10. Tasmania

Introduction

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Despite its size of 68,330 km^2, the island of Tasmania (Tas) has a wide diversity of habitats. The great geographic and altitudinal variation found on the island means that rainfall varies from 700 to 2,300 mm per annum. There are also wide variations in topography, geology, soil fertility, and other ecological factors such as fire frequency and the presence of light-robbing tannin in the water. This ecological variation, together with Tasmania's placement in the path of the Roaring Forties trade winds and its long coastline of approximately 3,200 km, including offshore islands, has resulted in an unusually rich abundance and diversity of wetlands at all altitudes (Hill and Orchard 1999). Tasmania has representatives of almost every wetland type in the classification system, except for coral reefs and mangroves.

Tasmania's wetlands contain a high proportion of endemic species (eg Bowling *et al.* 1993; Kirkpatrick and Tyler 1988), as well as a disproportionately large percentage of all of the State's vascular species (Kirkpatrick and Harris 1999). Tasmania also provides a significant link in the understanding of southern hemisphere biogeographic processes, with the biota showing elements of its Gondwanan heritage, not evident on the mainland of Australia, as well as distinctly Australian elements (Jackson 1999). Wetlands, including ancient wetlands, provide one of the primary reservoirs of palaeogeographic information (Hill *et al.* 1999). Limnological studies of Tasmanian wetlands have also revealed some unique lentic environments (eg Bowling and Tyler 1988, Edgar *et al.* 1996) and scientific mysteries (eg Cheng and Tyler 1976). In combination, these factors create the unusually high scientific and biological value of Tasmania's wetlands.

Tasmanian wetlands also provide an important resource for many significant migratory birds. Tasmania is the southern-most area in Australia where these birds can rest and feed during their annual migration from the high Arctic.

Tasmania has 89 wetlands listed in *A Directory of Important Wetlands in Australia.* The location of each of the listed sites is illustrated in Figure 8. In this edition, a very significant area including Boullanger Bay and Robbins Passage has been added. A nomination is being prepared to list this area on the Convention on Wetlands (Ramsar, Iran, 1971). Currently Tasmania has ten sites listed under this Convention. Twenty-eight sites are known to host species listed on the Japan—Australia Migratory Bird Agreement (JAMBA) and/or the China—Australia Migratory Bird Agreement (CAMBA).

The 89 sites listed here represent only a fraction of the State's wide range of wetlands. There are at least 800 sites listed on the inventory of Tasmanian wetlands (about one quarter of the estimated number in Tasmania), and it remains the case that much of our knowledge of these wetlands is inadequate or outdated. As discussed by Blackhall *et al.* (1996), about half the State's land area is yet to be investigated for wetlands. In particular, many flowing, artificial and marine waters are still awaiting investigation.

The wetlands are included under a number of Criteria (see Chapter 2), primarily relating to flora and fauna, but some are also listed for significant hydrological or cultural values. Further investigation and increasing recognition of the values of the State's wetlands will undoubtedly lead to the listing of more nationally or internationally significant sites. Sadly, new information has also lead to the de-listing of some wetlands that have been severely disturbed or destroyed. Three sites previously included because they were thought to support threatened taxa have been removed from the Directory because no further work has been done to confirm their presence.

As in other States, Tasmania continues to lose wetlands, primarily to agricultural land clearing, urban development and hydro-electric development. The original extent of wetlands is unknown, and therefore the loss is difficult to quantify. With a small human population of approximately 454,000, the impact has probably been less than in some more populous areas. None-the-less, the inventory of Tasmanian wetlands shows that in 1981 some 51% of known wetlands were disturbed, and 12% were severely disturbed or destroyed (Kirkpatrick and Harwood 1981).

In Tasmania, development has largely concentrated on the relatively fertile North and East coasts, with large, relatively undisturbed areas on the South and West coasts where hydro-electric power generation and logging have been the only industrial activities. This trend has resulted in certain vegetation types such as grasslands being threatened and poorly reserved. Doubtless, this has also led to disproportionate vulnerability of wetland types which predominantly occur in the North and East coasts, and Central Highlands of Tasmania.

Few of the listed wetlands are afforded protection in reserves under the Tasmanian *National Parks and Wildlife Act 1970* or *Crown Lands Act 1976*. These forms of legal "protection" are also often ineffective, as existing buffer zones are frequently inadequate to protect the wetlands from adjacent land use, and the reserve status and corresponding proscriptions are often not adequate to prevent damage. Proscriptions have commonly been ignored by adjacent landowners or other land users with activities such as grazing, clearing and four-wheel driving extending into reserved areas, often to the shoreline. Activities occurring within a wetland's catchment, for example siltation, eutrophication, introduction of weeds etc. pose difficult management problems. Many of these activities in and near the wetlands are generally not monitored, due to shortage of policing resources, and the location of most wetlands near or within private land.

