

TRACERS INVESTIGATIONS IN POIANA-TECURI AREA (ȘUREAN MOUNTAINS, ROMANIA)

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On the southern side of the upper course of Strei river the zone Poiana-Tecuri, characterized by a remarkable speleological potential, from which the caves of Tecuri, Clenjii and Sipot sump are mentioned as well as the pothole Răchitea.

The researched area is sloped into a plate of Upper Jurassic limestones with a slight sinuous relief, hanging up at 600–800 m above the Strei river and laying on a crystalline schists relief.

The karstic terrains are deprived of a superficial flow, the water courses, which forms on the limitrophe crystalline areals, infiltrating completely underground, when passing through limestones.

The underground water from the limestones, discharge westwards through 2 main sources: the Siphon's cave from Sipot with a mean discharge of about 200 l/s and the right side spring from Sipot having a mean flow of about 40 l/s. Both of them emerge from the limestones near the limit with the crystalline schists.

In 1965, V. Trușăș carried out two investigations with fluoreceine in order to define some flowing directions of the underground waters. Thus, he established the hydrogeological relation between Poiana ponor and Sipot right side spring and that between Ponorici ponor and Siphon's cave of Sipot (Giurgiu, Lascu, 1985).

In 1986, and 1987, we performed four investigations with tracers for completing the image of underground flow and for establishing the transit time of the water between insurgences and resurgences. (table 1). Two of these experiments repeated the ones carried out by Trușăș.

The results of these works point out two main aspects:

1. We are in the presence of an underground flow with a relatively slow speed, which suggest a quick undergrounding of superficial courses on quasivertical ways followed by a slow flow with a slight slope of the underground water towards the resurgences.

2. The source from the Siphon's cave of Sipot and the right side Sipot spring have their own hydrogeological basin, without any connection between them, at least at small water. This situation is generated by a swelling out of the crystalline basement on the East-West direction between the interflow of Gîrla Vacii-Clenjii cave, where the crystalline schists appears at the surface and the Sipot river. The raising of the crystalline basement forms a watershed for the undergrounds water from the limestones, which keeps apart the two hydrogeological basins mentioned before.

During the rainfalls or the snow melting period, the position of the above mentioned watershed could alter, due to the raising of underground water level, to up its vanishing near the two sources. In this case both of the hydrogeological basins form a whole with the two points of discharge.

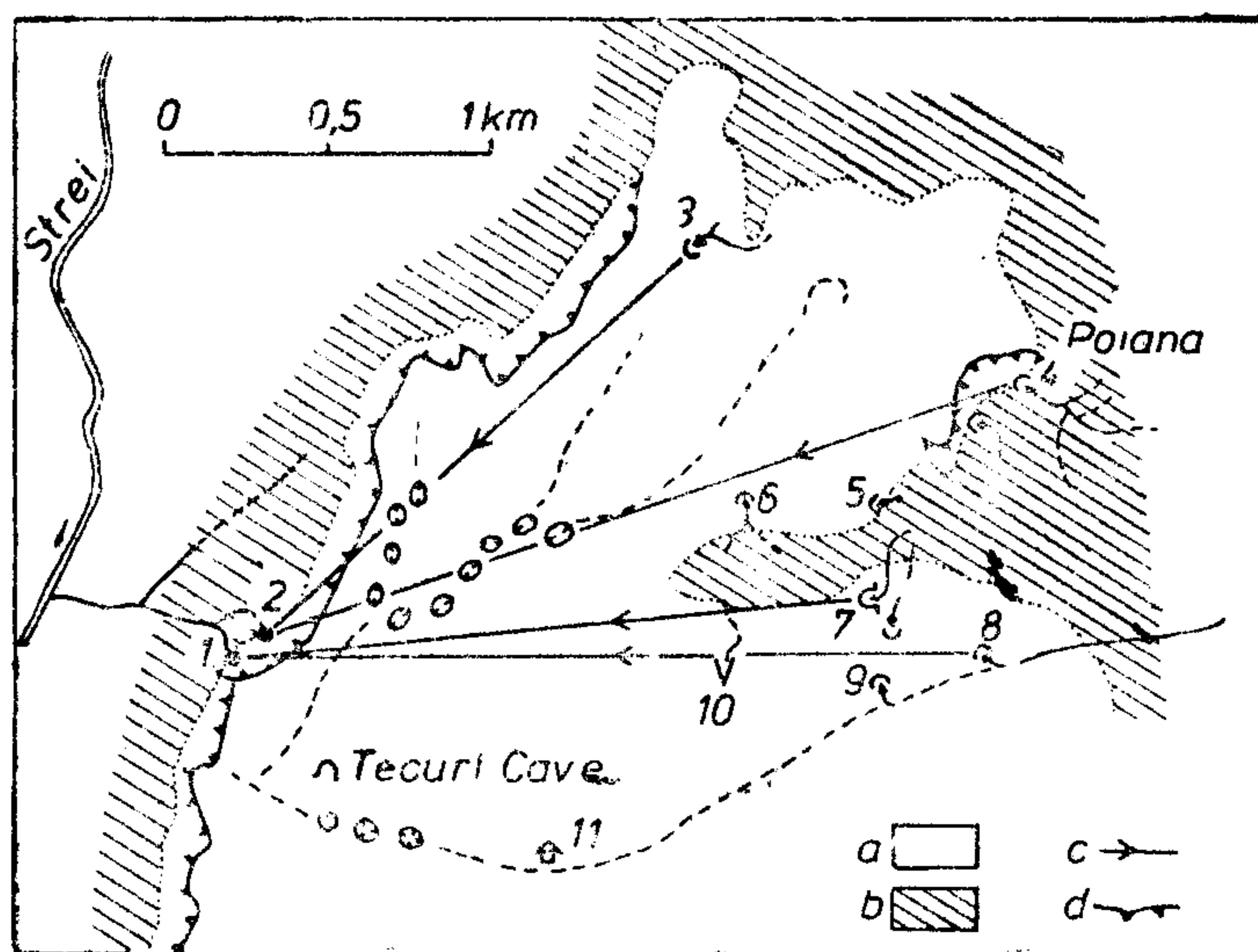


Fig. 1 — Hydrogeological sketch of Poiana-Tecuri area: a — Karstic terrains; b — Nonkarstic terrains; c — Underground flow direction established by tracer experiments; d — Abrupt; 1 — Siphon's cave of Sipot; 2 — Right side spring of Sipot; 3 — Teiul Lung (La Tăul Lung) ponor; 4 — Ponor of Poiana; 5 — Ponor of Stina Trăznită; 6 — Gîrla Vacii ponor; 7 — Clenjii cave; 8 — Ponorici 2 ponor; 9 — Ponorici 1 ponor; 10 — Răchițea pothole; 11 — Bojița ranger chalet

Table 1

Results of tracing operations on Poiana-Tecuri area

No.	Insurgence (H)	Resurgence (H)	L (m)	H (m)	Tracer used	T (h)	V (m/h)	Date
1	Ponorici ponor (900)	Siphon's cave on Sipot (560)	1800	340	In-EDTA	144	12.5	5.10.1986
2	Clenjii cave (906)	"	1909	346	Rhodamine B	132	14.5	"
3	Teiul lung ponor (868)	Right side spring on Sipot (560)	1850	308	Dy-EDTA	96	19.3	13.09.1987
4	Ponor of Poiana (1027)	"	2400	467	Rhodamine B	72	33.3	"

H = Elevation; L = Horizontal distance between insurgence and resurgence; H = Vertical drop; T = Time of first arrival of tracer; V = Velocity.

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