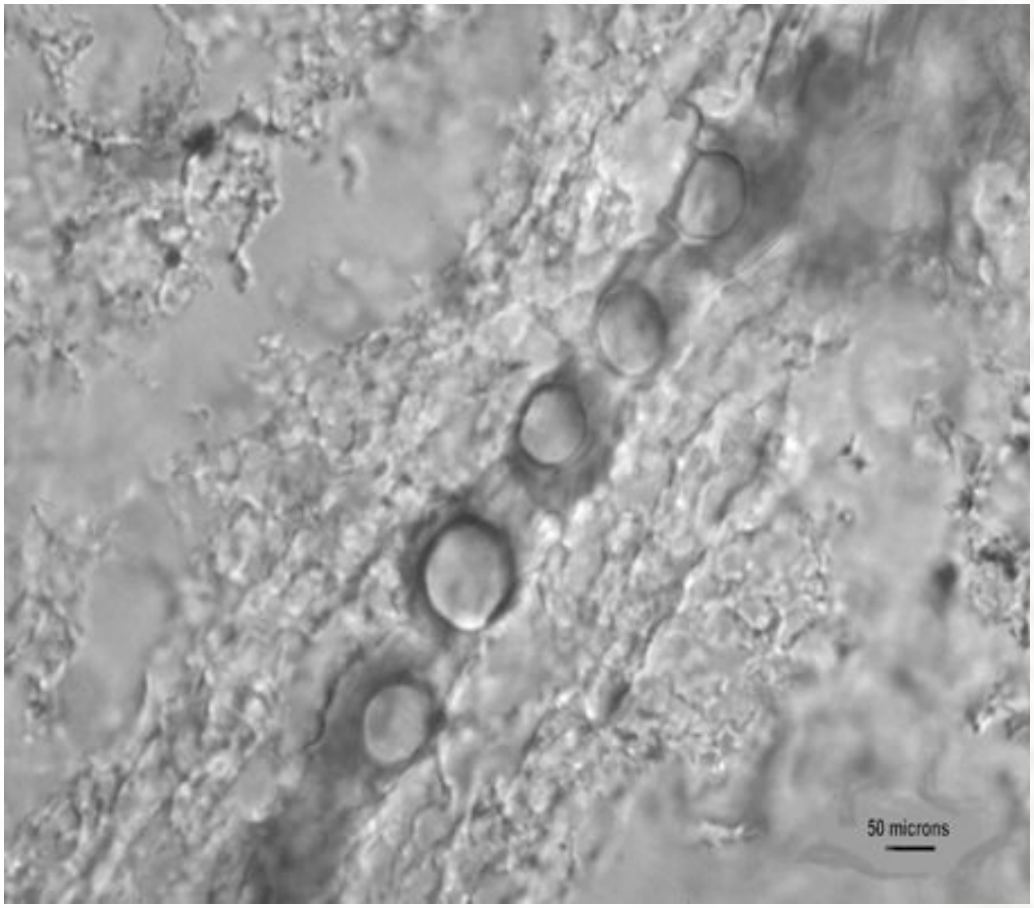


Image: Phytolith micrograph M. Madella

3. Plant Impressions

Plant impressions are a good source for identifying the presence of particular species.

4. Pollen

While pollen analysis from lake bed sequences have been used extensively in environmental reconstruction, their collection and analysis from archeological sites is only beginning to be applied to South Asia.

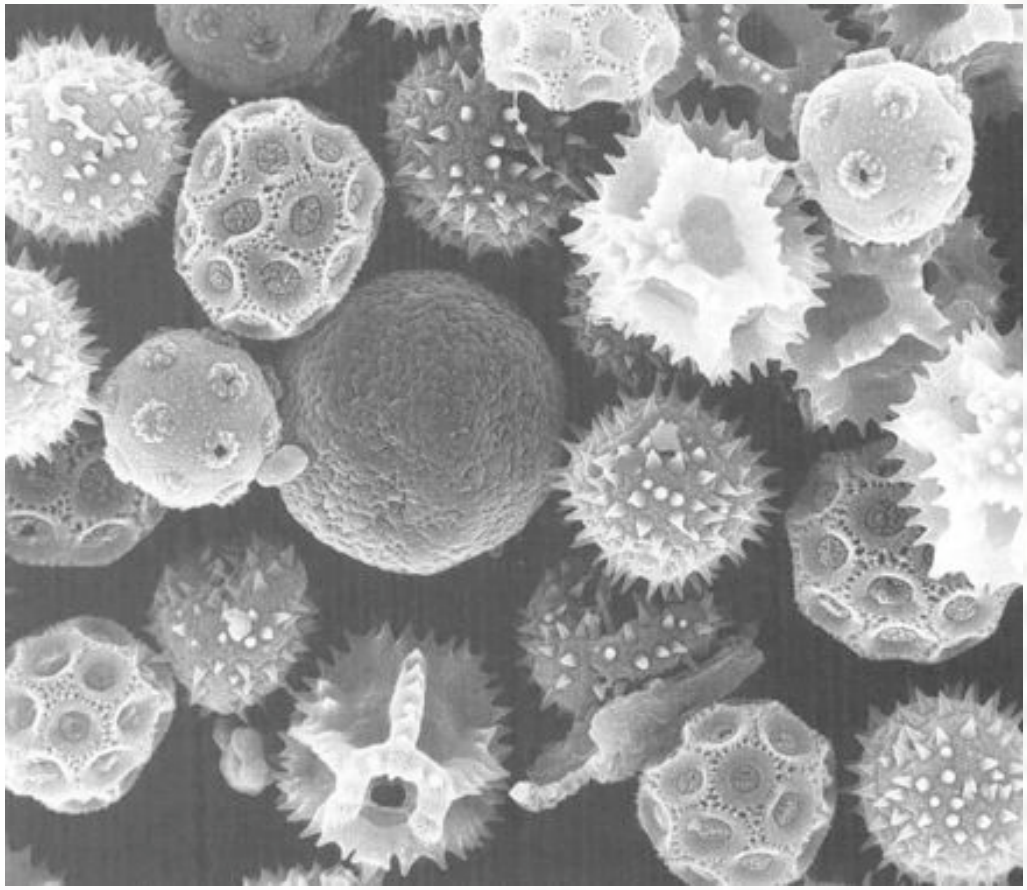


Image: Emergence of Agriculture B.Smith

5. Inferences from Artifacts

Artifacts can indicate the presence of certain species of plants.

Images of a pipal tree.

Image: Ancient Cities of the Indus Civilization J.M.Kenoyer

6. Inferences from Bones

The potential for stable isotope analysis still needs exploring.

7. Ethnographic Work

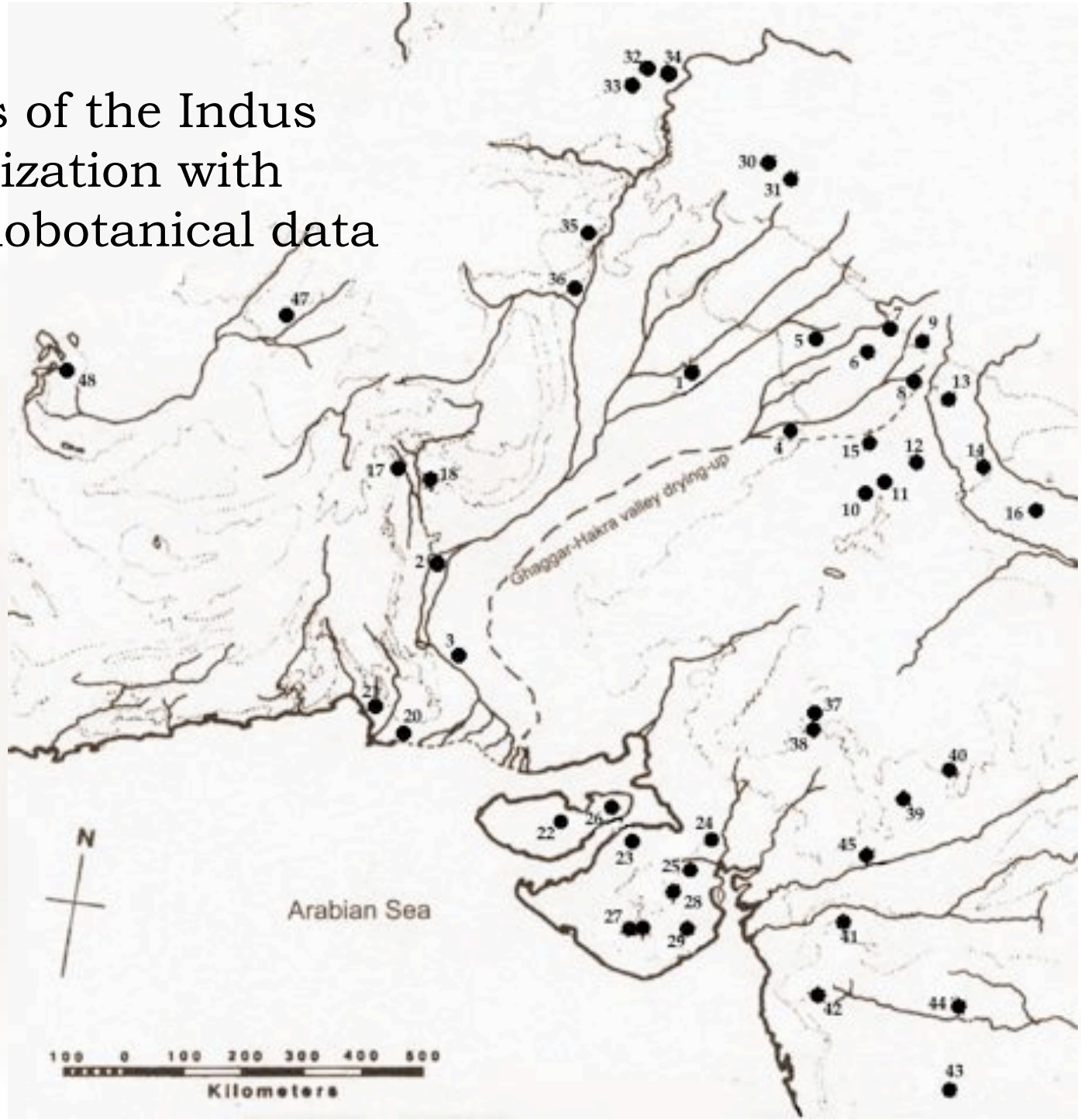
Ethnographic studies can give us insight into the significance and meaning of archeological plant remains.

