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Study, monitoring and conservation of the Balearic shearwater in Spain: an update

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Summary

The present document is an update on general knowledge, monitoring work and conservation action on the Balearic shearwater. Population estimates are still uncertain, with contrasting figures resulting from colony estimates (about 3,000 breeding pairs) and counts at sea (over 25,000 individuals, that would account for a breeding population of ~7,000 pairs assuming demographic equilibrium). These discrepancies might be due to the difficulty of properly assessing the breeding population of such a secretive seabird, which might have remained underestimated; but caution is recommended while the most "optimistic" figure is not confirmed on the breeding grounds. Whatever the case, the population trend is negative, with an estimated annual decline of 14%,

largely influenced by low adult survival (0.81). If the current scenario does not change, a recent population viability model (based on the optimistic assumption of a breeding population of ~7,000 pairs) predicted that the species would disappear in about 61 years. Main threats are those that cause direct adult mortality, mainly fishing bycatch at sea and predation by introduced species on land (colonies). Particular concern deserves fishing bycatch, at the light of new evidence that demonstrate high mortality by small-scale demersal longlines in the Iberian Mediterranean, with several hundreds of birds involved every year during the late spring. It is important to urgently address this problem and find appropriate mitigation measures. Further work is also required to assess the exact occurrence of bycatch throughout the distribution range by different gears, covering the complete annual cycle. Among the less intense threats, recent research on light pollution suggests a wider impact than previously thought, with 0.46-0.56% of the fledglings grounded per year. A few birds have also been recently found dead apparently due to plastic accumulation and this deserves further research. Colony monitoring has been very limited in the past, but new projects have allowed new colonies to be covered recently, and it is desirable to continue these efforts as to better understand the demography of the species, including potential inter-colony differences. Work in the colonies has also included some recent rat eradication campaigns, and a new EC LIFE IP Project will allow building an anti-predator fence to protect one of the most sensitive colonies to cat predation, the Mola de Maó (Menorca), among other actions. Political commitment has also increased in the last few years, with national and international agreements reinforcing the urgent need to improve its conservation status (including ACAP's designation of the species as priority population), and several legal tools that could help to tackle these commitments. In Spain, the species conservation strategy has been recently updated (pending of final approval), and the species working group has been reactivated in 2016 and should follow up and ensure the implementation of the strategy, providing the necessary tools to coordinate and prioritize action. International coordination is also necessary with neighbouring countries.

Resumen

El presente documento es una actualización sobre los conocimientos generales, el trabajo de monitoreo y las acciones de conservación de la pardela balear. Las estimas de la población son todavía inciertas, con cifras que contrastan entro los censos en las colonias (alrededor de 3.000 parejas reproductoras) y los censos en el mar (más de 25.000 individuos, lo que correspondería a unas ~7.000 parejas si se asume que la población está en equilibrio demográfico. Estas discrepancias podrían deberse a la dificultad de censar la población reproductora dada la inaccesibilidad de gran parte de las zonas de nidificación y los hábitos nocturnos de las especie en las colonias; en cualquier caso, la estima más "optimista" debe tomarse con suma precaución mientras se mantengan las discrepancias. En cualquier caso, la tendencia poblacional es negativa, con un declive anual estimado del 14%, debido en gran parte a la baja supervivencia adulta (0,81). Un reciente modelo de viabilidad poblacional (que asumió la estima poblacional de ~7.000 parejas reproductoras) predijo que, si el escenario actual no cambia, la especie desaparecería en alrededor de 61 años. Las principales amenazas son las que causan mortalidad directa de adultos, principalmente la captura accidental en artes de pesca en el mar y la depredación por parte de especies introducidas en tierra firme (colonias). Se recoge información reciente que muestra una alta mortalidad de la especie en embarcaciones artesanales de palangre demersal en el Mediterráneo ibérico, con varios cientos de aves implicadas cada año a finales de primavera. Es necesario trabajar para minimizar estas

