FORENSIC ENTOMOLOGY IN SWITZERLAND

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In 1993, one of us (C.W.) introduced the use of forensic entomology at the Criminal Police of canton de Vaud (Switzerland) to help investigators to determine post-mortem interval. Since that time he conducted about one hundred expertises in collaboration with entomologists at the Museum of Zoology and the Institute of Ecology from the University of Lausanne. In most if not all cases he went at the crime scenes to conduct all the relevant investigations related to forensic entomology. These investigations were based on several major stages.

These stages included collection of adults, eggs, larvae and puparia at the crime scene. Part of the living material (eggs, larvae and puparia) was rapidly collected and brought back to the laboratory to be reared under known conditions (20°C). Adults of the different species were mounted and labelled in order to allow identification to species level. Identified material was later deposited at the Department of Entomology of the Museum as reference collection.

Visual observations and notations at the crime scene were made before and after corpses removal. In addition , collection was also made at the Institute of forensic medicine to find more material (eggs, larvae) hidden in the body. In practice, obtaining temperature data for determining insect development is a crucial need. Therefore in many cases a datalogger for temperature was placed and left for period of two weeks. This would bring comparative data (max, min, mean temperatures) to be checked with the closest weather station allowing us to reconstruct the previous conditions that influenced flies activity, egg-laying and development. In one case (see Faucherre et al., 1999) we conducted experiment at the crime scene.

All calculations of PMI were made with all species discovered (when development time was known) and reared to adult stage in order to increase the quality of PMI value. We worked only with blowflies (Calliphoridae) to estimate PMI value. Typical succession patterns, as described in the literature (e.g. Smith, 1968) have rarely been found.

Besides these expertises (Wyss, 1997) we conducted several studies dealing with blowflies' diversity and development time (Faucherre 1997, Faucherre & Cherix 1998, Wyss & Cherix 2001). A better knowledge of local distribution, biology and ecology of blowfly species is of great importance to avoid misinterpretations. Moreover four experiments with pigs were undertaken to complete general surveys on life cycles, activity and diversity of blowflies and other species of forensic importance.

A data base has been developed which allow a rapid comparisons between cases. Actually multivariate analysis (Wyss et al, in prep) based on nearly all investigated cases will permit, for the area concerned (canton de Vaud), predictions on the presence or absence of different blowflies species. These preliminary analysis will be presented and discussed.

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