Images: Forgotten Cities on the Indus Janson, Malloy, Urban eds.

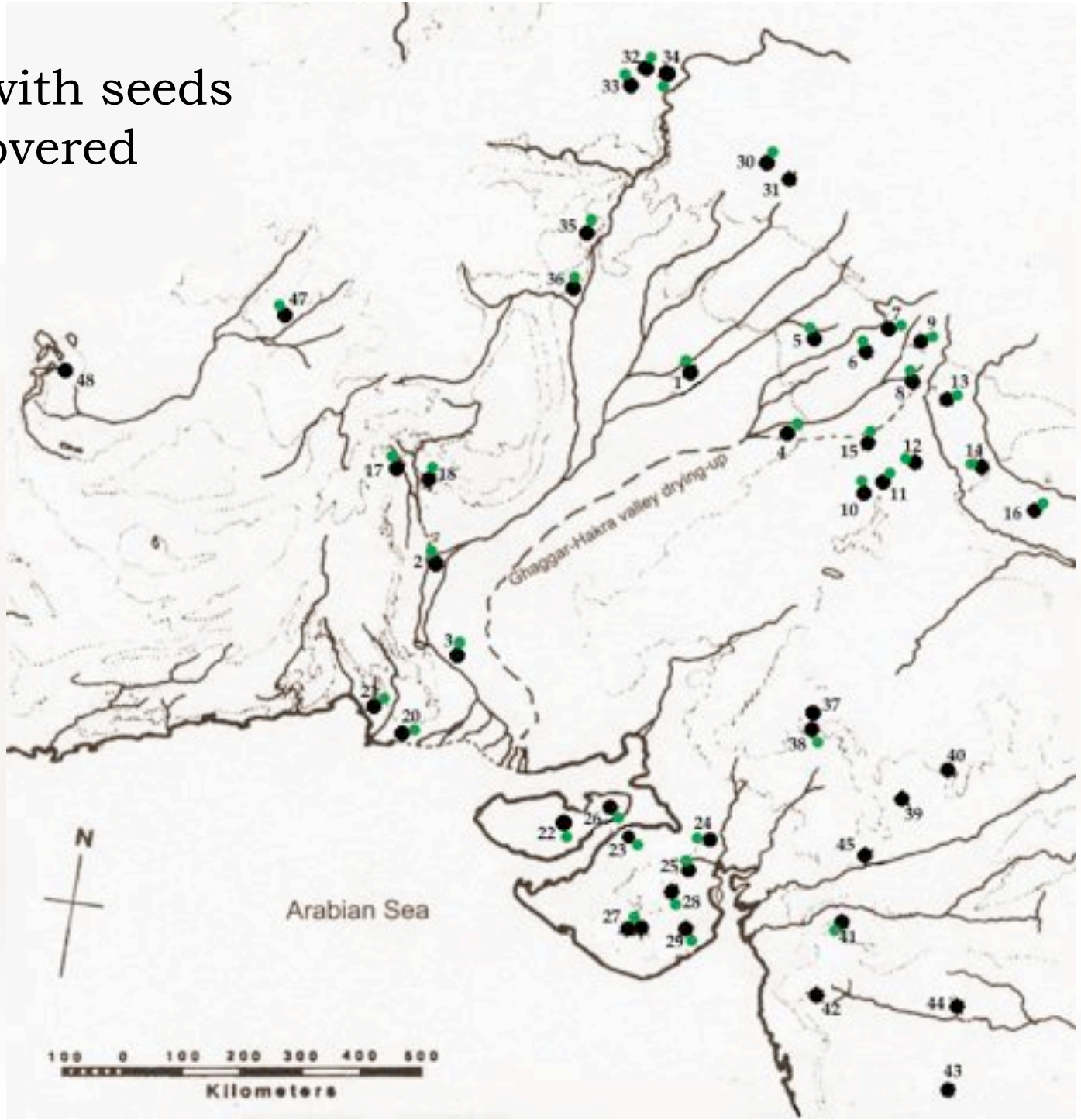
8. Seeds and other identifiable plant parts

The basis of agricultural studies.

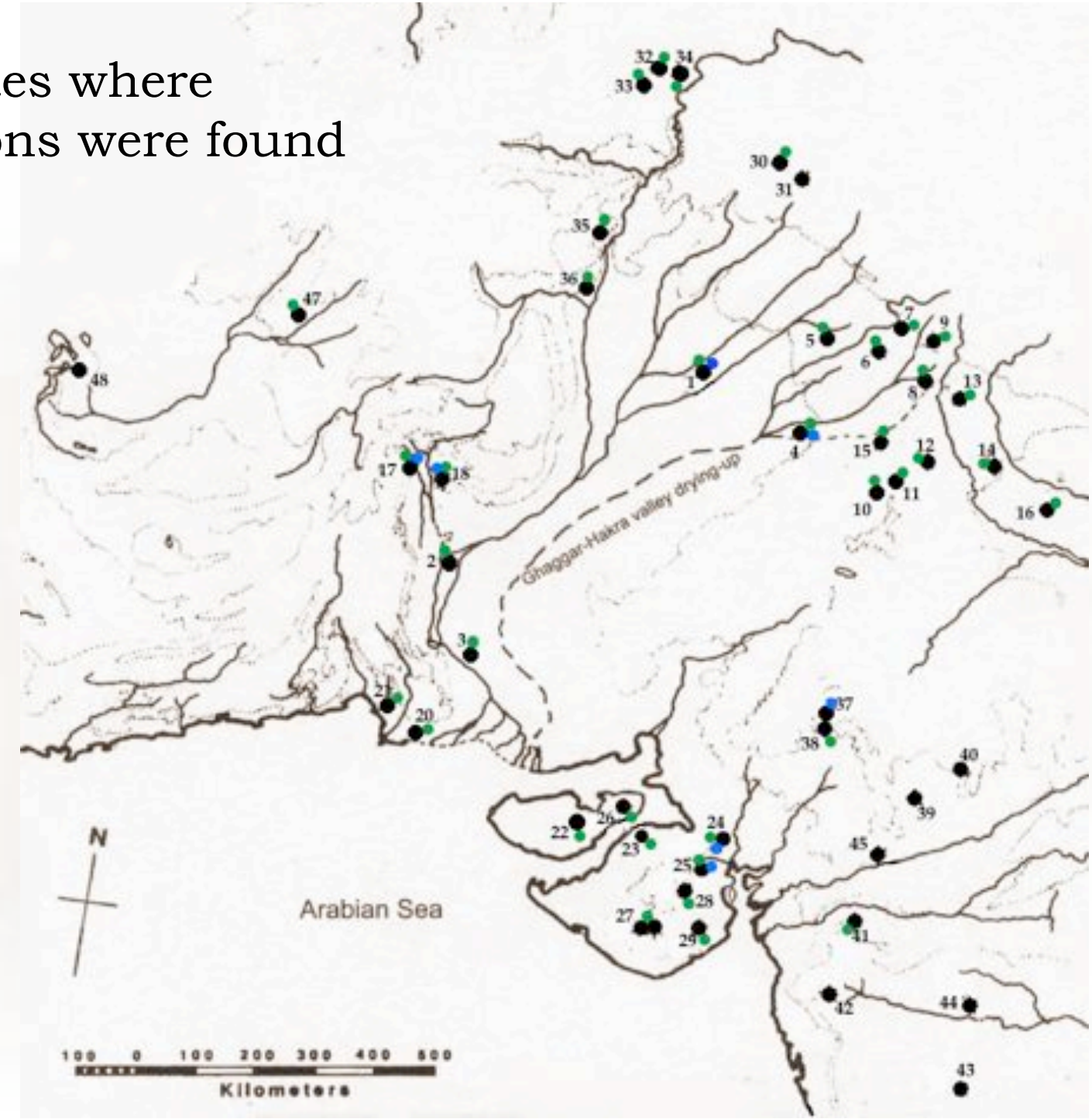
- Sites of the Indus Civilization with paleoethobotanical data



