

### WHAT TO LOOK FOR?

A small earthstar with a 1.5-3 cm diameter fruitbody (when expanded). The diameter of the endoperidium (spore sac) ranges from 6–12 mm, occasionally up to 16 mm. The exoperidium splits into 6-10 arching rays. Not fornicate (i.e rays not folding backward to form an arch beneath the endoperidium). Often found in groups.

Notes: This species was previously known as *G. minimum*, a species concept which has been recently considered too uncertain to use, and has therefore been split. The correct current name for the species recorded in England is uncertain, and any new record conforming to the *G. "minimum"* concept from GB&I would be of interest. Several other similar *Geastrum* species are also considered rare or vulnerable, and records of these would also be of interest.

### WHEN TO LOOK?

Most records of this species are from August to December, but records from all seasons exist.

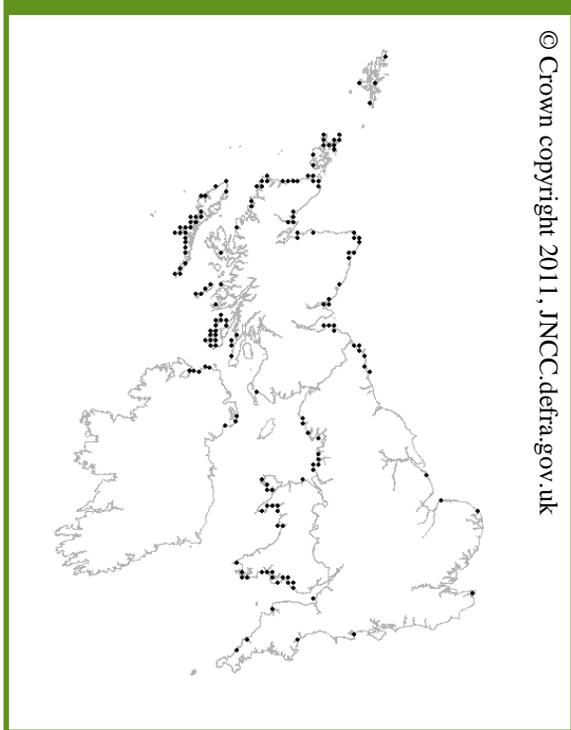
### WHERE TO LOOK?

In sandy soil near/on coastal dunes. There is one consistently sampled site in Norfolk (Holkham Meols/Gap), and other reports from similar habitats in Sandcastle Haws National Nature Reserve (Westmorland) and Driggs Dunes (Cumberland). Other coastal dune sites may be worth investigating.



Top: [image](#) by Irene Andersson, [CC BY-SA 3](#). Bottom: *G. minimum* K(M)120328 by Alison Harrington, [CC BY-SA 3](#)

### UK duneslack distribution



### *Geastrum minimum*



# *Geastrum* “*minimum*” agg.

## General description

Fruitbody 1.5-3 cm diam. when expanded; endoperidium 6–12(-16) mm diam., pale grey-brown and covered in whitish-grey crystalline pruina when fresh, subglobose; peristome fimbriate/fibrillose, delimited with a weak groove; columella whitish, cylindrical/clavate, may be poorly defined; mature gleba brown; pseudoparenchymous layer pale when young, growing darker and splitting with age, may form a collar around the stalk; stalk brown, 1 mm tall; exoperidium splitting into 6-10 arching rays; not fornicate (i.e. the fruitbody is not elevated by arching rays to the extent of separation of its base from the mycelial layer below); mycelial layer persistent and encrusting debris; capillitial hyphae yellow-brown, 3-6 µm diam., thick-walled, tapering towards tips, irregularly encrusted, sometimes forked; spores dark brown, globose, 5-6 µm diam. excluding ornamentation, 5.5-7.5 including; spore ornamentation irregular, composed of coarse verruculae 0.4-0.7 µm tall and 2 µm diam. Fruiting bodies often found in groups.

Members of the *G. minimum* agg. include a number of morphologically similar species, detailed in Zamora *et al.* (2015). The most likely candidate for the species reported in the UK is *G. marginatum* Vittad. (Zamora, pers. comm.), although further study is required.

