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"Beyond 2020: Shaping flyway conservation for the future"

DRAFT REVISED CMS/AEWA/EU INTERNATIONAL SINGLE SPECIES ACTION PLAN FOR THE CONSERVATION OF THE WHITE-HEADED DUCK (*Oxyura leucocephala*)

Introduction

This draft revised CMS/AEWA/EU International Single Species Action Plan for the Conservation of the White-headed Duck (*Oxyura leucocephala*) was prepared by SEO/BirdLife in the framework of the EuroSAP (LIFE14 PRE/UK/000002) LIFE preparatory project, co-financed by the European Commission Directorate General for the Environment and the UNEP/AEWA Secretariat, through a grant by the Ministry of the Environment and Protection of Land and Sea of Italy, as well as by the MAVA Foundation and the Spanish Ministry of Agriculture, Food and the Environment.

Drafts of the plan went through rigorous consultations with experts and government officials of the Range States of the species. The final draft was endorsed for submission to MOP7 by the Technical Committee at its 14th Meeting in April 2018 and the Standing Committee at its 13th Meeting in July 2018.

For the EU, the plan was approved, subject to minor technical amendments, by the EU Expert Group on the Birds and Habitats Directives (NADEG) at its Meeting in May 2018 in Brussels.

This Action Plan follows the revised format for Single Species Action Plans, approved on an interim basis for further use by the by the Standing Committee at its 12th Meeting in January 2017, in Paris, subject to final approval by MOP7 (Document AEWA/MOP 7.22).

Action Requested from Meeting of the Parties

The Meeting of the Parties is invited to review this draft revised ISSAP and to adopt it for further implementation.

TECHNICAL SERIES

No. XX (CMS)
No. XX (AEWA)

- Final Draft -

International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala*

Convention on the Conservation of
Migratory Species of Wild Animals (CMS)

Agreement on the Conservation of
African-Eurasian Migratory Waterbirds (AEWA)

Council directive 2009/147/EC on the conservation of wild birds (Birds Directive) of the European Union (EU)

International Single Species Action Plan for the Conservation of the White-headed Duck

Oxyura leucocephala

Revision 1

CMS Technical Series No. XX

AEWA Technical Series No. XX

April 2018

Produced by
SEO/BirdLife

Prepared in the framework of the
EuroSAP (LIFE14 PRE/UK/000002) LIFE preparatory project, coordinated by BirdLife International and co-financed by the European Commission Directorate General for the Environment, and the UNEP/AEWA Secretariat, through a grant by the Ministry of the Environment and Protection of Land and Sea of Italy, as well as by the MAVA Foundation and the Spanish Ministry of Agriculture, Food and the Environment

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Adopting Frameworks:
Convention on the Conservation of Migratory Species of Wild Animals (CMS)
Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)
European Union (EU)

This revised International Single Species Action Plan for the Conservation of the White-headed Duck (*Oxyura leucocephala*) was prepared in the framework of the LIFE EuroSAP project (LIFE14 PRE/UK/000002), co-financed by the European Commission Directorate General for the Environment, the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), through a grant provided by the Ministry of the Environment and the Protection of Land and Sea of Italy as well as by the MAVA Foundation, the Spanish Ministry of Agriculture, Food and the Environment and by each of the project partners as coordinated by BirdLife International. The preparation of this revised Single Species Action Plan was coordinated by SEO/BirdLife Spain.

Organisations leading on the production of the plan and donors supporting the planning process:
SEO/BirdLife Spain, AEWA, BirdLife International and the European Commission

Compiled by: Rob Sheldon[1] (Lead Compiler), Nina Mikander[2] and Jorge Fernández Orueta[3]
1 RDS Conservation; 78 Riverdene Road, Ilford, IG1 2EA, UK, email: vanellus1970@yahoo.co.uk
2 UNEP/AEWA Secretariat, Germany; email: nina.mikander@unep-aewa.org
3 SEO/BirdLife, Spain; email: jorueta@seo.org

List of contributors:
We would like to thank the following people for providing data, support and assistance to the preparation of this Action Plan: Karen Aghababyan (Armenia), Nabegh Ghazal Asswad (Syria), Hichem Azafzaf (Tunisia), Sebastian Bugariu (Romania), Lei Cao (China), Sofia Capellan (UK), Simba Chan (China), Claudine de le Court (Spain), Peter Cranswick (UK), Mohamed Dakki (Morocco), Bram D'hondt (Belgium), Zahra Elahirad (Iran), Arzu Gürsoy Ergen (Turkey), Carlos Gutiérrez Expósito (Spain), Andy Green (Spain), Ricardo Gómez (Spain), Ohad Hatzofe (Israel), Ramzi Hedhli (Tunisia), Baz Hughes (UK), Zhang Junjian (China), Roman Kashkarov (Uzbekistan), Ahmad Khan (Pakistan), Najam Ul Huda Khan (Pakistan), Savas Kazantzidis (Greece), Nela Miauta (Romania), Ma Ming (China), Jean-Baptiste Mouronval (France), Evgeny Murzakhanov (Russia), Mohamed Noaman (Morocco), Stephane Ostrowski (Afghanistan), Claire Pernollet (France), Nikolai Petkov (Bulgaria), Eldar Rustamov (Turkmenistan), Hamida Salhi (Algeria), Marcos Ferrández Sempere (Spain), Diana Pérez-Aranda Serrano (Spain), Alyona Shmalenko (Kazakhstan), Elchin Sultanov (Azerbaijan), Peter Zahler (Afghanistan)

This Action Plan represents a review of the first global CMS/AEWA International Single Species Action Plan for the Conservation of the White-headed Duck, which was adopted in 2005 at the 3rd Session of the Meeting of the Parties to AEWA and much of the information presented therein has been adopted and carried over in this review:

Hughes, B., Robinson, J.A., Green, A.J., Li, Z.W.D. & Mundkur, T. (Compilers). 2006. International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala*. CMS Technical Series No. 13 & AEWA Technical Series No.8. Bonn, Germany.

Date of adoption (Revision 1):
- Adopted by the NADEG meeting on the 22-23 May 2018 for Member States of the European Union.
- Adopted by the 48th meeting of the CMS Standing Committee on 23-24 October 2018.
- Adopted at the 7th Session of the Meeting of the AEWA Parties in South Africa, 4-8 December 2018.

Lifespan of the Plan:
This International Single Species Action Plan is valid for 10 years, following its adoption in 2018 by the respective governing bodies: **2018-2027**. It should be reviewed every 10 years (assessed for revision, extension or retirement

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in 2027). An emergency review will be undertaken if there is a significant change to the species' status before the next scheduled review.

Milestones:

- 1st Meeting of the AEWA White-headed Duck International Working Group: 24 – 26 October 2016, Madrid, Spain;
- First draft: June 2017, circulated to the AEWA WHD IWG and additional experts;
- Second draft: December 2017, circulated to the Principal Range States for consultation;
- Final draft: presented to the AEWA Technical Committee at its 14th Meeting on 10-13 April 2018 and the AEWA Standing Committee at its 13th Meeting on the 03-05 July 2018.

AEWA White-headed Duck International Working Group:
Please send any additional information or comments regarding this Action Plan to the Working Group Coordinator, Arzu Gürsoy Ergen (agursoy@omu.edu.tr) as well as to the UNEP/AEWA Secretariat (aewa.secretariat@unep-aewa.org).

Photo cover: White-headed Duck (*Oxyura leucocephala)* © Amir Bendov

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Disclaimer:
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This International Single Species Action Plan represents a full revision of, and supersedes the 2006 version (CMS Technical Series No. 13, AEWA Technical Series No. 8)

[This publication can be downloaded from the CMS, AEWA and EC websites (xxxxx/xxxxx/ http://ec.europa.eu/environment/nature/conservation/wildbirds/action_plans/index_en.htm add links) and is available on the Species Action Plans Tracking Tool: http://trackingactionplans.org/SAPTT/sapTimeline/35]

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1. BASIC DATA

Species and populations covered by the Plan:
This Action Plan covers all four White-headed Duck populations: 1) **West Mediterranean** (Morocco and Spain), 2) **North African** (Algeria and Tunisia), 3) **East Mediterranean, Turkey, central and south-west Asian** (from here on referred to as the **Eastern population**); and 4) **south Asian**.

List and map of Principle Range States[1]:
This Action Plan shall be implemented in the following **18 Principal Range States** for the White-headed Duck: Algeria, Armenia, Azerbaijan, Bulgaria, China, Greece, Iran, Israel, Kazakhstan, Morocco, Romania, Russia, Spain, Syria, Tunisia, Turkey, Turkmenistan, and Uzbekistan.

