

**The Heard Natural Science Museum & Wildlife Sanctuary
Banding Report, Total Birds
December 2007**

This report covers the banding years of 1978 through 2007. The totals presented below are for all banding by Heard personnel and volunteers. The graphs and analysis deal only with seasonal totals on the Heard grounds. A subsequent report will cover species specific results.

The season definitions are the same as defined in the December 2004 report by Deborah Fripp.

Breeding Season: April 1 to August 31, 5 months.

Winter Season: September 1 to March 31, 7 months.

Annual result has been totaled but is presented only in the data table in this report.

1 Database

The totals and analysis presented in this report were derived from the Band Manager program database, paper records of early year recapture records and the net hours data recorded by the banders.

1.1 Band Manager program database.

- 1.1.1 **New band Records.** The Band Manager (BM) database contains new band records from 1978 to 2007 for the Heard grounds and at 39 locations around Texas, most in Collin and Hunt county. The records for 1978 and 1979 are sparse and intermittent and are not included in the totals presented below. Only the birds caught in mist nets on the Heard grounds are included in the seasonal totals and analysis present here. The data for the other locations is sparse and intermittent over the years.
- 1.1.2 **Recapture Records.** The banders begin recording, on paper, recaptured birds in 1994. Recapture data has been entered into BM for the years 2000 to 2007. I have compiled the totals from the paper records for the years 1994 to 1999. (I am currently in the process of entering the recapture data for 1994 to 1999.) The records for 1994 and 1995 are sparse and intermittent and are not included in the seasonal totals and graphs presented below. Recaptured box-babies are included.
- 1.2 **Net Hours Data.** Net hours data is available from 1988 to the present. In reviewing the net hours data compiled by Fripp a few "key punch" errors were found and corrected. A few data points were missing that I filled in by estimating from adjacent data. The number and magnitude of these are too small to appreciably affect any conclusions you may draw from the results.

2 Total Birds.

Between March 28, 1978 and December 21, 2007 Heard personnel and volunteers banded 30,136 birds on the Heard grounds and at 39 locations around Texas, most in Collin and Hunt county. While the number of days per year of banding has varied, substantial banding has occurred in every year.

- 2.1 **Mist Net Banding on the Heard Grounds.** Since March 28, 1978 mist net capture and banding has been carried out on 1,862 days. 25,045 birds of 167 species have been banded. Since 1994 (the start of recaptured bird records) there have been 3004 recaptures. This count does not include all of the birds that were recaptured a second time on the same day. Records for net hours by day begin on April 21, 1988. Since that day 17,277 birds have been captured in nets on 1054 days with a total net time of 56,008 net hours. The overall net productivity is 30.8 birds per 100 net hours.
- 2.2 **Nest-box Banding on the Heard Grounds.** The banding of box-babies began in 1989 and has been carried out each year except for 1990 and 1995. During this time 928 box-babies of 9 species have been banded.
- 2.3 **Heard Raptor Rehabilitation Center Banding.** The following numbers are based on a group of Band Manager records marked with Location= Heard Block and Bird_Status other than 300 (Normal wild bird banded and released). There are a number of non-raptor species in this group that may not have been handled by the Raptor Rehabilitation Center. 1,200 birds of 42 species were banded between November 21, 1978 and June 10, 2002. (It is odd that there are no banding records for the raptor center between 2002 and 2005.)

3 Definition of terms used in the graphs.

Most are obvious but are included for completeness.

- 3.1 **Birds Neted.** Total number of birds banded (or recaptured) from mist nets on the Heard grounds per season.
- 3.2 **Number of species.** Total number of species of birds banded (or recaptured) from mist nets per season.
- 3.3 **Banding Days.** Total number of banding days per season.
- 3.4 **Net Hours.** Total number of hours of net time per season. Sum(Number hours each net is open).

- 3.5 **Birds per Day.** Average number of birds banded (or recaptured) per banding day over the season.
Birds_Neted/Banding_Days.
- 3.6 **Birds per 100 Net Hours.** A measure of capture efficiency. $100 * \text{Nbr_Birds} / \text{Nbr_Net_Hours}$. In the 2004 report only new-banded birds were counted. In this report both new banded and new banded + recapture birds per 100 net hours are presented.

