EARTHSTARS

The Earthstars are members of the Lycoperdaceae, the puffballs, and are in the genus *Geastrum.* They have a different structure to other fungi and are even different from other puffballs, so people who study them use terms that you may be unfamiliar with. A short glossary and some diagrams are provided below to help.

GLOSSARY

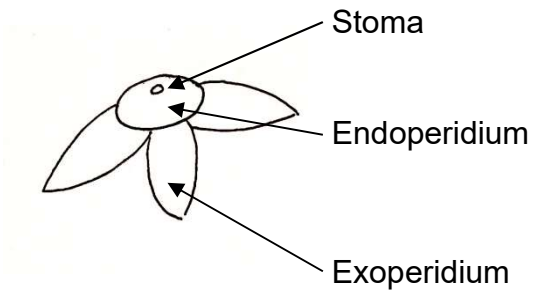
Asperate – with a roughened surface
Endoperidium – the inner 'ball' that contains the spores
Exoperidium – the outer covering that contains the endoperidium and which splits to form the stars or rays as the fungus matures
Glabrous – with a smooth surface
Hygroscopic – the rays close in dry weather, they become involute
Non-hygroscopic – the rays remain in a permanently expanded state
Pedicellate – with a stalk between the exoperidium and the 'ball'
Peristome – a complex structure at the top of the 'ball' which can be:

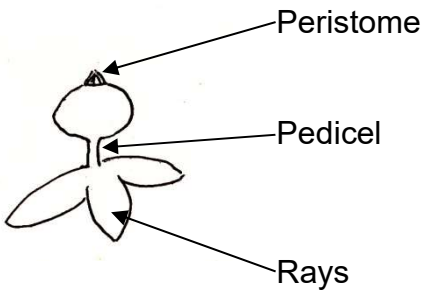
- **Sulcate** – grooved
- **Fibrillose** – surrounded by thin fibres

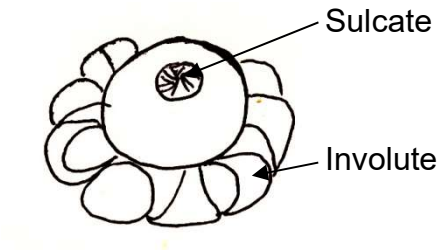
Rays –the individual splits of the exoperidium; they can be:

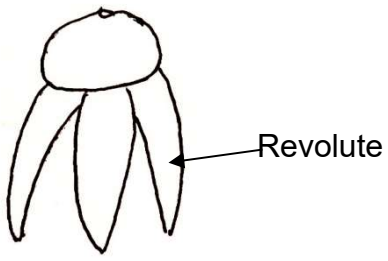
- **Involute** – incurved partially enclosing the endoperidium like a lotus flower
- **Revolute** – recurved, bending downwards and lifting it off the ground

Rugose – wrinkled
Stoma – the pore at the top of the ball where the spores are released. It may be simple (naked) or complex (peristome)
Tomentose – felted









Some *Geastrums* have changed their names. The latest species names are given in the key; the older names (shown in brackets) are often on Herbarium specimen labels.

Trial Key for Geastrum

1. Stoma naked	2
1. Stoma with peristome	3
2. Exoperidium hygroscopic, acute rays involute	***G. floriforme***
2. Exoperidium not hygroscopic, wide rugose rays, endoperidium pedicellate (*G. fenestratum*)	***G. fornicatum***
3. Peristome sulcate	4
3. Peristome fibrillose	7
4. Exoperidium not hygroscopic, revolute, endoperidium pedicellate, spores 5.5 – 7.5 µm diameter (*G. pectinatum*)	***G. tenuipes***
4. Exoperidium hygroscopic, involute	5
5. Endoperidium sessile, involute (*G. drummondii*)	***G. ambiguum***
5. Endoperidium pedicellate, thick and rugose on outside	6
6. Endoperidium asperate, spores 6 – 8 µm diameter	***G. campestre***
6. Endoperidium glabrous, spores 4 – 5.5 µm diameter	***G. clelandii***
7. Stars small, < 30 mm diameter, endoperidium pedicellate	***G. austrominimum***
7. Endoperidium sessile (pedicel absent), stars larger than 30 mm diameter	8
8. Exoperidium tomentose (*G. velutinum*)	***G. javanicum***
8. Exoperidium glabrous	9
9. With a collar between the exoperidium and the endoperidium, spores 4 – 5 µm diameter	***G. triplex***
9. Lacking a collar, spores either larger or smaller	10
10. Spores 2.5 – 3.5 µm diameter	***G. saccatum***
10. Spores 7 – 8 µm diameter	***G. australe***

Note: *G. triplex* is the most common earthstar recorded in Queensland; *G. saccatum* is also known from several collections; all the others appear to be rare, with only 1 to 3 collections. If you find an earthstar, photograph it, collect it, make careful notes using this key and then deposit it at the Queensland Herbarium at Mt Coot-tha.

Gretchen Evans 25 April 2022
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