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978-0-521-63580-6 - Intellectual Property Rights and Biodiversity Conservation: An Interdisciplinary Analysis of the Values of Medicinal Plants

Edited by Timothy Swanson

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The urgent need to ensure the conservation of biological diversity is now widely recognised, but the role of an intellectual property rights regime as an instrument for biodiversity conservation is poorly understood and often hotly debated. This volume is a detailed analysis of the economic and scientific rationales for the use of a property rights-based approach to biodiversity conservation. It discusses the justification for, and implementation of, intellectual property rights regimes as incentive systems to encourage conservation. An interdisciplinary approach is used in the book, encompassing fields of study such as evolutionary biology, chemistry, economics and legal studies. The arguments are presented using the case study of the use of medicinal plants in the pharmaceutical industry. The book will be of interest and relevance to a broad spectrum of conservationists from research students to policy makers.

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of medicinal plants

Edited by

TIMOTHY SWANSON

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Preface

A dairy farmer once walked into the Department of Agronomy at the University of Wisconsin complaining that the prize specimens in his herd were succumbing to a weird ailment symptomised by uncontrollable internal bleeding. The department researched the problem, and the source of the mystery was traced to a plant in the animals' diet, and more specifically to a chemical substance within that plant: dicumarin. This naturally generated chemical within sweetclover was wreaking havoc upon the plant's primary predator on account of its biological activity. When further analysed, it was found to have anti-coagulant activity across a wide range of animals. When these discoveries were patented (under the tradename WARFRIN) and marketed, they resulted in massive commercial sales as both the world's major rodenticide and also as an important medical treatment for stroke victims.

This is one example, from the developed world, of the trail that is traced between the natural generation of biologically active chemicals and their ultimate commercial utilisation. Not every naturally produced chemical has so well-documented a trail or so illustrious a career (as it was WARFRIN that was used to treat President Eisenhower after his stroke), but the anecdote serves as an illustration of how nature, observant human communities, chemical researchers and patent lawyers together combine to create useful products. It is important to recognise that each and every one of these participants plays an important and often irreplaceable role in the delivery of important chemical substances to society.

The primary motivation for this volume is to draw a picture of this process: the delivery of useful chemical substances by cooperation across all of these various levels. We commence with the role of nature in developing biologically active substances. It is no accident that plants are able to work such dramatic impacts on their predators; it has been the role of evolution to select for characteristics that will aid in the survival of these plants, and one set of such characteristics is that which works specific effects on

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animals. We then look to the role of human communities in identifying such activity. Even though plants will generally exhibit such characteristics, it is necessary for humans to discover them. This includes the role of traditional usage and the role of chemical screening and analysis; both are modes of separating out the active from the inert. Finally, it is necessary to market the substance and to allocate the rewards from discovery, and this is in part the role of the patent lawyer. In this volume we ask a series of individuals involved in researching this industry, or working within it, to describe how they see the passage of the discovery through this process, from nature's initial contribution to its final marketing.

Another motivation for the volume is to demonstrate that the extent to which the industry is reliant upon each of these sectors for its returns, and to emphasise that the benefits from these discoveries are not flowing to all levels within this industry. This is one way to typify the problem of biodiversity conservation: contribution without compensation. We rely on this resource at the base of some of our most important industries, yet we fail to compensate it adequately for its contribution. We cannot be too surprised if the resource slowly disappears, and our industries suffer for its demise, if we are unwilling to pay for its contribution.

This is a book that brings together all of the various perspectives that are necessary to draw the complete picture of important biodiversity depletion on account of the failure to compensate it for its contribution. The volume allows each specialist to discuss in turn the role of biodiversity in its sector, and then to hand over the story to the next in line. We hope that the story it tells is just as concrete as the diaryman's dilemma related above, but far more general and sited more in the developing world. We also hope that it will aid in defusing and clarifying the hotly debated issue of intellectual property rights and biodiversity conservation

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