Aerial Survey of Wetland Birds in Eastern Australia - October 2019 Annual Summary Report

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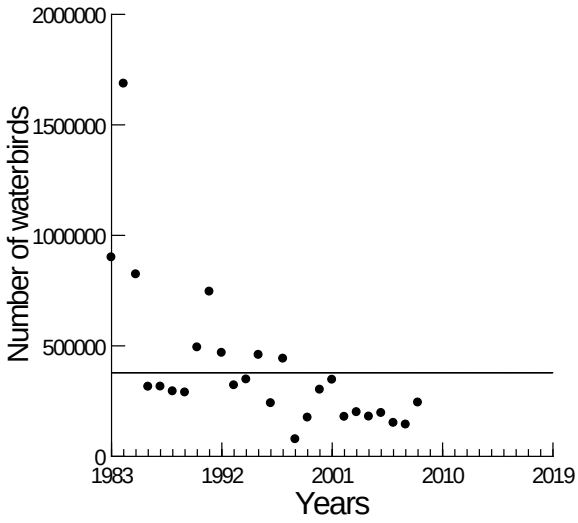


Figure 1. Changes over time in a) total abundance, b) wetland area, c) breeding and d) number of breeding species in the Eastern Australian Waterbird Survey (1983-2019); horizontal lines show long-term averages.

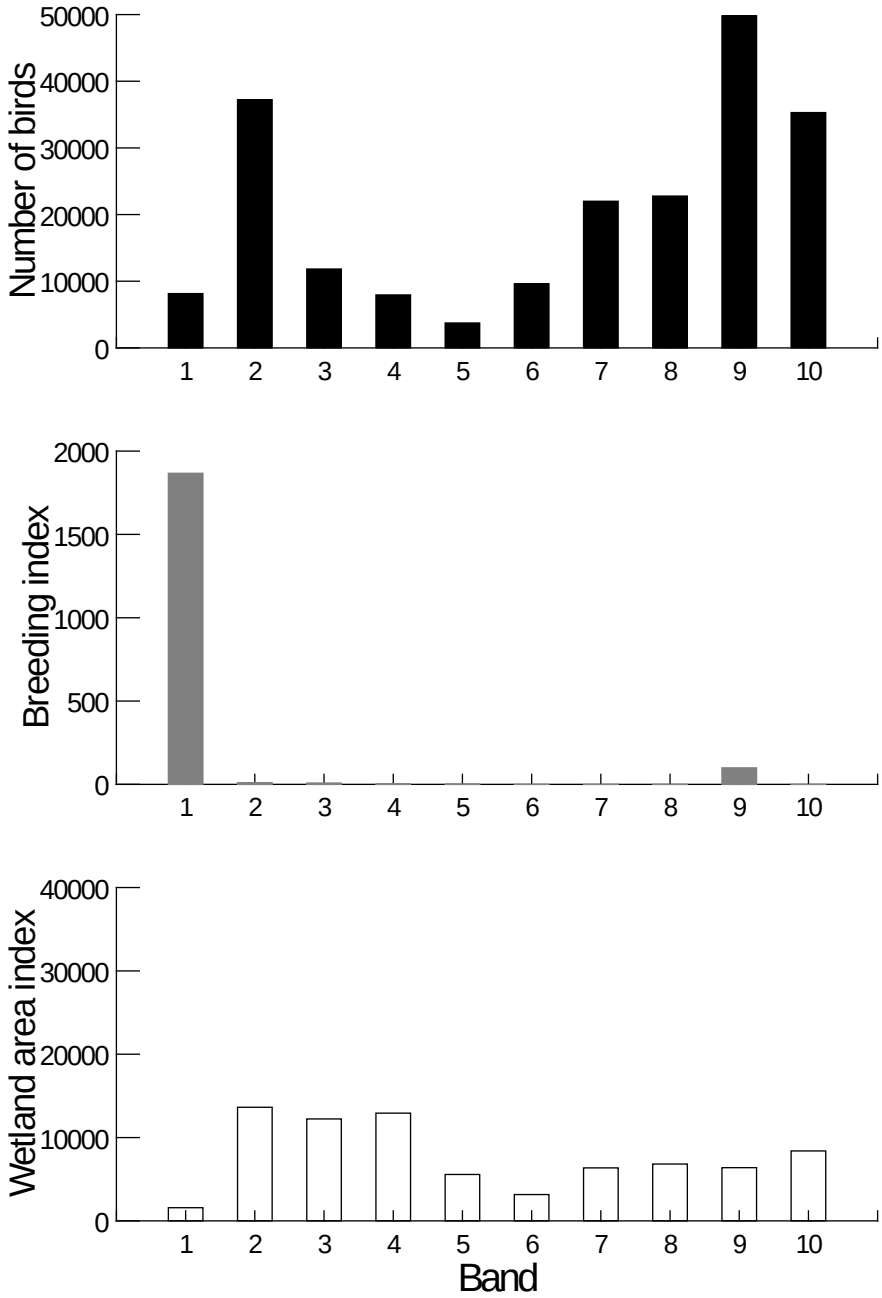
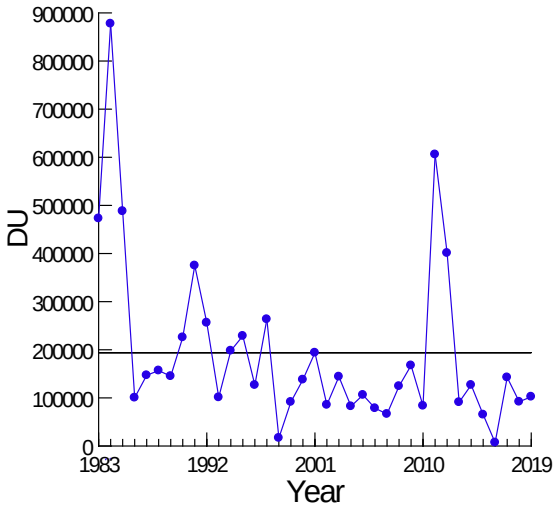
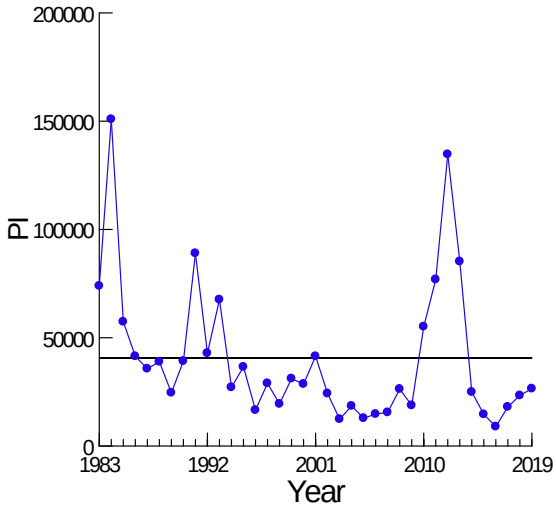


Figure 2. Waterbird abundance, breeding index and wetland area index in 10 survey bands of the Eastern Australian Waterbird Survey in 2019.





