Coomalbidgup Swamp Waterbirds

Situated 45 km west of Esperance, Coomalbidgup Swamp was historically an ephemeral freshwater wetland dominated by a closed canopy of the Yate, *Eucalyptus occidentalis*. Increased run-off into the wetland, as a result of land clearing, resulted in increasing periods of inundation, and tree death has occurred since the 1980s. Currently only fringing vegetation remains and the lake is semi-permanent and in the early stages of secondary salinization.
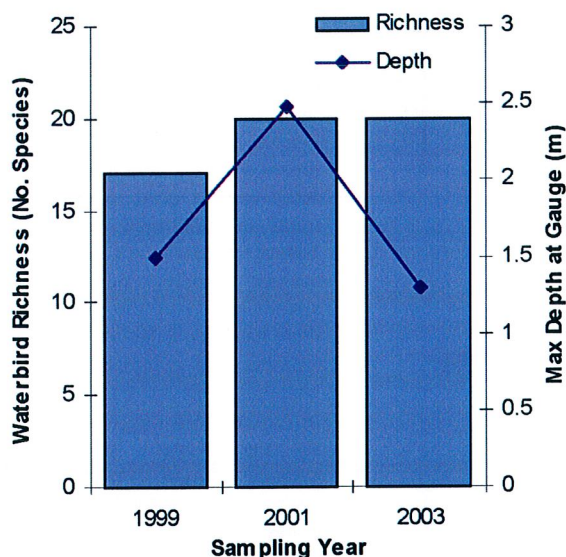

Increased run-off into Lake Coomalbidgup has caused a change in structure since the 1980s (photo by S.A. Halse)
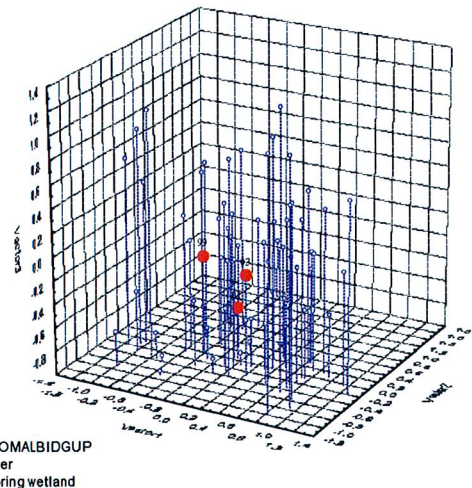
Species Richness

Twenty-five species were recorded from Coomalbidgup Swamp, with the maximum of 20 species recorded in both 2001 and 2003. Species richness and abundance were lower in 1999 because the lake was inaccessible due to flooding and only two of the three annual surveys were conducted. Despite this, 12 species (49%) were recorded in all years and 16 species (67%) were observed in both 2001 and 2003. Seven species were recorded breeding.

The waterbird assemblage was dominated by ducks with several species being abundant. More than 2000 birds were recorded in both 2001 and 2003, which was an order of magnitude greater abundance than was recorded in surveys conducted twice annually between 1988-1992. Community composition was similar across years, despite the reduced sampling effort in 1999, and this is reflected in an ordination of species abundance.

MDS Ordination (SSH) of range standardized abundance of waterbird species.


Species richness at Coomalbidgup swamp.

Further Reading

Cale, D.J., S.A.Halse and C.D.Walker (2004) Wetland monitoring in the Wheatbelt of Western Australia: site descriptions, waterbird, aquatic invertebrate and groundwater data. *Conservation Science W. Aust* **5**: 20-135

Halse, S.A., D.J. Cale, E.J. Jasinska and R.J. Shiel (2002) Monitoring change in aquatic invertebrate biodiversity: sample size, faunal elements and analytical methods. *Aquatic Ecology* **36**:1-16

Halse, S.A., R.M. Vervest, G.B. Pearson, F.H. Yung, and P.J. Fuller, Annual waterfowl counts in south-west Western Australia - 1990/91. *Calmscience* **1**: 107-129