capturas, así como para caracterizar el riesgo de capturas en otras flotas y regiones a lo largo de todo el ciclo anual. Entre las amenazas menos intensas, un trabajo reciente sobre contaminación lumínica sugiere un impacto más amplio de lo que se pensaba anteriormente, con un 0,46-0,56% de pollos volantones de pardela balear recogidos cada año por deslumbramiento. La presencia de plásticos también podría ser la causa de la muerte de unas pocas aves halladas recientemente en el Mediterráneo ibérico, tema que merece cierta atención. El monitoreo de colonias ha sido muy limitado en el pasado, pero nuevos proyectos han permitido cubrir recientemente nuevas colonias, y es deseable continuar estos esfuerzos para comprender mejor la demografía de la especie, incluyendo las posibles diferencias inter-coloniales. El trabajo en las colonias también ha incluido algunas campañas recientes de erradicación de ratas, y un nuevo proyecto de la CE (Programa LIFE IP) permitirá entre otras acciones construir una barrera anti-predadores para proteger una de las colonias más sensibles a la depredación de gatos, la Mola de Maó (Menorca). El compromiso político también ha aumentado en los últimos años, con acuerdos nacionales e internacionales que refuerzan la urgente necesidad de mejorar el estado de conservación de la pardela balear (entre los que destaca la declaración de la especie como población prioritaria de ACAP), y instrumentos legales que podrían contribuir a poner en práctica las acciones necesarias. En España se ha actualizado recientemente la estrategia de conservación de la especie (pendiente de su aprobación final), y se ha reactivado el grupo de trabajo de la pardela balear en 2016, que debería ser el encargado de coordinar y asegurar el cumplimiento de las acciones contempladas la estrategia. También es necesaria una coordinación internacional con los países vecinos.

Introduction

The present report provides an update on general knowledge, monitoring work and conservation action on the Balearic shearwater, focusing on Spain. For a background reference see the International Action Plan of the species (Arcos 2011), the ACAP species' factsheet (ACAP 2012), the update for ACAP presented in 2013 (Boué *et al*. 2013) and the BirdLife International species factsheet (BirdLife International 2017).

General knowledge

Population estimates and breeding distribution

Breeding population estimates have been slightly modified in recent years based on limited fieldwork in certain colonies, with no major survey conducted. The last of these updates was presented to ACAP in 2014, and accounted for 3,142 breeding pairs. Subsequently, the available information for some colonies has improved, mostly related to the breeding monitoring initiatives reported below. Of particular interest is a short survey of Tagomago in 2016, as this private island off the coast of Ibiza had not been surveyed for about 2 decades (Serapio *et al*. 2016).

Table 1 attempts to update the information on population estimates by colonies, based on current information. Changes to the last estimates have been made only when new information was sound, or when old estimates were considered to be based on a guess work, with no real survey data or confirmed evidence of breeding.

Table 1. Updated breeding population estimates for the Balearic shearwater, according to the island group and colony site. Numbers in bold have been changed relative to the last revision (reported to ACAP in 2014).

Island group	Colony	Breeding pairs	Precision	Observations
Menorca	Illa de l'Aire	**<5**	Poor	Isolated nests, only 2 reported over the years
	Mola Maó	300	Poor-medium	Decline, likely overestimated fig.
	Fornells	**?**	"guess"	Pending verification of breeding
	Cavalleria	**?**	"guess"	Pending verification of breeding
Mallorca	Sa Cella	200	Medium-good	
	Sa Dragonera	400	Poor	
	Malgrats	250	Medium	
	Conills	50	Medium	
Cabrera	na Pobra	8	Poor	
	na Plana	2	Poor	
	Conills (Blanquer-Corrals-Escala)	350	Poor	
	Redona	30	Poor	
	Fonoll	0	Extinct	
	Imperial	35	Poor	
	Rates	0	Extinct	
	Picamosques	50	Poor	
Ibiza	Es Vedra	**?**	"guess"	Pending verification of breeding
	Es Vedranell	**?**	"guess"	Pending verification of breeding
	S'Espartar	**50**	Poor	
	Es Bosc	60	Medium-good	
	Sa Conillera	250	Medium-good	
	Tagomago	**170**	Medium	Revisited 2016 (Serapio *et al*. 2016)
	Ses Bledes	**<5**	Poor	Isolated nests
Formentera	S'Espalmador	32	Medium	
	S'Espardell	**40**	Medium	Decline
	Punta Prima	50	Poor	
	La Mola	460	Poor	
	Barbaria	110	Poor	
TOTAL		>2,907		

