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## Supplementary Material

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## Rose-ringed Parakeet *Psittacula krameri* Populations and Numbers in Europe: A Complete Overview

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## SUPPLEMENTARY MATERIALS

### Publications Regarding Rose-Ringed Parakeet in Europe

**Table. S1. Summary of publications regarding demography and distribution of Rose-ringed Parakeet in Europe.**

	Citation	Document type	Language	Country (region) of study
1	Akyıldırım B & Arslan M. 2012	Poster	Turkish	Turkey
2	Braun M. 2004	Thesis	German	Heidelberg, Germany
3	Braun M. 2009	Journal paper	German	Rhine-Neckar, Germany
4	Butler CJ. 2003	PhD thesis	English	UK
5	Butler CJ. 2005	Journal paper	English	UK & USA
6	Clergeau P, Vergnes A & Delanoue R. 2009	Journal paper	French	Île-de-France, France
7	Clergeau P et coll. 2014	Report	French	Île-de-France, France
8	Clergeau P, Leroy O & Lenancker P. 2015	Journal paper	French	Île-de-France, France
9	Desch AK, 2013	Thesis	German	Rhine-Neckar, Germany

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	Citation	Document type	Language	Country (region) of study
10	Fraticelli F. 2014	Journal paper	English	Rome, Italy
11	Di Febbraro M & Mori E. 2014	Journal paper	English	Tuscany, Italy
12	Klaassen O. 2014	Report	Dutch	Netherlands
13	Mori E et al. 2013	Journal paper	English	Italy
14	Pasquier C & Ramière J. 2012	Journal paper	French	Toulouse, France
15	Peck H. 2013	PhD thesis	English	UK
16	Pithon JA & Dytham C. 1999	Journal paper	English	UK
17	Pithon JA & Dytham C. 2002	Journal paper	English	UK
18	Strubbe D & Matthysen E. 2008	Journal paper	English	Belgium
19	Strubbe D & Matthysen E. 2009	Journal paper	English	Europe
20	Taylor JR. 2010	Conference proceedings	English	UK
21	van Kleunen A, Kampichler C & Sierdsema H. 2014	Report	Dutch	Netherlands
22	Weiserbs A. 2010	Journal paper	French	Belgium
	<b>Bird Atlases</b>			
1	Balmer DE et al. 2013	Breeding bird atlas	English	UK and Ireland
2	Bijlsma RG, Hustings F & Camphuysen CJ. 2001	Bird report/ Book	Dutch	Netherlands
3	Dvorak M, Ranner A & Berg H-M. 1993	Breeding bird atlas	German	Austria
4	Garcia-del-Rey E. 2011	Field guide	English	Macaronesia
5	Gedeon K et al. 2014	Breeding bird atlas	German	Germany
6	Grüneberg C et al. 2013	Breeding bird atlas	German	Rhine river basin, Germany
7	Hustings F & Vergeer JW (SOVON Vogelonderzoek). 2002	Breeding bird atlas	Dutch	Netherlands
8	Lack P. 1986	Wintering bird atlas	English	UK and Ireland
9	Sharrock JTR. 1976	Breeding bird atlas	English	UK and Ireland
10	van den Berg AB & Bosman CAW. 2001	Breeding bird atlas	Dutch	Netherlands
11	Wink M. 1987	Breeding bird atlas	German	Rhine river basin, Germany
12	Wink M, Dietzen C & Gießing B. 2005	Breeding bird atlas	German	Rhine river basin, Germany

## Complete List of European Populations of Rose-Ringed Parakeet in 2015

**Table. S2. Rose-ringed Parakeet (*Psittacula krameri*) populations in Europe.**

Country	Location	Year of Introduction	RRP Population Status	References	Details
Austria	Innsbruck	1978	Failed	[1], Norbert Teufelbauer and Richard Zink pers. comm.	Probably present but not breeding. Population declining
Austria	Vienna	1970	Failed	[1], Norbert Teufelbauer and Richard Zink pers. comm	Probably present but not breeding. Population declining
Belgium	Antwerp	1982	Established	[1], Alain Paquet and Diederik Strubbe pers. comm.	Birds dispersed from Brussels. 360 parakeets counted at roost in August 2015
Belgium	Blaasveld	1980	Failed	[1]	Failure factors not identified
Belgium	Brussels	1974	Established	[1], Anne Weiserbs pers. comm. and Diederik Strubbe pers. obs.	Established. 9425 birds in August 2015
Belgium	Diest	>2010	Unclear	Alain Paquet and Diederik Strubbe pers. comm.	13 birds counted at roost in July 2015
Belgium	Duffel	1977	Failed	[1]	Failure factors not identified
Belgium	Gent	1982	Established	[1], Diederik Strubbe pers. obs.	Birds dispersed from Brussels
Belgium	Gullegem	>2010	Unclear	Alain Paquet and Diederik Strubbe pers. comm.	70 parakeets counted at roost in August 2015. These are probably birds from the French Lille-Roubaix population
Belgium	La Louvière	>2010	Established	Alain Paquet, Anne Weiserbs and Diederik Strubbe pers. comm.	Roost count in August 2015: 870 parakeets
Belgium	Leuven	1973	Unclear	[1], Alain Paquet and Diederik Strubbe pers. comm.	17 birds counted at Herverlee roost in June 2015. 34 birds counted at Wijgmaal roost in July 2015

