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TUTANNING NATURE RESERVE

Description :- (Landforms and vegetation from Brown and Hopkins 1983)

Tutanning Nature Reserve has a total area of 2,250 ha and is located approximately 150 km south east of Perth. Virtually all the surrounding areas have been cleared for farming so that the reserve is now an island of natural vegetation.

Tutanning Nature Reserve includes the Dutarning Range and some adjacent lateritic plateau remnants which form portion of the watershed between two major westward flowing rivers systems, the Avon and the Murray / Hotham. Elevation ranges from 320 to 430 m.

The uppermost unit in the landscape is the Norrine landform unit. It comprises erosion residuals of the tertiary lateritic plateau. The deep yellow or grey siliceous sands, sandy gravel and duricrust (indurated laterite) support DRYANDRA dominated shrublands with some open powder-bark wandoo (EUCALYPTUS ACCEDENS) and ALLOCASUARINA HUEGELIANA woodlands. Flanking this is the Noombling unit where there has been extensive stripping of the lateritic material often exposing dolerite or granite. Gentle slopes are mantled by sandy loams and duplex soils. There may be occasional spurs with a gravelly duplex profile. Vegetation includes woodlands of brown mallet (E. ASTRINGENS) and powder-bark wandoo on the upper erosional slopes and low woodlands of jam (ACACIA ACUMINATA) and A. HUEGELIANA associated with the granite outcrops. The slopes of the Noombiling unit merge with the Biberkine unit near the valley floor. At Tutanning, soils of this unit are coarse textured, often water-logged and salt-affected. Wandoo (E. WANDOO) and York gum (E. LOXOPHLEBA) woodlands dominate the lower slopes and valley floors.

Kwongan vegetation occurs in 11 patches totalling 64 ha. This vegetation community is found throughout Tutanning Nature Reserve and can be classified into three structural types:
1) Very dense DRYANDRA - PETROPHILE shrublands 2-3 m tall which are confined to areas of duricrust;
2) Mixed low (<2m) shrubland with a high proportion of species from the Proteaceae, Myrtaceae and Leguminosae families and found on both upper landform units; and
3) Mallee shrublands (E. PACHYLOMA, E. DRUMMONDII) of very limited extent occurring in small patches usually mixed with types 1 and 2.

The place contains a diverse fauna representative of the wheatbelt region and is considered likely to act as a stepping stone reserve for a number of bird species. The fauna includes two species which have been successfully re-introduced to the reserve, the numbat (MYRMECOBIUS FASCIATUS) and the quenda (ISOODON OBESULUS).

Condition and Integrity
The place is actively managed by the Department of Conservation and Land Management. It is considered to be in good condition in the context of the wheatbelt region. Fox baiting in the reserve and adjacent land has led to an increase in small to medium sized native mammal populations. A translocation program has successfully reintroduced several native mammals species.

Tutanning Nature Reserve is of major significance in maintaining on-going ecological processes of the wheatbelt region of Western Australia. The place is one of the few pockets of uncleared land which is large and varied enough to continue to provide a habitat for the remaining species of the Wheatbelt. Tutanning Nature Reserve retains 21 of the 46 species of native mammals which remain in the wheatbelt. It therefore plays a critical role in the maintenance of the fauna and flora bio-diversity of the Wheatbelt region and the State.

Tutanning Nature Reserve contains a high number of rare, threatened and regionally uncommon vertebrate species including Red-tailed Phascogale, Numbat, Southern Brown Bandicoot, Woylie, Tammar Wallaby, Brush Wallaby, Mallee Fowl and Carnaby's black-cockatoo. Many of these species have all but disappeared from the Wheatbelt region and are now found in only a few locations.

Compared with the nearby wheatbelt nature reserves, Tutanning has a rich flora of 697 native plant species. The native vertebrate fauna diversity is also considered to be high for the wheatbelt region. Tutanning contains patches of kwongan a plant community which is of considerable significance for its high level of endemism and high species richness. Kwongan contains the highest number of vascular plant species per unit area of any sclerophyllous vegetation type in southern Australia. The 64 ha of kwongan at Tutanning contains 315 species, about 45% of the reserve's total flora in less than 3% of its area. This makes it amongst the most floristically rich sites in the world.

