Preface

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The first teaching-focused article on the topic of this book appeared in the *Journal of Economic Education* five years after John Krutilla's (1967) influential 'Conservation reconsidered' article appeared in the *American Economic Review* and two years after the first Earth Day and the founding of the U.S. Environmental Protection Agency. Carter (1972) suggests that the production possibilities curve (with environmental quality on one axis and market goods on the other) as the foundational theory for teaching courses related to environmental and natural resource economics. The article provides a reading list for instructors, sans formal textbooks, including books that could supplement a micro principles text and other readings. Over a decade and a half later, Christiansen (1988) reviewed progress in the field with a review of the most influential environmental and natural resource economics textbooks.

Since that time, almost 50 economic education journal articles have been published addressing the field of environmental and natural resource economics (González-Ramírez et al., 2021). In one of the first articles in this literature since Carter (1972), Walbert and Bierma (1988) described a classroom game that illustrated two important points in environmental economics: (1) the optimal pollution level is not zero and (2) tradeable permits can be a more cost-effective approach to regulation. Following Walbert and Bierma (1988) the number of articles has been increasing linearly with five, 15, and 25 articles published in the 1990s, 2000s, and 2010s. Most of these articles have considered classroom games with others describing innovations in computer-assisted instruction and the use of the contingent valuation method as a student project.

It is within this scholarly context that this book has emerged. The chapters within this book make several significant contributions to the economic education literature. In the first chapter of the book, a brief survey of the history of thought in environmental and natural resource economics is presented which helps provide context for the rest of the book. In addition, when teaching our own courses, we have found that sprinkling a typical course with some background historical theory and personalities often helps set the stage for the modern innovations that we teach with the additional benefit of enhancing students' interest in and understanding of course content.

The rest of the book is divided into two parts: paradigms and pedagogy. In Part I on paradigms are five chapters that provide models for teaching the variety of courses that have emerged in university curricula. We find that while there are a number of environmental and natural resource economics textbooks, there is little guidance for how to approach the course topics and outline. This part helps to fill that void.

Part II on pedagogy consists of eight chapters that contribute to the practice of teaching environmental and natural resource economics. These chapters can be further classified into those that approach the teaching of a particular topic and those that use a particular teaching method. The topical chapters include approaches to teaching environmental justice, nonmarket valuation, and climate change. The methods chapters describe the use of classroom experiments, data analysis, policy briefs, technology, and a variety of supplemental materials.

The first two chapters in Part I on paradigms cover the more traditional, neoclassical approaches to the topics in the course. In Chapter 2, David McEvoy describes a positive economics course that focuses on environmental and resource policy to achieve economic efficiency. This chapter discusses approaches to teaching the economic concepts of optimal environmental and natural resource management with theory and classroom experiments. In Chapter 3, John Bergstrom describes an applied welfare economics teaching paradigm (approach) that focuses on theory and tools for evaluating natural resource and environmental policy and management decisions. Examples of assignments that demonstrate the usefulness of this approach including benefit–cost analysis exercises are described.

The next two chapters in Part I consider less traditional approaches to teaching environmental and natural resource economics. Robert Johnston, in Chapter 4, presents the key components of an interdisciplinary ecosystem services and sustainability approach. The chapter includes teaching tips and examples. On the other end of the science spectrum, Kathleen Lawlor describes an institutional approach to the course in Chapter 5, with a focus on climate change. The chapter includes teaching resources and strategies that could be used in the classroom.

In Chapter 6, Tim Haab describes an approach to teaching an environmental and natural resources course as a micro principles course. For example, he asks why are market failures taught secondarily when they are pervasive and the competitive market is the unusual situation? In short, he thinks we've been teaching principles of micro with a misplaced emphasis.

Considering first the topical chapters in Part II on pedagogy, in Chapter 7 Amy Henderson addresses environmental justice by describing how data can be used to develop active learning exercises to determine if minority or low-income populations bear a disproportionate share of the costs of pol-

lution. Peter Schuhmann, in Chapter 12, describes an approach to teaching non-market valuation to undergraduates including where to place the topic in the outline of the course, tips for motivating the need for valuation, and ways to deal with the more technical nature of the topic. Jim Casey describes a teaching module focused on climate change in Chapter 14. He describes a model that considers the full costs of producing and consuming energy resources.

Considering next the chapters that contribute to teaching practice in Part II, Stephan Kroll describes five classroom experiments in Chapter 8 including those on externalities, public goods, willingness-to-pay versus willingness-to-accept, tradable emissions permits, and the problems with eco-labelling. In Chapter 9, John Whitehead describes research activities that range from a single class day in an introductory course to a semester length project in an advanced course. The research topics include the valuation of public goods, environmental policy, and natural resources. Leah Greden Mathews describes her policy briefs assignment as one that engages students, bringing the real world to the course, and improves writing skills (Chapter 10). In Chapter 11, Shana McDermott describes assignments using smartphone technologies related to sustainability and encourages students to interact with the outdoors which might lead to the co-benefit of pro-environmental behavior. David Anderson describes the need for triangulated teaching (Chapter 13). Supplements to the textbook and lectures can include educational videos, active-learning exercises, field trips, guest lectures, and blogs.

While we are more than satisfied with the contents of the book, it is not encyclopedic. Inevitably, there are chapters that we would have liked to include that did not make it for various reasons. For example, another useful chapter would have provided a review of the textbooks in the field as an update to Christiansen (1988). The enormity of this task precluded its inclusion. We also would have like to have included a paradigms chapter focused on teaching the intertemporal allocation of natural resources (e.g., energy, fisheries, forestry). Finally, as we were trying to wrap up this project, the COVID-19 pandemic hit and many courses moved online. Whitehead's own second-year course transitioned from face-to-face to hybrid during the 2020–21 academic year to consistently online beginning in the 2021–22 academic year. A chapter on teaching environmental and natural resource economics online would have made a useful contribution to the literature – or maybe that is the topic for another book given all that we as an educational profession have experienced and learned over the past unforgettable two years teaching online asynchronous, online synchronous and hybrid formats.

Finally, we thank the authors of the chapters for excellent contributions and their patience as the COVID-19 pandemic delayed the editors in putting the final touches on the book (e.g., writing this preface). We hope that instructors

of environmental and natural resource economics find the book useful when doing this important work.

REFERENCES

- Carter, W. (1972), 'Teaching environmental economics', *Journal of Economic Education* **4** (1), 36–42.
- Christiansen, G.B. (1988), 'The natural environment and economic education', *Journal of Economic Education* **19** (2): 185–197.
- González-Ramírez, J., J. Caviglia-Harris, and J.C. Whitehead (2021), 'Teaching environmental and natural resource economics: A review of the economic education literature', *International Review of Environmental and Resource Economics* **15** (3): 235–369.
- Krutilla, J.V. (1967), 'Conservation reconsidered', *American Economic Review* **57** (4): 777–786.
- Walbert, M.S., and T.J. Bierma (1988), 'The permits game: Conveying the logic of marketable pollution permits', *Journal of Economic Education* **19** (4): 383–389.