Wheatbelt Wetlands Monitoring

The Salinity action Plan Wheatbelt Wetlands Monitoring programme commenced in 1997 with the sampling of five wetlands and was expanded to include 13 in 1998 and finally a total of 25 wetlands in 1999. These monitoring wetlands have been sampled every second year since commencement, such that half of the wetlands are sampled in alternating years. Wetlands first sampled in 1997 have now been sampled 4 times. While this actually yields few data points and interpretation is, at this stage, imprecise it is expected that as the project continues and further data points are collected an increasingly accurate estimate of wetland trends will be achieved. Faunal sampling includes; waterbird species richness and abundance, aquatic invertebrate species richness and abundance and water-chemistry. Sampling of these parameters is directed toward tracking trends in biodiversity of the wetlands individually and as a group to reflect the status of wheatbelt wetlands generally. This brief note presents data for waterbird surveys up to 2003 and is intended as an annual mechanism for reporting data from this project.
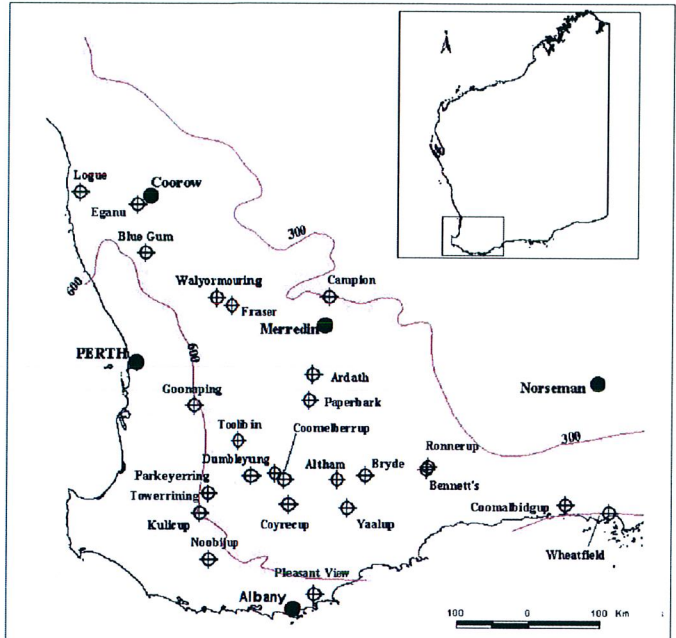
MEAN Z-score for WATERBIRD RICHNESS at all lakes during year of sampling
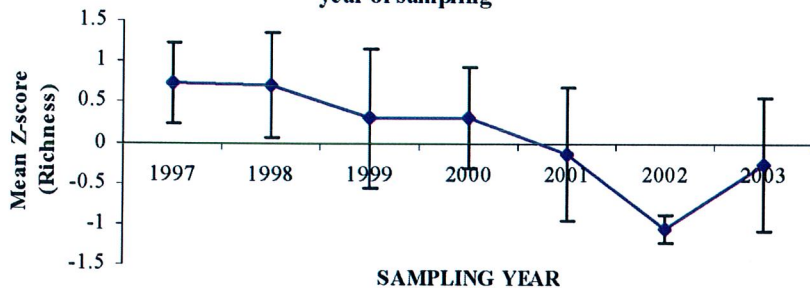
MEAN Z-score for WATERBIRD ABUNDANCE at all lakes during year of sampling
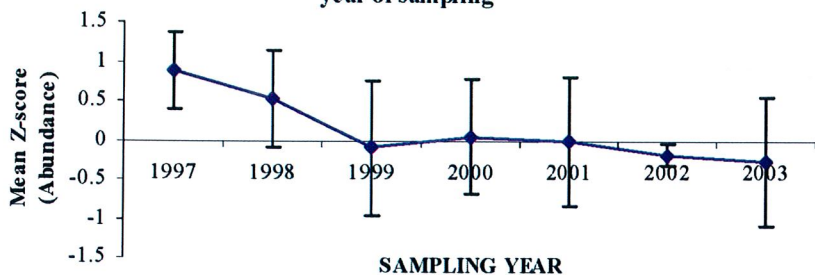
Waterbird Richness and Abundance in the Wheatbelt

The number of species present (Richness), is a valuable measure of biodiversity and abundance is indicative of the productivity of wetlands. The mean z-score for waterbird richness and abundance is calculated in the same way. At each wetland the normal deviate (z) is calculated for each year, from the entire dataset for that wetland. The mean z-score is the average of these annual z scores over all wetlands. Thus, the mean z-score can be used to measure the overall trend in monitored wetlands over time. Values below zero reflect lower than average species richness or waterbird abundance. Over the period of monitoring there has been a decline in waterbird species richness and abundance at the monitored wetlands. This has coincided with a decline in rainfall following 1999 with 2000-2002 showing 'average' to 'very much below average' rainfall over the study area. It is too early to ascribe the reduction in species richness and abundance to low rainfall, although it is intuitive that the lower water levels and higher salinities associated with low rainfall are likely to lead to fewer species using wetlands.

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