Soundcounts

www.soundcounts.com

Te Henga Autonomous Acoustic Recorder Wetland Avifauna Survey - Spring 2020

Summary

An autonomous acoustic recorder (AR) survey of threatened wetland avifauna species was completed for the Habitat Te Henga Project in September/October 2020 (TABLE 1). Situated behind Te Henga/Bethells Beach, the Matuku Wetland lies within the Waitakere Ecological Area (36°52' S, 174°28 E). It is the largest mainland wetland within the Auckland Ecological Region (FIGURE 1).

At least three booming Matuku (Australasian bittern) were detected (TABLE 2). This result is better than 2018, but substantially lower than in 2016 when at least seven booming males were detected.

Spotless crake were detected from five of the acoustic recorder stations and most of these were in multi-tiered habitat at the northern arm of the wetland (TABLE 3). This result is similar to 2016 and 2018. Marsh crake have only been detected at one location in 2016.

Field method

The method used was based on a Proof of Concept completed at two Waikato wetlands in 2016 (Stewart and Lauder, 2016). Three avifauna species that utilize freshwater wetlands were targeted (TABLE 1).

TABLE 1: WETLAND ACOUSTIC SURVEY TARGET SPECIES.

Common name	**Scientific name**	**Threat status***
Australasian Bittern	*Botaurus poiciloptilus*	Threatened/Critically Endangered
Spotless crake	*Porzana tabuensis*	At Risk/Relict
Marsh crake	*Porzana pusilla*	At Risk/Relict

*Robertson et al, 2016

Multispecies acoustic surveys are inherently difficult due to factors such as different habitat preferences, territory size and variation of bird vocalisations between species. Australasian bittern are the most threatened of the three target species so the AR deployment was targeted towards bittern and field deployment based on best practice protocols (O'Donnell and Williams, 2015).

Although not detecting all birds, autonomous acoustics are a cost effective, non-invasive, consistent data collection method across landscapes.

Field deployment

Thirteen Department of Conservation manufactured omni-directional autonomous acoustic (ARs) were deployed by Paddy Stewart and Matt Mannington on 14 September 2020. Two of the AR stations were established in 2018 (red dots (FIGURE 1). The ARs were deployed at approximately 500m intervals about wetland margins. Sheltered areas that targeted specific catchment areas were targeted. This was done to minimise acoustic coverage from neighbouring AR stations. They were set to capture diurnal activity for three hours each morning and evening.

Data analysis

The 15 minute sound files were manually inspected in RAVEN PRO 1.5© (Charif et al. 2010) at default settings, except that we selected a 512-sample Hann window to improve spectral resolution. A digital log was exported from Raven for data analysis.

