

Assessment of Targeted Marine Invertebrate Species of the Northwestern Lagoon of Grande-Terre (Poum to Koumac), New Caledonia

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Source: A Rapid Marine Biodiversity Assessment of the Coral Reefs of the Northwest Lagoon, between Koumac and Yandé, Province Nord, New Caledonia: 41

Published By: Conservation International

URL: <https://doi.org/10.1896/054.053.0107>

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Chapter 6

Breeding seabirds of conservation interest

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SUMMARY

- Among the thirteen seabird and three coastal species studied, the number of species confirmed to be breeding ranged from one to five species per site for the 28 sites sampled. (see Table 6.1). In total, 12 species were observed as confirmed breeding.
- A new breeding species for the area, the Beach Thick-Knee (*Esacus magnirostris*) was observed (one to two pairs).
- Two lagoon marine Important Bird Areas (IBAs) were identified that included the main breeding area in New Caledonia (about a hundred pairs) for a highly endangered subspecies of Fairy Tern (*Sterna nereis exsul*). Previously, only about 20 pairs had been recorded in New Caledonia.
- A relict population of an endemic subspecies of Island Thrush (*Turdus poliocephalus xanthopus*) was rediscovered on Yandé Island. This subspecies is considered extinct from Grande Terre and had not been observed for 30 years.
- Several first or new reports were recorded during the survey. These included: nine new colonies of Wedge-tailed Shearwaters (*Puffinus pacificus chlororhynchos*); two new nesting sites of Tahiti Petrels (*Pseudobulweria rostrata trouessarti*); confirmation of the presence on Carrey Islet of the only colony of Brown Boobies (*Sula leucogaster plotus*) on the New Caledonian lagoon and of the only two pairs of Masked Boobies (*Sula dactylatra personata*); and the first census of the population of Australian Ospreys (*Pandion haliaetus cristatus*) in the area.
- Several recommendations are made based on our findings. These include the implementation of participatory management plans on the IBAs of Koumac and Yandé Island in collaboration with local institutions and communities, management of human frequentation to ensure protection of seabirds' breeding sites and eradication or at least control of introduced predators. Additionally, a monitoring component of seabirds' populations and a specific study with the aim of preserving the last Caledonian population of Island Thrushes should be included. Recommended actions include local ecotourism-based development and creation of a small natural reserves network. For Yandé Island, the latter action should be implemented in synergy with the inscription on the UNESCO World Heritage list.

INTRODUCTION

This chapter focuses on the conservation challenges facing breeding seabirds in the survey area. Additionally, information is included on two terrestrial birds of interest. While seabirds are endothermic species living outside of the water and breeding on land, they are indissociable from seas and oceans. Most tropical species using the islets of a lagoon to breed depend on coral reefs for food. These birds form a singular community of organisms that is dependent on the marine environment and is easy to survey. As a community of species consuming a large

spectrum of marine organisms, seabirds are good biological indicators of the health status of trophic networks. Moreover, the lagoon islets sometimes serve as a refuge for endangered terrestrial species from Grande Terre. Therefore, they represent good opportunities for implementation of conservation and/or ecological restoration actions.

The survey area covered by this Rapid Assessment Program (RAP) includes two Important Bird Areas (IBA) (Spaggiari et al. 2007b), identified after a survey by the Société calédonienne d'ornithologie (SCO) (Baudat-Franceschi 2006) mandated by Province Nord. Most of the information presented here comes from that survey with added important data collected during the RAP and monitoring activities by SCO since May 2006.

MATERIAL AND METHODS

The ornithological heritage value of an area is rapidly assessed using standard methods that are specifically adapted to the ecological characteristics of species, the surfaces of survey areas, and the type of ecosystems (Bibby et al. 2000).

For coastal and marine species, we assessed the terrestrial breeding sites by surveying the islets at the relevant period in order to document any sign of breeding, the presence of feeding, gathering and/or dispersion areas on sea. On land, all observed individuals are recorded using a pair of binoculars and/or a telescope. Once a colony is discovered, the counting unit is a full nest, except for the Wedge-tailed Shearwater for which the counting unit is an occupied burrow. Small colonies (< 500 nests) are exhaustively inventoried. Large colonies (> 500 nests) are sampled using 4m-wide transects (Burger and Lawrence 2003). This is a standard inventory method for diurnal tropical seabirds nesting above ground (e.g. *Sternidae*) which represent the majority of seabirds in the survey area. For nocturnal species nesting below ground, mainly the Wedge-tailed Shearwaters, Pandolfi-Benoît and Bretagnolle (2002) recommend the same method. However, the Tahiti Petrel is surveyed using the nocturnal point count method (Bretagnolle 2001; Spaggiari and Barré 2004; Delelis et al. 2007).