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Country	Location	Year of Introduction	RRP Population Status	References	Details
Belgium	Liège	>2010	Established	Alain Paquet, Anne Weiserbs and Diederik Strubbe pers. comm.	Roost located in Grivegnée. 65 birds in August 2015
Belgium	Luik	1978	Failed	[1]	Probably failed in 1979 or 1985 during severe winter
Belgium	Sint-Niklaas	Unknown	Unclear	Diederik Strubbe pers. obs.	Birds dispersed from Brussels
Belgium	Sint-Truiden	>2010	Unclear	Alain Paquet and Diederik Strubbe pers. comm.	29 birds counted at roost in August 2015
Belgium	Tervuren	1966	Failed	[1]	Birds disappeared
Bosnia-Herzegovina			Absent	Nermina Sarajlic and Dražen Kotrošan pers. comm.	No parakeets have ever been recorded in the country
Bulgaria			Occasional escapes	[2], Boris Nikolov pers. comm.	1 breeding attempt in Kranevo in 2006, failed due to corvids attack
Croatia			Occasional escapes	[1], Ivan Budinski & Tibor Mikuska pers. comm.	In Croatia, even escaped birds are rare
Cyprus			Absent	Martin Hellicar and Nicolaos Kassinis pers. comm.	No parakeets and no escapes. They were never recorded in the country
Czech Republic			Several occurrences	Jana Skorpilova, Petr Vorisek and Tomáš Najer pers. comm.	Only several escapes
Denmark			Several occurrences	Henning Heldbjerg and Thomas Vikstrøm pers. comm.	Only escapes. 48 recordings in the database
Estonia			Absent	Dmitrijs Boiko and Riho Marja pers. comm.	No parakeets in the Baltic countries
Finland			Absent	Aleksi Lehikoinen pers. comm.	No breeding population. Escaped birds are very rare
France	Anthony / Massy / Wissous	1974	Established	[1, 3 - 6], Marine Le Louarn and Philippe Clergeau pers. obs.	Birds first introduced in 1974 at Orly Airport. Regular counts from 2003.
France	Aulnay-sous-Bois / Roissy	late 80's	Established	[1, 3 - 5], Marine Le Louarn pers. data, Philippe Clergeau pers. obs.	Population introduced around 1980 at Roissy airport. Roost counts since 2009 (2015- 1500 birds)
France	Cannes	2003	Established	[1, 7], Marine Le Louarn pers. data, Philippe Clergeau pers. obs.	Breed successfully since 2002. Last roost count (September 2010) = 210 individuals
France	Fréjus	1999	Established	[1, 8], Marine Le Louarn pers. obs.	36 birds counted in 2009. First breeding success in 2002
France	Lille & Roubaix	1996	Established	[1] Diederik Strubbe pers. data	950 birds in December 2014. 715 birds in August 2015 but highly possible that birds dispersed to nearby Gullegem (Belgium)
France	Marseille	1996	Established	[1, 9]	500 individuals counted in January 2010
France	Mercuès	2007	Unclear	[1, 10]	
France	Montpellier	2007	Unclear	[1, 11], Philippe Clergeau pers. obs.	42 individuals counted in December 2012
France	Nancy	2005	Established	[1, 12], Marine Le Louarn pers. data	230 birds counted at roost in winter of 2014
France	Sausheim	Unknown	Established	[1, 13]	
France	Strasbourg	1999	Unclear	[1], Philippe Clergeau pers. obs.	Unclear
France	Toulouse	Unknown	Established	[1], Philippe Clergeau pers. obs.	25 birds in 2011
Germany	Berlin	1991	Failed	[1, 14]	No birds observed in the last 5 years
Germany	Bonn	1979	Established	[1], Tobias Krause pers. comm.	
Germany	Brühl	1975	Unclear	[1, 15], Detlev Franz pers. obs.	One male pictured on a 2014 image, club 300.de, in Brühl Nordrhein Westfalen
Germany	Brühl	1975	Unclear	[1, 15], Detlev Franz pers. obs.	One male pictured on a 2014 image, club 300.de, in Brühl Nordrhein Westfalen