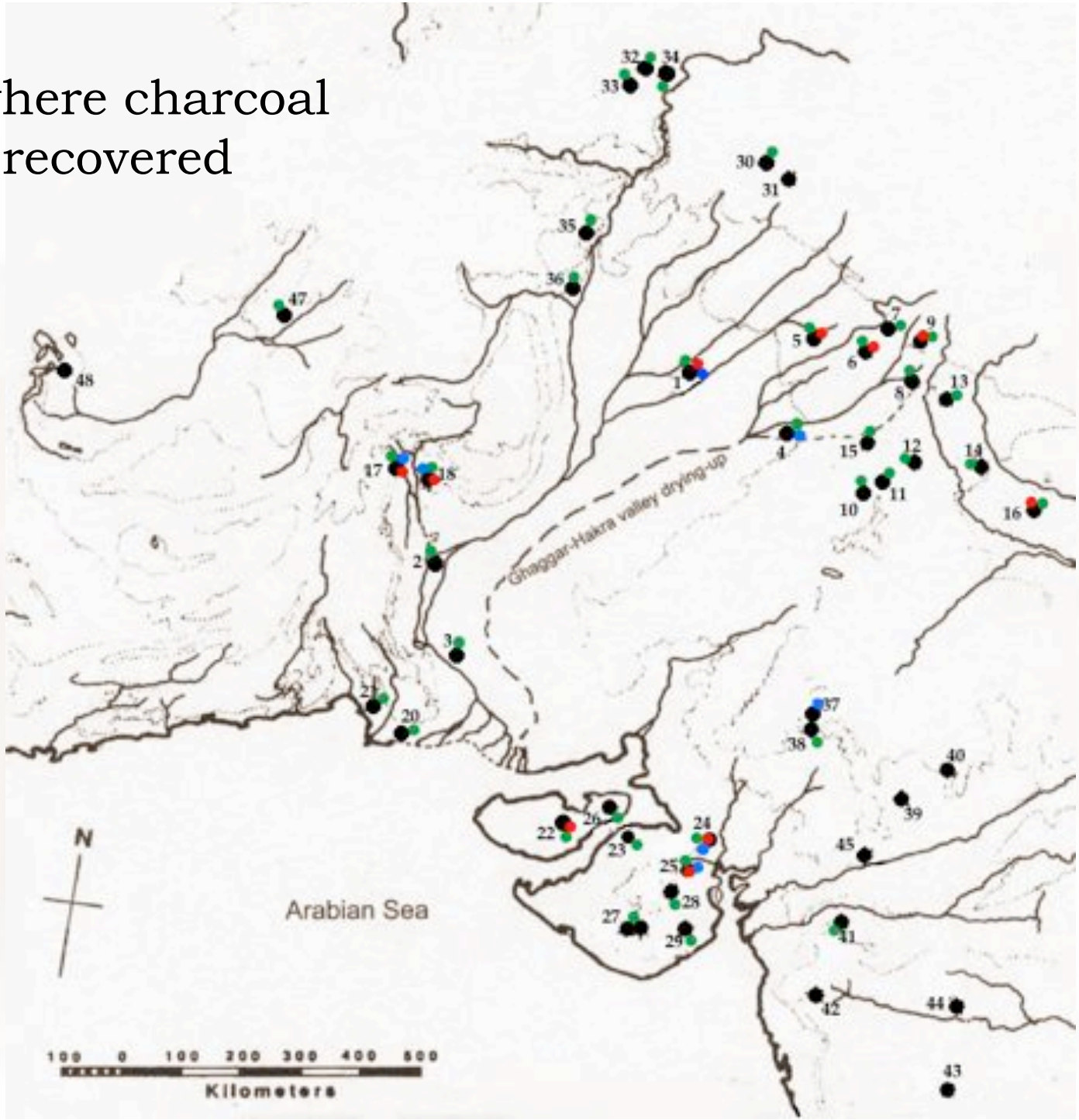
- Sites with seeds recovered



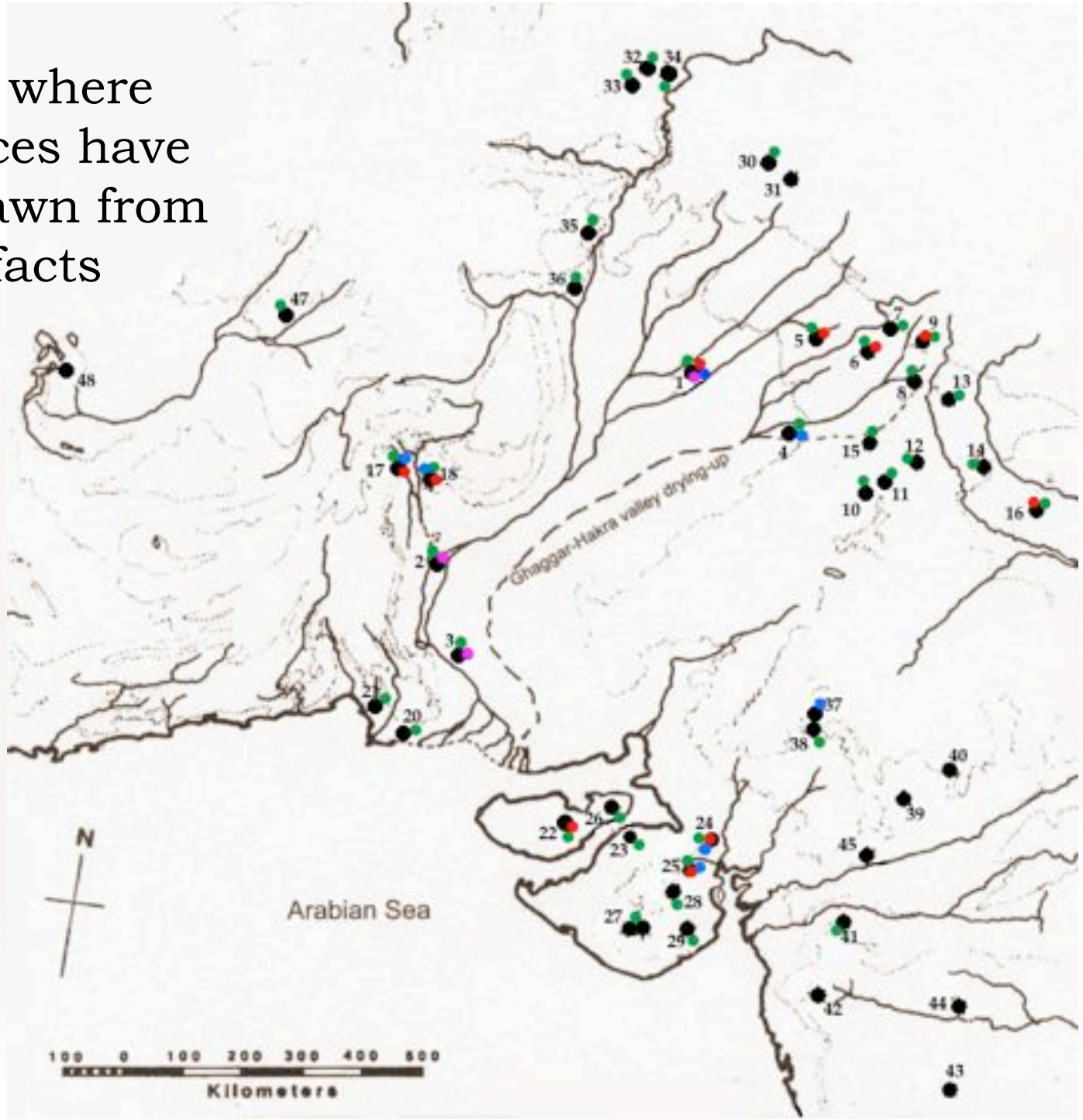
- Sites where impressions were found



