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Two national initiatives for Butterfly Monitoring in France

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Butterfly monitoring is exemplified as one of the powerful sources of data to document large-scale trends in biodiversity. Monitoring schemes are now running in many European countries, but not yet in France. Most existing Butterfly Monitoring Schemes (BMS) are derived from the Pollard and Yates' method (1993), i.e. weekly transects from April to September. The required fieldwork effort is easily achieved for countries with important numbers of volunteers (e.g., U.K., Netherlands), but it seems too intensive for France where public involvement in naturalist schemes is low.

To compensate for this lack of monitoring data on butterflies in France, three complementary initiatives are presented: (1) a reduced effort BMS at national scale, (2) a citizen science project on garden butterflies, and (3) a standard BMS run at 10 national nature reserves, with the aim of quantifying the impact of openland management (e.g. grazing, cutting) on butterfly populations (communication of D. Langlois).

Resampling analyses of the UK BMS data (D. Roy and P. Rothery, unpublished results) helped us to find a reduced effort BMS that would optimally distribute fieldwork effort among the number of visits per sites and the number of sites monitored. The proposed protocol is: 5 visits from April to September to 10 250-m transects, with homogenous habitat per transect. Two procedures will be possible to choose the site where to set up transects: (1) randomly chosen 2-by-2-km square within 10 km from a locality provided by declared volunteers, and (2) free choice. Whatever the protocol, weather conditions have to be favourable for butterfly activity (*cf.* UK BMS) and are recorded. A preliminary version of this protocol was tested in Ile-de-France (Paris' region) in 2005 at 27 sites. Some results on diversity and abundance indexes will be presented.

The French Garden Butterfly Monitoring will be based on citizen participation, in collaboration with a major national firm of gardening (Gamm vert®). Basics of the protocol are: to record the maximum number of individuals observed simultaneously, at any one time per 15-day period, from April to September, for a closed list of common garden species (i.e., highly mobile generalists). Basic garden characteristics (size, composition) are also provided.

We hope to receive constructive feedback from the discussion to optimize these protocols.