

USE OF REMIGE MOLT FOR AGE-CLASS IDENTIFICATION  
IN MONK PARAKEETS *MYIOPSITTA MONACHUS*<sup>1</sup>JOAQUÍN L. NAVARRO<sup>1</sup>, LILIANA F. MARTÍN<sup>2</sup> Y ENRIQUE H. BUCHER<sup>2</sup>

**RESUMEN.** El uso de la muda de remiges para determinar clases de edad en la cotorra (*Myiopsitta monachus*).

Desde 1986 a 1989, 286 cotorras (*Myiopsitta monachus*) de edad conocida fueron clasificadas como adultos o juveniles en base a la presencia de muda de remiges en la época pos-reproductiva. Nuestros datos demostraron que esta técnica es altamente confiable desde febrero a marzo. En este período, el 99% de los adultos capturados estaban mudando. Excepto un juvenil cuyas remiges incompletamente crecidas fueron presumiblemente clasificadas erróneamente como mudando, ningún juvenil capturado estaba mudando. No obstante, el método es inexacto a partir de mediados de abril como consecuencia de la disminución de la muda en adultos.

In ecological and behavioral studies, it is frequently useful to be able to age individuals or, at least, to classify them as adults or juveniles. It is comparatively easy to determine the age of live birds in species where there are conspicuous plumage or structural differences between age-classes. But where adults and juveniles are similar, such as in the Monk Parakeet (*Myiopsitta monachus*), accurate age determination is more difficult.

Monk Parakeets are considered a pest throughout their range in Argentina, as they cause damage to crops and to power lines (Bucher 1984, Bucher and Martín 1987). This parrot species is also heavily exploited for the pet trade (Nilsson 1990). As part of a long-term study of the population dynamics of the Monk Parakeet, we were interested in finding ways of discriminating two age classes: juveniles (individuals fledged in the last breeding season, i.e. < 1 yr old) and adults (≥ 1 yr old). Various aging techniques have previously been tried in this species, including a number of body measurements—used either singly or in combination—and the presence or absence of the bursa Fabricius (Bucher *et al.*, unpubl. data). None of these techniques result in a complete separation of age classes.

Moreover, dissecting the bursa, although reliable during most of the year, is time-consuming and involves some risk to the birds, and so should be avoided in demographic studies.

Molt in the Monk Parakeet follows breeding but there is a partial overlap: the breeding season begins

in October and finishes in mid February and the molting period is between December and April (Bucher *et al.*, unpubl. data). Therefore, we investigated whether differences in the pattern of feather replacement could be used for determining age-classes of individuals. In this note, we show that the presence of remige molt is a useful method for assigning age-classes in Monk parakeets during the post-breeding season.

We recaptured 286 known-age Monk Parakeets (previously banded as adults or nestlings) in two different periods: from mid February to mid March (1986, 1987, 1988), and in mid April (1989). The birds were caught in a 610-ha study area located 50 km north of Córdoba city (Argentina), using a nest trap (Martella *et al.* 1987). We examined all trapped individuals for remige replacement.

Data on known-age birds recaptured in February and March show that almost 99% of the adults were molting their remiges in these months. Except one juvenile (whose partially grown remiges were presumably mistaken for evidence of molting), none of the juveniles that we caught exhibited remige molt (Table 1). The presence of remige molt in February and March was therefore significantly related to the age-class of the parakeets (Chi-square test = 218.0, d.f. = 1,  $P < 0.001$ ). During this period the technique showed an estimate actual error rate—the likelihood of incorrectly classifying adults as juveniles or juveniles as adults—of 1.5% and 2.2%, respectively.

However, the same aging method is invalid from mid April onwards, because of a decline in molting. In April, although juveniles were not molting, 46% of the adults did not exhibit remige molt either, and so age-classes could not be determined accurately (Table 1).

The method presented here is the only reliable technique currently available for aging live Monk Parakeets under field conditions, and probably can be applied to other bird species. The principal advantages of the technique are its high accuracy, consistency and speed, even when used by inexperienced personnel. However, it only allows separation of juvenile from adult Monk Parakeets during the post-breeding season. Future work could usefully focus on developing techniques for distinguishing adults and juveniles at other time of the year, and for aging adult birds to a specific year.

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**Table 1.** Presence of remige molt in Known-age (previously banded) Monk Parakeets caught in two different periods of the post-breeding season.

Age-class	FEBRUARY/MARCH		MID APRIL	
	Molting	Not Molting	Molting	Not Molting
Adults	202	3	15	13
Juveniles	1	44	0	8

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