4 Seasonal graphs.

- 4.1 **Season Totals.** Figures 1, 2 and 3 show the total birds banded/recaptured, number of banding days and the average number of birds neted per day of banding for the breeding season. Figures 4, 5 and 6 are the corresponding graphs for the winter season. The 2005-year gap is because there was no winter banding for that year. The 2007 winter season will not be complete until March 31, 2008. Note that the Winter Season Birds Neted graph scale is almost twice the Breeding Season graph (The winter season is 7 months long compared to the 5 month breeding season). The Winter Season Birds Neted shows a steep downward trend. However, the trend for years 1991 to 2007 is flat and the average is not much different from the Breed Season average for those years. The average number of birds banded per banding day, Figures 3 and 6, trend is almost flat. Likewise, the number of species banded per season is almost constant over the 29 years. Note that these are not necessarily the same species over the span of the data. (Possibly an interesting results that could be extracted from the database.)
- 4.2 **Capture Efficiency.** Birds per 100 Net Hours graphs, Figures 7 and 8, both show a downward trend. It is interesting that starting in approximately 1998 the year-to-year variation is less than in the earlier years and the trend is approximately constant. Including the recaptured birds only shifts the values up since the number of recaptures per year is approximately constant. This is sharp contrast to the large year-to-year variation of the number of new bands, Figures 1 and 4.
- 4.3 **Your ideas and thoughts about the results.** Assuming you think the data shows that something changed around 1998 I would like to hear you thoughts and will add them to the report if you like.
- For example:
Did the banding methodology or net opening/closing change?
Were the nets moved to new areas?
Did the environment in and/or around the Heard change?

5 Additional Analysis.

- 5.1 **Population and Age Structure.** Before updating the population and age structure analysis I would like to do two things. First, include the recapture data to increase the data set size. Second, scrub the age data. Since the data set per species is small in most cases errors in aging a bird could greatly affect the results. For this I will need help from the banders.
- 5.2 **Other Analysis.** A number of other ways to plot and/or analysis the data come to mind. But I would like to hear from you as to what you think would be interesting and/or useful.
- 6 **Data.** All of the analysis and graphs were generated in MS Excel. The size of the data tables and calculations are to large to import into MS Word. The Excel worksheet, with data and graphs, is file Totals_1978-2007.xls.

