

EUROPEAN EXPERTISE IN RESEARCH ON THERMAL ADAPTATION

Wolf Blanckenhorn (Evolutionary Biology Group, Zoological Museum, University of Zurich, Switzerland; wolfman@zoolmus.unizh.ch).

General scope of the group's research: We are trying to understand the evolution of body size in selected species in a variable environment from all angles by integrating patterns with mechanisms at the morphological, genetic, ecological, physiological and behavioural levels.

Topics & Questions: Evolution of body size, sexual size dimorphism; life histories; phenotypic plasticity; clinal patterns (Bergmann's, Rensch's, temperature-size rule); relationship between molecular (Fst) and quantitative genetic (Qst) variation among populations; thermal effects on animal distributions & diversity, ecology, physiology and behaviour.

Organisms: Primarily arthropods, particularly dung flies (yellow dung fly *Scathophaga stercoraria*; various Sepsidae (Diptera)).

Methods & Expertise we use: Genetic analysis of microsatellites for population genetics and paternity (sequencing, PCR; associated Zurich genomics center); phylogenetics; enzyme electrophoresis; *in vitro* enzyme activity; photometric analysis of energy reserves; digitizing equipment for morphometrics; quantitative genetic methods; artificial selection & experimental evolution; statistical methods; ecological and behavioural field and lab experiments.

Methods & Expertise sought: Methods for assessing metabolic energetics of small insects (e.g. respirometry); comparative data on sex-specific development time/age at maturity AND body size of various ectotherms.

3-5 Sample publications:

- Blanckenhorn, W.U., Stillwell, R.C., Young, K.A., Fox, C.W. Ashton, K.G. 2006. When Rensch meets Bergmann: does sexual size dimorphism change systematically with latitude? *Evolution* 60: 2004-2011.
- Reim, C., Teuschl, Y. & Blanckenhorn, W.U. 2006. Size-dependent effects of temperature and food stress on energy stores and survival in yellow dung flies (Diptera: Scathophagidae). *Evolutionary Ecology Research* 8: 1215-1234.
- Blanckenhorn, W.U. & Demont, M. 2004. Bergmann and converse Bergmann latitudinal clines in arthropods: two ends of a continuum? *Integrative and Comparative Biology* 44: 413-424.
- Kraushaar, U., Goudet, J. & Blanckenhorn, W.U. 2002. Geographic and altitudinal population genetic structure of two dung fly species with contrasting mobility and temperature preference. *Heredity* 89: 99-106.
- Blanckenhorn, W.U. & Hellriegel, B. 2002. Against Bergmann's rule: fly sperm size increases with temperature. *Ecology Letters* 5: 7-10.