

## ORKNEY HARRIER REPORT

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Preface. Over 25 years ago, Edward Balfour chose the Hen Harrier as a species to concentrate on as a long term breeding population study. In his nearly treeless homeland of Orkney, a group of more than 70 islands off the north coast of Scotland, there is a surprising degree of choice of raptorial birds to study. All of the most common species are ground-nesters as is the Hen Harrier (same species as the North American Marsh Hawk). They include Short-Eared Owls, Merlins, and the European Kestrel. Mr. Balfour reported on the advent of ground-nesting kestrels just after World War II. We also observed nesting Peregrines and Buzzards this year.

I went to Orkney at the suggestion of Dr. Frances Hamerstrom, whose efforts on behalf of the Orkney Harrier project are gratefully acknowledged and from whom I learned the capture and marking techniques that I employed in Orkney. Acknowledgment is also made to the granting agencies, the Royal Society for the Protection of Birds and the Chapman Fund of the American Museum of Natural History.

It is noteworthy that our total of 39 nests does not reflect the total number of nests suitable for trapping. That number was considerably smaller due to the normal nest failure rate. Only a small percentage of the nests suitable for trapping had males in attendance. We failed to catch males (normally more difficult to trap) at only two nests. All harriers caught were in Mr. Balfour's long-term study area which contains the highest concentrations of this species in Orkney. However, a fair number of nests did exist outside the study area and on other islands where we were unable to trap.

Procedure. I arrived in Kirkwall, Orkney, on 12 June, 1967, with a live Great Horned Owl and necessary capture and color marking equipment. Due to a late hatch date, we attempted no captures until 24 June. However, we spent the interim preparing capture equipment and adding at least 15 nests to our list for study. The total number of nests found was 39. During the capture period we followed a fairly rigorous schedule, arising between 4:00 and 6:00 hrs. with work continuing through the day. Our latest capture was recorded at 21:45 hrs. which emphasizes the long hours of daylight available for work in this latitude during early summer. The greatest number of captures in one day was three, but there were some unsuccessful days. Mr. Balfour's van served as transport to the nest site vicinity because the distance between some nests was as far as 10-15 miles. After

our arrival in the nest vicinity, we walked, carrying the equipment. The most remote nest was more than an hour away on foot.

In addition to the capture studies, Mr. Balfour and I collected data on nestling development by weighing the young birds and measuring the longest primary feather. This study was carried on during every nest visit if feasible, and some nest visits were made expressly for this purpose. I left Orkney on 19 August.

Results. We took great care to determine whether the increased activity at nest sites due to recapture techniques or nestling development study techniques increased mortality of young or adult birds, or nest desertion. Comparison of the 1967 mortality with Mr. Balfour's long term records revealed that our activities had no adverse effect on the nesting Hen Harrier population.

We captured 26 adult Hen Harriers during the study (one was captured twice). Five of these birds had been ringed as nestlings. One bore celluloid color rings which had been attached while it was a nestling, but had no ring. This suggests that the ring had been lost, and we surmised that this may have happened fairly frequently among birds ringed with the old-style aluminum rings. This is unlikely to occur with the new monel rings which are of a harder metal. We performed routine processing on each adult which included weighing, wing measurement, color marking, and ringing. We also took notes concerning plumage and iris colour.

We recorded 281 weights and longest primary measurements from nestlings of known age and at all stages of growth. These data probably comprise the most comprehensive study of nestling development in this species. Mr. Balfour and I feel that these data will show a complete growth curve for aging nestlings of unknown age, the development of the pronounced sexual dimorphism and faster development of the Hen Harrier male (preliminary graph fig. 1), and the influence of asynchronous hatching on siblings. Also, our nestling development study contributes to the standardization of techniques for obtaining growth data from young raptors. We are preparing these data for publication. Let me also stress that Orkney is uniquely suited for this type of nestling development study, because there are no ground predators to follow the investigator's path to the nest when frequent visits are necessary.