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Country	Location	Year of Introduction	RRP Population Status	References	Details
Germany	Dortmund	1998	Failed	[1, 14]	No birds observed in the last 5 years
Germany	Düsseldorf	1983	Established	[1], Detlev Franz pers. obs.	At least 900 individuals
Germany	Frankenthal	1985	Established	[1, 16], Detlev Franz pers. obs.	No information on the population size. Birds fly to the Ludwigshafen roost place
Germany	Hamburg	1984	Failed	[1], Detlev Franz pers. obs.	Birds of prey decimated the parakeets at the 2 roost places, around 1999
Germany	Hamm	1985	Failed	[1]	No information found.
Germany	Hannover	1999	Failed	[1]	No information found
Germany	Heidelberg	1972	Established	[1, 17, 18], Michael Braun pers. data	
Germany	Kassel	1994	Failed	[1]	No information found
Germany	Köln	1967	Established	[1, 19, 20]	Population is increasing
Germany	Mainz	1970	Established	[1, 21, 22], Detlev Franz pers. data	The Mainz total population counts several hundred birds. Parrots breed in Bretzenheim, Gonsbachal, Laubenheim, Finthen, Ingelheim, Volkspark
Germany	Minden	2000	Failed	[1, 23]	No birds recorded in the last 5 years
Germany	München	1998	Failed	[1, 24]	No birds recorded in the last 5 years
Germany	Neckarhausen	1973	Established	[1, 17, 25]	Population is increasing
Germany	Wiesbaden-Mainz	1974	Established	[1, 22, 26], Detlev Franz pers. data	In Summer 2014, summed population of Wiesbaden and Mainz was 2350 parakeets
Germany	Worms	1974	Established	[1], Detlev Franz pers. obs.	No information on population size. Parakeets fly to Ludwigshafen roost
Greece	Agina Island	1996	Unclear	[1], Lefteris Stavrak pers. comm.	No confirmed breeding
Greece	Athens	1995	Established	[1]	Established, several sources
Greece	Crete	Unknown	Established	[1], Lefteris Stavrak pers. comm.	Confirmed breeding
Greece	Dodecanese Islands	Unknown	Unclear	[1], Lefteris Stavrak pers. comm.	No new information found
Greece	Leros Island	1996	Unclear	[1], Lefteris Stavrak pers. comm.	No new information found
Greece	Patra	<1996	Established	[1]	No new information found
Greece	Rhodes	Unknown	Established	[1], Lefteris Stavrak pers. comm.	Confirmed breeding
Greece	Thessaloniki	<1996	Established	[1], Lefteris Stavrak pers. comm.	Breeding
Hungary			Absent	Karoly Nagy pers. comm.	Currently no records exist for this species
Ireland			Several records	[27]	
Italy	Bari	>2000	Established	[28], Emiliano Mori pers. obs.	Confirmed breeding. 25 individuals present near Bari and Lecce
Italy	Bologna	1999	Established	[1, 28], Jacopo Cecere pers. data	800 birds in 2015
Italy	Bolzano	>2000	Established	[28], Davide Righetti pers. comm.	Confirmed breeding. 15 individuals present in 2015
Italy	Cagliari	>2000	Established	[28], Emiliano Mori pers. obs.	120 birds in 2015
Italy	Caorle	1983	Failed	[1], Emiliano Mori pers. obs.	Same info found on Cabi.org.
Italy	Casalbuttano	1984	Established	[1], Emiliano Mori pers. obs.	Same info found on Cabi.org
Italy	Castenaso	Unknown	Established	[28], Emiliano Mori pers. obs.	Confirmed breeding
Italy	Catania	1990	Established	[1, 28]	30 birds in 2015
Italy	Firenze	1986	Established	[1, 28], Emiliano Mori, Mattia Menchetti and Leonardo Ancillotto pers. obs.	300 birds in 2015

(Urrigo et al.'OcyleinTable 4) contd....