This Action Plan also applies to the following countries hosting individuals of the invasive Ruddy Duck *(Oxyura jamaicensis)*: Belgium, France, Netherlands and the United Kingdom. It should be noted that the actions pertaining to the eradication of Ruddy Ducks included in this Action Plan are, in addition, to be implemented in any countries where invasive Ruddy Ducks are identified in accordance with AEWA Resolution 4.5[2] and the recommendations of the Bern Convention (Annex 4).

In addition, four **Survey Range States** have been identified, for which there is currently insufficient data available to assess their significance for the species. These are: Afghanistan, Iraq, Mongolia and Pakistan.

Table 1. Distribution and populations of the White-headed Duck

West Mediterranean	North African	Eastern	South Asian	Ruddy Duck countries
Morocco (*breeding, staging, wintering*)	**Algeria** (*breeding, staging, wintering*)	**Armenia** (*breeding*)	Afghanistan*	**Belgium**
Spain (*breeding, staging, wintering*)	**Tunisia** (*breeding, staging, wintering*)	**Azerbaijan** (*staging, wintering*)	**China** (*breeding*)	**France**
		Bulgaria (*staging, wintering*)	Mongolia*	**The Netherlands**
		Greece (*staging, wintering*)	Pakistan*	**Spain**
		Iraq*		**United Kingdom**
		Israel (*wintering*)		
		Islamic Republic of Iran (*breeding, staging, wintering*)		
		Kazakhstan (*breeding, staging*)		
		Romania (*staging, wintering*)		

[1] Each Contracting Party to AEWA is equally responsible under the Agreement for all the AEWA species/populations they host as per the obligations set out in the AEWA legal text. All the countries which host a specific species (whether in small or large numbers) are considered Range States for that species. The identification of Principle Range States in AEWA Action Plans, is an approach used to prioritize coordinated international conservation efforts to those countries considered to be crucial for ensuring the favourable conservation status of the species/population in question. It should be noted that, under no circumstances does the identification of Principle Range States in AEWA International Species Action Plans, diminish the legal obligations of potential remaining Range States which are Contracting Parties to AEWA to equally ensure the adequate protection and conservation of the species/populations in question, including through implementation of relevant actions from the respective Species Action Plan.
[2] AEWA Resolution 4.5 on Introduced non-native waterbird species in the Agreement area (paragraph 13).

		Russian Federation (*breeding, staging*)		
		Syrian Arab Republic (*breeding, staging, wintering*)		
		Turkey (*breeding, staging, wintering*)		
		Turkmenistan (*breeding, wintering*)		
		Uzbekistan (*breeding, staging, wintering*)		

*****The current situation in Afghanistan, Iraq, Mongolia and Pakistan is unclear and further surveys will be necessary to assess the status of the species in these countries. They have thus been included as Survey Range States in this revised Action Plan.*

Figure 1. Western Palearctic distribution of the White-headed Duck Oxyura leucocephala (from Scott & Rose 1996).

International legal status

Table 2. Summary of the international conservation and legal status of the White-headed Duck

Global Status (IUCN Red List)[3]	AEWA[4]	CMS[5]	Bern Convention[6]	CITES[7]	EU Birds Directive*[8]
Endangered (A2bcde+4bcde)	All three populations covered under AEWA are listed on Table 1 Column A: - West Mediterranean (Spain & Morocco) 1a 1b 1c - Algeria & Tunisia 1a 1b 1c - East Mediterranean, Turkey & South-west Asia 1a 1b 1c	Appendix I	Appendix II	Appendix II	Annex I

**Council directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive)*

As the White-headed Duck is listed in Annex I of the Birds Directive, the species should be subject of special conservation measures concerning its habitats in order to ensure survival and reproduction in its area of distribution. EU Member States should classify in particular the most suitable territories in number and size as Special Protection Areas for the conservation of the species.

Member States shall also take the requisite measures to establish a general system of protection for the White-headed Duck, prohibiting in particular deliberate killing or capture by any method or keeping birds; deliberate destruction of, or damage to, species nests and eggs or removal of nests, taking eggs in the wild and keeping these eggs even if empty; deliberate disturbance particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of this Directive. Derogations from these provisions may be possible in the absence of other satisfactory solutions, for particular reasons, specified in the Directive.

[3] http://www.iucnredlist.org/details/22679814/0
[4] http://www.unep-aewa.org/en/documents/agreement-text
[5] Migratory species that have been categorised as being in danger of extinction throughout all or a significant proportion of their range. For more details see the Convention text http://www.cms.int/en/convention-text
[6] Give special attention to the protection of areas that are of importance (Article 4) and ensure the special protection of the species (Article 6). http://www.coe.int/en/web/bern-convention/home
[7] https://www.cites.org/eng/app/appendices.php
[8] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147

2. FRAMEWORK FOR ACTION

GOAL: Restore the White-headed Duck to a favourable conservation status and remove it from the threatened categories of the IUCN Red-list.

PURPOSE: The purpose of this Single Species Action Plan is to maintain the current global population and range of the White-headed Duck during the next 10 years (2018-2027).

Population target indicators (minimum) for the 10-year lifetime of this revised Action Plan:

- West Mediterranean population size: 2,100 winter counts/wintering individuals (Morocco & Spain)
- North African population size: 1,100 wintering individuals (Algeria & Tunisia)
- Eastern population size: 10,000 individuals (based on 2016 autumn counts in Kazakhstan)
- South Asian population size: *establish better knowledge on the distribution and population size, understand the causes of decline and stop and reverse the decline of the population.*

Priority scale:	**Time scale:**
Essential	Immediate: to commence within the next year
High	Short: to commence within the next 3 years
Medium	Medium: to commence within the next 5 years
Low	Long: to commence within the next 10 years
	Ongoing: an action that is currently being implemented and should continue

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Direct problem: Direct adult mortality	**Objective 1: Direct mortality of adults is minimized & breeding success and annual survival is increased**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Illegal killing	1.1 Illegal killing is reduced	1.1.1 Continue to provide adequate legal protection for the White-headed Duck **(All WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation
		1.1.2 Ensure law enforcement and a wardening system at key sites and protected areas **(All WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation
		1.1.3 Capacity building of law enforcement officers in identification, biology, conservation status and conservation of the species **(All WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation Conservation NGOs
		1.1.4 Raise awareness, provide education and training to hunters to identify species **(MO, TU, AL & All Eastern WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation Hunting organisations Conservation NGOs
Disturbance	1.2 Disturbance is minimised	1.2.1 Ban of hunting and trapping at key breeding sites **(All breeding WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation Hunting organisations
		1.2.2 Introduce management & zonation plans to regulate human activities at key sites (hunting, fishing, boating) **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation Hunting organisations Conservation NGOs

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Direct problem: Direct adult mortality	**Objective 1: Direct mortality of adults is minimized & breeding success and annual survival is increased**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		1.2.3 Ban of hunting at key wintering sites **(All wintering WHD range states)**	High	Short	Government institutions in charge of nature conservation Hunting organisations
Accidental killing including drowning	1.3 Accidental killing and drowning is min-imised	1.3.1 Ban hunting before sunrise and after sunset at key White-headed Duck sites **(AM/BG/SP)**	High	Short	Government institutions in charge of nature conservation Hunting organisations
		1.3.2 Restrict the use of mono-filament fishing nets and other potentially dangerous net types at key sites **(All WHD range states)**	Essential	Immediate	Government institutions in charge of nature conservation Conservation NGOs Fishing organisations
		1.3.3 Awareness raising aimed at fisherman at key White-headed Duck sites **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation Conservation NGOs Fishing organisations
		1.3.4 Introduce systems to monitor by-catch and fishing activity in relation to WHD feeding distribution **(All WHD range states)**	Medium	Medium	Government institutions in charge of nature conservation Conservation NGOs Fishing organisations

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Direct problem: Direct adult mortality	**Objective 1: Direct mortality of adults is minimized & breeding success and annual survival is increased**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		1.3.5 Develop fishing techniques sympathetic to the conservation of the WHD **(All WHD range states)**	Low	Long	Government institutions in charge of nature conservation Conservation NGOs Fishing organisations
Lead poisoning	1.4 Mortality from lead ingestion and subsequent poisoning minimised	1.4.1 Ban the use of lead shot for hunting waterfowl and over wetlands, monitor lead shot use by hunters and lead shot ingestion by WHD **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation Hunting organisations
		1.4.2 Ban the use of lead weights for angling purposes in all range states **(All WHD range states)**	Med	Medium	Government institutions in charge of nature conservation Fishing organisations
		1.4.3 Quantify the lead concentration in sediments at key sites **(AL, AM, MO, SP, TU)**	Low	Long	Government institutions in charge of nature conservation
		1.4.4 Monitor lead levels in dead individuals and other waterfowl species **(SP)**	High	Short	Government institutions in charge of nature conservation Conservation NGOs
		1.4.5 Implement remediation measures at key sites with high lead concentration **(AM, SP**)	Low	Long	Government institutions in charge of nature conservation

