Short communication

A *macrorhynchos*-like Eurasian Nutcracker (*Nucifraga caryocatactes*) in the Dolomites with a very abraded ring: an aged immigrant, or a locally born bird?

Tiziano Londei

**Abstract** - The origin of the ringed bird, photographed at Passo Gardena on 28 July 2016, remains unknown. However, considering that 1) irruptions of the *macrorhynchos* subspecies into the region have not occurred for years compatible with the degree of abrasion of the ring; 2) dispersed *macrorhynchos* individuals rarely survive for long periods outside their population range; 3) intermediate morphological traits between *macrorhynchos* and nominate *caryocatactes* appear in the area; and 4) the nominate subspecies may be derived, the possibility of a locally born representative of a hybrid population, or a bird with ancestral traits, should be considered for future studies.

**Key words:** *Nucifraga caryocatactes macrorhynchos*, Alps, hybrids, atavism.

**INTRODUCTION**

Nominate, thick-billed *Nucifraga caryocatactes caryocatactes* is the subspecies to which the Eurasian Nutcrackers in the Alps are usually assumed to belong, whereas slender-billed *Nucifraga caryocatactes macrorhynchos* would only occur in that area after irregular mass irruptions from Siberia. Although the *macrorhynchos* immigrants found in Europe were often older than one year, most seemed unable to survive the following winter (Cramp & Perrins, 1994). However, after irruptions, novel small populations of this subspecies have been discovered outside the usual range, e.g. in Finland (Lanner & Nikkanen, 1990), in association with plantations of the Swiss stone pine (*Pinus cembra*), the European counterpart of the closely related Siberian stone pine (*Pinus sibirica*). Eurasian Nutcrackers exhibit limited geographic genetic structure throughout their range (Dohms & Burg, 2014), which means that subspecific distinction would rest on morphology only. However, morphological intermediates between *caryocatactes* and *macrorhynchos* occur in Europe and are difficult to distinguish (Demongin, 2016).

On 28 July 2016, while I was observing Eurasian Nutcrackers feeding on Swiss stone pine seeds at Gardena Pass in the Dolomites (South Tirol, Italy), I photographed a *macrorhynchos*-like ringed bird (Fig. 1A). It was rather approachable, allowing for close-distance photographs, but its aluminium ring was too worn by time to permit any reading of the data (Fig. 1C). Of the many Eurasian Nutcrackers I have observed and photographed during my stay in the Dolomites (Badia and Funes valleys) from 27 July to 13 August 2016, this was the only ringed subject. Most of the birds observed were like nominate *caryocatactes* (Fig. 1B), although others appeared intermediate in morphological traits (Fig. 1D).

Supposing it was an aged *macrorhynchos* immigrant, i.e., a bird born elsewhere in a true *macrorhynchos* population, I considered two possible explanations for the origin of the ringed bird.

1) A bird of recent arrival, after having been ringed a considerable time before abroad. Its relative tameness, a characteristic of irruptive migrants, suggested to me this first idea and is consistent with migration in adulthood, as has often been observed elsewhere (Cramp & Perrins,
However, I considered the following. While an aluminium ring worn by a common raven (Corvus corax) for 41 months may still appear legible in a photograph, these birds may lose aluminium rings through wear after 10 to 15 years (Bedrosian & Craighead, 2007). Aluminium rings on passerines wear at about 3% of their mass per year (Baylis et al., 2018), and judging from my photographs, the mass loss of the ring on the bird being studied is not less than 30%. Therefore, assuming a comparable ringing date (about 10 years before my observation), my first explanation would have been unlikely. This is because the nearest apparent irruption of macrorhynchos to Europe would have occurred in 1998 in the Baltic area (data in Ananin & Sokolov, 2009) and a massive movement of Eurasian nutcrackers in 2002 in the Italian Alps was entirely ascribed to the nominate subspecies (Pedrini et al., 2008).

2) An immigrant bird that was an isolated representative of its subspecies before being ringed near the place of my observation. Its ring seemed consistent with one type still being used at the nearby Passo Gardena ringing station (Mantovani and Micheloni, 2016, personal communication). However, although a Eurasian Nutcracker has reportedly reached the age of 19 years 11 months (Franson et al., 2017), the rapid decline in numbers observed after macrorhynchos irruptions (Cramp & Perrins, 1994) makes it unlikely that a dispersing singleton of this subspecies could survive more than the time suggested by that ring. Thus, this explanation is even less likely than the first.

Supposing instead, a locally born bird, two additional and more reasonable explanations are possible.

3) The subject was a representative of a caryocatactes × macrorhynchos hybrid population, as the intermediate
appearance of other birds I have observed, and birds ringed and/or recovered at Gardena Pass (Prugger 2016, personal communication) have suggested. The occurrence of a hybrid population would be in full accordance with the gene flow supposed for the Eurasian Nutcracker across its whole geographical distribution (Haring et al., 2007), and the dynamics of such a population might emerge from comparisons of museum specimens. A search in the Global Biodiversity Information Facility (http://www.gbif.org/; accessed 3 September 2017) for museum specimens collected in neighbouring countries provided me with six macrorhynchos (three of which were from Tirol) and 17 nominate caryocatactes from Austria; two macrorhynchos and 79 caryocatactes from Switzerland; and 14 macrorhynchos and 23 caryocatactes from France. From the scarcity of macrorhynchos in Switzerland, it might be inferred that they entered the Alps mainly from the east and west of this country.

4) Provided that caryocatactes was a derived form (Fig. 4c in Haring et al., 2007), macrorhynchos traits might reappear intermittently in the Alps as atavisms. Reappearance of ancestral traits has already been suggested for other passerines (Bonnet et al., 2011). A low frequency of macrorhynchos traits in the Eurasian Nutcrackers of the region might suggest atavism, whereas a high frequency would more likely result from hybridisation produced by (recurrent) immigration. In both cases, persistence of adaptive macrorhynchos traits would likely depend on local abundance of Swiss stone pines, because, although the macrorhynchos subspecies has been found to feed on other coniferous seeds, stone pine seeds seem a requirement for its long-term survival and successful breeding (Lanner & Nikkanen, 1990). The shape of the bill might be a constraint in this respect. As Löhrl (1970) suggests and according to the secondary origin of the nominate subspecies, during periods of a lack of stone pine seeds the thicker bill of caryocatactes would be an adaptation, which facilitates their reliance on storage of the harder hazel (Corylus avellana) nuts for winter.

Acknowledgements

The author would like to thank Rosita Mantovani and Pierfrancesco Micheloni, ISPRA, and Iacun Prugger, the Passo Gardena ringing station, for providing useful information to better address the search for explanations. Giuseppe Bogliani and an anonymous reviewer suggested additional literature and text improvements.

REFERENCES

Ananin A. A. & Sokolov L. V., 2009 – Relationship between weather conditions, crops of Siberian pine nuts, and irruptions of Siberian Nutcrackers Nucifraga caryocatactes macrorhynchos C.L. Brehm in Siberia and Europe. Avian Ecology and Behaviour, 15: 23-31.

Baylis S. M., Drynan D., Clarke N., Van M., Sunnucks P., Rohan H. & Clarke R. H., 2018 – Estimates of wear rates in metal bird bands, with applications for survival and movement models of marked individuals. Journal of Field Ornithology, 89: 393-406.