Epidemiology of avian influenza in aquatic birds in northern Queensland

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Avian influenza (AI) is an emerging infectious disease which is being closely monitored worldwide due to the potential for highly pathogenic strains to mutate and infect humans. The virus can be carried by wild migratory aquatic birds, which easily bypass biosecurity checks and interact with domestic species, creating a platform for cross infection.

My 6-week AB-CRC vacation scholarship gave me the opportunity to be part of a James Cook University (JCU) research team who aim to fill a major gap in surveillance for AI along the Papua New Guinea to Cape York wild bird migratory route. I captured and sampled wild water fowl at Billabong sanctuary in Townsville, with PhD student Rukan Hoque. Elusive Dusky Mohens and Plum whistling ducks were lured into traps with poultry feed – once captured, we would individually weigh and tag each bird, then take cloacal, tracheal and blood samples.

“Quick, give me a swab!” Rukan would often exclaim, as he trotted off triumphantly towards a fresh faecal sample from a magpie goose, adding it to his collection for analysis.

When the notorious wet weather in far north Queensland made it impossible to continue catching wild birds, we started on lab work. Samples were screened for AI using a real-time PCR assay; positive samples were then further tested using a Haemagglutination Inhibition test to verify the influenza strain, and determine whether it was a highly pathogenic type.

I had to learn biotechnology lab skills on the job, which was quite a challenge given my veterinary science background. Epidemiological principals that I learnt at University came to life as I helped with the statistical analysis, allowing us to determine the risk factors, such as age or species, which might increase the chance of a bird being infected with AI.

The research project aims to improve surveillance for AI, as well as identify some of the factors involved in the introduction, maintenance and transmission of AI - helping us better understand the ecology of influenza viruses. The project was a highlight; encouraging my interest in the avian species and epidemiology of infectious diseases, and affirming my desire to pursue further research in the field.

Fig 1. magpie geese in cage

Fig 2. Field station at Billabong sanctuary

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