The breeding population estimate remains around 3,000 breeding pairs, taking into account the slight changes presented in Table 1. However, alternative estimates from boat-based surveys in the main areas of congregation in late Autumn (Mediterranean Iberia), as well as coastal-based counts from a vantage migration point (Tarifa, in the Gibraltar Strait) suggest a global population of about 25,000 individuals (Arcos *et al*. 2012, Arroyo *et al*. 2016). Assuming that the population was in demographic equilibrium, these estimates would imply that the breeding population is larger than previously thought, likely over 7,000 breeding pairs (Genovart *et al*. 2016). The reason of this inconsistency in population estimates is unclear, but it could be due to an underestimation of the breeding population, given the difficulty of conducting thorough censuses (or even locating breeding sites) on such a secretive seabird, which often breeds in inaccessible sites and attends the colonies at night.

Population trends

Whatever the population estimate is, the population is experiencing a significant negative decline, according to available demographic data. A population viability analysis (PVA) was conducted recently based on birds from the unique colony that has been monitored over the long-term (Sa Cella, in W Mallorca; Genovart *et al*. 2016). This new analysis was based on the optimistic assumption that the breeding population consisted of ~7,000 breeding pairs, but pointed to the same conclusion as the preceding analysis (Oro *et al*. 2004): if the current trend is not changed, the species will become extinct within a few decades (with an average extinction time of 61 years). The current rate of decline was estimated at -14%, and was mostly influenced by a relatively low adult survival (0.81). Since the model was based on the most optimistic population estimate, it should be taken as conservative. Moreover, the study colony for the model is free of terrestrial predators, so the trend could be even sharper if the whole population was considered, given that some colonies are subject to this additional threat (on the other hand, the intense monitoring might have had a negative influence on the performance of the colony, although effects on survival –the most sensitive parameter- are unlikely). This information was presented as a working document to ACAP in 2016 (Guilford & Arcos 2016), and led to the declaration of the Balearic shearwater as a priority population for the agreement.

In addition to demographic trends, there is the general perception among technicians and researchers with long-term experience in the colonies that the breeding numbers are declining at least at some of the most important colonies, such as Sa Calla and islets of the Cabrera archipelago (M. McMinn com. pers.), the Formentera-Ibiza channel colonies (D. García com. pers.) and the Mola de Maó (L. Capellà com. pers.).

Distribution at sea

The distribution range of the species is quite well known, although the extent to which birds move into the Central (and potentially Eastern) Mediterranean is still little understood. Recent remote-tracking studies have provided better understanding of the distribution patterns of different colonies during both the breeding (western Mediterranean) and non-breeding periods (Atlantic).

During the breeding period, data from Mallorca and Ibiza points to a segregation of foraging areas between sub-populations, as previously suggested by Louzao *et al*. (2011), which might be influenced by wind patterns (Meier *et al*. 2015, Afan 2016). Birds from the southern colonies (Ibiza) forage along the Iberian Mediterranean shelf, with main foraging grounds located off eastern Iberia, between Cape Palos and the Ebro Delta, although they range between Málaga in the south (within the Alboran Sea) and the French border in the north, also regularly using the north African waters off Algeria and Morocco (Louzao *et al*. 2012, SEO/BirdLife 2014, Louzao *et al*. 2016, Afan 2016). Birds from central islands of the Balearic archipelago (Mallorca) also forage along the Iberian shelf, but tend to concentrate northwards, between the Ebro Delta and Gulf of Lion (Meier *et al*. 2015). Foraging trips to the African coast appear to be rare for this “sub-population” group (Ruiz & Martí 2004, Meier 2015). Information on the movements of birds from the northern colonies (Menorca) is limited to old PTT and new GLS data, which suggest a slightly eastwards distribution, potentially visiting both the Mediterranean European coast (around the Gulf of Lion) and the African coast (Algeria) (Ruiz & Martí 2004, Meier 2015).

