
NECTARIES AND NECTAR

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A C.I.P. Catalogue record for this book is available from the Library of Congress.

ISBN 978-1-4020-5936-0 (HB)
ISBN 978-1-4020-5937-7 (e-book)

Published by Springer,
P.O. Box 17, 3300 AA Dordrecht, The Netherlands.

www.springer.com

Printed on acid-free paper

Cover illustrations from left to right:

Left: Cross section through the base of an ornamental tobacco (*Nicotiana langsdorfii* x *Nicotiana sanderae* Hort var Sutton's Scarlett Line LxS8) flower showing the large, bright-orange floral nectary located at the base of the ovary (picture by Robert Thornburg).

Middle: Flower in an inflorescence of *Fatsia japonica* with large nectar droplets on the surface of the yellow nectary (picture by Massimo Nepi).

Right: *Lycus fernandezi* (Lycidae) drinking nectar of *Aloysia wrightii* (Verbenaceae), New Mexico (picture by Bob Barber).

Background: Scanning electron micrograph of the nectary surface of *Cyclanthera pedata*. Nectar droplets are secreted by multicellular capitate trichomes (picture by Fabrizio Ciampolini).

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Preface

“Nectar is the drink of the gods”... since the time of Homer (the *Iliad*, 800 BC), nectar has been known as a unique biological fluid with mystical properties; yet it is only now that the true chemistry of nectar is being defined. Nectar is a complex biochemical milieu offering much more than sugars to visiting pollinators. Its consumption is central to one of two types of plant–animal interaction that have contributed so much to global biodiversity: herbivory and pollination. All types of plants, regardless of their position on the evolutionary scale, are eaten by herbivorous animals. Nectar, however, is the product of a mutualism in which animals consume nectar and are involuntarily responsible for the transport of pollen or, in some cases, for plant defence. The presence of nectaries, in either reproductive or vegetative parts of a plant, symbolizes that plant’s benevolent relationship with animals.

Nectaries are interesting not only for our knowledge of plant biology, but also because they are involved in the pollination of many edible and rare plants, thus having huge economic and ecological importance. About a third of our food may be derived from bee-pollinated crops. In addition, nectar is the raw material of honey. Other than bees, nectar is food for an enormous variety of insects, a tenth of all bird species, and some mammals; when nectar is not an animal’s main food, it often provides an energy drink. Nectar biology has many overlapping facets, evident in the chapters that follow: botany, chemistry, zoology, and ecology.

The stimulus for this volume was the meeting of a group of nectar biologists in Italy, at the first international conference dedicated exclusively to nectar and nectaries. The meeting was held in Montalcino, Tuscany, in May

2002, and the proceedings were published as a special volume of *Plant Systematics and Evolution* (238, issues 1–4, 2003). The topics ranged from the molecular biology of tobacco nectar to the potential effects of global climate change on floral nectar production, and we decided it was the right time for a new book on nectar. The cooperation of the three co-editors was also assisted by an award from the Joint Italy/South Africa Science and Technology Agreement (2002–2003).

The authors of the various chapters would like to thank the following people and institutions for their help:

Chapter 1. Braam van Wyk (University of Pretoria, South Africa) reviewed the manuscript.

Chapter 2. The University of Connecticut Libraries, G. Caram (IMBIV), M.A. Plaza, and E. Werner (IBODA) provided bibliographical support. L.E. Mana, F. Di Tada, M.L. Las Peñas, and F. Chiarini helped with the literature cited, and L. Ribulgo and M.L. Las Peñas with the illustrations. CONICET and Universidad Nacional de Córdoba (Argentina) provided financial assistance. Tito Prevotel helped in every possible way, not only in this project, but also in most of my scientific and personal adventures; my debt to him is certainly beyond payment.

Chapters 3 and 4. Art Davis (University of Saskatchewan, Canada) for his invaluable suggestions and discussions that greatly improved the quality of the manuscript; Malgorzata Stpiczyńska for her helpful comments and for providing a picture for Chapter 3; Fabrizio Ciampolini for SEM and TEM pictures, Laura Cresti and Massimo Guarnieri for technical support. We are indebted to José Vesprini for sharing his data on *Helleborus* nectaries. The research was funded by PAR (Piano di Ateneo per la Ricerca, Università di Siena) and PRIN (Progetti di Ricerca di Interesse Nazionale, Ministero dell'Università e della Ricerca Scientifica).

Chapter 5. Steve Johnson (University of KwaZulu-Natal, South Africa) and Rob Raguso (University of Michigan, USA) for comments on the manuscript; Petra Wester (Johannes Gutenberg-Universität, Mainz) for providing a copy of Schwerdtfeger's 1996 thesis; Angela Köhler and Carolina Leseigneur for help with literature (also for Chapter 7); the National Research Foundation (South Africa) and National Science Foundation (USA) for support.

Chapter 6. Patrick von Aderkas (University of Victoria, Canada) revised the manuscript; the National Science Foundation (USA) supported the research.

Chapter 7. Trish Fleming and Todd McWhorter (Murdoch University, Australia) for comments on the manuscript; Luke Verburgt for figures; Cromwell Purchase, Tim Jackson, Steve Johnson, Dennis Hansen, and Bob Barber for permission to use their photographs; National Research Foundation (South Africa) for support.

Chapter 8. Dan Eisikowitch (Tel Aviv University, Israel) and Dr Ellen Lamborn for invaluable comments on earlier drafts of the manuscript.

On the production side, we thank Marthina Mössmer for excellent copy-editing and indexing, and Zuzana Bernhart and Ineke Ravesloot for guiding the process at Springer.

Sue Nicolson
Massimo Nepi
Ettore Pacini

November 2006