

Unveiling the occurrence of new aliens in town: the case of conures from urban areas of Italy

S. Giuntini¹, T. Lipparelli², E. Mori^{2,3,*}, A. Viviano², M. Menchetti⁴,
L. Ancillotto^{2,3}

¹ Environmental Analysis and Management Unit, Guido Tosi Research Group, Department of Theoretical and Applied Sciences, Università degli Studi dell'Insubria, 21100 Varese, Italy

² Istituto di Ricerca sugli Ecosistemi Terrestri IRET, Consiglio Nazionale delle Ricerche, Via Madonna del Piano 10, 50019 Sesto Fiorentino (Florence), Italy

³ National Biodiversity Future Center, 90133 Palermo, Italy

⁴ Institut de Biologia Evolutiva (CSIC-Universitat Pompeu Fabra), Barcelona, Spain

* Corresponding author: emiliano.mori@cnr.it

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Abstract

Unveiling the occurrence of new aliens in town: the case of conures in urban areas of Italy

The global trade in parrots in recent years has led to the establishment of non-native conure populations outside their native range. In Italy, conures are poorly documented compared to other invasive parrot species. Here, we confirm the presence of a breeding population (N = 14 individuals) of white-eyed conures in Florence through a literature review and citizen science data screening. Furthermore, repeated sightings of flocks of blue-crowned conures suggest the potential breeding of this species in Rome. Misidentifications and confusion with more common invasive parrot species may obscure their true distribution, highlighting the need for systematic monitoring to assess their ecological impact and potential for expansion in urban environments.

Key words: Non-native species, *Psittacara leucophthalmus*, *Thectocercus acuticaudatus*, Urban ecosystems

Resumen

Desvelando la aparición de nuevos alienígenas en la ciudad: el caso de las cotorras en áreas urbanas de Italia

El comercio global de loros en los últimos años ha llevado al establecimiento de poblaciones no nativas de cotorras fuera de su área de distribución original. En Italia, las cotorras están poco documentadas en comparación con otras especies invasoras de loros. Aquí, confirmamos la presencia de una población reproductora (N = 14 individuos) de cotorras de ojos blancos en Florencia mediante una revisión bibliográfica y el análisis de datos de ciencia ciudadana. Además, avistamientos repetidos de bandadas de cotorras de corona azul sugieren la posible reproducción de esta especie en Roma. Las confusiones de identificación y la asociación con especies invasoras de loros más comunes pueden oscurecer su distribución real, lo que resalta la necesidad de un monitoreo sistemático para evaluar su impacto ecológico y su potencial de expansión en entornos urbanos.

Palabras clave: Especies no nativas, *Psittacara leucophthalmus*, *Thectocercus acuticaudatus*, Ecosistemas urbanos

Resum

Desvelant l'aparició de nous alienígenes a la ciutat: el cas de les cotorres a àrees urbanes d'Itàlia

El comerç global de lloros en els últims anys ha portat a establir poblacions no natives de cotorres fora de la seva àrea de distribució original. A Itàlia, les cotorres estan poc documentades en comparació amb altres espècies invasores de lloros. Aquí confirmem la presència d'una població reproductora (N = 14 individus) de cotorres d'ulls blancs a Florència mitjançant una revisió bibliogràfica i l'anàlisi de dades de ciència ciutadana. A més, observacions repetides de bandades de cotorres de corona blava suggereixen la possible reproducció d'aquesta espècie a Roma. Les confusions d'identificació i l'associació amb espècies invasores de lloros més comunes poden enfosquir-ne la seva distribució real, cosa que destaca la necessitat d'un monitoratge sistemàtic per avaluar-ne l'impacte ecològic i el potencial d'expansió en entorns urbans.

Paraules clau: Espècies no natives, *Psittacara leucophthalmus*, *Thectocercus acuticaudatu*, Ecosistemes urbans

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The increasing movement of goods and people across the globe has significantly contributed to the spread of non-native species, particularly in temperate regions, where suitable climatic conditions may facilitate their establishment (Abellán et al 2017). Among vertebrates, parrots are one of the most commonly traded taxa (Cardador et al 2017). The international pet trade has enabled their introduction to numerous countries worldwide, where urban and suburban environments provide favourable conditions for their survival (Chan et al 2021, Sánchez-Mercado et al 2021). As these birds escape or are intentionally released, some species have successfully adapted to new environments -especially in cities with mild winters and abundant human-provided food sources. Their presence raises concerns regarding competition with native bird species, ecosystem disruption, and potential health risks through disease transmission (Radford and Penniman 2014, Pruett-Jones 2021).

