

Ginini Flats Subalpine Bog Complex

1. Country: Australia

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5. Name of wetland: Ginini Flats Wetland Complex

6. Date of Ramsar designation:

7. Geographical co-ordinates: 35°31'S, 148°46'E. Located near Mt. Ginini in the upper reaches of the Cotter River catchment in the Brindabella Range, 40 km SW of Canberra, Australian Capital Territory.

8. General location: Near Mt. Ginini, Namadgi National Park, Australian Capital Territory; nearest urban area is the city of Canberra.

9. Area:

Wetland complex:	50 ha
Open Flats:	75 ha
Total Catchment:	410 ha

10. Wetland type: Type: 12 (Inland wetlands): Peatlands; shrub and open bogs, fens.

11. Elevation: Ginini Flats Wetland Complex:

Ginini Flats	1600 - 1520 m.a.s.l.
Cheyenne Flats	1500 - 1540 m.a.s.l.

12. Overview: The Ginini Flats wetland consists of a complex of subalpine *Sphagnum* bogs and associated wet heath and wet grassland occupying a series of interconnected flats known as Ginini Flats and Cheyenne Flats (Figure 1). The wetlands occur in low-lying, open areas with impeded drainage which has resulted in the formation of a bog complex on deep peaty soils (Hope and Southern 1983). The area is relatively undisturbed, and is part of the Cotter River catchment, the primary water supply for the city of Canberra. The Ginini Flats complex includes a particularly good examples of a *Sphagnum* bog at its northern-most limit in the Australian Alps. The area includes some of the largest, deepest and best preserved bogs found in mainland south-eastern Australia (Costin 1972).

13. Physical features: The topography consists of a series of gently undulating broad, open flats lying between the higher slopes and ridges of the Bimberi Range. The highest part of the catchment includes the summit of Mt. Ginini (1762 m asl).

The underlying geology consists of four main types: intensely folded Ordovician Nungar sediments, late Silurian intrusives, McKeahnie Adamellite, and Ginini Leucoadamellite (Owen and Wyborn 1979), the latter are both intensely deformed. The Nungar beds, which are derived from deep marine turbidity currents, consist of fine quartz arenite, siltstone, and slate. The McKeahnie Adamellite is a foliated adamellite, while the Ginini Leucoadamellite is a Leucoadamellite, consisting of adamellite, and aplite. The Nungar Beds occupy the western third of the nominated area, with most of the wetland complex being underlain by granitic rocks.

The soil types found within the catchment include alpine humus soils on the surrounding wooded slopes, and well developed peats up to two metres deep beneath areas of wet heath and bog (Costin 1972).

The waters of Ginini Flats are unpolluted, and are part of the water supply for Canberra. The ephemeral pools within the bogs typically have a substrate of loose organic debris, are shallow, slightly acidic, have low conductivities, and very low turbidities (Osborne 1990). The permanent streams that cross the flats are typically small and often completely overgrown with wet heath vegetation. The total area of wetland is about 50 ha, with the catchment occupying approximately 410ha.

The climate is sub-alpine, with winter snow cover generally persisting for at least one month/year. At Bulls Head (1366 m asl, 15 km north of Ginini Flats), the nearest station with suitable long-term climate data, the mean annual precipitation is 1100 mm/yr, the mean maximum temperature for the warmest month (January) is 13.4⁰ C, and the mean minimum temperature for the coolest month is 4.2⁰ C (information provided by the Bureau of Meteorology, Canberra).

14. Ecological features: The Ginini Flats wetland complex occurs on an interconnected series of subalpine flats, where, because of the underlying granitic geomorphology, extensive *Sphagnum* bogs and associated wet heath and wet grassland have formed in areas with impeded drainage (National Capital Development Commission 1989; Hope and Southern 1983). Ginini Flats and Cheyenne Flats comprises a mosaic of bog, wet heath, wet herbfield, sedgeland, dry heath, and tall wet heath surrounded by sub-alpine woodland. The *Sphagnum* bogs in this area, with their characteristic hummock-hollow development, are the northern-most examples of this type of wetland in the Australian Alps (Evans and Keenan 1993).

The dominant vegetation found within each of the wetland vegetation types is listed in Table 1. The surrounding slopes are dominated by snow gum woodland (*Eucalyptus pauciflora* ssp *debeuzevillei*) with a grassy ground cover (*Poa* spp) or shrubby understorey (*Bossaea foliosa*, *Oxylobium ellipticum*, *Daviesia ulicifolia*, *Leptospermum lanigerum* in sheltered sites).

15. Land tenure: The entire catchment is contained within Namadgi National Park in the Australian Capital Territory. The western edge of the catchment extends to the state boundary

between the Australian Capital Territory and New South Wales. Bimberi Nature Reserve is located on the New South Wales side of the border, offering similar protection to that of a national park.

Table 1: Main vegetation types found within the Ginini Flats wetland complex (after Helman and Gilmour 1985 and NCDC 1989).

