# Upukerora River Bat Survey

Wildlife Acoustics

CONTRACT REPORT: FOR SAVE FIORDLAND TRUST, TE ANAU.

**Summary**

A small scale survey for native bats was completed on private property along 2.5 km of forest/pasture margins bounding the Upukerora River, over the eleven night period 11 – 21 November, 2013 (FIGURE 1).

Wildlife Acoustics was commissioned by the Save Fiordland Trust to confirm if long tailed bats were present in this area. They were found to be active throughout the sampling period and also large amounts of activity in the last hour prior to sunrise indicate that long tailed bats were most likely roosting in close proximity to the area sampled.

**Background**

The study area lies within the Upukerora Ecological District at approximately 400 m a.s.l. in the Snowdon Forest (45°26' S, 167°91' E) and is part of the Te Wahipounamu South-west New Zealand World Heritage Area. It is located opposite Takaro Lodge and just downstream of the Dunton Swamp, approximately 20 km SE of the Eglington Valley. Long tailed bats have previously been detected in this area by the Department of Conservation and also during the ecological surveys by Mitchell Partnerships (2010), as part of their ecological assessment for the Fiordland Link Monorail proposal.

The South Island Long tailed bat (*Chalinolobus tuberculatus* "South Island") is presently classified as "Nationally critical" and estimated to be declining at a rate of 90% over the next three generations[1] (O'Donnell et al, 2010). This is the highest threat level for native species before extinction in New Zealand and to put the SI long tailed bat status in context, it is in the same threat tier as iconic bird species such as takahe (*Porphyrio hochstetteri*) and kakapo (*Strigops habroptilus*). As of 2010 there were only ten know sustainable populations and predation by introduced mammalian predators is considered the main threat. Other small populations have been detected since then (E.g. Iris Burn - Stewart, 2011), but relict populations such as that at Iris Burn are very small (typically < 100 individuals) and therefore these mammals are vulnerable to predation events or loss of tree roosts which increase the risk of extirpation.

[1] based on a conservative estimate that a generation is 12 years.