Country	Location	Year of Introduction	RRP Population Status	References	Details
Italy	Follonica	2008	Established	[1], Emiliano Mori, Mattia Menchetti and Leonardo Ancillotto pers. obs.	Confirmed breeding. 20 birds in 2015
Italy	Friuli Venezia Giulia region	Unknown	Established	Andrea Caboni, Luca Lapini and Riccardo Balsamo pers. data	An estimate of 50 birds in the region
Italy	Genoa	1977	Established	[1, 28], Alessandro Perfetti and Enrico Borgo pers. data	650 birds in 2015
Italy	Livorno Ferraris	2014	Failed	Unpublished, Emiliano Mori pers. obs.	
Italy	Milan	>1990	Established	[28, 29], Paolo Bonazzi and Nicola Ferrari pers. data	300 birds in 2015
Italy	Muggia (Trieste)	1974	Failed	[1]	Same info found on Cabi.org. No new information
Italy	Napels	1994	Established	[1, 28], Emiliano Mori pers. obs.	Breeding in the botanical garden. 30 birds in 2015
Italy	Paderno Dugnano	Unknown	Established	[28]	
Italy	Palermo	1990	Established	[1, 28], Federico Marrone and Valentina Cumbo pers. data	1000 birds in 2015
Italy	Parma	>2005	Established	[28]	
Italy	Pastrengo-Bussolengo	Unknown	Established	[28]	
Italy	Pavia	>2005	Established	[28], Giampasquale Chiatante and Giuseppe Bogliani pers. data	
Italy	Peschiera	>2000	Established	[28]	
Italy	Portici	2000	Failed	[28]	
Italy	prov. di Imperia	Unknown	Established	Emiliano Mori pers. obs.	
Italy	prov. di Lecce	Unknown	Established	Emiliano Mori pers. obs.	
Italy	Rome	1977	Failed	[1]	
Italy	Rome	2002	Established	[1, 28, 29], Emiliano Mori, Mattia Menchetti and Leonardo Ancillotto pers. obs.	Breeding in every urban park. A total of 5,500 birds in December 2015
Italy	San Bartolomeo (Trieste)	<2000	Failed	[28], Emiliano Mori pers. obs	
Italy	Riva del Garda (Trento)	2000	Failed	[28], Emiliano Mori pers. obs.	
Italy	San Liberato	2000	Established	[1, 28]	
Italy	Sassari	>2005	Established	[28], Emiliano Mori pers. obs	
Italy	Siracusa	1990	Established	[1, 28], Emiliano Mori pers. obs	
Italy	Triestino	Unknown	Established	[1]	
Italy	Udine	1984	Established	[1]	
Italy	Vailate (Cremona)	1984	Failed	[1]	No new information found
Italy	Valbrembo	Unknown	Established	[28]	
Italy	Veneto region	Unknown	Established	Maurizio Sighele pers. data	An estimate of 150 birds in the area
Italy	Villa Bartolomea (Verona)	>2000	Established	Emiliano Mori pers. obs	
Latvia			Absent	Dmitrijs Boiko and Riho Marja pers. comm.	No parakeets in the Baltic countries
Lithuania			Absent	Dmitrijs Boiko and Riho Marja pers. comm.	No parakeets in the Baltic countries
Luxembourg			Several occurrences	Gilles Biver, Patric Lorgé and Mikis Bastian pers. comm.	Only occasional escaped birds
Macedonia			Absent	[2], Boris Nikolov and Evgenija Jordanovska pers. comm.	No parakeets in Macedonia
Malta			Absent	Denis Cachia and Nicholas Barbara pers. comm.	No parakeets. Some birds kept as pets on the island
Moldova			Absent	Vitalie Ajder pers. comm.	No parakeets ever recorded
Montenegro			Absent	Andrej Vizi pers. comm.	No parakeets ever recorded
Norway			Absent	Magne Husby and Julian Bell pers. comm.	No parakeets. Only 2 recordings of escaped birds
Poland			Absent	Piotr Tryjanowski and Michał Polakowski pers. comm.	Occasional escapes [every 2 or 3 years]

(Urrigo *et al.* ('Ocyclopterus) contd....