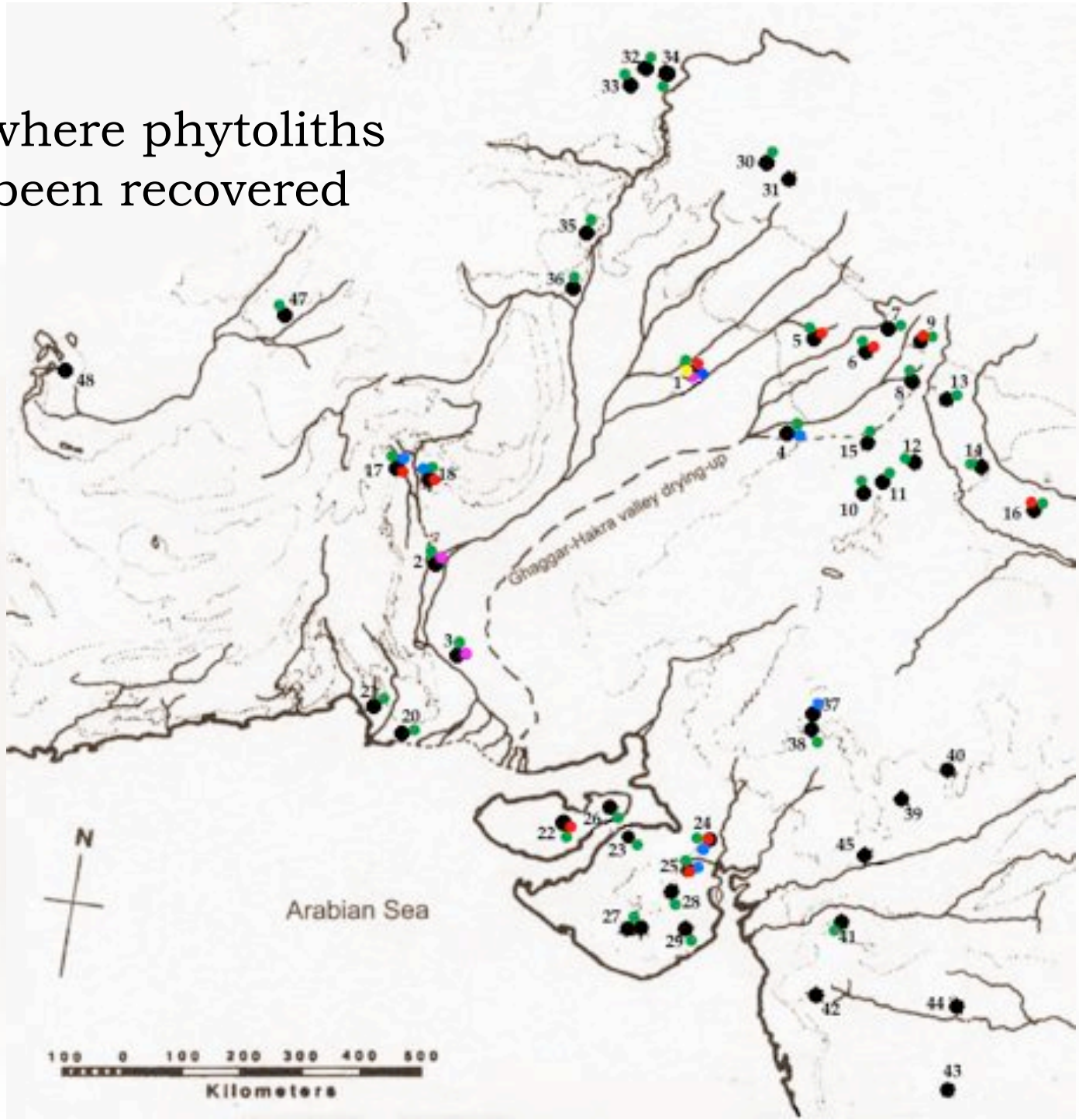
- Sites where charcoal was recovered



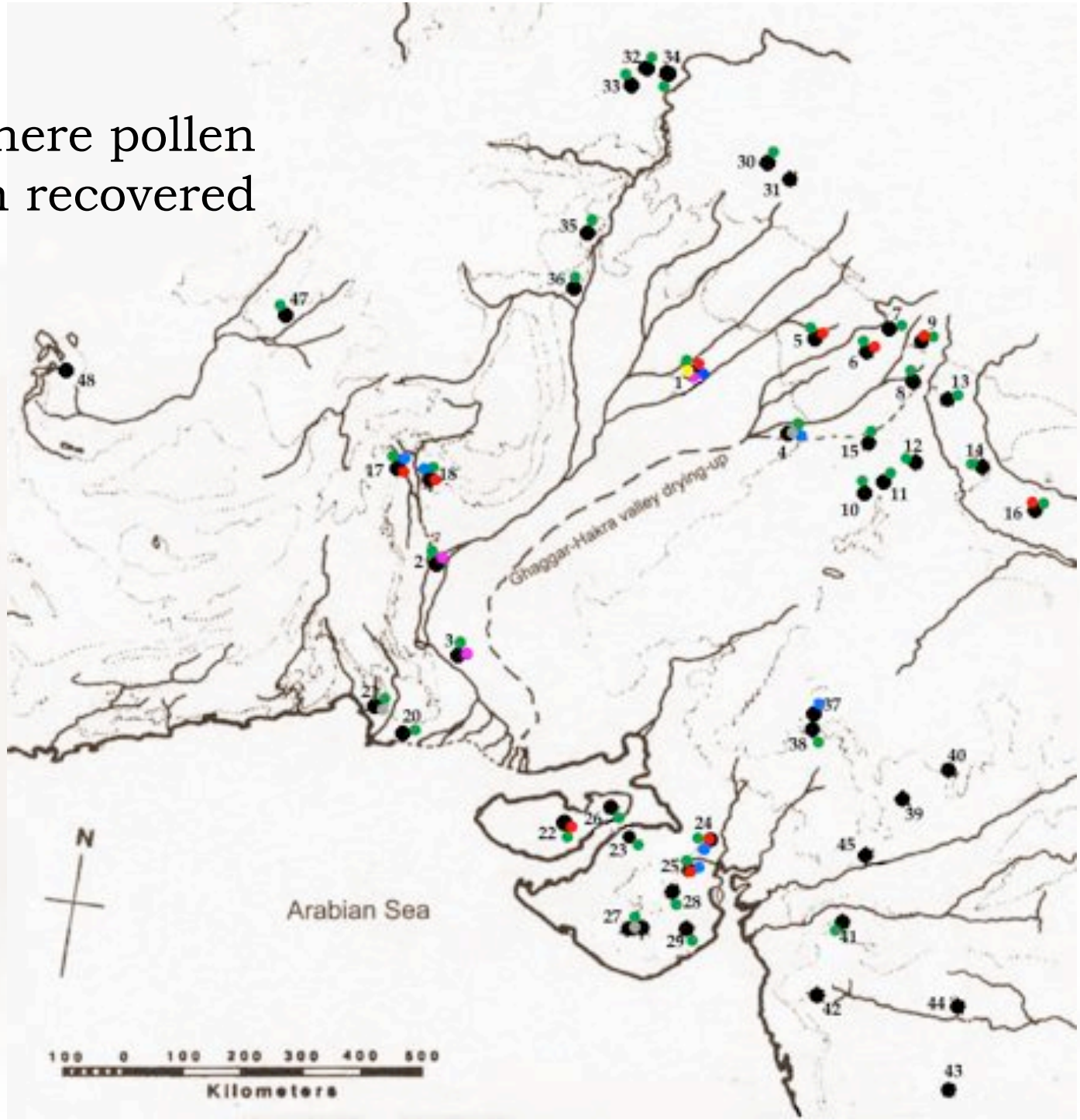
- Sites where inferences have been drawn from artifacts



