

## **Chapter 4      Implications for conservation**

This study represents the culmination of a comprehensive investigation into the reproductive success and demography of the Orange-bellied Parrot over a long period of time. No other species of Australian parrot has been studied as intensively over such a period. The impetus for this work has been to generate information that can be used to better inform the decision-making process for conservation management and, ultimately, the recovery of the species. Previous investigations on the population viability of the species and application of management decisions have been constrained by the limited reproductive and demographic data available on the species. This study, for the first time, provides comprehensive data on a variety of fundamental life parameters. This not only provides an insight into the current state of the population but also provides a valuable baseline with which to compare future studies.

The raw data on reproductive success and demographic parameters have been reported annually to the Orange-bellied Parrot Recovery Team (Brown 1990; Rounsevell 1991; Brown and Holdsworth 1992 and 1993; Holdsworth 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001a, 2001b, 2002, 2003, 2004 and 2005). However, the standards used to report these data have varied over this time and therefore it has been difficult for the Orange-bellied Parrot Recovery Team to synthesise and compare inter-annual results. This has limited the recovery team's capacity to provide accurate information on the species' population demographic parameters, reproductive success and trends to key stakeholders. Most recently this has included the provision of information to regulatory authorities in consideration of the potential impact of wind energy developments in coastal areas of western Tasmania, Victoria and South Australia. While this has not prevented consideration of impacts, because modelling has been based on a variety of plausible scenarios based on the raw data, it

nevertheless has limited the capacity to inform others who do not have working knowledge of the species. The lack of regular analysis of reproductive and demographic data was identified as an issue requiring attention, within a major review of the Orange-bellied Parrot recovery program (Saunders 2002). This deficiency is reflected in the latest recovery plan (Orange-bellied Parrot Recovery Team 2006) under action 1.1, which recommends a review of the methodology and statistical robustness of these studies. This study does some way to meeting this requirement.

The consolidation of demographic data collected at the key-breeding site at Melaleuca for the period 1991–2005 provides an opportunity to update important decision-making tools. Action 4.7 of the Orange-bellied Parrot Recovery Plan (Orange-bellied Parrot Recovery Team 2006) requires that a Population Viability Analysis (PVA) for the Orange-bellied Parrot be refined and reviewed to assess the impacts of threats to the species. A critical element of this action is to review parameter estimates used in the PVA developed by Drechsler *et al.* (1998) and updated by Drechsler and Meredith (2000) and to ascertain their suitability for inclusion in a revised PVA. Until now the parameter estimates used in these PVAs were constrained by limited data, gathered over relatively short periods of time, and therefore introduced considerable uncertainty in the values of reproductive success, fecundity and mortality (Drechsler *et al.* 1998). The information reported in this study is substantial and gathered over a long period of time and therefore provides a greater level of confidence on which to base future modelling and analysis on the viability of the species.

The major findings of this study are the Orange-bellied Parrot reproductive success parameters are high when compared to all other closely related and sized psittacids. This result is consistent with the previously held view that reproductive success is not

currently limiting the population while mortality during the migration and/or winter range is suppressing population growth. This study has shown the value of long-term use of nest boxes to monitor breeding activity and the importance of banding studies to determine a range of demographic parameters that otherwise would be poorly known. This study highlighted the lack of similar intensive studies in other Australian Psittacidae. This in turn has limited the capacity for this study to compare results with more common and secure species. The use of nest boxes, colour banding and even supplementary feeding to study other species will greatly enhance our understanding of the conservation of Australia's parrots.

This study has identified several introduced species, which may be reducing nest site availability, reproductive success and breeding range. Further work is required to determine the impact of Common Starling, Honeybee and Sugar Glider on the Orange-bellied Parrot. In particular, studies should ascertain whether the long-term success of the reintroduction program at Birchs Inlet is limited. Studies are also required to determine the distribution and abundance of these competitors in relation to the main breeding area at Melaleuca.

It is clear from this study that several important pieces of information are required to complete the reproductive and demographic picture for the Orange-bellied Parrot. The completion of molecular DNA analysis to determine sex of all banded individuals, parentage and rate of polygamy will provide important information to further develop PVA analyses.

The experience through this study and management of captive-breeding has highlighted the problems of data management of complex conservation program that pre-dated common use of computers. The author and other workers spent considerable time deciphering and collating written observations into a range of

databases. This served as an important lesson in ensuring that observers have appropriate skills and receive adequate training to minimise errors and wasted effort. While the author has managed a wide range of tasks under the recovery program throughout this study, it is important to recognise that the conservation and research requirements for the Orange-bellied Parrot recovery program are expanding. It is increasingly important to separate the various tasks to enhance our capacity to implement Recovery Plan actions and meet objectives. Accordingly, it is recommended that dedicated research staff are employed to undertake specific studies and, when volunteers are involved, a coordinator is employed to take responsibility for training and program management.

Alan H. Lendon (1979) wrote,..."There is so little, if any, information that can be regarded as authentic concerning the nesting habits of this species [Orange-bellied Parrot] that one is tempted to speculate as to whether it may not be a terrestrial nester, possibly on off-shore islands, like its close relative the Rock Parrot". Lendon published these words in the same year I started working with Peter Brown and Rolland Wilson on this elusive bird. This study is a culmination of this earlier work and advances our knowledge to a new level to aid its long-term survival.