



## **Aerial Survey of Wetland Birds in Eastern Australia - October 2013 Annual Summary Report**

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### **Results summary**

1. Most of the northern survey area has experienced extremely dry conditions since 2010, with few large areas of wetland available. However, the southeast of the survey region (Warrnambool, southern part of Coorong) high rainfall flooded many wetland areas. Wetlands throughout Queensland, New South Wales, and central and western Victoria were mostly dry at the time of survey (Fig. 1).
2. Trend analyses indicate continued long term (31 years) declines in waterbird abundance, wetland area, and breeding species richness (Figs 2 & 3). Wetland area, total abundance, breeding species diversity and breeding abundance declined considerably in 2013, compared to the previous year.
3. The Macquarie Marshes and Lowbidgee wetlands were partially filled by environmental flows but these were comparatively small areas compared to large flooding years. Most rivers in the Murray-Darling Basin were also low with little wetland habitat on the floodplains. Most of the large lakes of the Menindee Lakes system were full (Fig. 1).
4. Lake Eyre and Cooper Creek wetlands were mostly dry except for Lake Hope, which was drying back and supported more than 21,000 waterbirds. Lakes Yamma Yamma, Galilee, Torquinnie and Mumbleberry were also dry (Fig. 1).
5. There were relatively few large concentrations of waterbirds; only five wetland systems held more than 5,000 birds (compared to 35 in 2012): Burdekin River, Lake Hope, Paroo overflow, Loorica Lake (Lowbidgee) and Lake Proserpine (Figs 1 & 4)

**This survey is run by the University of NSW and funded by the NSW Office of Environment & Heritage, with additional funding provided by the South Australian Department of Environment, Water and Natural Resources, the Queensland Department of Environment and Heritage Protection, the Victorian Department of Environment and Primary Industry and the Department of Environment of the Australian Government.**

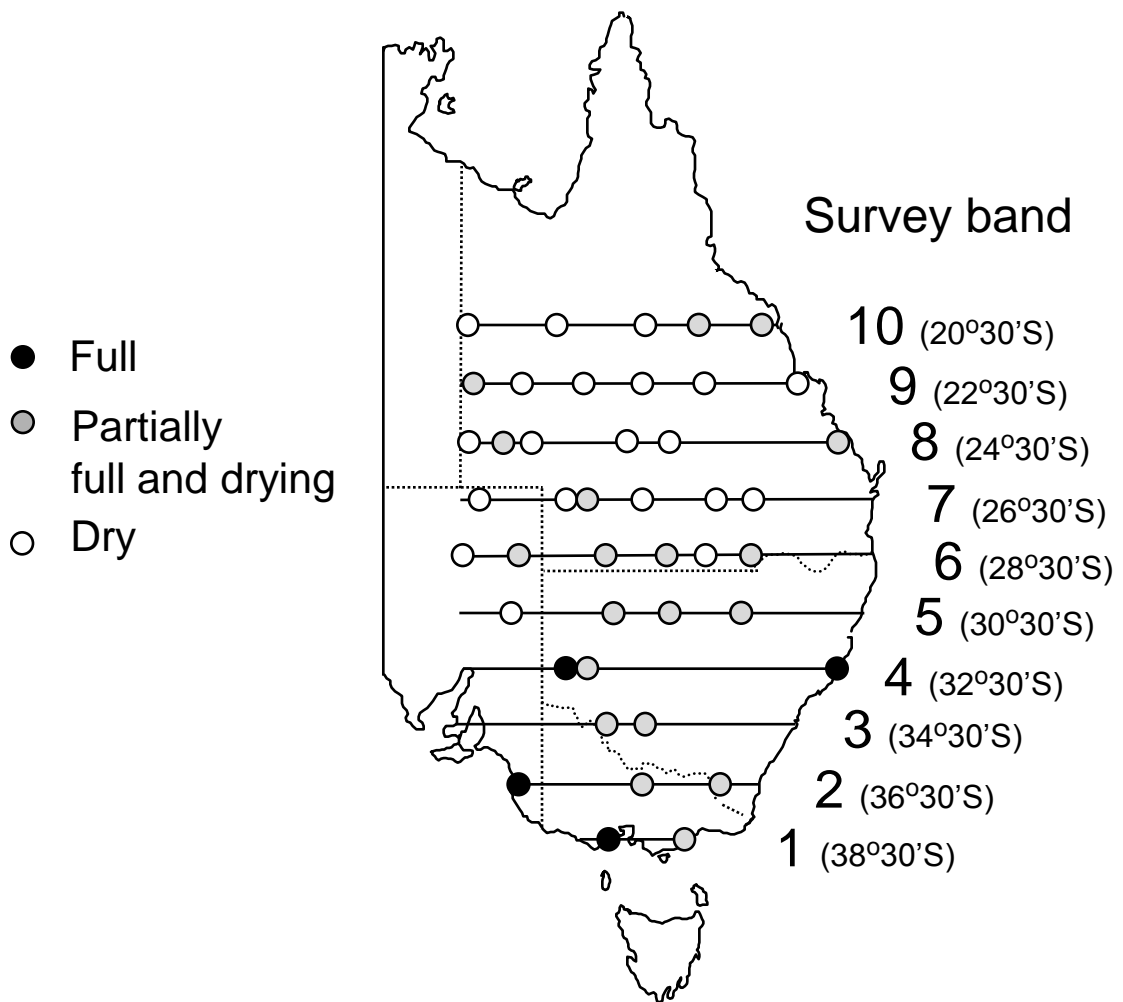
## **Result summary continued**

6. Total breeding index (all species combined) was well below the long term average and lower than in 2012 (Fig 5). Breeding was concentrated in a small number of locations with most of the breeding (96%) confined to a single site. Breeding species richness was very low (four species), and comprised mainly (98%) of three non-game species (Figs 6 to 8).
7. Low numbers of waterbirds and breeding were observed on key wetland systems including Cooper Creek, Menindee Lakes, Paroo overflow, Cuttaburra channels, Macquarie Marshes and the Lowbidgee (Figs 1 & 4)
8. Game species abundances were all well below long term averages, in many cases by an order of magnitude (Figs 9 to 29)

## **Acknowledgements**

We thank Terry Korn, Peter Morris and Paul Wainwright for acting as expert observers during the survey, Richard Byrne of NSW National Parks and Wildlife, NSW Office of Environment and Heritage for piloting aircraft. We also thank Kate Brandis, Justin McCann and Roxanne Francis for their help with data entry and validation.

Figure 1. Wetland map 2013



### Key to wetlands from W-E, by band

- 10 Lake Moondarra, Cloncurry River, Flinders River, Campaspe R, Burdekin R
- 9 Georgina R, Eyre Ck, Hamilton R, Diamantina R, Lake Galilee, Styx R
- 8 Mumbleberry-Torquinnie Lakes, Eyre Ck, Diamantina R, Thomson R, Barcoo R, various small coastal wetlands
- 7 Goyder Lagoon, Lake Yamma Yamma, Cooper Ck, Bulloo R, Paroo R, Warrego R
- 6 Lake Eyre, Lake Hope, Bulloo R, Paroo R, Warrego R, Balonne R,
- 5 Lake Frome, Paroo O'flow, Darling R, Macquarie Marshes
- 4 Menindee Lakes, Talywalka Lakes, Myall Lakes
- 3 Murray River Lakes, Lowbidgee Swamp
- 2 Coorong, Cooper + Mokoan Lakes, Cooma-Monaro
- 1 Curdies Inlet, Jack Smith Lake

Figure 2. Total wetland area

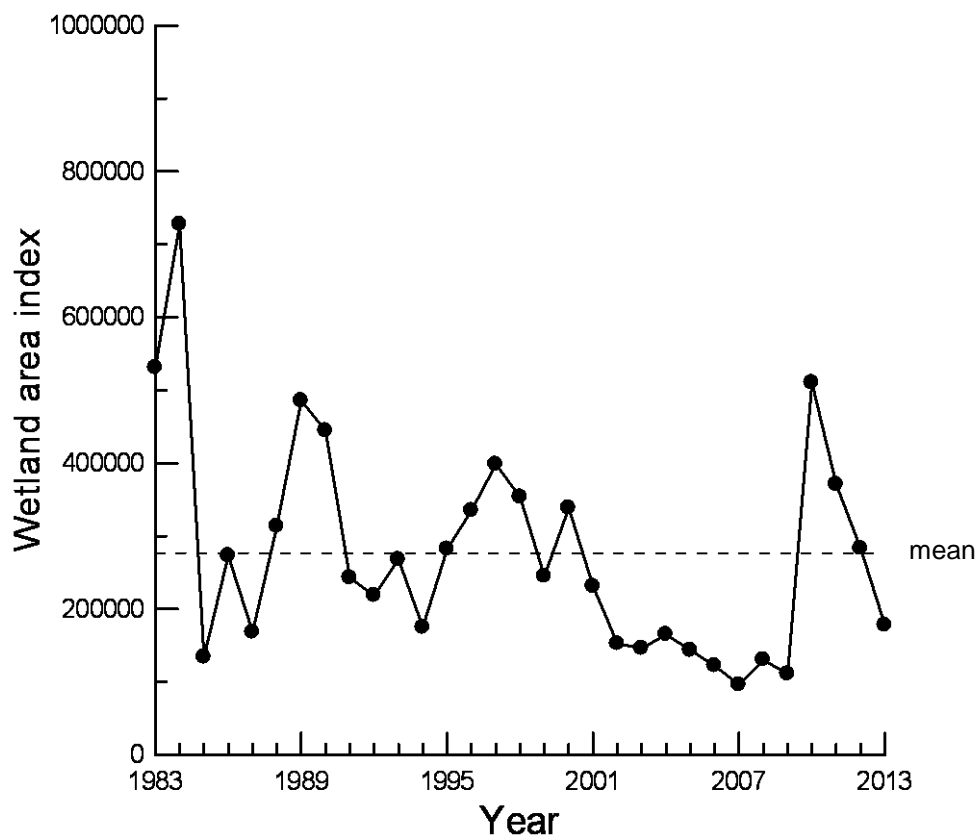


Figure 3. Total waterbirds

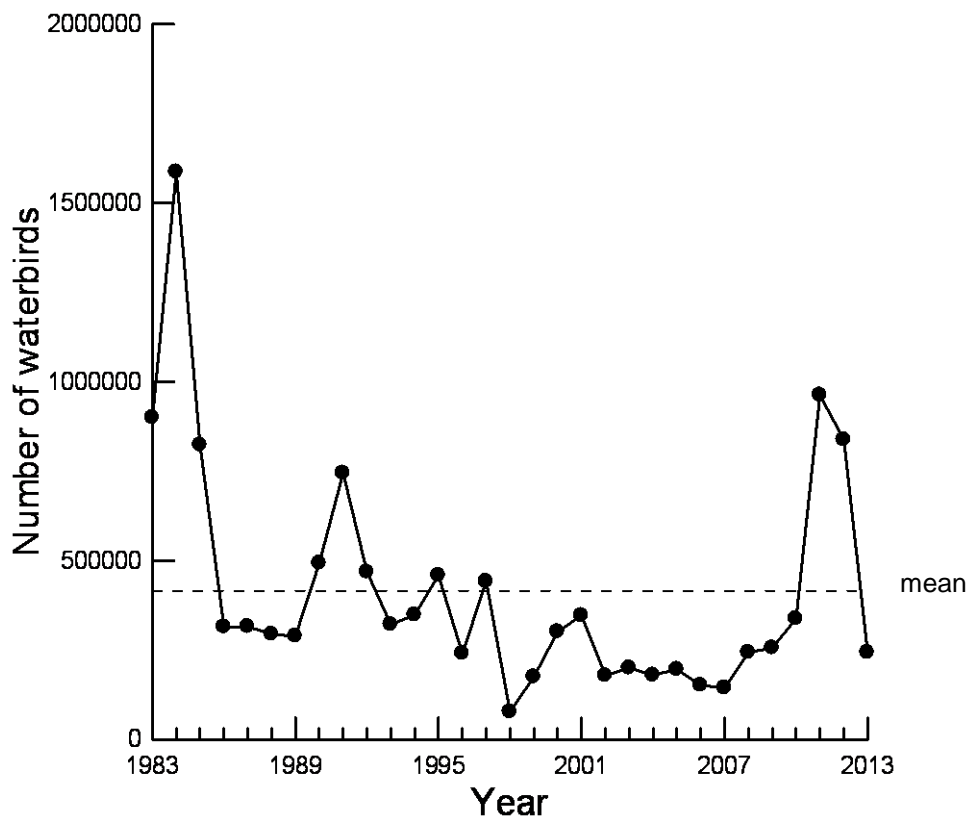
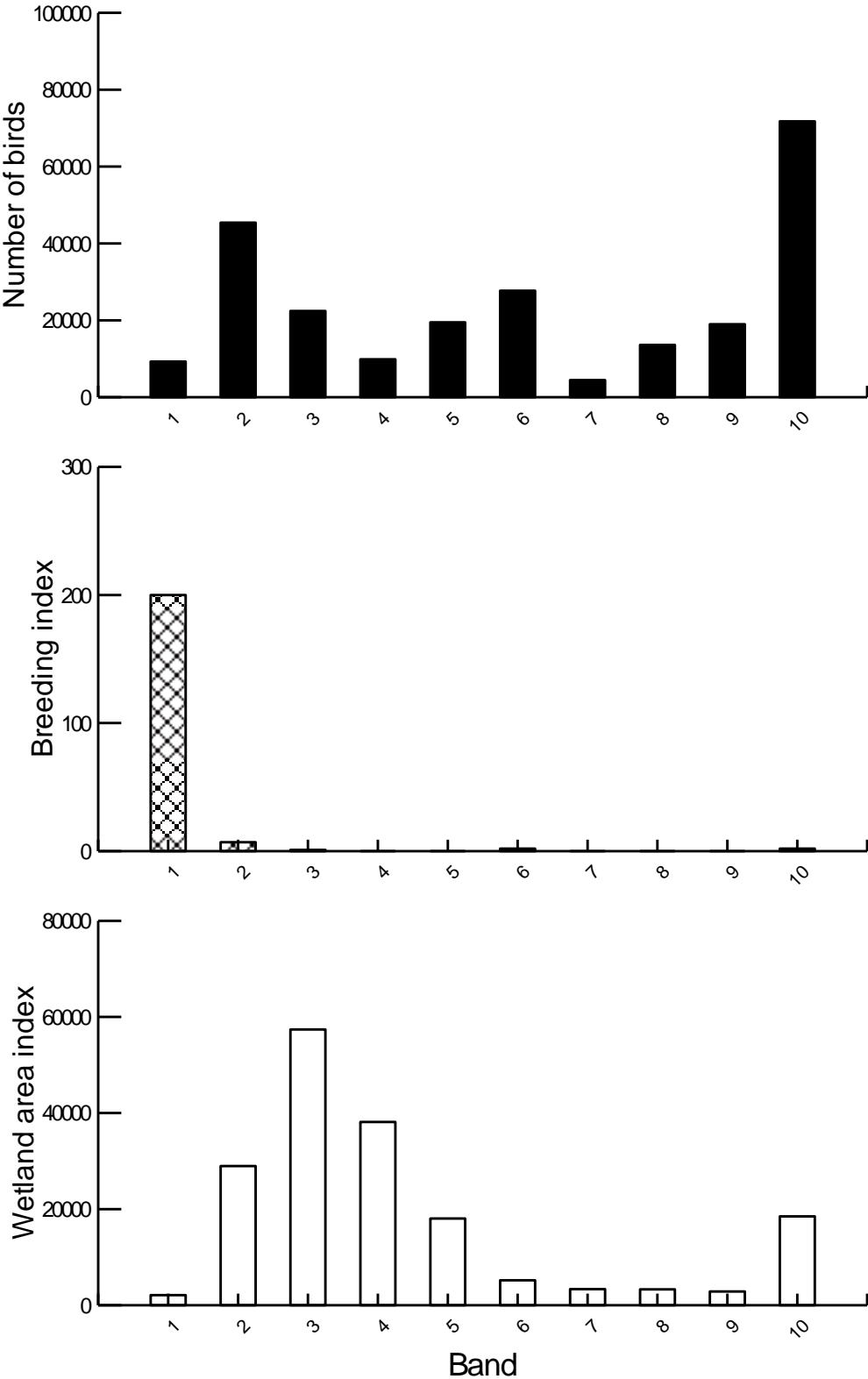