Direct problem: Direct adult mortality	**Objective 1: Direct mortality of adults is minimized & breeding success and annual survival is increased**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Disease	1.5 The risk of disease outbreaks minimised and co-ordination between range states optimised	1.5.1 Implement appropriate water management to avoid botulism and cyanobacteria **(AL, GR, IS, MO, RO, SP, TU)**	Overall High (Locally Essential)	Short (immediate)	Government institutions in charge of nature conservation
		1.5.2 Prepare protocols in case of H5N1 outbreak at key White-headed Duck sites **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation
		1.5.3 AEWA and CMS Secretariats to liaise with relevant orgs/authorities if H5N1 outbreak **(AEWA/CMS)**	Essential	Immediate	AEWA Secretariat CMS Secretariat

Direct problem: Direct destruction/ mortality of eggs and chicks	**Objective 2: The direct mortality of chicks and the destruction of nests is minimized**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Trampling of nests by cattle	2.1 Trampling of nests by livestock minimised	2.1.1 Exclude livestock from breeding areas at key sites during the breeding season **(AL, MO, TR, TU)**	High	Short	Government institutions in charge of nature conservation

Direct problem: Direct destruction/ mortality of eggs and chicks	**Objective 2: The direct mortality of chicks and the destruction of nests is minimized**				
Predation by introduced/feral mammals (Brown Rats, stray dogs etc.)	2.2 Predation by introduced/feral mammals minimised	2.2.1 Develop and implement control of introduced and feral mammals at key sites **(AL, IR, MO, TU)**	High	Short	Government institutions in charge of nature conservation
		2.2.2 Control of wild boar at key nesting sites **(SP, TU)**	High	Short	Government institutions in charge of nature conservation
Inappropriate hydrological management at breeding sites	2.3 Appropriate hydrological management at breeding sites	2.3.1 Hydrological management plans for key breeding sites to minimise inappropriate management during the breeding season **(TR, IR, KZ, RU, SP)**	High	Short	Government institutions in charge of nature conservation

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Direct problem: Habitat degradation	**Objective 3: Habitat loss and degradation is halted**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Wetland drainage and reclamation	3.1 Wetland drainage and reclamation is halted	3.1.1 Designate all key sites for the species (including IBAs) as SPAs in EU member states or as Ramsar Sites or protected areas outside of the EU **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation
		3.1.2 Protect all WHD IBAs under national legislation and ensure this legislation is enforced **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation BirdLife International
		3.1.3 Implement appropriate environmental impact assessments for all projects and plans affecting key sites, with special attention to agricultural development, drainage, diversion of rivers, abstraction of water and building dams **(All WHD range states)**	High	Short	Government institutions and pertinent authorities
		3.1.4 Awareness campaign around importance of wetlands, conservation and ecosystem services **(All WHD range states)**	High	Short	Conservation NGOs
		3.1.5 Avoid habitat fragmentation of breeding sites through appropriate land-use planning **(All breeding WHD range states)**	Medium	Medium	Government institutions and pertinent authorities
		3.1.6 Assess the practicality, and undertake the restoration of former key sites **(AM, AZ, RO, IR, SP, TU)**	Medium	Medium	Conservation NGOs

Direct problem: Habitat degradation	**Objective 3: Habitat loss and degradation is halted**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		3.1.7 Ensure that White-headed Duck habitat requirements are included in relevant governmental land-use policies in breeding and wintering areas and along migration routes **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation
Reduced food supply	3.2 Halt and reverse the introduction of non-native cyprinids	3.2.1 Avoid arrival of carp and other cyprinids in current and potential key sites. Eliminate or reduce carp biomass from invaded sites. **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation
Drought	3.3 Adaptation for climate change	3.3.1 Increase resilience of key sites in the face of climate change by reducing water extraction and nutrient inputs **(All WHD range states)**	High	Medium	Government institutions in charge of nature conservation
Degradation of nesting vegetation	3.4 Degradation of nesting vegetation is minimised	3.4.1 Promote appropriate hydrological management at key breeding sites to ensure suitable water levels and quality **(All breeding WHD range states)**	High	Short	Government institutions in charge of nature conservation
		3.4.2 Promote and ensure reed harvesting practices reflect WhD breeding requirements at key sites **(IR)**	Medium	Medium	Government institutions in charge of nature conservation
		3.4.3 Improve control and enforcement to prevent illegal burning of reedbeds at key sites **(AM, RU)**	Medium	Medium	Government institutions in charge of nature conservation

Direct problem: Habitat degradation	**Objective 3: Habitat loss and degradation is halted**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Degradation of water quality limiting food supply	3.5 Degradation of water quality limiting food supply is minimised	3.5.1 In EU countries promote use of agri-environment schemes to reduce and prevent drainage and run-off of pesticides **(All EU WHD range states)**	High	Short	Government institutions and pertinent authorities
		3.5.2 In EU countries comply fully with Urban Waste Water Treatment Directive **(All EU WHD range states)**	High	Short	Government institutions in charge of nature conservation
		3.5.3 Promote and enforce water quality and abstraction legislation **(All WHD range states)**	High	Short	Government institutions and pertinent authorities
		3.5.4 Monitor water quality at key sites **(All WHD range states)**	Medium	Medium	Government institutions and pertinent authorities
		3.5.5 Develop buffer zone of natural vegetation around key sites to reduce chemical and sediment inputs from surrounding agriculture **(All WHD range states)**	High	Medium	Government institutions and pertinent authorities
Poisoning from pesticides and other chemicals	3.6 Poisoning from pesticides and other chemicals is minimised	3.6.1 Risk assessment of industries/agriculture practices close to key sites **(All WHD range states)**	Medium	Medium	Government institutions and pertinent authorities
		3.6.2 Promote nature friendly agriculture around key sites to reduce run-off **(All WHD range states)**	High	Short	Government institutions, pertinent authorities and conservation NGOs

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Direct problem: Hybridisation with invasive alien species	Objective 4: **No hybridisation and competition for food and nesting sites with the non-native Ruddy Duck or with any other *Oxyura* species**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Competition and hybridisation with non-native Ruddy Duck	4.1 Competition and hybridisation with Ruddy Duck is eradicated	4.1.1 Implement the new recommendation of the Bern Convention **(MO, SP, TU)** and propose the implementation in **AL** (encourage implementation in range states not covered by the WhD ISSAP – example Switzerland)	Essential	Immediate	Government institutions in charge of nature conservation Bern & AEWA Secretariats
		4.1.2 Implement the new European Regulation – non-native species **(All EU RD ranges states)**	Essential	Immediate	Government institutions in charge of nature conservation
		4.1.3 Survey the presence of Ruddy Duck and hybrids **(All WHD and RD range states)**	Essential	Immediate	Government institutions in charge of nature conservation Conservation NGOs
		4.1.4 Eradicate all Ruddy Ducks as well as Ruddy Duck x White-headed Duck hybrids **(All RD range states)**	Essential	Immediate	Government institutions in charge of nature conservation
		4.1.5 Phase out all captive populations of Ruddy Ducks **(All WHD and RD range states)**	High	Short	Government institutions in charge of nature conservation

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Direct problem: Hybridisation with invasive alien species	Objective 4: **No hybridisation and competition for food and nesting sites with the non-native Ruddy Duck or with any other *Oxyura* species**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		4.1.6 Raise awareness of the need to control non-native species using the Ruddy Duck as a case study.	Low	Long	
		4.1.7 Governments should not implement any reintroduction project for WHD before the RD is eradicated (all former and current breeding range states – for example Italy).	Essential	Immediate	
Potential hybridisation with other *Oxyura* species	4.2 Potential risk of hybridisation with other *Oxyura* species is minimised	4.2.1 Undertake a risk assessment of the potential accidental introduction and hybridisation of other *Oxyura* spp.	Medium	Medium	

