

IPI Policy and Practice Notes

A series of nine IPI Policy & Practice Notes is being prepared and will be published online during 2014/2015 under the auspices of the [Living with Environmental Change \(LWEC\) partnership](#).

- 1. [What is causing the decline in pollinating insects?](#)** Insect pollinator numbers are affected by many different environmental and socio-economic factors but attributing long term change in pollinator numbers to one or more of these is difficult. Scientists are beginning to understand how these different factors interact with each other, and which are more important for particular insect groups, but there is no single, simple explanation for pollinator decline. Published 04/2014. Authors: Adam J. Vanbergen, & Lynne V. Dicks.
- 2. [The benefits of managing pollinators for crop production.](#)** Insect pollinators are essential for food production, improving the yield and quality of three quarters of UK crops. Multiple pressures threaten pollinator populations and the pollination services they provide, including changing land use, disease, climate change and agrochemicals. This has resulted in declining abundance and species richness in both managed and wild pollinator populations and threatens the stability of crop pollination services. It is therefore essential to conserve and manage insect pollinators as demands on food production increase. Published 11/2014. Authors: Simon Potts, Mike Garratt, Deepa Senapathi and Tom Breeze
- 3. [Protecting insect pollinators from pesticide risk.](#)** Pesticides can cause sub-lethal effects on the physiology and behaviour of beneficial insects which can, in turn, cause an impact on their survival and reproduction. The toxic effects of common pesticides are rarely highly specific and can pose a risk to beneficial insects such as pollinating bees. Authors: Chris Connolly, Jeri Wright and Nigel Raine
- 4. [How are pests and diseases affecting bee pollinators?](#)** Wild and managed pollinating bees are susceptible to a range of diseases that are being shared between species. Bees are important insect pollinators; there are over 250 species in the United Kingdom, including solitary bees, bumblebees and the managed honeybee. Together they provide a pollinating service to crops and wild flowers. Bee numbers are affected by many environmental (e.g. land management, climate) and social-economic (e.g. global trade, beekeeping) factors. Pests and diseases can act alone or in combination with other factors to cause bee declines. Scientists are beginning to understand how pests and diseases contribute to bee losses and how they are moving between bee species. Authors: Robert Paxton, Giles Budge and David Evans
- 5. [Crop pollination by wild and managed insects: Why diversity matters](#)** Pollination is the movement of pollen between the male (anthers) and female (stigma) parts of flowers and is essential for successful crop production and wild plant reproduction. The majority of plant species rely on flower-visiting insects for this pollination. Insect pollinators include wild bees, flies, butterflies and beetles, but managed honeybees also play an important role. Abundant and diverse pollinator communities are essential for maintaining healthy ecosystems, stable crop production, and to ensure effective pollination services in the face of continued land use and climate change. Authors: Michael Garratt, Simon Potts and Adam Vanbergen
- 6. [Managing urban areas for insect pollinators](#)** - As towns and cities continue to grow how can land managers help insect pollinators in urban areas? Insect pollinators are essential for food production and wild flower reproduction yet these important insects are declining in the UK and in other regions of the world. Multiple pressures including land use change, disease, climate change and agrochemicals affect pollinator populations and the services they provide. This has resulted in declining species richness in wild pollinator populations and local declines in abundance. Urban areas make up 9% of the land area in the UK and are growing. With the majority of the UK population living in urban areas there is huge pressure in these landscapes for plants and animals, including pollinators, to coexist. Therefore it is important that we manage our towns and cities favourably for insect pollinators. Authors: Katherine Baldock, Mark Goddard, Bill Kunin, Simon Potts, Graham Stone and Jane Memmott

7. [Land use change: Opportunities for pollinator conservation and risks for pollinator losses](#). Land use in Britain has changed significantly over the last century. These changes have wide ranging implications for biodiversity, including pollinator species and communities. Availability of historic data, and the digitisation of the earliest land utilisation survey of Britain, have provided an opportunity to explore how changes in land use have affected pollinating insects. Characterising historical links between land use and pollinators can allow us to understand better how present and future land use decisions impact on pollinators. This in turn will help and provide information for policy makers and land owners to enhance land management for these important species. Authors: Deepa Senapathi, Mark Gillespie, Bill Kunin and Simon Potts

8. [Managing the landscape to optimise pollinator nutrition How can land managers, policymakers and the public help pollinators to meet their nutritional needs in the UK landscape?](#) Insect pollinators are critically important to ecosystems and human wellbeing. By transporting pollen between flowers of the same species they help to assure healthy wild plant populations and contribute to sustaining yields of many fruit, vegetable, nut and seed crops. In return, pollinators like bees obtain nectar and pollen foods from a wide range of wild, ornamental and crop plant species. Unfortunately there is evidence that pollinators are declining, probably as a result of multiple environmental threats. Land use change, management intensification, invasive species, and even climate change, have reduced the abundance and diversity of flowering plants throughout the growing season. This has reduced the availability of pollen and nectar foods for pollinators and this lack of nutrition makes bees more susceptible to other threats like diseases, parasites and pesticides. Inadequate nutrition is therefore likely to be

a major cause of pollinator declines. Authors: Geraldine Wright, Eileen Power and Jon Carruthers

9. [Managing farmed landscapes for pollinating insects. Increasing floral resources and improving habitat conditions can benefit pollinating insect species, wildflowers and crop production](#). Pollinating insects in the UK include the managed honeybee and hundreds of species of wild bumblebee, solitary bee, fly, butterfly and moth. They support food production and biodiversity by pollinating crops and wildflowers. Insect pollinators face multiple threats in farmed landscapes, including the loss of wild habitats, agrochemicals, climate change and disease. Land management to increase floral resources and improve semi-natural habitats, such as using agri-environment schemes, can benefit both pollinators and crop production. Authors: Claire Carvell, Matt Heard, Adam Vanbergen, Andrew Bourke and Lynn Dicks