Habitat and species diversity indicators in relation fo farm managment parameters

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MISSION D'ACQUISITION AÉRIENNE LIDAR POUR DES APPLICATIONS THÉMATIQUES EN ÉCOLOGIE DU PAYSAGE : LE CAS DES COTEAUX DE GASCOGNE

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Les recherches en écologie du paysage du laboratoire de recherche DYNAFOR à Toulouse visent à comprendre les relations entre la composition du paysage, son évolution et la biodiversité des agroécosystèmes. Des nouveaux travaux menés dans le cadre des enjeux liés à la protection des cultures ou à la conservation de la biodiversité ont mis en avant l'importance des éléments seminaturels de faible superficie (haies, bandes enherbées, arbres isolés, fragments boisés, ripisylves, lisières) dans la dynamique des espèces étudiées. Dans le but d'être capable de produire des données spatiales plus adaptées aux besoins des recherches engagées, l'unité a décidé de réaliser une mission d'acquisition d'images à très haute résolution spatiale et spectrale par moyens aéroportés. Des mesures altimétriques très fines ont été effectuées à l'aide d'un système de LiDAR topographique. Deux principaux produits ont été dérivés du semis de points bruts : un Modèle Numérique de Terrain (MNT) à 1 m de résolution spatiale représentant le relief et fournissant l'altitude du terrain, et un Modèle Numérique d'Elévation (MNE) représentant l'enveloppe externe du terrain (incluant le sursol) et permettant ainsi de calculer la hauteur des objets (forêts, haies, etc.) et de construire un modèle de hauteur de la canopée. Quelques premiers résultats de profils sur des fragments boisés suivis par Dynafor sont présentés ici et ouvrent de nouvelles perspectives pour étudier les potentialités d'une cartographie précise de la composition et de la structure (y compris verticale) de certaines forêts étudiées. Ces données seront mises en relation avec la diversité de différentes communautés d'espèces animales ou végétales.

HABITAT AND SPECIES DIVERSITY INDICATORS IN RELATION FO FARM MANAGMENT PARAMETERS

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Farmland biodiversity is an important component of Europe's biodiversity. More than half the continent is occupied by agricultural lands. They host specific habitats and species, which (in addition to the conservation values they provide) perform vital ecological functions. Indicator are needed to enable the monitoring of biodiversity at the farm level for the purpose of assessing the impacts of farming practices and of agricultural policies. Our European project BioBio aims at identifying farmland biodiversity indicators which are scientifically sound, operational and relevant for stakeholders. We screened the literature for farmland biodiversity indicators and, in an iterative process with stakeholders, we identified 28 candidate indicators for genetic, species and habitat diversity. Those selected biodiversity indicators, as well as 14 management parameters that are known to relate to biodiversity, were assessed in 12 case study regions across Europe. Each case study region represents a typical production system (i.e. specialist field crops, horticulture and permanent crops, specialist grazing with cattle and other livestock types, mixed crop and livestock farming). In each region, 8-20 farms were randomly selected, mostly within the two groups of organic and non organic farms, to obtain a gradient of farming intensity. Indicators were measured applying standardized sampling procedures and farmer interviews. Sampling

effort was recorded in order to assess the cost of indicator measurement. For each case study region, biodiversity indicators are presently being evaluated in conjunction with management indicators. Surrogate indicators will be proposed when possible and indicators will be prioritized taking into account their validity, practicality, cost and priority for stakeholders. Based on preliminary results, the poster focuses on the results of biodiversity indicators (habitats, spiders, bees, earthworms, plants) got on the 16 both organic and conventional farms we surveyed in the Gascony Hills, southwards between Toulouse and Auch.

PREDICTING DISPERSAL ABILITY FROM MORPHOLOGY AND LIFE-HISTORY TRAITS IN EUROPEAN AMPHIBIANS

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Dispersal has recently focused our attention because of its key role in the response to global environmental changes (GEC). Because of this particular role of dispersal in the response of populations and species to spatially-explicit GEC, our conservation efforts must rely (and do rely) on spatially-explicit tools. However, measuring dispersal is extremely challenging, particularly for rare species. Consequently, dispersal information is often lacking for endangered species for which particular conservation efforts should be implemented. We propose here to explore the possibility to predict dispersal ability of a species for which it is unknown from the observed correlations among traits at the species-level (morphological and life-history traits) in 85 European amphibian species. Using generalized linear models and AIC selection, correlations between dispersal abilities of 39 amphibian species (species with mobility data available from capture marking recapture or radio-tracking studies) with life-history traits were found and we therefore choose to build a predictive model for mobility capacity that included the life-history traits and morphological attributes that are informed for a large number of species rather than to focus on traits with the strongest correlation with mobility. We then propose a predictive model, based on only 3 traits (snout-to-vent length, total length and number of eggs by clutch) to predict a range of dispersal abilities especially for species without available data on mobility.

CONDITION DEPENDENCE OF STATIC VS DYNAMIC SEXUAL TRAIT: AN EXPERIMENTAL STUDY WITH PALMATE NEWTS (*LISSOTRITON HELVETICUS*).

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In mate choice most females focus on morphological and behavioral sexual traits. To explain why female used both traits, theories predict that their preferences have evolved because these traits could give information about male condition at different time scales. Morphological sexual traits, more static and less labile would give information about past condition and behavioral sexual traits, more dynamic and more labile would give information about current condition. However we can also expect that behavioral sexual traits were more prone to cheat because of their high lability allowing sustaining deceptively high-quality expression for short periods. Here we tested this theory and several prediction links to this possible difference of lability using the palmate newts (*Lissotriton helveticus*).