Country	Location	Year of Introduction	RRP Population Status	References	Details
Portugal	Azores	Unknown	Established	[1, 30]	
Portugal	Lisbon	1980	Established	[1], Luis Reino and Miguel Monteiro pers. data	Established. 625 birds counted at roost in July 2015
Portugal	Porto	Unknown	Established	[1, 31], Luis Reino pers. comm	
Romania			<10 birds in Bucharest	Vlad Cioflec pers. data	Bucharest: one pair in 2008. 6 birds in 2010 and 3 birds in 2015. Most of the breeding attempts have failed
Serbia			Absent	Marko Sciban and Dragan Siminić pers. comm.	Occasional escapes but no feral population
Slovakia			Absent	Tomáš Nájer pers. comm.	Very rare escaped birds
Slovenia			Unclear / Absent	Klemen Koselj pers. comm.	All rare bird reports mention several escapes, with no evidence of breeding. Most of the records come from the coast. Most of the observed birds were shot
Spain	Albacete	Unknown	Unclear	[1, 32]	
Spain	Alicante	Unknown	Established	[1]	No new information found
Spain	Almeria	Unknown	Unclear	[1, 33]	Found a YouTube video with parakeets from Almeria
Spain	Barcelona	1976	Established	[1], Juan Carlos Senar and Marcel Gil Velasco pers. comm.	Around 700 birds throughout Catalonia
Spain	Cádiz	Unknown	Unclear	Alvaro Luna pers. comm.	
Spain	Canaries	Late 80's	Established	[1, 34], Marcel Gil Velasco pers. comm. and Dailos Hernández Brito pers. data	280 birds on Tenerife Island in 2014
Spain	Castelló d'Empuries	Unknown	Unclear	Gerard Dalmau Bonet pers. comm.	+ data on ornitho.cat
Spain	Castellon	Unknown	Established	[1]	No new information found
Spain	Ciudad Real	Unknown	Unclear	[1, 35]	SEO (BIRDLIFE Spain) reports the species as present
Spain	Gijón	Unknown	Unclear	[1, 36]	Breeding but no numbers available
Spain	Girona	Unknown	Established	Gerard Dalmau Bonet pers. comm.	At least 40 birds
Spain	Granada	Unknown	Established	[1, 35]	Breeding, but no numbers available
Spain	Ibiza	Unknown	Established	[1, 35]	Breeding, but no numbers available
Spain	La Rioja	Unknown	Established	[1, 35]	Breeding, but no numbers available
Spain	Madrid	Unknown	Established	[1, 35], Cornel Dima pers. comm.	Breeding
Spain	Malaga	1985	Established	[1, 35], José Luis Postigo Sánchez & Leticia Lopera Doblas pers. comm.	Breeding. 40 birds counted at roost in summer 2015
Spain	Mallorca	Unknown	Established	[1, 35]	Breeding, but no numbers available
Spain	Manresa	Unknown	Unclear	Gerard Dalmau Bonet pers. comm.	+ data on ornitho.cat
Spain	Murcia (Cartagena)	Unknown	Unclear	[1, 35]	Breeding, but no numbers available
Spain	San Roque	Unknown	Established	[1, 37]	Breeding, but no numbers available
Spain	Santander	2006	Unclear	[1]	No information found
Spain	Sevilla	Early 1990's	Established	[1, 35, 38, 39], José Luis Postigo Sánchez & Alvaro Luna pers. comm	Breeding. 1400 birds in 2014
Spain	Toledo	Unknown	Unclear	[1]	No information found
Spain	Valencia	Unknown	Established	[1, 35], David Diez-Méndez pers. comm.	Breeding

(Urrigo gpt ('OcylekTable 4) contd....

Country	Location	Year of Introduction	RRP Population Status	References	Details
Sweden			Absent	Åke Lindström, Gustav Eriksson and Anders Wirdheim pers. comm.	Occasional escapes. One bird was seen crossing the sea at Falsterbo in autumn 2014.
The Netherlands	Aerdenhout	1977	Established	[1]	Part of Haarlem population
The Netherlands	Amsterdam	1977	Established	[40, 41]	Previously independent populations have expanded their range and are now connected throughout the urbanized western part of the country (Randstad), so there is a fused distribution!
The Netherlands	Haarlem	1977	Established	[40, 41]	Established. See comments for Amsterdam!!
The Netherlands	Rotterdam	1973-1977	Established	[41]	Established. See comments for Amsterdam!!
The Netherlands	The Hague	Late 1960's	Established	[40, 41]	Established. See comments for Amsterdam!!
Turkey	Adana	1996	Unclear	[1, 42]	Present, but no other information
Turkey	Ankara	1976	Established	[1, 42], Tamer Albayrak pers. data	Breeding, 60 individuals
Turkey	Antalya	1960's	Established	[42, 43], Tamer Albayrak pers. data	First observations in 1960s. Population size 20 individuals. Present and breeding
Turkey	İstanbul	1990	Established	[1, 42], Tamer Albayrak pers. obs.	Breeding, population size 600-900 birds
Turkey	İzmir	1992	Established	[1, 42], Tamer Albayrak pers. obs.	Breeding, approximately 200 birds
Turkey	Ören	1997	Unclear	[1]	No information found
Turkey	Şanlıurfa	1994	Unclear	[42]	Regular observations. More chances for breeding in Yalova than Şanlıurfa
Turkey	Terkos Gölü	Unknown	Unclear	[1]	No information found
Turkey	Yalova	2007	Unclear	[42]	Regular observations. More chances for breeding in Yalova than Şanlıurfa
UK	Avon	1997	Failed	[1]	No new observations on eBird and GBIF
UK	Brighton	1975	Failed	[1], Rachel White and Sussex Ornithological Society pers. comm.	
UK	Chichester	1974	Failed	[1]	No new information found
UK	Claygate-Esher	1970	Established	[1], Simon Tollington pers. comm.	+ observations from eBird and GBIF
UK	Croydon	1969	Established	[1], Simon Tollington pers. comm.	Confirmed breeding
UK	Epping Forest	1930	Failed	[1]	Failed
UK	Gresford	1979	Failed	[1]	No new information found
UK	Herstmonceux	1975	Failed	[1]	No new information found
UK	Higham Parks-Woodford Green	1971	Established	[1, 27, 44], Simon Tollington pers. comm.	
UK	Lilford	1931	Failed	[1]	No observations in the past 5 years
UK	Liverpool	1980	Unclear	[1]	Several GBIF obs. from 2012
UK	London, Kensington gardens	1925	Established	[1, 27, 44], Simon Tollington pers. comm.	
UK	Margate	1972	Established	[1, 27, 44], Simon Tollington pers. comm.	
UK	Marlow area	1972	Established	[1, 27], Simon Tollington pers. comm.	
UK	Northrepps	1855	Failed	[1]	No new observations or information
UK	Southfleet	1969	Failed	[1]	No new observations or information
UK	Stockport	1974	Failed	[1]	Only recent recordings of single birds South of Manchester