Note: description adapted from Pegler *et al.* (1995) and updated according to Zamora *et al.* (2015).

## Habitat:

Coastal dune habitat. This species is reported on or near dunes or dune slack, in sandy soils, sometimes near pine.

## Conservation status

Classed as Vulnerable / D2 in GB&I in the provisional Red Data List of Threatened British Fungi (Evans *et al.*, 2006). Previously a UK BAP priority species.

## Associations

Often found on mosses, with *Pinus nigra*, grasses and sedges.

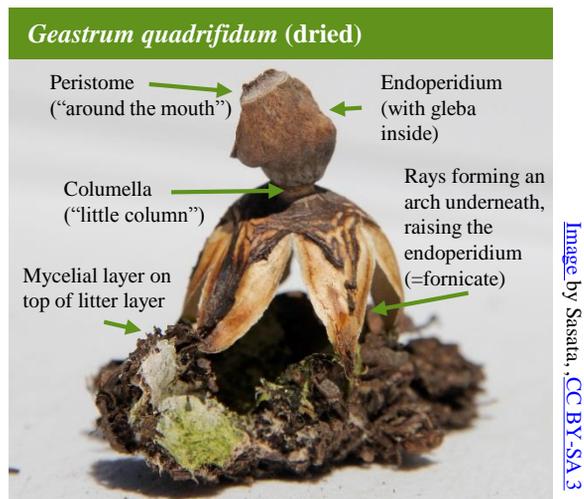
## Look-alikes (in GB&I)

- *G. schmidelii* is similar in size and macroscopic appearance, and found in similar habitats. It differs in possessing a sulcate peristome (outside of the “mouth” slit clearly marked with parallel grooves) while that of *G. minimum* is fibrillose (covered in minute hairs).

Sulcate peristome of *G. schmidelii*



- *G. quadrifidum* (below) should be clearly distinguishable in possessing a fornicate exoperidium, with (3-)4-5(-6) rays, the margins of rays conspicuously rolled out. A very similar species, *G. britannicum*, has also been recently described in the UK, differing in basidiospore and peristome micromorphology (Zamora *et al.*, 2015). *G. quadrifidum* is currently considered vulnerable (Evans *et al.* 2006), while *G. britannicum* is known only from three collections.



- *G. coronatum* has robust and much larger fruitbodies (3-10 cm when expanded), with a fibrillose peristome, dark stalk and glabrous endoperidial surface, covered with a ‘mealy’ mesoperidium formed by abundant but rather indistinct hyphae. Basidiospores are also very distinct from *G. minimum*.

## Known sites in GB&I

- Sandscale Haws NNR, Westmorland VC:69, England. 2013, coll: D.G. Benham. Grid ref: SD189751.
- Holkham Gap, West Norfolk VC:28, England. Most recently found in 2012, coll.: R. Purser. Grid refs: TF88964499, TF87494555.
- Driggs Dunes, Cumberland VC:70, England. 1999, coll: J. Thomas. Grid Ref: SD0498.

## Literature

- Evans, S., Henrici, A. and Ing, B. (2006). "The Red Data List of Threatened British Fungi: Preliminary Assessment." *Unpublished report. British Mycological Society*. Manchester. Available at: <http://www.britmycolsoc.org.uk/mycology/conservation/red-data-list/>
- Pegler, D.N., Læssøe T. and Spooner, B.M. (1995). *British Puffballs, Earthstars and Stinkhorns. An account of the British gasteroid fungi*. Royal Botanic Gardens Kew.
- Zamora, J.C., Calonge, F.D. and Martín, M.P. (2015). Integrative taxonomy reveals an unexpected diversity in *Geastrum* section *Geastrum* (Geastrales, Basidiomycota). *Persoonia* 34: 130-165.
- Zamora, J.C. *et al.* (2014). Systematics of the genus *Geastrum* (Fungi: Basidiomycota) revisited. *Taxon* 63: 477-497.