In celebration of World Wetlands Day (2nd February 2003), a "Billabong Jazz" day was held at the Psyche Pumps Station in Kings Billabong, Mildura.

The day was a tremendous success with approximately 200 people attending. A number of activities were organised for all ages including the ‘Food-web Treasure Hunt’, a Kings Billabong guided walk, the ‘World Wetlands Day Quiz’, information displays, give-aways, wine tasting, a free BBQ lunch and of course the jazz band!

"All the organisers were thrilled with the number of people who attended and made the day such a success" explained Paula D’Santos, MWWG’s project officer.

"The day’s celebrations was aimed at raising the community’s general awareness and importance of wetlands and the vital role they play. It's the first time that we've had an official celebration of World Wetlands Day!"
within the Mildura region and hopefully there will be many more” said Paula.

Rebecca White, Wetlands Officer with the Mallee Catchment Management Authority (CMA), initiator of the day and main coordinator said “Kings Billabong was the ideal setting for such an event. It highlights the importance of wetlands in a number of ways - from the use of freshwater for irrigation, to providing a habitat for a wide variety of species. It also demonstrates that wetlands can be a real focal point for a community”.

World Wetlands Day, held each year on the 2nd February, commemorates the signing of the first international treaty for the protection of migratory birds and their habitats in the Iranian city, Ramsar, in 1971. This year’s theme was “No Wetlands - No Water” in honour of the United Nation’s “International Year of Freshwater”.

Within the mallee region there are approximately 900 wetlands, with 16 of those wetlands listed on the National Directory of Important Wetlands including Kings Billabong, Lake Ranfurly, and Lindsay and Walpole Islands (all in Victoria) and the NSW Menindee and Darling Anabranch Lakes. The region also includes the internationally significant Ramsar-listed Hattah Lakes in Victoria.

“There are a number of issues that have negatively impacted on wetlands within the mallee region. Most wetlands within the area are ephemeral and so need the cyclic wetting and drying phases. Unfortunately wetlands closely situated along the

“After speaking to many people at the billabong jazz day it’s evident that there is a great groundswell of concern and understanding beginning to develop within the wider community - all of which is very encouraging to see” said Paula.
Murray River now suffer from permanent inundation due to river regulation, and wetlands further back on the floodplain are often isolated from floodwaters due to the installation of roads, levee banks or other structures and also the lack of small to medium sized floods. Another problem that many wetlands and floodplain areas in this region face is the threat or effect of salinisation explained Paula.

The MWWG had a display table with a number of publications and fact sheets available, as well as posters illustrating information from the River Murray Wetland Database (RMWD) collected by the MWWG on the River Murray wetlands from Euston to the South Australian border.

Message from the Chairman

The Group is currently in the process of refining an investment program for the funds generated from water sales last year. We are also developing more comprehensive project selection criteria for future projects that may be submitted to the Group for funding assistance. This is proving to be quite a large task, but members and staff are making good progress on this issue.

"Progress has been made towards achieving good outcomes for the Gol Gol Lake and Swamp, with the Murray-Darling Water Management Action Plan (MDWMP) committee, Western Murray Irrigation Ltd. and the MWWG funding a study to look at the feasibility of a pipeline for irrigation supplied from the Gol Gol Creek.

"The 'Wetlands on Private Properties' project is going ahead once again, and looks like being bigger and better than ever! It's great to see the community has embraced this project and are enjoying the results as much as we are.

"We have had a few changes on the staffing side of the Group. Damian has finished up his marvellous work on the RMWD, and I would like to congratulate him on a job well done, and wish him all the best in the future.

The transition between duties with Deb going on maternity leave has been very smooth. I would like to acknowledge the extra effort by Paula and Trish during this period.

"I am looking forward to another challenging and exciting year for the Group."

- Howard Jones
Congratulations - It's a boy!

Congratulations to Deb and Richard on the safe arrival of Phillip in late March 2003.
The Nias and Scott family.
Photo courtesy of D. Finimore

Major Projects Round-up

The MWWG is currently involved in a number of differing projects. Listed below are a few of the major projects and information on their progress:

**River Murray Wetland Database:**
- The database is now completed.
- The Final Report should be published by October 2003.
- A mapbook showing the wetlands and their various commence-to-flow levels will be produced and be available for purchase towards the end of the year. See page 6 for more details.

**Stevens Weir:**
- Delays are being experienced with the Fishway at Stevens Weir due to uncertainties about the proposed hydro development scheme.

