



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

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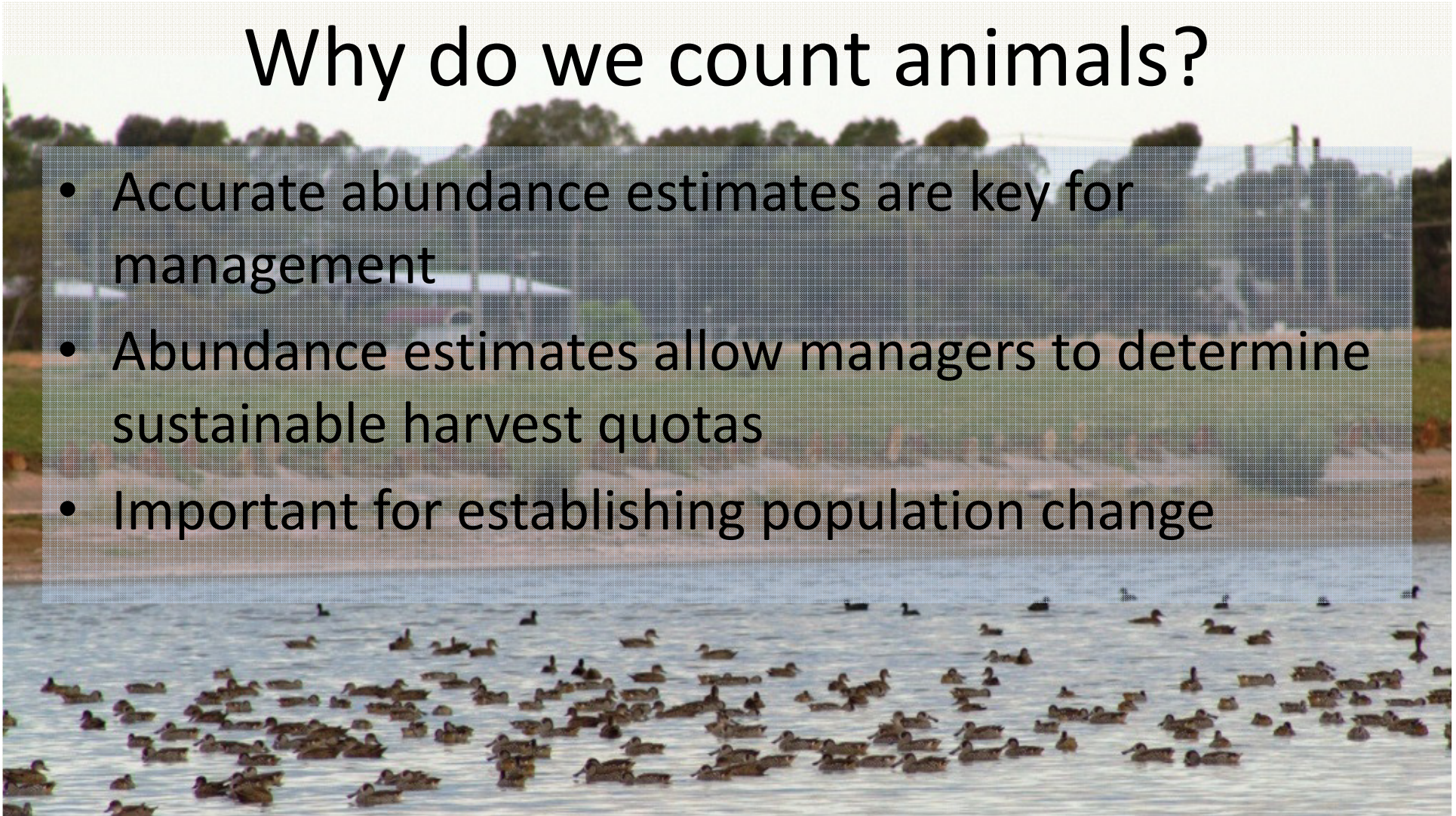
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Department of
Primary Industries