Figure 4. Band totals 2013



Scales vary on graph axes

Figure 5. Breeding index (all species)

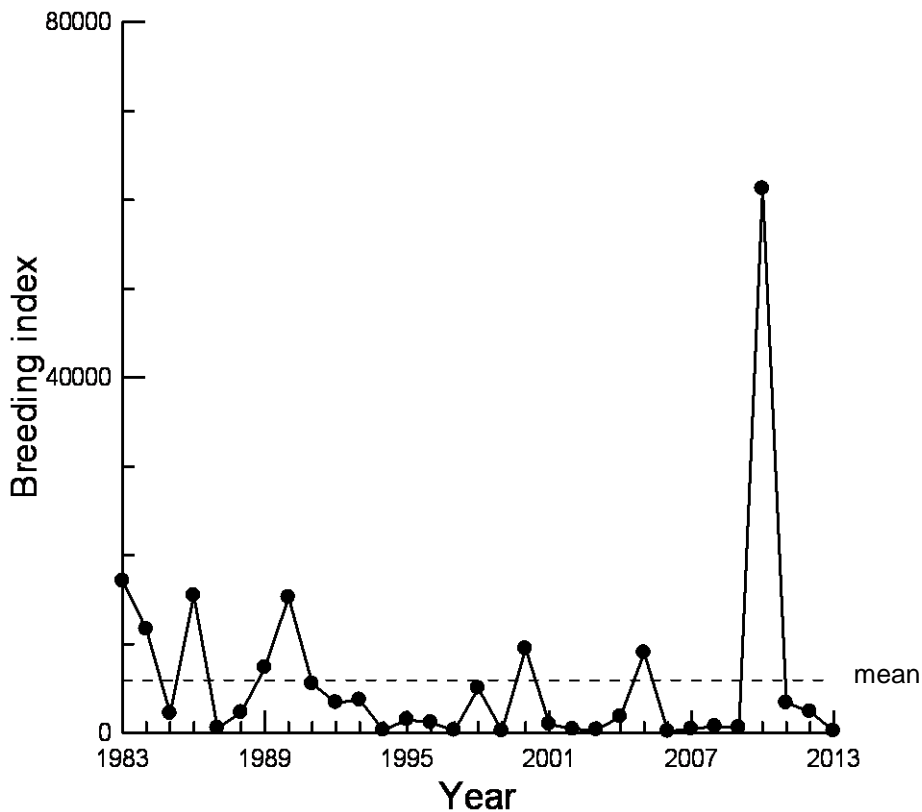
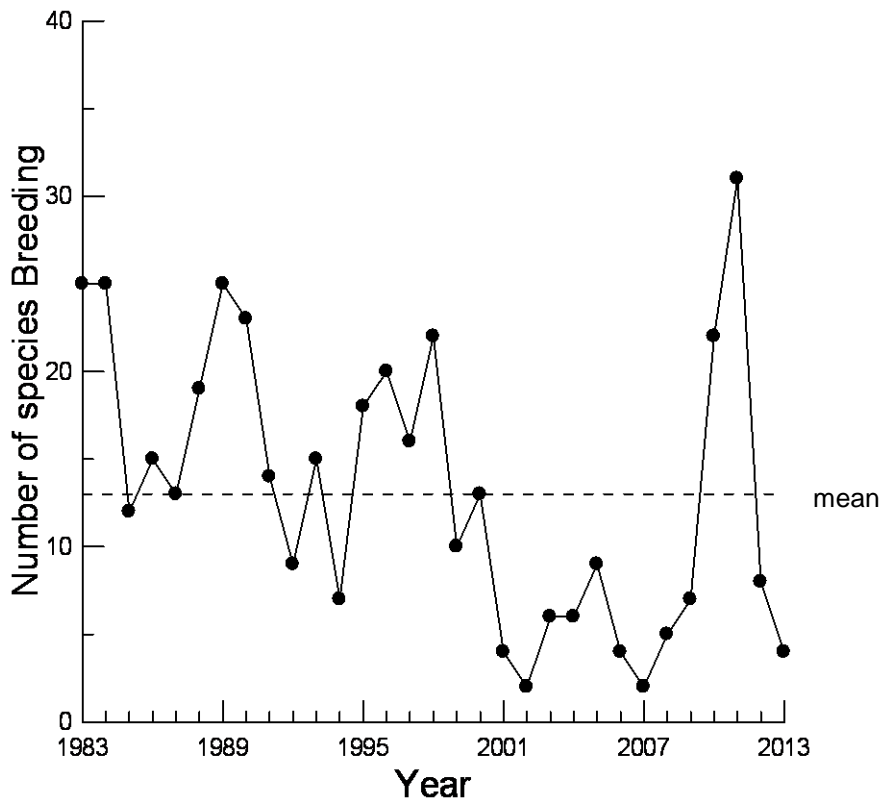
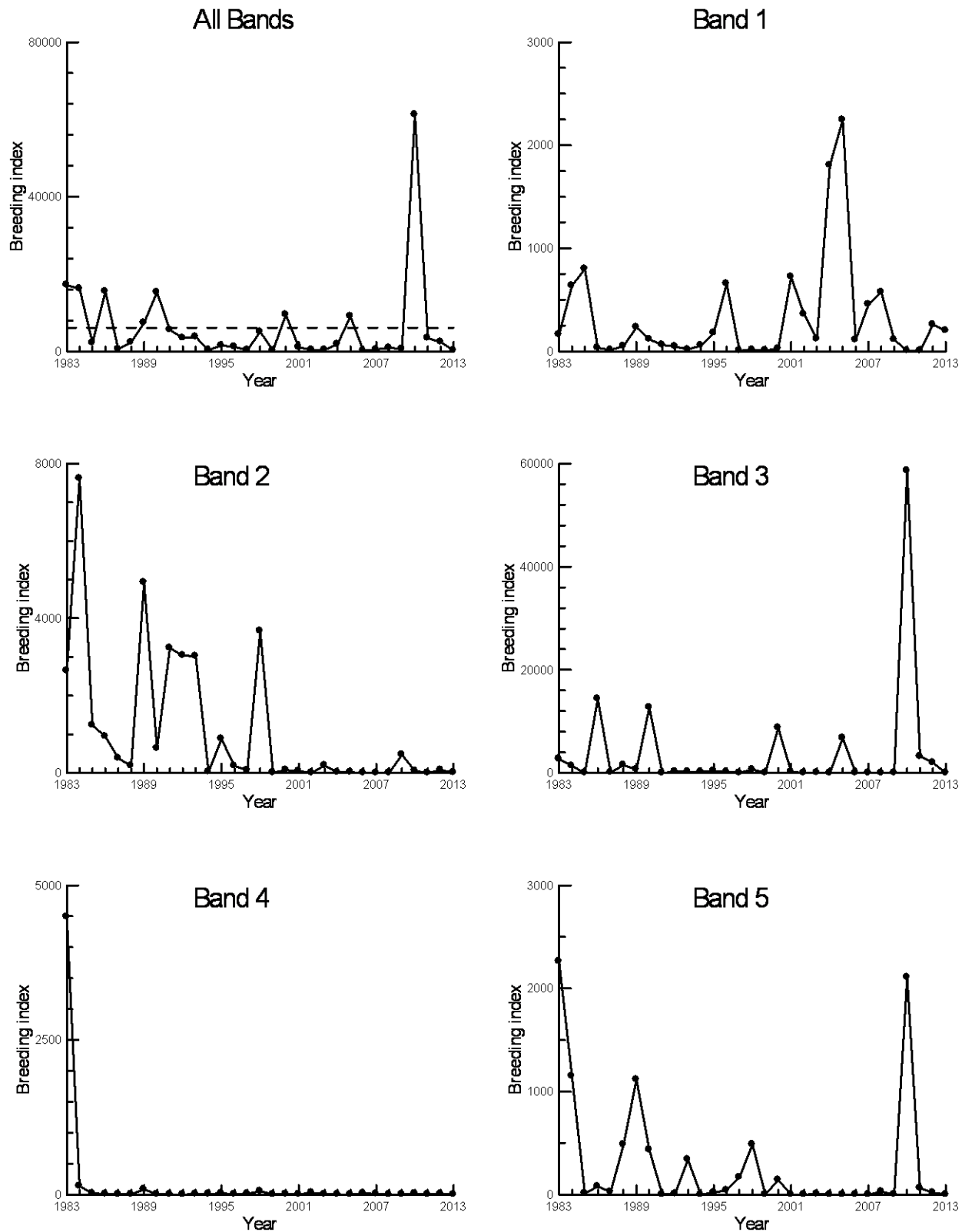