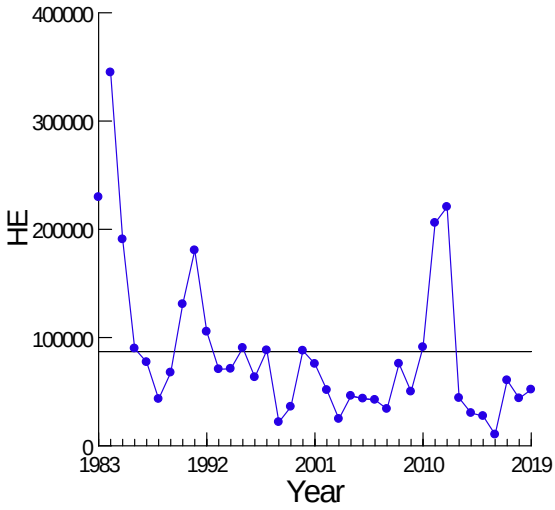


Figure 3. Changes in abundances of waterbird functional response groups (Du=ducks; Pi=piscivores; He=herbivores; Sh=shorebirds; La=large wading birds) over time in the Eastern Australian Waterbird Survey (1983-2019).

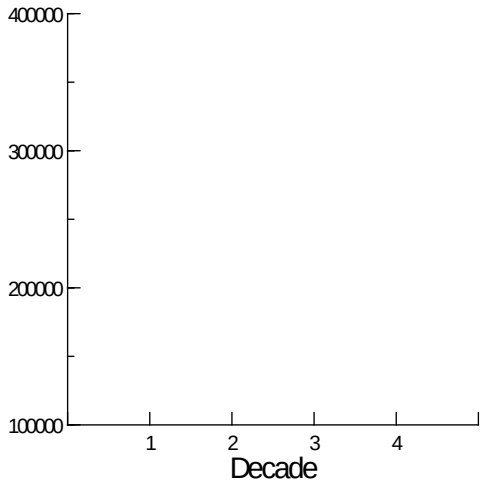


Figure 4. Decadal changes in indices including total abundance, wetland area, number of breeding species and breeding in the Eastern Australian Waterbird Survey (1983-2019).

Table 1. Trends in total waterbird abundance, wetland area index, breeding index and breeding species richness in the Eastern Australian Waterbird Survey (1983-2019).

Variable	1983-2019 All years		1985-2019 Omit 83-84	
	regression		regression	
Total waterbird abundance	decline	r^2=0.24, p=0.002	decline	r^2=0.13, p=0.034
Wetland area index	decline	r^2=0.24, p=0.002	decline	r^2=0.14, p=0.030
Breeding index	decline	r^2=0.12, p=0.041	no trend	r^2=0.06, p=0.158
Breeding species richness	decline	r^2=0.25, p=0.002	decline	r^2=0.16, p=0.017

Table 2. Trends in abundances of functional response (Fx) groups, in the Eastern Australian Waterbird Survey (1983-2019).

Fx group		Trend	Regression
Du	Ducks	decline	r^2=0.26, p=0.002
He	Herbivores	decline	r^2=0.29, p=0.001
La	Large wading birds	decline	r^2=0.30, p=0.001
Pi	Piscivores	decline	r^2=0.19, p=0.007
Sh	Shorebirds	decline	r^2=0.46, p<0.001

Table 3. Trends in abundances of game species from the Eastern Australian Waterbird Survey (1983-2019).

Species	Trend	Regression
Black duck	decline	r^2=0.32, p<0.001
Australasian shoveler	decline	r^2=0.39, p<0.001
Chestnut teal	decline	r^2=0.12, p=0.036
Grey teal	decline	r^2=0.19, p=0.006
Hardhead	no trend	r^2=0.03, p=0.326
Mountain duck	decline	r^2=0.42, p<0.001
Pink-eared duck	no trend	r^2=0.06, p=0.153
Australian Wood duck	decline	r^2=0.24, p=0.003

2019 Total abundance 208,364

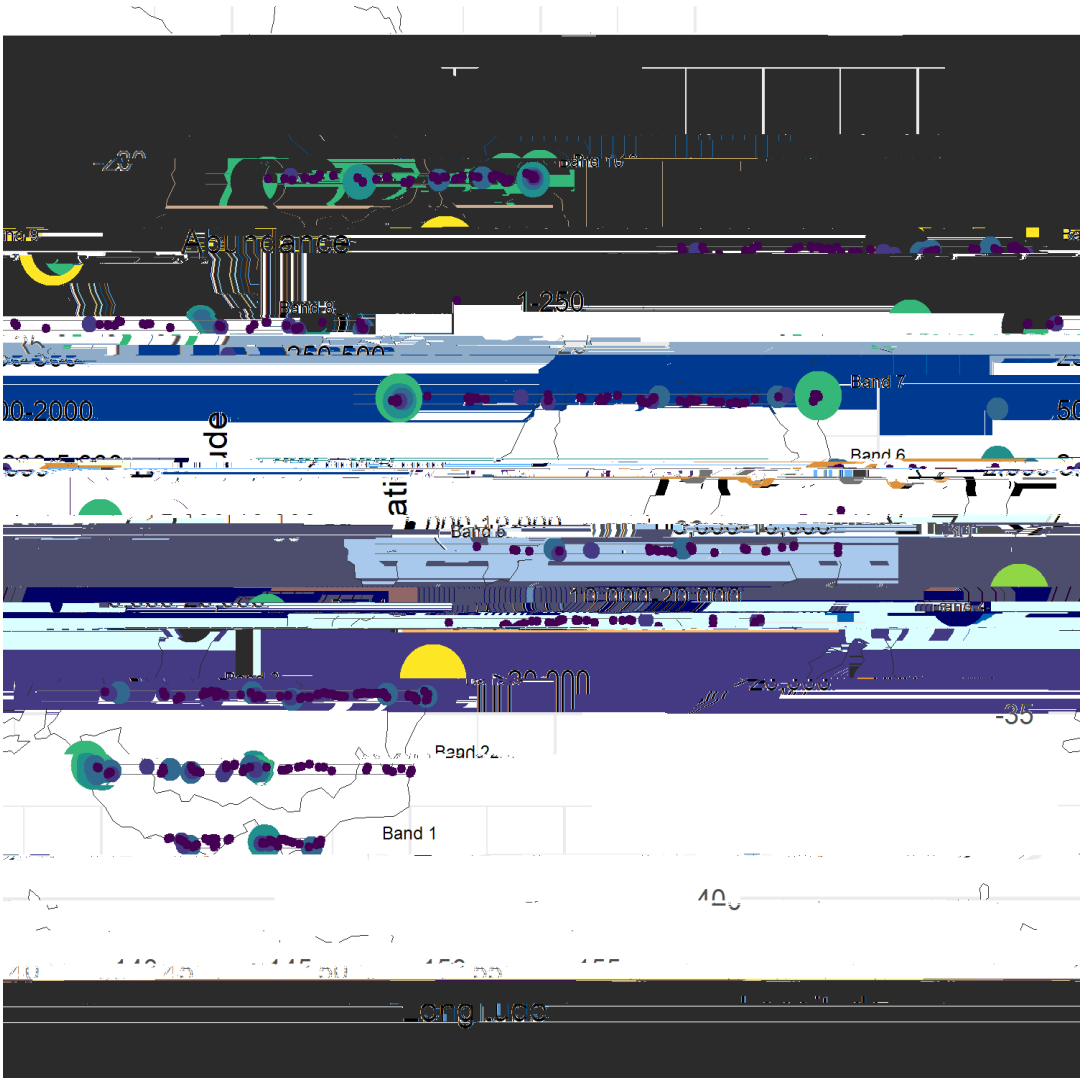


Figure 5. Distribution and abundance of waterbirds in the 2019 Eastern Australian Waterbird Survey. Dry wetlands and those with zero waterbirds not plotted.