During the non-breeding period, birds from Ibiza and Mallorca appear to largely overlap in range, with GLS-tracked adults concentrating in the Atlantic coasts from N Morocco to NW France, particularly off W Iberia and Brittany (Guilford *et al*. 2012, Pérez-Roda *et al*. 2016, Meier *et al*. 2017). New boat-based and aerial surveys allow refining the distribution patterns of the species off the Atlantic Iberian coast, with important stopover areas in the Gulf of Cádiz in early summer (G.M. Arroyo com. pers.) and in central and north Portugal in late summer (Araújo *et al*. 2017; see also Oppel *et al*. 2012). On the other hand, birds from Menorca present a distinctive pattern, most of them remaining in the Western Mediterranean during the non-breeding period, mainly off N Algeria, E Iberia and in the Gulf of Lion, and up to the Ligurian Sea (Meier 2015). Only two out of 10 tracked birds reached the Atlantic, and in both cases they remained off SW Iberia.

Threats

The following is not an exhaustive compilation of threats for the Balearic shearwater. Only those threats for which there is new relevant information are included. These include the two threats of main concern, i.e. those that cause significant adult mortality: fisheries bycatch and introduced predators (Arcos 2011).

Bycatch

Fisheries bycatch has been considered a major population threat for the species for years, but reliable and sound information has been missing until recently. Genovart *et al*. (2016) incorporated this parameter into a population viability model, and found that at least 45% of current mortality of the species is due to this factor. In the Mediterranean, mortality caused by longlines is the major concern, particularly demersal vessels. Recent onboard observer work confirmed significant mortality of Balearic shearwaters in demersal longliners, including occasional mass mortality events of several tens of birds off the Mediterranean Iberian coast, peaking in late spring (Cortés *et al*. 2017). Moreover, a self-reporting approach conducted by SEO/BirdLife and BirdLife International's Seabird Task Force in Catalonia (NE Spain) allowed regular occurrence of these events to be documented during that period, with 667 shearwaters (approximately half of them Balearic) reported by 13 vessels between April and June 2017 in Catalonia, NE Spain (Seabird Task Force 2014-2017). Small-scale vessels (i.e. those registered as "artisanal vessels", polyvalent and operating relatively close to the coast) were responsible for most of this bycatch, particularly when using fish bait (sardine, anchovy and other pelagic fish) and setting the line in the early hours of the day (although nocturnal catches were not rare), without weights. Interestingly, these small-scale vessels often stopped their operations when birds got hooked, so a significant number of shearwaters were released alive, though their eventual fate is unknown and deserves further research. Studies on bycatch of the more abundant Scopolis'shearwater *Calonectris diomedea* in the region also suggest that bycatch risk increases in the absence of trawling activity (i.e. weekends, holidays and periods of trawling moratoria) (Laneri *et al*. 2010, García-Barcelona *et al*. 2010, Soriano-Redondo *et al*. 2016), which might apply to the Balearic shearwaters.

In the Atlantic Ocean, information from questionnaires and observers onboard suggests that bycatch also occurs regularly, in this case not only in longlines, but also in purse-seines and likely also trawlers and gillnets (Boué *et al*. 2013, ICES 2013, SEO/BirdLife 2014, Oliveira *et al*. 2015). Regular

use of discards in the Atlantic also supports these concerns, as this could enhance the likelihood of bycatch occurrence (Meier *et al*. 2017).

Introduced predators

Information on predators remains similar to that published in the species' international action plan (Arcos 2011). After this time, Black rat *Rattus rattus* eradication was conducted on Sa Dragonera by the Balearic Government (Mayol *et al*. 2012, Morgan *et al*. 2013), and monitoring is ongoing to assess the efficacy of these management actions (Morgan *et al*. 2013). Rat eradications have also been conducted in the Cabrera archipelago and in Malgrat Islet (SW Mallorca) by the Balearic Government in recent years, and available evidence suggests that all these islands have remained rat-free following erradication.

An action to remove cats *Felis catus* from the Mola de Maó (the main colony in Menorca) was also conducted in 2015 by the Balearic Government, although it was not accompanied by colony monitoring, and the site remains accessible to these mammals, as it is located on a peninsula. Cats are believed to have caused a severe reduction of this colony, with events of mass mortality reported in the past (Ruiz & Martí 2004). Genet *Genetta genetta* and cats eradication continues in Cabrera, which should allow to the recovery of nest occupancy and colony expansion in some of the archipelago islets.