(Urrigo grpt ('OcylekTable 4) contd....

Country	Location	Year of Introduction	RRP Population Status	References	Details
UK	Studland	late 1980s	Unclear	[1]	Several awkward eBird obs in 2012 and 2013
UK	Thundersley	1974/75	Failed	[1]	No new information found
UK	West Yorkshire	1974	Failed	[1]	No new information found
UK	West Yorkshire	<1983	Failed	[1]	No new information found
Ukraine			Absent	Valentin Serebryakov pers. comm.	The species is not on the bird list

### Rose-Ringed Parakeet Centers of Abundance in Europe 2015

Table. S3. Centers of Rose-ringed Parakeet (*Psittacula krameri*) abundance (>500 birds) in Europe.

Country	Location	Population size (individuals)
Belgium	Brussels	9420
Belgium	La Louvière	870
Belgium	Other localities	510
France	Île-de France	5000
France	Lille & Roubaix	950
France	Marseille	700
France	Other localities	600
Germany	Bonn	865
Germany	Düsseldorf	1500
Germany	Köln	2250
Germany	Rhine-Neckar	4010
Germany	Wiesbaden & Mainz	2335
Greece	Athens	500
Greece	Other localities	500
Italy	Bologna	800
Italy	Genoa	650
Italy	Palermo	1000
Italy	Rome	5500
Italy	Other localities	1220
Portugal	Lisbon	600
Portugal	Other localities	200
Spain	Barcelona	700
Spain	Seville	1400
Spain	Other localities	900
The Netherlands	Randstad	10100
Turkey	Istanbul	760
Turkey	Other localities	280
United Kingdom	Greater London	29000
United Kingdom	Canterbury	2000
<b>TOTAL</b>	<b>EUROPE</b>	<b>85120</b>

### REFERENCES

- [1] Strubbe D, Matthysen E. Establishment success of invasive ringnecked and monk parakeets in Europe. *J Biogeogr* 2009; 36: 2264-78. [<http://dx.doi.org/10.1111/j.1365-2699.2009.02177.x>]
- [2] Nikolov B, Kralj J, Legakis A, Saveljic D, Velevski M. Review of the alien bird species recorded on the Balkans. In: Rat M, Trichkova T, Scalera R, Tomov R, Uludag A, Eds. East South Eur Netw Invasive Alien Species Rep, Univ Novi-Sad (Serbia), IBER-BAS. Bulgaria: ESENIAS 2013.
- [3] Clergeau P. L'invasion de l'espèce exotique, la Perruche à collier *Psittacula krameri* Report for Conseil Général des Hauts-de-Seine. 2014.
- [4] Clergeau P, Vergnes A, Delanoue RR. La Perruche à collier *Psittacula krameri* introduite en Île-de-France: distribution et régime alimentaire. *Alauda* 2009; 77: 121-32.
- [5] Clergeau P, Vergnes A. La Perruche à collier *Psittacula krameri* en Ile-de-France. Dispersion et approche des impacts 2009.
- [6] Oiseaux des Jardins 2015. Available at: [http://www.oiseauxdesjardins.fr/index.php?m\\_id=6&p\\_c=1&p\\_cc=-1&sp\\_tg=1&sp\\_DateSynth=11.02.2015&sp\\_DChoice=offset&sp\\_DOffset=15&sp\\_Cat\[never\]=0&sp\\_Cat\[veryrare\]=0&sp\\_Cat\[rare\]=0&sp\\_Cat\[unusual\]=0&sp\\_Cat\[esca](http://www.oiseauxdesjardins.fr/index.php?m_id=6&p_c=1&p_cc=-1&sp_tg=1&sp_DateSynth=11.02.2015&sp_DChoice=offset&sp_DOffset=15&sp_Cat[never]=0&sp_Cat[veryrare]=0&sp_Cat[rare]=0&sp_Cat[unusual]=0&sp_Cat[esca)

