

USE OF A PLUMAGE CRITERION FOR AGING FEMALE MERLINS

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Abstract.—A key for distinguishing between adult and yearling female Merlins (*Falco columbarius*) based on the color of rump plumage was proposed by Temple (1972). Examination of this characteristic in 34 known-age females from a wild population of *F. c. richardsonii*, caught during three breeding seasons and one winter, indicated discrepancies between the observed rump coloration and that expected based on the predictions of Temple (1972). Two of the nine yearlings examined had some gray (associated with adult plumage) in the rump coloration, and 12 of 25 adults were classified as having a brown rump (associated with yearling plumage). The onset of the change in the rump color of female Merlins appears much more variable, at least in this population of Merlins, than previously described. It would be beneficial to examine this currently accepted aging technique for female Merlins in more detail.

UTILIZACIÓN DEL PLUMAJE COMO CRITERIO PARA DETERMINAR LA EDAD DE HEMBRAS DE *FALCO COLUMBARIUS*

Sinopsis.—Temple (1972) propuso una clave basada en el color del plumaje de la rabadilla, para distinguir entre hembras adultas y de un año de *Falco columbarius*. El examen de esta característica en 34 hembras *F. c. richardsonii*, de las cuales se conocía su edad, y capturadas durante tres épocas reproductivas y un periodo de invierno, mostró discrepancias a tono con lo esperado, basándose en las predicciones de Temple (1972). Dos de las aves de un año, tenían gris en la rabadilla (asociado con plumaje de adultos) y 12 de 25 adultos, coloración parda (asociado al plumaje de aves de un año). El inicio en el cambio del color de la rabadilla de las hembras de este falcón, parece más variable (al menos en la población estudiada) que lo anteriormente descrito. Sería de gran beneficio el examinar esta técnica en mayor detalle, ya que ha sido comúnmente aceptada para determinar la edad de hembras de este falcón.

Temple (1972) proposed a key for sexing and aging Merlins (*Falco columbarius*) based on plumage criteria. He suggested that it was possible to distinguish yearling from adult females based on the color of the rump and upper tail covert feathers in relation to that of the dorsal plumage. The rump and upper tail coverts of adult females are slate-brown (i.e., gray), in contrast to the dark brown of the back, whereas those of yearling females are the same shade of brown as the back. This prediction was based on the examination of museum specimens and live birds.

During the trapping and banding of breeding Merlins, part of an ongoing study in Saskatoon, Saskatchewan, begun in 1972 (Oliphant and Haug 1985, Warkentin et al. 1991), we noted discrepancies between the observed rump plumage coloration and that expected based on the predictions of Temple (1972), described above. We found that not all adult females displayed a difference between the color of the rump feathers and that of the dorsal plumage. Therefore, while trapping breeding birds in 1988, 1989 and 1991 (for a description of trapping methods see Warkentin et al. 1990), and while trapping birds during the winter of 1987–1988 (see Warkentin and Oliphant 1990), we recorded the color of the rump feathers in relation to the dorsal plumage of known-age (banded as nestlings) and known-adult (those banded as breeding birds and known to be at least 2 yr old) females. All scoring of plumage color was done by the same person.

Four yearlings and 24 adult females trapped during the three breeding seasons, plus five yearlings and one adult trapped in winter, were included in the analysis, for a total of 34 individuals. We had multiple recaptures for several individuals; four adults were caught in two breeding seasons and one was caught in all three breeding seasons.

Additionally, two birds were captured as both yearling and adult breeders, and one adult was captured twice as a breeder and once during the winter. Of the nine yearlings, two were recorded as having some gray in the rump plumage in contrast to their brown dorsal plumage. Ten of 25 adults were recorded as having brown rump plumage that did not contrast with the dorsal plumage. Among the eight females captured at least twice, the two captured as both yearlings and adults were scored as brown on both occasions, as was another captured when 2 and 3 yr old. Four females (aged 2, 2, at least 2 and at least 4 yr old when first captured) were scored as being gray in each year. The other two that had been scored as having brown rumps, which did not contrast with their dorsal plumage, when captured first as 2-yr-olds, were subsequently recorded as having gray rumps when captured as 3-yr-olds. Thus in total, 12 of the 25 known-adult birds (those that were at least 2 yr old whether banded as nestlings or adults) had brown plumage when first captured as adults, contrary to the predictions of Temple's (1972) key. The oldest female in the sample was 8 yr old, and the oldest adult scored as being brown was at least 4 yr old.

Whereas most older adult females do have the gray rump coloration indicated by Temple (1972), it appears that the onset of the change in color from the brown associated with yearling female plumage to the gray that contrasts with the dorsal plumage of adults is quite variable. Six of eight known 2-yr-old adults had brown rumps and only one of four known 3-yr-old females had a brown rump. Thus, the changeover time for most individuals occurs somewhere between ages one and four, rather than strictly between 1 and 2 yr old, for members of this population. It should be noted that this study was conducted on the subspecies *richardsonii*, and that these features may differ (and Temple's criteria hold) for other

subspecies. Where known-age birds are available from other subspecies, it would be beneficial to examine this currently accepted aging technique in more detail.

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LITERATURE CITED

- OLIPHANT, L. W., AND E. HAUG. 1985. Productivity, population density and rate of increase of an expanding Merlin population. *Raptor Res.* 19:56-59.
- TEMPLE, S. A. 1972. Sex and age characteristics of North American Merlins. *Bird Banding* 43:191-196.
- WARKENTIN, I. G. 1991. Influence of site fidelity on mate switching in urban-breeding Merlins (*Falco columbarius*). *Auk* 108:294-302.
- , AND L. W. OLIPHANT. 1990. Habitat use and foraging behaviour of urban Merlins (*Falco columbarius*) in winter. *J. Zool. (London)* 221:539-563.
- , P. C. JAMES, AND L. W. OLIPHANT. 1990. Body morphometrics, age structure, and partial migration of urban Merlins. *Auk* 107:25-34.

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