Vegetation community	Dominant species
Bog	<i>Sphagnum cristatum</i> , <i>Richea continentis</i> and <i>Restio australis</i>
Wet herbfield	<i>Poa costiniana</i> <i>P. clivicola</i> and <i>Athropodium milleflorum</i>
Wet heath	<i>Epacris paludosa</i> , <i>Baeckea gunniana</i> and <i>Callistemon sieberi</i>
Sedgeland	<i>Carex gaudichaudiana</i> and <i>Ranunculus spp.</i>
Dry heath	<i>Bossiaea foliosa</i> , <i>Oxylobium alpestre</i> , and <i>Helipterum anthemoides</i>
Tall wet heath	<i>Leptospermum lanigerum</i> and <i>Sphagnum cristatum</i>

16. Conservation measures taken: The Ginini Flats wetland complex occurs entirely within a national park. In the ACT it is illegal to hunt or trap or remove habitat of wildlife within national parks and reserves. Wildlife is defined as including both flora and fauna. The area is also wholly contained within the Bendora Reservoir sub-catchment within the Cotter River catchment, and as such there are restrictions on camping and fishing. Vehicular access to the wetlands by public is restricted by closure of a management trail. The area also has been nominated as part of the National Estate of Australia.

In the past the activities of feral pigs have damaged the bogs, however following a successful program by ACT Parks and Conservation Service to reduce pig populations, the amount of ongoing damage has been minimised.

17. Conservation measures proposed: The Ginini Flats area is being nominated for designation as a Ramsar site.

18. Current land use: The current land use of the area is nature conservation, and catchment management. Human activities that take place in the catchment are minimal and principally recreational. Bushwalking and cross-country skiing are popular activities in the general area. As the wetlands are part of the Bendora sub-catchment management area, camping is restricted, limiting human activity to day use.

Access to the Ginini Flats area is via a maintained gravel road ending in a small car park, allowing car access to within 300 metres of the wetland complex. The public road is closed during high fire risk times, and during times of high snow cover. Beyond the car park, the road is

closed to the public by locked gates. There is a four wheel drive vehicle management trail that crosses parts of Cheyenne Flats (Figure 1). Within the catchment there is a small Civil Aviation Authority air navigation facility on the summit of Mt. Ginini. A gravel road is also maintained to this facility.

19. Disturbances/threats: The Ginini Flats wetlands remain relatively undisturbed and free of weed invasion. Past disturbances to the flats have included livestock grazing, and extraction of peat and *Sphagnum* (Clark 1980). Livestock grazing apparently has been minimal with the last official grazing in the area occurring in 1909, and possibly during a period of drought in 1920 (Clark 1980). In 1938 a two metre deep trench some 50 m in length was dug through a large area of peat at Ginini Flats by researchers from the Department of Forestry at the Australian National University, and this may have altered the hydrology of a small area of the wetlands nearby. During the 1940's, *Sphagnum* was extracted from part of the bog, the effects showing on aerial photography taken during 1944 (Clark 1980). On the eastern side of Mt. Ginini, upslope of the wetlands, trees have been removed to form a ski run, which is now disused.

Fire presents a moderate threat to the wetland complex. In subalpine areas wildfires can severely damage peat and bog areas (Good 1973). For example in January 1983 a wildfire burnt moss and underlying peat in Rotten Swamp at 1460 m altitude in Namadgi National Park (Helman and Gilmour 1985).

The main current threats to the wetland system are from recreational use and damage caused by feral animals. Feral pigs are a threat as they disturb large areas of herbfield in their search for food such as insect larvae and tubers (Alexiou 1983). Pigs also wallow in bog pools and can disturb the breeding pools used by the corroboree frogs which breed in this area.

As the flats are one of the most accessible high altitude bog/ wet heath areas in ACT, there is the risk of trails forming from the compression of vegetation from walkers (Clark 1980 and NCDC 1989). There is also a minor threat to the wetlands from the establishment of exotic conifer trees from seeds dispersed from an arboretum on the north eastern slopes of Mt Ginini. A number of such trees have already established in the area between Ginini and Cheyenne Flats.

20. Hydrological and physical values: The wetlands occupy part of the Cotter River Catchment which provides a major part of the urban water supply for Canberra. Snow cover on the subalpine ranges in this area provides a significant winter storage that is released slowly as the snow melts. Snowmelt may be an important factor in maintaining the hydrological conditions that encourage *Sphagnum* development within the Ginini Flats wetlands.

The flats contain some of the largest and best preserved *Sphagnum* bogs on Australian mainland (Costin 1954), with the peat being two meters deep in places (Clark 1980). Costin (1972) estimated the age of the peat to be about 3280 years BP, with wood remains being present from about 3070 years BP. The bogs are spring fed, and are reasonably well protected from fire due to

their large extent and the presence of extensive areas of moist *Sphagnum*.

21. Social/cultural values: Within the wetland system there is little evidence that the flats were used by Aboriginals. However, there is considerable evidence of aboriginal use of the nearby Mt Gingera area (Flood 1980). Thus, it is likely that the open flats would have been used as a route by people during their annual visits to the high peaks to harvest bogong moths (*Agrotis infusa*) (Clark 1980).