2019 Breeding index 1,987

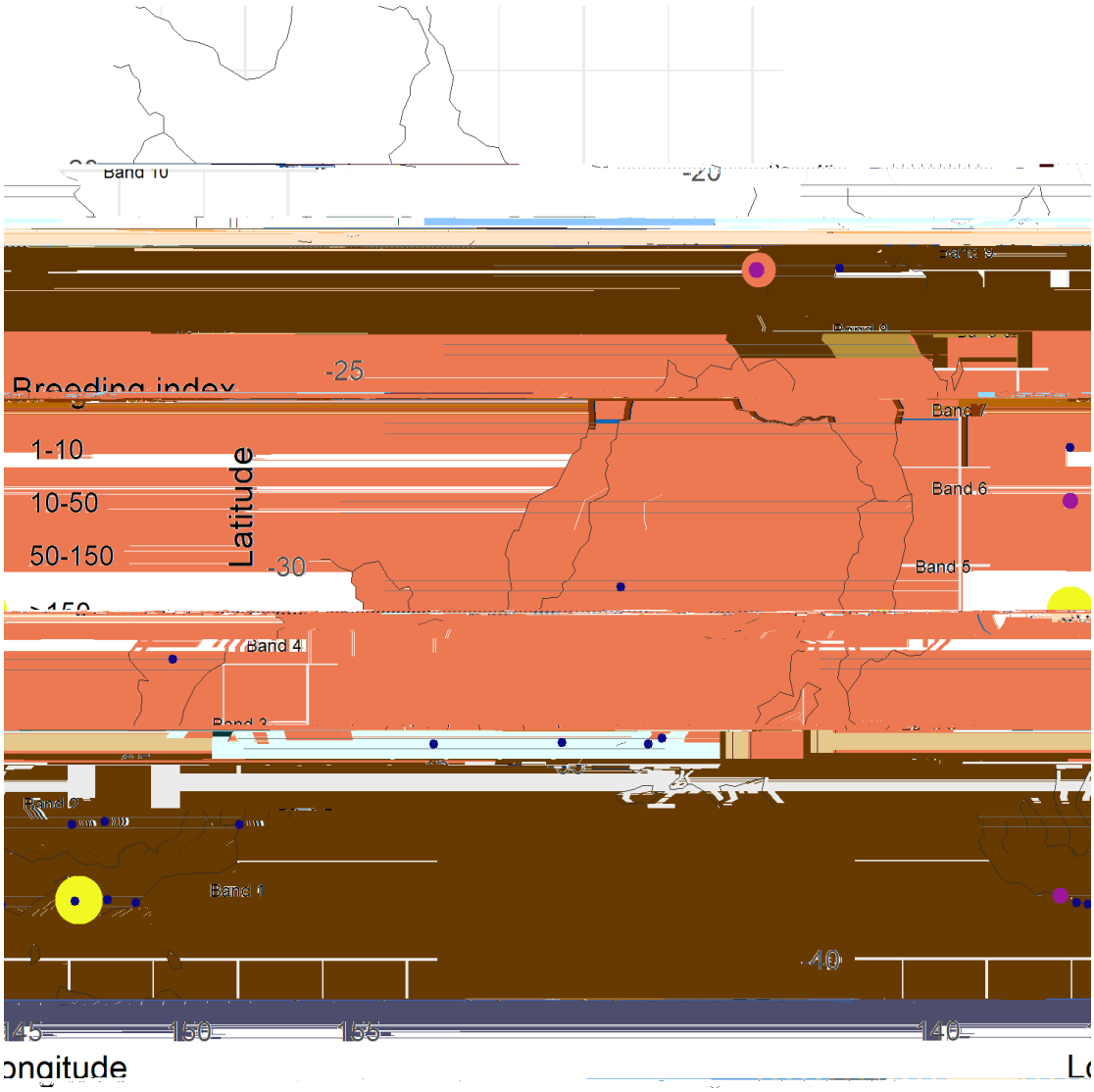


Figure 6. Distribution of waterbird breeding in the 2019 Eastern Australian Waterbird Survey. Only wetlands with breeding recorded are plotted.

