

## RARITY AND ENVIRONMENTAL DISTURBANCE AN EXAMPLE FROM THE RHAMNACEAE

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The phenomenon of rarity has fascinated people interested in natural science for a long time. The word 'rare' is loaded with preconceptions, that is we often assume that because something is rare it is attractive, unusual to look at, found in a remote location and probably delicate or vulnerable. But is this always true? We are aware that many plants have become rare due to the effects of disturbance to the environment over the two hundred years since European settlement. Activities such as clearing and ploughing, grazing and overburning have reduced former plant populations to protected pockets so that their distribution is now disjunct within the state, with populations often consisting of a few individuals. On the other hand, some species are likely to have always been rare, existing as small, isolated populations separated from each other geographically, or in small numbers widely distributed statewide, or combinations of both. How these populations maintain themselves has been the subject of ongoing debate between botanists for many years. The viability of populations or their ability to maintain sufficient genetic vigour is considered a prerequisite for the perpetuation of a species. The production of viable seed and appropriate conditions for germination is another. Growth and establishment of propagules amidst faster growing neighbours which may be competing for resources both above and below ground may also threaten the livelihood of rare plants.

Examples of rare species which appear to have special requirements for regeneration and dispersal occur in the family Rhamnaceae. Unlike the common dogwoods—*Pomaderris apetala*, *P. elliptica* and *P. pilifera*, other species in the family are not so ubiquitous. There is, therefore, a high degree of species rarity within other genera in the Rhamnaceae which is expressed as the localized occurrence of small populations which are highly site specific within particular vegetation types. Coincident with the distribution of almost all these populations is evidence of some form of past disturbance. This may be from high fire frequencies, mechanical disturbance such as bulldozers, river flooding, slope movement or the activities of animals. Commonly, all such phenomena create open bare ground, suitable for the establishment of seedlings, or encourage suckering from plants damaged during the course of the disturbance. Regeneration would appear restricted to these situations so far as most of the rare Rhamnaceae species are concerned, however the occurrence of rare plants with disturbed sites has been observed for other taxa. This raises the question of whether rare plants possess

specific ecophysiological or reproductive traits which may be unique to the species and are only expressed following a disturbance event. Conversely, it could also be argued that disturbance may be limiting, rather than enhancing the establishment of such species, given that they are restricted in their distribution, yet disturbance, both natural and imposed, is of frequent occurrence in the Tasmanian environment.

In an attempt to answer these questions, a study was initiated early in 1989 by the Department of Parks, Wildlife and Heritage, which will form the basis of postgraduate degree at the University of Tasmania, to be carried out over the next few years. The study will look at plant strategies and processes such as germination and seedling establishment, in an effort to examine and explain the links between rarity and disturbance as exemplified by the Rhamnaceae. The author would be interested to hear from anyone who has made similar observations on rare plants and who would be willing to disclose any locations they may have. In particular, *Stenanthemum pimeleoides*, *Spyridium microphyllum*, *S. parvifolium*, *Discaria pubescens*, *Pomaderris elachophylla* and *P. phyllicifolia* are of special interest.

## BOOK REVIEWS

### **Birds of Tasmania**

by Robert H. Green

Published by Potoroo Publishing, Launceston

Reviewed by D.G. Hird

Described as an annotated checklist of Tasmanian birds, this Third Revised Edition, 1989, updates the 1977 Second Edition. A prominent additional feature is the inclusion of 16 pages of colour and plates, supplementing the black and white habitat photographs retained from the prior edition.

The continuing availability of this book should serve the more keen Tasmanian amateur ornithologist well. Tasmania, with its subset of the general Australian fauna, has fewer species to confuse the bird watcher, especially when sea birds are excluded. Check lists are vital supplements to field-guides and longer and more descriptive volumes. Although for many species the information provided may be unchanged between editions, many new references and interesting occasional records are added.

The colour photographs included in this volume are generally clear and well reproduced. Their inclusion in what is predominantly a check list is slightly incongruous, although they should not impede a reader's access to the latter.