

3rd International Conference on Biodiversity & Sustainable Energy Development

June 24-26, 2014 Valencia Conference Centre, Valencia, Spain

Oil constraints in food production: The threat to biodiversity of agricultural deintensification

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The single greatest cause of biodiversity loss is conversion to agricultural land for food production. This process has only increased at a rate of about one tenth that of the growth in the human population since the green revolution due to increase in agricultural intensity. Most of this intensification has been achieved through the use of petrochemical-derived agricultural inputs. Since global oil production leveled off in 2005, prices of fuel, agricultural inputs and food have at least doubled, making them increasingly out of the reach of the world's marginal farmers. This carries with it the threat of reversing the intensification gains of the green revolution, leading to accelerated biodiversity loss through agricultural expansion to compensate for lost productivity. An additional impact is the threat to food security for food importing nations who also have sought to expand their land for food production through acquisition in what has become known as the 'global land grab'. This study aims to develop a framework for prioritising interventions to protect biodiversity under conditions of global oil constraint through mapping the biodiversity threat due to increase in land clearing rates and producing a systems model linking the drivers of these changes to biodiversity impacts. Initial results show the role of land acquisition and deintensification in deforestation and indicate that prioritising by economic efficiency has the ability to discriminate between alternative interventions.

Biography

Rowan Eisner (BSc computer science, Stirling, UK; masters, social planning, Queensland) is a PhD student, supervised by Clive McAlpine. Her research projects have included application of multi-objective decision support systems to water infrastructure planning, development of a water quality metric for the Great Barrier Reef, development of an online spatial multi-criteria analysis tool for regional land-use planning, assessment of the ecological, heritage and visitation values of Queensland's protected estate (Queensland government), and a process for enhancing and assessing stakeholder participation in coastal research (Coastal Cooperative Research Centre). She has worked in Costa Rica, Laos and Uganda.

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