2019 Wetland area index 75,239 ha

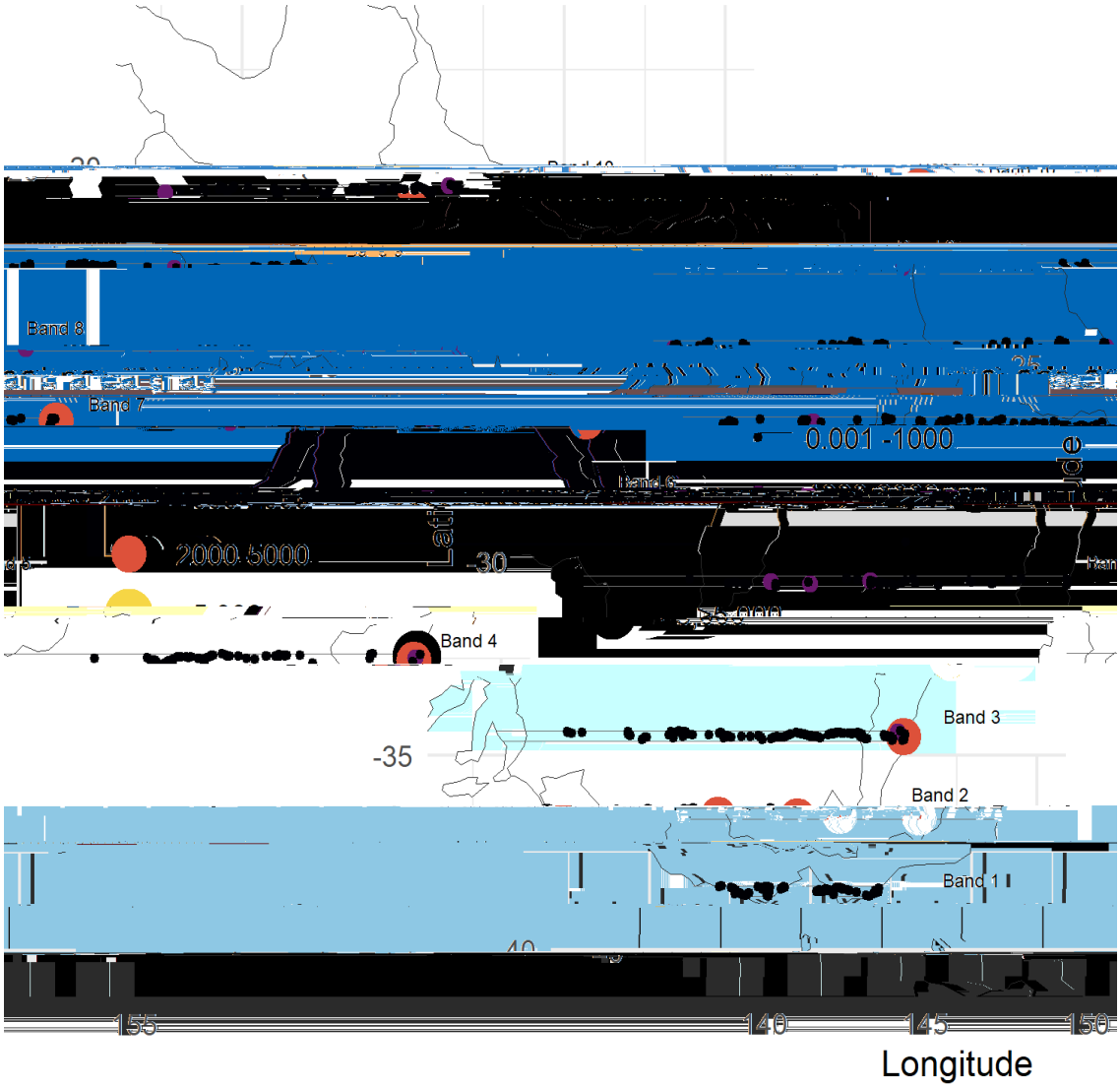


Figure 7. Distribution of wetland area in the 2019 Eastern Australian Waterbird Survey. All surveyed wetlands with surface water present are plotted; dry wetlands not plotted.

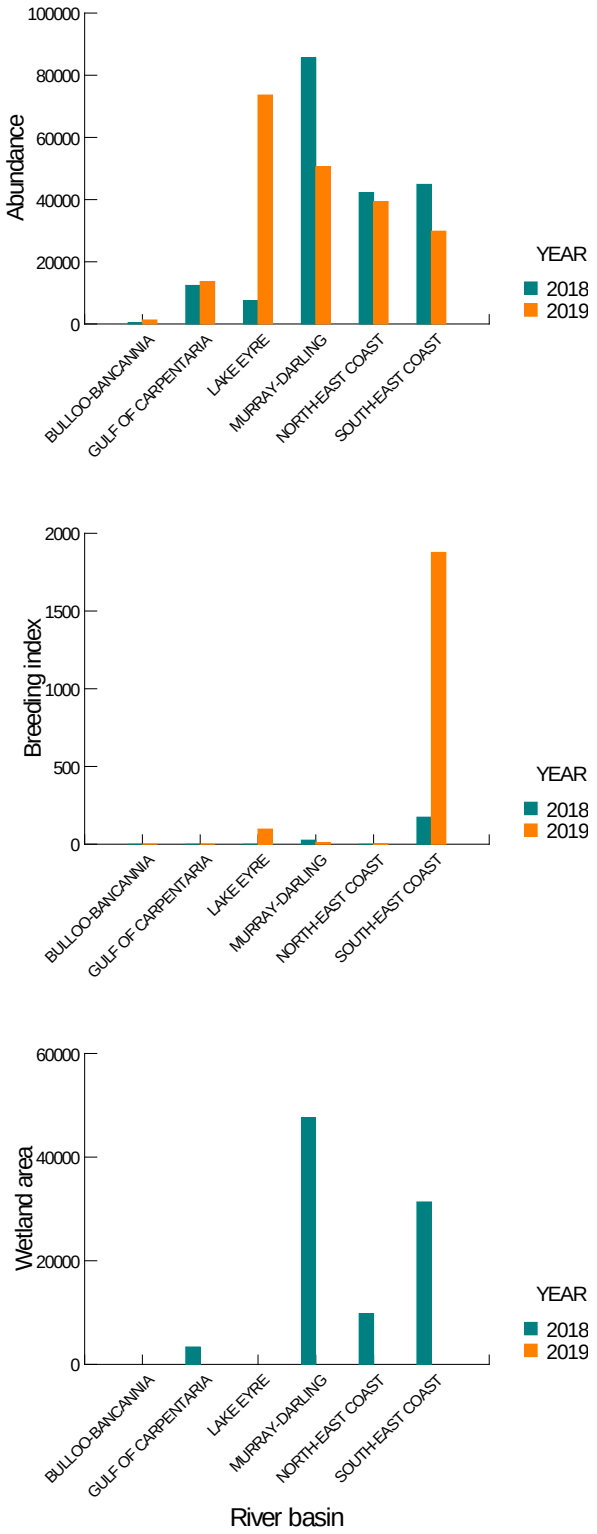


Figure 8. Comparison of waterbird abundance, breeding index and wetland area in major river basins in 2018 to 2019.

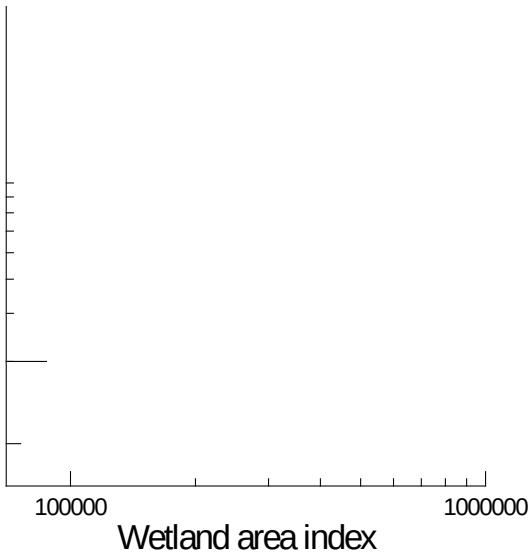


Figure 9. Interactions – mean abundance, breeding and number of breeding species with wetland area index (ha) for the Eastern Australian Waterbird Survey (1983-2019).

