

# A Universal Phytolith Key 5: Spheroidal Class

DIANE M. HART<sup>1</sup>, CAROL LENTFER<sup>2</sup> AND LYNLEY A. WALLIS<sup>3</sup>

1. Geocology Group, Department of Physical Geography, Macquarie University, Sydney
2. School of Resource Science and Management, Southern Cross University, Lismore
3. Department of Archaeology and Natural History, RSPAS, The Australian National University, Canberra

## Introduction

One of the greatest impediments to communication amongst phytolith researchers is the absence of a universal morphological key and standardised terminology with which to identify and describe discrete phytolith shapes. This poster is the fifth in a series which proposes such a Universal Phytolith Key (Bowdery et al. 1998, 2001, Hart et al. 2000, Lentfer et al. 2000, Wallis et al. 2000). The Key describes phytolith shapes in non-subjective geometrical terms, is open-ended and can be used by all workers in all geographical regions. It is a hierarchical system allowing for increasing complexity in identification according to the individual researcher's needs.

## Definition of Spheroidal Class

Solid bodies ranging from spherical (surface at all points equidistant from the centre) through slightly flattened bodies to ovoid (egg-shaped). (Table 1). The body is orientated with the longest axis vertical (polar axis). If the body is asymmetrical, the bulk of the body is the base. The Spheroidal Class encompasses bodies previously termed in the phytolith literature as spherical, cystoliths, circular, globular, etc.

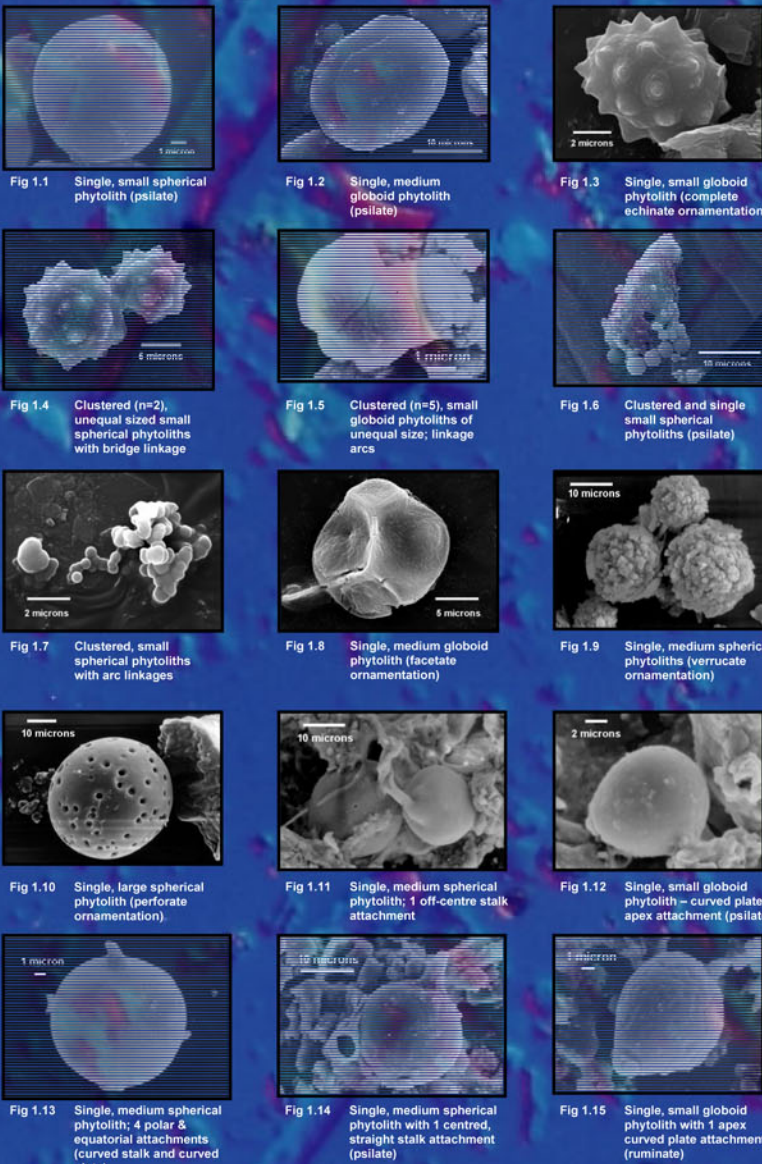


Figure 1: SEM illustration of different types of spheroidal phytoliths

Composition	Shape	Size (P axis)	Attachment(s)	Linkage	Ornamentation (see Appendix 1)
Single	Symmetrical	Spherical (E=P) Globoid (E<P)	absent	absent	absent (psilate)
	Asymmetrical	Ovoid Irregular	present (n) position shape polar straight stalk equatorial curved stalk other linear plate curved plate cone ridge	point arc bridge	partial upper middle lower other complete
Cluster (n=)	Symmetrical	Spherical (E=P) Globoid (E<P)	as above	as above	as above
	Asymmetrical	Ovoid Irregular	as above	as above	as above
Combination		Equal Unequal			

**Definitions used in table:**  
**Equatorial axis (E):** the longest horizontal axis through the body joining opposite points on the surface. **Polar axis (P):** the widest vertical axis (at right angle to the equatorial axis). **Orientation of bodies:** the bodies are oriented with the longest axis vertical. In asymmetrical bodies the bulk of the body is at the base. **Symmetrical body:** one in which the axes intersect at the center of both axes. **Asymmetrical body:** one in which the axes intersect at points off-center on one or both axes. **Linkage:** the point at which spheroids meet to form a cluster (point, arc, bridge). **Attachment(s):** where the spheroid connects to a cell wall or other body. **Cluster:** two or more linked spheres.