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

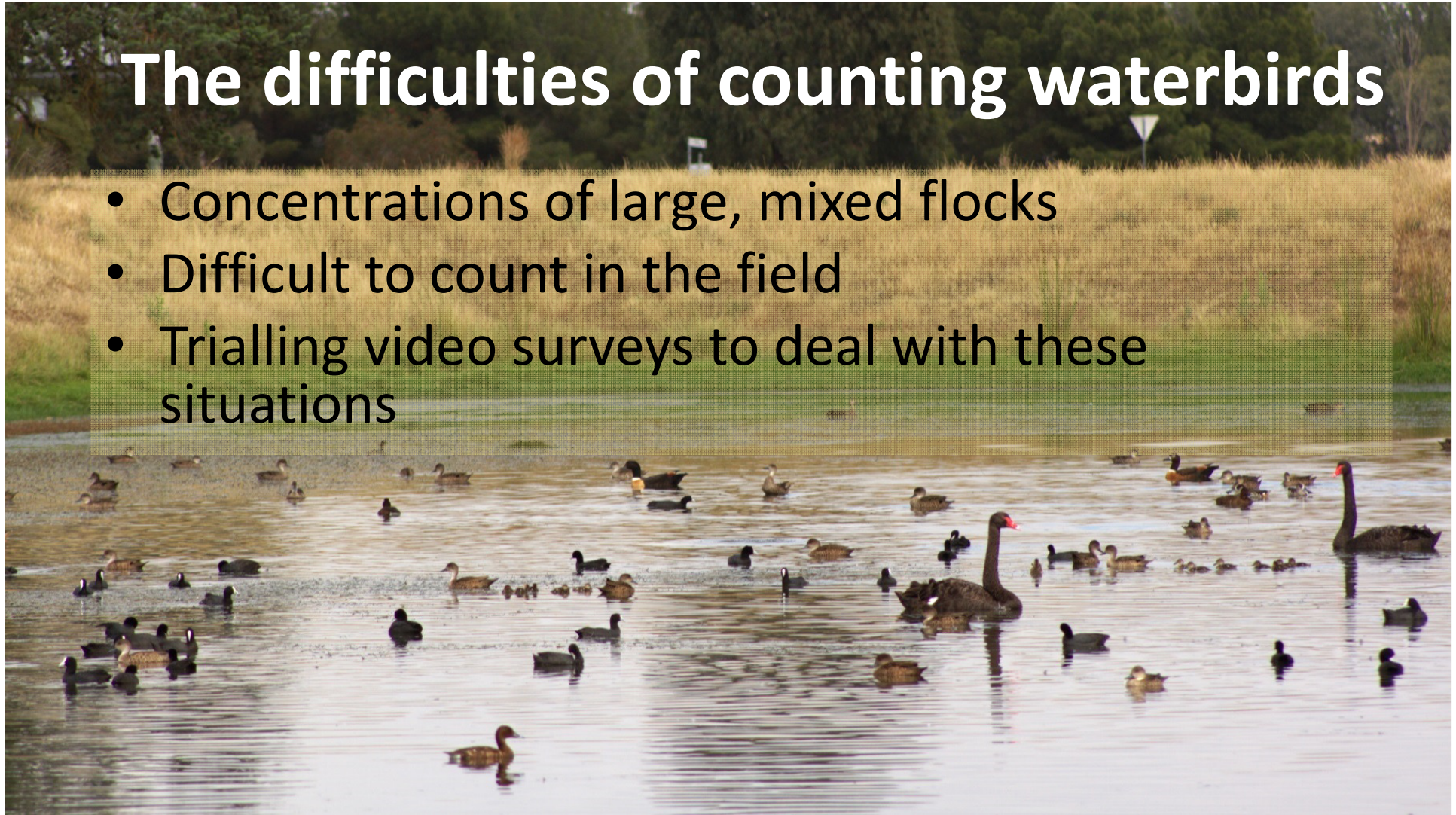
Wildlife researchers love new toys!

