**Draft scope of works DOC Rakitata bird walk through data analysis.**

Amount available = $19900 = ~358 Jack hours

Brad’s original request

1. What confidence is there in the current walk through regime detecting population changes in individual bird species? Ie. How many years of data are required to give us a high confidence trend analysis. We are struggling with what a meaningful monitoring regime is for our braided river bed monitoring and we want to feel assured we have a good monitoring system in place given the huge investment in predator control undertaken over the last 7 years.
2. Run a trend analysis on key braided river bird populations.
3. What has been the impact of the predator control. Ian and I would need to supply a second dataset for this-what trapping/predator control has been undertaken.
4. If the dataset needs changes to the monitoring regime to be useful, we need those ideas to feedback into our workplans.

Helen’s suggestions [ANGUS + JACK please edit the below]

* Collate, and clean the Rakitata bird walk through data and prepare for analysis. Including liaising with Brad and Ian to find any missing data and to understand changes in the monitoring regime over time.
* Run trend analyses for individual bird species of interest/target species.
* Run power analyses to determine the probability of detecting a trend (non-zero slope)
* Investigate what would be required to analyse the impact of predator control

Things we need from Brad/Ian

* Species of interest
* trapNZ + walk the line access for both Jack and Helen
* Time windows – over what time periods do they want to detect trends
* Other predator control – Hawkes + Black backed gulls
* Differences in historical methods
  + Check hectares makes sense
* GPS tracks (maybe)
* Any other important covariates e.g. flow, weather on the day of survey
* Missing number of observers in 2021 + 2022
* Names of observers/experience level
* Bat report

To check/do

* GPS start and finish for each section
* Decide if analyses are broken down per km/hectare/section
* Flow data – time since last flood as covariate in model
* Add 0’s if splitting into sections/kms
* Response – counts? Relative abundance (probably not)
* Colin O’Donnell papers -
* Check a 0 slope might be ok i.e. birds are not declining...???

Longer term list

* Figure out what can be used from trap NZ vs walk the line
* Residual population analysis (of predators)
* Detection probabilities – each bird has a different detection probability
* Use satellite images to work out how much habitat was available each year and estimate how much was surveyed.
* Ground truth observations – address biases
* Terrible as this sounds -if they have to stop predator control because funding disappears, we will have an easier time detecting the effect of predators…would assume to see declines in vulnerable bird numbers…
* Cross catchment analyses – all walk through data in the same database