Need for Continuation of this Study. It is of great importance to continue this study. Not only will it add to our knowledge of the Hen Harrier, but will also provide a comprehensive view of this intensively studied, healthy raptor population, a rare and perhaps unique circumstance. The adults which were ringed and color marked this season can yield a multiplicity of

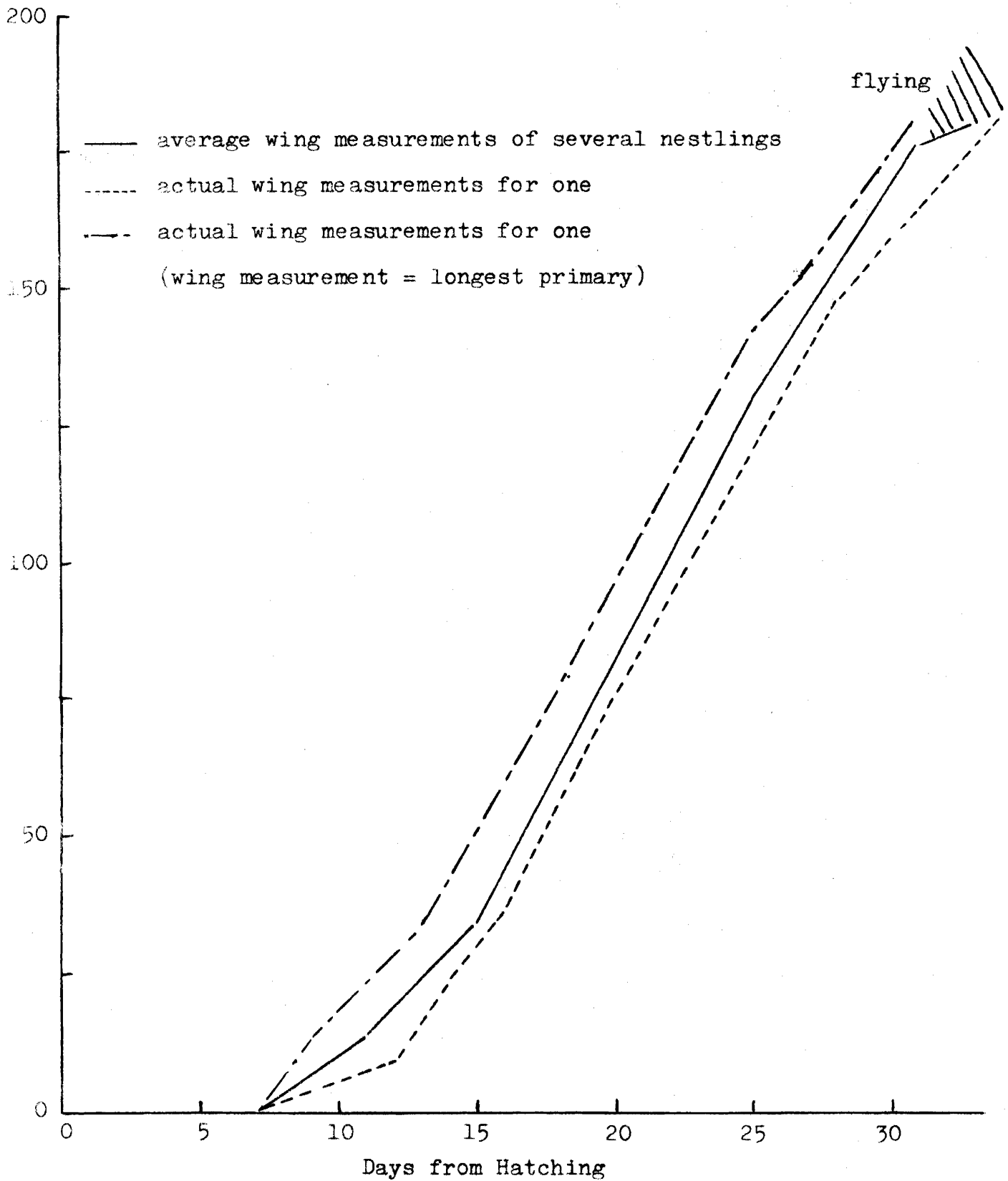


Figure 1 (preliminary graph). Growth of Orkney Harriers as indicated by length of longest primary.

information on the following subjects if the study is continued:

1. sex and age ratio in the population.
2. individual reproduction success when correlated with previous data.
3. mate constancy and polygamy and their implications to reproductive success.
4. correlations of reproductive success and age.
5. territory delineation and yearly nest site selection.

Continuation of the study next year with skilled manpower in addition to Mr. Balfour is the only means of utilizing the effort invested this year. Our accomplishments this summer could not have been carried on effectively by one man. The additive effect of the capturing to Mr. Balfour's original Hen Harrier nesting studies frequently taxed our energies, available time, and vehicular transportation heavily. I am confident that even more personnel could be profitably employed during the peak periods. None of the work would have been possible this season without the cooperative financial assistance of the two organizations this report is directed to.