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Direct problem: Gaps in knowledge hamper conservation of White-headed Ducks	Objective 5: **Priority research is undertaken on and key knowledge gaps are filled**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
Gaps in knowledge related to the White-headed Duck	5.1 Knowledge gaps relating to White-headed Duck are filled	5.1.1 Undertake national surveys to improve the knowledge of White-headed Duck breeding population size **(All breeding WHD range states)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.2 Undertake surveys in Afghanistan, Iraq, Mongolia and Pakistan to determine current species status (**AF, IQ, MN, PK)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.3 Assess the scale and impact of illegal killing, accidental shooting and disturbance from illegal and legal hunting **(All range states)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.4 Undertake research on White-headed Duck habitat selection and habitat requirements **(All WHD range states)**	High	Short	Government institutions in charge of nature conservation

Direct problem: Gaps in knowledge hamper conservation of White-headed Ducks	Objective 5: **Priority research is undertaken on and key knowledge gaps are filled**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
					National and international conservation NGOs
		5.1.5 Research on the migration strategy using advances in tracking technology to identify migration routes, wintering sites and connectivity **(All eastern and Asian WHD range states)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.6 Undertake surveys and co-ordinated counts to improve estimates of wintering White-headed Duck population size **(All wintering WHD range states)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.7 Identify White-headed Duck diet during breeding, migration and wintering **(All WHD range states).**	Medium	Medium	Government institutions in charge of nature conservation National and international conservation NGOs

Direct problem: Gaps in knowledge hamper conservation of White-headed Ducks	Objective 5: **Priority research is undertaken on and key knowledge gaps are filled**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		5.1.8 Undertake research and monitoring to determine the impact of net fishing throughout the species' range **(AZ, BU, GR, KZ, RO, RU, TU)**	Medium	Medium	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.9 Assess the impact of poisoning from pesticides and other chemicals on White-headed Duck mortality **(AL, AM, MO, SP, TU)**	Medium	Medium	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.10 Undertake metapopulation analysis to identify interchange between populations and key sites (migration and wintering) **(All WHD range states)**	Medium	Medium	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.11 Genetic studies undertaken to determine population structure of Eastern population **(All Eastern WHD range states)** and to establish	Medium	Medium	Government institutions in charge of nature conservation

Direct problem: Gaps in knowledge hamper conservation of White-headed Ducks	Objective 5: **Priority research is undertaken on and key knowledge gaps are filled**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
		differences between Eastern and Western populations			National and international conservation NGOs
		5.1.12 The likely effects of climate change, including drought, on White-headed Duck and key sites have been assessed and compensatory measures identified (e.g. reducing water extraction and nutrient loading).	Low	Long	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.13 The impact of introduced cyprinids and/or other fish species is understood. **(All WHD range states)**	Low	Long	Government institutions in charge of nature conservation National and international conservation NGOs
		5.1.14 White-headed Duck breeding ecology in Northern Africa are understood **(AL, MO, TU)**	Low	Long	Government institutions in charge of nature conservation National and international conservation NGOs
Gaps in knowledge related to	5.2 Knowledge gaps related to Ruddy Duck	5.2.1 Links between the Ruddy Duck populations in Europe are understood	Medium	Medium	Government institutions in charge of nature conservation

Direct problem: Gaps in knowledge hamper conservation of White-headed Ducks	Objective 5: **Priority research is undertaken on and key knowledge gaps are filled**				
Underlying problems	Result	Action	Priority	Timescale	Organisations responsible
interactions with non-native Ruddy Duck and other *Oxyura* species	and other *Oxyura* sp are filled	(movements, resident populations, genetic analysis).			National and international conservation NGOs
		5.2.2 Risk assessment for other *Oxyura* species which could possibly hybridise with WhD conducted (in particular *O. vittata*).	Medium	Medium	Government institutions in charge of nature conservation National and international conservation NGOs
		5.2.3 Current status of Ruddy Ducks as in the Netherlands is understood	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs
		5.2.4 Current status of Ruddy Ducks in Northern Africa is understood **(AL, MO, TU)**	High	Short	Government institutions in charge of nature conservation National and international conservation NGOs

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ANNEX 1. BIOLOGICAL ASSESSMENT

Distribution throughout the annual cycle:

Palearctic, with a fragmented breeding distribution extending east from Spain and Morocco in western Europe to western China and western Mongolia, and north from Iran to southern Russia (Figure 1). Divisions between biogeographical populations are poorly understood (Scott & Rose 1996), but four major populations are thought to remain: a migratory central Asian population breeding mainly in northern Kazakhstan and southern Russia and wintering in western Asia, the Middle East and in eastern Europe as far west as Greece (Eastern population); a small and declining migratory Asian population, wintering in Pakistan and perhaps originating from southern Russia and Mongolia (South Asian population); a population resident in Spain and Morocco (West Mediterranean population); and another resident in Tunisia and north-east Algeria (North Africa population).

The White-headed Duck occurs regularly in 18 countries which are categorised as Principal Range States in the ISSAP (Table 2), and in another 4 countries where the status is uncertain. Nine countries hold significant breeding numbers (Algeria, Islamic Republic of Iran, Kazakhstan, Russian Federation, Spain, Syria, Tunisia, Turkey, and Uzbekistan), but most are concentrated in only three countries (Kazakhstan, Russian Federation, and Spain). The most important wintering countries differ from year-to-year, presumably depending on weather conditions. In recent years, 11 countries have held over 1,000 birds (Armenia, Azerbaijan, Bulgaria, Greece, Islamic Republic of Iran, Israel, Kazakhstan, Russian Federation, Spain, Syria, Turkey, and Uzbekistan – see Table 3). Seven countries hold significant numbers of White-headed Ducks throughout the year (Algeria, Islamic Republic of Iran, Russian Federation, Spain, Tunisia, Turkey, and Uzbekistan).

The migration route is poorly understood as is the extent of dispersal. Moult movements are poorly understood, but large flocks of moulting individuals gather on certain sites (e.g. the Sudochie wetlands in Uzbekistan, and Lake Tengiz in Kazakhstan). Departure from breeding localities begins in late August and is completed by mid-October. In Central Kazakhstan, the largest numbers occur in September, but birds leave the region completely by mid-October (Koshkina *et al*. 2016; Schielzeth *et al*. 2003). In Uzbekistan, the major passage occurs through the Amu Darya delta in October (Kreuzberg-Mukhina & Lanovenko 2000; Lanovenko & Filatova 2012). In Pakistan, birds first appear in October and leave by the end of March (Chaudhry 2002). Further work is required to determine the current status of the White-headed Duck in Afghanistan, Iraq, Mongolia and Pakistan. It is currently unknown whether there is interchange between the West Mediterranean and North African populations.

Habitat requirements:

It breeds on small, enclosed, semi-permanent or temporary freshwater, brackish or eutrophic lakes with a fringe of dense emergent vegetation of helophytes, such as *Phragmites* or *Typha* species, and a covering of hydrophytes (like species of Potamogetonaceae). It is usually found where these conditions occur within larger wetland systems, and shows a preference for areas with extensive areas of shallow water.

During the winter the species inhabits larger, deeper alkaline or saline waters which often have less emergent vegetation than in the breeding season, but still support algae and pond weeds and rarely in freshwater lakesand reservoirs. Habitats include saline inland lakes, coastal lakes and lagoons, and even the coastal waters of inland seas, although it is not found on areas of coast that are subjected to heavy

wave action. In the northeast of its range it is associated with water bodies which are sufficiently saline so as not to freeze over during winter. In Middle East, they frequent reservoirs and sewage ponds (Hadad & Moyal 2007; Balmer & Murdoch 2010).

Survival and productivity:

Given the paucity of ringing information and no tracking studies initiated to date, there are no known data on adult or juvenile survival rates. Productivity data are also sparse. The key threat to the long-term survival is the risk of hybridisation with the non-native Ruddy Duck. An eradication programme is underway and has seen a dramatic reduction in the numbers and range of the Ruddy Duck (see Annex 4)

Population size and trend:

Estimating the overall breeding population size for White-headed Duck is difficult given the breeding behaviour of the species and its widespread and fragmented distribution. More accurate estimates can be made from winter counts (Table 3). However, large fluctuations in population size still occur even in well-monitored West Mediterranean population. For the West Mediterranean population (Spain and Morocco) the current population estimate is 2,500-3,500 individuals. The North African population (Algeria and Tunisia) has recorded peak counts of 1420 and 1861 in 2011 and 2014 respectively, and the IWC count from 2014 estimates the population to number 2,585 individuals. In Kazakhstan in 2016, counts of approximately 20,000 birds suggest that the Eastern population is much larger than previously thought. It is unlikely that these counts include the whole eastern population so 20,000 should be considered a minimum. There are no recent estimates for the South Asian population and is considered a high priority for surveys to establish a revised baseline.

