

Foraging ecology of Bar-tailed Godwits (*Limosa lapponica*) upon migration arrival

I will address three questions about the foraging behaviour of Bar-tailed Godwits after their arrival from the longest endurance flight known in birds (Alaska to NZ direct, >11, 500 km). The first is whether diet choice and energy intake change with time as birds recover from this flight. During flight godwits almost certainly experience massive reductions in the size of internal organs, including their gastrointestinal tract. This may reduce their digestive capacity and influence their prey choice and intake rate, and by repeatedly studying the same individuals I aim to track any changes in their 'recovery' phase. The second question relates to the large degree of sexual dimorphism between males and females. Males have bill lengths from 70–90 mm while females have bills of 90–130 mm. I will test whether this size difference leads to niche differentiation in terms of prey choice or habitat selection, and if these differences are consistent between individuals. Lastly, I intend to compare foraging proficiency between adults and juveniles. Based on earlier observations, juveniles appear to forage differently to adults and may choose less profitable food. I intend to examine the extent to which they forage differently to adult birds.

I will do this work at the Manawatu River estuary, where there is a population of individually-marked godwits. This allows for studies of individual birds to be made, and given that we know the biometrics of these birds we can use their bill length for direct size comparisons of prey size. The birds will be filmed and these videos will be analysed to determine pacing and foraging rates, prey consumed and the size of the prey consumed. The relative biomass and energy content of each size of prey item will be determined by benthos sampling and lab analysis of the prey items. Hopefully, at the end of this study we will have unique insights into the impact of extreme long-distance flight the subsequent ecology of godwits, and how consistently individuals differ from one another in their use of the estuary.

Toby Ross (May 2017)



Colour-banded adult female godwit stretching (photo taken by Toby Ross)



Exhausted juvenile that just arrived from migration (photo taken by Phil Battley)