



14. Conservation Significance of Wetlands

Scope

This section analyses the concept of biological significance at various geographic levels (regional to global). The concept of 'important wetlands' is also discussed along with the criteria for national and international importance. Those wetlands in the arid NT that have been identified as important are listed.

14.1 Framework for Assessing Significance and Importance

A Directory of Important Wetlands in Australia (hereafter referred to as the Directory) sets out criteria for inclusion of wetlands. Likewise, there are criteria for the Ramsar list of internationally important wetlands. Both the Directory and the Ramsar list have a biodiversity conservation focus. However, both sets of criteria allow wetlands to be included because they are good examples of a wetland type in a biogeographical region. This allows wetlands to be listed even in the absence of detailed data on flora and fauna values. Where such data exist, a more objective assessment of conservation significance is possible. The Directory also includes a criterion of 'outstanding historical or cultural significance'. In this report we make a distinction between conservation significance and the more general concept of wetland 'importance'.

We have identified wetlands that meet the criteria for inclusion in the Directory. We have further rated them for conservation significance at three geographic scales: regional, national and international. Our rating system is informal and somewhat subjective but provides a useful way of discriminating those wetlands with greater known biodiversity values from those with fewer known values. Regional significance is equated here with significance for maintaining biodiversity in the study area or within a particular bioregion. In making our assessments we considered the value of a wetland or wetland aggregate for the conservation of both species and communities of flora and fauna,

Most of these assessments must be regarded as preliminary due to the general paucity of data including data on:

- existence of individual wetlands;
- the general ecological character of individual wetlands;
- specific flora and fauna values of individual wetlands;
- general ecology and population parameters of many individual species.

In the arid NT all permanent and very long-term wetlands are considered important because of the aridity of the general landscape. However, the longevity of many individual waterholes is not yet recorded, including those in areas where permanent waterbodies are known or thought to occur such as the MacDonnell, Davenport, Murchison and Dulcie Ranges. We were not able to individually describe all the permanent waterholes for potential inclusion in the Directory. Some information about individual permanent waterholes is collated in volume 2 of this report.

Some of the wetlands that are not presently identified as nationally important may have unknown values which make them individually important, and others may collectively be very important. Whitehead and Chatto (1996) discuss the importance of collections of wetlands. Regional collections of wetlands provide the habitat necessary for sustaining regional populations of species. Even though individual wetlands may only support small populations of widespread species they are still important. Degradation

of many of the component wetlands could have serious consequences for the species they support. Gibbs (2000) states that reductions in wetland density can adversely affect total populations of organisms that depend on wetlands. Examples of arid NT wetland types to which this may apply are some of the smaller swamps and claypans. It is important not to overlook the importance of such collections of wetlands even though they do not meet the criteria for the Directory or the Ramsar list.

Some of the wetlands that we have identified as potential Directory sites are composed of several distinct individual wetlands. These wetland aggregations are used to present information about wetland areas for which there is insufficient information to assess or describe individual wetlands and for which the whole aggregation has notable importance for biodiversity.

14.2 Criteria for Including a Wetland in A Directory of Important Wetlands in Australia

According to the third edition of *A Directory of Important Wetlands in Australia* (Environment Australia 2001), a wetland may be considered nationally important if it meets at least one of the following criteria:

1. It is a good example of a wetland type occurring within a biogeographic region in Australia.
2. It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex.
3. It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail.
4. The wetland supports 1% or more of the national populations of any native plant or animal taxa.
5. The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.
6. The wetland is of outstanding historical or cultural significance.

14.3 Application of the Ramsar Criteria in the Arid NT

The criteria for assessing the international importance of individual wetlands are defined under the international agreement known as the Ramsar Convention and are listed in full in appendix 7. Here we discuss the application of some of the criteria to arid NT wetlands. Assessments of the international importance of some arid NT wetlands are included in volume 2.

The Ramsar Key Document *Strategic framework and guidelines for the future development of the List* (internet site of Ramsar: [key_guide_list_e.htm](#)) provides additional information on goals for the Ramsar List and criteria for the inclusion of sites. Some of these guidelines are listed and discussed below.