As the survey was done outside of the breeding period of the Australian Osprey, its numbers were estimated based on the number of recorded sites, with a maximum of three sites per pair (Thibault et al. 2001). On sea, due to logistical constraints, observations were mainly opportunistic but all field trips were valued for that purpose. Counting for ten minutes every hour on a 300-meter segment on one side of the boat was done occasionally (Tasker et al. 1984, as cited in Gibbons et al. 2002).

The breeding status of species was assessed based on collection of breeding signs in order to classify the species into four categories (Yeatman-Berthelot and Jarry 1995): confirmed breeding (NC), probable breeding (NP), possible breeding (Np) and non breeding (NR).

Terrestrial species were sampled opportunistically by listening to calls and by direct observation to provide only a qualitative result (presence *vs.* absence). In accordance with the request from Province Nord, the main objective was to search for rare species that may have found a refuge on these islands rather than to assess communities of terrestrial birds. All terrestrial species found in the area are not presented here as data are not exhaustive. Local communities were interviewed using illustrated field guides.

Migratory species are excluded from this study. New Caledonia is a secondary migration route and there is no site in the area with significant gatherings of migratory birds. Regular occurrence of some species during migration passages is of local interest, but does not represent a strong heritage issue.

RESULTS

Table 6.1 summarizes data for each seabird and coastal species. Names are from Barré et al. (2007). Observations on breeding seabirds and coastal birds known to occur in the area are highlighted below. Additionally notes on terrestrial birds of interest known to occur in the area are provided.

Breeding seabirds

Thirteen species form the community of seabirds in the study area. The *Sternidae* (7 species) are classified in this category as none of the species occurring in New Caledonia depends on freshwater for food. Due to their high numbers, populations of *Sternidae* are of considerable interest.

Observations on several marine species of global conservation interest have been made. The White-throated Storm-Petrel (*Nesofregatta fuliginosa*) classified as Vulnerable (VU) by the International Union for Conservation of Nature (IUCN 2008) had been only observed on Table Islet between 1997 and 1998 in numbers between 3 and 30 pairs (Pandolfi-Benoît 1997; Bretagnolle, pers. com.). No individual or indication of breeding has been recorded since, but this species is difficult to see in its breeding sites. However, it has been observed on sea, off the coast of the study area in April 2007 (Broodie-Good 2007).

The Fairy Tern (*Sterna nereis exsul*), recently classified as Vulnerable (VU) by the IUCN, is the most fragile bird species of the New Caledonian lagoon. The 70 to 90 pairs breeding in the study area form the only viable population presently known in the country and represent more than 1% of the biogeographical population for this species that are known from Australia with 3,000 breeding pairs. The Roseate Tern (*Sterna dougallii bangsi*) has an estimated population of 500 pairs in the area which represents about 10% of its known population in New Caledonia and more than 1% of its biogeographical population.

The Wedge-tailed Shearwater (*Puffinus pacificus chlororhynchus*) is the most abundant seabird in the area (> 36,000 pairs) as well as in New Caledonia. The colony located on

Table 6.1. Breeding seabirds and coastal bird species observed by site.