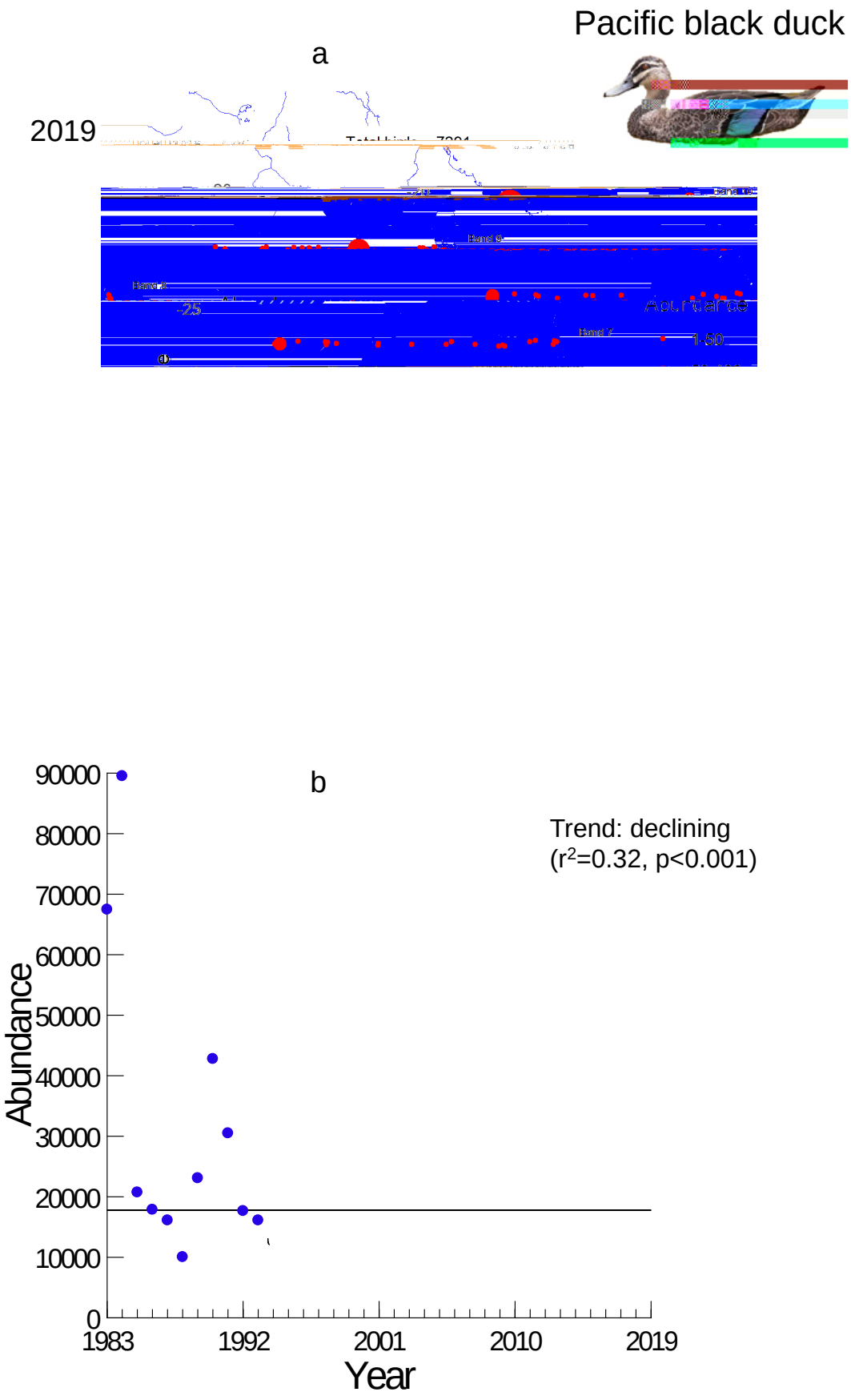


Figure 10. a. Distribution and abundance of Pacific black duck during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

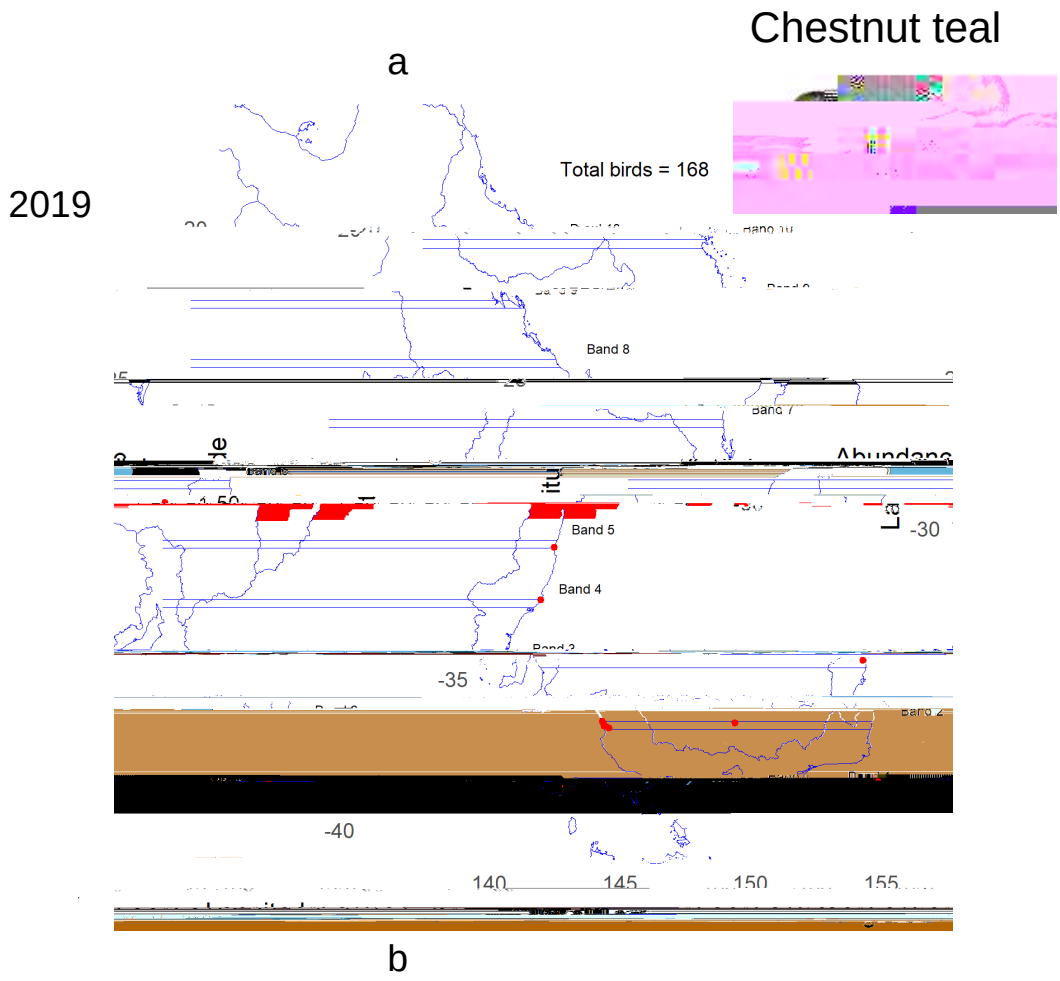


Figure 12. a. Distribution and abundance of Chestnut teal during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

