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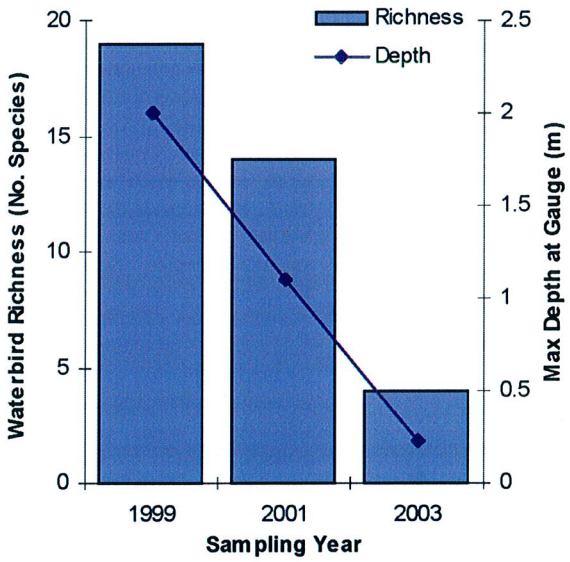
Lake Ronnerup Waterbirds

Lake Ronnerup is a naturally saline wetland situated in the Dunn Rock Nature Reserve approximately 40 km south-east of Lake King. The lake has a broad flat bed and moderately steep sides such that most of the lake bed remains wet even at low water levels

View across fringing saltbush and into Lake Ronnerup (photo by S.A.Halse)

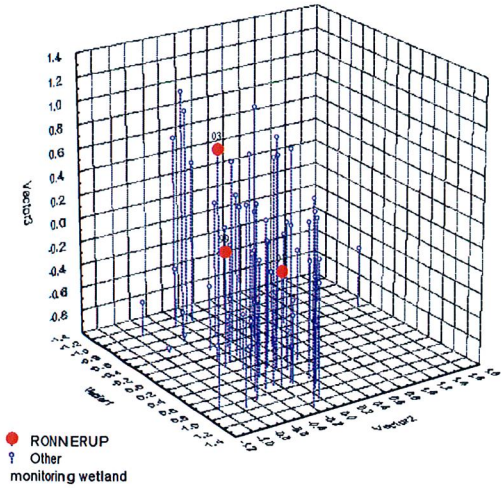
Species Richness

Species richness varied according to water depth with as few as 4 species recorded at less than 25 cm depth. A total of 21 species were recorded during the monitoring period, of which 6 (28%) were only recorded in 1999 when autumn rains filled the lake to a depth of 2 m.



Species richness at Lake Ronnerup.

Abundance also varied across years according to water level. However, greatest abundance occurred in the year after the lake filled, when more than 5000 birds were recorded. Only 18 birds were recorded in 2003. The variability in the number of species and the number of birds present resulted in a marked variability of community composition across years.



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

Further Reading

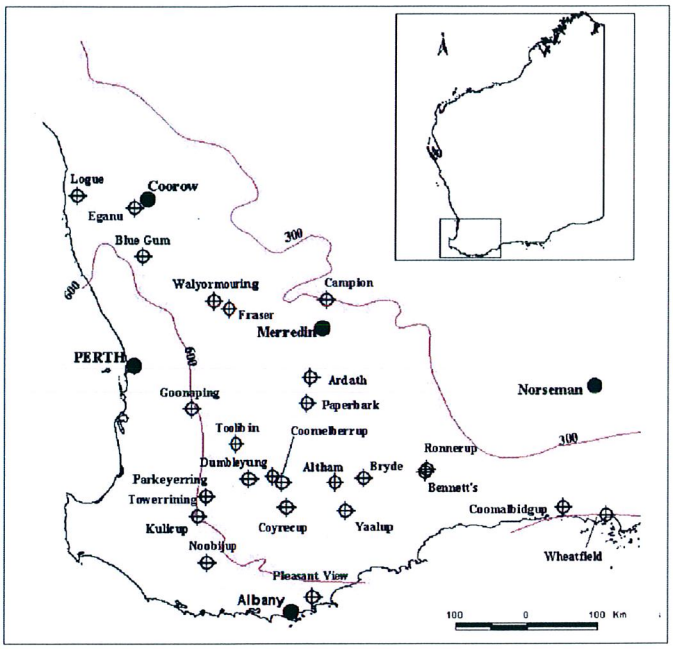
Cale, D.J., S.A.Halse and C.D.Walker (2004) Wetland monitoring in the Wheatbelt of Western Australia: site descriptions, waterbird, aquatic invertebrate and groundwater data. *Conservation Science W. Aust* **5**: 20-135

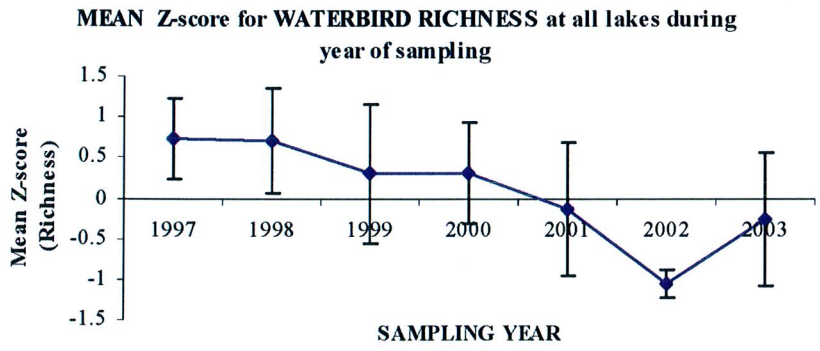
Halse, S.A., D.J. Cale, E.J. Jasinska and R.J. Shiel (2002) Monitoring change in aquatic invertebrate biodiversity: sample size, faunal elements and analytical methods. *Aquatic Ecology* **36**:1-16

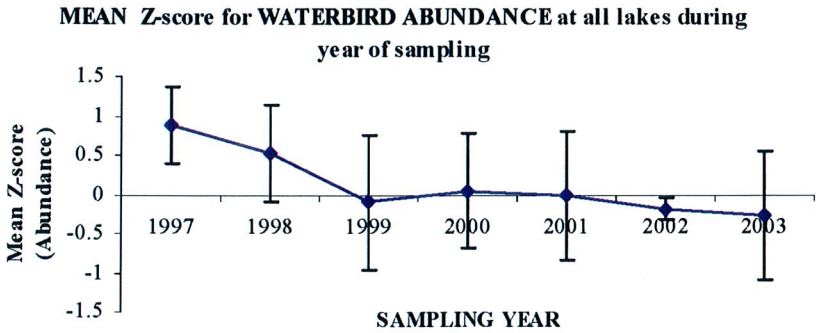
Salinity Action Plan
Wheatbelt Wetlands Monitoring Programme

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.







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.

Government of Western Australia

DEPARTMENT OF Conservation AND LAND MANAGEMENT
Conserving the nature of WA