Light pollution

Artificial lights at night cause high mortality of seabirds (Rodríguez *et al*. 2017). This is particularly true for fledglings of many burrow-nesting seabirds, and to a lesser extent adults, when they are attracted to and then grounded by lights when they fly at night. Previous evidence suggested that this was a relatively local issue in the case of the Balearic shearwater, with rather low impact, although predation events might have been enhanced by lights (see Arcos 2011 and references therein). However, recent research suggests that the issue might be more extended than previously thought, with 66 events reported between 1999 and 2013, according to data from wildlife recovery centres (Rodríguez *et al*. 2015). The study estimated that between 0.46 and 0.56% of the Balearic shearwater fledglings would end up stranded due to artificial lights every year, all cases concentrated between late June and early July, but spread across the whole Balearic archipelago, wherever colonies lay relatively close to populated areas.

Plastic pollution

There is very little information on the potential threat of plastics for the Balearic shearwater, but this is an issue that deserves some attention. Codina *et al*. (2013) reported high prevalence of microplastics in stomachs of all three species of Mediterranean shearwaters, with an occurrence of 70% in the Balearic shearwater. More recently, the Valencian Government reported that of seven Balearic shearwater corpses analysed in their recovery centres between 2014 and 2016, four had plastics in their stomach and this appeared to be the cause of their death (Servicio de Vida Silvestre de la Generalitat Valenciana - ined.).

Monitoring

Breeding population

Given the difficulty of obtaining robust estimates of breeding population size, it is desirable to focus on a few representative colonies where proper monitoring work is conducted and demographic parameters can be estimated as to assess population trends. This should include colonies from the major island groups, to account for potential geographical differences (Tavecchia *et al*. 2008).

Mallorca and Cabrera (central group)

Despite the delicate conservation status of the Balearic shearwater, there is only one colony that has been monitored with some regularity over the years, Sa Cella in W Mallorca. This large cave, with about 200 breeding pairs and free of predators, was regularly visited from 1985 to 2003, with major efforts in 1998-2004 during the execution of an EU-fundfed LIFE Project (1998-2001; Ruiz & Martí 2004), as well as other projects undertaken at the Population Ecology Group of IMEDEA (CSIC-UIB) (2002-2004), which included the elaboration of a PhD thesis (Louzao 2006). Monitoring work was interrupted from 2005 to 2009, and then resumed in 2010 thanks to the initiative of researchers from the University of Oxford and the National Oceanography Centre of Southampton, interested in studying the distribution patterns and the ecology of the species through remote-tracking. There is no specific monitoring scheme in place to ensure the continuity of the work in the colony, and this should be a major priority for the future.

Parallel to the work conducted in Sa Cella, some monitoring has also been conducted on neighbouring Sa Dragonera Island (Morgan *et al*. 2013). Moreover, tracking work has been conducted for the first time in the Cabrera archipelago (S Mallorca) (M. McMinn & T. Guilford, com pers.), and preliminary visits have also been conducted to Malgrats and Conills (SW Mallorca), with the aim of setting a new monitoring scheme that has secured funds till 2019 (García & Carrasco 2017).

Ibiza and Formentera (Pitiüses, southern group)

Monitoring work in Ibiza started in 2011 by SEO/BirdLife, LPO, CEBC-CNRS and IEO in 2011 under the umbrella of Interreg FAME Project (García *et al*. 2011), and has been continued since in collaboration between SEO/BirdLife, AZTI and IRBI, under different financial opportunities (Louzao *et al*. 2016). Work was initially focused in Sa Conillera and Es Bosc islets (W Ibiza), but later was extended to the close S'Espartar, and partially to two islets in the channel of Ibiza-Formentera, S'Espardell and S'Espalmador. This monitoring scheme should be the reference for the southern population, and requires support from the relevant administrations.

Menorca (northern group)

The Menorcan population deserves some particular attention, as birds show mixed characters between the Balearic and the Yelkouan shearwaters *Puffinus yelkouan*, presumably as a result of a secondary contact in historical times (Genovart *et al*. 2012). Distribution patterns are also consistent with this idea, with most birds remaining in the Mediterranean after breeding, contrary to other Balearic shearwater populations (Meier 2015). This colony also deserves attention owing to the regular presence of cats, which have caused severe mortality events in the past (with findings of 15-20 corpses in a single visit; Ruiz & Martí 2004), and other introduced terrestrial predators (e.g. rats and weasels *Mustela mustela*). However, monitoring work in this colony has been limited to occasional visits throughout the years, with more intensive work in the 1998-2004 period, with the support of EU (LIFE and V Framework Programmes) and MAPAMA (OAPN) funded projects (Ruiz &

Martí 2004, Oro *et al*. 2008). Currently, a new LIFE IP Project (INTEMARES) intends to pay attention to this colony, with monitoring work already started in 2017. Hopefully this will bring the opportunity to set a monitoring programme for the northern population of the Balearic shearwater.