	<i>Pseudobulweria rostrata trouessarti</i>	<i>Nesofregatta fuliginosa</i>	<i>Puffinus pacificus chlororhynchus</i>	<i>Sula dactylatra personata</i>	<i>Sula leucogaster plotus</i>	<i>Egretta sacra albolineata</i>	<i>Pandion haliaetus cristatus</i>	<i>Esacus magnirostris</i>	<i>Larus novaehollandiae forsteri</i>	<i>Sterna bergii cristata</i>	<i>Sterna dougalli bangsi</i>	<i>Sterna sumatrana</i>	<i>Sterna nereis exsul</i>	<i>Sterna anaethetus</i>	<i>Anous stolidus pileatus</i>	<i>Anous minutus</i>	# confirmed breeding sp.	# potential breeding sp. (NC + NP + Np)	# observed species (list + associated marine area)
Islets < 45 ha																			
Tiam'bouène	1		11,520		x	NP	1	x	NP	NP	102	31	Np	NP			5	9	10
Carrey	x		x	2	87				x	NP	395	Np	3	x	Np	x	4	7	12
Double			4,000		x	NP	1	NP	1	NP		NP	47 - 70	x			4	5	9
Pouh			500		x	NP			x	60		Np	5 - 20	1			4	5	7
Yan'dagouet			3,000	x	x	NP			1	80-100		Np	2 - 20	NP			4	6	8
La Table		Np	500		x	1	1		Np	x		Np	x	NP			2	6	9
Pionne			8,925		x	NP	1		NP	x							2	3	5
Kendec			x		x	x			x	x	5	10	x	NP			2	3	8
Ouanne			2,880		x	NP	1		Np	x		x		x			1	3	7
Yava			4,248			NP	x		x	x							1	1	4
Ti'Ac						NP	1		x	x							1	1	3
Googhu						NP	1	x	x	x							1	1	4
Nana						NP	1	Np	x	x				NP			1	3	5
Fwa Tiixia (opp. Nendialé Isl.)						NP	1										1	1	1
Pu i Agan Alo (opp. Tié Isl.)						NP	1										1	1	1
Mouac			NC non quantifié			NP	1			x							2	2	3
Yoyoé			x			NP	1			x							1	1	3
Paatio			x			NP	1			x							1	1	3
Ti Tienghène						NP				x							0	0	1
Tangadiou			x			x	x		x	x			x	Np			0	1	5
Magone			x			x	x		Np	x							0	1	4
Islands > 45 ha																			
Yandé	1		NP		x	NP	2		NP	x							2	4	6
Néba			NP		x	NP	3	x	Np	x							1	3	6
Tié					x	NP	1			x							1	1	3
Yenghebane					x	NP	2		Np	x							1	2	4
TOTAL COUPLES	1		35,573	2	87	1	21	0	2	60	502	41	70 - 90	1	0	0			
NC																			

NC: Confirmed Breeding / NP: Probable Breeding / Np: Possible Breeding / x: Presence without signs of reproduction
 Figures indicate the number of recorded breeding couples

Tiam'bouène Islet consists of more than 10,000 breeding pairs. Two other species of breeding seabirds noted in the survey area are of local conservation interest. The colony of Brown Boobies (*Sula leucogaster plotus*) of Carrey Islet (about a hundred pairs) is the only known colony in the New Caledonian lagoon. This is also the case for the two pairs of Masked Boobies (*Sula dactylatra personata*).

Breeding coastal birds

Three species are considered coastal as they exploit only the coasts of Grande Terre and the islets. These species are not strictly dependent on sea water for food as they frequently fly up the lower courses of rivers and/or use brackish waters especially in mangroves.

The Beach Thick-Knee (*Esacus magnirostris*), classified Near-Threatened (NT) by IUCN, is a species of local or even regional interest. It was only confirmed recently as a breeding species in New Caledonia (Baudat-Franceschi, 2006). Among the six confirmed pairs, all are found in Province Nord and one to two pairs are found in the survey area (Double and Nana Islets).

The population of Australian Ospreys (*Pandion haliaetus cristatus*), estimated at 21 pairs at least, is of local interest as it represents about 8% of the New Caledonian population, currently estimated at 250 pairs (Bretagnolle et al. 2001).

An abundant and common species in New Caledonia, the Reef Egret (*Egretta sacra albolineata*) should be added. It is observed on a daily basis and its breeding is confirmed in the area but the numbers of breeding pairs are not documented.

Terrestrial birds

Only one terrestrial species of conservation interest was documented in the survey area. A relict population of the endemic subspecies of the Island Thrush (*Turdus poliocephalus xanthopus*) was rediscovered (8 individuals) on Yandé Island after 25 years (Baudat-Franceschi 2006; Barré et al. 2007). This population was initially discovered by Naurois (1982), who estimated it at 300 individuals.

Also noteworthy is the observation on six occasions in the Koumac area of the subspecies of Peregrine Falcon (*Flaco peregrinus nesiotus*) searching for food. This subspecies is of local or even regional interest.