The diversity of Tasmania's wetlands itself poses a management challenge. Important wetlands are widely distributed geographically and very varied in nature. Land managers, planners and developers are sometimes unaware of the existence, form or function of wetlands. The Tasmanian Wetland Inventory (Atkinson 1991) has been useful in timely provision of informed advice in response to development proposals, but is desperately in need of information gathering and updating, and the funds to do so.

Some promising developments include an enhanced interest in "off reserve conservation"; with programs such as Landcare, Coastcare, Rivercare, Bushcare, Land for Wildlife, and

Whole Farm Planning providing support for, and education about, conservation on private land. Catchments are now widely regarded as the basic minimum unit for ecological management, and much of the conservation/management funding is catchment oriented. The Natural Heritage Trust has enabled the formation of a number of catchment management groups that are now preparing plans that should greatly benefit wetlands in the future.

Implementation of the Regional Forest Agreement (RFA—an agreement between the Tasmanian and Commonwealth governments) and subsequent State legislation has led to reservation of new areas, and upgrading of some existing reserves, with the aim of providing a "Comprehensive, Adequate and Representative Reserve System" for forest communities. Many of these areas are, and will remain, in private hands. However, the implementation of the RFA on private land is leading to new, more flexible, more consultative mechanisms for conservation and appropriate management by landowners, as well as (minimal) compensation and legal mechanisms of protection (eg covenants). As monitoring and policing of activities within and around reserves has been and continues to be, one of the main problems of wetland conservation, mechanisms such as extension, compensation and consultation which are inclusive of stakeholders should lead to more effective conservation.

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Note: Grid references are given in the site information, as well as latitudes and longitudes, and the TASMAP No. refers to the appropriate 1:100 000 series map (available from the Tasmanian Department of Primary Industries, Water and Environment, http://www.tas.gov.au). The Department of Primary Industries, Water and Environment, which includes the Parks and Wildlife Service, has previously been known by a number of names. The National Parks and Wildlife Service (NPWS) and Lands Department became the Department of Lands Parks and Wildlife, then the Departments of Parks, Wildlife and Heritage (PWH), and Environment and Planning, then the Department of Environment and Land Management (DELM).

Summary analysis

The Directory describes 89 nationally important wetlands in Tasmania. The distribution of nationally important wetlands in Tas (including Ramsar wetlands) is shown in Figure 8. A list compiling data on bioregion, site area, wetland type and criteria for inclusion for each wetland is provided at the end of this chapter.

Eight bioregions occur in Tasmania, with Furneaux the only one that is shared with neighbouring Victoria. All bioregions contain nationally important wetlands (refer to Table 10.1). The six smallest bioregions are found in Tasmania and the remaining two are among the smallest. The second smallest bioregion of D'Entrecasteaux covers 4,203 km^2 but has only three wetlands listed, covering an approximate area of 61 ha. The largest of the Tasmanian bioregions, West and South West, covers 18,269 km^2 and has seven wetlands listed. An overview of the IBRA regionalisation and a map of IBRA regions is included in Appendix 2.

Table 10.1 Number and area of nationally important wetlands in Tas by IBRA region

IBRA Region	IBRA code	No. of Sites	Area (ha)
Ben Lomond	BEN	15	281
Central Highlands	CH	12	2,420
D'Entrecasteaux	DE	3	61
Freycinet	FRE	8	7,650
Furneaux	FUR	14	3,729
Tasmanian Midlands	TM	20	2,128
West and South West	WSW	7	66
Woolnorth	WOO	10	35,179
Total	**8**	**89**	**51,514**

Nineteen of the 40 wetland types are represented in Tasmania, with a majority of these Marine and Coastal Zone wetlands (refer to Table 10.2). Apart from the ACT and the islands of the External Territories, Tasmanian wetlands exhibit the smallest range of Inland wetland types, with only seven represented. The most commonly listed type is A11—Freshwater lagoons and marshes in the coastal zone (n=20), and the next most common types are A10—Brackish to saline lagoons and marshes (n=13) and B15—Peatlands (n=13).
The Wetland classification system and Criteria for inclusion in the Directory are explained in Chapter 2.