Goals for the Ramsar List

Item 67 of the Key Document gives a long-term target of including at least one suitable representative of each Ramsar wetland type from each bioregion. The IBRA bioregions (Interim Biogeographic Regionalisation of Australia, Thackway & Cresswell 1995) meet the Ramsar guidelines for regionalisation yet may be considered to be at a relatively fine resolution. Thus, the goal of listing a representative example of each wetland type in each bioregion might be appropriately interpreted as applicable to a larger area than individual IBRA bioregions. For example, a rockhole in the Great Sandy Desert bioregion may have unique attributes for that bioregion but be unremarkable in the context of the nearby MacDonnell Ranges bioregion. Because all the arid NT bioregions consist of single simple polygons it is common for areas typical of one bioregion to occur as outliers in another. There are currently no guidelines for dealing with this issue in assessing sites for conservation importance at both

the national and international (Ramsar) level. However, guidelines for applying the Ramsar criteria in Australia are in preparation (R.Jaensch pers. comm.).

Item 68 encourages Contracting Parties (countries) to determine the range of wetland types, using the Ramsar classification, in each bioregion and identify those sites which provide the best examples of each. Whitehead and Chatto (1996) warn against focusing only on identifying 'best sites' for *A Directory of Important Wetlands in Australia* as often biota depend on a range of wetlands across the landscape. This point is also given some recognition in the Ramsar guidelines in item 74,

'greatest conservation value will be achieved through selection of a network of sites' (internet site of Ramsar: [key_guide_list_e.htm](#)),

however, this point is easily overlooked in the wealth of Ramsar information and the warning of Whitehead and Chatto is an important reminder that isolated 'best sites' generally have limited conservation value on their own.

Furthermore, within each type, there is an enormous variation in attributes such as inundation regime, dominant vegetation and wetland size. Although classification helps in summarising and describing the wetlands of the area there is a great deal of diversity within each type. Therefore, attempting to identify the best example of each type is not always meaningful. The concept of a 'good example' as used in the Directory is more appropriate.

Item 74 concerns criterion 2 concerning threatened species and communities. The guidelines for this have an apparent emphasis on birds but also includes a priority on including sites which

'hold a high proportion of the population of a dispersed sedentary species that occupies a restricted habitat type' (internet site of Ramsar: [key_guide_list_e.htm](#)),

This applies well to plants.

Item 75 concerns ecological communities about which there is little hard data for the arid NT.

Item 78 gives the following priority characteristics for selecting Ramsar sites:

- i. Are 'hotspots' of biological diversity and are evidently species-rich even though the number of species present may not be accurately known; and/or
- ii. Are centres of endemism or otherwise contain significant numbers of endemic species; and/or
- iii. Contain the range of biological diversity (including habitat types) occurring in a region; and/or
- iv. Contain a significant proportion of species adapted to special environmental conditions (such as temporary wetlands in semi-arid or arid areas); and/or
- v. Support particular elements of biological diversity that are rare or particularly characteristic of the biogeographic region.' (internet site of Ramsar: [key_guide_list_e.htm](#))

Clearly point iv concerning species adapted to arid areas is relevant to a great many arid NT wetlands.

Ramsar List Criterion 4

A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Criterion 4 is very broad and could include a vast number of wetlands which support plants and animal species at a critical stage in their life cycles. It is hard to know how to apply this criterion objectively and usefully in the arid NT. The guidelines for criterion 4 (see items 80 and 81 are below) also make special mention of the arid zone; potentially widening their applicability in the arid NT.

'80. Critical sites for mobile or migratory species are those which contain particularly high proportions of populations gathered in relatively small areas at particular stages of life cycles. This may be at particular times of the year or, in semi-arid or arid areas, during years with a particular rainfall pattern. For example, many waterbirds use relatively small areas as key staging points (to eat and rest) on their long-distance migrations between breeding and non-breeding areas. For Anatidae species, moulting sites are also critical. Sites in semi-arid or arid areas may hold very important concentrations of waterbirds and other mobile wetland species and be crucial to the survival of populations, yet may vary greatly in apparent importance from year-to-year as a consequence of considerable variability in rainfall patterns.

