Eradication and control programmes for invasive mynas (*Acridotheres* spp.) and bulbuls (*Pycnonotus* spp.): defining best practice in managing invasive bird populations on oceanic islands

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Abstract Invasive plants and animals inflict much damage on native species and this is particularly the case on isolated oceanic islands with high degrees of endemism. Such islands commonly are important refugia for species of high conservation value. Some of the most pervasive and potent of invasive animal species are birds of the myna (*Acridotheres*) and bulbul (*Pycnonotus*) genera that historically were introduced to isolated islands as biological control agents for the management of insect pest species that can cause considerable economic damage to agricultural crops and wider ecosystems. In this paper we consider a number of 'successful' eradication and control programmes targeting mynas and bulbuls. We review the locations and taxa where 17 such programmes took place and report that the common myna *(Acridotheres tristis)* has been the most heavily targeted species in eradication efforts followed by the red-whiskered bulbul *(Pycnonotus jocosus)*. Common mynas were also at the focus of control programmes as were jungle mynas *(Acridotheres fuscus)* and red-vented bulbuls *(Pycnonotus cafer)*. By far the most favoured method of eradication and control was trapping whereas mist-netting was employed rarely. We discuss 'best practice' in planning and executing such eradication and control programmes on oceanic islands so as to maximise their benefits to local human communities. We outline measures that must be adopted pre-, during and post-intervention in both programme types. They include adequate resourcing, local engagement and the integration of both traditional ecological knowledge and established conservation theory.

Keywords: engagement, ethno-ornithology, invasive bird management, local community, multispecies approach

INTRODUCTION

The modern world is experiencing unprecedented anthropogenic inputs that are resulting in the sixth global wildlife extinction (Foley, et al., 2013) with concomitant phenomena such as accelerating climate change (Crowley, 2000) and increased frequencies of invasions of alien species (Vitousek, et al., 1997; Dukes & Mooney, 1999), resulting in losses of biodiversity (Lowe, et al., 2000).

The establishment of early human societies resulted in the trade of goods and services (Zeder, 2008), and the accompanying development of transport modes and infrastructure, such as roads and other trading routes, resulted in commodities traded over greater distances (Earle, 1994). Inevitably, this resulted in the movement of species out of their native ranges into areas where they were alien (exotic). Today, we continue to trade goods and services internationally and in so doing we move thousands of exotic species, approximately 10% of which will become established as invasive (Williamson & Fitter, 1996; Westphal, et al., 2008). By definition, an alien species occurs outside of its natural (past or present) range and it has dispersal potential, including any part of it (e.g. propagules, gametes) surviving and subsequently reproducing (Lowe, et al., 2000). Invasive species are targeted for conservation actions because they are alien species that become established in natural or semi-natural ecosystems or habitats where they present problems to native species (Colautti & MacIsaac, 2004). The impacts of avian invasive species on ecosystems are pervasive and enduring; they include, for example, competitive exclusion and predation of native species, disease transmission and dilution of native gene pools through hybridisation (reviewed in Blackburn, et al., 2009).

Oceanic islands are known to be more susceptible to negative impacts of exotic species compared with continental land masses because of their increased endemism as a result of their geographical isolation (Coblentz, 1990; Reaser, et al., 2007; Feare, 2017). Furthermore, their ecological fragility is magnified on smaller islands that accommodate more simple native ecological communities than larger ones (Donlan & Wilcox, 2008). Therefore, conservation priorities for insular environments are often defined by the need for effective eradication and/or control programmes of invasive species (e.g. Dulloo, et al., 2002; Donlan & Wilcox, 2008).