Table 10.2 Number of Tas sites in each Wetland type

A—Marine and Coastal Zone wetlands

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Total	4	2	0	3	2	5	1	4	1	13	20	0

B—Inland wetlands

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
Total	11	0	0	0	9	2	3	2	3	0	0	0	0	0	13	0	0	0	0

C—Human-made wetlands

	C1	C2	C3	C4	C5	C6	C7	C8	C9
Total	1	0	0	2	0	0	0	0	0

Unlike all other jurisdictions, Tasmanian wetlands are most often included in the Directory because they support taxa or communities that are nationally threatened (Criterion 5, n=74). The next most important reason for inclusion is because they are good examples of a wetland type within a particular bioregion (Criterion 1, n=31) (refer to Table 10.3).

Table 10.3 Number of Tas sites included under each Criterion

	1	2	3	4	5	6
Total	31	6	9	4	74	6

List of nationally important wetlands in Tasmania

Wetland name	Old Reference No.	New Reference No.	IBRA Region	Area (ha)	Wetland type(s)	Criteria for inclusion
Blackmans Lagoon	BEN001TA	TAS001	BEN	28	A11	5
Jocks Lagoon	BEN002TA	TAS002	BEN	19	A11	5
Little Waterhouse Lake	BEN003TA	TAS003	BEN	56	A11	1, 5
Surveyors Creek	BEN004TA	TAS004	BEN	10	B1	5
The Chimneys (Lower Ringarooma River floodplain)	BEN005TA	TAS005	BEN	90	A11	5
Tregaron Lagoons 1	BEN006TA	TAS006	BEN	16	A11	5
Tregaron Lagoons 2	BEN007TA	TAS007	BEN	20	A10	5
Unnamed Wetland	BEN008TA	TAS008	BEN	1	A11	5
Unnamed Wetland	BEN009TA	TAS009	BEN	7	A10	5
Unnamed Wetland	BEN010TA	TAS010	BEN	2	A8	5
Unnamed Wetland	BEN011TA	TAS011	BEN	10	A10	5
Unnamed Wetland	BEN012TA	TAS012	BEN	5	A6	5
Unnamed Wetland	BEN013TA	TAS013	BEN	12	A8	5
Unnamed Wetland	BEN014TA	TAS014	BEN	2	A11	5
Unnamed Wetland	BEN015TA	TAS015	BEN	3	B15	5
Allwrights Lagoons	CH001TA	TAS016	CH	6	B15	5
Clarence Lagoon	CH002TA	TAS017	CH	100	B5	5
Dublin Bog	CH003TA	TAS018	CH	1	B15	5
Eagle Tarn Sphagnum	CH004TA	TAS019	CH	1	B15	5
Great Lake	CH005TA	TAS020	CH	1400	C1	5
Interlaken Lakeside Reserve (Lake Crescent)	CH006TA	TAS021	CH	519	B5	1, 3, 5
Kemps Marsh (Lake Sorell)	CH007TA	TAS022	CH	230	B15	2, 3, 5
Lake Kay	CH008TA	TAS023	CH	60	B5	5
Lake Lea	CH009TA	TAS024	CH	100	B5	1
Maggs Mountain Sphagnum	CH010TA	TAS025	CH	1	B15	5
Mt Rufus Sphagnum	CH011TA	TAS026	CH	1	B15	1, 5
Shadow Lake Sphagnum	CH012TA	TAS027	CH	1	B15	1, 5
D'Arcy's Lagoon	DE001TA	TAS028	DE	26	A11	5
Oyster Cove	DE002TA	TAS029	DE	25	A1	6
South East Cape Lakes	DE003TA	TAS030	DE	10	A11	1, 5
Apsley Marshes	FRE001TA	TAS031	FRE	865	A11	2, 5
Douglas River	FRE002TA	TAS032	FRE	100	B1	1, 5
Earlham Lagoon	FRE003TA	TAS033	FRE	220	A5, A10	5