Table 3. Population size and trend by country

Country	Breeding numbers	Quality	Year of the estimate	Breeding population trend in the last 10 years	Quality	Maximum size of migrating or non-breeding populations in the last 10 years	Quality	Year of the estimate
Algeria	unknown					366 - 1460		2008 - 2015
Afghanistan	0	Low		Unknown	Low	0[1]	Low	
Armenia	15-20	Good	2016	Stable	Good	100-500	Low	2003-2016
Azerbaijan						3500 – 6000		?
Bulgaria						4-667	Good	2003 - 2011
China	40-100	Good	?	Stable		10-60		2007 - 2016

Greece						0 - 1200	Good	2006 - 2016
Iraq						150-400	Moderate	2006-2016
Islamic Republic of Iran	?					31-4225 (mean=1085)	Good	2006 - 2016
Israel						979 - 3242		2006 - 2016
Kazakhstan	?					5000-20000	Good	2016
Mongolia[2]	500-700	Poor	2004	?		100-200	Poor	2004
Morocco	143		2016	Increase		642	Good	2015
Pakistan	0	Low				2-8	Good	2014-2017
Romania						10 – 30 (migration) 5 – 10 (winter)	Good	2008 - 2015
Russian Federation	400 - 450		2006 - 2016	Stable		5000 – 7500 (migration) 50 – 2000 (wintering)	Good	2006 - 2016
Spain	222	Good	2015	Stable	Good	4486	Good	2000
Syrian Arab Republic	40-60	Moderate	2011-2012	stable	Poor	851-2400	Poor	2007-2012
Tunisia	unknown					188 - 1861	Good	2008 - 2016
Turkey	70 - 150					1500 – 5000 (winter)		
Turkmenistan						2 – 4350 (winter: big fluctuations)	Good	2006 - 2016
Uzbekistan	5-24	Moderate	2005-2016	decline	Moderate	8000-10000	Stable	2016

[1]No recent surveys or data are available due to ongoing security concerns but there is potential habitat
[2]Estimates taken from previous White-headed Duck ISSAP

ANNEX 2. PROBLEM ANALYSIS

This is the 1st revision of the CMS/AEWA/EU International White-headed Duck Single Species Action Plan and many of the key conservation issues have been addressed. Notable progress has been made on reducing the key threat of hybridisation with the non-native Ruddy Duck and this remains a key area of conservation focus in this updated plan. The Eastern population requires much greater understanding of numbers, distribution and migratory patterns to enable the effective tackling of key threats. A number of range states, especially those associated with the South Asian population urgently need to establish baseline population estimates to help identify the need for conservation action.

The key threats were identified using the first CMS/AEWA/EU ISSAP (Hughes *et al.* 2006). During the 1st Meeting of the AEWA White-headed Duck International Working Group in Madrid in 2016, the threats were revisited to determine if they remained relevant. No new threats have emerged since the adoption of the previous Action Plan. With significant progress in tackling the key threat of hybridisation, there is now a need to emphasis other threats such as site management and habitat related issues. However, a focus on completing all aspects of tackling the threat of hybridisation remains an urgent and essential work area.

Over-hunting/illegal killing — Importance: Critical

The White-headed Duck is an incredibly easy bird to shoot given its lack of an escape response when facing hunters (Green et al. 1996). White-headed Ducks are undoubtedly shot by mistake by hunters who are unable to identify the species, although the impact of this has never been quantified. Over-exploitation and/or egg-collection for human consumption were probably the final causes of extinction in France, Italy, former Yugoslavia and Egypt. Over-hunting and poaching are still major threats in some parts of the species' range, although the impact of these practices has rarely been quantified. An investigation into illegal hunting at Burdur Gölü (Turkey) in winter 1993 found that an estimated 4.5 birds a day were being shot within a limited study area that held 25% of the lake's White-headed Duck population. This kill rate almost certainly exceeded the limits of "sustainable harvest" of the lake's population (Green et al. 1996). The White-headed Duck formerly suffered significant over-hunting in Spain, and Torres et al. (1986) considered over-hunting to be "the principal cause of the drastic decline in numbers prior to 1978". Effective protection in Spain facilitated the major increase there. Thus, the huge increase in El Hondo, Valencia (with 4,035 birds in August 2000) was largely in response to a hunting ban from 1996 onwards. White-headed Ducks are known to be have been shot illegally in many other countries, including Azerbaijan (M. Patrikeev in litt. 1995), Bulgaria (Iankov 1994), Greece (Handrinos 1995), Russia (Li & Mundkur 2003), Tunisia (Z. Benaïssa in litt. 1994) and Turkmenistan (Li & Mundkur 2003). A recent review of illegal bird killing across the Mediterranean suggested that the White-headed Duck is still killed in significant numbers especially in Algeria, Syria and Turkey (Laure-Brochet et al. 2016).

Human Disturbance — Importance: Critical

Disturbance from human activities, particularly hunting, fishing and boating activities during the breeding period, is thought to be a threat to the White-headed Duck in many countries.

Drowning in Fishing Nets — Importance: High

Diving ducks are prone to becoming trapped in fishing nets, which in some instances can cause significant mortality, for example in Greece, Iran, Kazakhstan, Pakistan and Uzbekistan (Panayotopoulou & Green 2000; Li & Mundkur 2003, Schielzeth et al. 2003).

Lead Poisoning Importance: High

Diving ducks suffer from lead poisoning through ingestion of lead shot, which is still used legally in shotgun cartridges in many White-headed Duck Range States. As hunting is intense at many key sites, the ingestion of lead shot could result in significant mortality (see Pain 1992). For example, in Spain Mateo et al. (2001) found that 50% of 26 White-headed Ducks had ingested lead in the gizzard, and that 80% of these birds had lethal liver lead concentrations. Note, however, that these figures are likely to exaggerate the prevalence of lead exposure in the wild population because they were mainly birds found dead – 32% of shot White-headed Ducks, Ruddy Ducks and hybrids had ingested lead in the gizzard. Further work by Mateo (2009) estimated mortality of up to 1848 White-headed Duck due to lead poisoning. Many key sites (e.g. El Hondo, Laguna de Medina) have been subject to intense hunting in the past and hold high densities of lead shot in the sediments.

Livestock Farming Importance: Local/high

Damage to reed beds in wetlands by cattle grazing or burning of reed beds for improved fodder production for cattle, results in the loss of nesting habitat of White-headed Duck (Li & Mundkur 2003). The harvest of reeds to build fences for protection of cattle in winter results in the loss of nesting habitat of White-headed Duck for example in Turkey and Morocco (Li & Mundkur 2003, Green et al. 2002) and no doubt other countries.

Predation by introduced/feral animals Importance: Local/high

The presence of humans and their activities leads to an increase in the densities of for example, Brown Rats *Rattus norvegicus* which can be major predators of nesting waterfowl. In the Tarelo Lagoon in Doñana, Spain, large numbers of White-headed Duck nests abandoned after predation by rats have been recorded in recent years, and nesting success is almost zero at this site (C. Urdiales pers. comm.).

Inadequate Wetland Management Importance: High

In Spain, wetlands often dry out (sometimes irreversibly) due to inadequate management. This also increases the effects of pollution and eutrophication (M. Giménez pers. comm.). This was particularly recognized as a risk at breeding sites in Turkey, Iran, Kazakhstan, Russia and Spain by the AEWA White-headed Duck International Working Group.

Groundwater Extraction and Infrastructure Development Importance: High

Overuse/unsustainable use of water resources for irrigation and man-made modifications to many wetlands are critical threats to the White-headed Duck, especially in Central Asia. In Uzbekistan, key sites for White-headed Duck, including the Sudochie Wetland and Dengizkul Lake, which have held up to 3,000 and 5,000 White-headed Ducks, respectively, are under threat of drying out completely due to a combination of the change in the water-regime in the Aral Sea basin (diversion of the Amu Darya and Syr Darya Rivers) and the extended drought in Central Asia between 1998 and 2002 (see below). In Turkey, dam-building and water abstraction from surrounding catchments have affected many

important breeding and wintering sites. For example, former breeding sites at Eregli and Hotamis Marshes are now totally dry (G. Eken pers. comm.) as is Çorak Gölü – a previously important wintering site. At Burdur Gölü, formerly the most important wintering site in the world, White-headed Duck numbers have decreased from around 11,000 birds in 1991 to around 1,000 birds since 2000 (Kurt et al. 2002). Over the same time period, lake water levels at Burdur Gölü have dropped by 12m (W. Eastwood pers. comm.). The Hamun-i Puzak, on the Afghanistan - Iran border, was an important site for White-headed Duck in the 1970-80s, until the development of irrigation and water supply schemes resulted in reduced water flows and changes to its ecology and vegetation (Scott 1995). In Tunisia, upstream barrages have severely affected the breeding site Sebkha Kelbia, increasing the frequency of desiccation by two and a half times (Hughes & Hughes 1992). These are just a few examples of specific cases, and many other key sites are affected by similar activities.