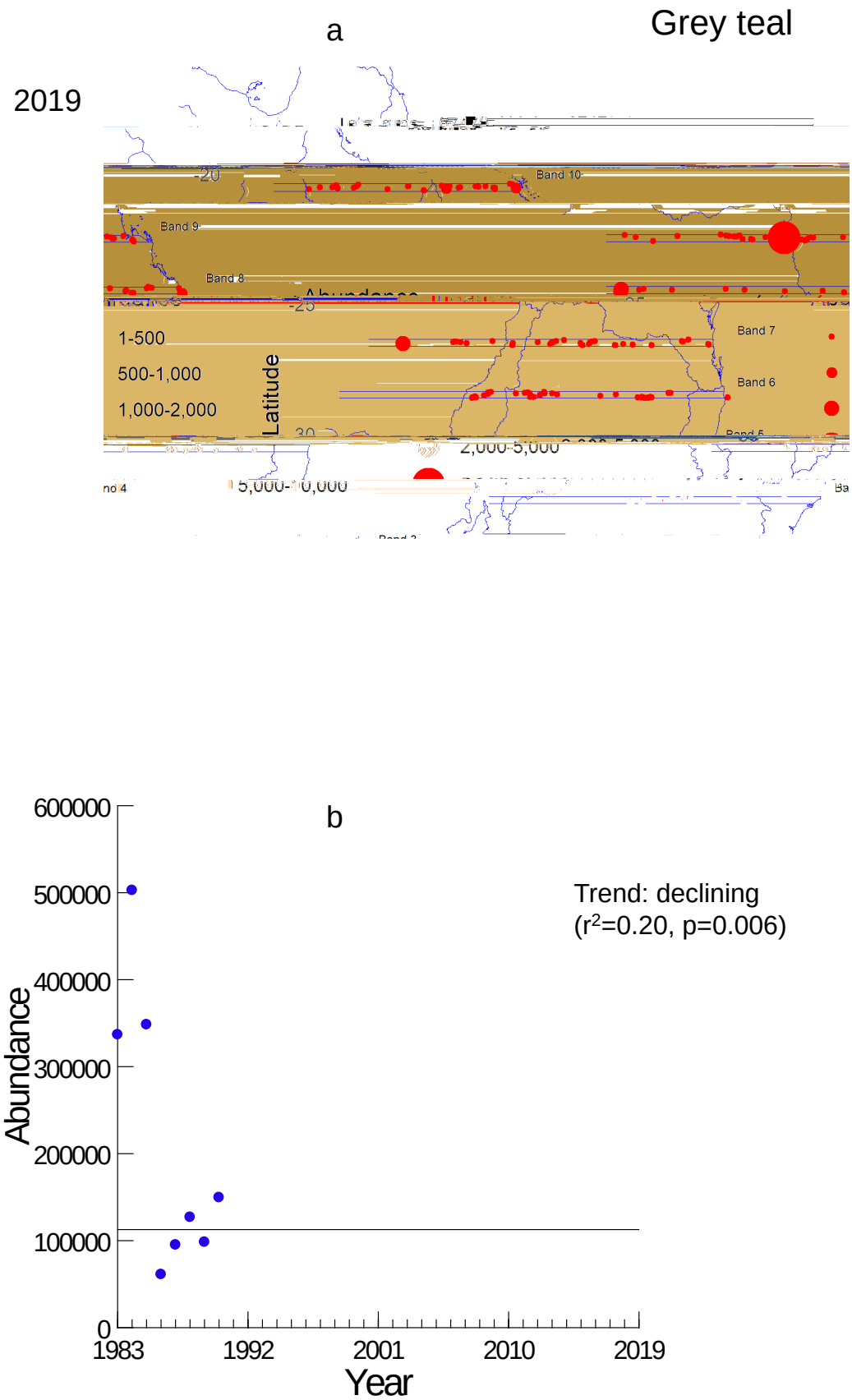


Figure 13. a. Distribution and abundance of Grey teal during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

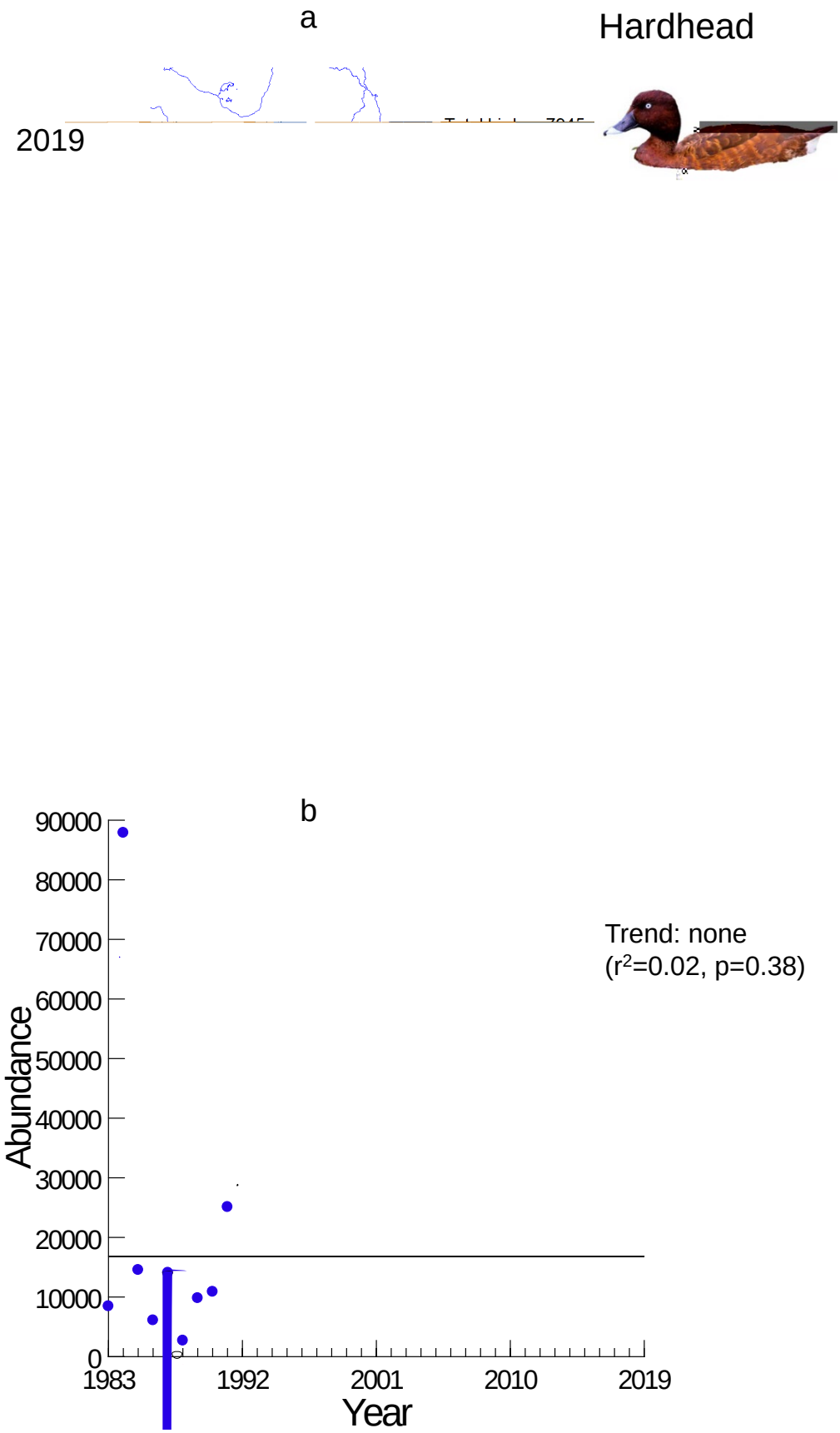
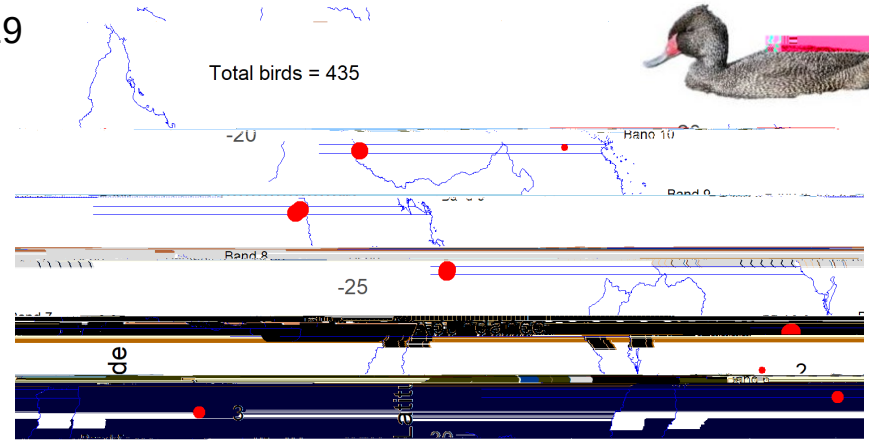


