Biological Conservation in Tasmania's Production Forests

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Abstract

One component of biological conservation in Tasmania is the reservation of representative areas of different forest types. Wildlife habitat strips form an important adjunct to these reserves. This paper describes the method used to select representative areas for the conservation of such vegetation. An example of the use of these areas in the establishment of wildlife habitat strips is illustrated.

Background

Forest practices in Tasmania include consideration of the ecology of native forests and the surrounding vegetation. A conservation strategy must include the reservation of benchmark examples of native forests among its aims.

Analyses of forest vegetation types in Tasmania have revealed that numerous communities are inadequately reserved (e.g. Kirkpatrick 1987 and Fig. 1). Communities containing high timber volume or quality, or occupying fertile or arable land, are the least represented in the existing reserve network, though extensions to the Western Tasmania World Heritage Area include substantial areas of rainforest and wet sclerophyll forest.

The Strategy

Strong correlations exist between attributes of the physical environment (e.g. altitude, landform, geology) and structure and composition of the vegetation, in each of Tasmania's biogeographic regions (e.g. Duncan and Brown 1985). These correlations have been used to assess the regional conservation of rainforest, wet sclerophyll and dry sclerophyll communities, and to select candidate sites for reservation (Hickey and Brown 1989). Field checking of ecological integrity aids the selection of areas for reservation. Vegetation and environmental site data are being added to a substantial existing data base (over 5000 plots) to test, by generalised linear modelling, the validity of reserve selection. The methodology is described below for conservation of dry sclerophyll vegetation.

Maps were prepared at 1:100 000 scale, showing patches of predominantly dry sclerophyll forest of at least 100ha in area. The distribution of dry sclerophyll vegetation in Tasmania as derived by this process is shown in Fig. 2. The maps were overlain, using a geographic information system, with maps of land tenure and of land units. The latter were defined by their geology and

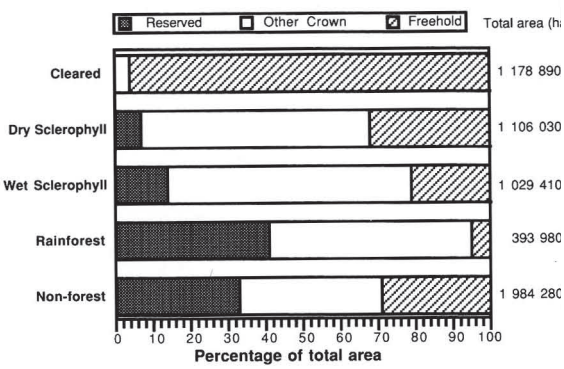

Fig. 1. Reservation status of broad vegetation classes (based on Kirkpatrick and Dickinson 1984) in Tasmania, as at December 1988.