Arable Farming Importance: High

Habitat loss and degradation due to human developments is the most significant factor in the past decline of the White-headed Duck. Drainage of numerous shallow lakes, marshes and other wetlands of former importance for breeding and wintering have occurred mainly for agricultural developments throughout the species' range (Green & Anstey 1992), and it has been estimated that the area of suitable breeding habitat has been roughly halved last century (Anstey 1989). Whole wetland systems have been transformed in the former Soviet Union. In Spain, >60% of the endorreic lagoons in Andalucía have been drained this century (Green & Hughes 1996). Agricultural practices in and around lakes and rivers have a negative impact by increasing run off and sedimentation rates in some wetlands that affect productivity and food availability for the White-headed Duck.

Climate Change/Drought Importance: Critical

Climate change is thought to be causing more frequent droughts resulting in reduced water levels and the drying out of many lakes in Central Asia. This phenomenon may be a great threat to the survival of the White-headed Duck. The drought in the Central Asian region between 1998 and 2002 greatly reduced wetland habitat for White-headed Duck and other waterbirds (Li & Mundkur 2003). Many important sites for the White-headed Duck totally dried out, or their area and water level were greatly reduced. For example, the Sudochie Wetlands in western Uzbekistan held only 9 White-headed Duck in 2001 compared to 3,800 in the previous two years. The long-term effects of drought on the viability of White-headed Duck populations are unknown although potentially critical. The lack of water has probably resulted in degradation and desiccation of important breeding sites in Kazakhstan, Mongolia, Russia and Uzbekistan; wintering sites in Pakistan, Iran and Turkmenistan; and also on staging sites in Afghanistan, Kazakhstan, Uzbekistan, Iran, Turkmenistan and possibly Tajikistan (Li & Mundkur 2003). Climatic fluctuations have been shown to influence the population dynamics of White-headed Ducks in Spain (Almaraz & Amat 2004).

Pollution Importance: Medium

The fact that many of the wetlands used by White-headed Ducks are endorreic makes them particularly vulnerable to hyper-eutrophication and pollution. For example, Burdur Gölü in Turkey is polluted by industrial, domestic and agricultural pollution (Salathé & Yarar 1992; Green et al. 1993, 1996) and heavy metals (Yigit & Altindag 2002).

Hybridisation with Invasive Alien Species Importance: Critical

The greatest long-term threat to the White-headed Duck's survival is thought to be introgressive hybridisation (i.e. genetic swamping) with the non-native North American Ruddy Duck *Oxyura jamaicensis* (Green & Hughes 1996). The hybrids are fully fertile: second-generation birds have already been collected in Spain (Urdiales & Pereira 1993) and third-generation hybrids have been bred in captivity at the Wildfowl & Wetlands Trust, Slimbridge. Ruddy Ducks mainly originating from the UK feral population of around 6,000 birds have been recorded in 21 Western Palearctic countries with breeding records in at least 11, and regular breeding in six (France, Ireland, Morocco, Netherlands, Spain, and the UK). The spread of the Ruddy Duck is also partly due to escapes from waterfowl collections in the Netherlands and also other countries such as Belgium (Rose 1993). The number of countries taking action against Ruddy Ducks has increased significantly in recent years. By 2004, at least 15 countries in the Western Palearctic had taken some action to control Ruddy Ducks (Belgium, Denmark, France, Hungary, Iceland, Ireland, Italy, Morocco, Netherlands, Portugal, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom). Concerted eradication programmes are in operation in five countries (Belgium, France, Portugal, Spain, and the UK), with a new EU LIFE project set to commence in France in October 2018 specifically aimed at eradicating the Ruddy Duck. The eradication programme in the UK has seen a reduction from a high of ca. 6,000 Ruddy Ducks to a few 10s by 2017. Despite recent successes the complete eradication of Ruddy Ducks from Europe remains a critical action for the conservation of the White-headed Duck (see Annex 4).

The threat from the Ruddy Duck is extremely serious, given the nature of the problem and the fact that, if allowed to proceed beyond a certain point, the Ruddy Duck's spread across the Palearctic will become unstoppable. This would certainly be the case if the species was allowed to become established in White-headed Duck range-states such as Algeria, Turkey or the Russian Federation, where the huge size and area of the wetlands and their infrequent monitoring would make control impossible.

Invasive Alien Species (Directly Impacting Habitat) Importance: Local/high

In the lagoons of Córdoba, Spain, introduced Common Carp *Cyprinus carpio* have caused wetland degradation as their bottom-feeding increases sediment suspension and results in the loss of benthic macrophytes (Almaraz 2000, 2001). Carp also cause eutrophication by mobilising phosphates and nitrates from the sediments. The removal of Common Carp from Laguna del Rincón led to a dramatic recovery in White-headed Duck numbers and breeding success (Torres et al. undated).

Competition with Invasive Alien Species Importance: High

Introduced North American Ruddy Ducks may compete with White-headed Ducks for food and nest sites (Arenas & Torres 1992). Introduced Tilapia and carp are likely to compete with White-headed Ducks for food in Spain, Pakistan, Afghanistan and elsewhere (Almaraz 2001, Torres et al. undated; Li & Mundkur 2003). A significant negative impact of Common Carp was observed for a range of species at Medina and Zoñar lakes in SW Spain, with the authors concluding that the ongoing expansion of alien cyprinids in the Mediterranean region constitutes a major threat for waterbirds and particularly for sedentary, threatened taxa such as the White-headed Duck (Maceda-Veiga et al. 2017).

Disease Importance: Medium

Diseases such as Avian Influenza may pose a risk to White-headed Duck populations, although this has not been quantified. At the AEWA White-headed Duck International Working Group meeting in October 2016, it was recognised that inappropriate culling of waterbirds could be a threat in the future.

