

Great Barrier Island Bittern Survey

October 19th 2024



Report and data compiled by John Ogden,
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on behalf of Oruawharo Medlands Ecovision



INTRODUCTION

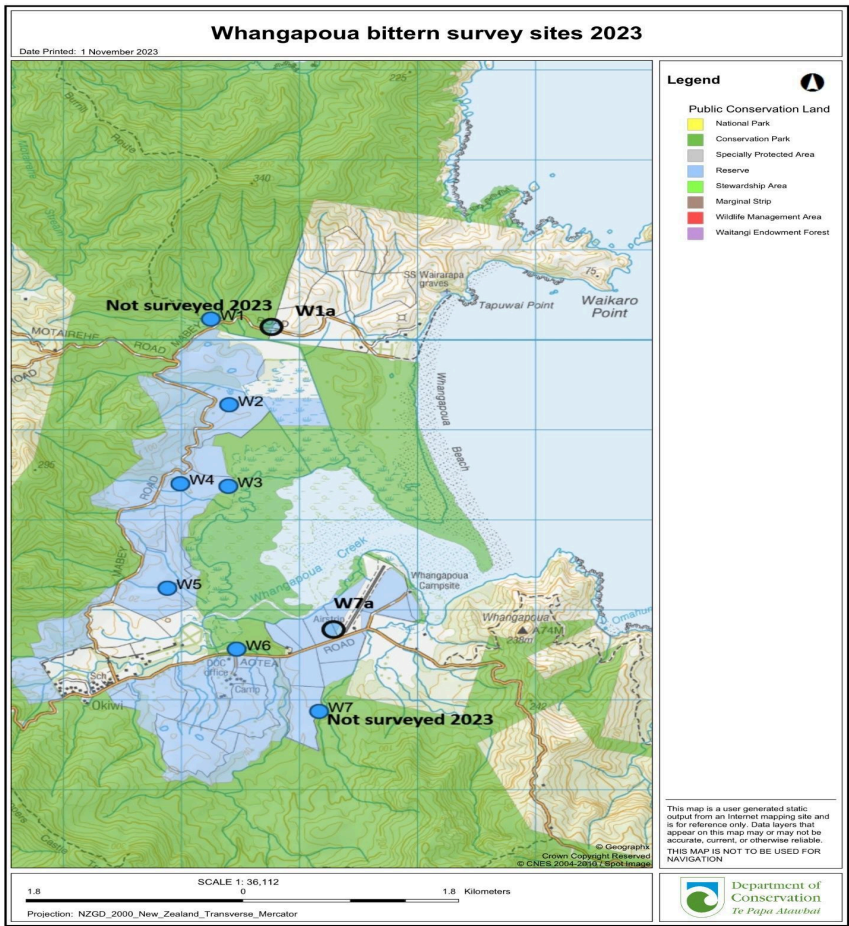
The Australasian Bittern (Matuku-hurepo, *Botaurus poiciloptilus*) is considered 'Nationally Critical' and for this reason has been the subject of considerable research in recent years, with the formation of the Bittern Conservation Trust in October 2023 [lovebittern.com/bittern-conservation-trust/]. The OME monitoring was started as a 'community reporting' exercise by Ogden in 2000, but became more comprehensive after 2012 (Geary et al. 2012), and especially since 2020. This increased monitoring by more members of the local community provides good indications of the presence of bittern at various locations, but confounds any apparent increase in numbers. Establishing some index of population trends requires a more consistent monitoring at specific times and locations. This report gives the results of the second OME/DOC Spring bittern count on Great Barrier Island on October 19th 2024. The previous report (Ogden et al. 2023) suggested minima of seven bittern in the Whangapoua area and two in the Kaitoke region. These figures were thought to underestimate the actual numbers present in 2023 in both areas, although they are 'indices' only, as they are based mainly on hearing booming birds. It is thought that booming is only by males, so that the true population, including (hopefully) females and juveniles is likely to be greater.