Globally, over 60 of the 355 recognized parrot species have established breeding populations outside their native ranges (Menchetti and Mori 2014). Conures, a group of South and Central American parrots, are classified into five genera: *Aratinga* (6 species), *Cyanoliseus* (1 species), *Eupsittula* (5 species), *Thectocercus* (1 species), and *Psittacara* (9 species) (Remsen et al 2013). These birds are particularly popular in the pet trade due to their bright plumage, social behavior, and adaptability to captivity (Menchetti and Mori 2014). Self-sustaining alien populations may compete with native species for food and nesting sites, alter local ecosystems, and act as potential vectors for avian diseases (Pruett-Jones 2021).

In Europe, conures have been reported in several locations, primarily in urban and peri-urban areas, where their loud vocalizations make them more easily detectable (Fernández-Juricic et al 1998, Vehrencamp et al 2003). However, their resemblance to other non-native parrots, such as ring-necked and monk parakeets, may lead to underestimation of their population size, distribution, or even presence (Pruett-Jones 2021). In Italy, the presence of conures remains largely undocumented compared to other invasive parrot species, hindering the development of effective management strategies. Although research on non-native parrots has expanded significantly in recent years (Menchetti and Mori 2014, Pruett-Jones 2021), studies focusing specifically on conure populations in Italy are still in their early stages (Mori et al 2013). Previous investigations have mainly concentrated on more widely established invasive parrot species, often overlooking the distribution, breeding ecology, and population trends of conures (Giuntini et al 2021).

To address this knowledge gap, we collected data on the presence, reproductive success, and habitat preferences of non-native conures in Italy. By analyzing these patterns, we aim to provide valuable insights into their establishment dynamics and potential ecological impacts.

We conducted a detailed literature search using Scopus, Web of Science, and Zoological Record to collect data on conures in Italy between 2000 and 2025. This included information on species or hybrids, locations of introduction or population settlement, and population counts. We used combinations of the following keywords in both Italian and English: *Aratinga*, *Psittacara*, *Thectocercus*, conure*, Italy, non-native*, alien*, and introduc*. In addition, we included unpublished observations by the authors and supplemented our dataset with records from citizen-science platforms (iNaturalist: www.inaturalist.org; Ornitho: www.ornitho.it), as well as from public profiles and pages on major social networks (Facebook and Instagram), image-hosting websites (Flickr and Pinterest), and YouTube. These sources were checked monthly for one year (following Mori et al 2017). When a photo, video, or birdwatcher report was found, we contacted the observer to verify the record and obtain geographic coordinates. The number of observed individuals was also assessed through local sunset counts conducted once a month during the breeding season (March–May) by one of the authors (E Mori), following Luna et al (2016). Observed numbers were compiled into a yearly dataset to determine local population trends (Mori et al 2017).

We found only one peer-reviewed study on conures in Italy, which documented a single breeding event of the blue-crowned conure *Thectocercus acuticaudatus* in the province of Rome (Mori et al 2013). Additionally, we recorded twelve entries from citizen-science platforms and four from social networks. The documented breeding event occurred in 2013 in the town of Maccarese, approximately 35 km from central Rome, near private aviaries housing other individuals of the same species.

Occasionally, single or paired individuals of the Nanday conure (*Aratinga nenday*) were observed between 2006 and 2018 in Naples (1 record), Vecchiano (Pisa, 1 record), and Milan (12 records, possibly referring to the same individuals). Subsequently, we recorded one *Cyanoliseus patagonus* in Ladispoli (near Rome) in 2022 and one sun conure *Aratinga solstitialis* in Rome in 2024, both likely representing escaped pet individuals. Between 2007 and 2024, pairs and small flocks of *T. acuticaudatus* were also observed in green areas of Rome (9 records), specifically in the urban parks of Appia Antica, the Colosseum, and Villa Doria Pamphilj, with up to five individuals seen simultaneously in 2022. However, no evidence of breeding was found. Additionally, three individuals of this species were recorded in Trapani (Sicily) in 2014 (1 record).