Figure 6. Number of species breeding



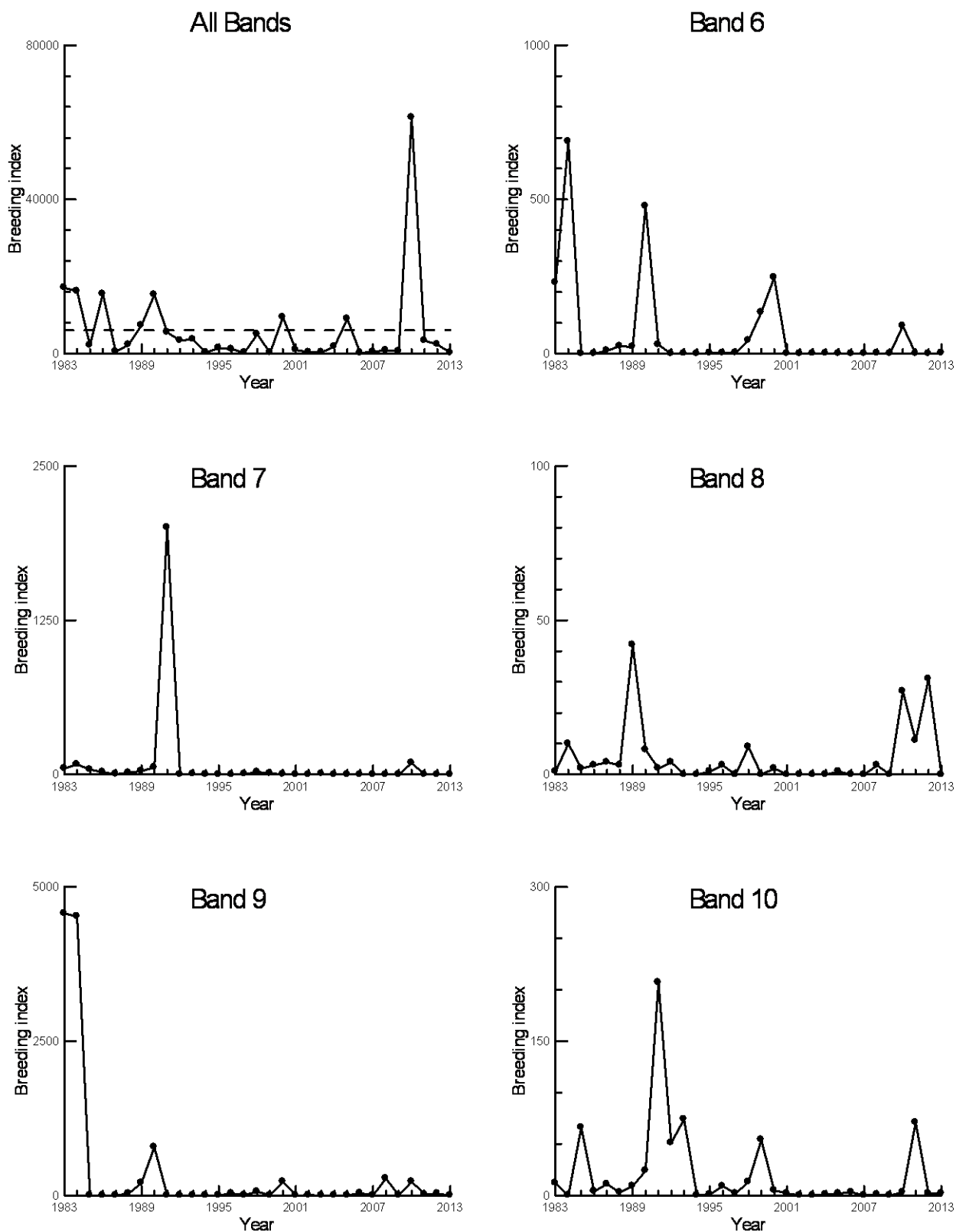
Scales vary on graph axes

Figure 7. Breeding index (all species) 1-5



Scales vary on graphs

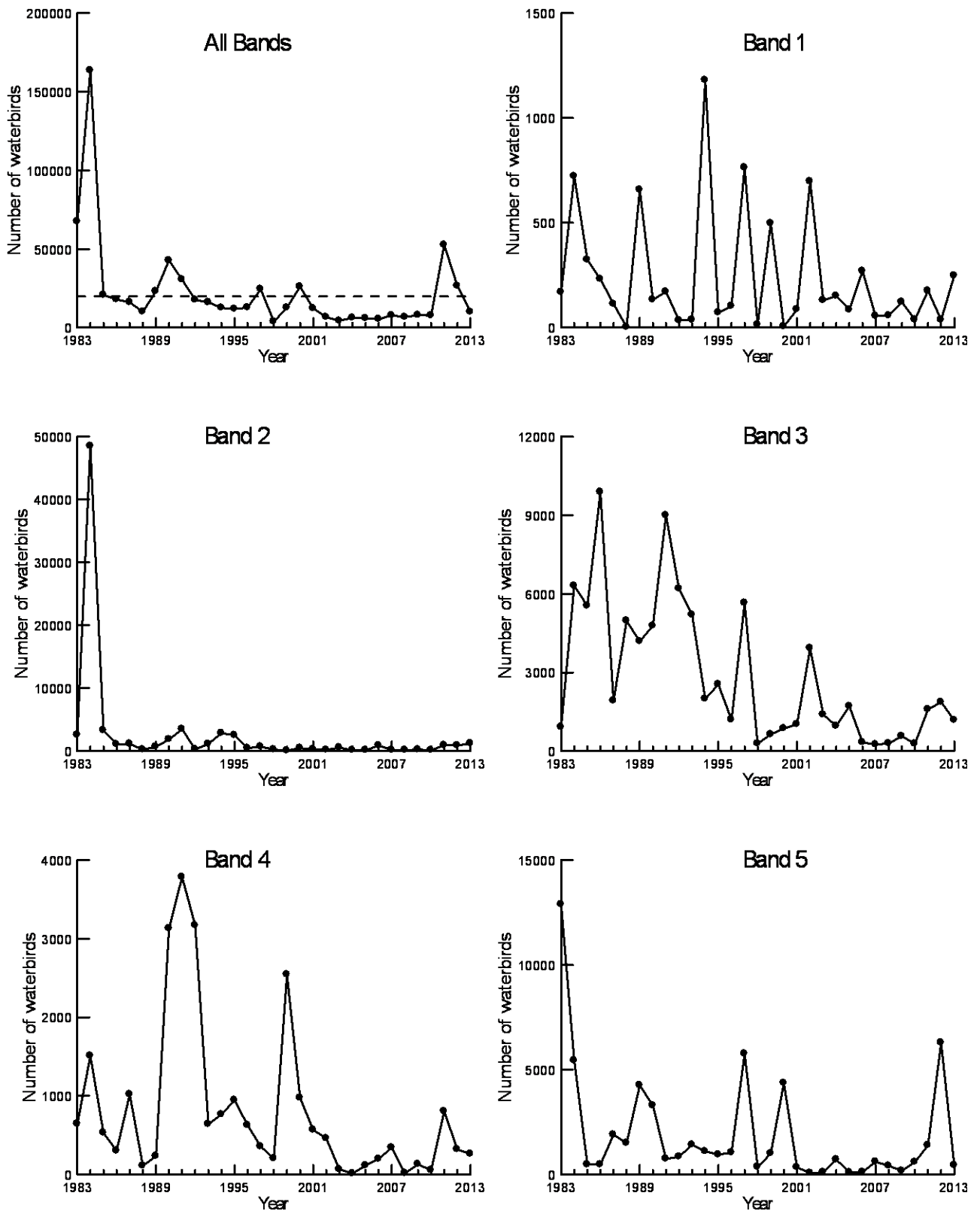
Figure 8. Breeding index (all species) 6-10



Scales vary on graphs

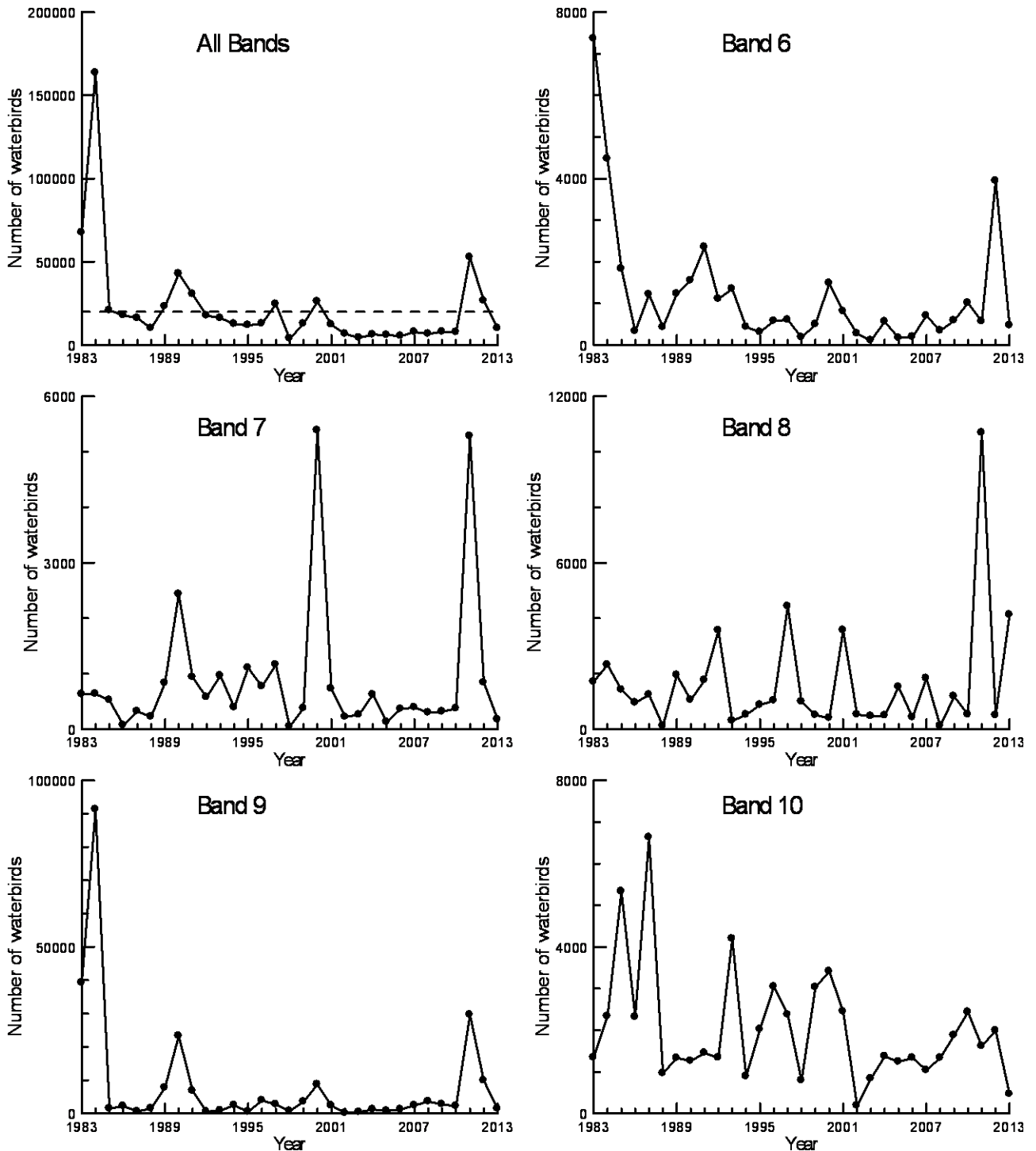


# Figure 9. Pacific black duck 1-5



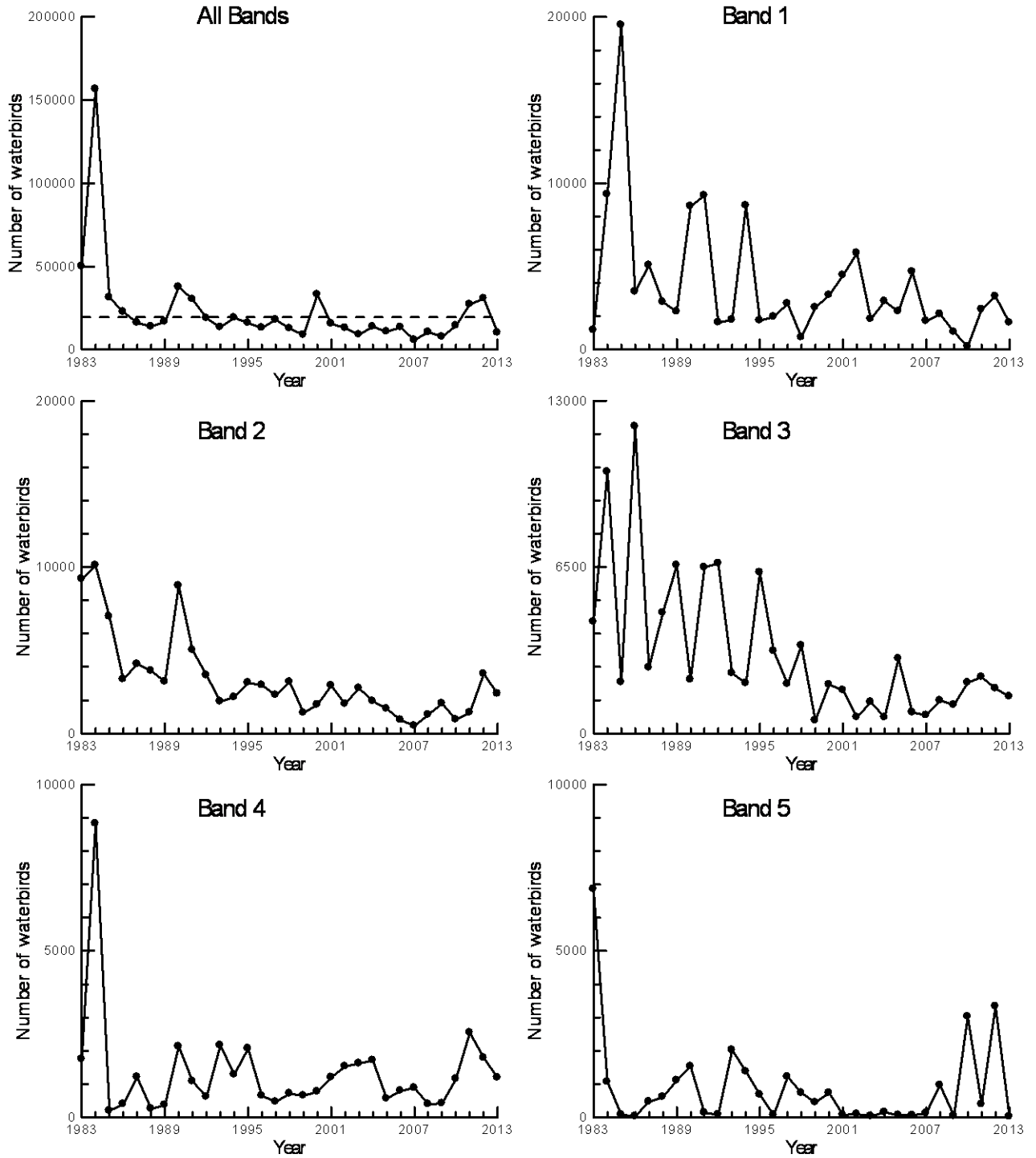
Scales vary on graphs – dashed line indicates long term average

