Ecological assessment of the status of the Southern Bell Frog and Sloane’s Froglet in part of Wah Wah area within the Murrumbidgee Irrigation Area

Final Report to Murrumbidgee Irrigation

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Results from surveys undertaken in Spring and Summer 2018, with management recommendations

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Background

This report presents survey data for the Southern Bell Frog (Litoria raniformis) and Sloane’s Froglet (Crinia sloanei) in part of the Wah Wah area within the Murrumbidgee Irrigation Area, conducted by CSU staff during November and December of 2018. This report is intended to facilitate the EPBC referral process for decommissioning of several channels within this area, to be pursued by Murrumbidgee Irrigation (MI).

The project sought to assess the status and significance of populations of both Southern Bell Frogs and Sloane’s Froglet within the study area, following detection of the former at three sites on Mywurlie Station by us during surveys in the last breeding season (spring and summer 2017/2018; Knight et al. 2018), plus records of Sloane’s Froglet from Mywurlie during spring 2016 (Tiljack 2016). The surveys reported here specifically sought to:

1. Establish the extent and significance of Southern Bell Frog and Sloane’s Froglet populations that will be, or are likely to be, impacted by altered hydrological regimes due to channel decommissioning in the Wah Wah area.
2. Identify potential mitigation options to offset potential impacts of the channel decommissioning process.

Methods

We completed two survey trips to the Wah Wah area in the months of October and December 2018 to complete surveys for Southern Bell Frogs and Sloane’s Froglets, aiming to coincide surveys with water flows down the channels and into connected stock dams. Surveys occurred between 22 and 27 October 2018 and 10 and 12 December 2018.

In all cases, site selection was guided by their potential suitability for Southern Bell Frogs and Sloane’s Froglet, particularly their hydrology, connectivity to the irrigation network and vegetation structure. Surveys focussed on the channels that will be decommissioned; specifically, channels 1, 2, 3 and 8. Sites included sections of the channels themselves, but targeted associated feeder dams that represented superior habitat for the two focal species. Assessment and survey of suitable habitat along Channel 10, Barron Box Swamp and persistent sections of Mirrool Creek were pursued to expand our spatial coverage of the WWID and to assess potential offset sites (Channel 10 will not be decommissioned and therefore any occupied habitat associated with this channel could be targeted for offsetting actions). Final site selection was undertaken in consultation with MI staff and was constrained by access. In total, we surveyed 48 sites across the Wah Wah area and adjacent regions, covering 17 sites along the channels, 28 feeder dams, and three points in Barren Box swamp. Surveys sites are depicted in Figure 1.

Results

We detected seven species of frog during surveys in Spring and Summer 2018, with the Spotted Marsh Frog (Limnodynastes tasmaniensis) being the most frequently encountered (43 of 48 sites). This was the only species found on all channels (1, 2, 3, 8, 10) and also at Barren Box swamp. The other species we detected were the Eastern Sign-bearing Froglet (Crinia parinsignifera; 9 sites; channels 2, 3, 4, 10), Giant Banjo Frog (Limnodynastes interioris; 6 sites; channel 8), Peron’s Tree Frog (Litoria peronii) 5 sites; channels 1, 3, 8, 10), Barking Marsh Frog (Limnodynastes fletcheri; 3 sites; Barren Box, channel 1), Wrinkled Toadlet (Uperoleia rugosa; 1 site; channel 3), and Southern Bell Frog (L. raniformis; 1 site; channel 8, -34.114321, 145.214606).

No Sloane’s Froglets were detected during these surveys, in accord with results from surveys in 2017 at Mywurlie Station. Southern Bell Frogs were only detected at one of three sites at Mywurlie at which they were detected in 2017. They were not detected elsewhere in the study area.
Conclusions and recommendations

*Sloane’s Froglet*

We did not detect the Sloane’s Froglet at Mywurlie Station or any other sites within the study area. Several of the smaller drains located on Mywurlie Station that contain small-stem diameter reeds do provide suitable habitat, however, we did not identify any larger sites of high potential suitability at Mywurlie or elsewhere. We note that the species is on the far western edge of its range in this area, and that the species call is easily mistaken with the widespread and abundant Plain’s Froglet. It is possible that the previous records at Mywurlie (Tiljak 2016) could have been in error. However, we also note that the extremely dry conditions prevailing during this survey (including during the core winter calling period) were not ideal for the species detection, unlike the conditions experienced across the region during the spring of 2016 when the surveys of Tiljack (2016) were completed.