DISCUSSION

The survey area included 25 out of the 179 islands and islets of Province Nord. The three districts of Bélep (71 islets), Poum (42 islets) and Koumac (13 islets) comprised, in total, 70% of the islands and islets of Province Nord. Biodiversity of these micro island ecosystems adds to the marine biodiversity *stricto sensu* of the survey area (see other chapters) and significantly increase the global heritage value of the area. The micro island ecosystems form terrestrial enclaves that are ecologically singular, diverse and interesting in many ways. These include the presence of terrestrial plant and

animal communities in an isolated state; potential refuge for endangered animal and plant species from Grande Terre, and presence of associated coral formations that are often well-preserved (fringing reefs of rocky islands, small atolls surrounding sandy islets). These islets constitute favorable management units for implementing conservation programs thanks to their small to medium size, the diversity of their habitats, their isolation and nonetheless a relatively easy accessibility, and limited human settlements.

These ecosystems play a crucial role for seabirds and coastal bird species as they provide terrestrial areas for breeding sites with less pressure from predators and less disturbance owing to their relative isolation. Additionally, there are high-quality marine feeding areas in the immediate vicinity (lagoons, atolls, fringing and barrier reefs).

Two areas qualify as Important Bird Areas within the RAP survey area (Spaggiari et al. 2007b). These include the Koumac area and Yandé Island (Figure 6.1). In the Koumac area, 14 out of the 19 islets of the IBA are found in the RAP survey area. Priority sites, based on diversity of species, presence of endangered species, and/or important numbers include Tiam'bouène, Carrey, Double, Pouh, Yan'dagouet and Table (Table 6.1). Management recommendations are to implement monitoring protocols for seabirds' populations, to eradicate invasive species (introduced predators are a priority), and to manage human frequentation (especially near *Sternidae* colonies). The latter two are recognized as major threats on seabirds' breeding sites (Burger et Gochfeld 1994).

With support from the Packard Foundation, SCO and various partners are currently working on eradication of rodents on the islets of this IBA. Mitigation of the impacts from human frequentation can be achieved in several ways. These include temporarily restricting access to the breeding colonies of *Sternidae* depending on their yearly location, raising awareness among visitors, and channeling the flow of sailors to lower-value sites. If accepted by the majority of local populations, a seasonal prohibition of disembarkation on the high conservation value islets, with appropriate enforcement, could be highly effective. All these actions should lead to a concerted effort with local stakeholders to develop a management plan for the area, which could include the concerted creation of a network of small natural reserves on these islets, to include part or all of the relevant sites.

The second IBA is Yandé Island. This 1,300 ha island, inhabited only by a few families (about 30 people), has an interesting diversity of landscapes. It is surrounded by a healthy reef with a high level of species richness (see other chapters). This island has the only known relict population of a subspecies endemic to Grande Terre of the Island Thrush *Turdus poliocephalus xanthopus*. There is an urgent need for a comprehensive assessment of the present individuals as well as the status of their habitat (characteristics and cartography). The habitat appears to be comprised of dry forest remnants (the most threatened terrestrial ecosystem in New Caledonia) that are more or less degraded and modified

by man, as well as some riparian forests isolated in the *maquis minier* (mining shrub). Eradication or at least control of introduced predators should be urgently done, especially for cats *Felis catus* and rats *Rattus* sp. that have well-known adverse impacts and numerous populations on the island. While the Island Thrush is not threatened in its distribution area (BirdLife 2004), this endemic subspecies can be considered as a very nearly-extinct taxon of the New Caledonian avifauna, as the unique population is very low and located in an unmanaged area. Its taxonomic status needs to be defined using modern methods (genetics). De Naurois (1982) recognizes three subspecies endemic to New Caledonia based on biometric criteria: two species are considered extinct and were endemic to the Loyalty Islands (Lifou and Maré) while the other species had not been seen on Grande Terre since the 1960s (Barré and Dutson 2000; Barré et al. 2007) and would therefore only exist on Yandé.