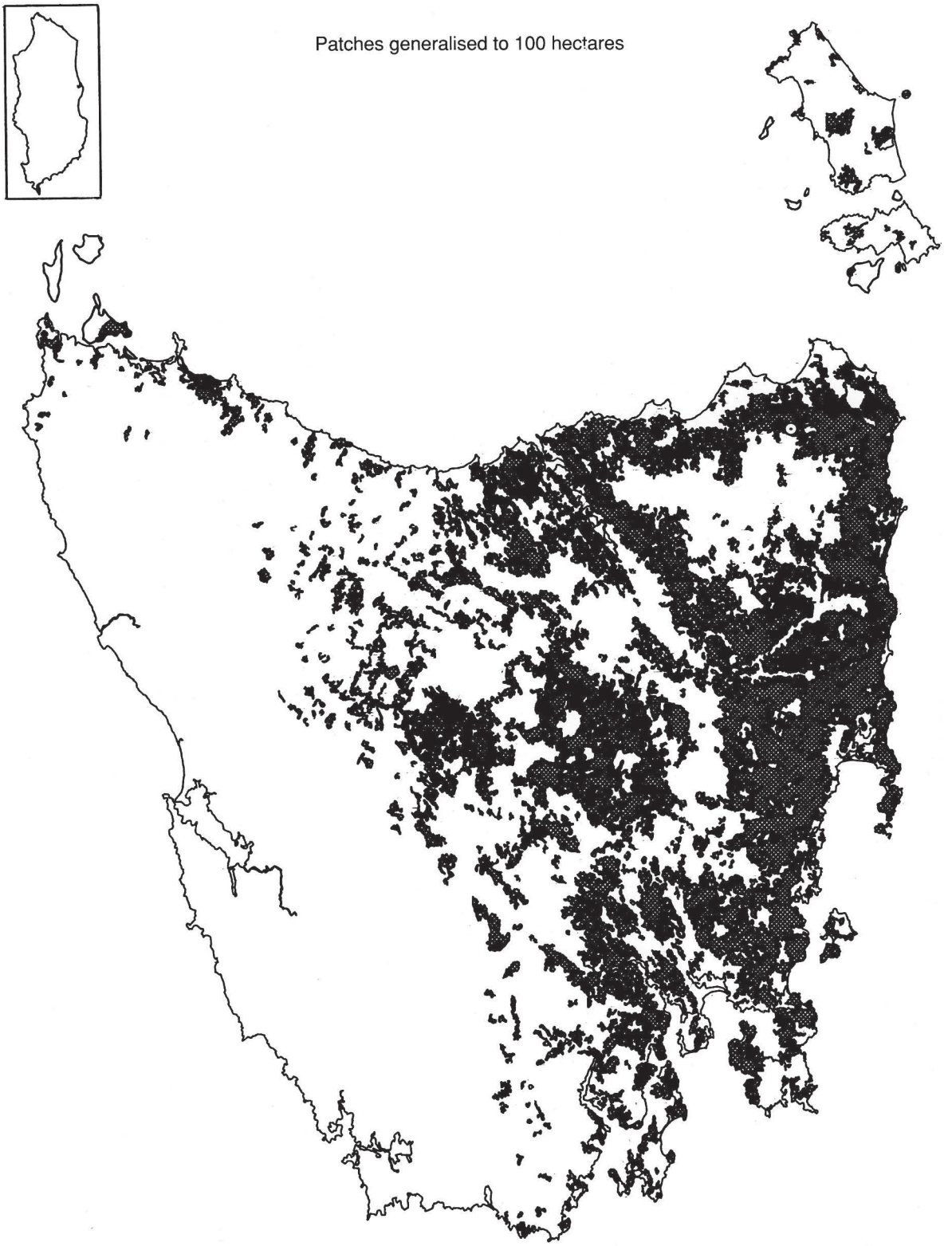

Fig. 2. Dry sclerophyll forest in Tasmania (after Williams 1989)