In this study we focus on two invasive avian genera (i.e. mynas *Acridotheres* and bulbuls *Pycnonotus*), consisting of six different species. These two genera are both represented on the list of '100 of the World's Worst Invasive Alien Species' (Lowe, et al., 2000), a subset of the Global Invasive Species Database, by common mynas (*Acridotheres tristis*) and red-whiskered bulbuls (*Pycnonotus jocosus*). The 18th and 19th centuries saw a series of introductions of mynas to oceanic islands as biocontrol agents to counter insect pests that threatened agricultural production. They were also transported to oceanic islands as cage birds. On Tutuila in American Samoa, for example, common mynas arrived in 1980 and jungle mynas (*Acridotheres fuscus*) in 1985 (SSC, unpubl. data) while on Ascension Island (Hughes, et al., 2017) and St Helena (Burns, 2011) they were introduced in the 19th century. Bulbuls were kept widely as caged birds but escaped captivity on islands such as Tahiti in 1925, Assumption in the 1970s and Tenerife and Fuerteventura at the turn of the 21st century.

The aim of our study is to provide an account of the characteristics of successful eradication and control programmes and then to discuss how they can be used to define 'best practice'. Through material presented in the discussion, we indicate how the conservation community can take effective measures to combat avian invasive species on remote oceanic islands.

METHODS

We used the following keywords – 'common myna', 'bulbul', '*Acridotheres'*, '*Pycnonotus'*, 'trapping', 'control', 'shooting', 'island*', and 'eradication' – in searches of several bibliographic databases including Webspire, Web

In: C.R. Veitch, M.N. Clout, A.R. Martin, J.C. Russell and C.J. West (eds.) (2019). Island invasives: scaling up to meet the challenge, pp. 302–308. Occasional Paper SSC no. 62. Gland, Switzerland: IUCN.

of Knowledge, Ovid SP, Inist, Blackwell Publishing and Science Direct to identify primary scientific literature about management programmes for avian invasive species on islands. References in literature cited/bibliography sections of the resulting sources were also considered for inclusion in our study. Whether programmes were considered further as successful eradications or controls, or rejected followed correspondence with programme managers to obtain further details about the interventions (Table 1). At the time of writing all programme managers have been contacted and we have received responses from all but one of them. Following inclusion in the study, the information obtained from these programme managers combined with that in publications was examined to assess a number of factors determining the effectiveness of programmes: the target species; and the numbers of birds of each species and the methods used as part of the intervention.

RESULTS

Literature searches

We did not consider every programme where eradication or control of avian invasive species had been attempted because after apparently successful removal of invasive birds, they reappeared on some islands (Table 1). The publications that were not considered further are detailed in Table 2. Following exclusions of these published studies we were left with 17 programmes (Table 3); their locations are shown in Fig. 1.

Invasive species targeted

Common mynas have been successfully eradicated from eight islands (Tenerife, Gran Canaria, Mallorca, Fuerteventura, Fregate, Denis, Tarawa and Atiu), and red-whiskered bulbuls from two islands (Tenerife and Assumption; Table 4). Control efforts targeting common mynas are ongoing on North Island in Seychelles (Table 4). Short-term isolated control programmes targeting common mynas were carried out twice on Ascension Island and once on St Helena, each being conducted in late 2009 (Table 4). An ongoing project on Tahiti is carrying out long-term control of common mynas and red-vented bulbuls (*Pycnonotus cafer*). In the Tarawa eradication two *Acridotheres* species were targeted and they were the common myna and the jungle myna. The only multi-species long-term control programme running today is in American Samoa where the two aforementioned myna species and the red-vented bulbul are being successfully targeted through trapping, with approximately 9,600 birds being captured in two consecutive trapping campaigns.

Total numbers of birds of each species by island

Table 4 provides details of the numbers of birds of each species that have been targets of population eradication and control programmes in the 17 projects (see also Table 3). In total, over 57,000 invasive birds have been captured. With ongoing projects such as the work on, for example, Tahiti and Tutuila (long-term control programmes) and North Island (an eradication programme), numbers are predicted to climb steeply in the near future. The vast majority of birds were common mynas and most were captured in Atiu in the Cook Islands (officially 'eradicated' but one remaining bird currently being tracked; SSC, unpubl. data), and on Tahiti in the control programme (Table 4). All but one of the 4,606 jungle mynas were caught in the ongoing control programme on Tutuila. The majority of red-whiskered bulbuls were caught as part of the eradication programme on Assumption, while most red-vented bulbuls were caught in the control programme on Tahiti (Table 4).