- 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



The easy part – in field data collection



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;

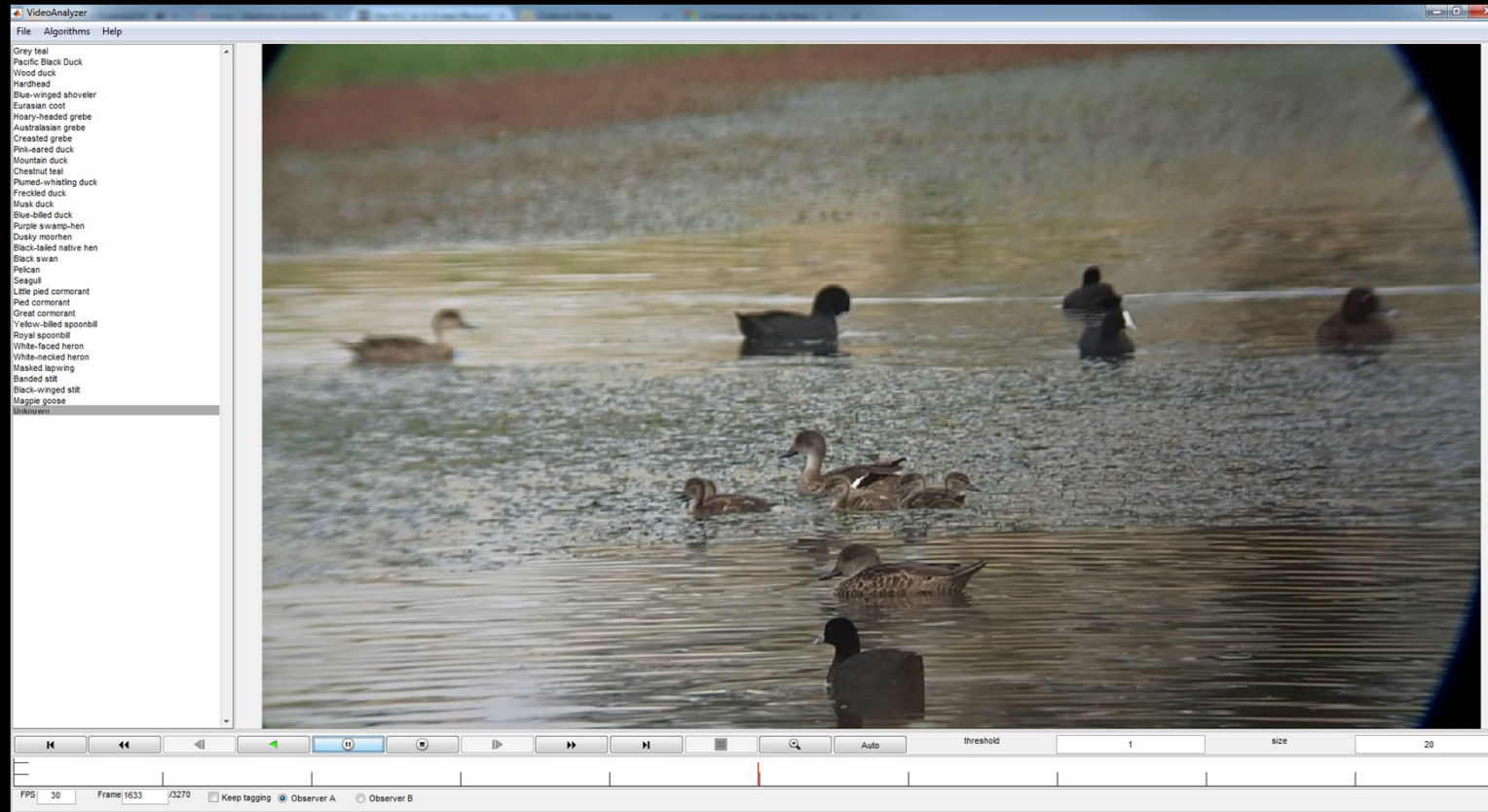
- User friendly GUI
- Manual tagging of birds with species identification
- Manual tracking of birds within video
- Multi observer tagging to compare birds identified
- Export of count data to Excel spreadsheet