**Thegoa Lagoon:**
- A report on the vegetation monitoring and groundwater results was completed in Dec. 2002.
- If low flows continue through 2003 the MWWG will consider an environmental flow allocation into the lagoon.
- A Steering committee has been reformed aimed at implementing the Thegoa Lagoon Management Plan. The plan has been revised and updated.

**Bottle Bend Billabong:**
- The final aquatic fauna survey and water chemistry report has been received. See article on pages 4-5 for further details about the findings at Bottle Bend.

**Purda Billabong:**
- Final reports on flora and aquatic fauna have been received, and negotiations continue with the landholder in regard to management.

**Wetland Watering on Private Wetlands:**
- The 2002-03 project is complete, and the Final Report is being completed.
- Once again, the project was deemed a huge success from both a landholder perspective and from the biological response.
- Interest in the project for the 2003-04 season has been huge, with 87 applications, totalling 143 sites having been received! Sites will be inspected during May and June, and it is anticipated that watering will commence by September 2003.
Inland Wetland Guide

On the 3rd of February 2003 the State Wetland Advisory Committee (SWAC) launched their new publication "Managing Wetlands on Your Property". It is a comprehensive and valuable land management tool designed to fulfil the growing need for information on the management of wetlands, particularly on private property.

All areas of wetland management are covered including identifying wetlands, information gathering, management issues, benefits, strategies and objectives. The guide is presented in plain English and also contains action plans and templates to allow land managers to record and track their wetlands management.

To get your own copy, contact:

Dr Kylee Wilton
Senior Natural Resource Officer
State Wetland Advisory Committee Coordinator
kwilton@dlwc.nsw.gov.au
Ph: (02) 9228 6317
Fax: (02) 9228 6140

Would Your Wetland Pass the Acid Test?

When we hear of wetlands in the Lower Murray-Darling region most of us would think 'ephemeral' systems. Areas adapted over thousands of years to cope with the sudden burst of floodwater or heavy rains, followed by months (or years) of being dry. 'Wetting and drying cycles' are now a commonly talked about function of these wetlands, and an accepted concept in the natural resource world.

Dried and cracked sediments of Bottle Bend Lagoon
Photo courtesy of P. D'Santos
However, after the completion of a baseline survey in one such wetland the MWWG is now asking - 'is reinstating a drying phase necessarily good for all natural ephemeral wetlands?'

Bottle Bend Lagoon has provided some interesting results that have sparked a lot of interest and flagged a potential issue for future concern.

Bottle Bend Lagoon is a 15 ha freshwater system in Gol Gol State Forest in south-west NSW. Branching off the Murray River (on the NSW-side) within the Mildura weir pool. The surrounding River Red Gum and Black Box floodplain show signs of stress - mainly due to the lack of flooding over the past 10 years.

The banks of the creek and wetland are bare and subject to cattle grazing. The health of many of the trees is declining and the wetland is subject to algal blooms. *When we first inspected the Lagoon we thought that*

The groundwater intrusion not only accounted for the high salinity readings within the wetland, but also for the iron discolouration of the banks.

The drying of the wetland is also thought to explain the wetland’s acidity. Sediments of most wetlands support
this area would be a good candidate for rehabilitation," explains Paula D'Santos the MWWG project officer involved with the Bottle Bend project. "It was initially felt that the wetland’s degradation was due to the lack of an appropriate hydrological regime and grazing pressure. We were interested in restoring its ecological value and part of that restoration would be to allow the system to have a drying phase. We organised the collection of some baseline information on the system that could then be used to develop a management strategy for the Lagoon.”

In 2002 the MWWG commissioned the Lower Basin Laboratory (Murray-Darling Freshwater Research Centre, Mildura) to conduct an aquatic fauna survey aimed at providing information on the current zooplankton, macro invertebrate and fish populations, and monitor water quality and phytoplankton.

Prior to the commencement of the survey in May 2002, the Lagoon had undergone a partial drying phase due to very low flow conditions in the Murray River. This was an unexpected, and somewhat infrequent event that occurred from December 2001 to February 2002. The drying phase resulted in large areas of the wetland’s sediments drying and cracking.

The fauna survey was conducted in May and October 2002, whilst water quality monitoring was conducted between March and December 2002.

Results from the survey indicate that:

- the wetland became highly salinised, with conductivity readings of > 30,000 mS/cm;
- the wetland became highly acidified over a 4 month period (pH <2.93);
- the macro invertebrates sampled (17 families) mostly belong to families that are pollution-tolerant;
- 7 fish species (2 exotics) were captured; and
- an extensive fish kill (mainly common carp) occurred in the wetland.