Figure 10. Pacific black duck 6-10



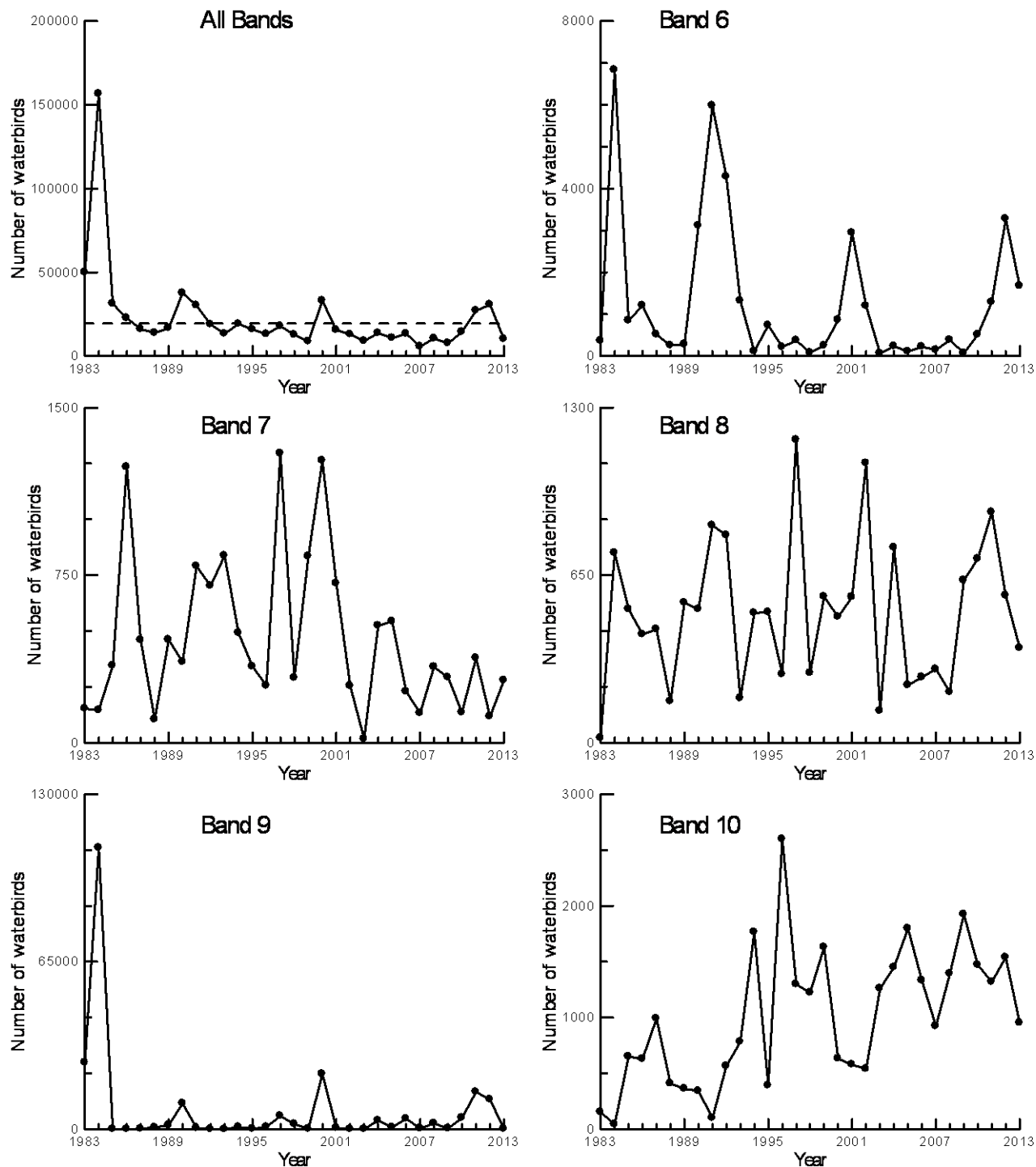
Scales vary on graphs – dashed line indicates long term average

Figure 11. Black swan 1-5



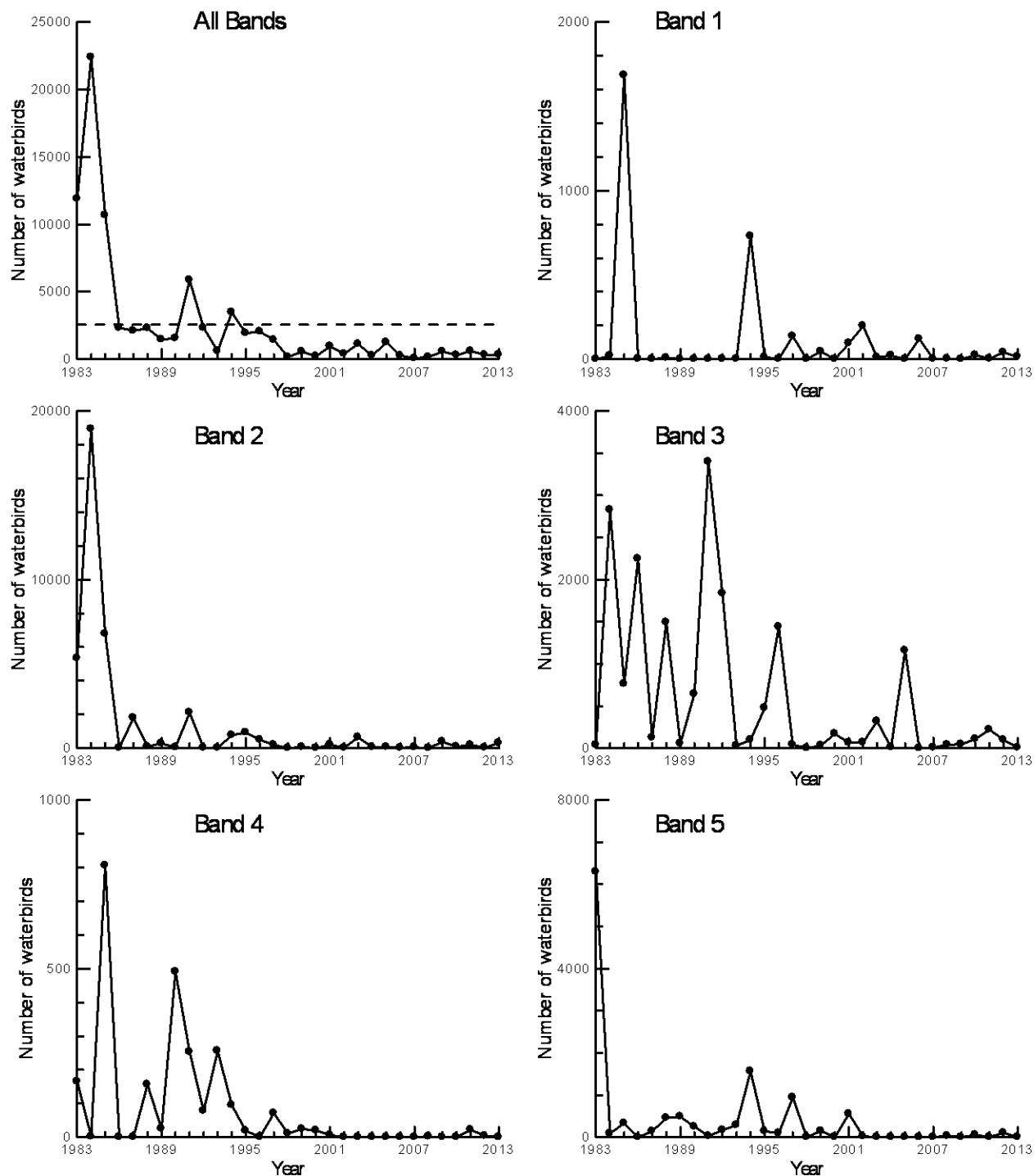
Scales vary on graphs – dashed line indicates long term average

Figure 12. Black swan 6-10



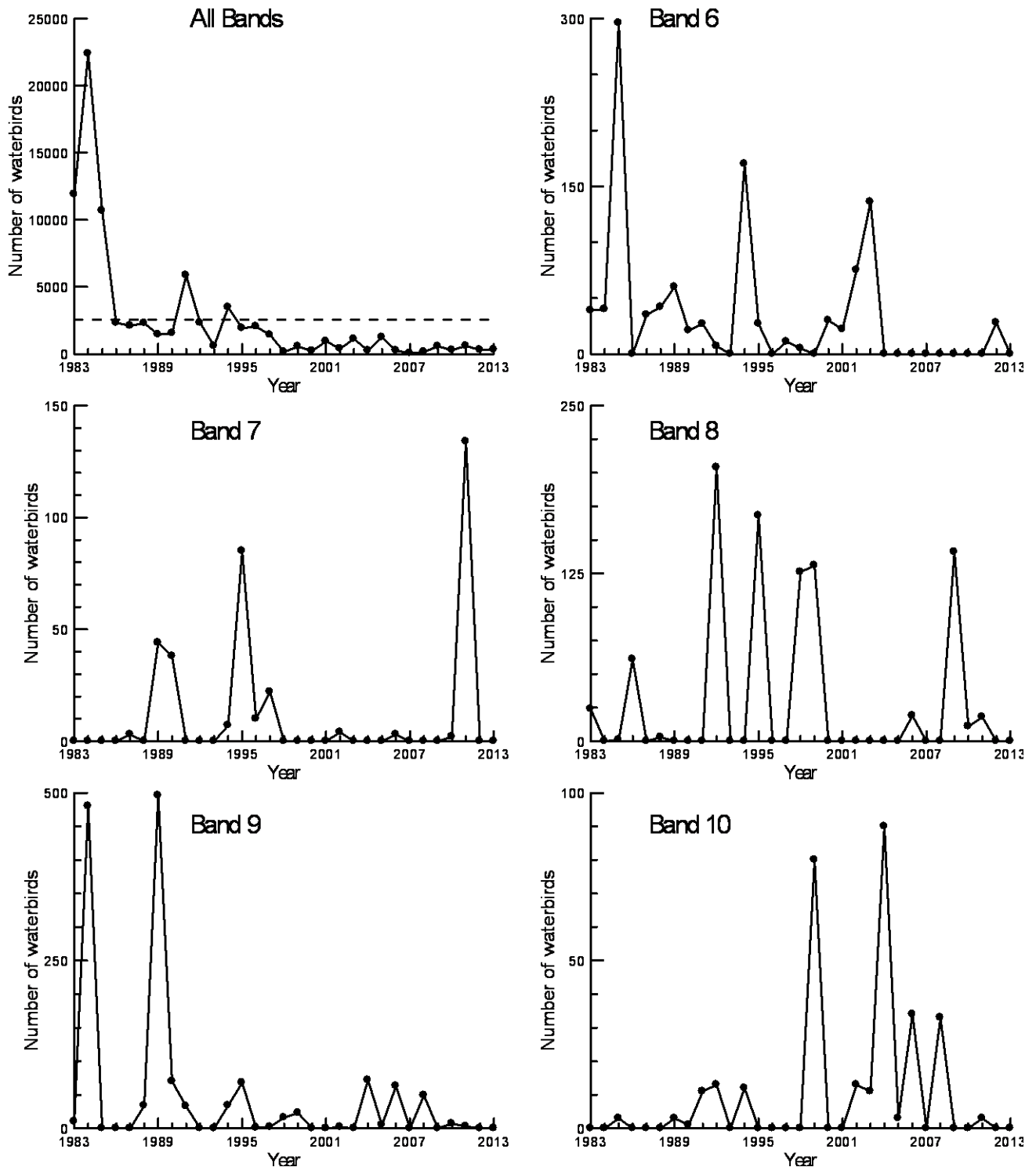
Scales vary on graphs – dashed line indicates long term average

Figure 13. Australasian shoveler 1-5



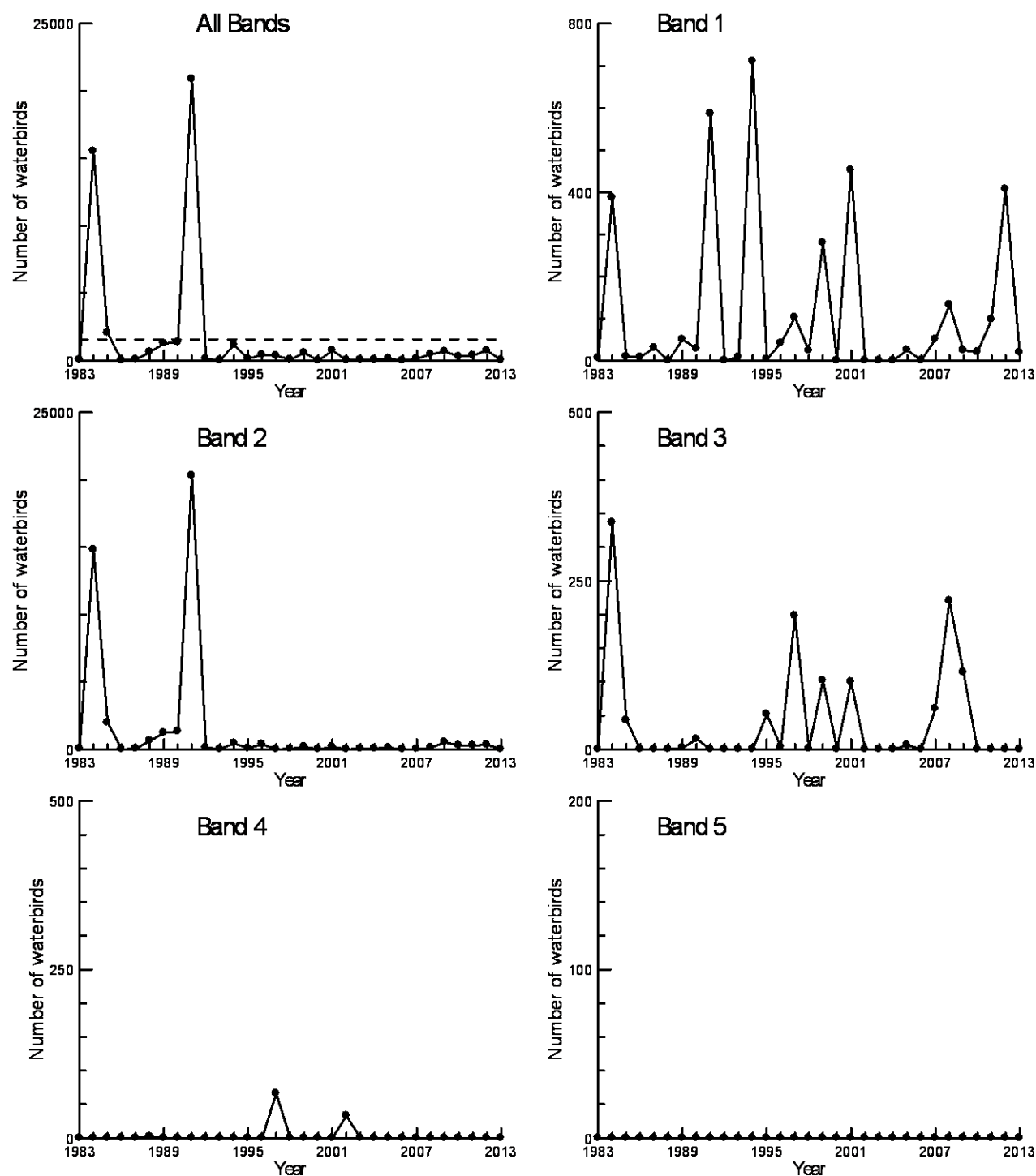
Scales vary on graphs – dashed line indicates long term average