Figures 1, 2 and 3. Breeding Season

Figures 4, 5 and 6. Winter Season

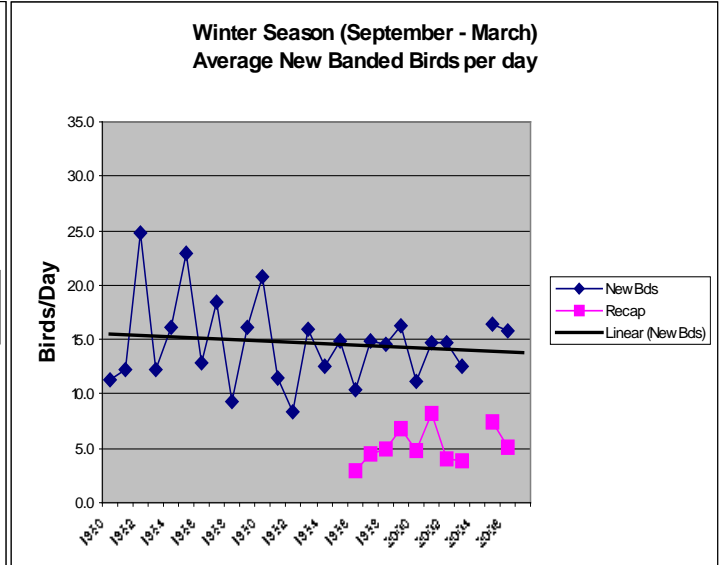
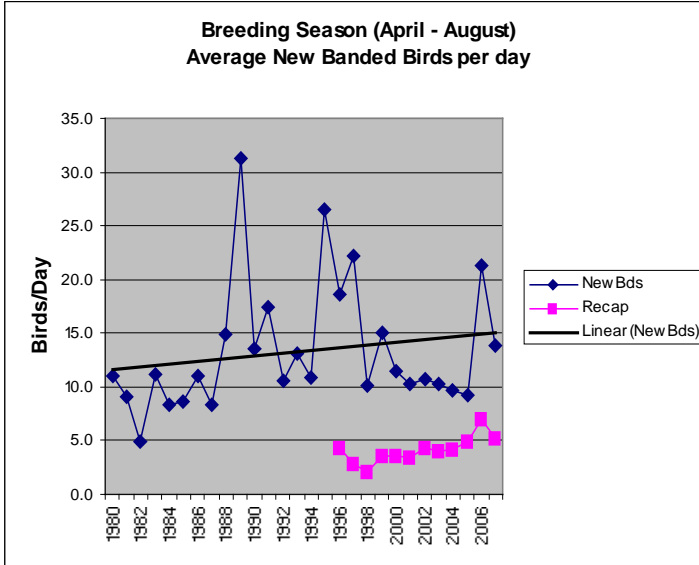
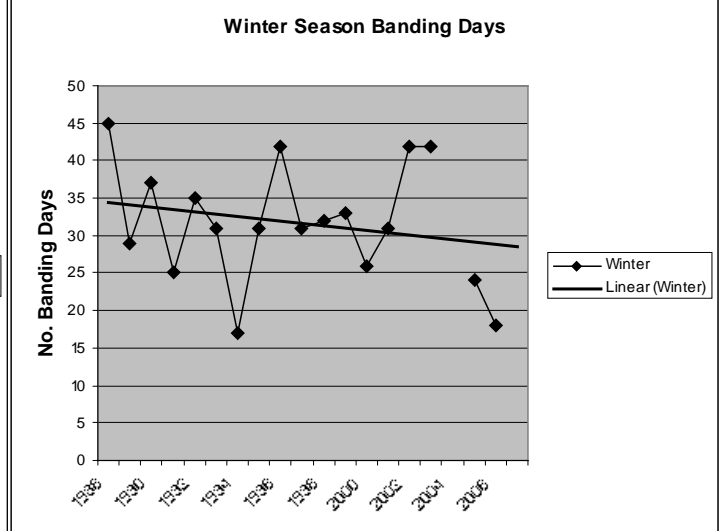
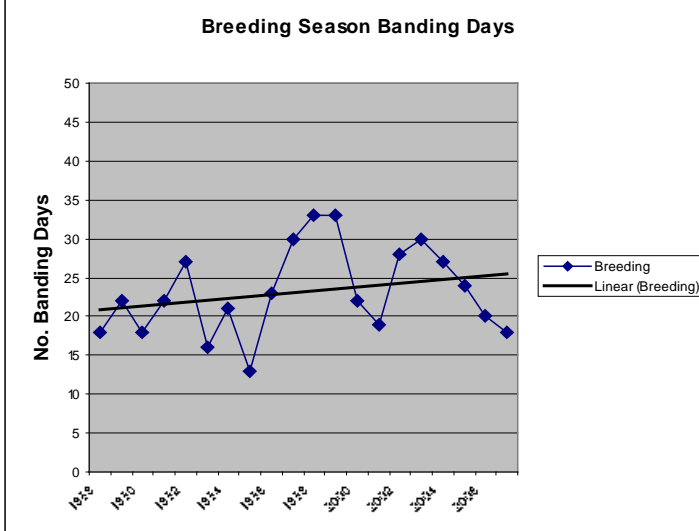
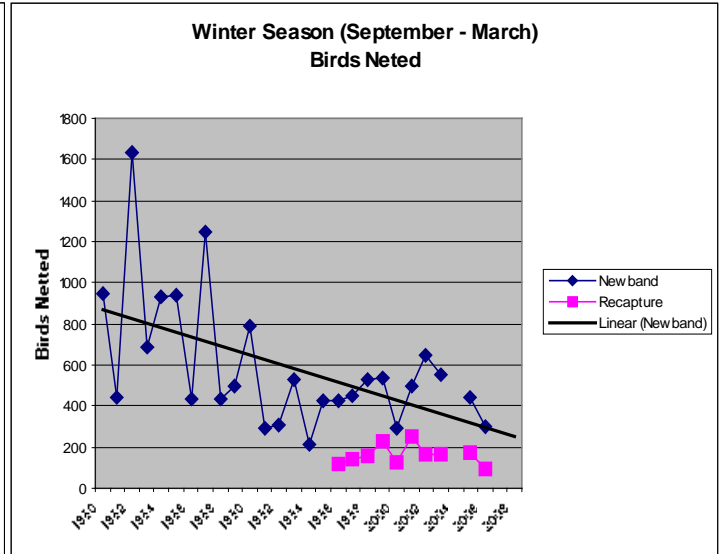
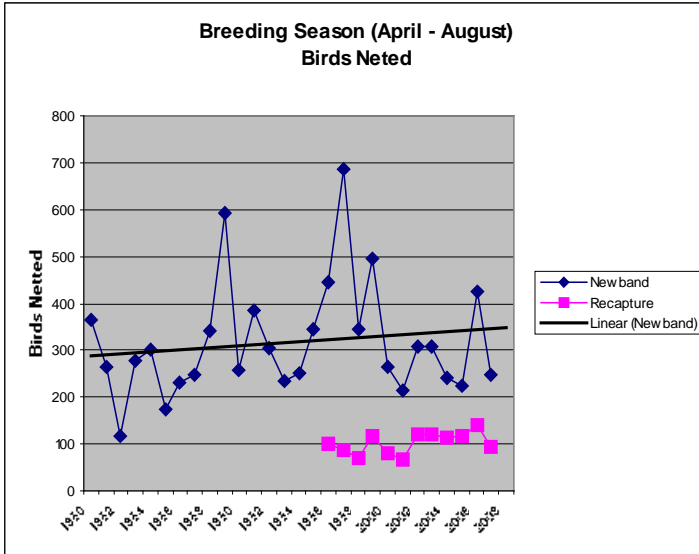


Figure 7. Breeding Season Number of Spices.

