The Eastern Australia Aerial Bird Survey estimates the total populations of all waterbird species within the area shown. It has been conducted every October since 1983, by the NSW Dept. of Environment and Conservation (NSW DEC). During this time, the total number of waterbirds of all species has declined by almost 90% — from over 7 million in 1983, to less than 800,000 now.

In 1983, two-thirds of all waterbirds in the survey region were found within the Murray-Darling Basin. That proportion has since declined to less than one-quarter, with absolute numbers within the Basin decreasing by 95%. These declines within the Murray-Darling Basin are the major factor contributing to declines within the entire survey region. For this reason, we have been investigating causes of these declines within the Murray-Darling.
Reduced Flow and Waterbird Numbers

Waterbird numbers vary greatly in both time and space. Much of the variation from year to year, and between different river basins, is related to climatic variation (see factsheet #19). Declines throughout the time of the survey show the influence of both climatic variations and water resource developments.

All waterbirds share a common need for water. The amount of water within the Murray-Darling Basin has declined over the past 25 years, though declines within individual river basins have varied greatly. The relationships between declines in both flow and bird numbers have been examined within the individual river basins of the Murray-Darling system (see graph below), revealing a very clear trend. Rivers that have suffered greater declines in flow have had similar declines in the numbers of waterbirds observed. Although there is some variation around this overall trend (e.g. the Namoi has suffered a similar reduction in flow to both the Darling and Paroo rivers, yet bird reductions have been far greater in the latter two), it is the overall relationship that is important. Furthermore, this overall relationship, between declines in flow and the disappearance of waterbirds, has not been previously demonstrated beyond the scale of individual river basins.

These data leave little doubt that, across the entire Murray-Darling Basin, declines in flow are directly associated with major reductions in bird numbers - flow declines are up about 23% since 1983, while bird declines within some basins approach 50%

Relative decline in bird numbers and flow volumes (% per year).

Reductions in rainfall contribute to reductions in flow volumes, yet even after accounting for this, the relationship shown in the graph below remains largely the same. In other words, it is the decline in flow beyond that explained by climatic variations that has predominantly influenced bird numbers. These additional declines in flow are those arising from water resource development.

Although preliminary, these findings do show a relationship between the flow regime and waterbirds in the Murray Darling Basin. These results also provide the beginnings for future research programs that deal with the management of bird populations within the Basin and beyond. It appears that rivers like the Border Rivers, and the Macquarie-Bogan Rivers, have suffered relatively large declines in bird numbers with relatively small declines in flow. If further research in these sub-basins were to confirm the larger-scale picture presented here, then flow restoration in systems like the Border and Macquarie may provide a greater ecological response in terms of overall bird populations than flow management in other sub-basins.