- ped]=1&sp\_Cat[common]=0&sp\_Cat[verycommon]=0&sp\_P 2015 [accessed February 23];
- [7] Joannes G. Observations naturalistes sur le pourtour méditerranéen. Available at: <https://fr.groups.yahoo.com/neo/groups/obsmedit/conversations/topics/24802> 2013 [accessed February 20, 2015];
- [8] Autran G. Observations naturalistes sur le pourtour méditerranéen. Available at: <https://fr.groups.yahoo.com/neo/groups/obsmedit/conversations/messages/18198> 2009 [accessed February 20, 2015];
- [9] Dhermain F. Observations naturalistes sur le pourtour méditerranéen. Available at: <https://fr.groups.yahoo.com/neo/groups/obsmedit/conversations/topics/18439> 2010 [accessed February 20, 2015];
- [10] Depeche L. La Depeche. Available at: <http://www.ladepeche.fr/article/2007/10/09/32491-mercues-la-perruche-a-collier-est-arrivee.html> 207 [accessed February 23, 2015];
- [11] Benoit N. Observations naturalistes sur le pourtour méditerranéen. Available at: <https://fr.groups.yahoo.com/neo/groups/obsmedit/conversations/topics/24202>. 2012.
- [12] Costa P. Vosges Matin. Available at: <http://www.vosgesmatin.fr/actualite/> 2013/07/18/perruches-dans-la-ville 2013 [accessed February 20, 2015];
- [13] Dronneau C. ObsAlsace (obs naturalistes alsaciennes) 2012. Available at: <https://fr.groups.yahoo.com/neo/groups/obsalsace/conversations/topics/19528> 2012 [accessed February 20, 2015];
- [14] Berlin NA. NABU Berlin. Available at: <https://berlin.nabu.de/projekte/stundedergartenvoegel/ergebnisse/?vogelart=Halsbandsittich&bundesland=Berlin&ort=&jahr=2011> 2011 [accessed February 20, 2015];
- [15] Club 300 Deutschland n.d. Available at: <http://www.club300.de/gallery/index.php?gal=1&mode=1&val=492> 2015 [accessed February 23];
- [16] Hamburg NA. ObsAlsace (obs naturalistes alsaciennes) 2012. Available at: <https://fr.groups.yahoo.com/neo/groups/obsalsace/conversations/topics/19528> 2012 [accessed February 20, 2015]; 2015
- [17] Braun M. Die Bestandssituation des Halsbandsittichs *Psittacula krameri* in der Rhein-Neckar-Region (Baden-Württemberg, Rheinland-Pfalz, Hessen), 1962–2008, im Kontext der gesamteuropäischen Verbreitung. Vogelwelt 2009; 130: 77-89.
- [18] Braun M, Wegener S. Alles halb so schlimm! Die öffentliche Wahrnehmung der Halsbandsittiche in Heidelberg 2008.
- [19] Koch E. Der Halsbandsittich *Psittacula krameri* (Scopoli, 1769) als potentieller Konkurrent heimischer Höhlenbrüter in Köln und Bonn. In: Diplomarbeit in Fachbereich Biologie. Bonn: Diplomarbeit in Fachbereich Biologie. Rheinischen-Friedrich-Wilhelms-Universität 2013.
- [20] Berlin NA. NABU Berlin. Available at: <http://berlin.nabu.de/projekte/stundedergartenvoegel/ergebnisse/?vogelart=Halsbandsittich&bundesland=Nordrhein-Westfalen&ort=053150000000&jahr=2014> 2014.
- [21] Papageien erobern Deutschland. Available at: <https://www.youtube.com/watch?v=Sy7ixmTUhFw> 2013 [February 23, 2015];
- [22] Desch A. Der Halsbandsittich im Rhein-Main-Gebiet: Welche Parameter beeinflussen die Verbreitung dieser invasiven Art? In: Bachelorarbeit im Fachbereich FB 15 Biowissenschaften. Frankfurt am Main: Johann Wolfgang Goethe-Universität 2013.
- [23] Berlin NA. NABU Berlin. Available at: <http://berlin.nabu.de/projekte/stundedergartenvoegel/ergebnisse/?vogelart=Halsbandsittich&bundesland=Nordrhein-Westfalen&ort=057700000000&jahr=2014> 2014 [accessed February 23, 2015];
- [24] Berlin NA. NABU Berlin. Available at: <http://berlin.nabu.de/projekte/stundedergartenvoegel/ergebnisse/?vogelart=Halsbandsittich&bundesland=Bayern&ort=091840000000&jahr=2013> 2013 [accessed February 23, 2015];
- [25] Wegener S. Verbreitung und Arealnutzung der Halsbandsittiche (*Psittacula krameri*) in Heidelberg- Distribution and habitat usage of Ring-necked Parakeets (*Psittacula krameri*) in Heidelberg. OrnitholJh Bad 2007; 23: 39-55.
- [26] Franz D, Krause T, Simon L. Zur verbreitung und biologie des halsbandsittichs *Psittacula krameri* am oberrhein (rheinland-pfalz) distribution and biology of Rose-ringed Parakeets *Psittacula krameri* in the upper rhine valley. Rhineland-Palatinate: Fauna Flora Rheinland-Pfalz 2002; 28: pp. 237-51.
- [27] Balmer DE, Gillings S, Caffrey BJ, Swann RL, Downie IS, Fuller RJ. Bird Atlas 2007-2011: The Breeding and Wintering Birds of Britain and Ireland. Thetford: BTO Books 2013.
- [28] Mori E, Di Febbraro M, Foresta M, Melis P, Romanazzi E. Assessment of the current distribution of free-living parrots and parakeets (Aves: Psittaciformes) in Italy: a synthesis of published data and new records. Ital J Zool (Modena) 2013; 80: 158-67.  
[<http://dx.doi.org/10.1080/11250003.2012.738713>]
- [29] Fraticelli F. The rose-ringed parakeet *Psittacula krameri* in a urban park : demographic trend, interspecific relationships and feeding preferences (Rome, central Italy). Avocetta 2014; 1-6.
- [30] Rose-ringed Parakeet on Azores Check list. 2014 n.d. Available at: [https://www.inaturalist.org/listed\\_taxa/4234056](https://www.inaturalist.org/listed_taxa/4234056). 2014 [accessed March 10, 2015];
- [31] Lista das especies de aves do distrito do Porto 2015. Available at: [http://avesdeportugal.info/files/Lista\\_de\\_especies\\_Porto\\_28-Fev-2015.pdf](http://avesdeportugal.info/files/Lista_de_especies_Porto_28-Fev-2015.pdf) 2015 [accessed March 10];
- [32] Albacetense de Ornitología S. Sociedad Albacetense de Ornitología. Anuario Ornitológico de Albacete online (AOA). Versión 1.1.1 2014. Available at: [http://anuario.albacete.org/especie/lista\\_ab](http://anuario.albacete.org/especie/lista_ab) 2014 [accessed February 26, 2015];
- [33] Cotorra Argentina y Cotorra de Kramer en Almeria. Available at: <https://www.youtube.com/watch?v=rUAEKvtUIZE> 2013 [accessed March 10, 2015];