81. Non-migratory wetland species are unable to move away when climatic or other conditions become unfavourable and only some sites may feature the special ecological characteristics to sustain species' populations in the medium or long-term. Thus in dry periods, some crocodile and fish species retreat to deeper areas or pools within wetland complexes, as the extent of suitable aquatic habitat diminishes. These restricted areas are critical for the survival of animals at that site until rains come and increase the extent of wetland habitat once more. Sites (often with complex ecological, geomorphological and physical structures) which perform such functions for non-migratory species are especially important for the persistence of populations and should be considered as priority candidates for listing.' (internet site of Ramsar: key_guide_list_e.htm)

Ramsar List Criterion 5

A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

Criterion 5 arguably does not apply in the arid NT since there is no such site. The only wetlands supporting such large populations do so episodically and may qualify as Ramsar sites under the guidelines for criterion 4 as presented above. The term 'regularly' is discussed in Appendix B of the key document *Glossary of terms used in the Strategic Framework*. Some flexibility is suggested for arid zone sites although a general definition of 'two thirds of the seasons' is given. If a long-term view is taken it is arguable that the episodic inundation events in arid NT salt lakes are regular, being likely to occur several times a century.

Ramsar List Criterion 6

A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

The application of criterion 6 also hinges on interpretation of the term 'regular'. 'Population' as used in criterion 6, is loosely defined in the glossary, as the relevant biogeographic population. In 2001 Lake Mackay probably had well over 1% of the global population of Banded Stilts.

Ramsar List Criterion 7

A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.

Several items of the guidelines aid in interpretation of criterion 7 concerning fishes. Item 92 concerns the international importance of sites with a high diversity of fishes. Three isolated arid NT drainage networks have a high diversity of fishes relative to much of the arid zone. The Finke River system has 9 species; the Whistleduck Creek system has seven and the Frew River system has six. The Sandover River system has 5 recorded species but the significance of this diversity is reduced due to the occasional connection to the Georgina River system (c. 11 species) and the possibility that some species do not persist in the Sandover and are only present following colonisation from the Sandover. None of these numbers is high in global terms but are moderately high in terms of the Australian arid zone. Wager and Unmack (2000) give numbers of species by national drainage basin for the greater Lake Eyre basin, of which The Cooper Creek basin has 19 indigenous species and the Georgina and Diamantina basins both have 11.

The guidelines on assessing significance of fishes direct that diversity alone is an inadequate measure and that other ecological factors should be assessed including interactions between species, with the environment and endemism. Item 94 gives a threshold value of 10% endemism. Only the Finke system (33% endemic) satisfies it and one of the species is listed as threatened and another is considered rare; further adding to the case for international significance of the permanent waterbodies in the upper Finke River system. The long isolation of the Frew and Whistleduck drainages may be grounds for claiming international significance of their fishes but they do not clearly qualify.

Ramsar List Criterion 8

A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Criterion 8 is designed to identify the importance for areas of fish habitat that are important at particular times such as breeding or as a source of food. Since all arid NT fish populations rely on permanent and semi-permanent pools within the river systems, this criterion has little applicability. In the arid NT some fishes may breed in biologically productive swamps in lower parts of the catchments but these are generally isolated from the refuge pools and typically dry out (with the resulting death of any fishes in them) before they are reconnected to the refuge pools.

14.4 Important Wetlands in the Arid NT

Existing and Potential Directory Wetlands

Prior to this inventory there were four arid NT wetlands listed in a *Directory of Important Wetlands in Australia* (hereafter referred to as the Directory or DIWA): 'Lake Surprise (Yinapaka)', 'Lake Amadeus', the 'Karinga Creek Paleodrainage System' and the 'Finke River Headwater Gorges System'. Of these, the last two are aggregations of individual wetlands.

We have identified a further 46 wetlands that would contribute well to the directory. Half (23) of these are aggregations of multiple individual wetlands. Therefore, the number of new potential Directory sites is less than the number of individual significant wetlands. We have also suggested removing one of the existing DIWA wetlands in favour of two new ones: 'Finke River Headwater Gorges System', replaced by 'Chewings Range Permanent Springs' and 'Permanent and Long-term Waterholes of the Finke River System'.

Description and Nomination of Wetlands for Inclusion in the Directory

For 10 of the 46 potential new DIWA wetlands, we have prepared a full descriptive account in the form required by DIWA, and stored it in a DIWA compatible database. These descriptive accounts are presented in Volume 2 of this report. For the others we have prepared only summary descriptions; stored in the same database. The summary descriptions are presented by bioregion in the next chapter of this volume.

It is important that the concerns of landholders be respected in building partnerships for the conservation of biodiversity values. Many landholders in the study area are very concerned about unauthorized visitation to sites on their properties and this makes some landholders wary of sites being listed in the Directory.

