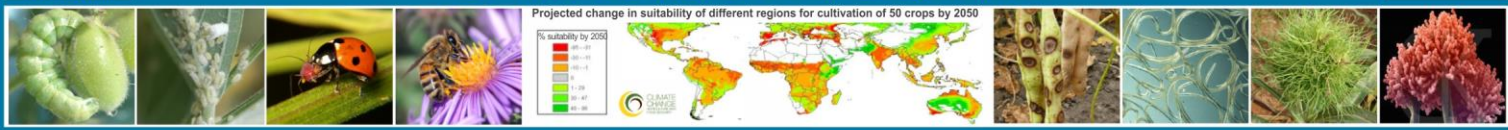
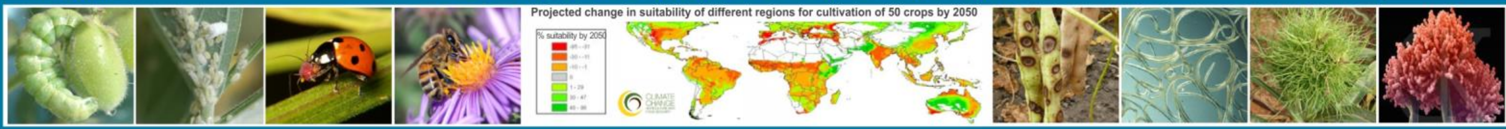


Prof. David G. Heckel
Geschäftsführender Direktor
Max-Planck-Institut für chemische Ökologie, Abteilung Entomologie,
Beutenberg Campus, Hans-Knöll-Straße 8, D-07745 Jena, Germany.

Email: heckel@ice.mpg.de

Biography – Prof. David G. Heckel

David G. Heckel is currently Director at the Max Planck Institute for Chemical Ecology in Jena, Germany. He was born in Pittsburgh and studied biology and mathematics at the University of Rochester. He was awarded the PhD in Biological Sciences from Stanford University in 1980. He joined the Zoology faculty at Clemson University in 1980 as Assistant Professor, and was eventually promoted to Professor. He was a Fulbright Senior Scholar at CSIRO in Canberra, Australia during 1996-1997. In 1999 he moved to the Department of Genetics at the University of Melbourne, Australia. He moved to Germany in 2004. His research interests include adaptations of generalist vs. specialist herbivorous insects to chemical defenses of their hostplants, resistance to chemical and biological insecticides, the genetic basis of host shifts, mechanisms of sympatric speciation, ecological aspects of insect immune systems, wing color patterns of butterflies, biosynthesis of female sex pheromones in moths, and the genetics of male behavioral responses to pheromones in Lepidoptera.



Presentation Title:

Understanding and controlling the evolutionary consequences of crop protection strategies

Abstract

Ideally every Integrated Pest Management plan should contain a component dealing with the evolutionary consequences of the control strategy; this is most commonly done for insecticide resistance, but unfortunately is often omitted. The repeated evolution of insecticide resistance by agricultural pests such as the cotton bollworm and diamondback moth, as well as by insect vectors of human disease, shows the consequences of failing to appreciate that strong selection acting on genetic variation can result in genetic changes at the pest population level which make chemical control more difficult or impossible. The same reasoning applies to selection by biologically-based insecticides such as baculoviruses and *Bacillus thuringiensis*, to RNA interference, and to population suppression or replacement strategies such as engineered sterility and genetic drive. The general principle of minimizing pest damage while also minimizing the evolutionary selective response should be kept in mind, not only in predicting the sustainability of existing alternatives but in designing novel methods of controlling pest populations or their ability to transmit disease. Such methods can never be truly "evolution-proof" but this can be a useful goal.