- Sites where phytoliths have been recovered



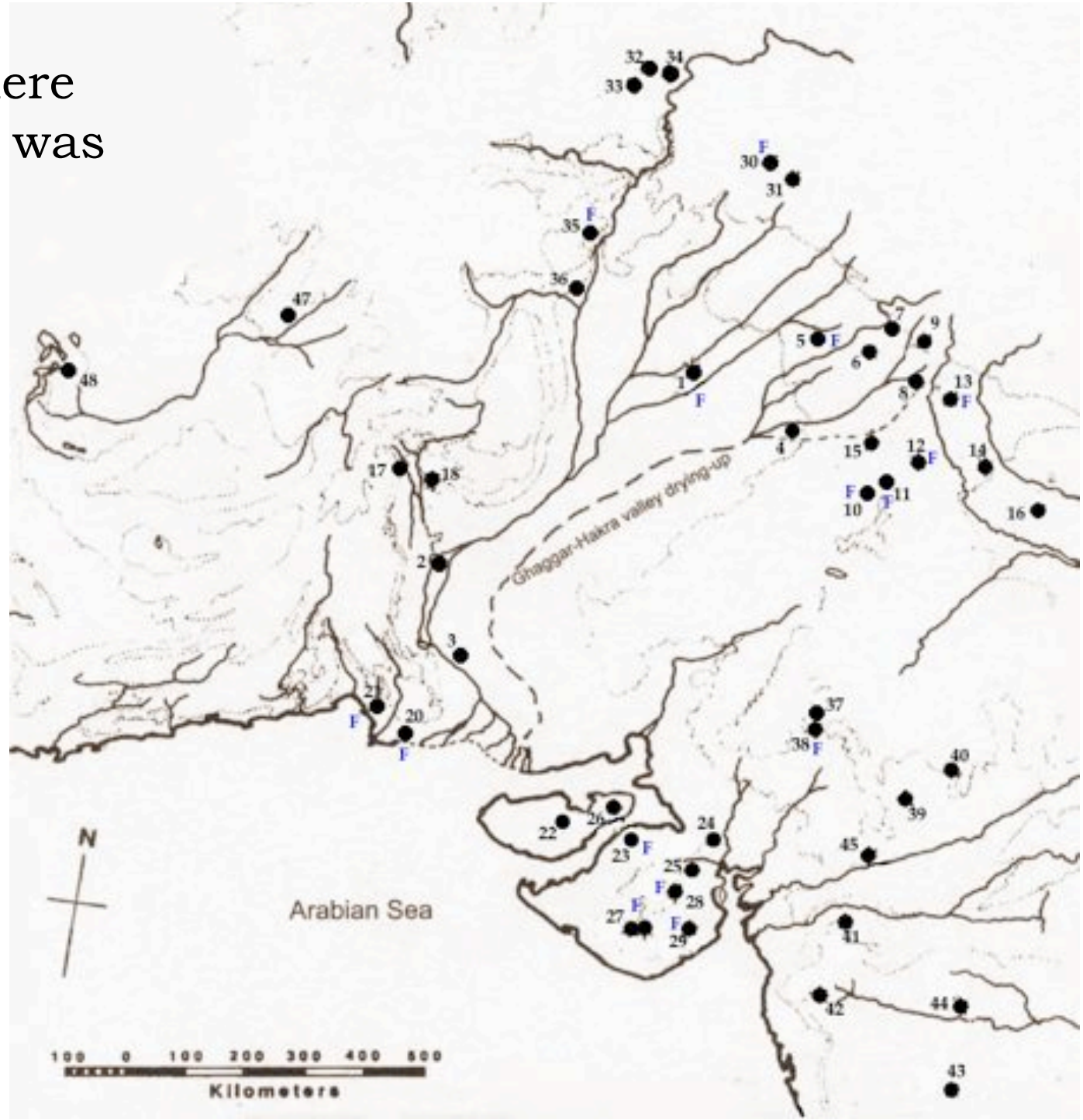
- Sites where pollen has been recovered



Carbonized seeds are recovered from the archeological record in one of three ways

- Accidental Finds
- Dry screening
- Floating

Sites where flotation was used - F



The formation process and its impact on the seed record requires us to consider four issues:

- Pre-charring activities
- Charring and deposition
- Post depositional factors
- Methods of Collection

Pre-charring Activities

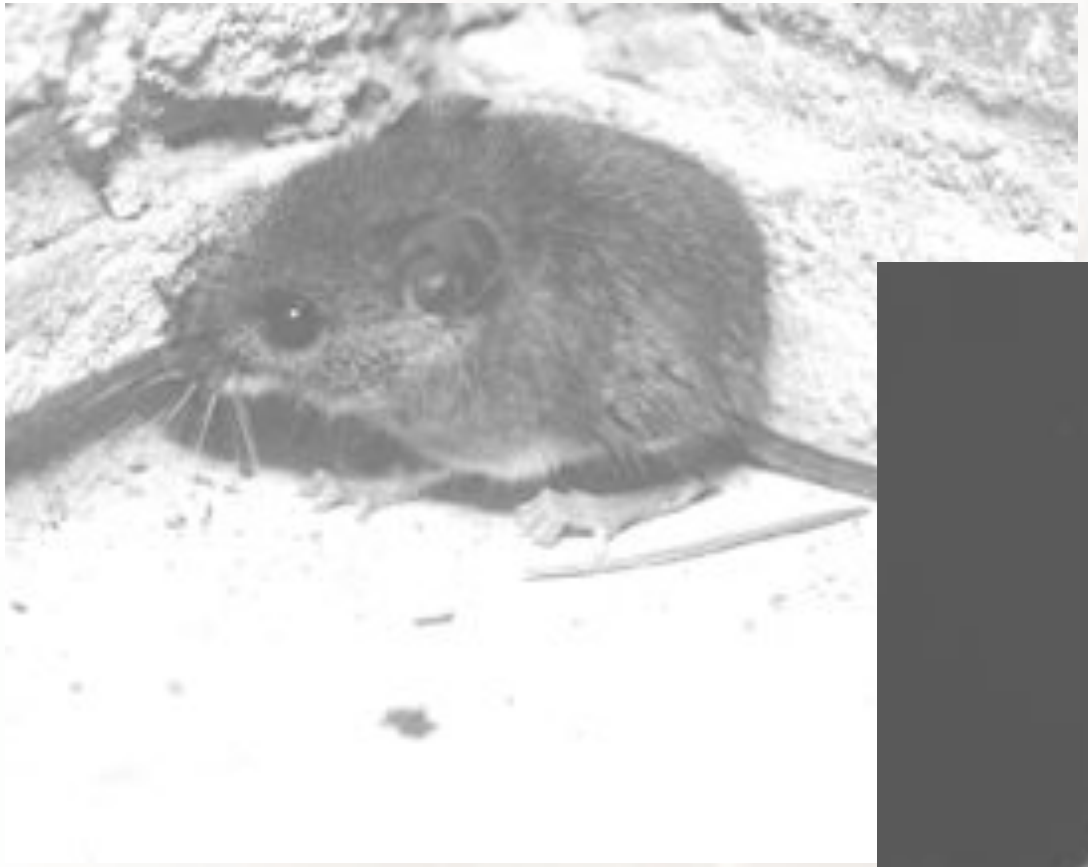
The location of seed processing has significance in both preservation and in interpretation.

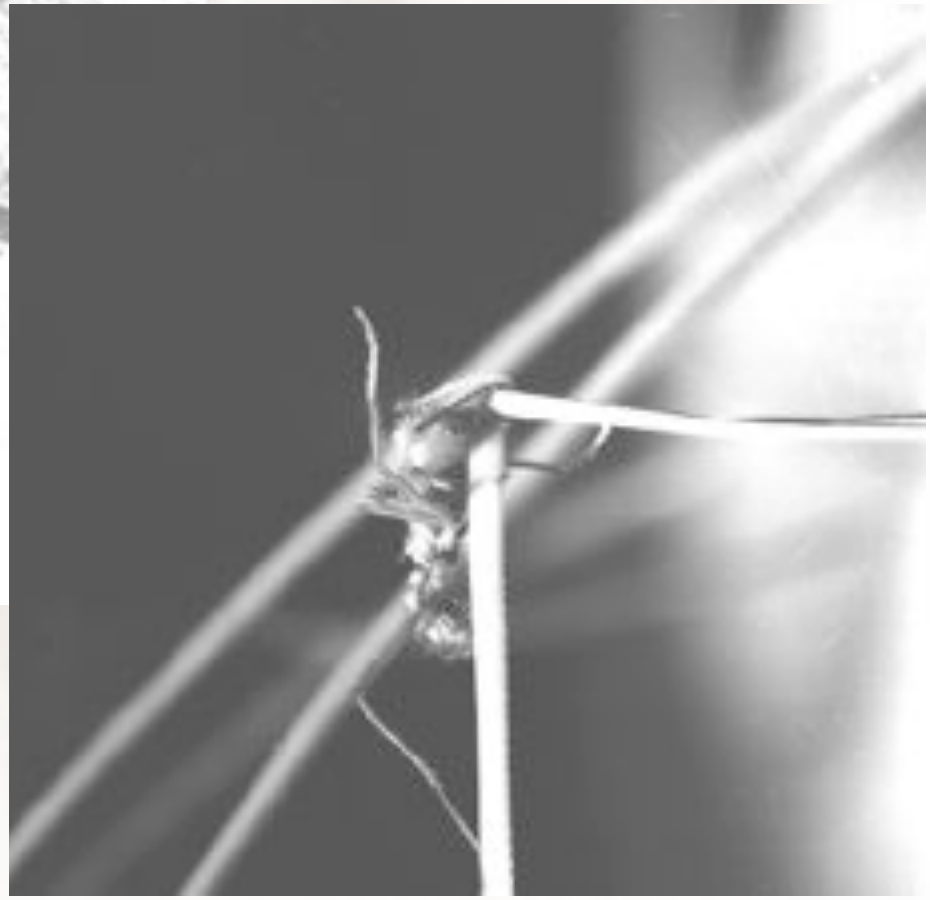
Charring and Deposition

Charring can occur both intentionally and accidentally.