The Tutanning Nature Reserve contains a number of rare, geographically restricted endemic and unnamed plant species. These include the rare CALADENIA INTEGRA, DRYANDRA LORANTHIFOLIA, HAKEA LORANTHIFOLIA, POMADERRIS BILOCULARIS and STYLIDIUM EXPEDITIONIS and the geographically restricted species CALOTHAMNUS PLANIFOLIUS, DRYANDRA CYNAROIDES, MELALEUCA CONFERTA and STYLIDIUM TENUICARPUM.

The place contains expressions of a number of vegetation communities in excellent condition which are characteristic of the wheatbelt region. These include kwongan, powder-bark wandoo woodlands and ALLOCASUARINA woodlands.

Tutanning Nature Reserve is highly significant for base line monitoring and research for a wide range of disciplines. It is also a very important base line monitoring site for determining long term ecological change, being one of the few sites in Western Australia with reliable fauna records going back around 90 years. Intensive on-going research has been carried out in the Nature Reserve for over 30 years.

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Tutanning Nature Reserve

Criterion	Attribute	Rat'g
A.1 Importance in the evolution of Australia's flora, fauna, landscapes or climate.	The place contains patches of kwongan which is of considerable significance for its high level of endemism (Brown and Hopkins 1983).	H
A.2 Importance in maintaining existing processes or natural systems at the regional or national scale.	The place is of major significance in maintaining on-going ecological processes. The place is one of the few pockets of uncleared land which is large and varied enough to continue to provide a habitat for the remaining species of the Wheatbelt. For example Tutanning Nature Reserve retains 21 of the 46 species of native mammals which remain in the wheatbelt (CALM Data 1995). Following agriculture development with its extensive clearing of bush and the introduction of exotic animals, plants and disease both the number of species and the area has been dramatically reduced. The Tutanning Nature Reserve therefore plays a critical role in the maintenance of the fauna and flora bio-diversity of the wheatbelt region and the State.	H
A.3 Importance in exhibiting unusual richness or diversity of flora, fauna, landscapes or cultural features.	The place contains patches of Kwongan which are a major contributor to the region's rich bio-diversity yet it covers a small area compared to other vegetation communities. Kwongan contains the highest number of vascular plant species per unit area than any other sclerophyllous vegetation type in southern Australia (Lamont *et al.* 1984). For example; the place contains 11 patches of kwongan which exhibits exceptional floristic richness and a low level of floristic uniformity between patches. The 64 ha of kwongan contains 315 species or c. 45% of the reserve's total flora in less than 3% of the area (Brown and Hopkins 1983). Compared with other shrubland heaths, woodlands and forests of the South West of Australia Tutanning's kwongan is very species rich (Brown and Hopkins 1983). These sites are also amongst the most floristically rich in the world (Hopkins and Griffin 1984, Friend 1990b).	VH

	The place contains a comparatively diverse native vertebrate fauna with about 21 mammal, 94 bird, 40 reptile and 8 frog species (CALM Data 1995). This number of species is relatively high for the wheatbelt region and reflects the number of habitats in the place (D. Mitchell pers. comm. 1995).	H
	Compared with the nearby wheatbelt nature reserves Tutanning has a relatively rich flora of 697 native plant species (Sutton *et al.* 1994).	H
B.1 Importance for rare endangered or uncommon flora, fauna, communities, ecosystems, natural landscapes or phenomena, or as a wilderness.	The place contains rare and geographically restricted plant species. Tutanning Nature Reserve contains 7 restricted endemic species and 22 unnamed species (Pate and Beard 1984) Gazetted Rare by WA Government: • *Caladenia integra* • *Dryandra loranthifolia* • *Hakea loranthifolia* • *Pomaderris bilocularis* • *Stylidium expeditionis* Geographically Restricted Species (Brown and Hopkins 1983) • *Calothamnus planifolius* • *Dryandra cynaroides* • *Melaleuca conferta* • *Stylidium tenuicarpum*	H-VH