Figure 14. a. Distribution and abundance of Hardhead during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

2019



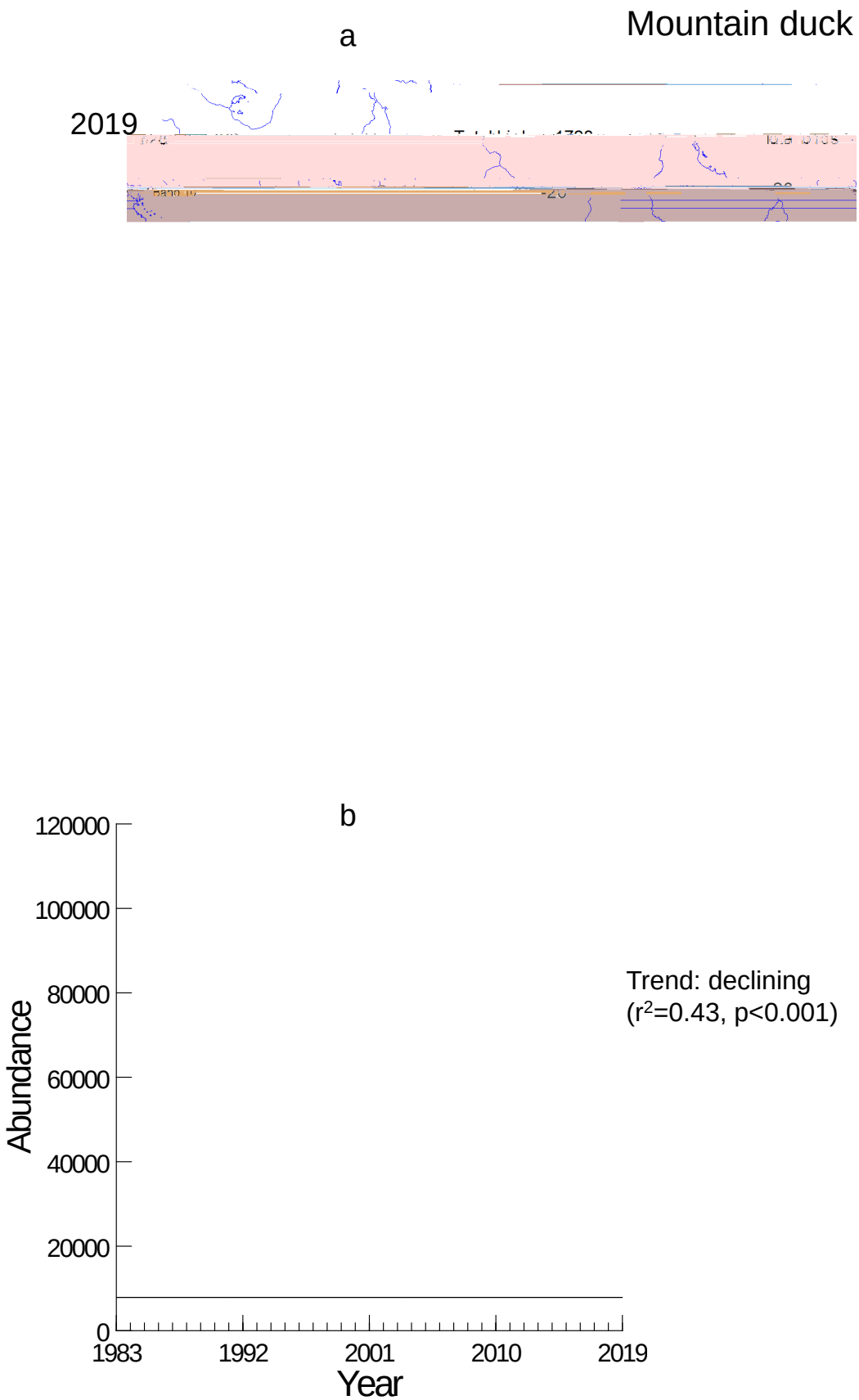


Figure 16. a. Distribution and abundance of Mountain duck during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

