BioScore tool assesses biodiversity impacts of biofuel plantations

Researchers have developed a new cost-effective tool to assess the impact of policy on biodiversity at a European scale. The study used it to assess the policy of expanding woody biofuel plantations in the EU, which indicated that 28 per cent of wild species would be negatively affected and 10 per cent would experience beneficial effects.

The EU aims to halt biodiversity loss by the end of this year (2010) and is keen to assess the impact of its policy measures. Sensitivity scores typically link environmental pressures – which may be consequences of policy – directly to the species. Many studies have assessed the impact of a specific pressure on a species but few have assessed multiple pressures on a wider group of species. These multispecies approaches have the advantage of serving as a “conservation umbrella” helping to produce an integrated picture of a location or region.

The BioScore tool, developed under a European Research Project, integrated data on the impact of a large set of pressures caused by EU policy on various species groups, such as mammals and reptiles. The tool narrowed down the species to just those that are in Europe, have sufficient ecological data for assessment and occur in 10-20 per cent of the surface area of at least one biogeographical region, for example, the Alpine region or the Mediterranean region.

The research considered the policy scenario of large-scale second generation bioenergy crop cultivation throughout Europe. The most important environmental pressure would be land use change, which is expected to arise mainly as a result of converting open agricultural land and abandoned land to woodland with trees such as willow and poplar. Species were classified according to their sensitivity scores to the different land use classes, for example, species which are indifferent to type of land use or species which are strongly dependent on open landscape.

The results indicated that the net effect of large-scale EU wide woody bioenergy crop production would be negative. Examples of negative effects are declining distribution areas and population size, reduced species richness, loss of habitat and invasion of alien species. There would be a negative impact on 28 per cent of species and a positive impact on 10 per cent of species. These net impacts are almost uniformly distributed over regions but there were considerable differences between species. 40 per cent of reptile species would be negatively affected in all regions. Butterflies and birds were predicted to experience significant biodiversity losses. Overall amphibians and vascular plants would be less affected.

The BioScore tool aims to evaluate policy measures and forecast impacts on biodiversity at a rough scale. However, the researchers urge caution in interpreting the results for the scenario of woody bioenergy crops and suggest it would be highly premature to abandon this policy. Due to the cost-effective nature of the approach, only wide-scale information was considered and broad impact patterns. Finer scale detail such as interaction among species and regional differences in biofuel production were not taken into account. Linking BioScore to more fine-scaled predictions could be the next step.

2. BioScore was supported by the European Commission under the Sixth Framework Programme under the theme “Sustainable management of Europe's natural resources”. See: www.bioscore.eu


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