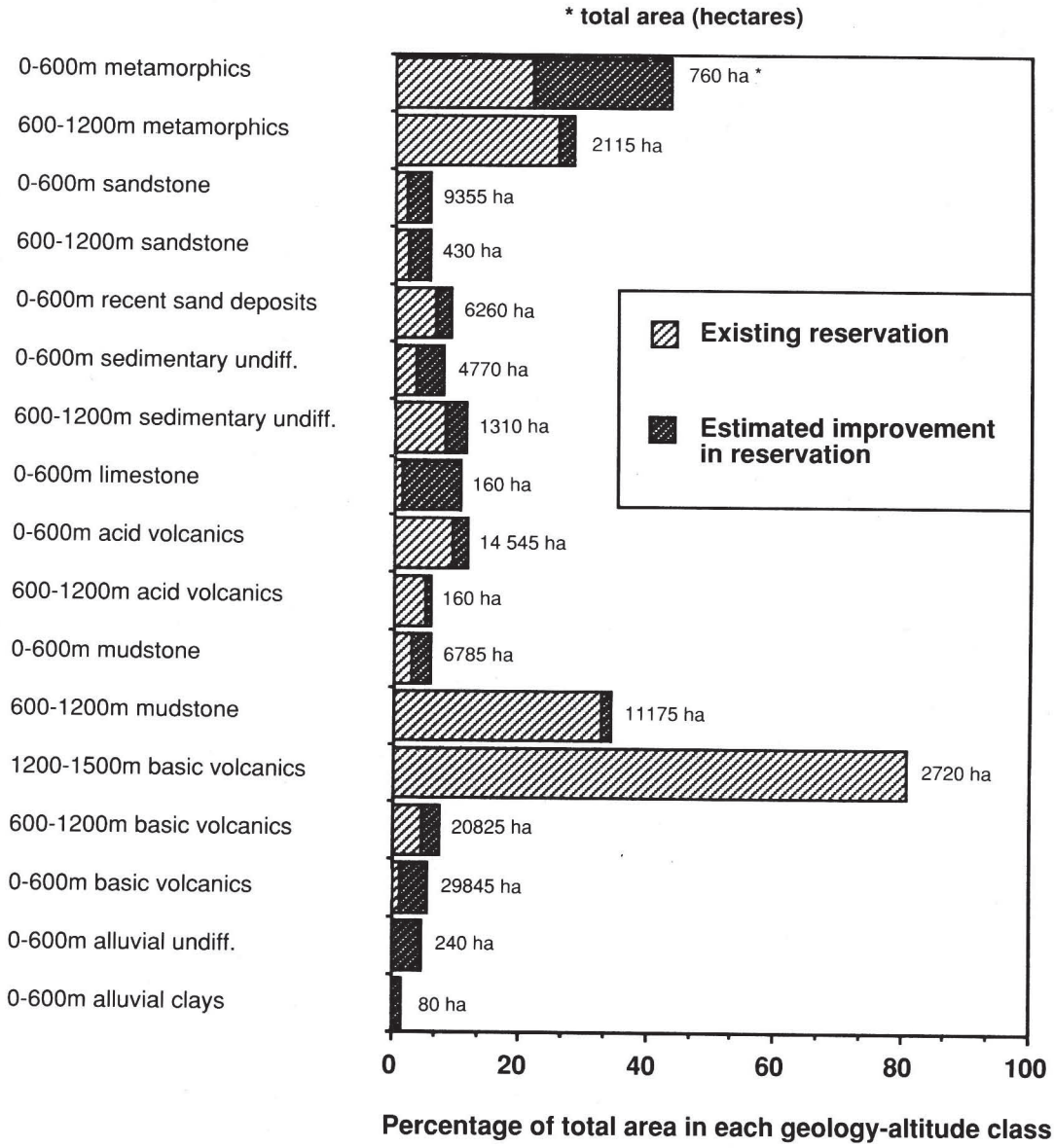

Fig. 3. Estimated improvement in dry sclerophyll reservation status on broad classes of geology and altitude in Tasmania.

altitude, derived from detailed surveys of Tasmania's land systems (e.g. Davies 1988).

The minimum requirement for reservation was taken to be 5 per cent of the dry sclerophyll forest on each geology-altitude class, in each biogeographic region. Candidate sites were located on public land and field checking allowed the condition of the vegetation and potential reserve management problems to be assessed. Nominated areas for reservation included some additional areas to conserve rare plant communities or species. The estimated improvement in the reservation status of dry sclerophyll forest on broad geology-altitude classes is shown in Fig. 3.

One problem with the process is that of conservation on privately owned land. In the Midlands and associated valleys, only a small proportion of native vegetation remains and most of this is located on private property.