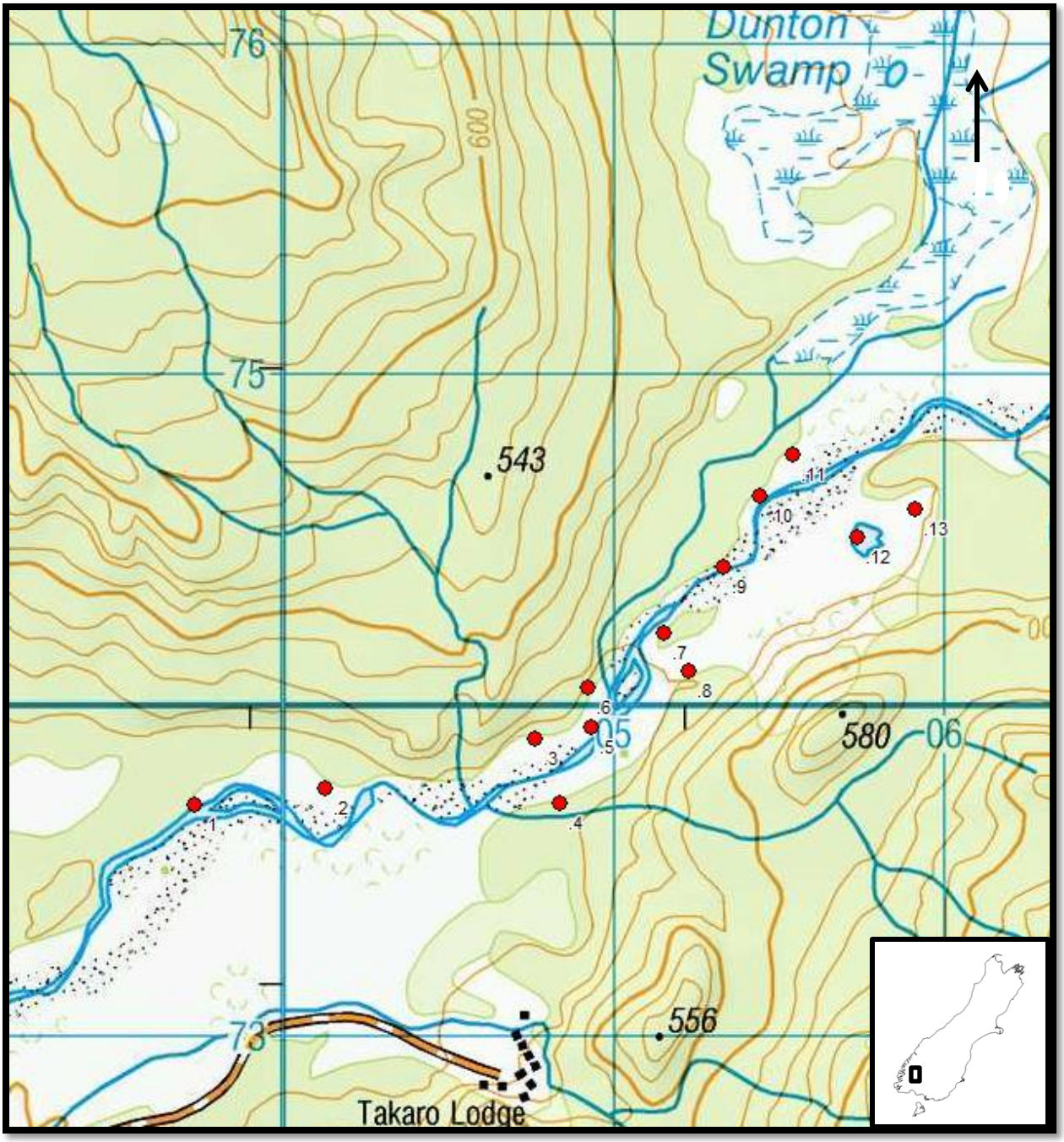


FIGURE 1: LOCATION OF AUTOMATED BAT DETECTOR UNITS (ABDUs) UPUKERORA RIVER BAT SURVEY, NOVEMBER 2013 RED DOTS SHOW LOCATIONS OF ABDUs. UNIT 2 MALFUNCTIONED.

**Field Method**

Thirteen automated bat detector units ("ABDUs"; manufactured by Department of Conservation, Wellington) were set up about forest margins (FIGURE 1). They were fixed to shrubs and trees approximately 1.5 off the ground and set to run from prior to sunset through

until after sunrise each night. Where practical they were deployed at 200m intervals on the true right of the Upukerora and 500m apart on the true left except ABDU 12 which was moved further upstream to sample the pond, which was considered a likely bat foraging area. High frequency echolocation pulses emitted by native bats are detected by the ABDUs, which are then saved as .wav files onto data cards.

**Data analysis**

Sound files from each sampling session were subsequently searched for bat signals using Bat Search Software 1.04. Data was sorted into nine one hour time periods after sunset for some of the analysis. There was also a small amount of time just prior to sunrise from part of the 10th hour (range 0-23 minutes over 11 nights), but only one bat pass was detected in this period and so the part tenth hour data was not used in analysis.

**Results**

No onsite environmental data was collected. Inspection of sound files showed that ABDUs successfully collected data throughout nights for the entire sampling period, but that there was some interference from showers 13th and 20th. Bats were detected on all of these nights and so the data has simply been presented as the number of bat passes per unit or night.

Twelve of the ABDUs collected data over the full eleven night period resulting in a total of 132 ABDU nights effort. ABDU 2 malfunctioned and failed to collect any data. A total of 867 bat passes were detected and this equates to a mean detection rate of 6.6 (± SE 2.6) bat passes per ABDU night. Activity was much higher at ABDUs 6 and 12 (FIGURE 2). Unit 6 was set up in a windfall area approximately 50 m from the forest margin and 12 next to a pond in open grassland.

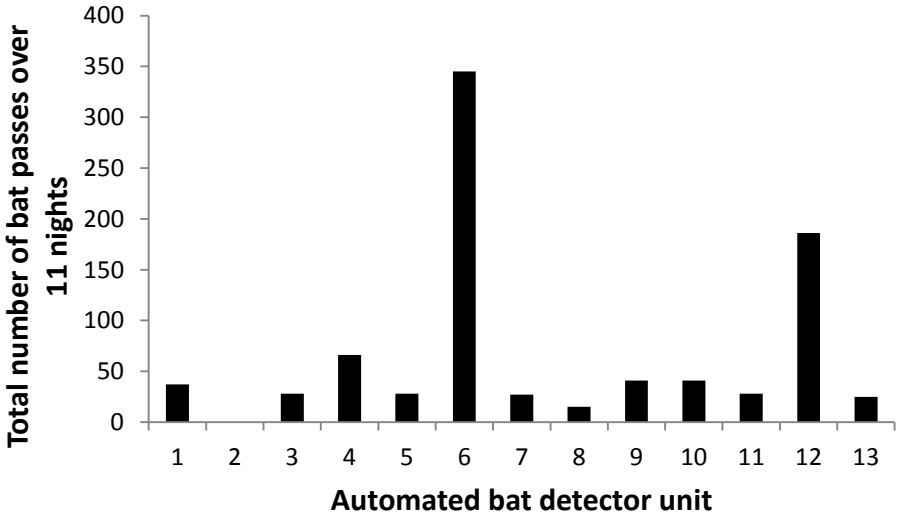


FIGURE 2: TOTAL NUMBER OF BAT PASSES PER AUTOMATED BAT DECTEOR UNIT (ABDU), UPUKERORA RIVER 11 - 21 NOVEMBER 2013. ABDU 2 FAILED TO OPERATE.