With results showing Bottle Bend as being a highly salty and acidic pool there was much speculation as to what processes were happening. What had caused the rise in conductivity and why was it so acidic? The answers lay in the partial drying phase.

Under ‘normal’ conditions, when the Lagoon is full and connected to the river, the surface water in the wetland exerts a hydraulic pressure on the groundwater system preventing it from moving into the wetland. During the drying phase this hydraulic pressure was eased, thus resulting in the saline groundwater being able to seep into the wetland.

an abundant microbial population, some of which are adapted for anoxic (oxygen free) conditions. These micro-organisms can respire without using oxygen by using other compounds such as iron minerals, nitrates, simple carbon compounds or sulphates. Sulphides, a by-product of respiration using sulphates, form the basis for Acid Sulphate Soils (ASS).

"The results of the Bottle Bend baseline study were very unexpected. After consulting with some of the Murray-Darling Freshwater Research Centre (MDFRC) microbial chemists we realised we had an ASS problem. We now strongly believe that the intrusion of groundwater has been the cause of this. Groundwater has been identified as being a major source of sulphates into wetlands, in addition to other sources such as run-off from fertilisers and soil additives” said Paula.

The acid event in Bottle Bend Lagoon occurred shortly after the dried sediments in the wetland were re-wetted. The pH progressively dropped - the lowest level recorded being 2.93. This resulted in an extensive fish kill, with large numbers of dead mature common carp seen floating in the wetland and a decrease in macro invertebrate numbers.

"The whole exercise of Bottle Bend has raised some interesting points, explained Paula "especially in how we approach the management of these systems and how we go about developing management strategies especially in relation to:

- the importance of conducting baseline surveys to gain a better understanding of the current condition and processes within the wetland;
- the consideration of all aspects of a wetland when developing a management strategy, and how each aspect interacts with each other;
- the impacts that weirs are having on the groundwater movement and the effects this has on ephemeral wetlands close to the river; and most importantly
- that in some scenarios the system has been impacted upon so greatly that to reinstate a ‘more natural’ situation may be more detrimental rather than beneficial to the wetland and its condition and functioning."

As a follow up on the baseline study’s findings the MWWG is interested in collaborating with the MDFRC to conduct a pilot study on areas such as Bottle Bend Lagoon. Objectives for the study include the determination of whether acid events in groundwater impacted wetlands is a common occurrence in the Murray and Lower-Darling system, as well as to increase our current knowledge on the chemical and microbial interactions between groundwater and wetland sediments.
River Murray Wetland Database

Version one of the River Murray Wetland Database - NSW and Victoria (RMWD) is currently in the final stages of completion. "This is the culmination of a four year project aimed at developing a central GIS database that details the river heights at which River Murray wetlands (rivers, creeks, billabongs, lakes and floodrunners), begin to receive water and other relevant ecological and hydrological wetland data" said Damian Green, the project officer working on the database. “The information from the RMWD can be used by river managers and the community to understand the impacts of different flow levels on wetland connectivity and enable the development of appropriate environmental flow rules.”

The RMWD was developed from, and is consistent with, the Murray-Darling Basin Commission (MDBC) River Murray Mapping 2nd Edition and covers the River Murray floodplain (both NSW and Victoria) between Hume Dam and the S.A. border, including the Edward-Wakool System. The information for the database has been collected from field assessments at a range of river flow levels, anecdotal information from landholders, agency staff, satellite image analysis and previous studies.

"The accuracy of the information on the RMWD varies between wetlands. This is due to the different methods of data collection and because of the variability in the accuracy of the field based assessments. Currently, the wetland database has commence-to-flow information on approximately 4,000 wetlands, however information is scarce for some areas of the floodplain" Damian said.

It is envisaged that the RMWD will be available on CD by November 2003, and we are hopeful that maps, photos and summary data from the RMWD will be published as a hard copy atlas of River Murray wetlands. In the interim, information from the RMWD can be accessed by contacting the MWWG Senior Project Officer, Paula D’Santos on (03) 5021 9446. We would like to thank DIPNR, NHT and the MDBC for helping fund this project.
Thanks & Farewell

With the completion of the River Murray Wetland Database, Damian Green (pictured left) has finished working with the MWWG and has taken up a new position with the Murray-Darling Basin commission on the Sustainable Rivers Audit.

Damian has made a great contribution to the MWWG and his understanding of the River Murray will be sorely missed.

We wish you all the very best Damian!

Thegoa Lagoon - During a Dry Phase

Since December 2000, Thegoa Lagoon, near Wentworth NSW, has been experiencing a rare drying event and monitoring of the riparian vegetation and groundwater levels seem to indicate that the system doesn't mind!

