

Introduction

The chapters in this symposium volume arose from the question, "How will the pollination needs of North American agricultural crops continue to be met in the 21st century?" Some of the leading mellitologists and applied pollination biologists in North America review the history of management for social and solitary bees used for crop pollination. In these chapters, they also present a range of perspectives on the desirability and feasibility of moving bees, sometimes in large numbers, within and between nations and continents to pollinate introduced crops. To put these chapters in context, we begin by summarizing relevant aspects of bee biology and the attributes of agro-ecosystems that constrain bee pollination. We also introduce and discuss ongoing controversies about the movement of bees for crop pollination.

Can the pollination needs of North American agriculture be met without jeopardizing native pollinator populations? Conferences in the past decade (Kevan 1991, Banaszak 1995, Williams 1995, Matheson et al. 1996, Cane and Tepedino 2001), essays (Osborne et al. 1991, Williams et al. 1991, Allen-Wardell et al. 1998), and media attention that followed the publication of *The Forgotten Pollinators* (Buchmann and Nabhan 1996) have focused on the conservation of native pollinators. The symposium that we convened in November 1998 differed in that we emphasized crop pollinators. Most economically important crops and horticultural species were deliberately introduced to North America from the Old World or the Neotropics (Simpson and Conner-Ogorzaly 1986). Many of our weed species were introduced inadvertently; others were introduced purposefully but escaped to become major problems. North America is a veritable tossed salad of plants—native and introduced. In contrast, fewer than 1% of the 3,800 North American bee species are not indigenous; and with the exception of honey bees, exotic bee species are rarely prominent in nature (Cane 2003). Should we introduce bees from abroad and move bees around the continent to meet the pollination needs of these nonnative crops, in the tradition of classic biological control, or can native and naturalized bees satisfy this need?

In recent years, environmental concerns about the importation of certain nonindigenous species, which become ecological scourges following their accidental or purposeful release, have led state and federal agencies to tighten