Advancing wildlife research – development of a solution to process video footage of waterbirds

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Why do we count animals?

- Accurate abundance estimates are key for management.
- Abundance estimates allow managers to determine sustainable harvest quotas.
- Important for establishing population change.
Traditional survey methods

- Often rely on in-field counts by observers
- Major biases exist with some methods – requires verification
- No record for future comparison
Wildlife researchers love new toys!

• Development of UAVs – improved battery life and affordability
• Solution for surveying wildlife, especially large, concentrated groups
The difficulties of counting waterbirds

- Concentrations of large, mixed flocks
- Difficult to count in the field
- Trialling video surveys to deal with these situations
The easy part – in field data collection
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So many videos, so little time

• Collection of large quantity of video footage from the field
• Currently no readily available program to process video (freeware available for tagging still images)
Why MATLAB?

• Recommended by Climate research group at DPI
• Extensive consultation during development stages
• Excellent support (even for someone with very limited programming experience!)
Development of video processing program (DuckTags)

Key components:

• User friendly GUI
• Manual tagging of birds with species identification
• Manual tracking of birds within video
• Multi observer tagging to compare birds identified
• Export of count data to Excel spreadsheet
MATLAB packages used

• Image Processing Toolbox
• Computer Vision System Toolbox
• Customised version of Ground Truth Labelling tool
Multi species tagging
Tracking tagged ducks
Tagging output
Further developments

• Progress towards machine learning to automate tagging and reduce processing time
• Challenges associated with camouflaged animals
• Potential for application to other species
Thanks for listening

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