Table 1 Inclusive sets of categorisation criteria that allowed us to exclude (reject) or include published studies as successful eradication and control programmes targeting avian invasive species on oceanic islands as a result of questioning programme managers (see Methods for further details).

Reject	Eradication	Control
Birds were present as of April 2017	Birds were absent as of April 2017	Birds were present as of April 2017
No post-intervention monitoring	Post-intervention monitoring found no birds	Post-intervention monitoring found reproductive birds
No defined milestones during intervention	Defined milestones during intervention	Defined milestones during intervention
Pathways of invasion remain open	Pathways of invasion closed	Pathways of invasion remain open
No defined period of quarantine	Defined period of quarantine	No defined period of quarantine

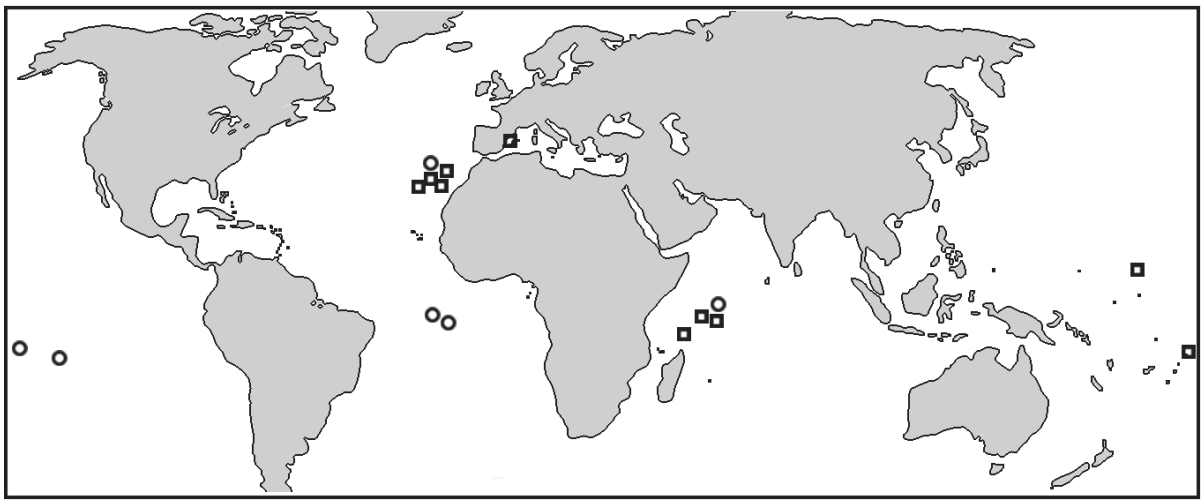

Fig. 1 Locations of islands where eradication (square symbols), and control (round symbols) programmes have been carried out to address problems of invasive myna and bulbul genera (see Tables 3 & 4 for further details).

Table 2 Details of eradication and control programmes on islands involving myna and bulbul genera, including the location, focal species, the number of birds eradicated/controlled (where known), and notes (including references) to explain why programmes were excluded from further consideration in our study.

Location	Species	No of birds	Notes (including references where available)
Ascension Island, Atlantic Ocean	Common myna *Acridotheres tristis*	40	Trapped birds were non-target species during feral domestic cat (*Felis silvestris catus*) removal in 2004 (Hughes, et al., 2008)
Seychelles, Indian Ocean	Common myna	-	Some birds remained after the eradication project ended (Canning, 2011). Eradication was abandoned when rats were discovered on site on Denis (Millett, et al., 2005)
Fakaofo (Tokelau), Pacific Ocean	Common myna	40	Birds targeted in 2006 with their egg and nest destruction resulting in no further sightings in 2011, but in early 2012 birds were seen on Nukunonu Atoll, 64 km north of Fakaofo (Parkes, 2012)
Western Samoa, Pacific Ocean	Bulbul *Pycnonotus* spp. and myna *Acridotheres* spp.	6,000	Feeding of ©DCR-1339 (3-chloro-p-toluidine hydrochloride) has been effective but to date no strategy to control avian invasive species has been formalised and consistently implemented island-wide
Mainland Australia	Common myna	>69,000	The Canberra Indian Myna Action Group (CIMAG) work, removing birds over 11 years using volunteer trappers, has taken place on a continental land mass and is of limited applicability to oceanic islands
Moturoa Island, Bay of Islands, New Zealand	Common myna	45	No detailed results were reported from trapping which has been criticised as an inappropriate method to control this species (Parkes, 2012)

Table 3 Island groups and islands where eradication and control programmes targeting myna and bulbul genera were carried out and the year when they ended and started, respectively.