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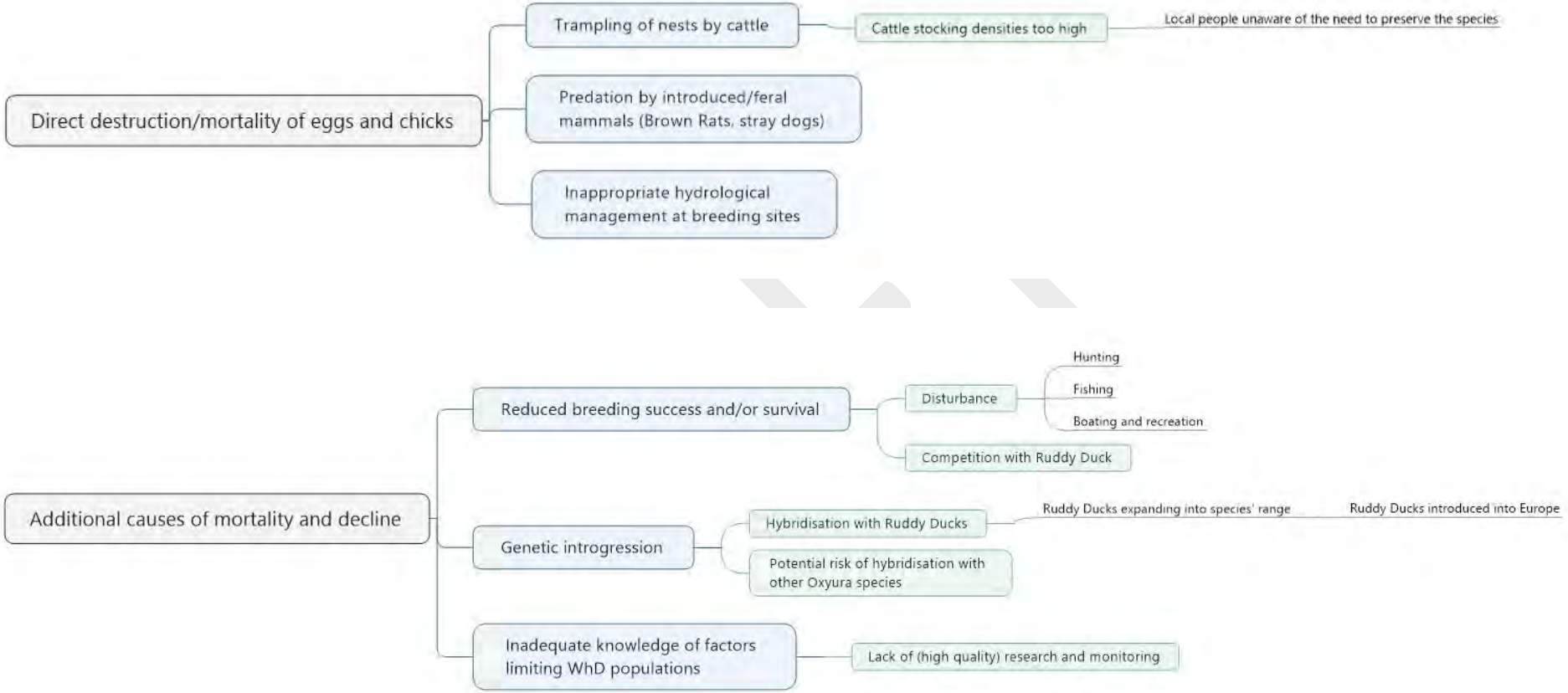
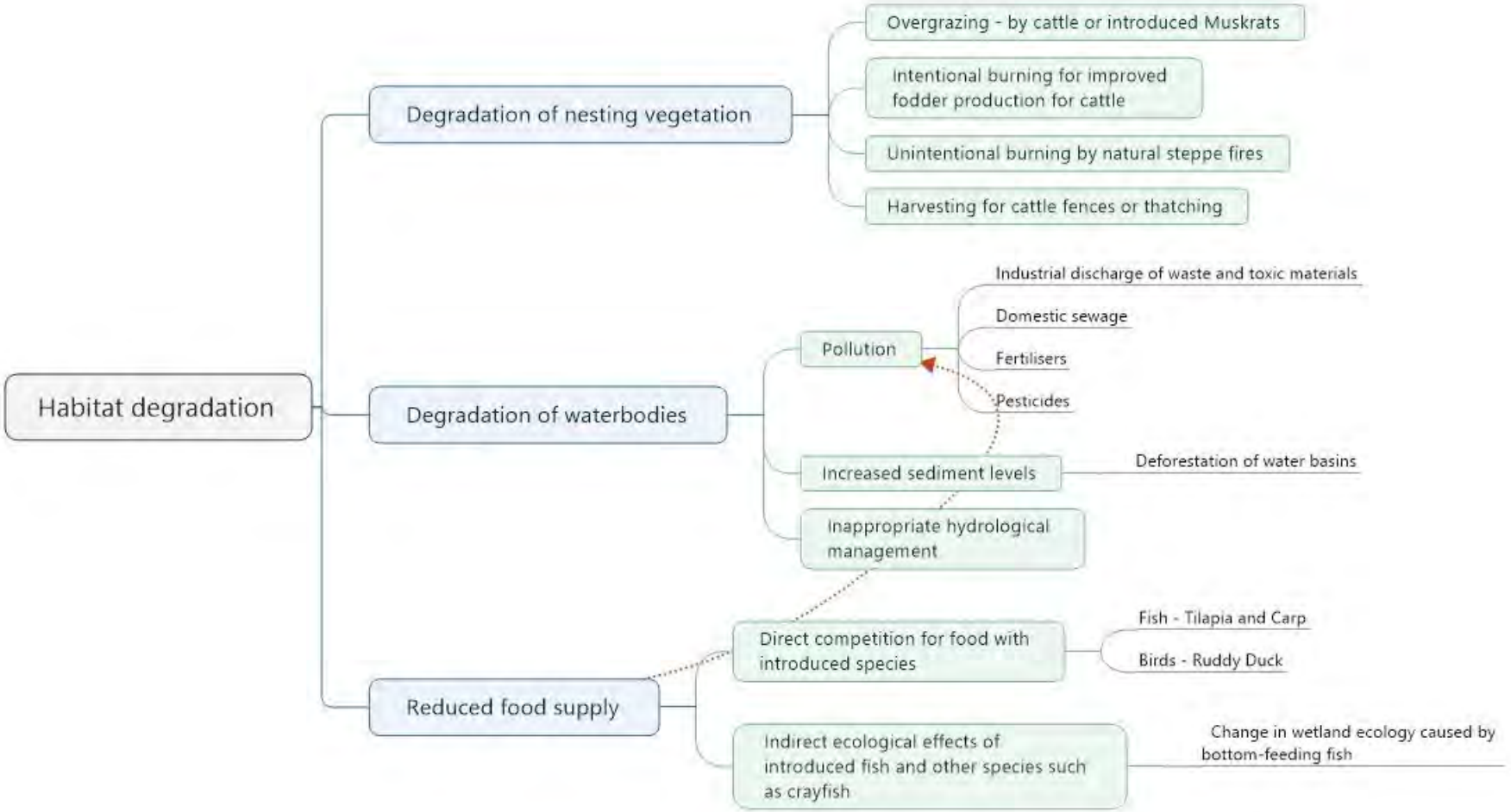
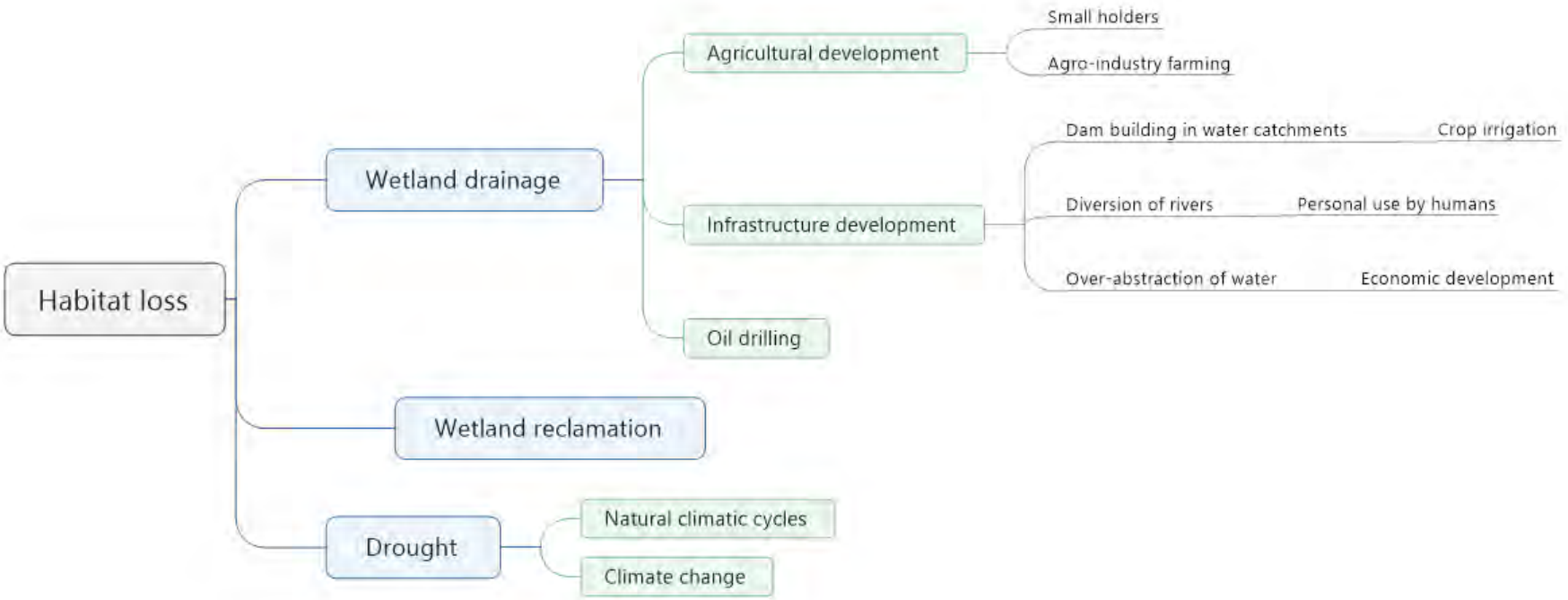
Direct adult mortality
Hunting (or illegal killing)
Subsistence hunting
People eat WhDs to survive
People sell WhDs to earn a living
Legal hunting for sport
Hunting is not sustainable
some people like shooting ducks
Illegal hunting
Local people do not know of the need to preserve the species
Local people do not know that the species is protected
Local people do not care that the species is protected
Education programmes are inadequate
Accidental shooting
Hunters mistake WhDs for legal quarry
Drowning
In fishing nets
Fishermen set nets in WhD feeding areas
Fishermen are not aware (or do not care) that the species is protected
People need to earn a living by fishing
Lead poisoning
Ducks eat shot from shotgun cartridges
Poisoning from pesticides and other chemicals
Industrial discharge of waste and toxic materials
Use of pesticides in agriculture
Disease