Figure 14. Australasian shoveler 6-10



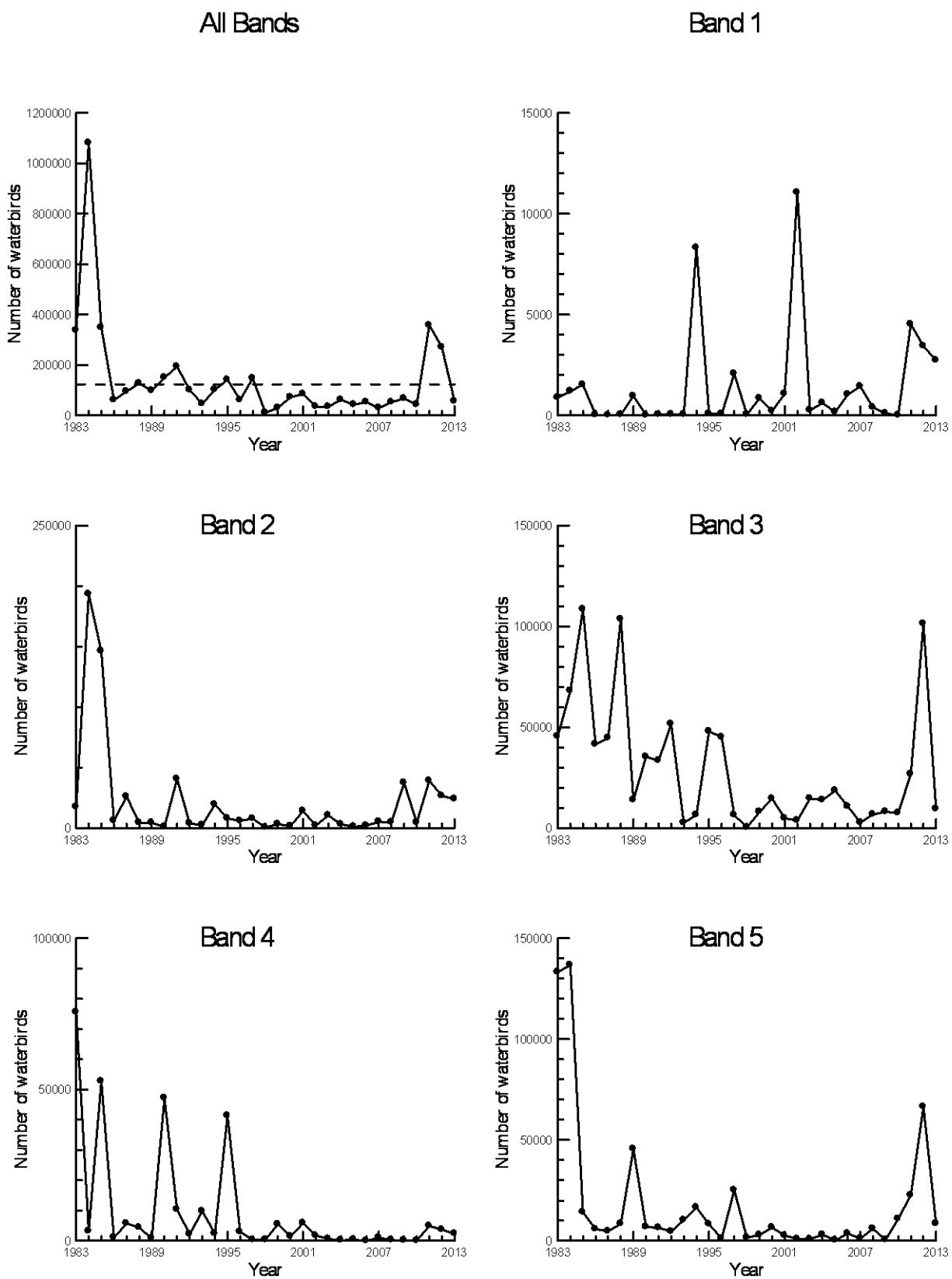
Scales vary on graphs – dashed line indicates long term average

Figure 15. Chestnut teal 1-5



Scales vary on graphs – dashed line indicates long term average

Figure 16. Grey teal 1-5

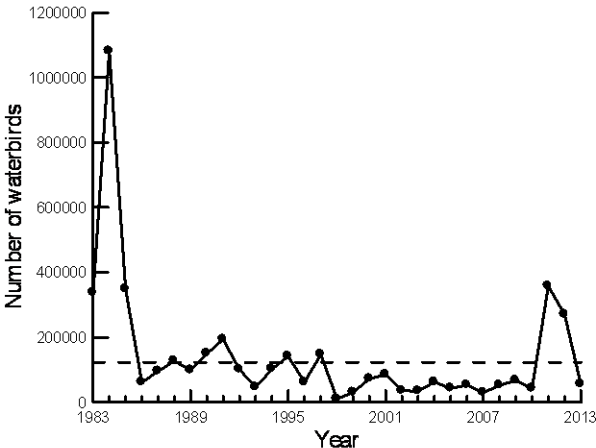


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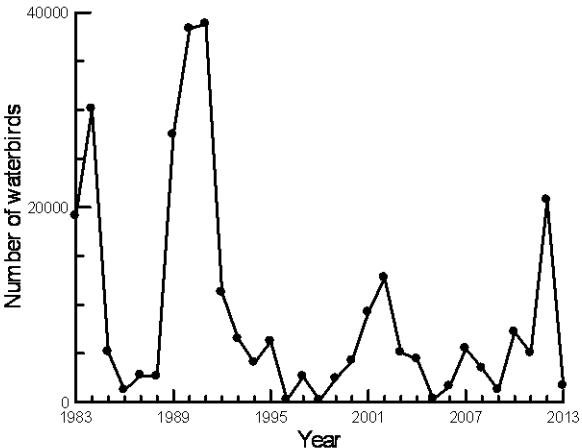


