

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?

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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.

Riassunto - Una Nocciolaia *Nucifraga caryocatactes* tipo *macrorhynchos* sulle Dolomiti con un anello molto usurato: vecchia immigrata, o nata sul posto?

Questa osservazione al Passo Gardena, il 28 luglio 2016, non ha permesso di identificare il luogo dell' inanellamento dell'individuo in questione, ma ha indotto l'autore alle seguenti considerazioni. 1) Immigrazioni cospicue della sottospecie *macrorhynchos*, di origine siberiana e tendente a movimenti di massa, non sono avvenute in anni compatibili sia con il grado di abrasione dell'anello che con una ragionevole longevità del portatore. 2) Questa sottospecie può stabilirsi fuori dal normale areale riproduttivo con popolazioni, ma una lunga sopravvivenza di individui dispersi è improbabile. 3) Individui con caratteri intermedi tra *macrorhynchos* e *caryocatactes*, la sottospecie nominale diffusa sulle Alpi, compaiono in quell'area e 4) *caryocatactes* sembra essere una sottospecie derivata. L'autore propone l'ipotesi che in quell'area esista una popolazione ibrida, frutto delle ricorrenti immigrazioni di *macrorhynchos*, oppure che caratteri ancestrali tipo *macrorhynchos* ricompaiano saltuariamente in *caryocatactes*.

Parole chiave: *Nucifraga caryocatactes macrorhynchos*, Alpi, ibridi, atavismo.

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,

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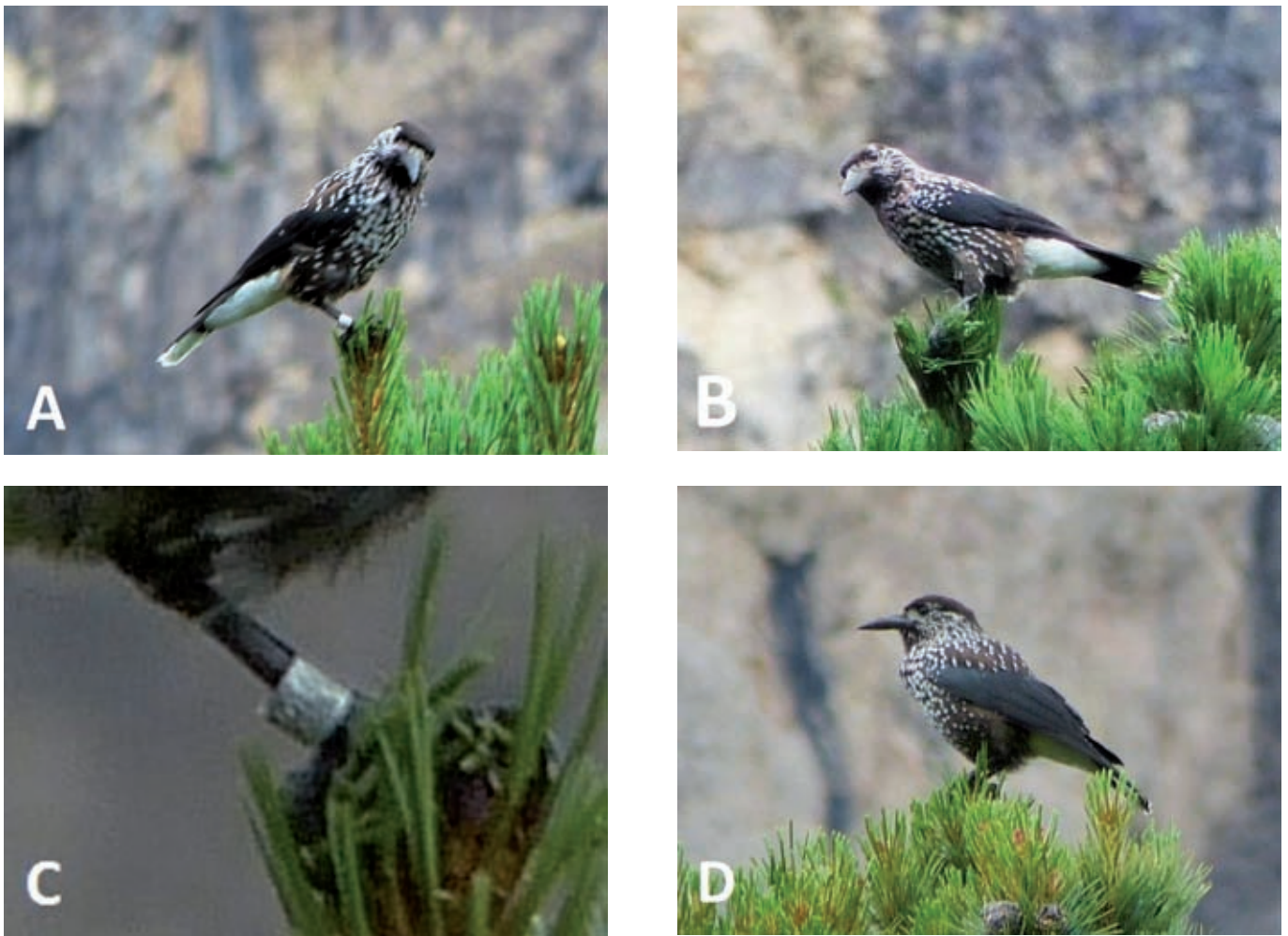


Fig. 1 - A) The ringed bird compared to B) a bird of the usual subspecies of the region, assumed to be nominate *caryocatactes*: the former bird shows *macrorhynchos* traits in its more decurved bill and more extensive white on its rectrices (cf. drawings in Demongin, 2016). C) An enlarged image of the ring: the uniform abrasion suggests involuntary wearing rather than intolerance behaviour. D) A bird intermediate in bill shape: *macrorhynchos*-like in the curvature of the culmen, but *caryocatactes*-like in the prominence of the gonys. Photographs by the author in the Alta Badia area, 28 July - 1 August 2016. / A) L'uccello inanettato a confronto con B) la sottospecie comune nella regione, considerata *caryocatactes* nominale: il primo mostra caratteri di *macrorhynchos* nel becco più incurvato e nel bianco più esteso sulle timoniere (cf. disegni in Demongin, 2016). C) Immagine ingrandita dell'anello: l'uniformità dell'abrasione suggerisce una lunga sopravvivenza del portatore anziché una sua intolleranza dell'anello. D) Un individuo intermedio nella forma del becco: simile a *macrorhynchos* nella curvatura del culmine, ma simile a *caryocatactes* nella prominente della gonide. Fotografie dell'autore nell'area dell'Alta Badia, tra 28 luglio e 1 agosto 2016.

1994). 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 (Fransson *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.

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