The small population of Tahiti Petrels, a Near-Threatened (NT) endemic subspecies, should be accurately assessed as this island is covered by *maquis minier*, a biotope identified as favorable to this species on Grande Terre (Spaggiari and Barré 2004; Delelis et al. 2007). Evaluating the response of populations of this species to the eradication or control of existing introduced predators, such as the cat (*Felis catus*), the pig (*Sus scrofa*) and the rat (*Rattus* sp.), would help to better understand its conservation status at the scale of Grande Terre. This would help develop protection measures for this species' breeding sites in New Caledonia, in addition to the ongoing work to reduce high mortality rates as a result of collision caused by lights (Delelis et al. 2007). It

should be noted that this seabird faces the impact of introduced predators on its entire distribution area which only includes Pacific Ocean islands.

CONSERVATION RECOMMENDATIONS

Yandé Island and the Koumac sector are two important bird areas (IBA). Since 2008 the Yandé Island is included in the World Heritage site. The Koumac sector, bordering the area registered to UNESCO sites, should be placed under a concerted management for its islets, including regulation of human frequentation and eradication of introduced predators. Concerted creation of a network of small natural reserves protecting the richest islets would be appropriate. The Yandé Island could form an integrated conservation project including control and/or eradication of introduced predators, monitoring of populations of Island Thrushes and Tahiti Petrels, restoration of the dry forest ecosystem, and development of local ecotourism (diving, hiking and home stays). Eradication and/or control of introduced species are urgent environmental measures in New Caledonia (Beauvais et al. 2006). Development, in collaboration with local stakeholders (province, mayors' offices, customary authorities, etc.), of participatory management plans is an essential preliminary step to ensure the long term success of potential conservation programs.

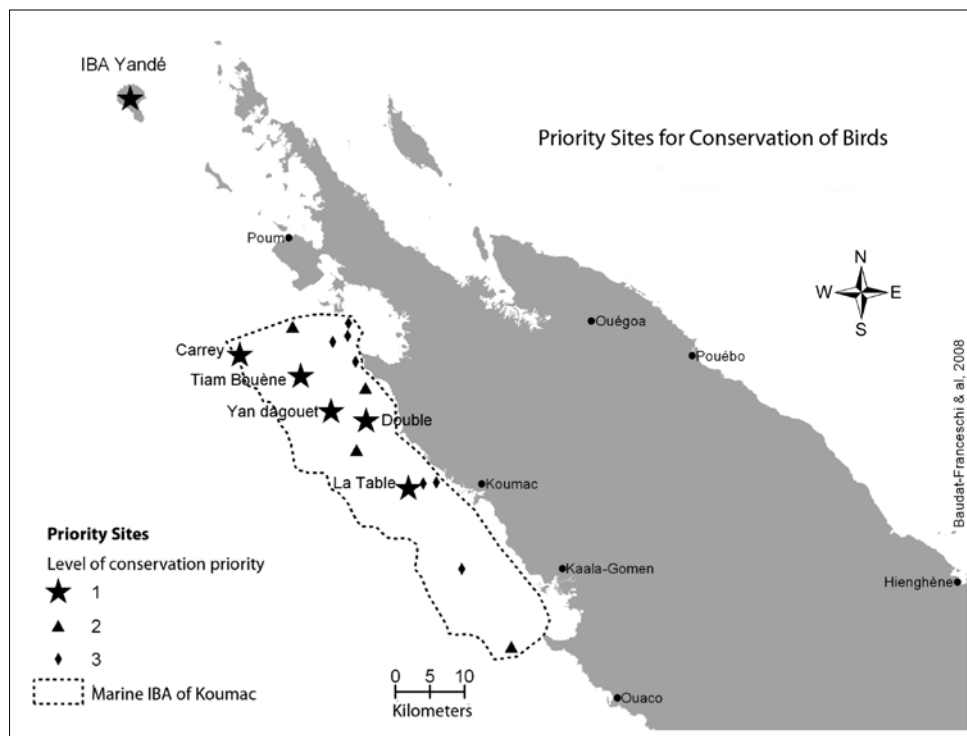


Figure 6.1. Map of priority sites for the conservation of birds in the survey area.