	The Tutanning Nature Reserve contains a number of rare, threatened and regionally uncommon vertebrate species; <u>Threatened Species</u> • Red-tailed Phascogale (*Phascogale calura*), • Numbat (*Myrmecobius fasciatus*), • Southern Brown Bandicoot (*Isoodon obesulus*)* • Woylie (*Bettongia penicillata*), • Tammar Wallaby (*Macropus eugenii*) * this species has disappeared from the wheatbelt region (Friend 1990) <u>Specially Protected</u> • Western Brush Wallaby (*Macropus irma*), • Peregrine Falcon (*Falco peregrinus*), • Carnaby's Black-Cockatoo (*Calyptorhynchus funereus latirostris*), • Carpet Python (*Morelia spilota imbricata*) <u>Uncommon in the wheatbelt Region</u> • Honey Possum (*Tarsipes rostratus*) • Western Pygmy Possums (*Cercartetus concinnus*) • Mallee Fowl (*Leipoa ocellata*)* * Species under consideration to be declared as a threatened species	H-VH
	The place contains stands of York gum woodland which has become a rare woodland type (CALM Data 1995). The vast majority of this vegetation type has been cleared in the wheatbelt (Saunders *et al.* 1982, 1985; Beard and Sprenger 1984; Saunders and Ingram 1987, Hobbs 1991). 97% of York gum /jam woodlands have been cleared in the South West Botanical Province (Beard and Sprenger 1984).	M

C.1 Importance for information contributing to wider understanding of Australian natural history, by virtue of their use as research sites, teaching sites, Type localities, reference or benchmark sites.	Tutanning Nature Reserve is one of the most important research sites in the wheatbelt region of Western Australia. The place is highly significant for base line monitoring and research for a wide range of disciplines and topics (Friend 1990a) and contains reference soil sites (McArthur 1991). Intensive on-going research has been carried out in the Nature Reserve for over 30 years. For example:- • Reserve and remnant ecosystem management (Kessell *et al.* 1984, Hopkins et al. in press); • Fauna ecology including :- rare marsupial fauna (Friend and Friend 1993, Friend *et al.* 1994, Friend 1994, Start *et al.* 1994), study of the translocation of mammals (Friend 1990b); mammal, reptile and invertebrate ecology and biology (Friend *et al.* 1989, Arnold and Steven 1988, Little and Friend 1993, Arnold 1990); • Fire Ecology (Hobbs and Atkins 1988, Hopkins 1985); • Geomorphology (McArthur et al. 1977, Nyagba 1976); • Kwongan Ecology (Brown 1989, Brown and Hopkins 1983, Hopkins and Griffin 1984).	H
	The place is significant as Western Australia's first biological research station. The building was opened on 6/11/1964 and has been in continuous use ever since (Friend 1990a).	M-H
	The nature reserve is part of an area extensively collected by G.C. Shortridge in 1906 for the British Museum (Shortridge 1910, Friend 1990a). This place is therefore very important as a baseline for monitoring the dramatic and sudden changes in the fauna of the wheatbelt region of WA. The data collected in this area documents the extinction of many mammal species in WA.	H
D.1 Importance in demonstrating the principal characteristics of the range of landscapes, environments or ecosystems, the attributes of which identify them as being characteristic of their class.	The place contains expressions of a number of vegetation communities in excellent condition which are characteristic of the Wheatbelt region (pers. comm. Mitchell 1995). These include kwongan, powder-bark wandoo woodlands, *Allocasuarina* woodlands etc.	H

G.1 **????**	The place is also of historic importance as it was considered the "guinea pig" in terms of land acquisition both for conservation and research into management of remnant vegetation through-out the wheatbelt (Friend 1990a). It was also a testing ground for gaining community support for this work in Western Australia.	H
H.1 Importance for their close associations with individuals whose activities have been significant within the history of the nation, state or region.	The place is of significance for it's association with G.C. Shortridge, a turn of the century biologist, who made an important contribution to the ecological knowledge of Western Australia (Friend 1990a). In 1906 Shortridge made extensive mammal collections in this area for the British Museum of Natural History (Shortridge 1910). Shortridge stayed in the district for six months, camping 5km east of the present reserve, and collected 270 specimens (Shortridge 1910). The specimens included a number of species which have either become extinct or very rare (Crescent Nailtail Wallaby, Banded Hare Wallaby, Burrowing Bettong and Bilby) or have had considerably reduced distributions (numbat, Chuditch and Mitchell's Hopping Mouse). Shortridge claimed that he collected more mammal specimens here than in all the other places of his trip put together (Shortridge 1910, Friend 1990a).	H