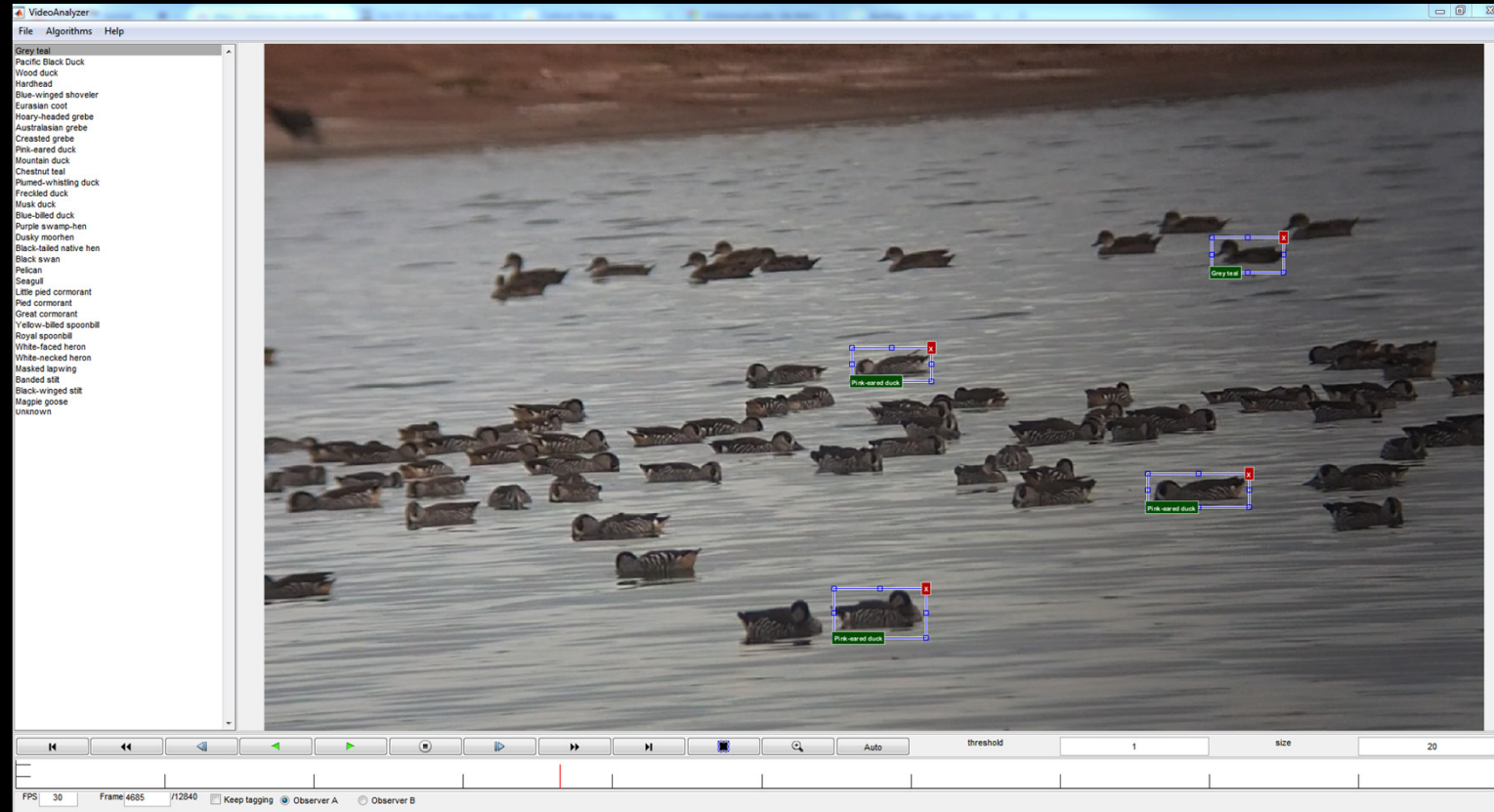
MATLAB packages used

- Image Processing Toolbox
- Computer Vision System Toolbox
- Customised version of Ground Truth Labelling tool

