

THE DISTRIBUTION, STATUS AND ECOLOGY OF THE RUFOUS  
RAT-KANGAROO, *AEPYPRYMNUS RUFESCENS*, IN  
NORTHERN NEW SOUTH WALES

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FELIX E. SCHLAGER  
B.Nat.Res. (Hons)

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of the requirements for the degree  
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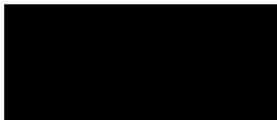
November, 1981 .

## PREFACE

I certify that no portion of this thesis has been previously submitted for any other degree.

I undertook the study while employed as a graduate research assistant by the Department of Ecosystem Management, University of New England. My employment was based on a research grant to determine the distribution and status of rat-kangaroos in northern New South Wales, funded by the New South Wales National Parks and Wildlife Foundation. The two-year project was undertaken entirely by myself and the contents of this thesis have been gleaned largely from my report to the Foundation.

I certify that the assistance given by others in the preparation of this thesis has been fully acknowledged in the text, as have been all other sources of information.



## SUMMARY

The rufous rat-kangaroo (*Aepyprymnus rufescens*) and the long-nosed potoroo (*Potorous tridactylus*) are believed to be the only members of the Potoroinae (rat-kangaroos) sub-family of macropods still persisting in northern New South Wales. The three *Bettongia* species, *B. penicillata*, *B. lesueur* and *B. gaimardi*, were all represented during historical times but have not been positively recorded as living animals in the north of the State for over 50 years. Their disappearance resulted from an inability to contend with the patterns of land clearing and pastoralism adopted by European man, and with the spread of introduced predators and competitors.

At the time of early European occupation, *A. rufescens* was distributed over almost 60% of New South Wales. It was very common in most northern districts around 1900, but increasing stock (esp. sheep) densities, compounded by waves of hares, rabbits and foxes, together with the imposition of bounties, proved too much for the species. The subsequent decline was rapid, resulting in the virtual elimination of all rat-kangaroos from the tablelands and more inland areas by the 1920's. Today, *Aepyprymnus* occupies a very reduced range, covering less than 2% of the State. It is distributed along a narrow belt on the eastern slopes of the Great Dividing Range, from Queensland in the north, south to about Coffs Harbour. An isolated population exists in the Barrington Tops area north of Newcastle. Its status in N.S.W. is uncommon. Queensland is the only other State where the species is found, and there it is considered relatively common.

The distribution of *A. rufescens* within its present range is discontinuous and patchy. Best populations in New South Wales are found in the upper Clarence River Valley, while densities in southern and coastal areas

are lower. Some high density populations occur at the interface between woodland and pasture areas, utilizing both habitats for feeding and refuge. Detected densities within natural habitats are low and the species is poorly represented in the present system of reserves in the northeast. Most occupied areas are in State Forest and freehold land used for low-intensity beef-cattle-grazing.

Virtually all *A. rufescens* populations utilize an open dry sclerophyll woodland habitat, preferring those sections where there are patches of tall bladey grass (*Imperata cylindrica*) and *Poa* tussock. A home range area is occupied and the centre of activity varies seasonally according to food availability. There is overlap among individual home ranges, with some sequential sharing of feeding and nesting sites. Nests are constructed from a variety of materials but *Poa* tussock grass is favoured wherever it is available. Nests are commonly located within clumps of tall grass or under logs.

Tuberous roots of native and introduced plants are the main food items taken by *A. rufescens* and the presence of the common flatweed (*Hypochoeris radicata*) is responsible for concentrated feeding activity in pasture areas. Hypogean (underground) fungi are eaten throughout the year and seasonal availability results in changes in feeding patterns and dispersal of animals. Invertebrates, grass leaves and seeds, flower buds, fruit and gum exudate are also taken in small quantities.

Rabbits and hares are in low densities in those areas where *Aepyprymus* persists. Competition with other species for resources is minimal and *A. rufescens* may even benefit by cattle grazing, through the promotion of short, grassy areas and food plants. Predation by foxes and dingoes has probably strongly influenced the present status and distribution of the species.

The present levels of land-use over much of the northeast are generally compatible with the interests of *A. rufescens*. Providing that the present fragmented pattern of woodland and pasture areas is kept, *Aepyprymus* can exist satisfactorily in some low-intensity beef-cattle grazing districts. State Forests occupy a large proportion of the land area in the northeast and are important refuges, providing that the essential understorey component is maintained. The use of fire as a forest management tool needs careful attention. Although the Potoroinae may have a high capacity to survive the short-term effects of fire (largely through their feeding behaviour), the long-term consequences of high-frequency, low-intensity burning are largely unknown, but there are definite structural and floristic changes occurring in the understorey through the favouring of fire-adapted plants.

An understanding of the ecology of *Aepyprymus* must be fully appreciated in the formulation of conservation policies for the species. In those areas where intensive conservation is a management objective, careful consideration should be given to all of those factors which play a part in determining the habitat suitability and survival ability of *A. rufescens*.

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