None of the wetlands that we have identified as important for conserving biodiversity have been nominated for inclusion in *A Directory of Important Wetlands in Australia*. It is proposed that landholders need to approve of and be part of any such nominations. The managers and/or owners of pastoral leases with identified potential Directory sites have all been informed in writing and the Central Land Council has been advised regarding sites on Aboriginal Land Trusts. A process of considering nominating wetlands on reserves managed by Parks and Wildlife has been commenced.

The Parks and Wildlife Service of the Northern Territory does not endorse listing of any wetlands in material for public circulation without landholder approval.

Conservation Significance Levels of Potential Directory Wetlands

Each of the 46 potential new Directory wetlands was assessed against the DIWA criteria using available data. The most likely potential Ramsar wetlands were also assessed against the Ramsar criteria. The amount of data on flora and fauna values varied greatly between sites so this assessment is far from comprehensive.

As stated above, we also rated each of these wetlands (or wetland aggregate) for conservation significance at a regional, national and international level.

The wetlands identified as potential Directory sites are listed in table 39 and their locations shown in figure 22.

Table 39. Potential wetlands for inclusion in the Directory and their significance rating.

| Wetland_name | Aggregation | Bioreg. | DIWA criteria | Ramsar criteria | DIWA account preparation status |
|---|-------------|---------|-----------------------|-------------------|---------------------------------|
| National/International (11) | | | | | |
| Alice Springs Sewage Ponds | | MAC | 3 | | minimal |
| Chewings Range Permanent Springs | Y | MAC | 1, 3 | 1, 3 | complete draft |
| Dulcie Ranges Springs and Waterholes | Y | BRT | 1, 3 | ?1, ?3, ?4 | complete draft |
| George Gill Range Springs and Rockholes | Y | MAC | 1, 3 | 1, 3 | complete draft |
| Lake Lewis | | GSD | 1, 3 | ?1, ?5 | complete draft |
| Lake Mackay | Y | GSD | 1 4, ?5 | 1, ?2, ?4, ?5, ?6 | complete draft |
| Palm Valley Area Springs, Rockholes and Palm Groves | Y | MAC | 1, 3, 4, 5 | 1, 2, 3, ?4 | complete draft |
| Permanent and Long-term Waterholes of the Finke River System (replacing Finke River Headwater Gorges) | Y | MAC | 1, 2, 3, 4, 5 | 1,2,3,4,7 | complete draft |
| Permanent Waterholes of the Davenport Ranges National Park | Y | DAV | 1, 2, 3, (possibly 4) | ?1, 2, 3, ?3 | complete draft |
| Snake Creek Interdune Floodout Lakes | Y | SSD | 1, ?3 | 1, 3, ?5 | complete draft |
| Talipata Spring | | MAC | 1, 3 | 3 | complete draft |
| National (8) | | | | | |
| Casuarina Swamp | | SSD | 1, 4, 5 | not assessed | minimal |
| Elkedra River Floodout Swamps | Y | TAN | 1, 2, ?3 | not assessed | minimal |
| Finke Floodout Forest | | STP | 1 | 1 | minimal |
| Karinga Creek Paleodrainage System (lakes of) | Y | FIN | 1,4,6 | not assessed | in DIWA |
| Lake Surprise (Yinapaka) | | TAN | 1,2,3 | not assessed | in DIWA |
| Lander River Floodout Swamps and Waterholes | Y | TAN | 1, 4, 5 | 2 | minimal |
| Newhaven Lakes | Y | GSD | 1 | ?1 | minimal |
| Stirling Swamp | Y | BRT | 1, 2, 3, 4, 5 | 2 | minimal |
| National/Regional (5) | | | | | |
| Frew River Floodout Swamps | Y | DAV | 1, 2, ?3 | not assessed | minimal |
| Illparpa Valley Wetlands | Y | MAC | 1, 3, 4, 5 | not assessed | minimal |
| Lake Amadeus | | GSD | 1 | not assessed | in DIWA |
| Mudhut Swamp | | BRT | 1 | not assessed | minimal |
| Woodduck Swamp | | BRT | 1 | not assessed | minimal |
| Regional (24) | | | | | |
| Ancient Swamp | | TAN | 1 | not assessed | minimal |
| Blue Bush Swamp (Burrumurra) | | MGD | 1 | not assessed | minimal |
| Duffield Swamp | | STP | 1 | not assessed | minimal |
| Ettenia Spring | | FIN | 1 | not assessed | minimal |
| Field River Floodout and other swamps | Y | SSD | 1? | not assessed | minimal |
| Indemina Swamp | | SSD | 1 | not assessed | minimal |
| Indinda Swamp | | SSD | 1 | not assessed | minimal |
| Kangaroo Dam Swamp | | FIN | 1 | not assessed | minimal |
| Lake MacDonald | | GSD | 1 | not assessed | minimal |
| Lake Neale | | GSD | 1 | not assessed | minimal |
| Large Semi-permanent Waterholes of the Georgina River System (NT portion) | Y | MGD | 1, 3 | not assessed | minimal |
| Narwietooma Lignum Swamp | | BRT | 1 | not assessed | minimal |
| Northern Simpson Desert Area Lakes | Y | SSD | 1 | not assessed | minimal |