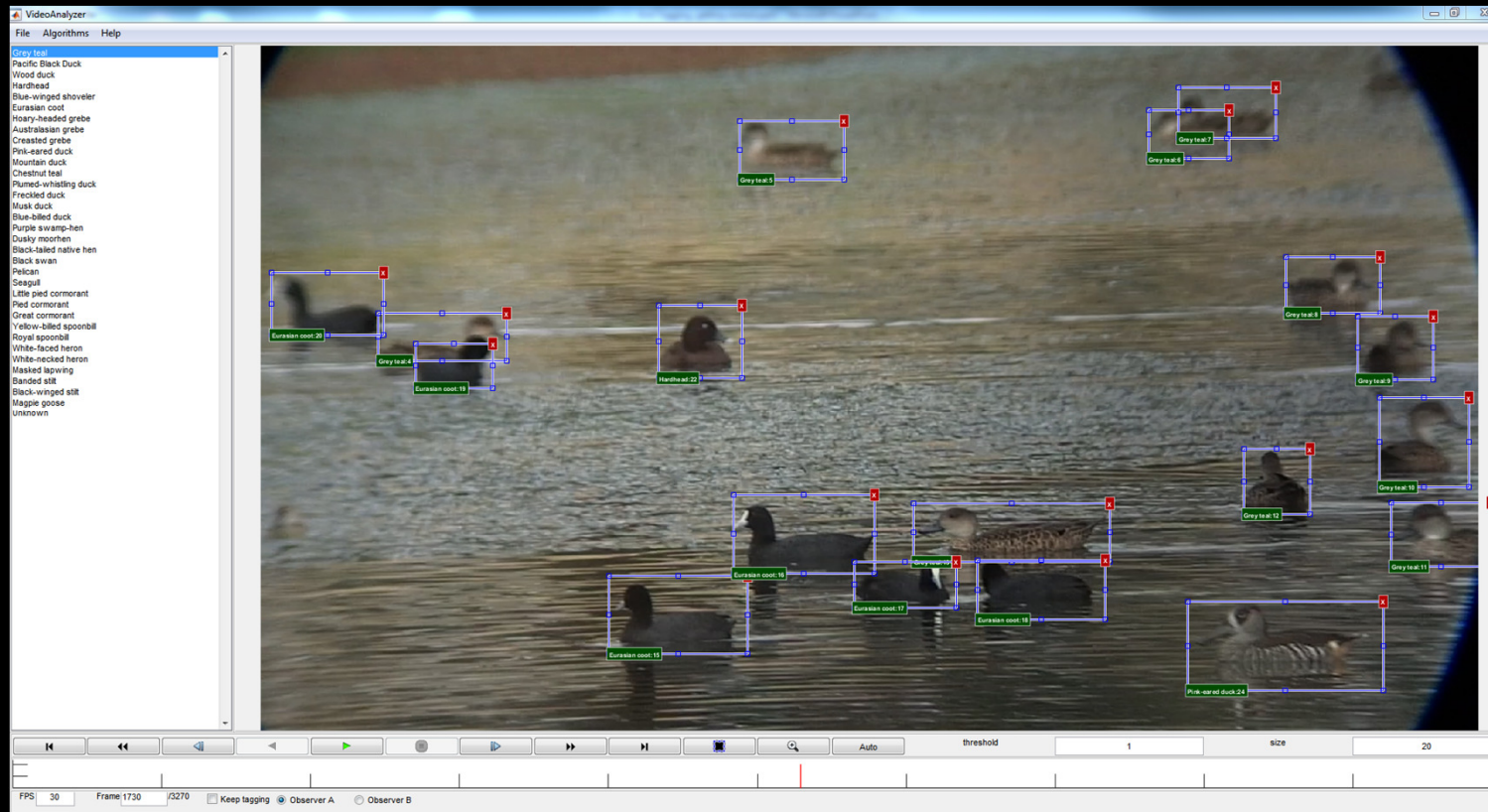
Multi species tagging



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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