- [34] Garcia-del-Rey E. Field Guide of the Birds of Macaronesia. Bellaterra, Barcelona: Azores, Madeira, Canary Islands, Cape Verde. Lynx Edicions 2011.
- [35] SEO BirdLife. Available at: <http://www.seo.org/ave/cotorra-de-kramer/>. 2015 [accessed February 27, 2015];
- [36] Fenix Avisunica 2013. Available at: <http://fenixavisunica.blogspot.de/2013/12/cotorras-de-kramer-en-gijon.html> 2013 [ (accessed February 27, 2015).];
- [37] Benitez Fernandez JA. Guadairajaben. Aves y otros habitantes de los entornos del Rio Guadaira. Available at: <http://guadairajaben.blogspot.de/2011/10/invasion-de-cotorras.html> 2011 [accessed February 27, 2015];
- [38] Hernández-Brito D, Carrete M, Popa-Lisseanu AG, Ibáñez C, Tella JL. Crowding in the city: losing and winning competitors of an invasive bird. PLoS One 2014; 9: e100593. [<http://dx.doi.org/10.1371/journal.pone.0100593>] [PMID: 24945439]
- [39] Hernández-Brito D, Luna A, Carrete M, Tella JL. Alien rose-ringed parakeets (*Psittacula krameri*) attack black rats (*Rattus rattus*) sometimes resulting in death. Hystrix 2014; 25: pp. 121-3.
- [40] Bijlsma RG, Hustings F. Algemene en schaarse vogels van Nederland (Avifauna van Nederland 2)/ Common and scarce birds of the Netherlands. Haarlem/ Utrecht 2001.
- [41] van Kleunen A, van den Bremer L, Lensink R, Wiersma P. De halsbandparkiet, Monniksparkiet en Grote Alexanderparkiet in Nederland : risicoanalyse en beheer 2010; 78
- [42] Akyıldırım B, Arslan M. Türkiye'ye Yerleşen Egzotik Kuş Türleri: Yeşil papağan (*Psittacula krameri*) ve İskender papağanı (*Psittacula eupatria*) 2009.
- [43] Albayrak T. Antalya Karaalioğlu Parkı Kuşları. Antalya Büyükşehir Belediyesi Yayınları 2012; p. 119.
- [44] Peck HL. Investigating ecological impacts of the non-native population of Rose-ringed parakeets (*Psittacula krameri*) in the UK. PhD thesis 2013.

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