(typical for the south of Oriental region; on the other hand, it has similarity with the fauna of northwest Tonkin containing elements typical for south Tibet and eastern Himalaya.
There are recorded 282 species of amphibians and reptiles in Central Highland of Vietnam. 61,7% (174 species) among them was found on Ngoc Linh mountain.
An attempt to quantify the diversity shows that 26.6 % (75 species) are endemic of this region. At the same time 46.7% of the number of endemic species (35 species) occurs on Ngoc Linh Mountain.. It is important to note the high degree of overlapping among regions: 134 common species (47.5%) for Central Highland and north-west Tonkin, and 158 common species (56%) for Central Highland and southern Indochina.

Capture effectiveness of terrestrial drift fences and funnel traps for the Great Crested Newt, *Triturus cristatus*

[POSTER]

ORTMANN, DANIEL, MONIKA HACHTEL, ULRICH SANDER, PETER SCHMIDT, DAVID TARKHNISHVILI, KLAUS WEDDELING & WOLFGANG BÖHME

In the course of a long-term study about amphibian populations in an agricultural landscape we compared the effectiveness of permanent drift fences and submerged funnel traps for capturing Great Crested Newts (*Triturus cristatus*). In the years 2002 and 2003 both systems were simultaneously used in the same breeding pond. The annual population size was estimated using the Lincoln-Peterson method. Already after 14 days, the submerged funnel traps proved to be more efficient to determine the population size as compared with the drift fence, which was controlled nearly every day over eleven months. Furthermore, the effectiveness of the drift fence decreased significantly over the three study years 2001-2003. Trusting the drift fence data alone, one would have assumed a strong decline in population size. The additional funnel trap and mark-recapture data, however, clearly demonstrated a nearly constant population size over this period. Our data strongly suggest that drift fences considerably influence the migration behaviour of *T. cristatus*, leading to an accumulation of newts inside the enclosure. In contrast, the use of submerged funnel traps combines high capturing effectiveness with undisturbed migration behaviour close to the pond. Therefore, we strongly recommend the use of submerged funnel traps for population censuses in *T. cristatus* whenever local conditions (pond size, structure etc.) allow their application.

Taxonomic status and biogeography of *Neurergus strauchii*

[ORAL PRESENTATION]

PASMANS, FRANK, SERGE BOGAERTS, TONNIE WOELTJES & SALVADOR CARRANZA

Six new populations of *N. strauchii* are reported from Turkey, closing the gap between the two subspecies *N. s. barani* and *N. s. strauchii.* A molecular analysis based on 829 base pairs from two mitochondrial ribosomal genes (12S and 16S rRNA), together with geographical data from

position has been variously accepted or refuted by recent authors. Population from Indonesia were treated as a subspecies of *X. piscator melanzostus* (GRAVENHORST, 1807) in most publications, but also regarded as full species in some. In order to clarify these taxonomical problems, we investigated the morphological variation in the *X. piscator* complex on the basis of about 450 specimens from the whole range of the complex. This survey led to the following results: *Xenochrophis piscator*, *X. flavipunctatus, X. asperrimus* and *X. melanzostus* are distinct taxa deserving a specific status. Another cryptic species is living in sympatry with *X. piscator* in northern India, Nepal and Pakistan. The population from Sri Lanka differs from all populations including *X. asperrimus*. All these taxa are easily distinguishable by meristic characters and a combination of characters of their pattern. Several taxa are living sympatrically over large areas. The status of *X. sanctijohannis* requires further research.

Toads from a blowfly's viewpoint – Phenology and host preferences of the blowfly *Lucilia bufonivora*

[ORAL PRESENTATION]

WEDDELING, KLAUS, MONIKA HACHTEL, DANIEL ORTMANN, PETER SCHMIDT & ULRICH SANDER

During a long-term monitoring project on amphibian populations in an agricultural landscape near Bonn (Germany) predation of common toads *Bufo bufo* by the blowfly *Lucilia bufonivora* was recorded. Infected toads were found in pitfall traps mainly between may and october each year, outside breeding period of toads. Highest infestation rates were recorded during mid summer in July and August. Overall predation rate exceeds 20 % of adult and subadult toads in some years showing high variation between ponds and years. Infestation risk of toads rises with increasing snout vent length of the hosts. Breeding experiments with toad carcasses show high variation in fly maggot density and hatching output of flies. Fly size after hatching shows negative correlation with maggot density, suggesting strong competition of fly maggots within carcasses. Secondary infestations by other fly species were common and sometimes completely rule out recruitment of *L. bufonivora* suggesting low competition ability of this blowfly. In a general view, predation rates of common toads by blowflies show a strong variability in time and space. In some toad populations, infestation by *L. bufonivora* may considerably contribute to summer mortality of common toads.