Eradication			Control		
Island group	**Island**	**Year**	**Island group**	**Island**	**Year**
Balearic Islands	Mallorca	2007	American Samoa	Tutuila	2016
Canary Islands	Fuerteventura	2008	Canary Islands	Fuerteventura	2010
Canary Islands	Gran Canaria	2006	French Polynesia	Tahiti	2012
Canary Islands	Tenerife	2000	Seychelles	North	2016
Canary Islands	Tenerife	2007	UK Overseas Territories	Ascension[b]	Sept. 2009
Cook Islands	Atiu	2016	UK Overseas Territories	Ascension[c]	Nov. 2009
Kiribati	Tarawa	2015			
Seychelles	Assumption[a]	2014			
Seychelles	Denis	2015			
Seychelles	Fregate	2011			

[a]Eradication of one target genus (i.e. red-whiskered bulbul) and one non-target genus (i.e. red fody *Foudia madagascariensis*) was achieved
[b]A control programme carried out by SSC by trapping
[c]A separate one carried out by C.J. Feare by poisoning, in the same year

Methods employed on projects

Methods used in eradication and control programmes included trapping, shooting, poisoning and mist-netting (Table 5). The method of choice for both programme types was live-trapping of invasive birds using live decoys and edible baits such as bread, fruit, pet food and tinned fish. Few programmes used shooting, with four out of five programmes employing firearms being conducted for population eradication purposes. Three out of the four programmes using poisoning were controlling (as opposed to eradicating) populations of invasive species. Only two eradication (but no control) programmes employed mist-netting to capture birds.

DISCUSSION

It was clear when we reviewed published studies and contacted programme managers that some programmes described as eradications should have been categorised as ongoing control programmes, according to our classification criteria outlined in Table 1. For those that did not carry out post-intervention monitoring, had not defined milestones during the intervention, had not identified invasion pathways or had not stipulated a period of quarantine post-intervention, we suggest that they should not be considered successful control programmes. We also request that programme managers consider carefully the contents of Table 1 as they plan and execute their intervention. Many studies were published before 2000 and they were unsuccessful in the case of eradication programmes because pathways of invasion were not closed and/or programme managers failed to remove all targeted birds (Tables 1 and 2). Remaining populations therefore recovered in numbers and, as a result, they expanded their ranges once again on islands. Such an example was provided by Millett, et al., (2005).

Table 4 Total number of mynas and bulbuls of six different invasive species caught on islands (see Table 3 for further details) as part of eradication and control programmes. Note that red-vented bulbul has been split into two subspecies – *cafer* and *bengalensis* – for historical reasons.

Island (year)	Invasive species (*A.*= *Acridotheres*; *P.*= *Pycnonotus*)					
	Common myna *A. tristis*	**Jungle myna *A. fuscus***	***A.* hybrid**	**Red-whiskered bulbul *P. jocosus***	**Red-vented bulbul *P. cafer cafer***	**Red-vented bulbul *P. c. bengalensis***
Eradication						
Assumption (2014)				5,279		
Atiu (2016)	24,375					
Denis (2015)	1,186					
Fregate (2011)	758					
Fuerteventura (2008)	21					
Gran Canaria (2006)			3			
Mallorca (2006)	22					
Tarawa (2015)	3	1				
Tenerife (2000)	11					
Tenerife (2007)				7		
Total birds	26,376	1	3	5,286		
Control						
Ascension (Sept. 2009)	623					
Ascension (Nov. 2009)	114					
Fuerteventura (2010)					7	
North (2016)	1,600					
St Helena (2009)	342					
Tahiti (2012)	6,170					9,123
Tutuila (2016)	2,915	4,605				2,401
Total birds	11,764	4,605			7	11,524
Total birds for both programme types	38,140	4,606	3	5,286	7	11,524