Thegoa Lagoon is a natural floodplain wetland located downstream of the Darling and Murray Rivers' confluence in south-west New South Wales. The Lagoon is approximately 80 ha, with 445 ha of floodplain between the Lagoon and the Murray River.

Since 1956 the Lagoon has been influenced by river regulation flows and as a consequence has had relatively stable water levels for the past 30+ years. In 1998/99 an interim water supply policy for Thegoa Lagoon was developed by the former Department of Land and Water Conservation (now known as the Dept. of Infrastructure, Planning and Natural Resources), Paula D'Santos, the MWWG officer who conducted the monitoring, explained "Being able to monitor and illustrate to others as to what has happened in Thegoa since it has dried has been very helpful. A lot of people assumed that the plants that grew out on the Lagoon bed were introduced 'weed' species, but that wasn't the case. Between 77-92% of the plants recorded were native species, most of which are common wetland plants."

"Hundreds of River Red Gum seedlings have also grown as a result of the drying phase. As the majority of River Red Gums around the Lagoon are very old trees, it is hoped that at least a few of these seedlings will survive to ensure the population health of the Red Gums around the Lagoon" said Paula.

One of the more surprising and encouraging responses observed was the decrease (and continuing decrease)
recognising that the Lagoon is an ephemeral system, and therefore should not be permanently inundated. Natural flood flows however can still enter the system. Due to the severe drought conditions for the past 3 years, the Lagoon is now 100% dry.

Interested in seeing how the Lagoon would respond to this drying event the MWWG developed a monitoring program aimed at recording the response of the riparian vegetation and groundwater system. Four vegetation transects were established around the Lagoon and monitored (on average) every 4 months. Monitoring of 14 groundwater piezometers was conducted monthly from April 2002 to November 2002. In addition to these, 6 photo points were established around the Lagoon.

The drying event in Thegoa Lagoon showed the following responses:

- enabled sediments to dry out, consolidate;
- enabled native wetland plants to colonise the newly exposed Lagoon bed;
- provided enough time for the colonising plants to complete their lifecycles;
- resulted in a decrease in the presence of exotic plants within the riparian areas;
- retarded the growth of Cumbungi stands;
- resulted in River Red Gum regeneration;
- removed all carp from the system; and
- resulted in a decrease in groundwater levels surrounding the Lagoon.

Of the groundwater levels around Thegoa Lagoon. Prior to the Lagoon drying, it was feared that as the surface water evaporated, groundwater would seep into the Lagoon and cause severe salinity problems. The groundwater, which is impacted upon by the Wentworth Weir pool, has risen close to the surface thus threatening low-lying areas on the floodplain, such as Thegoa Lagoon, with salinisation.

The results collected show a drop in level ranging from 0.26 - 0.73m. "These groundwater results are interesting," says Paula, 'and indicates that the system can withstand at least a 24 month dry spell, without groundwater intrusions occurring. This decrease in groundwater level is anticipated to benefit both the terrestrial and riparian vegetation."

In the event that 2003 proves to be another year of low river flows the MWWG are investigating the possibilities of putting in an environmental flow allocation into the Lagoon. Systems like Thegoa Lagoon would only have been dry for more than 2-3 years in extreme drought periods before river regulation.

A Steering Committee for the implementation of the Thegoa Lagoon Management Plan has been formed, comprised of representatives from landholders/irrigators, tourism industry, Indigenous and conservation groups, local council and Government agencies. The Management Plan, aimed at protecting the diverse features and values of the Lagoon and its surrounding floodplain, is currently being reviewed and it is hoped that implementation of recommendations will begin in the near future.

November 2001: Thegoa Lagoon - eastern arm of the lagoon with the system full of water.
Photo courtesy P. D'Santos.

April 2002: Native wetland plants colonising the drying lagoon bed.
Photo courtesy P. D'Santos.

Training Day for Implementation Staff
On the 9th of May 2003, the MWWG held the first of its training days for interested implementation staff in Holbrook and surrounding areas. Staff were introduced to the MWWG and informed about what the Group has to offer them. Three different types of wetlands that are represented in the area were visited, giving staff a great example of the diversity that's in the area. Thanks to Judy Frankenberg and Ian Davidson for sharing their time, expertise and help in organisin g the day.

Implementation staff learn about the function and importance of wetlands in the Holbrook region. Photo courtesy T. Alexander

NSW Murray Wetlands Working Group Inc.
Program Manager Deborah Nias, debnias@iprimus.com.au — info@mwwg.org.au

platypus websites