Convention on the Conservation of Migratory Species of Wild Animals

Secretariat provided by the United Nations Environment Programme

THIRTEENTH MEETING OF THE CMS SCIENTIFIC COUNCIL

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CMS/ScC.13/Inf.7

DRAFT INTERNATIONAL SINGLE SPECIES ACTION PLAN
FOR THE WHITE-HEADED DUCK *Oxyura leucocephala*

(Introductory note prepared by the Secretariat)

The Single Species Action Plan for the White-headed Duck *Oxyura leucocephala* has been initiated as a joint initiative of AEWA, CMS and the European Commission. As regards CMS, the CMS Scientific Council at its twelfth meeting (Glasgow, April 2004) has approved in principle the co-funding by the Convention of a project aimed at extending the geographic scope the existing European Action Plan for the species.

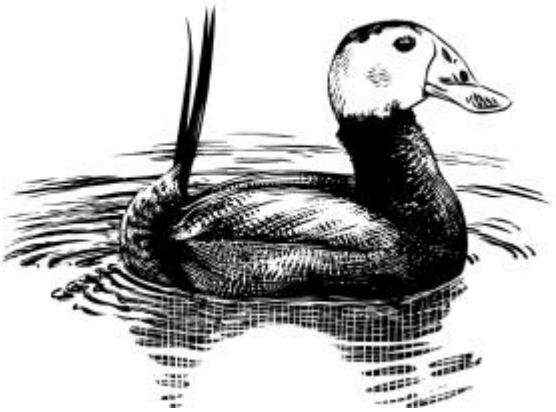
Initially, the plan was foreseen to be a EU plan only, but with the support and the legal framework of CMS and AEWA it was extended to cover the global range of the species. The drafting of the plan was carried out by BirdLife International and has been compiled by experts on the species from several organisations: Baz Hughes (WWT, UK) & James Robinson (RSPB, UK), Andy Green (Biological Station Doñana, Spain) and David Li & Taej Mundkur (Wetlands International-Asia)

This final version is the result of a wide consultation amongst Range States within the species' range, and all suggested amendments received through the official comments were incorporated. Consultation process within the EU took place via the Ornis Committee (the EU body for coordination of the implementation of the EU Birds Directive), and the plan was approved by the EU within the framework of that Committee.

The Technical Committee of AEWA reviewed the document at its 6th meeting in May 2005 and made several minor proposals, which were later included by the compilers.

The present version has been endorsed by the 3rd Meeting of the Parties (MOP3) to AEWA (Dakar, October 2005) for implementation in the AEWA region.

European Union



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

Final version, August 2005

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Milestones in the Production of the Plan
First draft: June 2005 presented to EC Ornis Committee Scientific Working group for comments
Final draft: August 2005

Geographical Scope
This International Single Species Action Plan requires implementation in the following countries regularly supporting White-headed Duck: Afghanistan, Algeria, Armenia, Azerbaijan, Bulgaria, China, France, Georgia, Greece, Iraq, Islamic Republic of Iran, Israel, Italy, Kazakhstan, Mongolia, Morocco, Pakistan, Romania, Russian Federation, Spain, Syrian Arab Republic, Tunisia, Turkey, Turkmenistan, Ukraine, and Uzbekistan. It should be implemented in the following countries where the introduced North American Ruddy Duck *Oxyura jamaicensis* occurs: Algeria, Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Israel, Italy, Morocco, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom. Implementation is also required in any other countries within the range of the White-headed Duck where the Ruddy Duck is found in captivity.

Reviews
This International Single Species Action Plan should be revised in 2015. An emergency review will be undertaken if there are sudden major changes liable to affect the population.

Credits
The compilers wish to thank the following people who provided data and support during the production of this International Single Species Action Plan: Lieuwe Haanstra, Sergey Dereliev, Simon Delany, Szabolcs Nagy, and Umberto Gallo-Orsi.

Recommended citation: Hughes, B., Robinson, J.A., Green, A.J., Li, Z.W.D. & Mundkur, T. (Compilers). 2005. International Single Species Action Plan for the White-headed Duck *Oxyura leucocephala*.

