**Potential for integrating biodiversity measurements, assessments and policy responses in a global ecosystem capital accounting framework**.

‘The use of biodiversity data reported by countries to build indices in the pilot ecosystem capital accounts for Europe will be discussed by Rania Spyropoulou and Jean-Louis Weber followed by the perspective for addressing gaps in data poor regions and in building global biodiversity indices using ecological niche modelling methodologies by Townsend Peterson”.

Abstract:  
Degrading the ability of ecosystem capital to provide services to the economy as well as to the society is consumption, a consumption of capital. This is an unpaid consumption, which by accounting measures automatically generates a debt, in all societies and at all times – in this case an ecological debt. The recording of natural capital degradation and correlated depreciation and the accounting of depreciation counterpart as an ecological debt is a matter of fairness and equity.

The presentation discusses possible ways in which biodiversity values can be incorporated into ecosystem capital accounting frameworks to help reach the global Aichi Target 2 (CBD,2010). Biodiversity and natural resources planning over time requires assessing where progress is being made, or where negatives outweigh positives. Although several indicators of biodiversity loss have been proposed (cf. e.g. Butchart et al. 2004, 2005; Loh et al. 2005, EEA 2009. 2010), they have not been tested as applicable to ecosystem capital accounting, meaning that they are scalable and accessible to countries outside of Western Europe and North America.

We will discuss the making of the Landscape Ecological Potential Index and a Species Intactness Index and their use in approximating the state of systemic services (regulating and socio-cultural) in the pilot project on Ecosystem Capital Accounting in Europe (Weber 2008, Weber & Martin 2010). This project is in line with the evolution of environmental-economic accounts as represented by the UN manual known as the SEEA (System of Environmental-Economic Accounts) 2003.

In the European pilot project, these two indices are built using data reported by countries on protected areas and protected species. Undoubtedly other species should also be integrated in the indices, but there is a noted lack of data outside certain areas of the world. To adress this gap, which is essential for enabling global ecosystem capital accounts, we are suggesting to use Ecological Niche Modelling (ENM) approaches which offer a more flexible and broadly applicable alternative to global status lists or complex indices (Jimenez-Valverde et al. 2010). ENM approaches are integrated with multi-temporal land cover and climate estimates, and range loss or gain is tracked via integration through time. The result is a simple and highly accessible approach that can track single species or customized sets of species, globally or within particular regions, and thus is much more adaptable to feed into an accounting framework.

We will further explore the design of a global biodiversity intactness metric, starting with a specific taxonomic group of interest such as birds. Occurrence data for the taxon of interest and environmental data on global scales for relevant parameters would be accumulated. On the basis of these we will develop summaries of predicted (based on ecological niche model estimates) and known (based on recent occurrence records) distributions -mismatches between these two data sets would signal biodiversity losses, which could be summarized across species and over geography to produce an intactness index. This quantity would provide an excellent metric not just of biodiversity potential, but also of the degree to which that potential has been damaged and rarefied.