REFERENCES

- Barré, N. and G. Dutson. 2000. Liste commentée des oiseaux de Nouvelle Calédonie. Supplément à la revue *Alauda* 68(3): 49.
- Barré, N., J. Baudat-Franceschi, J. Spaggiari, V. Chartendrault, P. Bachy, F. Desmoulins, and J. Guhring. 2007. Second complément à la liste des oiseaux de Nouvelle-Calédonie. *Alauda* 75(2): 129–144.
- Baudat-Franceschi, J. 2006. Oiseaux marins et côtiers nicheurs en province Nord: évaluation des populations, enjeux de conservation. SCO, Province Nord, Nouvelle Calédonie.
- Beauvais, M.L., A. Coléno, and H. Jourdan (eds). 2006. Les espèces envahissantes dans l'archipel néo-calédonien: un risque environnemental et économique majeur. IRD Editions. Paris.
- Bibby C.J., N.D. Burgess, D.A. Hill, and S.H. Mustoe. 2000. Bird census techniques. 2nd edition. Academic Press. San Diego, CA.
- BirdLife International. 2004. Threatened Birds of the World. CD-ROM. Cambridge, UK.
- Bretagnolle, V. 2001. Le pétrel de la chaîne *Pterodroma (leucoptera) caledonica*: statut et menaces. Province Sud, Nouvelle Calédonie.
- Bretagnolle V., M. Pandolfi, V. Lecoq, and J. Broudisou. 2001. Le Balbuzard pêcheur *Pandion haliaetus* en Nouvelle-Calédonie: effectif, répartition et menaces. *Alauda* 69(4): 491–501.
- Broodie-Good, 2007. The Western Pacific Odyssey 2007. Web site: <http://www.wildwings.co.uk/wpotriprpt.html>.
- Burger J., and Gochfeld M. 1994. Predation and effects of humans on island-nesting seabirds, *in*: Nettleship, D.N. *et al.* (Ed.). Seabirds on Islands: threats, case studies and action plans. Proceedings of the Seabird Specialist Group Workshop held at the XX World Conference of the International Council for Bird Preservation, University of Waikato, Hamilton, New Zealand, 19–20 November 1990. Birdlife Conservation Series, 1. Pp. 39–67.
- Burger, A.E., and A.D. Lawrence. 2003. Seabird monitoring handbook for Seychelles. Suggested methods for censusing seabirds and monitoring their breeding performance. 2nd edition. Nature Seychelles. Mahe, *Seychelles*.
- Delelis, N., N. Barré, and V. Chartendrault. 2007. Oiseaux menacés du massif de Koniambo. IAC/SCO.
- Gibbons, D.W., D. Hill, and W.J. Sutherland. 2002. Birds. *In*: Sutherland, W.J. (ed.). Ecological census techniques, a handbook. Cambridge University Press. Pp. 227–259.
- IUCN. 2008. IUCN Red List of Treated Species. Web site: <http://www.iucnredlist.org>.
- Naurois, de R. 1982. Sur le statut présent et passé des Merles (*Turdus poliocephalus*) de Nouvelle-Calédonie. *ORFO*. 52: 153–170.
- Pandolfi-Benoît, M. 1997. Compte rendu des missions en province Nord du 8 juillet et du 2 septembre 1997. DRN Province Sud.
- Pandolfi-Benoît, M. and V. Bretagnolle. 2002. Seabirds of the southern lagoon of New Caledonia: distribution, abundance, breeding biology and threats. *Waterbirds*. 25: 202–213.
- Spaggiari, J. and N. Barré. 2004. Inventaire complémentaire des sites de reproduction du Pétrel de Tahiti *Pseudobulweria rostrata trouessarti* sur le massif du Koniambo. SCO/IAC/Falconbridge.
- Spaggiari, J., N. Barré, J. Baudat-Franceschi, and P. Borsa. 2007a. New Caledonian seabirds. *In*: Payri, C.E. and B. Richer de Forges. (eds). Compendium of marine species of New Caledonia, Doc. Sci. Tech. II7. Seconde édition. IRD Nouméa. Pp. 415–428.
- Spaggiari, J., V. Chartendrault, and N. Barré. 2007b. Zones Importantes pour la Conservation des Oiseaux de Nouvelle-Calédonie. SCO/BirdLife International.
- Thibault, J.C., V. Bretagnolle and J.M. Dominici. 2001. Le Balbuzard pêcheur en Corse: du martyr au symbole de protection de la Nature. Editions Alain Piazzola.
- Yeatman-Berthelot, D. and G. Jarry. 1995. Codification des indices de reproduction. *In*: Nouvel Atlas des oiseaux nicheurs de France 1985–1989. Société Ornithologique de France. P. 16.

