

Short Notes

Determination of clutch frequency and clutch size in free-living iteroparous lizards: application of laparotomy

Yung-Ping Mou, Robert Barbault

Laboratoire d'Ecologie, UA-258 du C.N.R.S., Ecole Normale Supérieure, 46, rue d'Ulm, F-75230 Paris Cedex 05, France

Clutch size and clutch frequency in individual iteroparous lizards are usually assessed either by examination of dissected individuals throughout the reproductive season (e.g. Saint Girons and Duguy, 1970, or Barbault, 1976), or in some favourable cases, by palpation of free-living marked individuals (Tinkle, 1967; Medica et al., 1971). We here propose a surgical technique for obtaining these data on marked individuals in field populations. It permits periodic determination (each month through the entire reproductive period decided after field observation data for this population) of the reproductive state of a given individual by surgical operations under a binocular microscope.

This technique has been applied in 1983 on females of the wall lizard, *Podarcis muralis* (Lacertidae). The females were anaesthetized with ether. The lizard was handled gently. Its head was inducted at the entry of a tube at the bottom of which was placed a cotton ball damped with ether. This tube was removed once the lizard had ceased struggling. Then, the lizard was fixed on the operation block by sticking band at its four limbs. A lateral longitudinal opening of 10 to 13 mm was made with a scalpel, alternatively on the left and on the right side of the posterior part of the abdomen. After examination of the internal organs the incision was sewn with a sterilized surgical thread (Seracap, N° Dec: 1,5 with needle 3/8, sterilized). The scar was dusted with sulfanilamide powder and covered by a bandage (a piece of compress appropriate to

Table 1. Clutch size and clutch number per season for five females of *Podarcis muralis* in 1983.

SVL mm	Female weight, g	Age in years	Clutch size			Clutch frequency	Overall fecundity
			I	II	III		
59	4,8	2	6	3	0	2	9
63	4,9	3	8	8	4	3	20
64	5,2	3	8	9	4	3	21
65	5,7*	4	6	3	0	2	9
66	6,2	3	10	8	5	3	23

* Individual of which the left ovary was damaged before laying the second clutch.

cover the scar, attached by sticking band) which was removed 24 hours after the female had recovered. Then, the animal was released in a semi-natural enclosure.

Five marked females of known age were submitted to this method. To minimize trauma surgical interventions were limited to four times per female per year. The preliminary results obtained by this method (table 1) show that the two-year old females laid two clutches whereas the older females laid three clutches during the same season. It is difficult to evaluate whether the application of this technique in population studies affects the survivorship of the individuals at this stage. It seems that the lizards scared over rapidly after operations. There were no signs of any inflammation on the incisions in these operated females.

This method permits not only to establish the clutch frequency of a given female, but also to establish the variations in clutch size of a given individual throughout its reproductive life. This kind of information is rarely available for free-living animals and its importance for the understanding of population dynamics and reproductive strategy compensates for the inconvenience of the technique.

References

- Barbault, R. (1976): Population dynamics and reproductive patterns of three african skinks. *Copeia* **1976**: 483-490.
- Medica, P.A., Hoddenbach, G.A., Lannom, J.R. (1971): Lizard sampling techniques. Rock Valley Misc. Publ., n° 1, 55 p.
- Saint Girons, H., Duguy, R. (1970): Le cycle sexuel de *Lacerta muralis* L. en plaine et en montagne. *Bull. Mus. Ntl. Hist. Nat.*, 2^e série, **42** (4): 609-625.
- Tinkle, D.W. (1967): The life and demography of the side-blotched lizard, *Uta stansburiana*. *Misc. Publ. Mus. Zool. Univ. Michigan* **132**: 1-182.

Received: February 9, 1987