Table 1: Spheroidal Class Characteristics

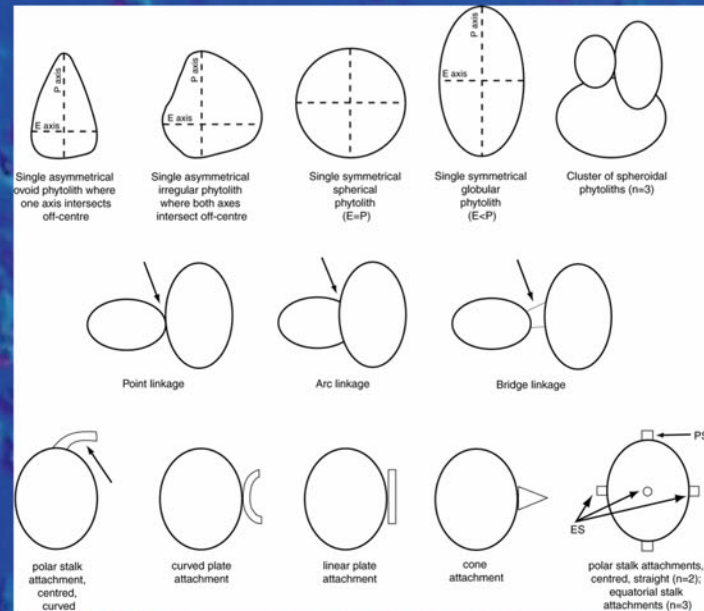
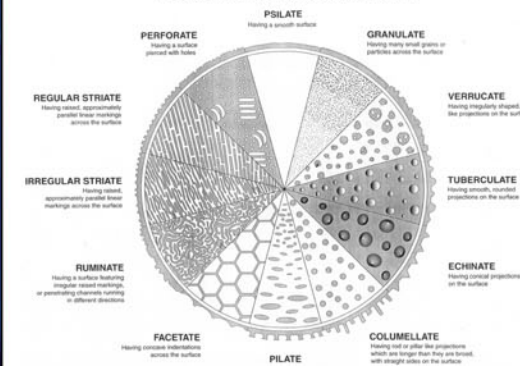


Figure 2: Line drawings illustrating stylised characteristics

## Appendix 1: Surface Ornamentation



**Acknowledgements**  
 The authors wish to thank Ian Faulkner for producing the surface ornamentation diagram in Appendix 1. We also wish to thank the many other phytolith researchers with whom we have had many long, and sometimes heated(!) discussions concerning this issue. In addition, Doreen Bowdery was a member of the original working group charged with developing this Key and her many contributions to the work thus far, despite her formal withdrawal from the group, are graciously acknowledged.

**References**  
 - Bowdery, D., Hart, D.M., Lentfer, C. & Wallis, L.A. 1998. A Universal Phytolith Key. Poster presented at the Second International Phytolith Conference, Aix en Provence.  
 - Bowdery, D., Hart, D.M., Lentfer, C. & Wallis, L.A. 2001. A Universal Phytolith Key. In *Phytoliths: Application in Earth Sciences and Human History*. Papers from the Second International Phytolith Conference, Aix en Provence, A. & Barkema.  
 - Hart, D.M., Bowdery, D., Lentfer, C. & Wallis, L.A. 2000. A Universal Phytolith Key 2: Point Class. In: L. Vrydaghs & A. Degraeve (eds) Abstracts from the Third International Phytolith Conference, Brussels, Belgium. Man and the (paleo)environment. The phytolith evidence. pp 13-14.  
 - Lentfer, C., Wallis, L.A., Bowdery, D. & Hart, D.M. 2000. A Universal Phytolith Key 3: Prismatic/Ellipsoid/Trapezoid (PET) Class. In: L. Vrydaghs & A. Degraeve (eds) Abstracts from the Third International Phytolith Conference, Brussels, Belgium. Man and the (paleo)environment. The phytolith evidence. pp 14.  
 - Wallis, L.A., Bowdery, D., Hart, D.M. & Lentfer, C. 2000. A Universal Phytolith Key 4: Lobate Class. In: L. Vrydaghs & A. Degraeve (eds) Abstracts from the Third International Phytolith Conference, Brussels, Belgium. Man and the (paleo)environment. The phytolith evidence. P. 15.