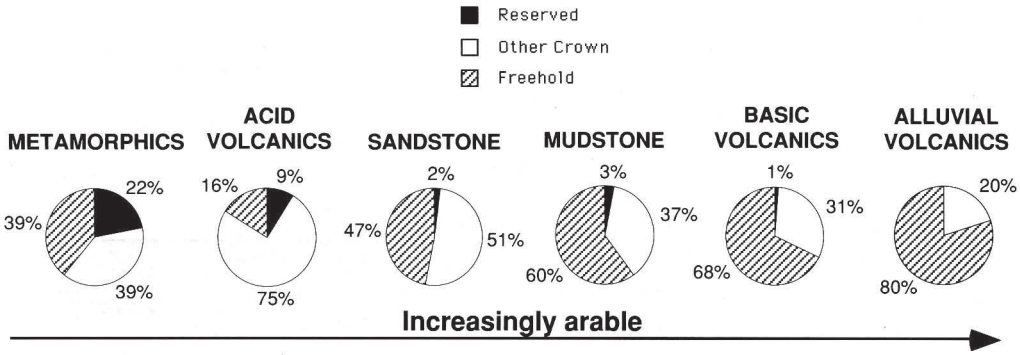

Fig. 4. Changes in tenure of dry sclerophyll forest on major geological groups below 600m altitude.

The shift from public to freehold ownership where dry sclerophyll forest occurs on more arable land is illustrated in Fig. 4 for the major geological types, below 600m altitude. The broad process of conservation of Tasmania's dry forest communities will be fully realised only when a conservation strategy is developed for freehold land.

The Role of Wildlife Habitat Strips

Reserves cater for conservation of communities on a regional level. Wildlife habitat strips can complement these by acting as a comprehensive habitat reservation system at a local level (Taylor 1990). The strips can be positioned so as to include mature forest in the complete spectrum of physical environments present (i.e. different altitude, landform, aspect and geology) and all State forest blocks can be included. Larger reserves can also be linked to the habitat strip system to increase their effective area.

Current thinking on conservation planning is being put into practice as management revisions of State forest are undertaken. An example is given for the Tasman and Forestier Peninsula State forests (Fig. 5).

Forest Reserves are Gazetted areas of State forest managed for recreation and conservation, and from which logging is excluded.

Dry Sclerophyll Reserves are regionally representative areas of dry sclerophyll vegetation proposed for conservation, and from which logging is excluded.
Preservation Zones comprise areas where conflicting conservation and wood production values were determined in favour of conservation, and from which logging is excluded.
Tall Tree Management Areas are regional examples of tall eucalypts managed for aesthetic, recreation and scientific purposes. Logging is restricted to a notional rotation of 300 years, subject to another area being designated as a suitable replacement.
Restrained Development Zones comprise areas where logging is subject to special restrictions due to considerations such as visual impact, steep country or proximity to existing reserves.

The reserved areas are linked by strips of at least 100m in width which have been positioned to sample the range of physical environments and biological communities present within the Wood Production Zone. The Wood Production Zone, represented in Fig. 5 as the remaining State forest, is available for timber harvesting under the guidelines of Tasmania's Forest Practices Code.