Direct destruction/mortality of eggs and chicks
Trampling of nests by cattle
Cattle stocking densities too high
Local people unaware of the need to preserve the species
Predation by introduced/feral mammals (Brown Rats, stray dogs)
Inappropriate hydrological management at breeding sites
Additional causes of mortality and decline
Reduced breeding success and/or survival
Disturbance
Hunting
Fishing
Boating and recreation
Competition with Ruddy Duck
Genetic introgression
Hybridisation with Ruddy Ducks
Ruddy Ducks expanding into species' range
Ruddy Ducks introduced into Europe
Potential risk of hybridisation with other Oxyura species
Inadequate knowledge of factors limiting WhD populations
Lack of (high quality) research and monitoring


Habitat degradation
Degradation of nesting vegetation
Overgrazing - by cattle or introduced Muskrats
Intentional burning for improved fodder production for cattle
Unintentional burning by natural steppe fires
Harvesting for cattle fences or thatching
Degradation of waterbodies
Pollution
Industrial discharge of waste and toxic materials
Domestic sewage
Fertilisers
Pesticides
Increased sediment levels
Deforestation of water basins
Inappropriate hydrological management
Reduced food supply
Direct competition for food with introduced species
Fish - Tilapia and Carp
Birds - Ruddy Duck
Indirect ecological effects of introduced fish and other species such as crayfish
Change in wetland ecology caused by bottom-feeding fish


Habitat loss
Wetland drainage
Agricultural development
Small holders
Agro-industry farming
Infrastructure development
Dam building in water catchments
Crop irrigation
Diversion of rivers
Personal use by humans
Over-abstraction of water
Economic development
Oil drilling
Wetland reclamation
Drought
Natural climatic cycles
Climate change

ANNEX 3. JUSTIFICATION OF CONSERVATION OBJECTIVES

The White-headed Duck is dependent on a range of wetland habitats, especially larger waterbodies with emergent vegetation and areas of shallow water for feeding. Previous declines of the species have been attributed to habitat loss and degradation as well as over-hunting. Thus, management objectives need to address these issues. Furthermore, hybridisation with the non-native Ruddy Duck was identified as the major threat to the species in Spain during the late 1990's and significant resources have been allocated to tackle this problem. The eradication of Ruddy Duck and appropriate management of other *Oxyura* species within Europe is reaching the final stages. Completing the eradication remains a high priority and the management objectives within this revised ISSAP reflect the need to continue aligning work programmes within the framework of the Bern Convention (see Annex 4). The urgency of the hybridisation threat has meant the focus has been on the conservation of the Mediterranean population during the life-time of the previous CMS/AEWA ISSAP. There is a need to remain vigilant with regards to the presence of the non-native Ruddy Duck in other parts of the species range.

Given the lack of understanding of some of the basic ecology of the eastern populations of White-headed Duck, particularly in relation to migratory movements, a greater emphasis on research and monitoring is required to enable evidence-based conservation management. Recent high counts of birds in Kazakhstan highlights the significance of this population which may account for more than half of the global population. This updated ISSAP reflects the increased focus on understanding this population and initiating conservation measures where appropriate. Declines of birds in this flyway could have a severe impact on the global population of the species.

The South Asian population is poorly understood in terms of its population size and distribution, and a key focus needs to be on survey and monitoring to determine the status of this population.

During the last decade, especially in Spain, it has been clearly shown that where conservation measures are taken to restore and protect habitat, as well as to tackle the threat of hybridisation, White-headed Duck numbers can respond positively (Figure 2). There is no reason to suggest that similar population responses shouldn't occur elsewhere in the species' range where effective conservation management is implemented.

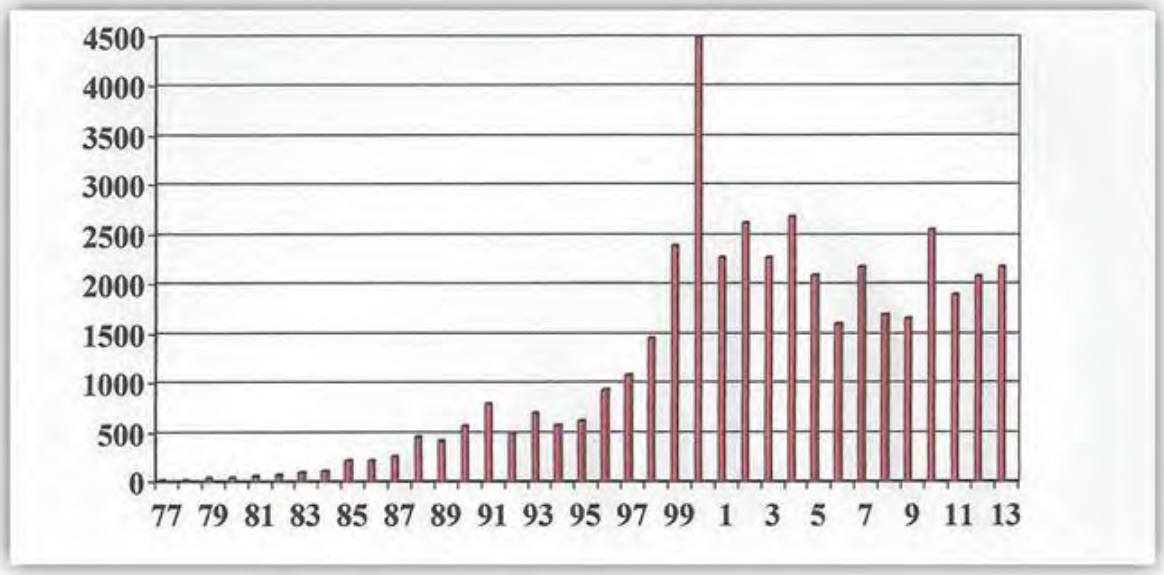


Figure 2. The number White-headed Duck (individuals) in Spain between 1977-2013, source Torres Esquivas, 2015)

ANNEX 4. RECOMMENDATION ON THE ERADICATION OF THE RUDDY DUCK IN THE WESTERN PALEARCTIC BY 2020

These recommendations are taken from the Recommendation No.185 (CoE 2016) of the Standing Committee, Convention on the Conservation of European Wildlife and Natural Habitats, and are summarised here for ease of reference.

The full text can be found on the Bern Convention website.

Goal: Ruddy Ducks[1] stop being a threat to the White-headed Duck

Target: Long-term eradication of the ruddy duck in the Western Palaearctic and avoidance of new introductions of the species.

I. Actions concerning eradication of ruddy ducks in the wild

General target Eradication of the ruddy duck in the wild in the Western Palaearctic by 2020

Action 1 Eliminate ruddy ducks in the wild mobilising the necessary resources for culling operations

Action 2 Continue monitoring the distribution of ruddy duck in the wild

Action 3 Keep active the existing national working groups guiding the implementation of this eradication strategy, drafting as necessary national eradication strategies

Action 4 Remove legal barriers that may hinder the control of ruddy ducks

II. Actions concerning ruddy duck in captivity

Goal: Avoid any new escape of ruddy ducks to the wild in the Western Palaearctic **General target** Phase out all captive populations of ruddy ducks

Action 5 Fully implement legislation which prohibits the trade and release of ruddy ducks kept in captivity, such as Regulation (EU) No. 1143/2014 of the European Parliament and of the Council on prevention and management of the introduction and spread of invasive alien species

Action 6 Devote supplementary efforts to monitor the status of ruddy ducks in captivity

Action 7 Encourage the sterilisation and/or elimination of ruddy ducks in captivity and consider compensating owners for voluntary elimination, thus avoiding possible accidental scape or release of birds

III. Actions concerning public awareness, reporting and international co-ordination

Goal: Improve understanding by the public of the problem thus and create a favourable opinion for eradication

Goal: Follow the progress of the eradication plan and update it as necessary

Action 8 Implement public awareness activities on the need to control ruddy ducks.

Action 9 Report annually to the Bern Convention on national action and collaborate with other States, the Bern Convention, AEWA and other appropriate bodies in the implementation of this updated eradication plan and the Action plan for the conservation of the white-headed duck.

[1] In the context of this eradication plan 'ruddy duck' refers both to ruddy ducks and to the hybrids of ruddy ducks and white-headed ducks.

ANNEX 5. REFERENCES

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