Pollnapaste, Lettermacaward, Co. Donegal

Matthew A. Parkes¹, Michael J. Simms², and John G. Kelly³
1 Geological Survey of Ireland, Beggars Bush, Haddington Road, Dublin 4, Ireland
2 Department of Geology, The Ulster Museum, Botanic Gardens, Belfast, BT9 5AB
3 Gortmacally, Florencencourt, County Fermanagh, BT92 1AA

INTRODUCTION
Pollnapaste is a small complex cave developed in marble of the Dalradian Supergroup near Lettermacaward in County Donegal, at the mouth of the Gweebarra River (Fig 1). The speleogenesis was strongly influenced by local geology, of an unusual type in the Irish context. It has formed within a sequence of deformed metasediments belonging to the Dalradian Supergroup, locally metamorphosed to impure banded marble. Metadolerite bodies in particular have influenced later development and are a distinctive feature of the cave, including one dyke which remains as a wall across an aven. The strongly folded banding in the marble is also characteristic. Pollnapaste exposes considerably more of the geological structure and lithological variety in three dimensions than can be determined from surface exposures, and this was analysed by Parkes et al. (1999). The survey (Figs 2, 3) can be considered to indicate only the general configuration and relationships of the various passages. Pollnapaste (a corruption of Pollnapeiste - the cave of the worm or serpent) is situated above and to the southeast of Farsetpollnapaste in Kincrum Townland, a few hundred metres southeast of Gweebarra Bridge, in central County Donegal (Fig 1). The cave is shown on the 1:10,560 scale map (Donegal 65) of the area, and has been known to geologists for some decades, but was first noted by cavers only recently (Anon 1989). A stream draining from Derkmore Lough flows on the surface for about 800m before sinking into Pollnapaste. The resurgence lies just above high tide level in the muddy embayment of Farsetpollnapaste; a wooded steep-sided enclosed valley. A second, sub-parallel, stream flows from the area just north of the cave. It does not sink but flows down a steep-sided gorge-like valley, with at least one abandoned cave (The Den) on its western flank.

DESCRIPTION OF THE CAVE
Top Sink is where the stream disappears into a sump pool among boulders on the west floor of a high but very short cave. The cave appears to back up completely in high water conditions. From the right an inlet stream called Thin Man Alley ascends steeply for almost 20m before becoming too low for further progress.

Figure 1a. Locality map of Pollnapaste.

This apparently restricted cave is accompanied by a far more impressive cave developed beneath a deep adjacent depression, reached by climbing over the col between them. The depression is steep-sided with a rock wall above the cave around about half of the circumference, forming a natural amphitheatre. This is termed Fossil Sink, as the original flow through the sinkhole has been captured via Top Sink. The flow passes through a small

Figure 1b. A view into Farsetpollnapaste; Pollnapaste and the resurgence are hidden within the trees at the far end (photo by M Parkes).
Figure 2. Survey of Pollnapaste and associated karst features.

Figure 3. Section of Pollnapaste and associated karst features.
sump in Top Sink, and reappears amongst the boulders in Fossil Sink and flows over a shelf to cascade into the cave.

A 5m drop (requiring a ladder) leads into an irregular high cavern, termed Main Chamber. A metabolericite sill is conspicuous along the south edge of the roof and has been breached near where the cascade enters. The stream crosses the Main Chamber floor and largely sumps in the northwest corner, although some water continues down a narrower canyon type streamway. This widens where a climb up to the right leads to heavily calcited sections called the Attic (on the left) and Bell Chamber (on the right), the latter named from a prominent formation.

Also at this point, on the opposite side of Main Streamway, a higher level passage (Draughty Passage) can be entered. After a short distance it is almost blocked by a stalagmite boss and gour dam. It has not been surveyed beyond these, but descends a metre or so into a lower and broader section of passage, floored by re-sedimented peat underlain by sand. It continues over muddy cobbles for another 2 to 3m before becoming too low for further progress. At this point it is probably less than 5m from the cliff edge.

The Main Streamway passes these side passages into a few metres of tubular section passage which was the former sump, and end of the cave. The way on was blocked by a thin acquichade, which has been breached (by Dave Scott – Anon 1990a,b), dropping into a small shaft, at the base of which is the present terminal sump. Immediately before the cascade, a small inlet stream enters on the left probably returning some of the flow from the sump in the lowest point of Main Chamber. The resurgence for the system lies only a short distance beyond this sump, about 2m above sea level in Fartspollnapaste. A separate small stream to the north sinks just upstream of here, but is insufficient to account for the outflow of the rising. A series of flood risings up to 4m higher than the main rising lie on the slope behind. There are several other flood risings around the north shore of Fartspollnapaste, though not necessarily associated with the main cave system (Fig. 1).

From the foot of the waterfall in the Main Chamber, a low wet crawl (The Lowway) behind boulders leads via a narrow rift into the second main part of the cave, Dyke Chamber. This is named after a substantial folded metabolericite dyke that forms a wall across the middle of the chamber. It averages about 10 to 50cm in thickness, about 2m in height and is passable underneath.

This chamber can also be reached by a climb up to a mudfloored, dry high-level passage, the Highway, which emerges at the top of the dyke. From this point a choked relict passage descends to the northwest. The folding of the banded marble is perhaps best seen in this chamber, although the whole cave exhibits it well, except where it is obscured by calcite deposits.
OTHER SITES IN THE AREA
References to caves in County Donegal are few and those that exist have in some cases been given erroneous names. Coleman (1965) refers to a few small caves in Donegal, but they are in the Carboniferous Limestone in the south of the county. One is in Ballyacarrick Townland, and this may have been mistakenly used as the name for Pollnapaste (Anon 1990a,b). Confusingly, there is also an area called Ballyacarrick some kilometres upstream from Gweebarr Bridge.

The limited outcrop of marble, much obscured by vegetation, displays extensive dissolutional sculpture in the forest and valley side exposures. Small caves other than The Den are probably more common than searches indicated. The exposures near the cliff edge are heavily karstified and some expanded joints are big enough to allow access to a caver.

FLAUTIST’S CAVE
(Lettermacaward side of Gweebarr River)

This site was not located during this study, despite making local enquiries. The first description (Anon 1990c) of it was by Adam Jones, an Oxford University geologist mapping in the area in 1989. It is about 11m long and consists of a single chamber that stops abruptly against a metadolerite sill (Fig. 4). A very small waterfall flows over the sill, into a pool which contained brown trout despite the whole cave being polluted with domestic rubbish. The height averages 1.5m but rises to over 2m at the back of the cave. Much of the northern part of the marble outcrop is either lake-covered (Ranny Lough, Toome Lough) or unlikely to be accessible other than to divers.

THE DEN
This cave is situated on the south side of the small stream valley to the north of Pollnapaste. An easy climb down into a choked inactive pot leads only into a second dry chamber less than 3m high, with flowstone on the walls (Fig. 5). This site is probably unconnected to Pollnapaste.

ACKNOWLEDGEMENTS
The survey was assisted by a Royal Irish Academy Praeger Grant, which we gratefully acknowledge. We thank Trevor Faulkner, Pam Fogg, Dave Scott and Elaine Cullen. Adam Jones supplied information on Flautist’s Cave to Pam Fogg.

REFERENCES
Anon, 1990c. Donegal. SUICRO Newsletter 17, 2.