|  |  |  |
| --- | --- | --- |
| **Phytolith Morphologies**(single-cell unless described as **multi-cell**) | **ICPN alternative** | **References to identification criteria/comments** |
| Psilate long-cell**G~** | Elongate psilate margin | Most frequently found in grass stems ([Metcalf, 1960](#_ENREF_10); [Twiss, 1992](#_ENREF_19)). |
| Echinate long-cell**M** | Elongate echinate  | General of monocots. Of particular importance as a morphology that is found in *Phragmites* (reed) culms. |
| Dendritic long-cell**G** | Elongate dendritic | Found primarily in pooid grass husks and are characterized by finely branched processes ([Novello and Barboni, 2015](#_ENREF_12); [Rosen, 1992](#_ENREF_15)). See the ICPN schematic drawings ([Madella et al., 2005](#_ENREF_9)). |
| Bilobe short-cell**G** |  | Generally panicoid grasses ([Twiss et al., 1969](#_ENREF_20))­­. |
| Polylobate short-cell**G** |  | Generally panicoid grasses ([Twiss et al., 1969](#_ENREF_20)). |
| Cross short-cell**G** | Quadralobate | Generally panicoid grasses ([Twiss et al., 1969](#_ENREF_20)). |
| Saddle short-cell**G** |  | Generally chloridoid grasses ([Twiss et al., 1969](#_ENREF_20)), but also appears in *Phragmites*. |
| Rondel short-cell**G** |  | Generally pooid grasses ([Twiss et al., 1969](#_ENREF_20)). |
| Wild grass husk **G** **(multi-cell)** |  | Generally pooid grass. Dendritic long cells, with papillae and short cells (mainly rondel). Cork cells are sometimes silicified ([for a more detailed discussion of husk identification methods please refer to Rosen, 1992](#_ENREF_15)).  |
| cf. Wild wheat husk **G (multi-cell)** |  | Dendritic long cells with high rounded wave with irregular amplitude. Variable papillae size range from 21-43 µm, with 16 to 18 pits, and a domed stippled surface. Cork cell’s tend to be D-shaped ([for a more detailed discussion of husk identification methods please refer to Rosen, 1992](#_ENREF_15)). |
| Bulliform**G** |  | Found in the leaves of grasses, also known as motor-cells ([Metcalf, 1960](#_ENREF_10)). |
| Stacked Bulliforms**G** **(multi-cell)** |  | Found in the leaves of grasses. Higher silicification may indicate a wet or submerged growing environment ([Andrejko and Cohen, 1984](#_ENREF_2); [Bremond et al., 2005](#_ENREF_5); [Sangster and Parry, 1969](#_ENREF_18)). |
| Keystone Bulliform (‘Fan-shaped’) (cf. reeds)**G** | Cuneiform bulliform cell | Commonly occur in reed-grass species that favor watery habitats ([Sangster and Parry, 1969](#_ENREF_18)). Cf. to fan-shaped reed ([Liu et al., 2013](#_ENREF_8)). With higher silicification may also become a ‘stacked’ multi-cell form.  |
| *Phragmites* (reed) culm**G (multi-cell)** |  | Echiniate long cells connected by narrow ‘pinched’ short-cells (mainly rondel to saddle). The short-cells are narrower than the echinate long-cells that connect them ([Ryan, 2011](#_ENREF_17); [Ryan, 2009](#_ENREF_16)).  |
| *Phragmites* (reed) leaf**G (multi-cell)** |  | Characterized by small frequent stomata ([Ryan, 2011](#_ENREF_17); [Ryan, 2009](#_ENREF_16)), with a central lacuna that pinches out beyond the more silicified top and bottom (‘hamburger’ shape) ([Greiss, 1957](#_ENREF_6)). |
| Sedge cones**M** |  | See ([Ollendorf et al., 1987](#_ENREF_14); [Ollendorf, 1992](#_ENREF_13); [Metcalf, 1971](#_ENREF_11); [Le Cohu, 1973](#_ENREF_7)). Single and multi-cell forms. |
| Juncus-type**M (multi-cell)** |  | See ([Fig. 108 and 114A in Greiss, 1957](#_ENREF_6)). Characterized by small, linear stacks of uniform oval to cube shaped cells.  |
| Platelets (sheet)**DM** |  | See ([Bozarth, 1993](#_ENREF_4)). Found in dicot leaves and wood, cf. to platelet ([Albert et al., 2003](#_ENREF_1)). |
| Polyhedron**D** |  | Found mainly in dicot leaves, single and multi-cell forms ([Albert et al., 2003](#_ENREF_1); [Bozarth, 1992](#_ENREF_3)) (Fig. 5d). |
| Honeycomb**DM** | Favose | Found mainly in dicot leaves ([Bozarth, 1993](#_ENREF_4); [Albert et al., 2003](#_ENREF_1)). |
| Smooth spheroid **D** |  | Found mainly in dicot wood, cf. to spheroid psilate ([Albert et al., 2003](#_ENREF_1)).  |
| Blocks**DM** |  | Found mainly in dicot wood, cf. to parallelepiped block forms ([Albert et al., 2003](#_ENREF_1)).  |
|  |

Key: **G** grasses, **G~** mainly grasses, **M** monocot, **D** dicot.

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