2010 and beyond for Lepidoptera

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The Convention on Biological Diversity (CBD) was an outcome of the ‘Earth Summit’ held in Rio de Janeiro in 1992. In 2002 the Convention committed the European Union (EU) and (currently) 192 other countries “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level” (Anonymous 2010). The EU set an even more ambitious target: “...to protect and restore habitats and natural systems and halt the loss of biodiversity by 2010...” (Anonymous 2001). In March 2010, Butterfly Conservation held its 6th International Symposium on the topic, ‘The 2010 Target and Beyond for Lepidoptera’, to assess progress towards the target, report advances in conservation science, and look to the future. This volume presents a collection of papers from that meeting.

Evidence presented at the Symposium from across the world was bleak, with no evidence that the EU and CBD target had been met (Asher et al. 2011; Brereton et al. 2011; Caritt et al. 2011; Fox et al. 2011; Groenendijk and Ellis 2011; Lewis and Senior 2011; Nakamura 2011; Sáfián et al. 2011; Stefanescu et al. 2011). At the global scale the general trend for Lepidoptera is one of decline, and the overall trend for biodiversity is of a continuous and accelerating decline. In May 2010 the CBD published its

overall assessment of progress towards the 2010 target and reported failure (Anonymous 2010). The 2002 CBD and EU targets were ambitious, and, despite not being met, they did manage to place conservation and biodiversity firmly on global and national political and development agendas and provided mechanisms for raising public awareness.

Failure can be a powerful stimulus to renewed action, especially if the reasons for failure are identified. New CBD 2020 targets are now being formulated (Djoghla 2010) alongside a vision for 2050. Initial progress suggests there will be a much closer integration of biodiversity with climate change adaptation/mitigation, ecosystem services, human health and the economic benefits of biodiversity (Djoghla 2010). Papers in this collection examine some of the likely impacts of climate change on Lepidoptera (e.g. de Vries et al. 2011; Wilson and Maclean 2011). Whilst climate change is an issue and will become an even bigger issue in the future, biodiversity loss is already a problem and likely to become worse unless measures are taken now. For some Lepidoptera there is a real and imminent threat of local, regional and global extinction. For such species, urgent action is needed now and climate change is a distant threat. The papers here outline the issues, and some demonstrate how approaches based on sound conservation science can improve the status of species, both preventing imminent extinction and making populations more resilient to future climate change (e.g. Ellis et al. 2011; Porter and Ellis 2011).

Meeting the new CBD targets, will require well researched solutions and this volume contains contributions to the challenges ahead under the broad headings of the Science of Conservation Management and Landscape-scale Conservation. Jeremy Thomas, for example, distills a lifetime of experience working with endangered species to identify key factors of importance in butterfly conservation

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(Thomas et al. 2011). Many contributions are species-specific in their approach e.g. Botham et al. (2011) whilst other papers examine how we can manipulate the agricultural environment to soften the impacts of intensive agriculture on a broad range of ‘wider countryside’ species (e.g. Haaland and Bersier 2011).

In 2002 when CBD participants committed themselves to the 2010 target, it was increasingly recognised that, whilst the optimal management of individual habitat patches will always underpin conservation action, long-term persistence of species in a given area was a landscape-scale issue. The spatial organisation of resources within a landscape is now recognised as a prime determinant of species’ distributions and persistence (e.g. Williams 2011) and targeted action on the ground is demonstrating that such approaches can yield excellent results (e.g. Ellis et al. 2011). Whilst much landscape-scale conservation is aimed at repairing anthropogenic impacts that created extremely fragmented habitats, it is encouraging that naturally fragmented systems are being examined for cues to understand species responses to such systems (Swengel and Swengel 2011). Understanding species’ responses to fragmented landscapes is exceptionally difficult, as experimentation at such a scale is often impossible, and even intensive agricultural landscapes rarely correspond to the binary patch/matrix simplicity of early modelling (Dennis et al. 2003; Dover and Settele 2009). In the absence of detailed data on species’ behavioural responses in the ‘matrix’ between habitat patches and recognising that this is a complex issue to address, Shreeve and Dennis (2011) suggest that using agri-environment schemes to increase landscape heterogeneity and disturbance may be a pragmatic approach to improve dispersal and access to resources.

Agri-environment schemes have not always been well thought-out (Warren et al. 2005), and can have negative consequences (e.g. Konvička et al. 2008) although they are probably our best tool to work with in intensively managed landscapes (Settele et al. 2009). It is promising therefore that Brereton et al. (2011) reports clear evidence that targeted Higher Level agri-environment schemes are slowing, and in some cases reversing, the decline of threatened butterflies in the UK. Schemes must be designed and implemented on the basis of science if they are to be effective in conserving biodiversity. In intensive agricultural areas the pressure is to maintain production at the expense of agri-environment schemes and in the EU they remain vulnerable to changes in the Common Agricultural Policy (CAP). In landscapes that are less intensively managed (extensive or cultural landscapes) there is a different problem: supporting existing agricultural systems that currently deliver some of the highest quality areas in terms of biodiversity (Dover et al. 2011a). This is not an issue of developing a new margin mixture or management

prescription; in Europe it is about radically reforming the (CAP) and developing support measures that can underpin existing High Nature Value Farmland—it is a matter of socioeconomics and social justice (see Dover et al. 2011b).

Reforming the CAP is just one of the ten challenges that Warren and Bourn (2011) have identified as needing to be addressed if the new CBD 2020 targets and 2050 vision are to be realised. The challenges are undeniably tough; but the global community must rise to them, and we as conservationists need to fulfil the faith that is held in us and our ability to help effect change (see Attenborough 2011). We have much of the science to know what will be effective; a crucial issue now is how we apply that science to be effective against one of the greatest threats facing the planet: the rapid loss of biodiversity.

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