Non-breeding

Coastal counts

Coastal counts have been conducted in Tarifa (Straits of Gibraltar) during the post-breeding migration (mid-May to mid-July) since 2007, with some gaps (Arroyo *et al*. 2016). This work will be continued at least for 2017 and 2018, with support of LIFE IP INTEMARES. In addition to providing an alternative figure for the population estimate, data for the period 2007-2012 allowed a population trend of -16% per year to be estimated (A. Onrubia-MIGRES Programme, pers. com.), which is consistent with the population viability analysis.

At sea

Ongoing work to monitor the distribution patterns of the Balearic shearwater at sea includes observations on two oceanographic cruises of the Spanish Institute of Oceanography (IEO), conducted by SEO/BirdLife and currently supported by LIFE IP INTEMARES Prpoject. These cruises cover the Mediterranean Iberian shelf during the later stages of the breeding period, and the Galician and Cantabrian shelves during the non-breeding period (September-October) (SEO/BirdLife 2014). In the Gulf of Cadiz (SW Spain), surveys are also conducted every year in the context of EcoCadiz IEO campaings (collaboration between IEO and University of Cadiz). In addition, in the last 6 years there have been several initiatives to track birds with a variety of devices, mostly GLS (Mallorca, Ibiza and Menorca) and GPS (Mallorca and Ibiza), which has contributed to understand the distribution patterns of the species and its ecology at sea (see above), as well as to consolidate the proposal of marine protected areas (see below).

Conservation action

Ongoing projects and opportunities

The following are ongoing projects that have provided or could provide in the near future opportunities to better understand the conservation status of the species and the impact of different threats, as well as to take relevant action. This is not, however, an exhaustive revision of all current projects that are related in some way to the Balearic shearwater.

LIFE IP INTEMARES

This is a new European Commission LIFE Integrated Project (2017-2024), which intends to consolidate the Natura 2000 network at sea in Spain, including the approval of management plans through participative processes, and the exploration of governance models. It is led by Fundación Biodiversidad and involves other five partners: the Spanish Ministry of Agriculture and Fisheries, Food and Environment (MAPAMA), the Spanish Institute of Oceanography (IEO), WWF-Spain, SEO/BirdLife and the Spanish Fishing Confederation (CEPESCA).

The project pays attention to the Balearic shearwater, with several actions where this seabird species has particular relevance, in charge of the MAPAMA and SEO/BirdLife, and with the collaboration of the Balearic Government. Among them:

- Anti-predator fencing. Installation of an anti-predator fence in the Mola de Maó (Menorca) to halt the access of cats and other potential predators. This pilot action is justified by the regular presence of cats in the area, and severe predation in the past. Moreover, the colony is located on a small peninsula, providing a good opportunity to install a relatively small and potentially effective fence in its isthmus. The action will be accompanied by a campaign to remove cats from the area, as well as to assess the potential impact of other predators.
- Special Protection Areas (SPAs) designation. GPS and GLS tracking to refine the information about the main foraging grounds during the breeding and non-breeding seasons. In particular, there is specific interest in gaining information about an area in the central Catalan coast (NE Spain) that was not included in the Spanish inventory of marine Important Bird Areas (IBA) (Arcos *et al*. 2009) where the species has been detected in high densities during the late breeding season, based on boat-based counts (SEO/BirdLife 2014) and GPS tracking (Meier *et al*. 2015). If the new information supports these data, which is to be expected, this area will be designated as SPA. Coastal and boat-based counts in the Gibraltar Strait to continue the monitoring of the post-breeding migration, to allow confirmation of population figures and trends, and designation of the area as an SPA (currently it is one of the few marine IBAs that have not been yet protected).

These actions will also contribute to the development and implementation of monitoring programmes of the species both on land, at colonies, and at sea. Moreover, the project includes actions (still to be defined) to be funded through the European Maritime and Fisheries Fund. This brings an opportunity to make progress in the assessment of bycatch and the development and implementation of mitigation measures.