Our empirical results document the species, the numbers of birds of each taxon and the methods employed during the targeting of birds in eradication and control programmes. It is clear that traps should be favoured to 'capture' invasive birds as we understand more about the biology of the target species and because trap design has markedly improved over recent years. From a practical perspective, the construction and establishment of traps on the ground are more preferable to applying continuously for permits from authorities on isolated islands to import and use firearms and poison. This said, national governmental agencies would be well advised to facilitate the use of complementary and effective management methods that can be combined with trapping to allow programme staff to progress invasive bird management on these islands and others in the future. As an example, the experience from Assumption suggests that combining mist-netting with shooting can result in removal of large numbers of red-whiskered bulbuls (now eradicated) and red fodies (*Foudia madagascariensis*).

As a result of considerations of both excluded (Table 2) and included studies (Tables 3 and 4) documenting eradication and control programmes, we briefly discuss below some of the fundamental considerations that should be undertaken in their future planning, execution and reporting. The outcome should be the adoption of processes that lead to best practice in managing invasive bird populations on oceanic islands.

Community engagement

Many programme managers historically argued that it was impossible to rely on local people to instigate actions on the ground, to remain committed to the programme and thus to constitute the main task force addressing the problems posed by the invasive species, as the programme will be destined to fail because of local apathy (SSC, pers. obs.). Nowadays, programme managers often assume that the programme's aims will thrive mediated by the locals' sense of community and shared aspirations for the programme. Success comes through the development of simple 'tools' that can be employed by the local community to manage invasive species for the benefit of the whole community. While people who want to become volunteers (whether trapping or otherwise) in any invasive species management programme have their own motivations for doing so, the success of any such intervention lies in the effective coordination of human power directed towards an achievable and beneficial community goal. This sustains commitment to the programme, especially from the community itself.

A successful programme will not only engage with the local community but also with wider audiences, requiring widespread availability of well-designed and well-delivered education campaigns, and comprehensive media coverage. The Canberra Indian Myna Action Group (CIMAG) provides an excellent example (albeit a mainland one) of a society-driven movement of volunteer

Table 5 Methods employed on eradication and control programmes targeting mynas and bulbuls of six different invasive species caught on islands (see Table 3 for further details).

Island (year)	Ocean	Method			
		Trapping	Shooting	Poisoning	Mist-netting
Eradication					
Assumption (2014)	Atlantic		✓		✓
Atiu (2016)	Pacific	✓	✓	✓	
Denis (2015)	Indian	✓	✓		
Fregate (2011)	Indian	✓			
Fuerteventura (2008)	Atlantic	✓			
Gran Canaria (2006)	Atlantic	✓			
Mallorca (2006)	Mediterranean	✓	✓		
Tarawa (2015)	Pacific		✓		
Tenerife (2000)	Atlantic	✓			
Tenerife (2007)	Atlantic	✓	✓		✓
Totals		8	6	1	2
Control					
Ascension (Sept. 2009)	Atlantic	✓			
Ascension (Nov. 2009)	Atlantic			✓	
Fuerteventura (2010)	Atlantic	✓			
North (2016)	Indian	✓			
St Helena (2009)	Atlantic	✓		✓	
Tahiti (2012)	Pacific	✓	✓	✓	
Tutuila (2016)	Pacific	✓			
Totals		6	1	3	

community trappers that has removed >69,000 common mynas and 8,900 common starlings (*Sturnus vulgaris*) through trapping over the last 11 years (CIMAG, pers. comm.). Their programme started in 2006 and it has achieved unprecedented successes in controlling birds on a continental scale, thereby demonstrating the effectiveness of well-coordinated volunteer efforts. Invasive birds have been managed effectively on Tahiti for the last seven years and on Tutuila for nearly the last three years.