Figure 17. Grey teal 6-10

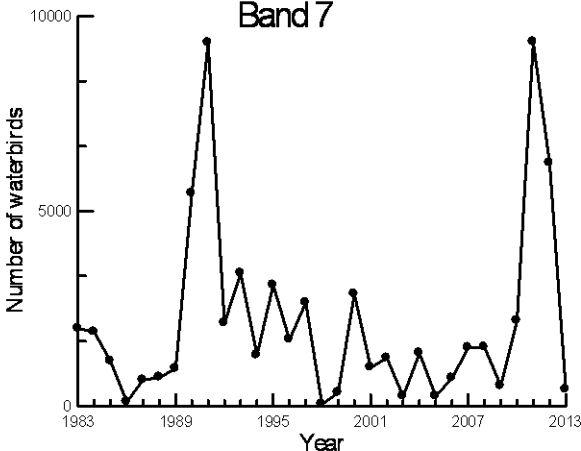
All Bands



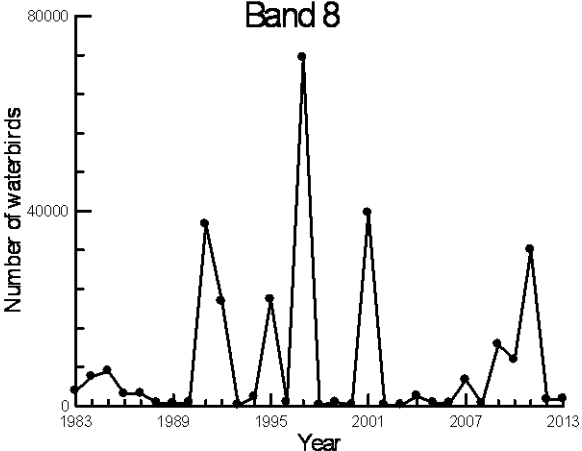
Band 6



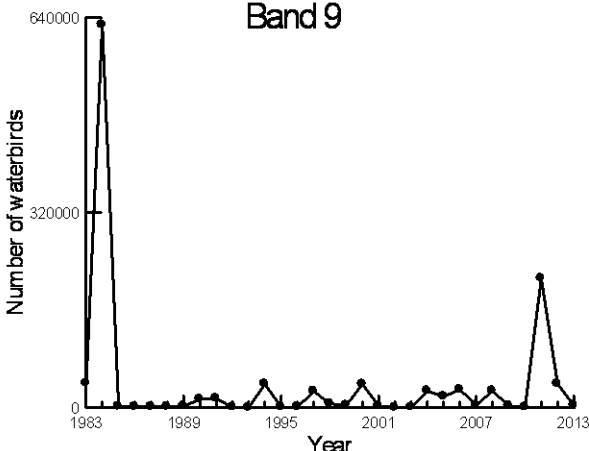
Band 7



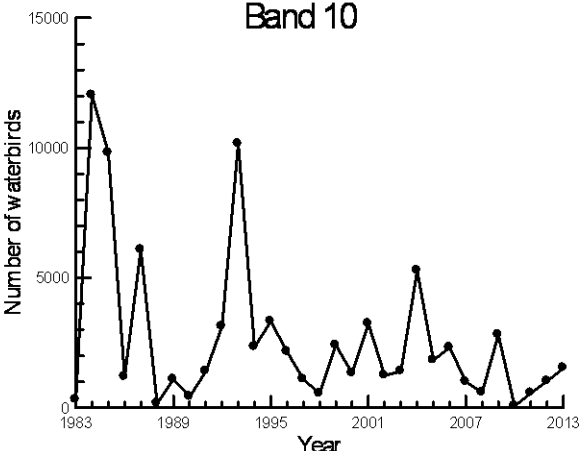
Band 8



Band 9

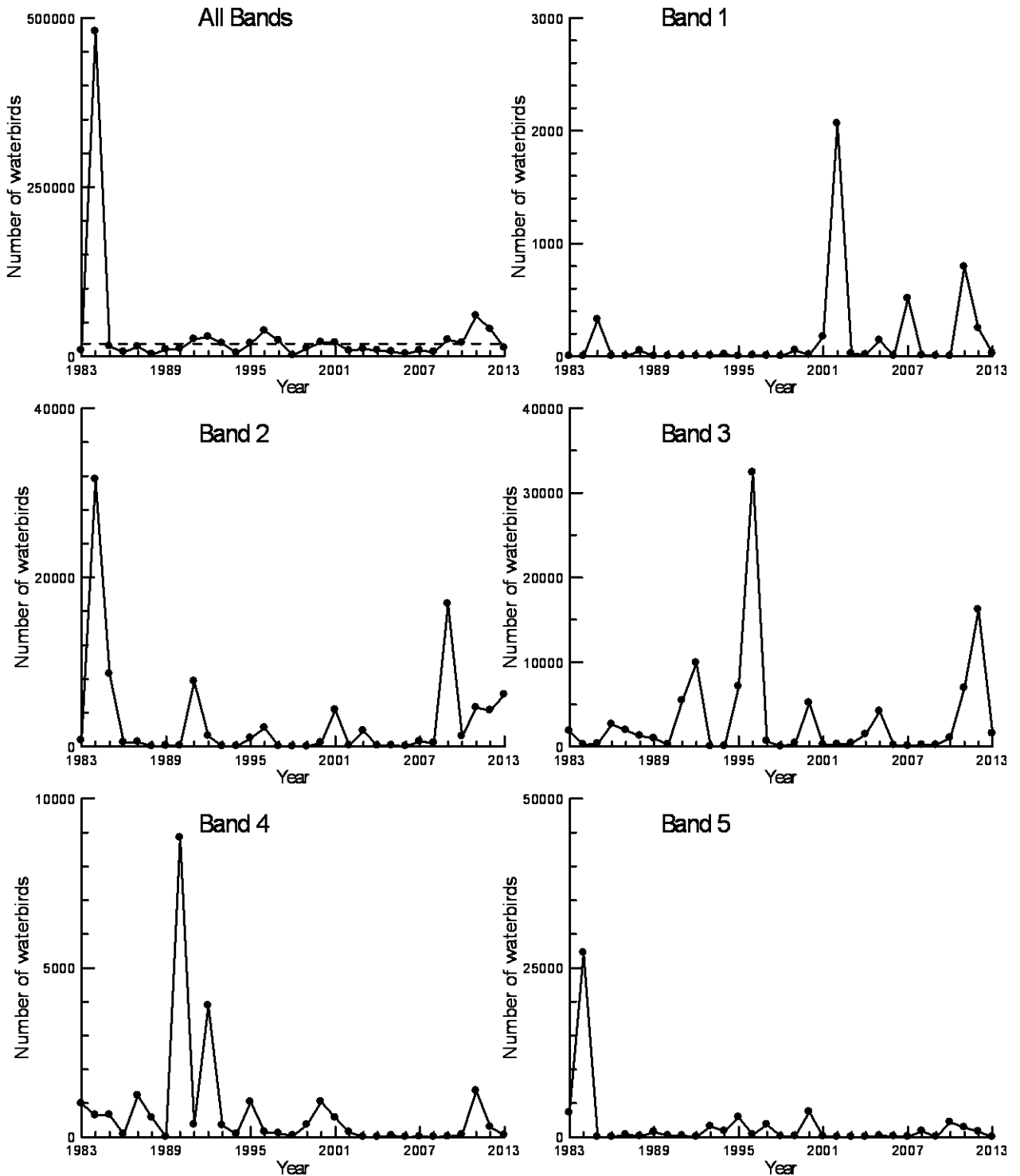


Band 10



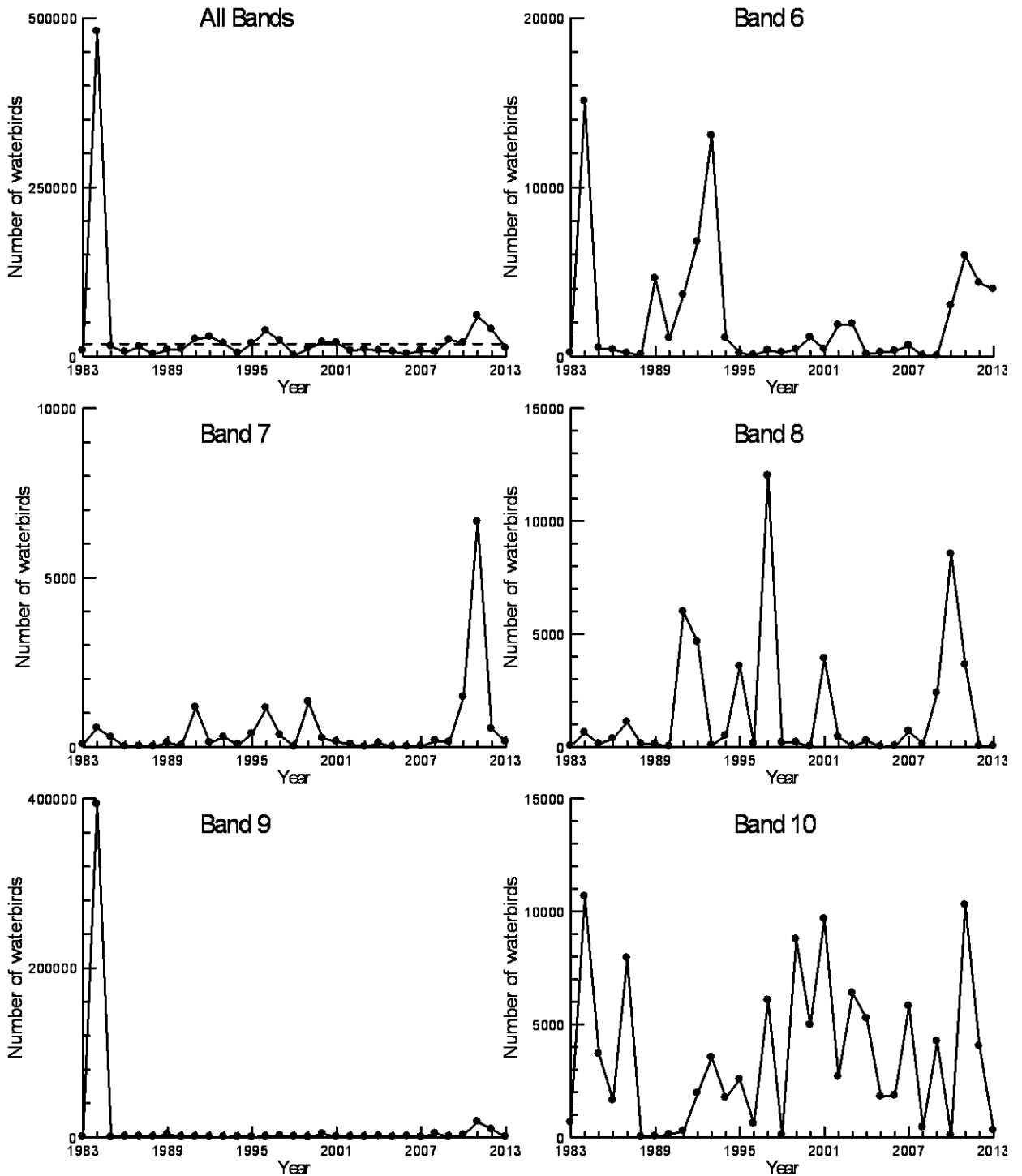
Scales vary on graph – dashed line indicates long term average s

Figure 18. Hardhead 1-5



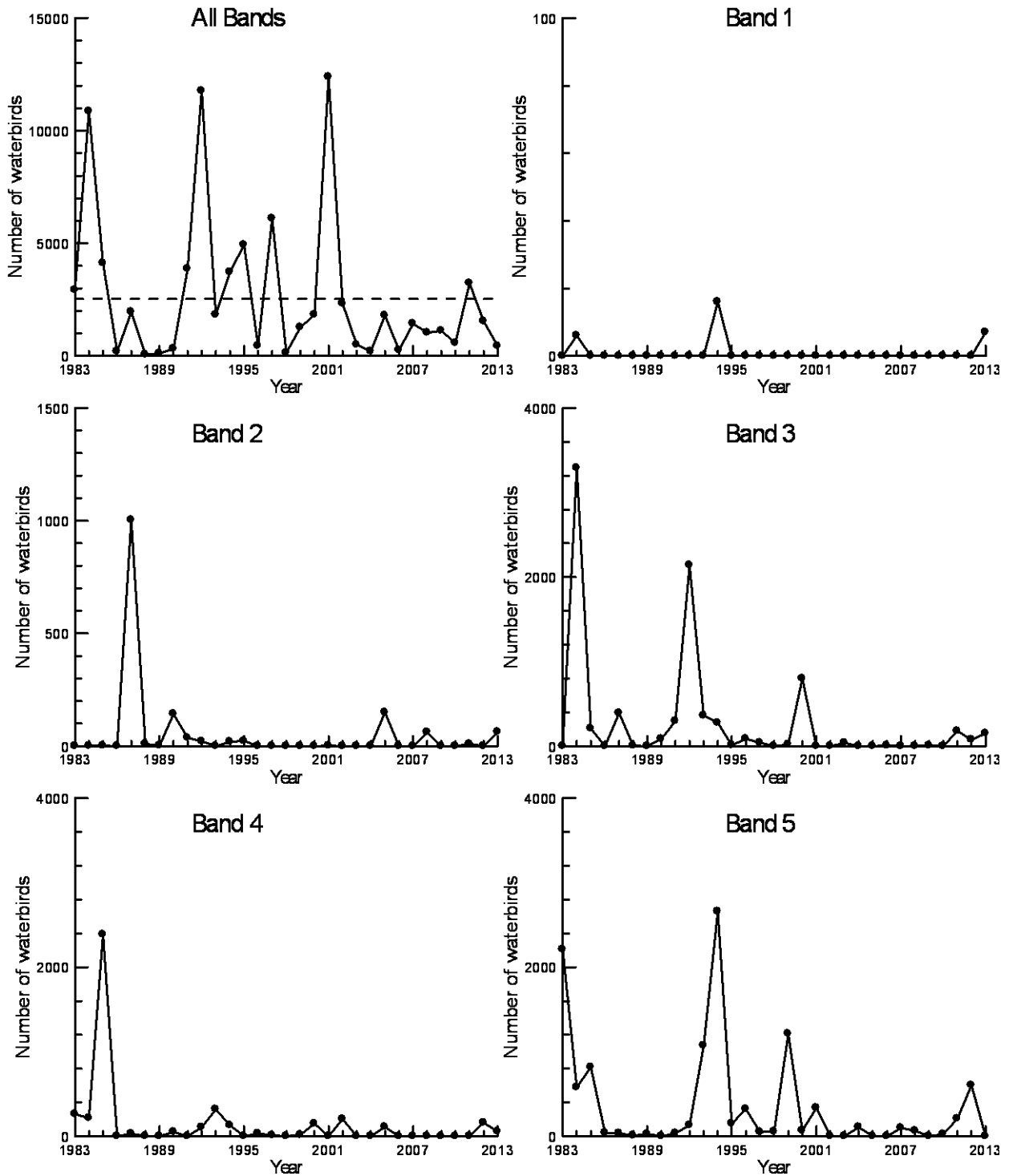
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Figure 19. Hardhead 6-10



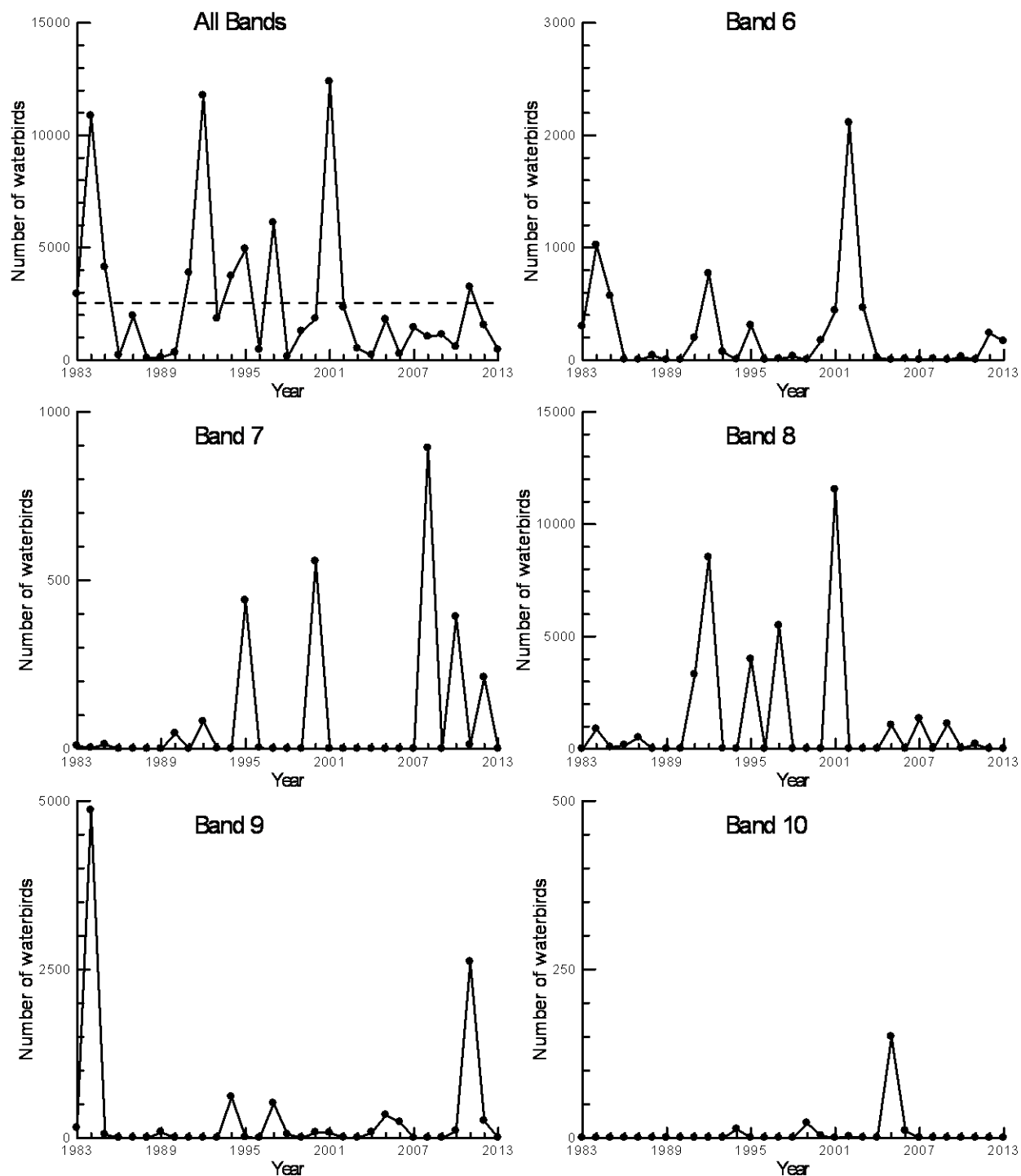
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Figure 20. Freckled duck 1-5



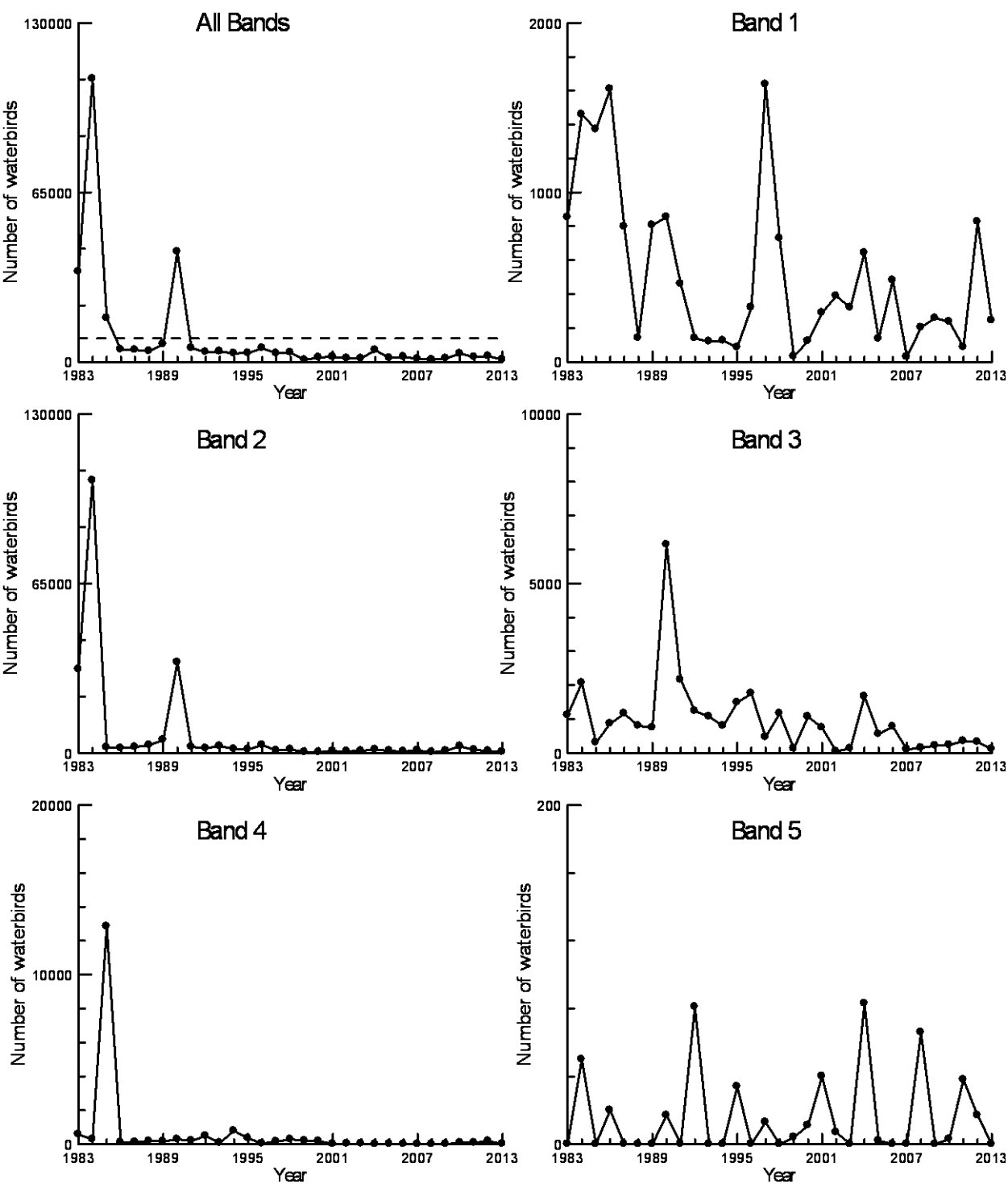
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Figure 21. Freckled duck 6-10