Intentional charring may occur through the use of dung as fuel. Accidental charring may occur during food preparation.

Post depositional factors





Images: The National Agricultural Library Special Collections

Methods of Collection

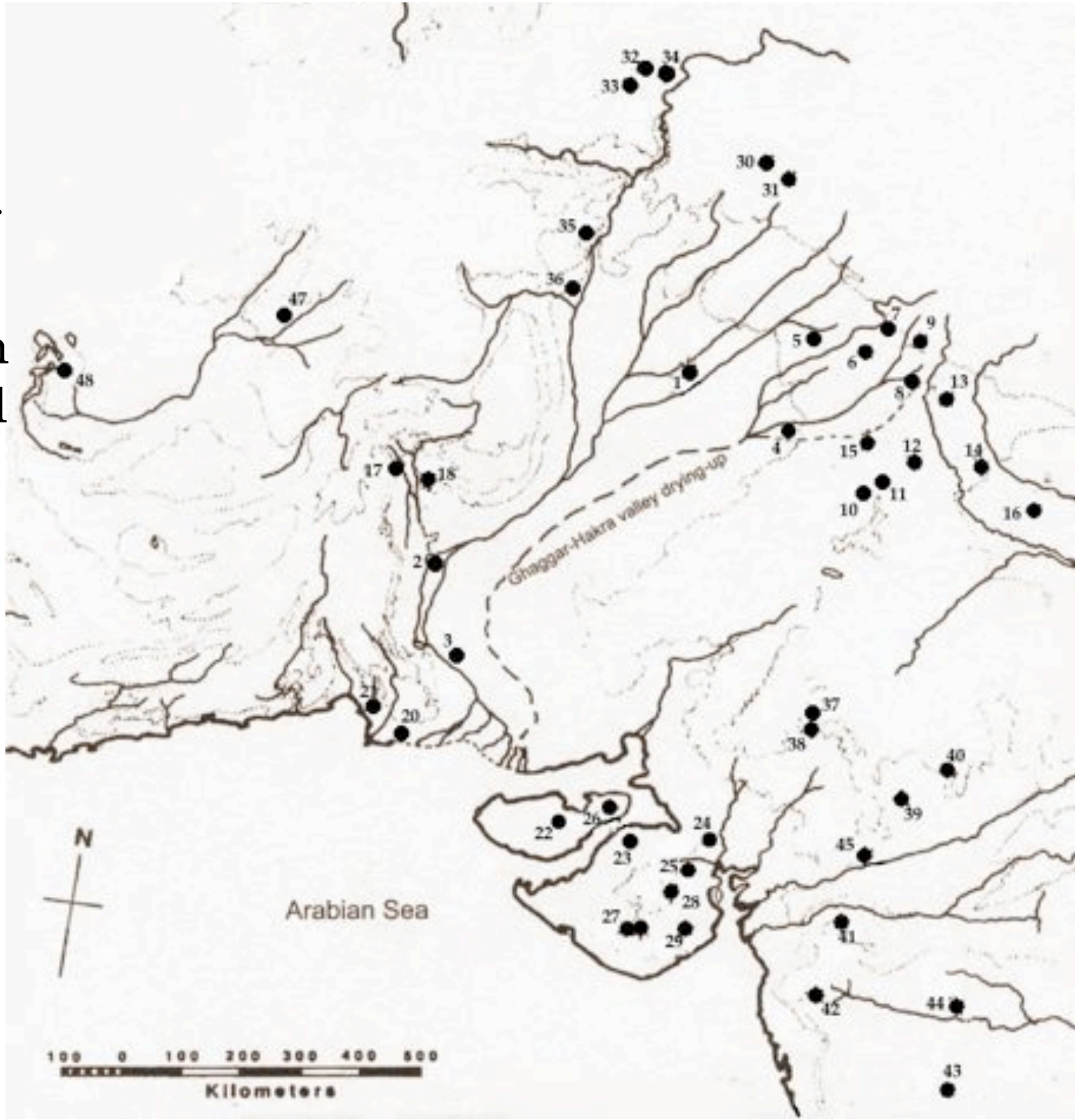
Collection can occur through accidental finds as well as through deliberate and systematic collection during excavation.

The temporal scheme used to discuss archaeobotanical data:

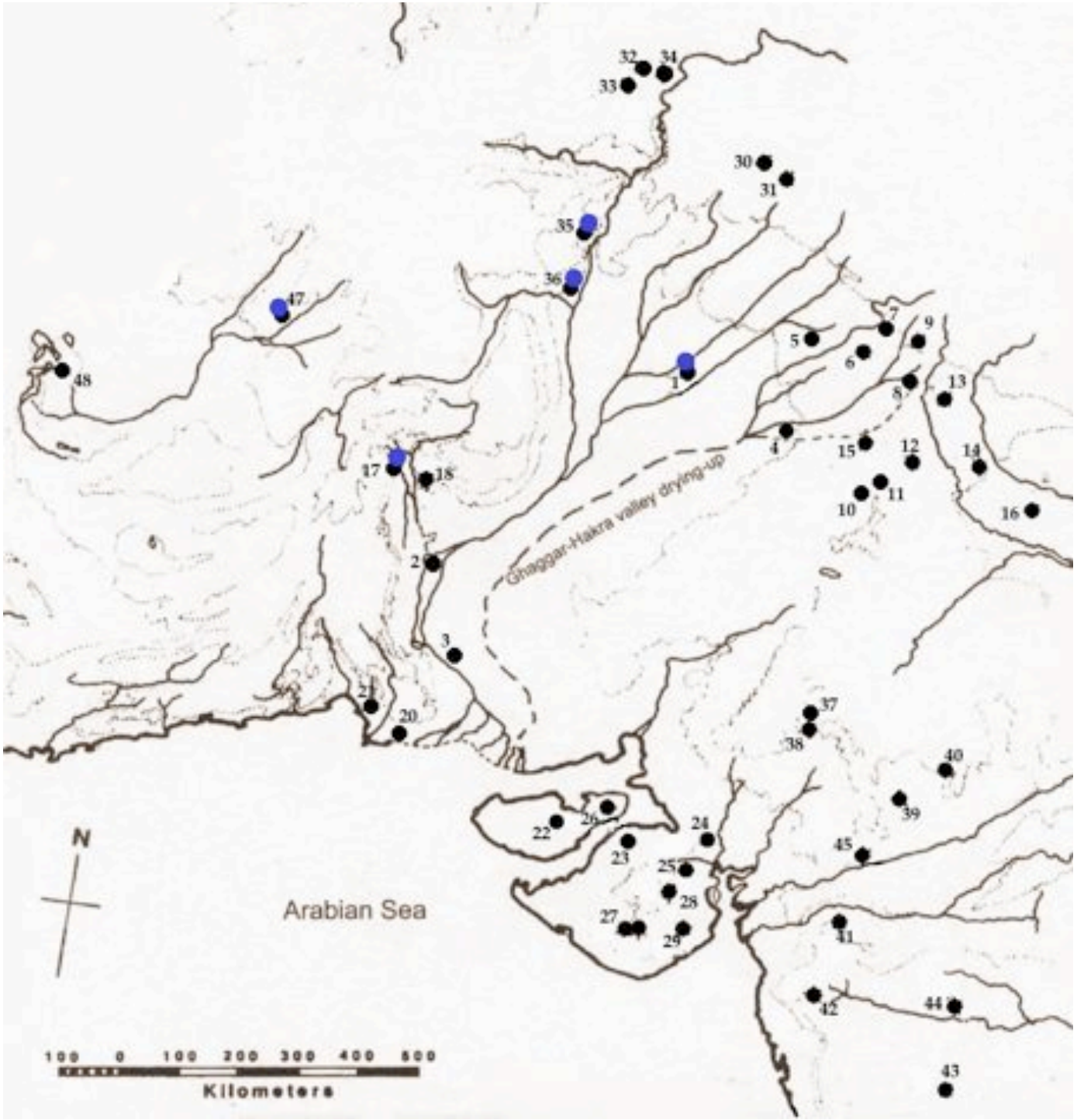
Indus Valley Tradition

Localization Era Late Harappan Phase	ca. 1900 to 1300 B.C.
Integration Era Harappan Phase	ca. 2600 to 1900 B.C.
Regionalization Era Early Harappan Phase	ca. 5000 to 2600 B.C.
Early Food Producing Era Neolithic/Chalcolithic	ca. 6500 to 5000 B.C.