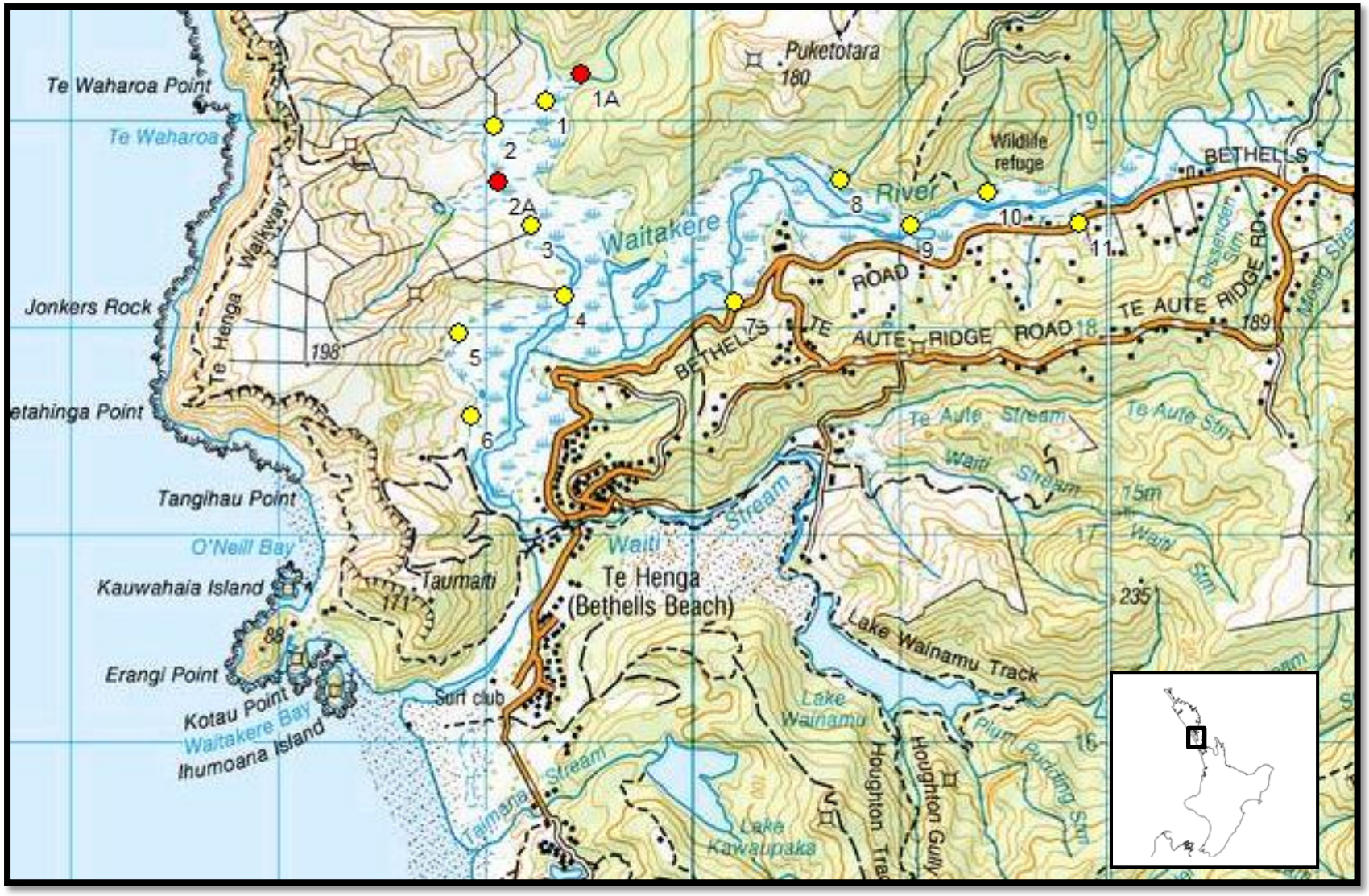

FIGURE 1: LOCATION OF ACOUSTIC RECORDER STATIONS, TE HENGA 2016 - 20. RED STATIONS ESTBALISHED IN 2018.

Results

Recorder efficacy

All of the thirteen ARs successfully collected data. The entire 26 night period 14/09/2020 – 8/10/2020 was manually processed.

Target species detections

Australasian bittern

Matuku were detected from five stations (TABLE 2). Three of the signals could be confirmed as being from separate birds using date-time-location data on 3/10/2020.

TABLE 2: MATUKU DETECTIONS, SPRING 2016-20

AR Station	1a	1	2	2b	3	4	5	6	7	8	9	10	11
2016	N/A	0	1	N/A	1	1	1	0	1	1	1	1	1
2018	0	0	0	0	0	0	0	0	0	0	0	0	2
2020	0	0	0	0	1	1	0	1	1	0	0	1	1

Spotless crake

Detected from five stations in 2020, this result is similar to 2018. These detections were all in/about similar layered habitat (TABLE 3).

TABLE 3: SPOTLESS CRAKE DETECTIOINS, SPRING 2016-20

AR Station	1a	1	2	2b	3	4	5	6	7	8	9	10	11
2016	N/A	1	2	N/A	1	0	0	0	0	0	0	0	1
2018	0	1	1	0	1	0	0	0	0	0	1	1	0
2020	1	1	1	1	0	0	0	0	0	0	0	1	0

Marsh Crake

One bird was detected from AR 7 in 2016. No have been detected since then.

Discussion

Matuku

Booming bittern were detected intermittently throughout the survey period. This year boomer activity was more frequent than in 2018, when only two birds were detected from Station 11 situated on the upper Waitakere River. Both the 2020 and 2018 results are lower than the baseline 2016 result. This pattern has been observed at other upper North Island sites over the same period (E.g. Kopuatai) (Stewart, 2020).

Crake

Most spotless crake were detected about the unnamed northern wetland arm and also the head of the Waitakere River. This result is similar to 2016 and 2018.

Acknowledgements

Thanks very much to people who allowed us access, enabling the deployment of recorders. Also to Matt Mannington and John Sumich for practical help and advice.

Paddy Stewart

23 January 2021

References

Charif, R., Strickmann, L. & Waack, A. (2010) Raven Pro 1.4 User's Manual. The Cornell Lab of Ornithology, Ithaca, New York, USA.

O'Donnell, C.F.J.; Williams, E.M. 2015: Protocols for the inventory and monitoring of populations of the endangered Australasian bittern (Botaurus poiciloptilus) in New Zealand. Department of Conservation Technical Series 38. Department of Conservation, Wellington. 40 p.

Robertson, H.A.; Baird, K.; Dowding, J.E.; Elliott, G.P.; Hitchmough, R.A.; Miskelly, C.M.; McArthur, N.; O'Donnell, C.F.J.; Sagar, P.M.; Scofield, R.P.; Taylor, G.A. 2017: Conservation status of New Zealand birds, 2016. New Zealand Threat Classification Series 19. Department of Conservation, Wellington.

Stewart, P; Lauder B. 2016. Protocol for cryptic avifauna species inventory for wetlands of the Waikato Region. Contract report SAS2015/2016-1428 for Waikato Regional Council, Private Bag Hamilton.

Stewart, P. 2020. Kopuatai Bittern Acoustic Survey 2020. Contract report for the Department of Conservation, Thames.