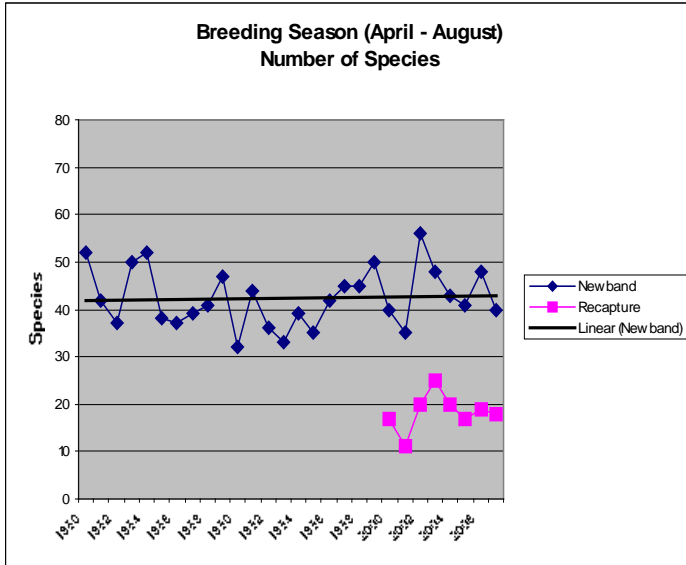


Figure 8. Winter Season Number of Spices.

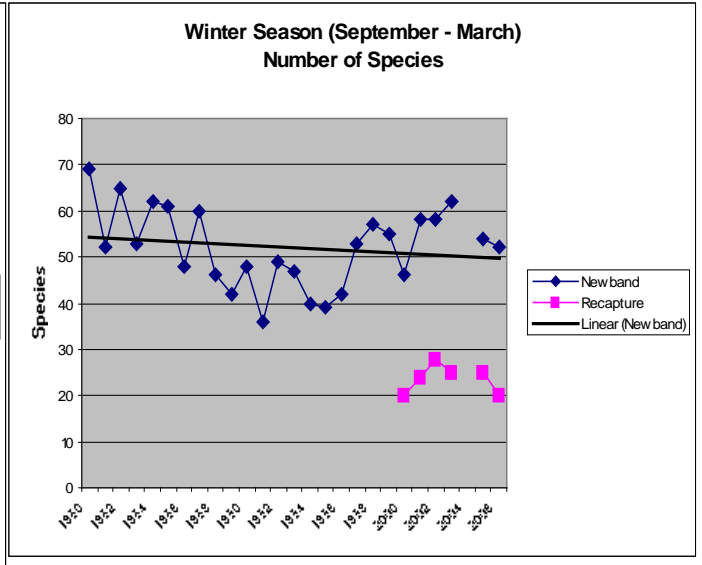


Figure 9. Breeding Season Birds per 100 Net Hours.

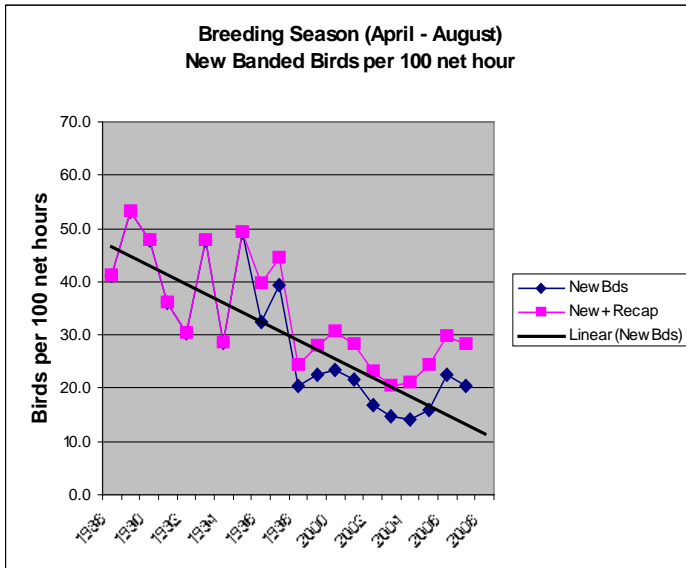


Figure 10. Winter Season Birds per 100 Net Hours.