Globally, eight alien populations of *T. acuticaudatus* are currently known, located in Spain (mainly breeding in Barcelona and the Canary Islands), the UK, and the USA (Florida and Hawaii) (Menchetti and Mori 2014, Pruett-Jones 2021, Santos 2022). All of these populations are associated with established, reproductively active populations of more abundant parrot species -particularly the ring-necked parakeet *Psittacula krameri*- suggesting a facilitation mechanism (Ancillotto et al 2016). The presence of large, conspicuous populations of this species may attract other escaped or released parrots to join existing flocks, enhancing their survival and breeding opportunities (Pruett-Jones 2021).

Moreover, in June 2018, six individuals of the white-eyed conure *Psittacara leucophthalmus* were visually observed in urban green areas of Florence (central Italy) during local counts of ring-necked parakeets (Giuntini 2018, Mori et al 2020). Breeding of the white-eyed conure in Florence was confirmed in 2021, 2023, and 2024 in the urban park 'Le Cascine', specifically in tree cavities of *Platanus* spp. (www.inaturalist.org). The local population consisted of nine individuals in 2022 and 14 individuals in 2024, indicating a slow but exponential increase (fig. 1).

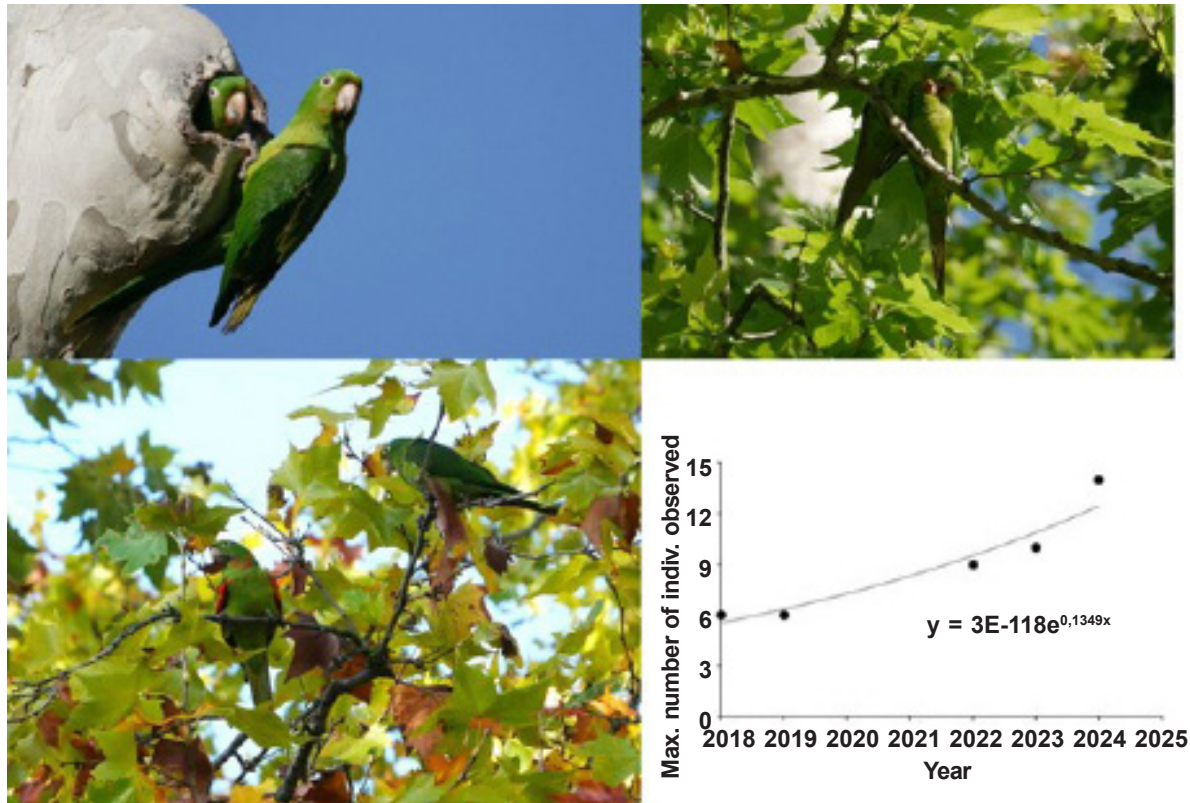


Fig. 1. Breeding white-eyed conures in Florence (photo Giovanni Ciattini) and local population trend, based on local bird counts.