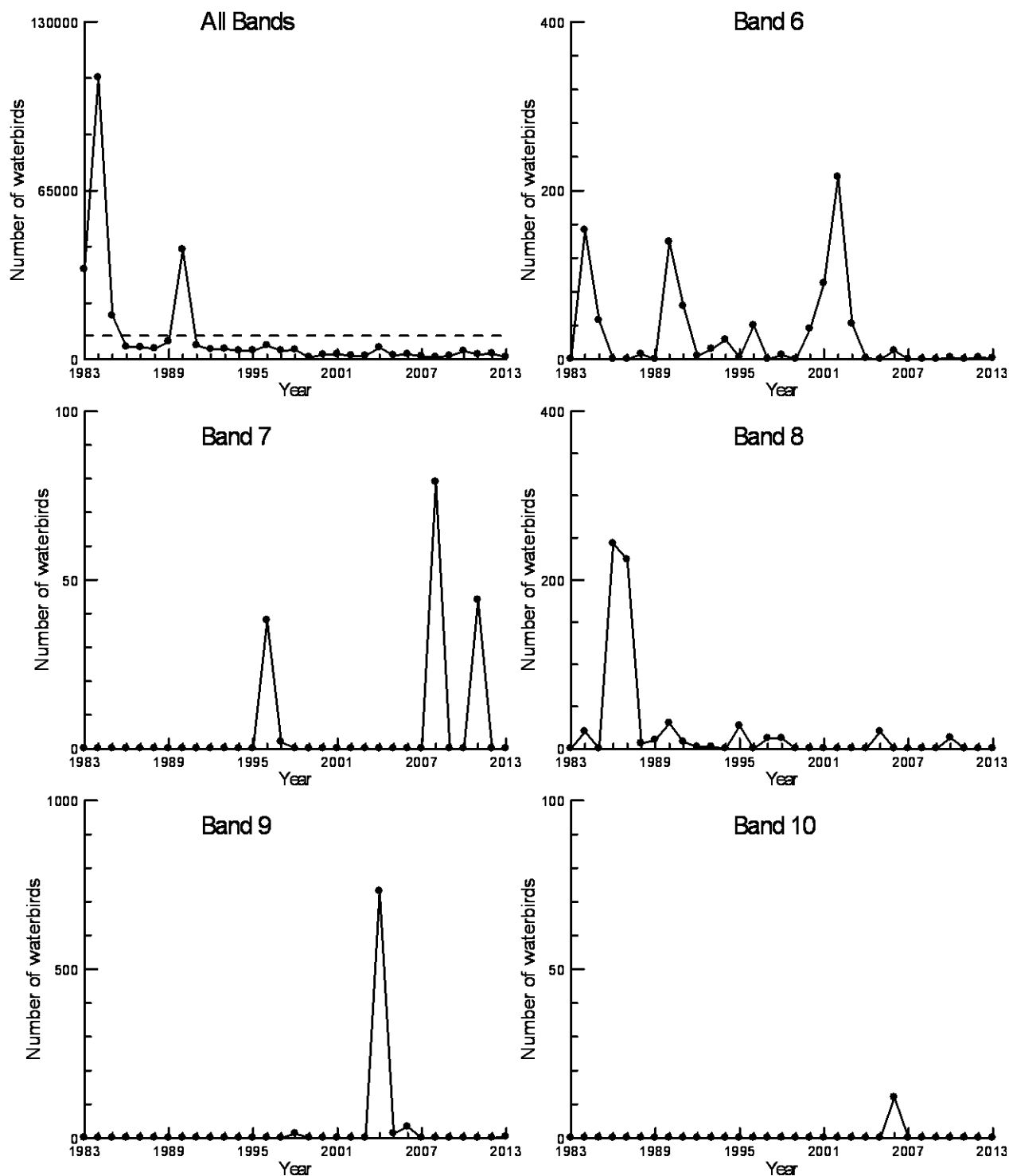
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Figure 22. Australian shelduck 1-5



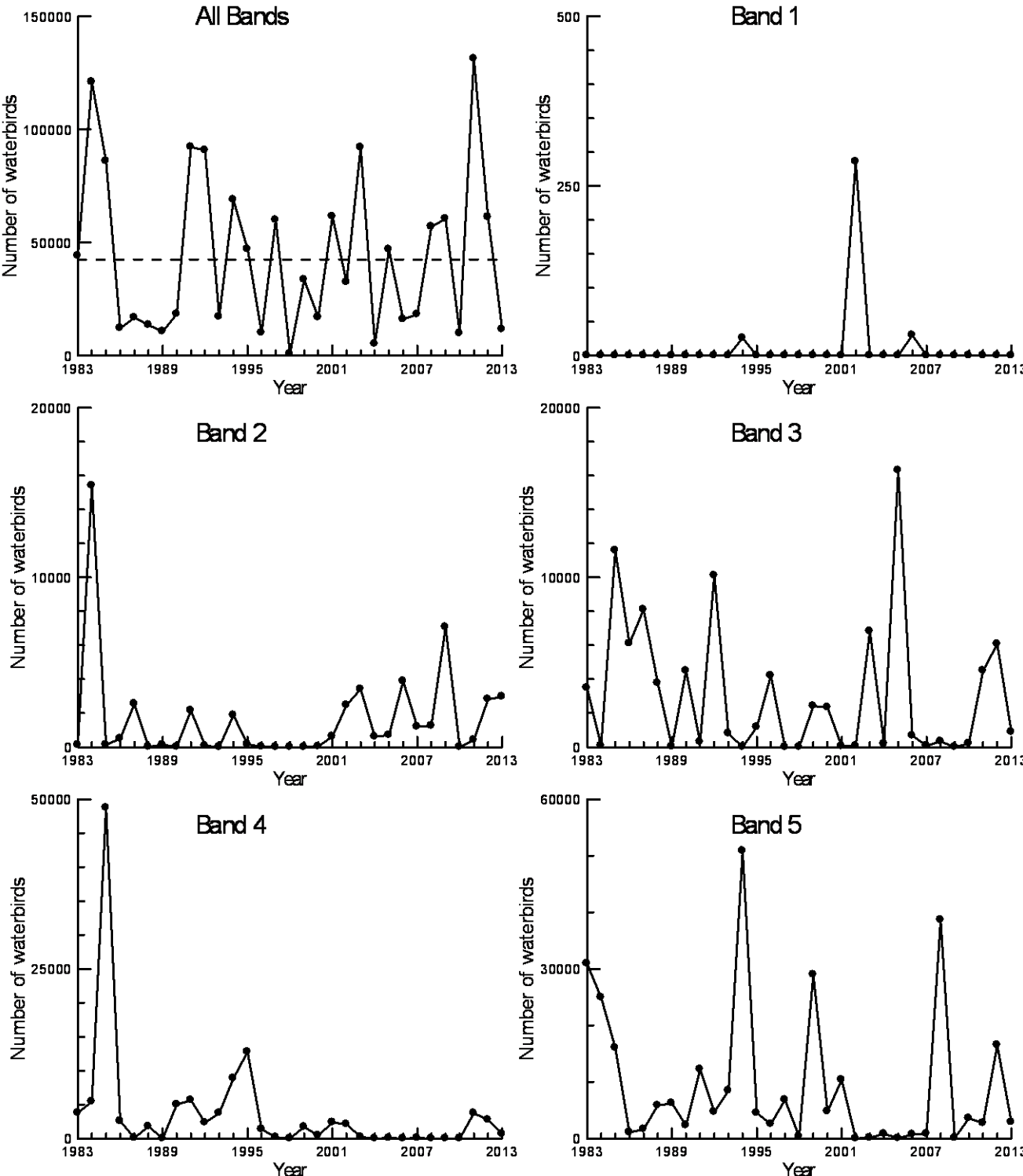
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Figure 23. Australian shelduck 6-10



