IAH (IRISH GROUP) ANNUAL FIELDTRIP: "THE BURREN AND GORT LOWLANDS – GROUNDWATER FLOW SYSTEMS IN KARST LIMESTONE" 29TH - 3TH SEPTEMBER 2001

Report by Morgan Burke

The 2001 annual IAH (Irish Group) fieldtrip weekend was held in September and was based in the Burren on Saturday with a visit to the Gort Lowlands on Sunday morning. The trip was led by Dr. David Drew of the Geography Department, TCD. A total of 30 people attended the trip.

The first stop on Saturday morning was a viewing point on Corkscrew Hill where the contrast between the bare karst plateau of the Burren and the lower lying till floored valley could be seen. Also evident was the contrast between the well bedded limestones which form terraces and poorly bedded or unbedded strata that form more uniform slopes.

Killeany Spring, which derives most of its flow from sinking streams on the eastern flank of Slieve Elva, was the next stop. Water could be seen discharging from the bedding and a discussion took place on the variable quantity and quality of the water from this source which is used to supplement the supply to the Lisdoonvarna area.

Following a drive around Eastern Slieve Elva, along the contact between the impermeable Namurian strata and the limestones, the fieldtrip group arrived at Cullaun Cave 2. The group entered the cave passage which is typically 5m in height and 350-700mm wide (this proved too tight a squeeze for some participants!!). After 300m the point where the main cave stream joins the passage from a wide bedding cave was reached. Along this 300m stretch of passage a number of interesting phenomena were observed including joint and bedding control on passages, chert, abondoned passages, scalloping, stream incision, high level inlets and seepage inlets.

The last stop before lunch was St. Brendan's Well, Lisdoonvarna, which drains some 20km^2 of the western Burren. St. Brendan's Well marks the location where the limestones dip under the younger Namurian shales thus forcing the water in the limestone to the surface.

The first stop after lunch was Aillwee Cave which is an ancient cave system with a complex history. The group did not enter the main Aillwee Cave passage but focused solely on the 300m long Marine Blast tunnel which links St. Bridget's Series with The Highway and runs approximately along the strike of the strata. Noteworthy observations along the blast tunnel included the relative scarcity of conduits, extensive areas of impermeable rock or distributed flow in fissures, evidence of early cave development or 'failed caves' and clustering of proto-conduits.

Apart from St. Brendan's well other karst springs visited include the epikarst springs at Berneens which are fed by shallow groundwater originating on the southern flank of Aillwee hill. Also on the itinerary were the River Fergus Valley Springs which are base level springs that feed into the River Fergus along a 3km stretch. These springs provide the outlet for almost 40% of the drainage of the Burren plateau.

The inter-tidal zone springs at Kinvarra were visited on Sunday morning. This group of springs which drain the Gort Lowlands, are probably amongst the largest karstic springs in Ireland. A series of shallow collapses were observed on a small island in the centre of the springs. These features have collapsed into underlying solutionally enlarged bedding planes which are probably typical flow conduits for groundwater in the vicinity of the springs.

The next stop was Poulaloughabo Cave which is one of a series of large enclosed depressions which occur along a line extending from Lough Caherglassaun to Quinns Cave. These features were formed by collapses into a major, water filled karst conduit upto 25m in diameter, which carries all of the underground drainage of the Gort area. Poulaloughabo is a large collapse that gives access to a spacious cavern in cherty limestone. Cave divers have gained access to the underlying main Gort to Kinvarra drainage conduit via Poulaloughabo.

At Cappacasheen there is an excellent example of a superficial groundwater flow system in the shallow epikarst layer of the limestone. Water emerges from the bedding, flows south to north for 25m before sinking underground again in the bedding. In contrast to this, two beds of limestone between the surface of the surrounding limestone pavement and the bedding plane that carries flow are highly karstified with solutionally enlarged joints and extensive karren features on surface exposures.

For the final stop of the weekend the group headed to Pollduagh Rising where the Beagh (Gort) River emerges from Pollduagh (Cannahowna) Cave. This is the largest of the rivers from Slieve Aughty in the Kinvara catchment. At Pollduagh it can be seen that the main cave is developed in the bedding guided by a joint roof.

The IAH would like to thank David Drew for leading the trip and all who attended the weekend. It was a superb weekend and a good opportunity to gain an insight into groundwater flow systems in karst limestones as well as visiting some of the fascinating karst features of the Burren Plateau and Gort Lowlands.

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