Fig. 1. Crianza de las cotorras de ojos blancos en Florencia (foto Giovanni Ciattini) y tendencia de la población local, basada en recuentos de aves locales.

In Florence, white-eyed conures were observed feeding on plane tree fruits, cherries, and *Melia azedarach* L. fruits in several urban parks, mainly in the Boboli Gardens and on scattered trees in the San Frediano quarter, up to 4 km in a straight line from the known nesting site. Outside central Italy, the only other known alien population of this species appears to occur in Florida, with a population exceeding 120 individuals (Pruett-Jones 2021). In iNaturalist records of conures in Italy ($N = 5$), these parrots were misidentified by the original observer in 60 % of cases, often confused with more common species such as the ring-necked parakeet. Repeated observations reported on iNaturalist also suggest that some individuals of this species may be breeding in Tenerife (Canary Islands, Spain).

These findings suggest that free-ranging conure species may be more widespread in Europe than currently recognized, but their detection may be hindered by their frequent association with more abundant alien Psittaciformes. Therefore, the white-eyed conure should be included in the Italian bird checklist as a taxon with at least one established, self-sustaining population resulting from human introduction (AERC category: C), recorded in Italy over the last 10 years (general status code: 1), and as an occasional breeder (breeding status code: 3).

Our findings highlight the previously overlooked presence of conure parrots in Italy and underscore the need for further research on their establishment dynamics and potential ecological impacts. Despite their popularity in the pet trade, conure populations remain largely undocumented in the scientific literature—likely due to their resemblance to other, more abundant non-native parrot species and their relatively small, localized populations. The likely breeding of the blue-crowned conure in Rome and the confirmed reproduction of the white-eyed conure in Florence suggest that these species may be establishing breeding populations in Italian urban environments. The observed increase in the Florence population indicates that, under suitable conditions (e.g., urban areas and human-provided food), conures can sustain and expand their populations—mirroring trends observed in other regions and among other alien parrot species (Mori et al 2020).

Furthermore, the association of conures with larger, well-established invasive parrot species, such as ring-necked parakeets, suggests potential facilitation mechanisms that may support their survival and reproduction. Frequent misidentification on citizen-science platforms further highlights the challenges in accurately assessing their distribution, reinforcing the need for systematic national monitoring. Given the ecological risks posed by invasive parrots—including competition with native species and the potential for disease transmission—proactive management strategies should be considered to limit their expansion. Future studies should prioritize long-term population trends, interactions with native and non-native species, and the ecological consequences of conure establishment in Italy.

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Conflicts of interest

Authors declare no conflict of interests.

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Complete affiliations

Silvia Giuntini, Environmental Analysis and Management Unit, Guido Tosi Research Group, Department of Theoretical and Applied Sciences, Università degli Studi dell'Insubria, 21100 Varese, Italy. E-mail: silvia.giuntini11@gmail.com

Tommaso Lipparelli, **Emiliano Mori**, **Andrea Viviano**, **Leonardo Ancillotto**, Istituto di Ricerca sugli Ecosistemi Terrestri IRET, Consiglio Nazionale delle Ricerche, Via Madonna del Piano 10, 50019 Sesto Fiorentino (Florence), Italy. E-mail: lipa.ita98@gmail.com, emiliano.mori@cnr.it, andreaviviano@cnr.it, leonardo.ancillotto@cnr.it

Emiliano Mori, **Leonardo Ancillotto**, National Biodiversity Future Center, 90133, Palermo, Italy.

Mattia Menchetti, Institut de Biologia Evolutiva (CSIC-Universitat Pompeu Fabra), Pg. Marítim de la Barceloneta 37, 08003 Barcelona, Spain. E-mail: mattiamen@gmail.com