Nevertheless, given the location of the region on the far western edge of the species range, and the lack of large areas of suitable habitat, we recommend that:

1. Significant populations of this species are unlikely to be found within the Wah Wah area, and;
2. A significant impact on an important population of this species from channel decommissioning in the Wah Wah area is unlikely.

*Southern Bell Frog*

Surveys completed throughout the study area in the spring and summer of 2018 failed to provide further detections of Southern Bell Frogs outside of Mywurlie Station. Resurveys at Mywurlie were also suggestive of reduced activity or abundance during the 2018 breeding season, with only one individual detected.

On the basis of these surveys, it is apparent that the range of the Southern Bell Frog in the Wah Wah area is highly restricted, and indeed, may not extend beyond Mywurlie. Confidence in this conclusion is quite high,
with numerous sites surveyed across the study area completed at peak times for calling (both in terms of seasonal timing and correspondence with channel flows and filling of stock dams).

Significant impact guidelines for the Southern Bell Frog (EPBC Act Policy Statement 3.14) state that an ‘important population’ is one that is viable, where a viable population is one “which is not isolated from other populations or water bodies, such that it has the opportunity to interact with other nearby populations or has the ability to establish new populations when water bodies fill and become available.” Additionally, an ‘important population’ may be one that is “near the limit of the species range is well-studied or has a history of monitoring”.

While the Mywurlie population is on the edge of the species range, the viability of this population is questionable. It occurs in an environment that is otherwise hostile to the species, and appears restricted to small stock and domestic supply dams that are of relatively poor quality (small, poorly vegetated and inhabited by invasive fish). Moreover, these sites are widely dispersed and therefore poorly connected for this species (whose overland dispersal capacities are poor; Wassens, Watts et al. 2008).

We speculate that this population may be an ephemeral, range-edge expansion facilitated by the extensive flooding during the 2016/2017 breeding season. Extensive, flood-assisted dispersal and colonisation events have been documented for this species within the Lowbidgee region (S. Wassens, unpublished data).

On this basis, we recommend that:
1. The Mywurlie population of the Southern Bell Frog is unlikely to meet the criteria of an ‘important population’ under the EPBC Act.
2. If so, decommissioning of channels within the Wah Wah area would not have a significant impact on an important population.

Nevertheless, we highlight that the Mywurlie population is wholly reliant on channel flows for persistence, in which case offsetting or mitigation activities should be pursued to mitigate the impact of channel decommissioning upon this population.

Offsetting options could be targeted at other, more-secure Southern Bell Frog populations in the Lowbidgee. Habitat works, particularly those that target hydrological improvements to key wetlands, vegetation management or invasive species control (particularly European Carp), could be pursued to benefit these populations. Potential focal populations in the Murrumbidgee Irrigation Area are the mid-Murrumbidgee wetlands, particularly Yarradda Lagoon which supports an extant population of Southern Bell Frogs (Wassens, Spencer et al. 2018), and Gooragool Lagoon, where Southern Bell Frogs were recorded in 2010 (Wassens and Amos 2011).

Mitigation options focussed on persistence of the Mywurlie population could also focus on securing and enhancing available habitat. This could include:
1. Establishing permanent water at existing known sites, and/or neighbouring sites could be pursued to ensure continuity of habitat;
2. Stock exclosure fencing and/or aquatic revegetation could be pursued to bolster habitat quality, and;
3. Removal of exotic fish from existing habitat (particularly European Carp and Mosquito Fish) could be pursued to limit egg and tadpole predation, and thereby bolster recruitment.

References