Wetland name	Old Reference No.	New Reference No.	IBRA Region	Area (ha)	Wetland type(s)	Criteria for inclusion
Freshwater Lagoon	FRE004TA	TAS034	FRE	14	A10	5
Hardings Falls Forest Reserve	FRE005TA	TAS035	FRE	1009	B1	5
Maria Island Marine Reserve	FRE006TA	TAS036	FRE	1500	A1, A2, A4	1, 3
Moulting Lagoon	FRE007TA	TAS037	FRE	3930	A6	1, 3, 6
Unnamed Wetland	FRE008TA	TAS038	FRE	12	A11	5
Fergusons Lagoon	FUR001TA	TAS039	FUR	75	A11	5
Flyover Lagoon 1	FUR002TA	TAS040	FUR	18	A10	5
Flyover Lagoon 2	FUR003TA	TAS041	FUR	24	A10	5
Hogans Lagoon	FUR004TA	TAS042	FUR	85	A11	5
Little Thirsty Lagoon	FUR005TA	TAS043	FUR	30	A10	5
Logan Lagoon	FUR006TA	TAS044	FUR	2172	A11	1, 2, 3, 5
Sellars Lagoon	FUR007TA	TAS045	FUR	1200	A10	5
Stans Lagoon	FUR008TA	TAS046	FUR	20	B15	5
Syndicate Lagoon	FUR009TA	TAS047	FUR	1	A10	5
Thompsons Lagoon	FUR010TA	TAS048	FUR	55	B15	5
Unnamed wetland	FUR011TA	TAS049	FUR	25	B15	5
Unnamed wetland	FUR012TA	TAS050	FUR	4	B15	5
Unnamed wetland	FUR013TA	TAS051	FUR	2	A10	5
Unnamed wetland	FUR014TA	TAS052	FUR	18	A11	5
Bells Lagoon	TM001TA	TAS053	TM	80	B7	1, 6
Blackman River 1	TM002TA	TAS054	TM	1	B1	1
Calverts Lagoon	TM003TA	TAS055	TM	46	A10	1
Cataract Gorge	TM004TA	TAS056	TM	1	B1	5, 6
Elizabeth River Gorge	TM005TA	TAS057	TM	1	B1	5
Folly Lagoon	TM006TA	Deleted				
Glen Morey Saltpan	TM007TA	TAS058	TM	15	C4	1
Glen Morriston Rivulet 1	TM008TA	TAS059	TM	1	B1	1, 5
Goulds Lagoon	TM009TA	TAS060	TM	3	A10	3
Lake Dulverton	TM010TA	TAS061	TM	200	B6	5
Lake Tiberias	TM011TA	TAS062	TM	900	B6	5
Macquarie River 2	TM012TA	TAS063	TM	1	B1	5
Macquarie River 4	TM013TA	TAS064	TM	1	B1	5
Mona Vale Saltpan	TM014TA	TAS065	TM	26	C4	1
Near Lagoon	TM015TA	TAS066	TM	15	B8	1, 5
Pitt Water and Orielton Lagoon	TM016TA	TAS067	TM	265	A8	3, 4, 5
River Derwent	TM017TA	TAS068	TM	550	A6	5

Wetland name	Old Reference No.	New Reference No.	IBRA Region	Area (ha)	Wetland type(s)	Criteria for inclusion
South Esk River 1	TM018TA	TAS069	TM	1	B1	5
Tin Dish Rivulet 1	TM019TA	TAS070	TM	1	B1	1, 5
Township Lagoon	TM020TA	TAS071	TM	10	B7	1, 4, 5
White Lagoon	TM021TA	TAS072	TM	10	B8	1, 6
Bungaree Lagoon	WOO001TA	TAS073	WOO	11	B7	5
Lake Flannigan	WOO002TA	TAS074	WOO	150	B5	5
Lavinia Nature Reserve (Lake Martha Lavinia, Sea Elephant Wildlife Sanctuary, Nook Swamps	WOO003TA	TAS075	WOO	6904	A6, A9, B5	3, 4, 5
Pearshape Lagoon 1	WOO004TA	TAS076	WOO	6	A11	1
Pearshape Lagoon 2	WOO005TA	TAS077	WOO	2	A11	1
Pearshape Lagoon 3	WOO006TA	TAS078	WOO	1	A11	1, 5
Pearshape Lagoon 4	WOO007TA	TAS079	WOO	2	A11	1, 5
Rocky Cape Marine Area	WOO008TA	TAS080	WOO	100	A1, A4	1, 5
Unnamed wetland	WOO009TA	TAS081	WOO	3	A11	5
Hatfield Sphagnum	WSW001TA	TAS082	WSW	1	B15	1, 5
Lake Ashwood	WSW002TA	TAS083	WSW	12	B5	1, 5
Lake Bantick	WSW003TA	TAS084	WSW	5	B9	1, 5
Lake Chisholm	WSW004TA	TAS085	WSW	5	B9	2
Lake Garcia	WSW005TA	TAS086	WSW	8	B9	1, 5
Lake Surprise	WSW006TA	TAS087	WSW	25	B5	5
Lake Sydney	WSW007TA	TAS088	WSW	10	B5	2
Little Bellinger	WSW008TA	Deleted				
Unnamed wetland	WSW009TA	Deleted				
Boullanger Bay—Robbins Passage		TAS089	WOO	28000	A1, A2, A4, A5, A6, A7, A8	1, 2, 3, 4, 5, 6

Note: area figures for the above tables are approximate only.