METHODS

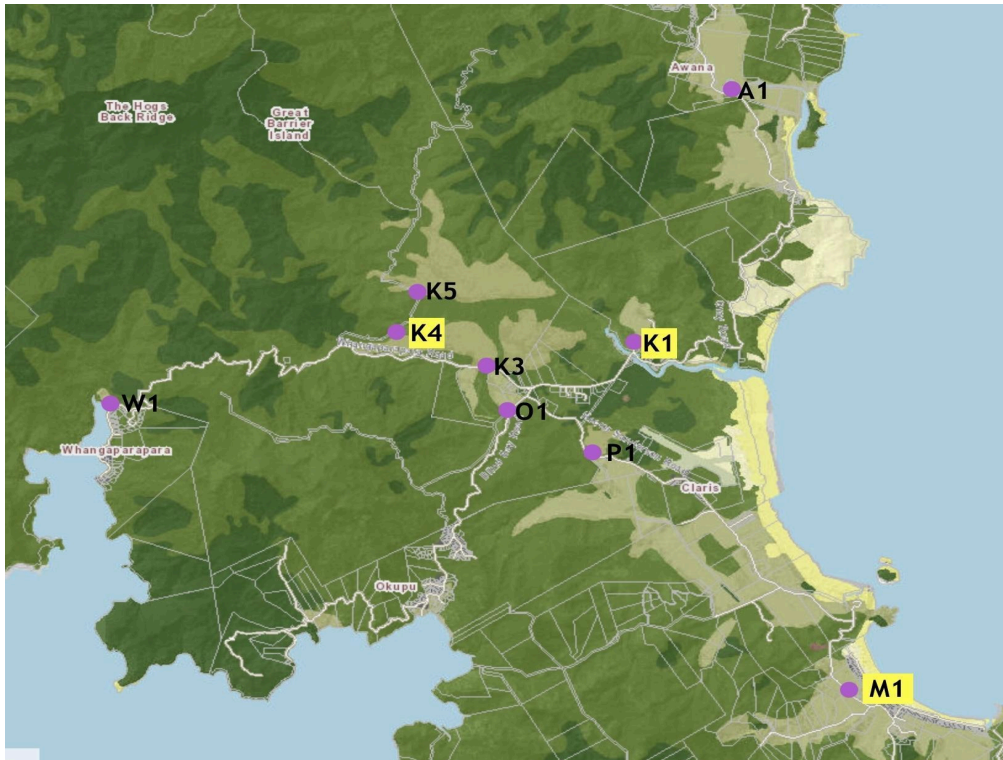
Two teams of observers were deployed, respectively in the Whangapoua (North, Department of Conservation, Sue Moore) and Kaitoke (South, OME, Lotte McIntyre). (Table 1, Maps 1 and 2). There were 7 observation (listening) stations in the north, each point coinciding with sites recorded in 2023 (Map 1). The stations were all > 500m apart (except W3 and W4 – c.400m). There were 9 listening stations in the south, six of them around Kaitoke swamp (including Police Station wetland) and three in more outlying positions where bitterns are known to have been present historically (Awana and Medlands/Oruawharo) and/or seen more recently (Whangaparapara) (Map 2). Each station had one or two observers for one hour from sunset (7.37PM) or before (P1). The protocol of starting observations at sunset and listening for an hour differed from that in the previous year when half an hour before and half an hour after sunset was the observation period (following O'Donnell & Williams 2015). Overall, twenty-two people were involved, so approximately 22 person/hours of observation. Observers were asked to record the time of the start of each boom sequence and the number of booms in the sequence. They also recorded the direction and estimated distance of the boom (near, intermediate, far, very far etc.) and any other relevant information (wind direction, strength, noise disturbance etc.).

Table 1. Locations and participants 2024. Survey points at which Bitterns were recorded highlighted in yellow.

Survey point	GPS coordinates		Counter
2024	Lat	Long	
SOUTH			
M1	36.26588	175.48718	David McIntyre
P1	36.24065	175.45577	Frances McClure + Kim Bannister. Phillipa
O1	36.23872	175.44539	Jeremy Warden
K1	36.22865	175.46119	Hannah Gale + Ryan
K3	36.23151	175.44286	John Ogden
K4	36.22798	175.432637	Annamarie Clough
K5	36.22309	175.43463	Lotte McIntyre + Kathy Sutherland
W1	36.14178	175.23896	Sarah Matthew
A1	36.20162	175.47339	Steve Kendall
NORTH			
W1	36.1185	175.4027	Not surveyed
W1a	36.1193	175.4087	Jade Williams
W2	36.1271	175.4048	Chippy
W3	36.1351	175.4048	Daniel Jacques
W4	36.135	175.4003	Lydia Green
W5	36.1455	175.3995	Sue Moore
W6	36.1522	175.4055	Sarah, Jesse and Ellie Dwyer
W7	36.1576	175.4141	Not surveyed
W7a	36.1499	175.4156	Beth and Thomas Daly



Map 1. Whangapoua Estuary showing northern survey locations in 2023 & 24. Sites not surveyed in 2023 were not surveyed in 2024.



