

VARIATION OF SEASONAL ACTIVITY

A major problem of field work is the choice of the most suited sampling time. Amphibians are known to have seasonal phases of activity which appear most clearly expressed in the temperate zone. Tropical regions are often considered to have a more stable climate and, in consequence, seasonal variation in amphibian activity should be less pronounced. The climate on Fan Si Pan is not tropical, but montane subtropical with a rather cold wet season (November to January) and a short dry season (February and March). The climate is humid due to rainfall distributed over great parts of the year (TORDOFF et al. 1999).

At Fan Si Pan, frogs were reproductively active all over the year (table 4). However, the periods of reproductive activity differed among congeneric species. Examples: *Leptolax bourreti* was found breeding in October-November, *L. pluvialis* in July. *Philautus carinensis* was found to breed mainly in October-November, while three other members of the genus showed this activity in July. In doing so, *Ph. odontotarsus* FEI & YE, 1998 and *Ph. jinxiuensis* HU & TIAN, 1981 shared more open habitats and call positions, whereas *Ph. gracilipes* BOURRET, 1937 found simultaneously was rather a forest dweller and chose call positions different from the two other *Philautus* species. The most common species was *Paa verrucospinosa* (BOURRET, 1937); individuals exhibiting

the morphological attributes of sexual activity were found all over the year. Some species such as *Leptolax pluvialis* which seem to have very short activity phases were found during one of four visits only, although the identical collection site was inspected during the other visits as well. A more detailed quantitative analysis on the ecological and ethological aspects of this amphibian community including field observations is part of a master's degree diploma (SWAN in prep.).

The present paper presents results of the most comprehensive batrachological exploration of a single site in Vietnam so far. Nonetheless, from some species only a single adult or some young specimens were collected, so that no information on their reproductive period can be given.

As shown in figure 4, collecting over successive phases led to an increasing number of species over the one-year period. This is due to differential activity patterns of the species from Fan Si Pan. None of the collecting phases provided results representative for the whole batrachofauna of this region. Finally, even after one year of data collecting, no definite information on the total number of amphibian species could be made. Concerning the choice of various phases of field work, our data indicate clearly that an increase of visits to a site will increase diversity of species observed and will lead to more and better data on a particular site.

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REFERENCES

- BOULENGER, G. A. (1905): Description of a new batrachian of the genus *Bombinator* from Yunnan.- Ann. Mag. Nat. Hist., London; (7) 15: 188-189.
- BOURRET, R. (1937): Notes herpétologiques sur l'Indochine Française XIV-XV.- Annexe Bull. Gén. Instr. Publique, Hanoi; 1937: 1-80.
- BOURRET, R. (1942): Les batraciens de l'Indochine; Hanoi (Institut océanographique de l'Indochine).
- CHEN, H.-J. & LI, F.-L. & HENG, X. (1984): Preliminary observations on ecology of *Vibrissaphora ailonica*.- Acta Herpetol. Sinica, Chengdu; 3: 41-45.
- DEUVE, TH. (2000): Un nouveau genre de Trechinae aphaenopsien et une nouvelle *Eustra* microphthalme découverts dans un karst du Laos (Coleoptera, Trechidae, Paussidae).- Rev. française d'Entomologie, Paris, (N. S.), 22 (in print).
- DUBOIS, A. (1977): Les problèmes de l'espèce chez les amphibiens anoures.- Mém. Soc. zool. France, Paris; 39: 161-284.
- DUBOIS, A. (1983): Note préliminaire sur le genre *Leptolax* DUBOIS, 1980 (Amphibiens, Anoures), avec diagnose d'une espèce nouvelle du Vietnam.-