Bycatch at sea (STF)

In the last three years, BirdLife International has established the Seabird Task Force (STF) in Europe, with the financial support of Fondation Segré. This initiative was designed to extend the Albatros Task Force (ATF) approachto tacking seabird bycatch in Europe and has focused on two pilot areas, one in Lithuania (paying attention to seaducks bycatch in gillnets) and another in Catalonia (W Mediterranean, NE Spain) prioritizing Balearic shearwater bycatch in demersal longlines. The latter, led locally by SEO/BirdLife, has allowed an assessment and confirmation of the alarming levels of Balearic shearwater bycatch (see above), and has fostered collaboration with fishermen to develop and test potential mitigation measures. Particular effort has been made to test the viability of implementing a vertical longline system (Moreno *et al*. 2007), so far with promising results in terms of bycatch, but still requiring further tests to make it profitable to the fishermen (in relation to time taken to set and haul). The use of self-reporting logbooks has allowed engagement of many fishermen, and encouraged bringing new ideas for mitigation that should be developed through future projects. Furthermore, a large scale bycatch project in the Mediterranean is commencing in the second half of 2017, funded by the Mava Foundation and coordinated by BirdLife International with direct input from the Spanish team of the Seabird Task Force. This project, which focuses on multi-taxa bycatch will work with demersal longline fisheries (and gillnets and trawl) in the Alboran

Sea (Morocco) and in Tunisia and Turkey. This work will enable further investigation of bycatch of Balearic Shearwater along the North African (Alboran Sea) coast, and progress on developing mitigation solutions for demersal longline gears.

Policy commitments

Spanish strategy of conservation for the Balearic shearwater

This strategy was first approved in 2005, but has now been reviewed and adapted to the species international action plan (Arcos 2011), also taking into account other new information. The strategy is in the process of revision by all the regional governments, and pending of its final approval.

In relation to the conservation strategy, the Spanish working group on the Balearic shearwater met in November 2016, for the first time since 2005. This group, formed by representatives of the Spanish and regional governments, as well as invited experts, is in charge of following up plans for the monitoring and conservation actions on the species. Its immediate aim is to approve the conservation strategy of the species, and to implement the most urgent actions required.

Marine Strategies

In accordance with the EU Marine Strategy Framework Directive (2008/56/EC), the Spanish Marine Strategies intend to attain a good environmental status for the European Seas. There are five strategies in Spain, one for each marine sub-region. The strategies should contribute to the monitoring and conservation of the Balearic shearwater, through their monitoring programmes and their programmes of measures. The monitoring programmes identify the Balearic shearwater as one of the target species, and include regular population counts, the monitoring of representative colonies, at sea surveys and bycatch assessment. The programmes of measures address the main threats for the species, paying particular attention to the issue of bycatch. Both programme sets were submitted to the European Commission in 2015 and 2016, respectively, and are pending of final approval through a Royal Decree. They are expected to start working by the end of 2017.

Common Fisheries Policy

The new EU Common Fisheries Policy (CFP), approved in 2013, stresses the need of managing fisheries under an ecosystem-based approach. Under the frame of this new policy, the European Commission published a Seabird Action Plan in 2012, but relatively little progress has been made towards its implementation. Also there is current debate about the European Commission (EC) proposal of fisheries technical measures (*Conservation of fishery resources and the protection of marine ecosystems through technical measures*), which originally incorporated some commitments regarding the mitigation of bycatch, but could be weakened after the contribution of member states. The new CFP is also accompanied by the European Maritime and Fisheries Fund (EMFF), which could bring financial opportunities to address bycatch and other fisheries-related issues.

At the Spanish level, the MAPAMA intends to elaborate a seabird bycatch action plan in the near future, to transpose the EU action plan as well as to commit with the marine strategies. So far an initial meeting of experts has been undertaken.