- Major Sites of the Indus Civilization with archeobotanical data

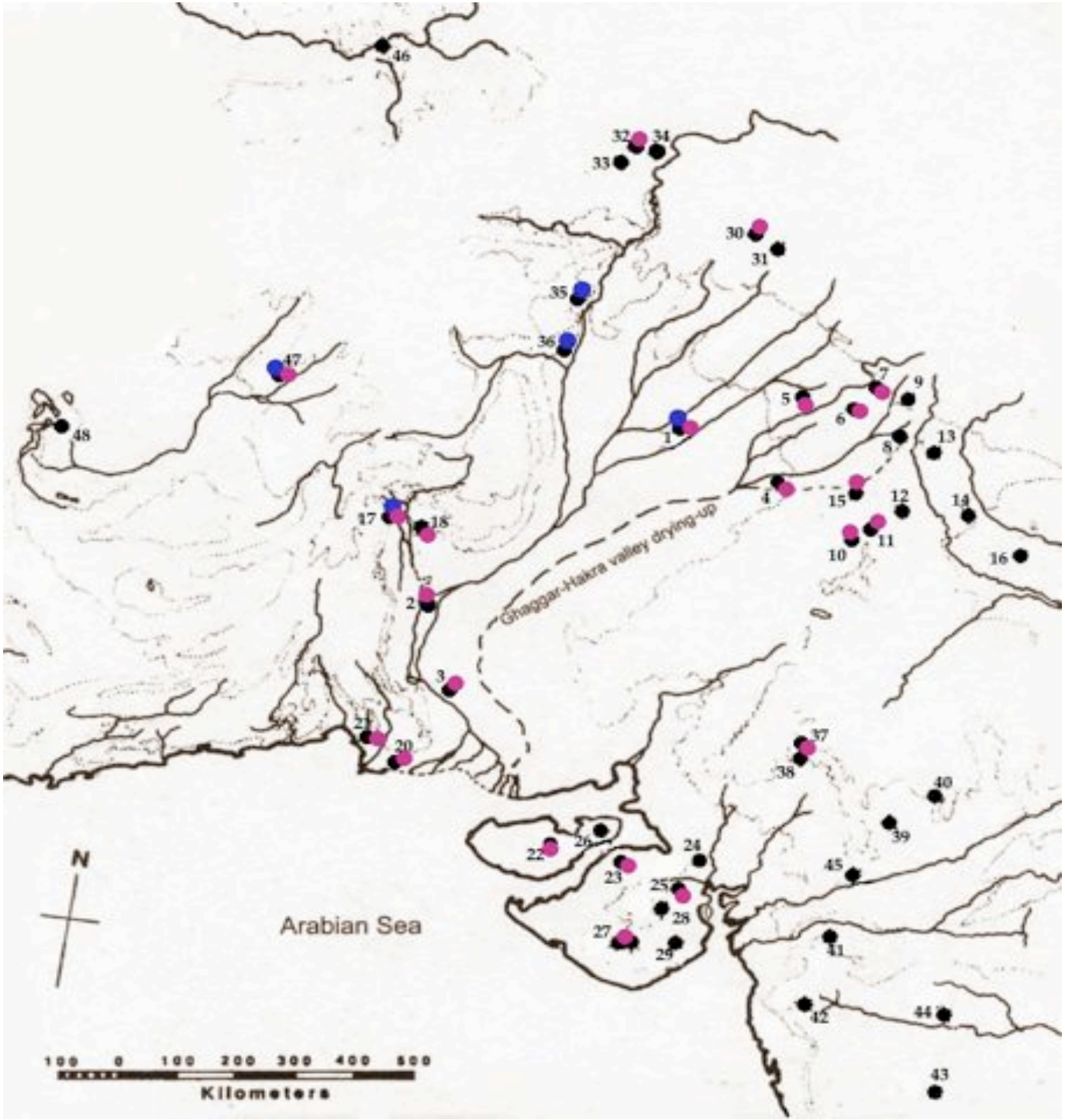


- Early Harappan Sites With Recovered Seeds



Early Harappan

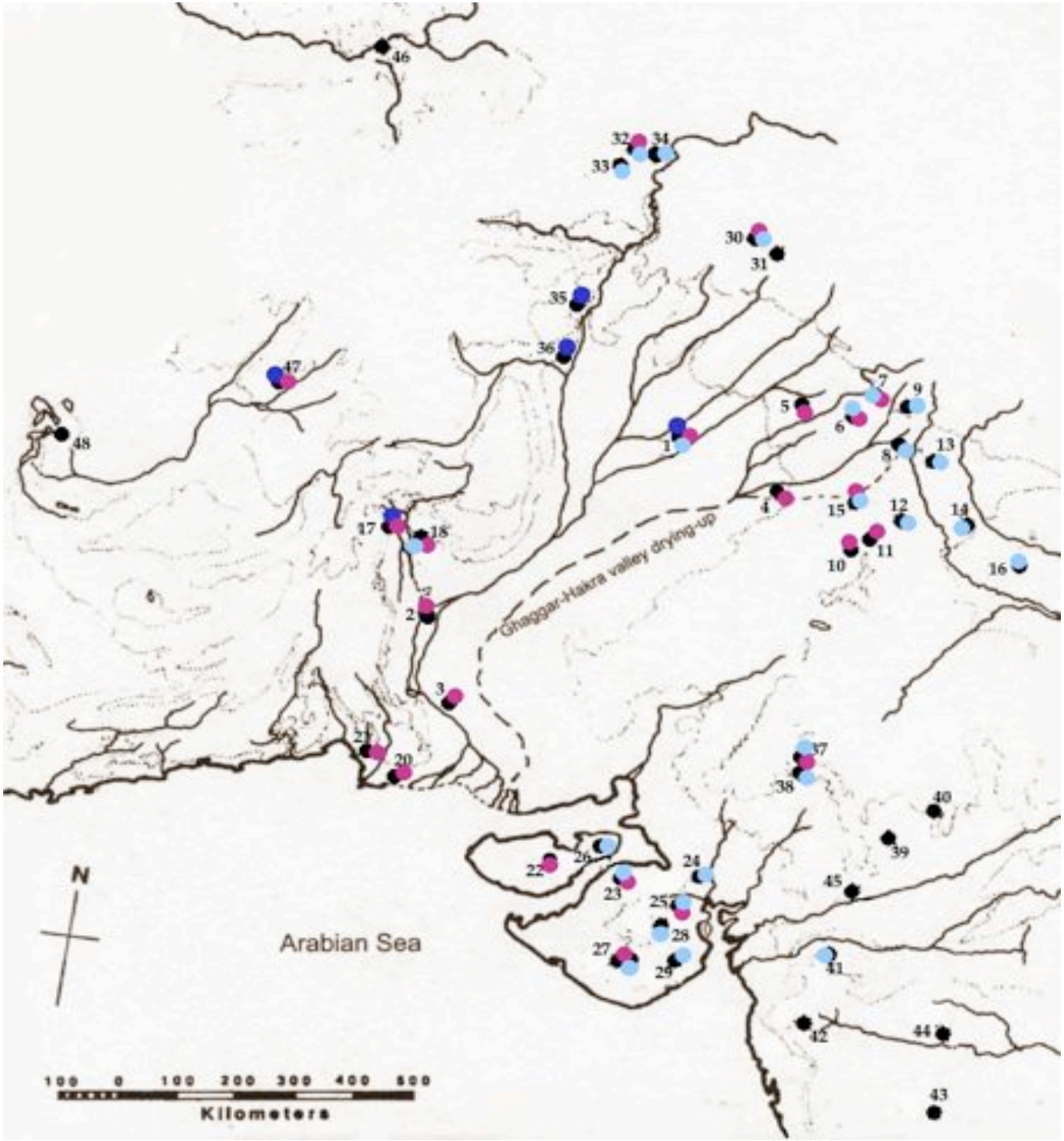
Harappan



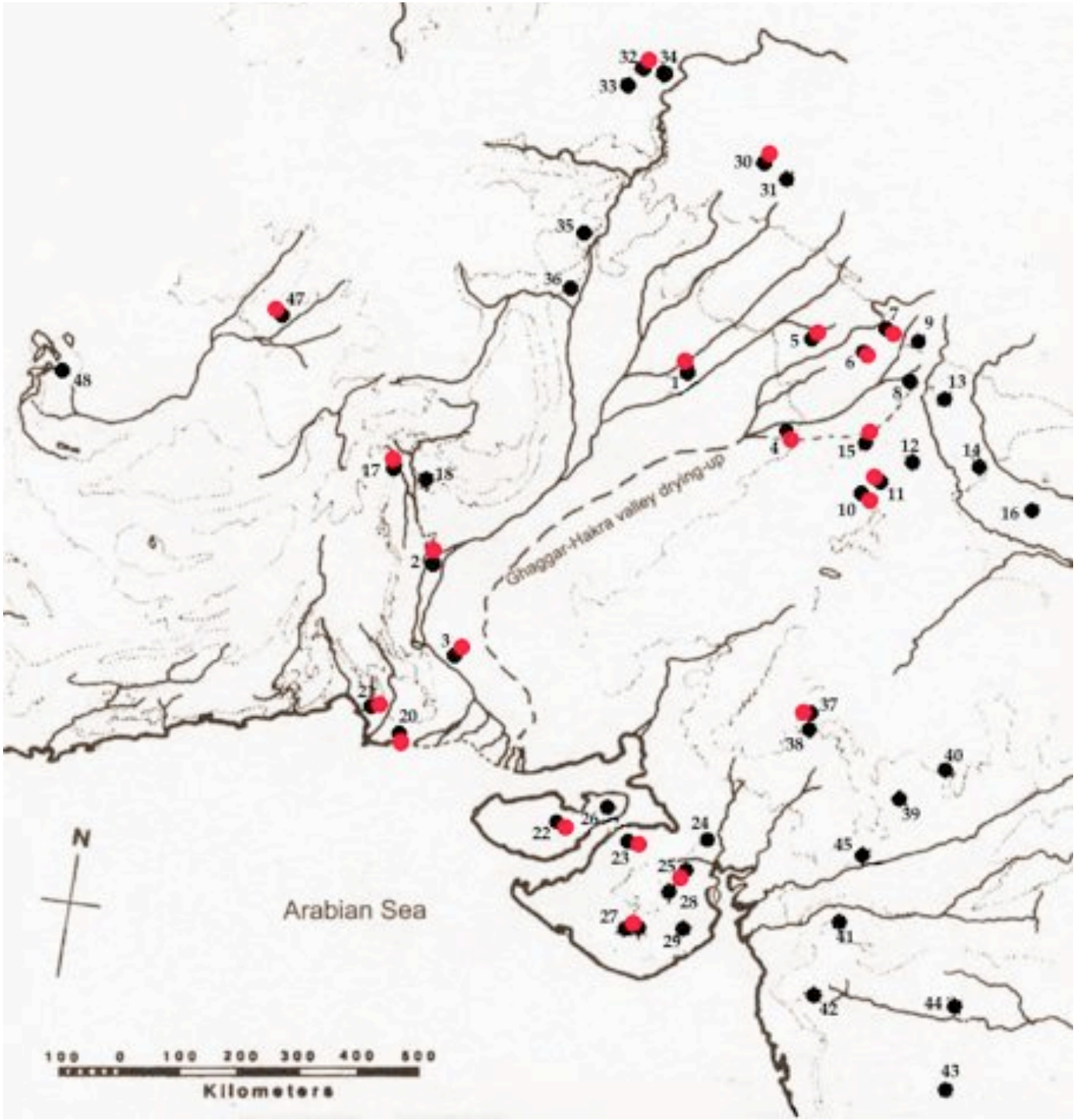
Early Harappan

Harappan

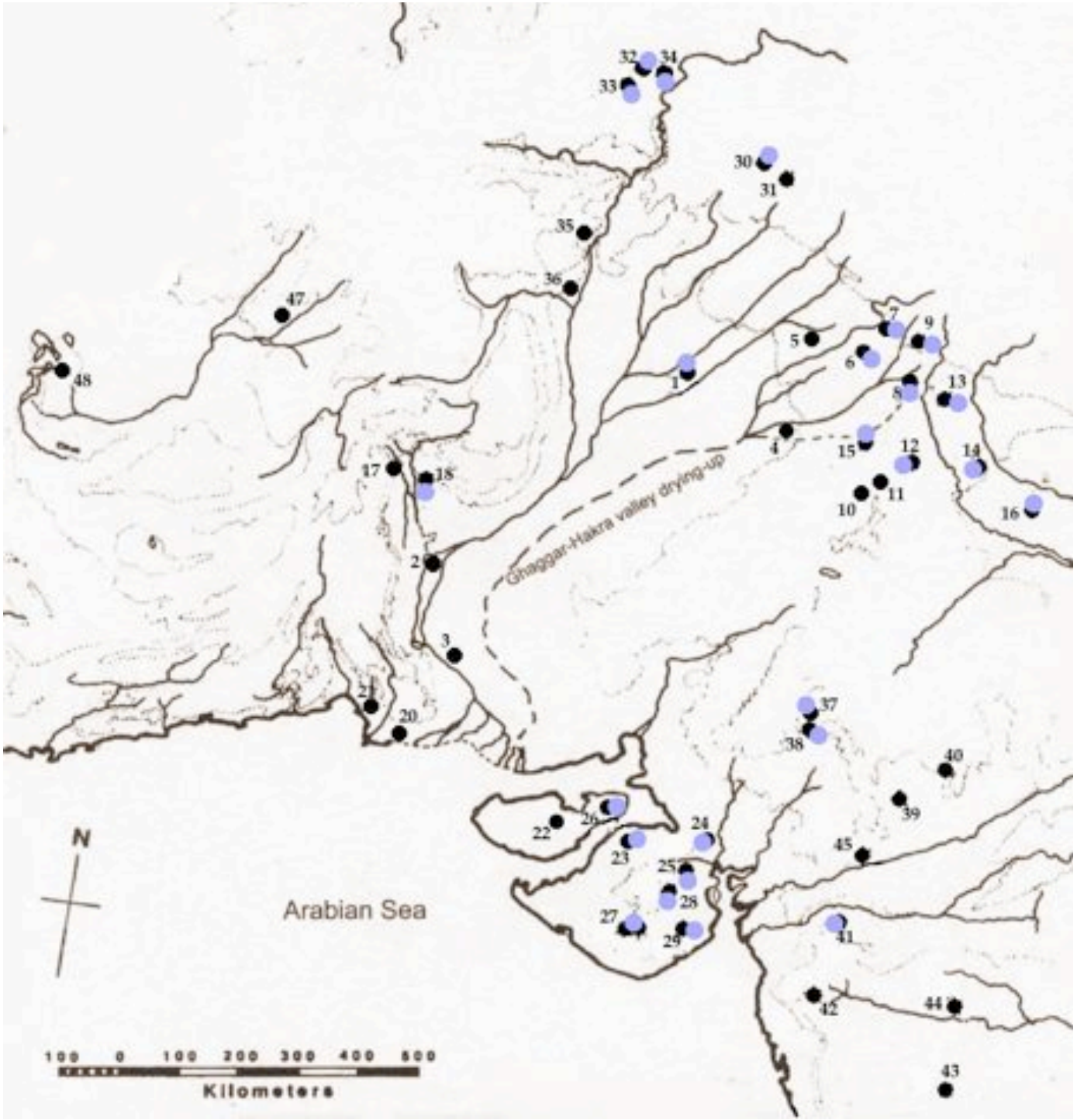
Late Harappan



- Harappan Sites with recovered seeds



- Late Harappan sites with recovered seeds



Cropping Strategies

Rabi crops or spring harvested crops are planted in the fall and watered by winter rains.

Kharif crops are planted in the summer, during or after the monsoon, and harvested in the fall.

Primary crops and their rate of seed occurrence during the Indus Civilization

0: no finds
1: low ubiquity and low density
2: high ubiquity with high density

	Cropping Season	Early Harappan	Harappan	Late Harappan
Cereals				
Wheat	kharif	2	2	2
Barley	kharif	2	2	2
Oat	kharif	?	1	1
Rice	rabi	0	?	2
Millets	rabi	1	2	2
Pulses and vegetables				
Peas	rabi	0	1	1
Lentil	rabi	1	1	1
Cow Pea	kharif	0	1	2
Gram	kharif	0	2	2
Oilseed and fiber				
Linseed	rabi	0	1	2
Cotton	perennial	?	1	1
Sesame	kharif	0	1	1
Fruits				
Date	rabi	1	1	1
Jujube	kharif	2	2	2
Grape	kharif	1	1	1

Indications for agricultural stability and continuity through time

- Cereals are the primary crop
- Focus is one primary season of cropping
- Rabi and Kharif patterns remain

Indications for changing agricultural practices

- New crops
- Changing proportions of some taxa

Conclusions for the Indus Civilization

- **Paleoethnobotany is still in the early stages of analysis**
- **New crops are constantly being added but are incorporated into the strategy at a slow rate. A gradual increasing importance in multi-cropping can be identified**
- **Quantitative shifts in some cereals is identifiable**
- **No rapid revolution in agricultural strategies can be identified**
- **Shifts in crop processing imply social change was possibly occurring**
- **The over riding agricultural strategy for this region is one base on local cultivation practices that are influenced by local hydrological conditions and local cultural traditions**