Map 2. Southern survey locations 2024.

RESULTS

The evening was cool, with high cloud cover (median 95%) and light to moderate wind from the NE or East. It was dark as super- full-moonrise was not until 9.58PM. Full moon was 16th Oct – three nights earlier than the count.

Booming was recorded at three of the seven Whangapoua stations, but only one of the nine southern stations (P1: Police Station swamp). Excluding sites with zero booms, sequence detection ranged from a minimum of three at W4 to a maximum of 12 at W7A (Table2). All booming activity this year was after sunset, but the northern stations were not occupied by the recorder(s) before then as this was the protocol adopted. Booming activity apparently stopped between 8.16 and 8.27 PM; c.40 - 50 min. after sunset.

The distances apart of the points at which bittern were heard, and the direction of those calls, indicate that four different birds were observed. W1 was the only site at which bittern were not recorded in the previous survey (2023) but bitterns have been seen in that vicinity before (Chris Giblin, Scott Mabey. Personal communications 2020).

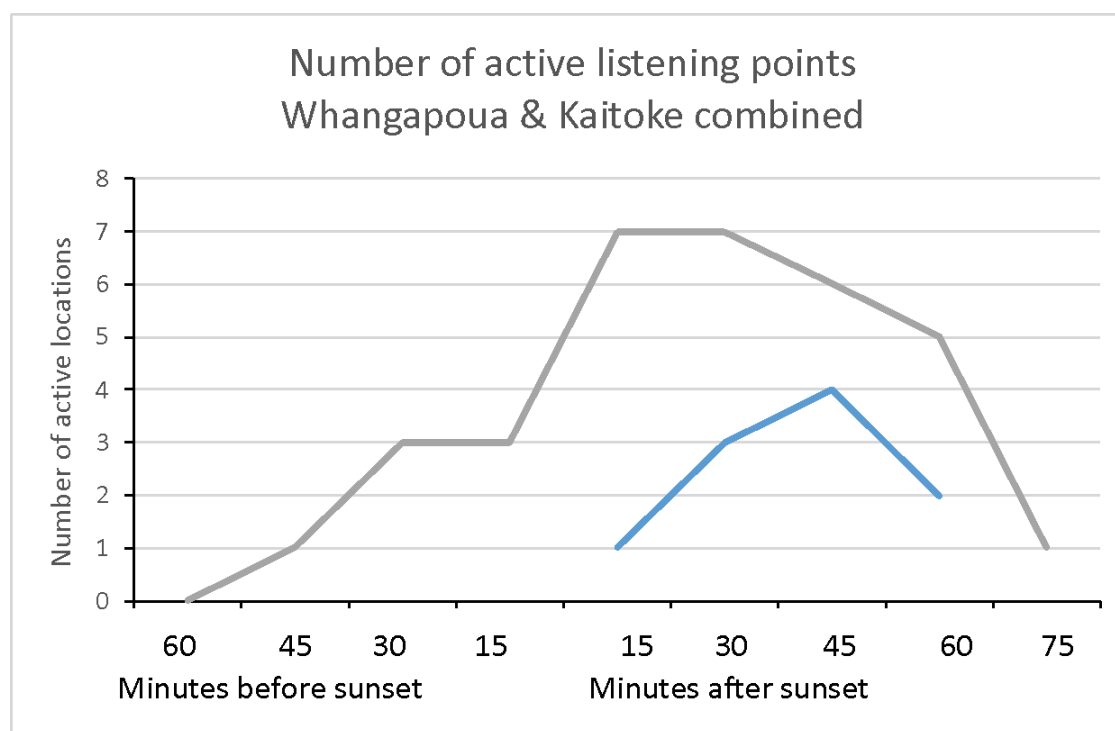


Fig 1. Bittern activity before and after sunset 2023 (Grey) and 2024 (Blue).