Dispersal of *Triturus alpestris* and *T. vulgaris* in agricultural landscapes – comparing estimates from genetic marker data and mark-recapture analysis

[ORAL PRESENTATION]

WEDDELING, KLAUS, PETER SCHMIDT, MONIKA HACHTEL, DANIEL ORTMANN, ULRICH SANDER & DAVID TARKHNISHVILI

Dispersal is one key factor for amphibian conservation in agricultural landscapes. During a long-term monitoring project on amphibian populations in an agricultural landscape near Bonn (Germany) we used two different approaches to estimate dispersal of newts between breeding

ponds. Wrights pairwise F_{st}-values were calculated using 1) allozym marker data and 2) mark-recapture data for adult newts. Indirect measures derived from allozym data indicate low pairwise F_{st}-values, suggesting high gene flow between breeding communities. No isolation by distance was detected within this approach. Direct tracking using toe clipping and mark-recapture techniques show an overall rate of migration for adults of approx. 4.5 % in both species leading to low F_{st} estimates, suggesting high amount of geneflow by breeding dispersal of adult newts. A significant isolation by distance effect for this estimate was found. Corresponding F_{st}-values are significantly higher for direct measures than for the indirect approach, indicating that some additional component contribute to dispersal. Natal dispersal by first breeding juveniles thus may be one key component in dispersal of newts. Within the scale of the study area with 5 ponds and distances between 300 m up to 1800 m, migration and geneflow between breeding communities appear to be high, circumventing allele fixation and local extinction.

Infrared detection in rattlesnakes: from behavioural studies on the sensitivity to signal enhancing mechanisms within the optic tectum

[ORAL PRESENTATION]

WESTHOFF, GUIDO

Rattlesnakes and other pit vipers (Crotalinae) possess a highly specialized sense to detect minute thermal differences. The pit organs enable the snakes to detect infrared radiation within their environment, which helps them to find their warm-blooded prey, orient in total darkness or to find places for thermoregulation. The detection range for a mouse-like stimulus has been calculated to be about a few centimeters only. As this is far below the value estimated from observations, stimulus enhancing mechanisms were speculated to take place within the midbrains Tectum opticum of the snakes.

We performed behavioural experiments with blindfolded rattlesnakes (*Crotalus atrox*) that revealed a detection range for a mouse-like stimulus of at least one meter. In these experiments, a 4 x 4 cm peltier element of 34 °C was used as a stimulus. This stimulus was presented on a moving pendulum to the blindfolded rattlesnakes at different distances ranging from 5 cm to 1.5 m. Different behavioural responses of the snakes like head jerks, tongue flicking and rattling were used as indicator that the snake sensed the stimulus.

In electrophysiological studies we investigated the tuning characteristics of infrared sensitive units within the optic tectum of the snakes. Anaesthetised animals were stimulated with a red laser beam of different intensities focussed into the pits. Recordings of mutli-units were carried out with tungsten electrodes in the stratum griseum centrale of the contralateral Tectum opticum. Spike rates of multi-units are increasing steadily with increasing stimulus intensity up to a maximal spike rate of a stimulus intensity of 1mW. Judged from the shape of spikes and their non-spontaneous character these spikes were most likely from incoming fibers. Evoked potentials were recorded with glas electrodes filled with 2 M NaCl and a resistance of <1 M . With increasing stimulus intensity the increasing amplitudes of the evoked potentials reached a maximum at about 0.3 mW. In comparison with the value of the presynaptic input (1 mW) our results propose a neuronal enhancing mechanism at the tectal level.