Programme resourcing

We make a few general points about resourcing, based upon experiences of SSC gained from the control programme carried out on Tahiti in 2012 (Tables 3 and 4). This programme was driven by the need for urgent conservation action to promote the survival of the critically endangered Tahiti monarch (*Pomarea nigra*) (Blanvillain, et al., 2003; Ghestemme, 2011). It was a success because the programme engaged fully with the local community, and maintained high levels of motivation among local community members by sustaining frequent and dynamic communication between the local community and the programme's management team. It provided many insights that could be transferred to other such programmes. Contractors should provide an upfront realistic budget to meet the costs incurred in mobilising materials and having personnel in post at the start of actions on the ground. Mobilisation requires transport logistics, appropriate personnel to be available and fuel costs to be met at the start of the programme. Materials can include components for trap construction, mist-nets and their associated poles, firearms and ammunition, bait stations, bait and poisons, and storage facilities. Often equipment like traps has been used for centuries but knowledge about the appropriate deployment of them has been lost trans-generationally. Money spent on re-education and re-training to address the deployment of single traps and of coordinated networks of traps is particularly well received, especially in locations such as the Pacific islands (SSC, pers. obs.) where remote communities rely upon subsistence agriculture for food security and invasive bird species in part threaten their very existence.

There are costs associated with employing appropriate (i.e. informed) staff on such programmes (e.g. advertising, interviewing) and submitting applications for permits to relevant on- or off-island authorities for activities such as the use of mist-nets and traps, the handling of hazardous chemicals and the safe disposal of managed birds. Funding is also needed to maintain surveillance efforts to ensure that invasive birds have not returned (eradication programmes) or exist in low numbers as a result of sustained trapping efforts (control programmes).

Perceptions of invasive (and native) species

In many locations outside of their native ranges invasive species may be the first birds that locals observe and become familiar with (CIMAG, pers. comm.; SSC, pers. obs.). Their overwhelming presence can result in native species becoming 'invisible' in local communities both in terms of reduced numbers of birds on the ground and a loss of natural history knowledge through education and personal experiences. This erosion of so-called 'traditional ecological knowledge' (TEK) is a widespread phenomenon (Sinclair, et al., 2010) and is not just restricted to remote oceanic islands. Children often tend to consider invasive species as 'normal' because they observe them constantly

throughout their formative years. In local community-based management projects, public awareness of native species for aesthetic, as well as ecosystem service, benefits is crucial in gaining public support, resulting in potent public engagement with invasive eradication and control programmes. Local people become highly motivated rapidly, especially if provided with effective management 'tools' to control invasive bird species. The challenge to the conservation manager is to promote native species' survival as a positive outcome of effective invasive species management in addition to other benefits to the local community. Whether this generates a conservation ethic in local peoples beyond that of their livelihoods remains aspirational but realistic, given experiences of SSC in the last seven years of control in Tahiti and three years in Tutuila.

Expertise networks

If invasive species are to be targeted successfully we must develop networks of expertise that are constituted not just by species experts (e.g. invasive species managers, professional ornithologists, avian pest controllers), but also by local experts who have developed detailed knowledge of the target species on the ground after training. Networks can thereby provide a detailed knowledge of the species' biological traits such as flocking patterns (Sinu, 2011), responses to novel foods (Martin & Fitzgerald, 2005), changes in food preference in relation to their location in their distributional range (Liebl & Martin, 2014), and trap shyness (Camacho, et al., 2017). For example, common mynas can be trapped for long periods of time without developing 'trap shyness' (SSC, pers. obs.), but only if trappers follow the recommended protocols.

Usually, local people have some biological knowledge of targeted invasive species, but on rare occasions some have detailed local knowledge about birds. All such knowledge can be obtained from full engagement with the local community who may have attempted eradication and control methods albeit in an uncoordinated manner that invariably results in unsuccessful outcomes. Knowledge can relate to where birds roost, favoured routes between roost and foraging sites, where they drink, their preferred foods and even how they behave in response to presentation of novel foods (e.g. Lermite, et al., 2017, SSC, pers. obs.). In some cases, ethno-ornithological knowledge (Tidemann & Gosler, 2010) could prove to be fundamental in the successful deployment of methods on the ground but to the best of our knowledge it has failed to inform eradication and control programmes to date.