Scales vary on graphs – dashed line indicates long term average

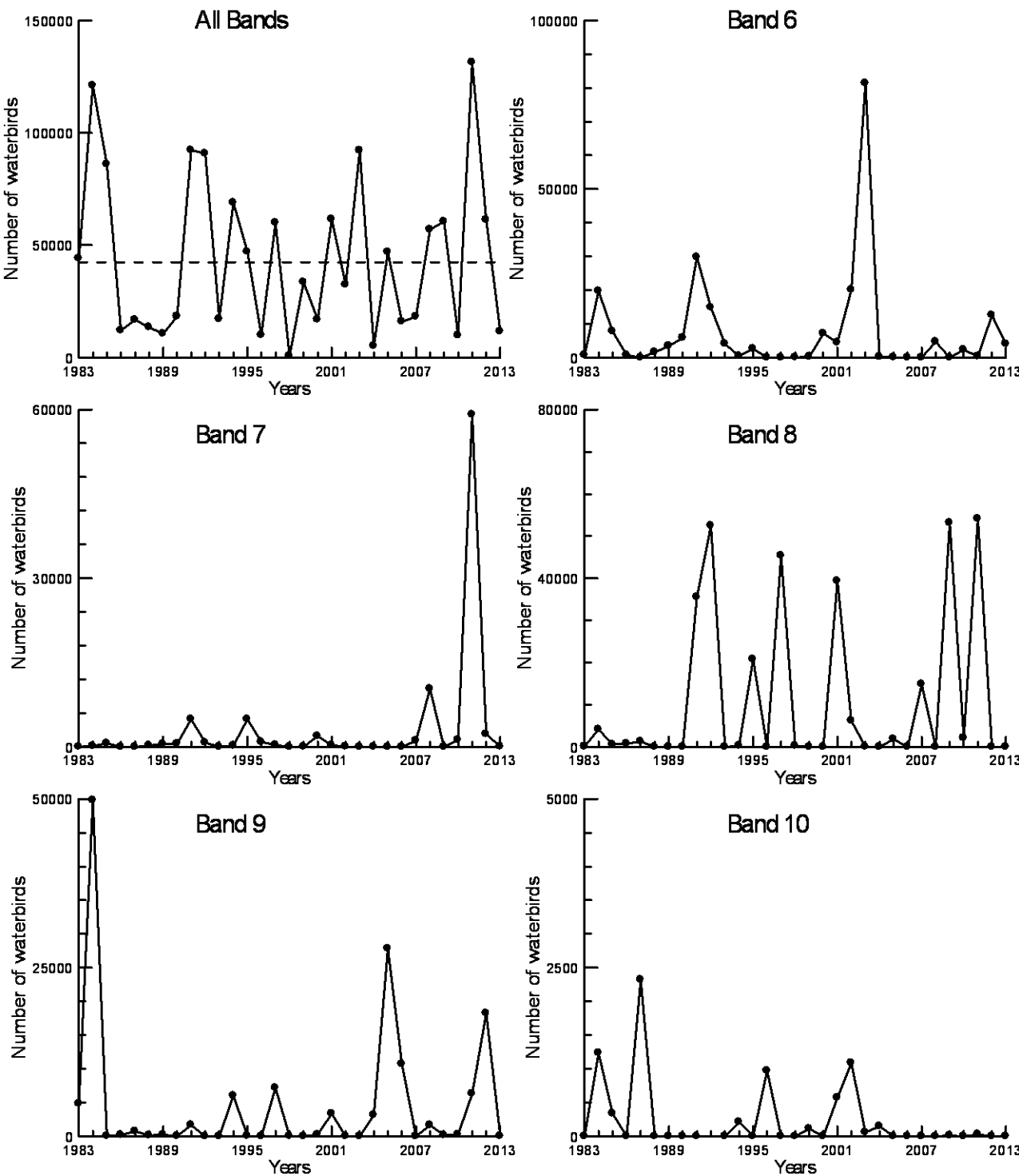
Figure 24. Pink-eared duck 1-5



Scales vary on graphs – dashed line indicates long term average

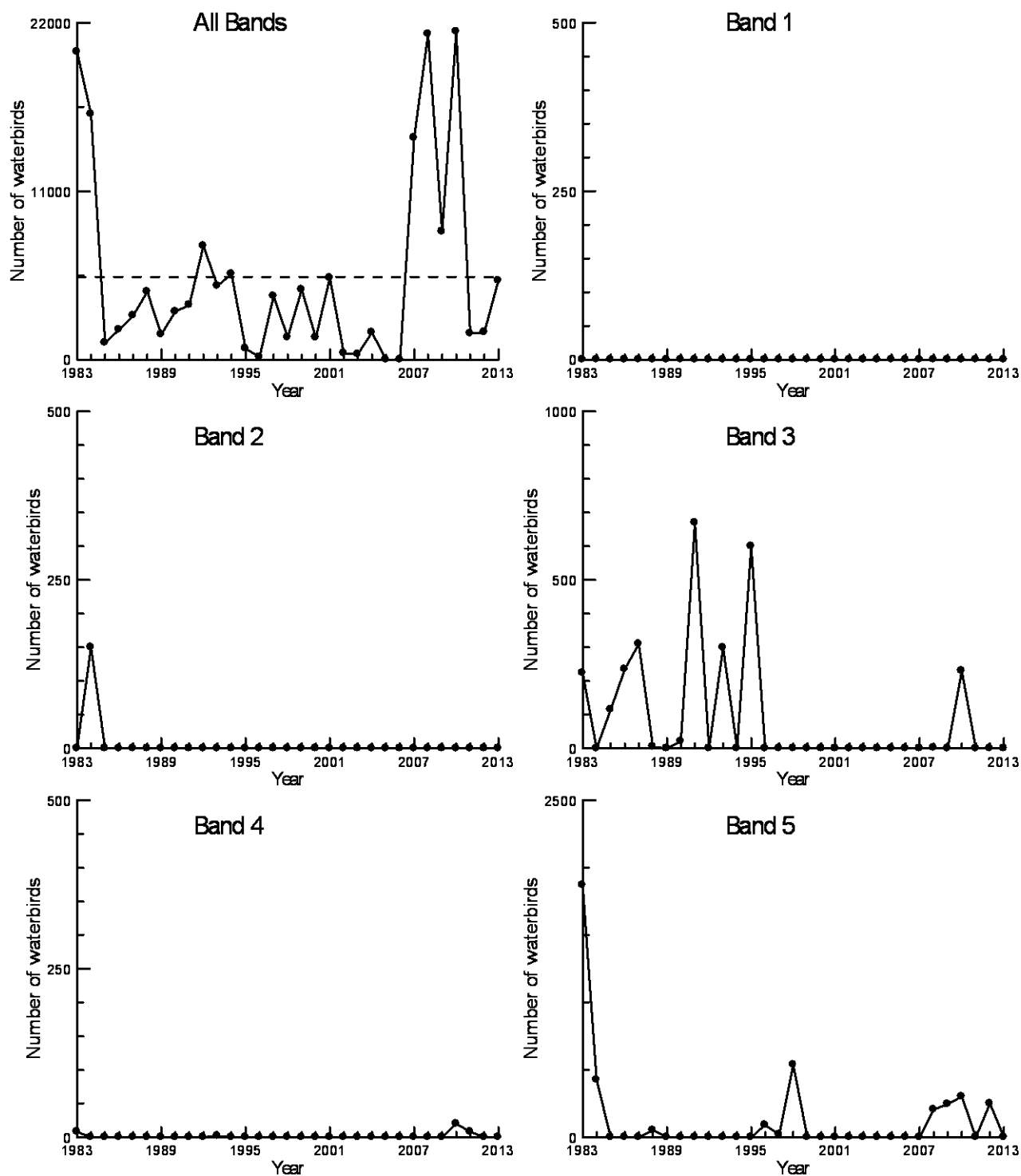


Figure 25. Pink-eared duck 6-10



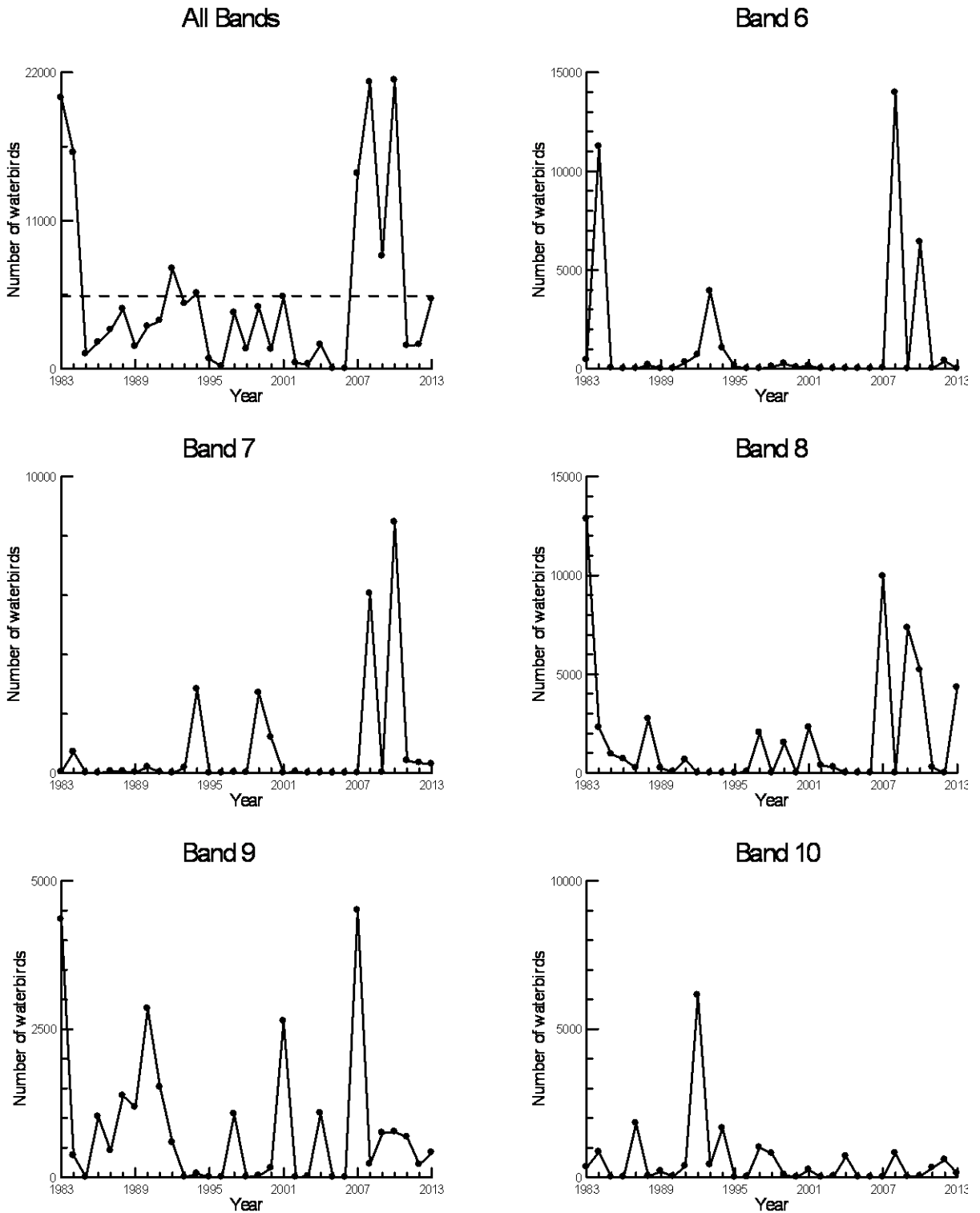
Scales vary on graphs – dashed line indicates long term average  
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Figure 26. Plumed whistling-duck 1-5



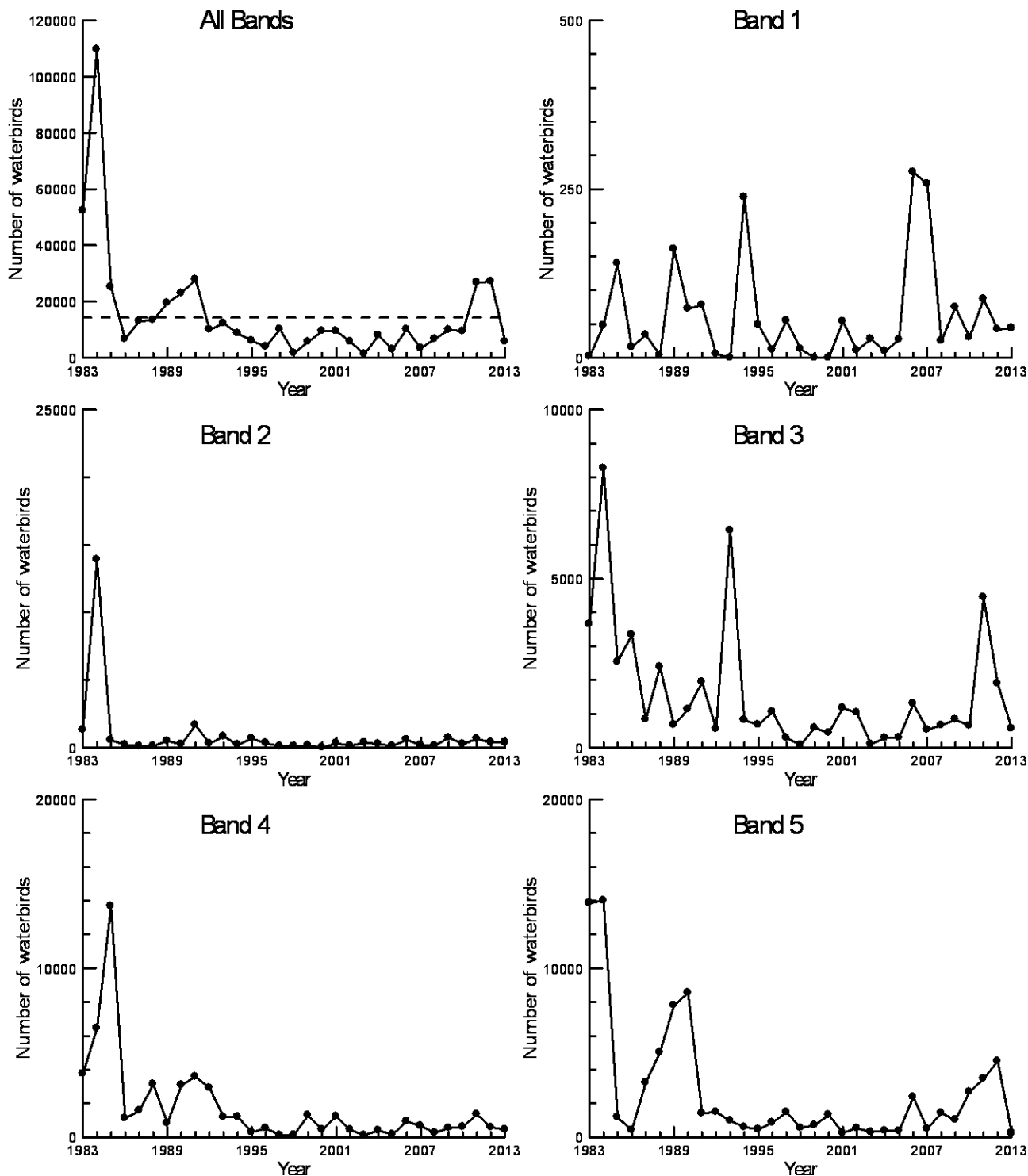
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Figure 27. Plumed whistling-duck 6-10



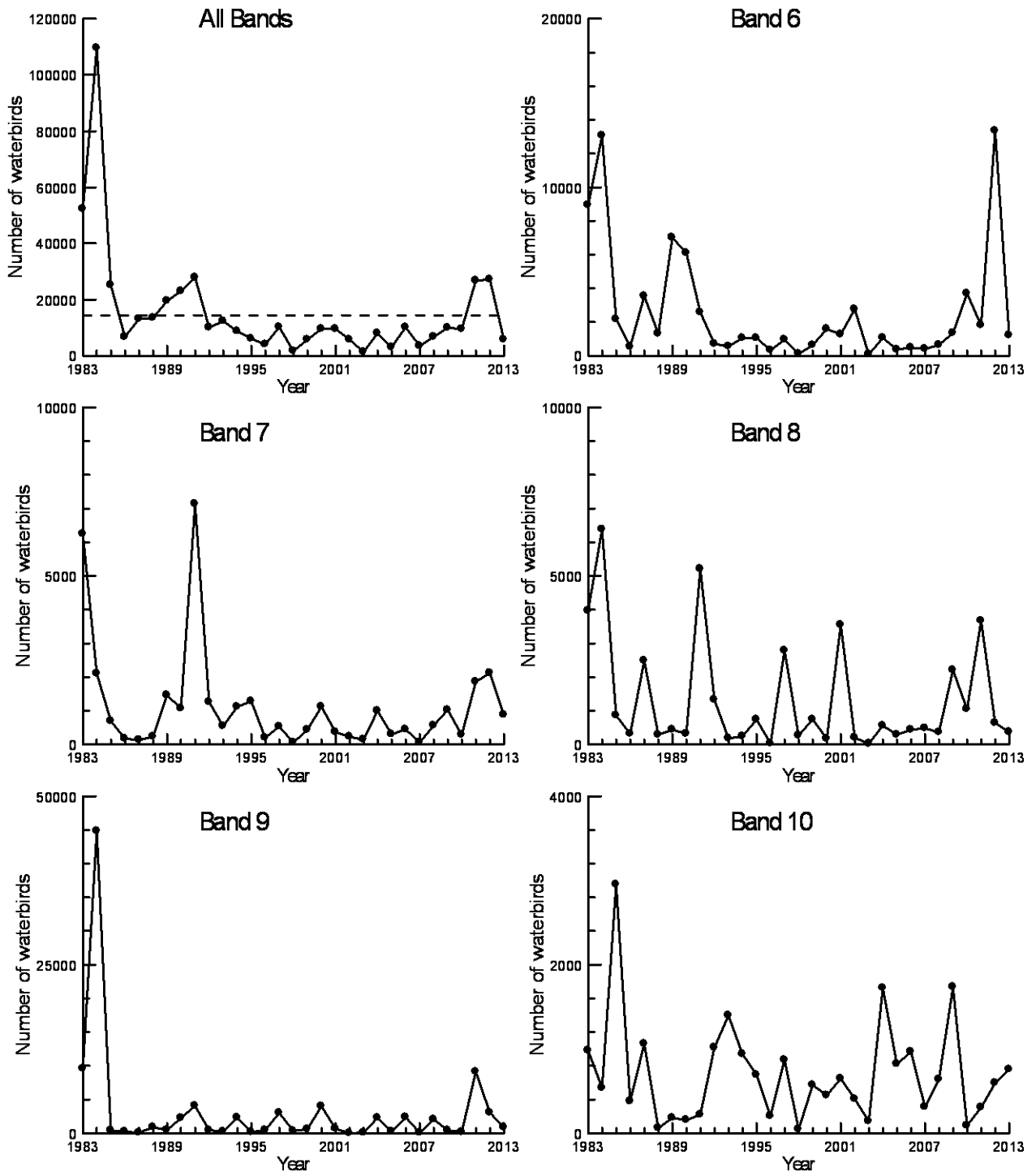
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Figure 28. Australian wood duck 1-5



Scales vary on graphs – dashed line indicates long term average

Figure 29. Australian wood duck 6-10



Scales vary on graphs – dashed line indicates long term average