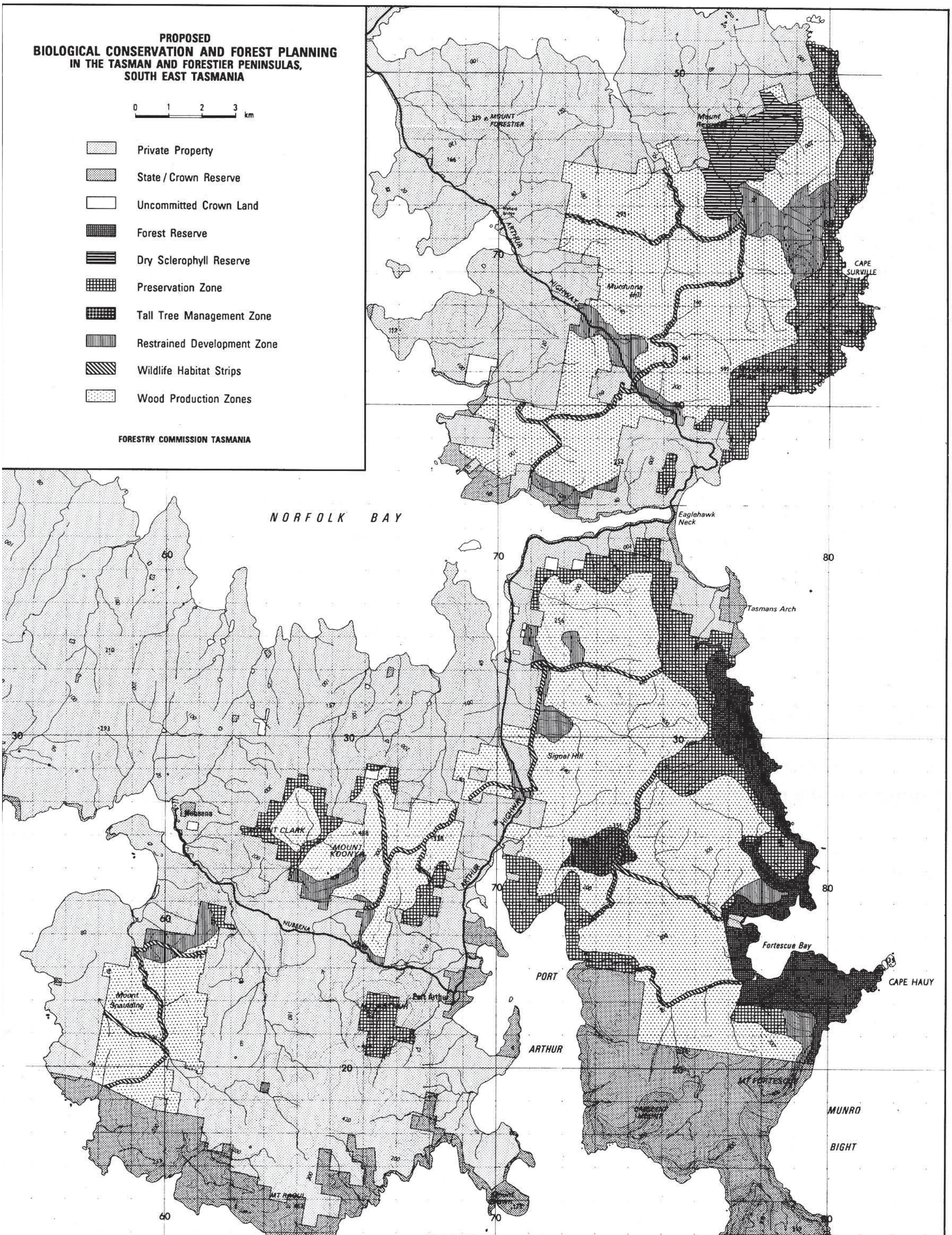
PROPOSED
BIOLOGICAL CONSERVATION AND FOREST PLANNING
IN THE TASMAN AND FORESTIER PENINSULAS,
SOUTH EAST TASMANIA
0 1 2 3 km
Private Property
State / Crown Reserve
Uncommitted Crown Land
Forest Reserve
Dry Sclerophyll Reserve
Preservation Zone
Tall Tree Management Zone
Restrained Development Zone
Wildlife Habitat Strips
Wood Production Zones
FORESTRY COMMISSION TASMANIA
NORFOLK BAY
CAPE SURVILLE
Eaglehawk Neck
Tasmans Arch
Signal Hill
Fortescue Bay
CAPE HAUY
PORT ARTHUR
MUNRO BIGHT
MAINGON BAY
CAPE PILLAR
Nubeena
MOUNT KOONYA
Mount Spaulding
Port Arthur
ARTHUR HIGHWAY
NUBEENA

Fig. 5

Acknowledgements

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