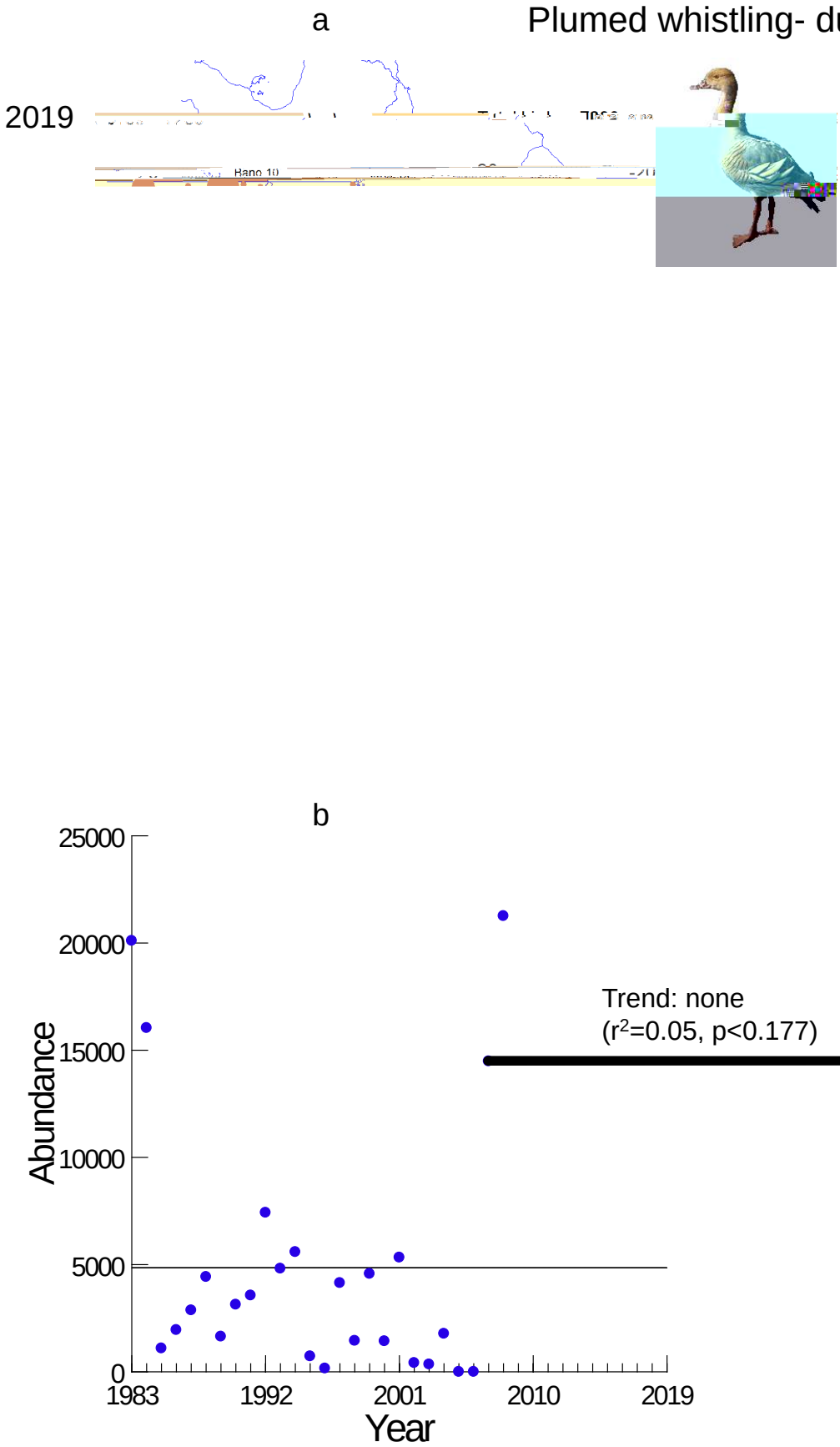


Figure 18. a. Distribution and abundance of Plumed whistling-duck during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

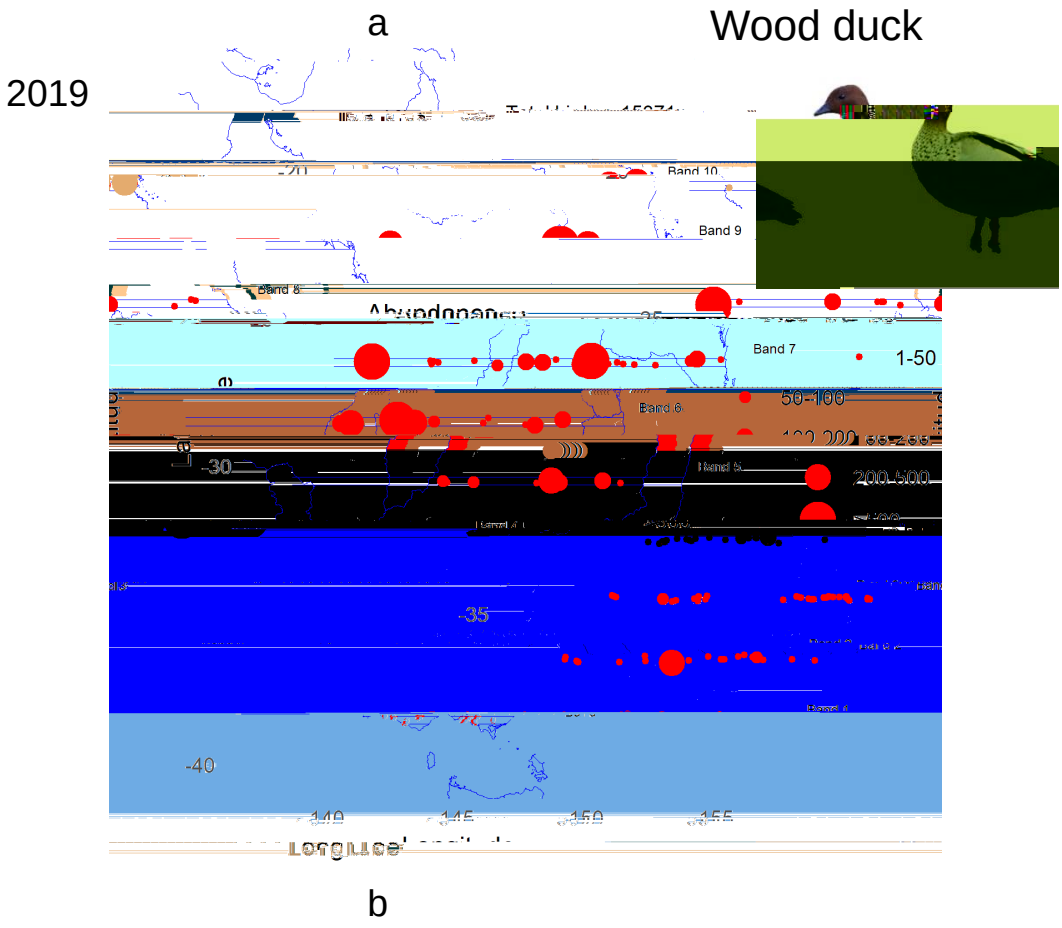


Figure 19. a. Distribution and abundance of Australian wood duck during the 2019 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2019). Horizontal line indicates long term average.

References

1. Bureau of Meteorology (BOM) 2019 Monthly Weather review. Australian Government. Accessed 20/11/2019 http://www.bom.gov.au/climate/drought/
2. Department of Primary Industries (DPI) 2019 https://edis.dpi.nsw.gov.au/
3. Queensland Government 2019 Drought declarations (Department of Agriculture and Fisheries). Accessed 20/11/2019 https://www.longpaddock.qld.gov.au/drought/drought-declarations/
4. Primary Industries and Regions SA 2019. Accessed 20/11/2019 https://www.pir.sa.gov.au/__data/assets/pdf_file/0007/339469/Dry_conditions_20190801.pdf