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## Lake Bryde Waterbirds

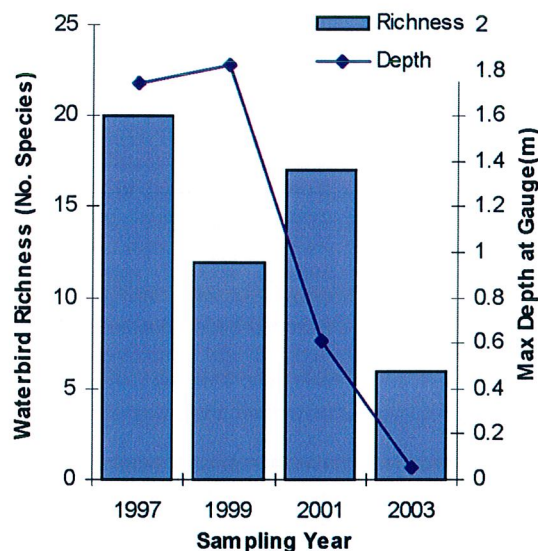
Lake Bryde is an intermittently flooded wetland of approximately 50ha and lies within the Lake Bryde Biodiversity Recovery Catchment (Katanning District). This wetland was included in the monitoring programme because of largely intact flora and fauna communities and the expectation of on-going management to maintain conservation values in the face of increasing salinity.



*View across fringing vegetation and into Lake Bryde (photo by C.D.Walker)*

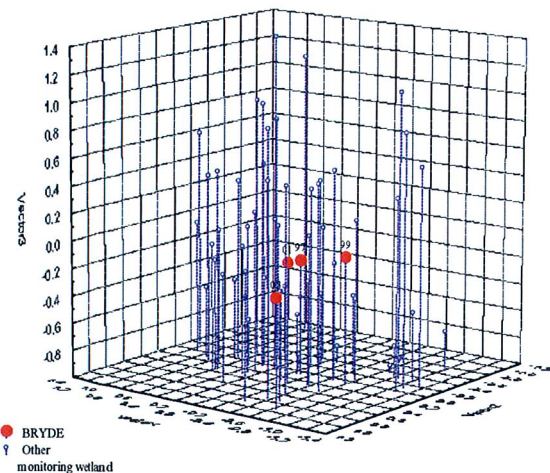
### Species Richness

A total of 25 species have been recorded during the monitoring project. Most species present at Lake Bryde are ubiquitous and common, however, the Australasian Bittern and Freckled Duck are exceptions. During periods of low water level more shorebird and wading species may be recorded. Richness is calculated from three surveys (Aug, Oct and Apr) each sampling year



*Species richness at Lake Bryde.*

Multi-dimensional scaling Ordination (SSH) of waterbird species abundance can be used to show changes in community structure over time. At Lake Bryde, 1997 and 2001 were similar climatically and this was reflected in similar species composition. In 1999 dry conditions saw a reduction in bird richness and abundance which was even more pronounced in 2003.



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

### Further Reading

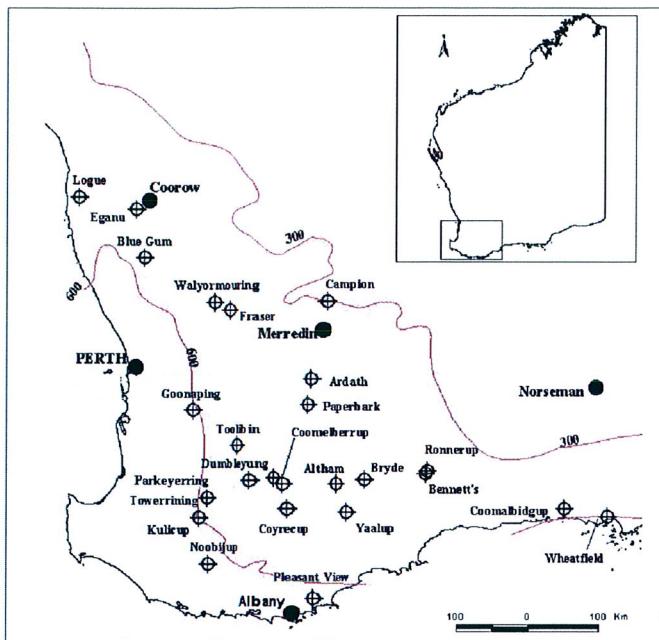
Cale, D.J., S.A.Halse and C.D.Walker (2004) Wetland monitoring in the Wheatbelt of Western Australia: site descriptions, waterbird, aquatic invertebrate and groundwater data. *Conservation Science W. Aust* 5: 20-135  
Halse, S.A., D.J. Cale, E.J. Jasinska and R.J. Shiel (2002) Monitoring change in aquatic invertebrate biodiversity: sample size, faunal elements and analytical methods. *Aquatic Ecology* 36:1-16



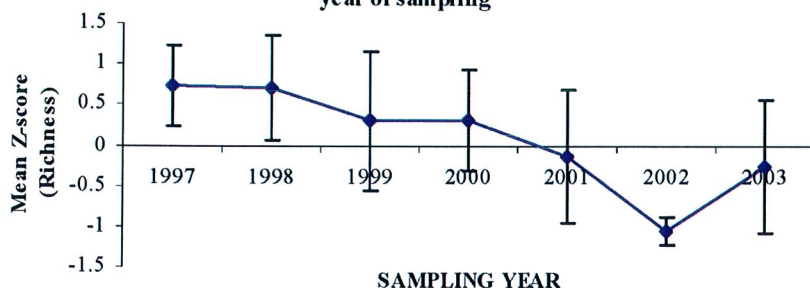
## Salinity Action Plan Wheatbelt Wetlands Monitoring Programme

### Wheatbelt Wetlands Monitoring

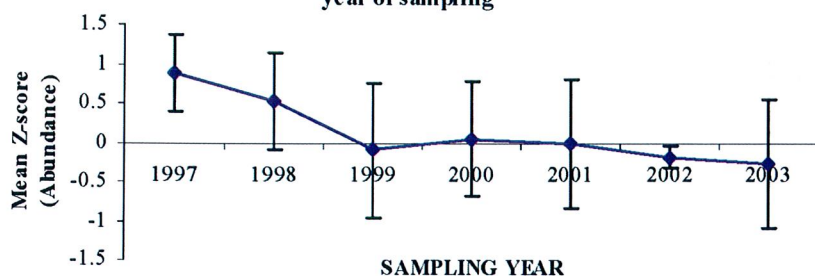
The Salinity action Plan Wheatbelt Wetlands Monitoring programme commenced in 1997 with the sampling of five wetlands and was expanded to include 13 in 1998 and finally a total of 25 wetlands in 1999. These monitoring wetlands have been sampled every second year since commencement, such that half of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



**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.