There is little evidence of early European settlement within the catchment. Existing cultural sites within the area include an arboretum, and former cleared ski run.

22. Noteworthy fauna: Subalpine wetlands in the Australian Alps support a distinctive fauna that includes many unusual, rare or endemic invertebrates and vertebrates (Green and Osborne 1994). In the Ginini Flats area many of these species are at the northern limit of their biophysical range, and are somewhat isolated from populations further south in Kosciusko National Park.

Noteworthy species present in the Ginini Flats complex include the broad-toothed rat (*Mastacomys fuscus*), Latham's snipe (*Gallinago hardwickii*), corroboree frog (*Pseudophryne corroboree*), the alpine water skink (*Eulamprus koscuiskoi*), the bog skink (*Niveoscincus rawlinsoni*), and invertebrates such as the metallic bog cockroach (*Polzostera virridisma*) (Evans and Keenan 1993). The broad-toothed rat, and the corroboree frog, are listed as Vulnerable and Rare Species on the Schedule 12 of the NSW National Parks and Wildlife Act (1992). The corroboree frog is listed as Vulnerable in the draft Action Plan for Australian Frogs (Tyler in prep.) Mountain Galaxias (*Galaxias olidus*), a small native fish confined mainly to streams that do not support introduced populations of trout, also occur in the streams that bisect the flats.

The Ginini Flats wetland complex is particularly important for the conservation of the spectacular yellow and black corroboree frog. The corroboree frog is a rare endemic species found only at high altitudes in the Southern Highlands between Smiggin Holes in Kosciusko National Park (NSW) and the northern end of the Brindabella Range near Canberra. The population at Ginini Flats is one of the largest known populations of this uncommon species. The numerous pools scattered throughout the bogs and wet heaths provide an important variety of potential breeding sites.

Corroboree frogs are listed as being a Vulnerable species by the IUCN (1994 Red List of Threatened Animals). In Australia the species is considered to be threatened in both New South Wales (National Parks and Wildlife Act 1974 - Vulnerable and Rare species) and the Australian Capital Territory (Nature Conservation Act 1980 - Special Protection Status Species). Continuing declines in the population numbers of this species (Osborne 1989, 1991) are of concern, adding to the importance of the protection of large areas such as the Ginini Flats complex.

23. Noteworthy flora: Subalpine bog and wet heath vegetation has a restricted occurrence in

favourable situations in the Australian Alps. Sites with extensive bog development dominated by *Sphagnum* are uncommon on the mainland of Australia. Significant plant species associated with the wetlands include the peat moss (*Sphagnum cristatum*), alpine plum pine (*Podocarpus lawrencei*), alpine ballart (*Exocarpus nanus*), dwarf buttercup (*Ranunculus millanii*), silvery carraway (*Oreomyrrhis argentea*), and *Craspedia* sp. F. (Helman and Gilmour 1985).

24. Current scientific research/facilities: There are currently no research facilities within the catchment of the wetlands. However because of its proximity to Canberra the area has attracted considerable use for research. Studies undertaken at Ginini Flats include research on *Sphagnum* development (Clark 1980), carbon-14 dating of the age of bogs (Costin 1972) and the ecology of corroboree frogs (Osborne 1990). From time to time the Australian National University, and the University of Canberra use the site for teaching purposes.

25. Conservation education: During holiday periods and other times of demand, there are guided walks lead by rangers of the ACT Parks and Conservation Service. These occur mainly during summer, but also during winter when the snow cover acts as an added attraction. Some private eco tourism groups also visit the Ginini Flats area.

26. Recreation/tourism: The open flats and bog areas provide an appealing destination for summer day visitors, who use the area for nature study and hiking. During the winter the road is often closed to private vehicles due to snow on the road. At these times, the snow-covered roads and flats provide a popular cross-country ski route.

27. Management authority: ACT Parks and Conservation Service, PO Box 1119, Tuggeranong, ACT 2901, Australia
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28. Jurisdiction: ACT Government, Department of Urban Services

29. Bibliographical references:

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30. Reasons for Ramsar inclusion:

- 1(a) The Ginini Flats wetland is one of the largest, deepest and least disturbed subalpine *Sphagnum* bogs in mainland south-eastern Australia. Such wetlands have a very limited distribution in the Australian Alps.

- 2(a) The wetland complex has a diverse assemblage of subalpine flora and fauna that is restricted to this wetland type.
- 2(b) The Ginini Flats wetland complex is at the northern biophysical limit of this habitat type, and is of importance in maintaining the genetic and ecological diversity of a number of endemic and restricted species found in subalpine wet heaths and bogs.
- 2(c) The Ginini Flats complex provides important breeding habitat for the vulnerable Corroboree Frog (*Pseudophryne corroboree*), a rare species confined to the Southern Highlands of New South Wales and the Australian Capital Territory. The area also supports the largest population of this species in the Brindabella Range.

31. Map of site: Figure 1: Ginini Flats Wetland Complex. Stippling indicates extent of wet heath and bog complex.