There were no feeding or social bat signals detected from ABDU 6. It can be seen in FIGURE 3 that there were high levels of activity at this site over the four night period 12th - 15th and again on the 18th. In total 345 passes (46% of grand total) at Unit 6 were detected and 299 (87%) of these were during the 9th hour prior to sunrise (TABLE 1). A total of 61 (21%) 9th hour passes were detected from the eleven other operational units and so 79% of 9th hour activity was detected from Unit 6.

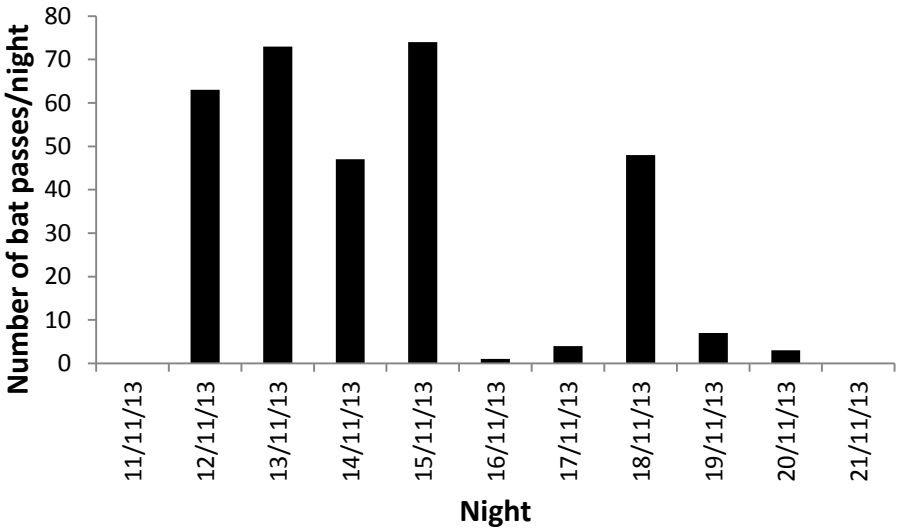


FIGURE 3: NIGHTLY LEVELS OF BAT ACTIVITY AT AUTOMATED BAT DETESTER UNIT 6, UPUKERORA RIVER 11 - 21 NOVEMBER 2013.

TABLE 1: AUTOMATED BAT DETECTOR UNIT 6 BAT ACTIVITY SORTED INTO EACH HOUR AFTER SUNSET, UPUKERORA RIVER 11 – 21 NOVEMBER 2013.

| Hour after sunset | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Number of passes | 0 | 10 | 6 | 7 | 7 | 8 | 3 | 4 | 299 |

Only one ABDU (12) was deployed near standing water and 186 (22%) of all passes were detected at this location (FIGURE 2). This included several echolocation sequences that were up to 30 seconds duration. Additionally 63% of all feeding buzzes (10 of 16 in total) were from there.

**Discussion**

Bats were active along this stretch of the Upukerora River throughout the 11 night period. Activity was also very high about Unit 6 (FIGURE 2 and TABLE 1) in the hour prior to sunrise and this indicates that bats were likely returning to a roost in the near vicinity, as all passes were search phase type and so it does not appear that they were feeding within the windfall area. It is also apparent that the bats roosted in this general area for some nights prior to moving to another roosting tree as would be expected (FIGURE 3).

The Save Fiordland Trust is concerned that the proposed monorail development in this area will have an adverse effect on this critically endangered species. Given that this species has been observed to reside in the Upper Upukerora in early November and thus indicating it is resident, then the proposed felling of forest throughout the home range of this population (Mitchell Partnerships, 2010) in this area could likely have greater than minor effects. This is because the loss of only a few breeding females would have a significant effect on a small critically endangered population.

Further expert opinion is recommended in relation to this issue and this should also include fieldwork next spring/summer during the breeding period to provide a clear picture of which areas are sensitive as current estimates predict the species will be extinct within 30 - 40 years (12 years/generation x 3 generations), if present population trends continue.

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**References**

Mitchell Partnerships 2010. Spring survey report for proposed Fiordland Link Experience monorail route. Report prepared for Riverstone Holdings Ltd.

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