Table 2. Median sequence characteristics for all active stations In 2024 and 2023.
(The active 2024 stations are highlighted in yellow; 2023 results in brackets)

Station	Number of sequences	Median time between sequences (minutes)	Median no. of booms per sequence
W1	4 (0)	10 (0)	3 (0)
W2	0 (10)	0 (3)	0 (1.5)
W3	0 (30)	0 (3)	0 (3)
W4	3 (4)	6 (16)	2 (2)
W5	0 (2)	0 (30)	0 (3)
W6	0 (6)	0 (9)	0 (4)
W7A	12 (17)	3 (4)	4 (2)
Whangapoua medians	4 (10.5)	6 (4.5)	3 (3)
MI	0 (0)	0 (0)	0 (0)
O1	0 (0)	0 (0)	0 (0)
W1 (whangapp)	0 (0)	0 (0)	0 (0)
A1	0 (0)	0 (0)	0 (0)
K1	0 (0)	0 (0)	0 (0)
K3	0 (0)	0 (0)	0 (0)
K4	0 (11)	0 (5)	0 (3)
K5	0 (0)	0 (0)	0 (0)
P1	10 (22)	2 (2)	3 (3)
Kaitoke medians	10 (16.5)	2 (3.5)	3 (3)

Comparison with 2023 results.

There was clearly less activity at both northern and southern sites in 2024 than in 2023 (Fig 1. Table 2). Not only were birds heard at fewer survey points, but also calls heard were fewer even at clearly ‘active’ sites P1 and W7A (exact comparison is not possible due to differences in starting time relative to sunset). The failure to hear bittern booming at W3 contrasts with 2023, especially given that a few booms were recorded from W4 which is relatively close.

At Whangapoua, the data indicate that two of the four territories shown with red ovals in Fig 2 of the 2023 Report were active in 2024; these were ‘East of 7A’ (Okiwi Airfield) and ‘South-East of W4’ (Mabey Rd.). A further site East of W1 was also located and confirms earlier audio recordings and sightings. At Kaitoke no activity was recorded at K4 (hotsprings track) or elsewhere on the main swamp, but Police Station Swamp was again active, apparently at the seaward NNW ‘corner’. It seems possible that, as hinted at in 2023, two birds were present at P1 (8.05PM to W, 8.09PM switch to NNW), but one moving bird is most likely.

DISCUSSION

The results again point to the importance of the Whangapoua Estuary and Okiwi area as the prime nesting area for bittern on Great Barrier Island. Estimating the actual number of birds present is difficult, especially based on one night of counting per year. In 2023 four 'territories' were identified around Whangapoua, one of which definitely included two birds, giving an index of "definitely seen or heard birds" of 5 for that area. Adding a definite two for Kaitoke gave an overall Aotea index of 7. This year's results give an index of 3 for Whangapoua and 1 for Kaitoke, giving 4 overall. This implies a probable minimum of 8 birds, which is considerably below last year's estimate of 14 or more. The 2023 maximum estimate might have been optimistic (it assumed all birds were paired and some birds were not recorded). The current estimate is more in keeping with earlier conservative figures. For example, Geary et al. (2012) suggested as minimum of three pairs for the Island. However, given previous counts and the apparently increasing number of sightings (see OME Bittern Data Base) a *minimum* figure of four territorial pairs is reasonable. To get a more robust estimate will require the current effort (with c. 20 observers) to be carried out on several nights over the booming period.

The bittern data base, recording all sightings or hearings of bittern reported to OME has been maintained. The number of records each year since 2000 is shown in Fig 3. The positive trend indicated is not statistically meaningful and is more likely to be a reflection of reporting frequency rather than bittern abundance, but even that is useful if it indicates increased awareness generally within the community. Awareness is the first step in conservation.