Protected areas

Most of the breeding colonies of Balearic shearwater have been protected at least as Special Protection Areas (SPAs) under the Natura 2000 network for years, but part of the Punta Prima colony in Formentera remained unprotected. This has been the focus of recent work by the Balearic Government, that has started the process of extending the SPA so as to cover the entire colony. As for the marine environment, the Spanish Government declared most of the marine Important Bird Areas (IBAs) as SPAs in 2014, with only a couple of sites remaining unprotected (Arcos *et al*. 2016). The MAPAMA intends to address the protection of these sites through LIFE IP INTEMARES, including a key migration hotspot for the species, the Straits of Gibraltar. There are also plans to designate a new SPA in the central-north Catalan coast, based on recent boat-based and tracking data, as detailed above. Recent research by the University of Cádiz also suggests that the current marine SPA in the Gulf of Cádiz should be extended southwards to properly encompass the main foraging grounds of the species in the region (G.M. Arroyo com. pers.).

Lilford Plan

A new Seabird Recovery and Conservation Plan in the Balearic Islands will be implemented in September 2017, and will give maximum priority to the Balearic shearwater. The plan will be financed with the Balearic sustainable tourism eco-tax, and will support several of the issues covered in this document: colony monitoring, bycatch, assessment of the incidence of plastics, rat eradication in islets, control of predators, education and raising awareness.

Further commitments

In 2017 the alarming situation of the Balearic shearwater led to the Spanish Senate to approve unanimously a proposal to reinforce the conservation measures of the species. This, along with the declaration of the Balearic shearwater as a priority ACAP population in 2016, should put the necessary pressure on the administrations to keep the species' working group active and to take urgent action regarding the most alarming threats, particularly fisheries bycatch and introduced predators.

Priority actions

The aim of this document is not to provide a detailed list of research, monitoring and conservation actions to address, but from the new information available it is important to highlight some of the most urgent issues to deal with in the near future:

- Fisheries bycatch. The available evidence suggests that this is the major concern for the species at present. Only off Catalonia hundreds of birds have been documented to be caught by demersal longliners every Spring. It is essential to urgently complement this information and extend the assessment to other gears, seasons and regions (in both the Mediterranean and the Atlantic), as well as to continue the collaborative work with fishermen to find the best set of solutions.
- Introduced predators in colonies. This is the other major threat to the species, particularly in the case of cats. It is important to document the occurrence of severe predation events, at least where there is evidence from the past (Mola de Maó and Mola de Formentera), as well as to take action to prevent this predation. Awareness campaigns should be essential to involve the local populations.

- Population monitoring. It is essential for all initiatives on breeding monitoring to be consolidated, and thus have a secured set of colonies where demographic data is available, in order to have a better assessment of the population trends across the whole breeding range. This should also contribute to understand the impact of different threats on the species, as well as potential differences between colonies. As a complement to the work in the colonies, coastal-counts in the Gibraltar Straits may also help assessing population figures and trends.

In addition to these actions, or as part of them, it is important to keep monitoring at sea through both boat-based surveys and tracking devices, which will refine our knowledge of on the species and its potential interaction with fisheries across the distribution range. The impacts of pollution on the species also deserve attention, including light pollution (that seems more important than previously thought) and plastics.

Funding opportunities

As explained above, the LIFE IP INTEMARES brings new opportunities for funding actions related to the conservation of the Balearic shearwater, particularly regarding bycatch. Beyond that, the new EMFF could also finance projects that are not related to this huge project, but still provide benefits to the Balearic shearwater in relation to fisheries. Moreover, the increasing commitments by the Spanish administration either directly or indirectly related to the species should also strengthen possibilities of obtaining new funds, for instance through the Marine Strategies or the Lilford's Plan. Private foundations such as the Ibiza Preservation Fund (IPF) and the Fondation Segré have also supported previous work and provide further opportunities for the future. And, finally, European and National calls to support research have and should keep providing funds to improve the knowledge on the species.

Coordination and commitment

The proper prioritization and implementation of the research, monitoring and conservation actions require of high level of coordination between the responsible administrations in Spain (Spanish Government and Regional Governments), which should be mediated by the species' working group, with the support of the national "experts group". This working group should also ensure that the priority actions are properly supported in the long-term, in agreement with the existing policy commitments.

Furthermore, international coordination is important in order to address some of the actions, particularly bycatch, with France and Portugal being the most relevant countries to involve, although UK, Morocco and Algeria could also play a relevant role. ACAP brings an opportunity to start such coordination work. In addition, Spain has recently expressed its willingness in leading promotion for the implementation of the European Commission Species Action Plan for the Balearic shearwater in the framework of the OSPAR Convention (POSH Plan of Implementation).

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