

Preface

Islands have always been at the forefront of evolutionary thinking. They played a pivotal role in the initial development of the theory of evolution via natural selection and have continued to teach us new lessons about evolution ever since. The aim of this book is to accelerate interest in what I believe to be a neglected aspect of island biology, the island syndrome in plants. It searches for repeated patterns in plant form and function on islands using the hypothetico-deductive research method in an effort to guide the field away from just-so natural history storytelling and help transform it into a more rigorous, scientific discipline.

I first became interested in the island syndrome in plants as an undergraduate student at the University of California, Berkeley, 25 years ago. I was enrolled on a course on biogeography and the fourth edition of Cox & Moore's *Biogeography: An Ecological and Evolutionary Approach* was assigned as required reading. On page 122, I discovered a series of line drawings illustrating six tree species that were endemic to St Helena Island, in the South Atlantic Ocean. All were shown to produce composite flowers, a hallmark of many common weeds. However, these 'weeds' had strikingly stout trunks and a distinctive, sturdy look about them.

Remarkably, Cox & Moore explained that all six species evolved from weeds on the mainland. This sent my mind wondering. What was it about this tiny speck of land in the middle of the ocean that turned them into giants? I suddenly wanted to visit St Helena to have a look for myself. Cox & Moore then went on to explain that this 'weeds-to-trees' evolutionary pathway was actually quite common. Similar-looking trees had evolved on many isolated islands across the globe. It was insularity in general, rather than some idiosyncratic feature of St Helena, that turned these weeds into trees.

I suppose my mind has wondered about the principles underpinning Cox & Moore's illustration ever since. In the years that followed, I somehow managed to make a career out of trying to solve the evolutionary riddles posed by island plants. My greatest hope for this book is to inspire future students to wonder about the island syndrome in plants, as Cox & Moore inspired me.

This book is split into seven chapters. Five of these chapters focus on a specific aspect of the life history of plants, bracketed by an introduction and conclusion. Some of these chapters differ widely in length, for good reason. For example, Chapter 2 ('Differences in Defence') is particularly long because most previous research on the subject has focused on single archipelagos, and is, therefore, disjointed and in need of an extensive overview. On the other hand, the topic of Chapter 4 ('Gender & Outcrossing') has been studied rigorously for decades and reviewed on multiple occasions. So, instead of another review of the topic, it provides a brief summary that focuses on several underappreciated aspects of the reproductive biology of island plants using new data. Chapter 6 ('Loss of Fire-Adapted Traits') is also comparatively short, but for a different reason again. Very few studies have investigated the subject quantitatively, so there is less to cover.

Any book on the island syndrome presents a serious challenge to just one author. Although the topic focuses on a single aspect of the earth's geography, the topic is biologically very broad, encompassing a wide range of subjects, from defence and dispersal to reproduction and morphology. I have done my best to cover these varied aspects of biology both thoroughly and accurately, but in those instances where I have failed, I apologise to experts in each of these subjects, whose research I neglected to discover, appreciate, and discuss accurately.

I am indebted to many people for their help. Thanks most of all to my family for their support and encouragement. My colleagues have been invaluable, particularly here at Victoria University of Wellington. After moving to New Zealand, I was very lucky to find myself surrounded by a group of enthusiastic emeritus advisors, including George Gibbs, Phil Garnock-Jones, and Ben Bell, who

patiently answered all of my questions about the natural history of New Zealand. John Dawson was particularly helpful in this regard. He also encouraged me to expand my research horizons to include New Caledonia, the Chatham Islands, and islands further afield. Murray Williams has also been endlessly supportive, painstakingly reviewing all seven chapters of this book. Ian Hutton has been similarly helpful on Lord Howe Island. Cherie Ball, Matt Biddick, and Bart Cox provided unpublished data. Pictures were kindly provided by Brent Alloway, Phil Gamock-Jones, Ian Hutton, Edward Farmer, and Philip Thomas. Robert Cross helped with the illustrations, and Karson and Luke helped with referencing. Chris Fink helped with Box 1.1, and Matt Ryan helped with Box 1.2. Brent Alloway (Chapter 1), Bill Lee (Chapter 2), John Lambrinos (Chapter 3), Janice Lord (Chapter 4), Mark Lomolino (Chapter 5), and Phil Rundel (Chapter 6) provided valuable comments to individual chapters. However, all errors, mistakes, and omissions are entirely my own.

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