

Northern Murray-Darling Basin Environmental Flows Forum

By Jon Marshal, Water Planning Ecology, QLD DES

Researchers from across the Northern Murray-Darling Basin braved chilly Armidale conditions in late May to participate in a two-day forum showcasing the last years' worth of new environmental flow related science. With a few groups joining in online, the forum hosted various water related the from agencies Commonwealth, Queensland and New South Wales government agencies, as well as research institutions. 2rog's Cultural Advisors Liz Taylor (Gomeroi) and Kevin Knight (Kurnu-Baakandji) joined in too.

<u>Day 1 – Northern Basin Environmental Flows</u> Forum

With a focus on knowledge sharing and collaboration the group heard what other agencies had been up to in the Northern Basin over the past year – an impressive list of projects when presented, and here are some findings from just a few.

The Warrego-Darling Select Area FlowMER researchers from UNE and 2rog shared some excellent information on turtle movement when faced with drying waterholes (Figure 2). Findings showed that Traditional Gamilaaraay Language of the Gomeroi nation used in this article (H. White & B. Duncan - Speaking Our Way)

Murray Turtles (Emydura macquarii) and Broad-shelled Turtles (*Chelodina expansa*) were more susceptible to drying than Eastern Long-necked Turtles (*Chelodina longicollis*) that tended to move overland to other waterbodies or lie dormant in mud or under logs on the floodplain. (<u>Read more in</u> <u>Issue 12</u>). The observation of two Murray turtles moving more than a kilometre overland to find remnant water was a first for this species, which was thought to be unable to survive far from water bodies.



Figure 2: Research at the Gwydir Flow-MER site found many turtles died in dried-up waterholes (left) but some travelled overland to find salvation in remnant water (right). Photo Credit - Annette Deppe, UNE.



Interestingly, NSW researchers have identified a guild of flood dependent frog species which breed in floodplain wetlands. Their monitoring over many years has determined these species have ecological and hydrological requirements for the timing, extent and duration of wetland inundation by floods, which make them a potentially useful new asset for incorporation into future water planning.

Finally, NSW **Fisheries** presented monitoring data that suggested that parts of the Darling River had virtually no fish present following the severe 2018-2020 drought until this year when a huge biomass of fish was caught following upstream flooding. Unfortunately, almost all these fish were Carp (Figure 3) and Spangled Perch – both opportunistic 'weedy' and highly mobile species, with virtually no other native species present. This may reflect poor recruitment success and limited opportunities for movement past barriers.

<u>Day 2 - CEWO Northern Basin Fish</u> <u>Workshop</u>

With a focus on fish populations in the northern Basin, QLD Department of Environment and Science (DES) kicked off day 2, with an overview of drought resilience and hypoxia (water with low to no oxygen available) project outcomes, as well as a summary of fish movement studies using acoustic tagging.

NSW Fisheries presented on fish movement studies and a successful reintroduction of the Gaygay (Freshwater catfish in the Gamilaraay language) into a river where they had gone locally extinct. (Read more in Issue 24). Great news! Fisheries also presented a conceptual model suggesting Golden Perch in the Darling River are heavily reliant on juvenile movement from spawning in Queensland tributaries. This contrasts with latest research by DES which found that within QMDB rivers, local recruitment rather than broad-scale movement is the dominant process.



Discussion of research priorities highlighted the need for better engagement with First Nations people and their knowledge, the importance of turbidity and sediment infilling threats to waterholes and the need to understand the requirements of native fish much better for survival of larvae to recruit into adult populations, including food and habitat quality/quantity influences.

Overall, the two days were a great opportunity to learn what has been happening and meet colleagues from both research and government agencies to discuss new science and future priorities. Thanks to UNE/2rog consulting and CEWO for organising the first and second days respectively and to UNE for hosting.



Figure 4: Old main stock dam on Moolabulla in drought November 2019 (left) and following large rainfalls in late February 2020. Photo credit - Annette Deppe, UNE.

Managing water for the environment is a collective and collaborative effort, working in partnership with communities, private landholders, scientists and government agencies - these contributions are gratefully acknowledged.

We acknowledge the Traditional Owners of the land on which we live, work and play. We also pay our respects to Elders past, present and emerging.

Monitoring

YK-