Creating and sustaining networks of trappers on single islands and on chains of islands are fundamental in targeting high numbers of birds to be removed. Full engagement in terms of commitment and motivation by programme managers is key to retaining network integrity. Communication is the principal way to enlist assistance from trap builders and volunteer trappers, to inform the island population, to recruit local people to the programme, to educate the community about its benefits, and to update local people about the results of the programme to date. It is not just the general public that needs to be updated but, just as importantly, members of the trapper network itself. Sharing positive results from the ongoing programme motivates everyone and if a problem in the network is described in sufficient detail, a solution can be found rapidly because of shared experience and capacity in problem solving. Of course, a sustained line of communication also engages with stakeholders beyond the programme's location such as international agencies who might be partially funding the work.

The reality of most programmes is that training of staff takes the form of native biodiversity conservation but that of volunteers is focussed on local habitat protection, whether cash crop, farmland or otherwise. The practical training to build and deploy traps should be similar for both of the above groups, but is often viewed as being less exigent for volunteers. However, if local people are trained in partnership with programme staff through an established expertise network, often trap design and deployment can

Table 6 Attributes defining best practice in planning and executing effective eradication and control programmes of avian invasive species on oceanic islands.

Attribute	Eradication	Control
Pre- and during intervention		
Local government support	✓	✓
Stakeholders identified and engaged with	✓	✓
Internal and external communication channels identified and open	✓	✓
Training of local and contract staff	✓	✓
Milestones identified	✓	✓
Full financial resources	✓	✓
Full non-financial resources	✓	✓
Post-intervention		
Full financial resources (including contingencies)	✓	✓
Full non-financial resources (including contingencies)	✓	✓
Refresher training of local and contract staff	✓	✓
All communication channels remain open	✓	✓
Birds absent	✓	×
Monitoring for birds	✓	×
Pathways of invasion closed	✓	×
Ongoing management of pathways of invasion	✓	×
Defined period of quarantine	✓	×

be improved through inputs of local knowledge (Tidemann & Gosler, 2010). Part of such training should include emphasising the importance of record keeping. Recording data is key to a programme's success but can sometimes be problematic when carried out by local trappers without an appreciation for its importance. The transmission of data between trappers, programme managers and their staff can result in the loss of data when resources such as standardised datasheets, time, computer hardware and software etc. are lacking. Data collection should run smoothly with full commitment of participants on such programmes if training has been effective and expertise networks are maintained.

What constitutes best practice in control and eradication programmes targeted at invasive bird populations on oceanic islands?

To conclude, we refer the reader to Table 6 where we summarise the main attributes of effective control and eradication programmes. These attributes should be considered alongside others that we have discussed in this study. In conclusion, we have provided an account of the most common invasive avian species that have been targets for conservation action on oceanic islands where they threaten native species and the livelihoods of local human communities. Mynas and bulbuls still pose major threats to local economies and to native biodiversity, and we must find ways to plan and execute their eradication and control that engage with local communities while guaranteeing that programme outcomes are attained. Above, we have discussed effective planning through full engagement with and between the local community, programme managers and team members (whether volunteers or otherwise) to capacity build through education and training. This results in the construction and maintenance of expertise networks that are built on the ideas of local people, harnessing their local knowledge about the target species and on an appreciation of the benefits of the proposed actions to the local community. Executing plans involves coordinated action on the ground between programme managers, their staff and local volunteers that arises from sustained communication and motivation in meeting all of the programme's goals. Success involves far more than simply providing financial resources to cover various elements of a programme. If we were to propose one overarching recommendation it would be that programmes share information using standardised reporting protocols as everyone strives to adopt best practice.

ACKNOWLEDGEMENTS

We thank all of the programme managers who have so kindly answered our queries relating to finer details of their work. Their names are withheld because of the sensitivities surrounding such invasive species management. Félix M. Medina and two anonymous referees provided helpful comments that significantly improved the manuscript. We extend a special thanks to the Editor of the conference proceedings for his patience and encouragement as the manuscript was prepared for submission.

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