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Lake Logue Waterbirds

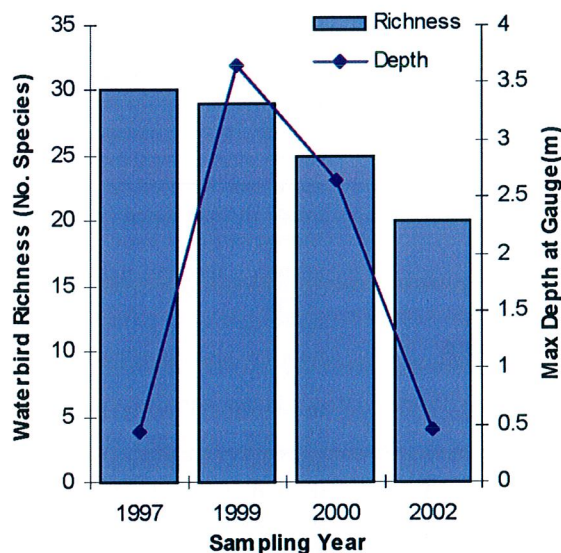
Situated in the northern sandplain Lake Logue is a fresh to brackish wetland of approximately 425ha. The wetland lies within the Lake Logue Nature Reserve (No. 29073, Moora District) and is surrounded by intact open woodland. Lake Logue periodically fills to a depth of several metres and may take several years before drying. The resulting range of water depths and shore exposures over a number of years can be expected to give rise to a range of waterbird assemblages.



Lake Logue at moderate water depth. (photo by C.D.Walker)

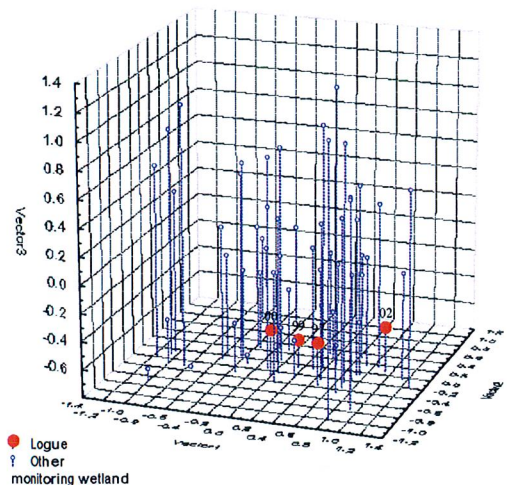
Species Richness

Lake Logue filled in early 1999 to a depth of 3.5m and progressively dried to 2002 until totally dry in April 2003. A total of 45 species of waterbird were recorded at Lake Logue (76% of all species recorded in the monitoring programme). Species richness has declined annually since sampling commenced in 1997 matching the regional trend. Annual changes have, however, been slight except in 2002 when the third annual survey found no species because the lake was dry.



Species richness at Lake Logue

As well as supporting a diverse waterbird assemblage Lake Logue supports a high abundance of waterbirds with more than 20,000 birds recorded in 2002 from 2 surveys. Ordination of waterbird communities at Lake Logue indicates only small differences in the identity of species recorded, except in 2002 where the presence of fewer species and the highest abundances recorded in the programme result in a noticeable shift relative to other samples.



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

Further Reading

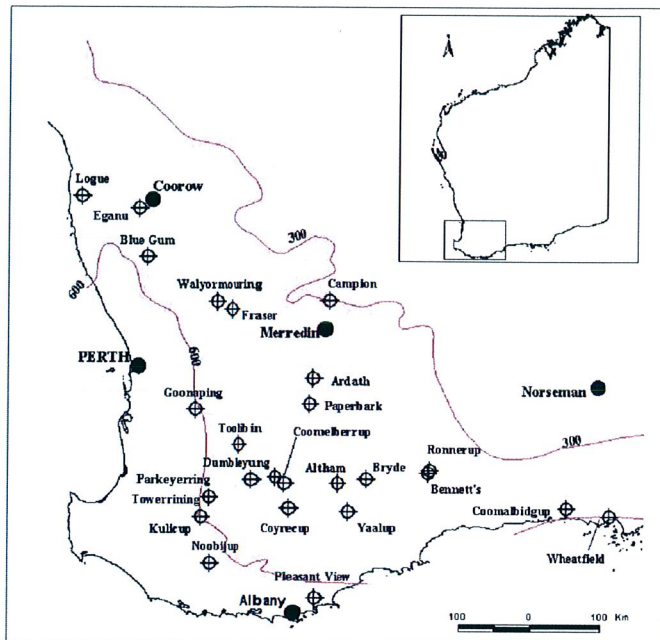
Cale, D.J., S.A.Halse and C.D.Walker (2004) Wetland monitoring in the Wheatbelt of Western Australia: site descriptions, waterbird, aquatic invertebrate and groundwater data. *Conservation Science W. Aust* 5: 20-13

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

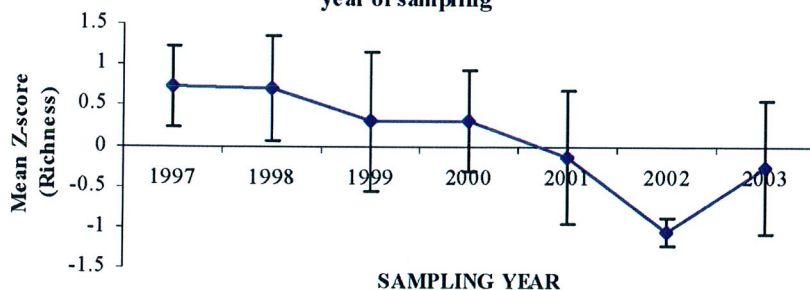
Salinity Action Plan Wheatbelt Wetlands Monitoring Programme

Wheatbelt Wetlands Monitoring

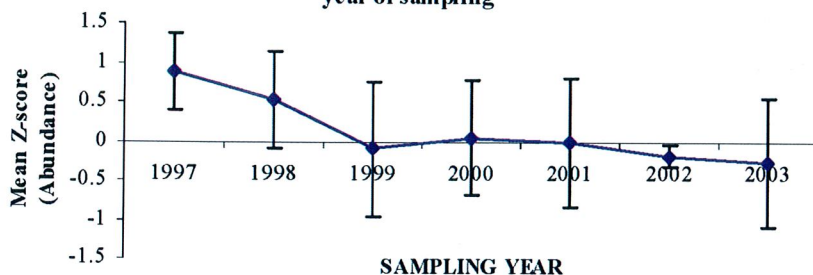
The Salinity action Plan Wheatbelt Wetlands Monitoring programme commenced in 1997 with the sampling of five wetlands and was expanded to include 13 in 1998 and finally a total of 25 wetlands in 1999. These monitoring wetlands have been sampled every second year since commencement, such that half of 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.



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.