| | | | | | |
|--|---|-----|---------|--------------|---------|
| Ormiston - Glen Helen Mound Springs | Y | MAC | 1 | not assessed | minimal |
| Pine Hill and Conniston Springs | Y | BRT | 1 | not assessed | minimal |
| Rainbow Valley Claypans | Y | MAC | 1 | not assessed | minimal |
| Ringwood Bluebush Swamp | | MAC | 1 | not assessed | minimal |
| Salt Creek Lake | | FIN | 1 | not assessed | minimal |
| Sanctuary Swamp | | TAN | 1 | not assessed | minimal |
| Sandover Highway Wooded Swamp | | MGD | 1 | not assessed | minimal |
| Skull Creek Swamps (New Crown) | Y | STP | 1 | not assessed | minimal |
| Small Spring-fed Waterholes of the Toko Ranges | Y | CHC | 1, 2, 3 | not assessed | minimal |
| Wycliffe Creek Floodouts | Y | TAN | 1 | not assessed | minimal |
| Yellow Hole Bore Swamp | | MGD | 1 | not assessed | minimal |
| Suspected Regional | | | | | |
| Warrabri Swamp - Skinner Creek Floodout | | TAN | 1 | not assessed | minimal |
| Superseded (presently in DIWA) | | | | | |
| Superseded site: Finke River Headwater Gorges System | Y | MAC | | not assessed | in DIWA |

Discussion of Significance Ratings of the Potential New Directory Sites

National / International

Due to the subjective nature of the criteria and the political aspect of the Ramsar listing process, sites of potential international significance have been rated as 'national/international significance'. There were 11 such wetlands or wetland aggregates that were identified at this level. The Alice Springs Sewerage Ponds were included for their importance for wetland birds, including as a migratory rest point.

National

The 8 wetlands rated as being of 'national significance' had known or suspected values for threatened species or supported a diverse suite or abundance of wetland organisms, but less clearly met Ramsar criteria.

National / Regional

There were 5 wetlands rated as being of 'regional significance' but which were bordering on being rated at the national level. Since the process of rating the significance of individual wetlands is presently informal, an intermediate category is a useful way of indicating relative importance.

Regional

Of the 46 identified potential DIWA wetlands, 27 only met criteria 1 (a good example in a bioregion). In most cases these equated to an assessment as regional conservation significance. In the exceptions, the conservation significance was also influenced by other factors such as the national distinctiveness or lack of it. Although the *Finke Floodout Forest* has little species data to highlight its significance, it is a highly unusual wetland, which is why it was rated as 'national significance'. In contrast, the *Large Semi-permanent Waterholes of the Georgina River System (NT portion)* met DIWA criterion 3 as well as 1, due to the moderately documented refuge value for fish and birds. However, since the NT only holds a portion of the greater Diamantina River system, the significance level was rated as regional. The *Newhaven Lakes* were deemed to be likely to meet criterion 3 as wetland bird habitat but data were not available to test this. This aggregation also consists of an unusual variety of wetlands that are being managed for conservation. Accordingly we rated it as nationally important. One site was rated as of 'suspected regional importance' because there is currently no species data for it, only anecdotal reports.