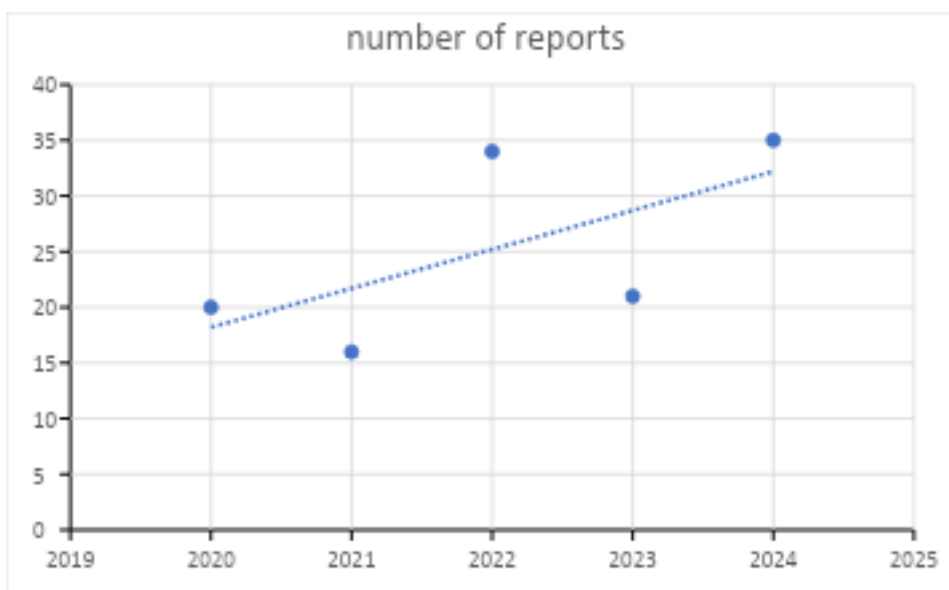


Fig 2. Reports of sightings and booming in OME/DOC data base 2020-2025. (Excluding sightings in the two Surveys).

Post script: on 16 Nov 2024 myself, Jenni Ogden and Lotte McIntyre did an hour's listening including time before and after sunset around Kaitoke Swamp, covering sites K1, K4, K5 and P1. No booming was heard at any site. Excepting at P1 the wind was light so had booming occurred we should have heard it. This negative result confirms the October Survey; bittern have been very quiet this year although the number of reports overall has increased.

Recommendations.

In view of the recommendations of O'Donnell & Williams 2015 (DOC protocol), the starting time of the monitoring has been reviewed. Although some birds boomed before sunset, none boomed *only* before sunset and all those that boomed did so soon after sunset, so the latter period (15-45 minutes after sunset) is optimum for estimating numbers in an evening count.

More than one date (month) should be aimed for in future, but if only one is feasible, October is preferable (O'Donnell & Williams 2015); it is the most active month, and the one monitored previously. Three consecutive evenings would be ideal. Calm weather conditions are essential for getting boom direction correct and triangulating individual birds.

ACKNOWLEDGEMENTS

Oruawhoro Medlands Ecovision wishes to thank all the participants listed in Table 1 and others who have contributed to the data-base. Also thanks to the staff of the Department of Conservation on Great Barrier Island for their willing cooperation in this project.

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APPENDIX. Raw data from sites where booming was heard 19/10/24

STATION	TIME	Time between sequences	No of booms	distance	direction
W1A	7.57		3	far	E
W1A	8.07	10	3	far	E
W1A	8.17	10	3	far	E
W1A	8.27	10	3	v. Far	
mean		10	3		
standard dev.		10	3		
median		10	3		
W4	8.14		2	far	SE
W4	8.17	3	1	far	SE
W4	8.26	9	2	far	SE
mean		6.0	1.7		
standard dev.		4.2	0.6		
median		6.0	2.0		
W7A	7.39		3	far*	E
W7A	7.43	4	4	far*	E
W7A	7.47	4	3	far*	E
W7A	7.5	3	4	far*	E
W7A	7.53	3	4	far*	E
W7A	7.55	2	3	far*	E
W7A	7.58	3	4	far*	E
W7A	8.01	3	4	far*	E
W7A	8.05	4	4	far*	E
W7A	8.08	3	4	far*	E
W7A	8.11	3	3	far*	E
W7A	8.16	5	3	far*	E
mean		3.4	3.6	*c. 80-100m.	
standard dev.		0.8	0.5		
median		3.0	4.0		
STATION	TIME	Time between se	No of booms	distance	direction
P1	7.56		1	far	W
P1	7.58	2	2	far	NW
P1	8.03	5	3	far	NW
P1	8.05	2	3	far	W
P1	8.09	4	3	far	NNW
P1	8.11	2	3	far	NNW
P1	8.12	1	4	far	NNW
P1	8.14	2	4	far	NNW
P1	8.16	2	4	far	NNW
P1	8.18	2	4	far	NNW
mean		2.444444444	3.1		
standard dev.		1.236033081	0.994428926		
median		2	3		