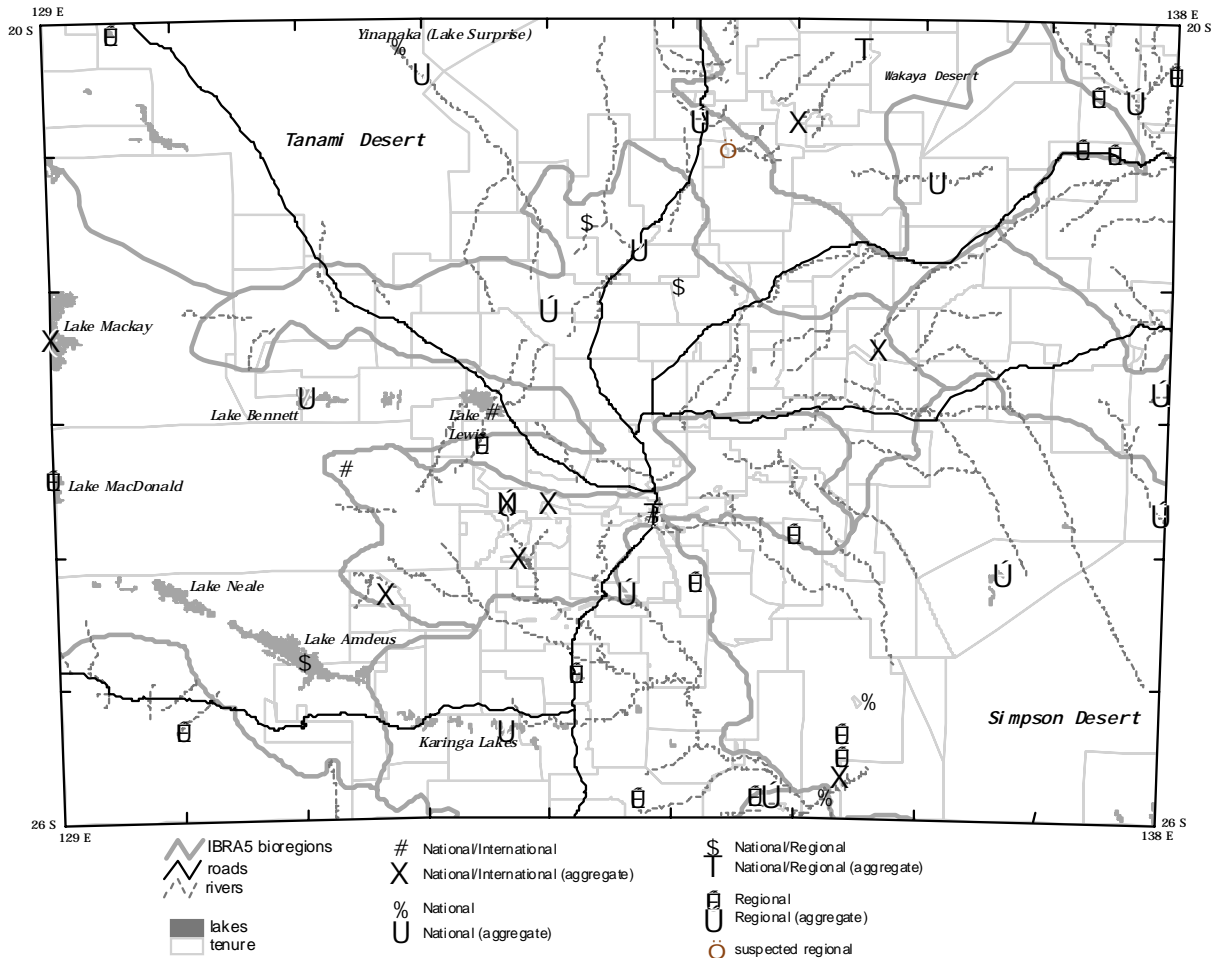


Figure 22. Map of identified 'important' wetlands.

Delineation of Important Wetlands

The mapping of individual wetlands varies in adequacy. Individual wetlands that are large enough to be mapped on 1:250,000 maps are usually reasonably well delineated. The floodout swamps of the Elkedra and Frew Rivers are notable exceptions and these have been mapped with remote sensing (see appendix 2). The components of the aggregate wetlands are generally not consistently mapped. The distributions of distinct zones or 'wetland types' with individual wetlands are not mapped.

Some of the sites could be much better delineated with additional aerial photograph and satellite image interpretation. Such mapping work has not been undertaken for individual wetlands.

Landowners should be consulted about the publication of maps showing detailed locations. Any such maps should be published with advice that land-holder/manger permission should be sought before wetlands are visited. This courtesy is important if effective cooperative conservation is to be implemented for wetlands outside of formal conservation reserves (off-park).