CONTENTS

Executive Summary

The White-headed Duck *Oxyura leucocephala* is listed as Endangered on the IUCN Red List of Threatened Animals. It is also listed on Annex I of the European Union Directive on the Conservation of Wild Birds (79/409/EEC) (Birds Directive), on Appendix II of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), and Appendix II of the Convention on International Trade in Endangered Species (CITES Convention).

The White-headed Duck is a highly aquatic diving duck of the stifftail tribe Oxyurini. Globally, there are four populations; two of which are declining, one stable and one increasing. The decreasing populations include the main Central Asian population of 5,000-10,000 birds and the Pakistan wintering population, which is on the verge of extinction. The resident North African population (400-600 birds) is stable and the Spanish population (*ca*. 2,500 birds) increasing. The White-headed Duck occurs regularly in 26 countries, and in another 22 as a vagrant. Nine countries hold significant breeding numbers (Algeria, Islamic Republic of Iran, Kazakhstan, Mongolia, Russian Federation, Spain, Tunisia, Turkey, and Uzbekistan), but most are concentrated in Mongolia, Kazakhstan, Russian Federation, and Spain. Birds occur commonly on migration in 10 countries, and in winter (December to February) in 13. The most important wintering countries differ from year-to-year, presumably depending on weather conditions. In recent years, 10 countries have held over 1,000 birds (Azerbaijan, Bulgaria, Greece, Islamic Republic of Iran, Israel, Kazakhstan, Russian Federation, Spain, Turkey, and Uzbekistan – see Table 2). Seven countries hold significant numbers of birds throughout the year (Algeria, Islamic Republic of Iran, Russian Federation, Spain, Tunisia, Turkey, and Uzbekistan).

White-headed Duck population declines have been attributed mainly to habitat loss and over-hunting. The main threats to the Central Asian population are habitat loss due to unsustainable use of water resources and the recent drought in Central Asia. These impacts are likely to be exacerbated by the effects of global climate change. The greatest long-term threat to the White-headed Duck, however, is introgressive hybridisation with the non-native North American Ruddy Duck *Oxyura jamaicensis*. Ruddy Ducks have now been recorded in 21 Western Palearctic countries with breeding records in at least 11, and regular breeding attempts in six (France, Ireland, Morocco, Netherlands, Spain, and the UK). However, outside the UK only France holds a significant numbers of breeding pairs (*ca*. 20). The number of countries taking action against Ruddy Ducks has increased significantly in recent years. By 2004, at least 14 countries in the Western Palearctic had taken some action to control Ruddy Ducks (Belgium, Denmark, France, Hungary, Iceland, Ireland, Italy, Morocco, Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom). This compares with only six countries in 1999. At least 471 Ruddy Ducks and hybrids have now been controlled in six countries excluding the UK (Denmark – 1, France - 246, Iceland - 3, Morocco - 2, Portugal - 3, and Spain - 217) and a further three countries have indicated that attempts will be made to shoot birds if they occur (Hungary, Italy, Slovenia). Concerted eradication programmes are in operation in four countries (France, Portugal, Spain, and the UK) and one is planned in Morocco. A total of 5,069 Ruddy Ducks have been shot in the UK since 1999. The Ruddy Duck has now been listed on Annex B of the EC CITES Regulations (338/97) on the grounds that they pose an ecological threat to indigenous species. This now gives member states the opportunity to place restrictions on or ban the keeping of Ruddy Ducks in captive collections. Other threats include inadequate wetland management (leading to the dry out of wetland habitats), competition with introduced carp, drowning in fishing nets, lead-poisoning, pollution and human disturbance.

This International Single Species Action Plan provides a framework for the conservation for the White-headed Duck and is based on the format for the AEWA International Single Species Action Plan prepared by BirdLife International. Successful implementation of this plan will require effective international co-ordination of organisation and action. The long-term Goal of this Action Plan will be to remove the White-headed Duck from the IUCN Red List of Threatened animals. In the short-term, the aim of the plan is to maintain the current population and range of the species throughout its range, and in the medium to long-term to promote increase in population size and range. The plan has been developed using internationally agreed standards for identifying actions and has been prepared to facilitate the monitoring and evaluation of subsequent implementation, linking threats, actions and measurable activities.

This plan will need implementation in 41 countries, including 26 White-headed Duck Range States and 21 countries with Ruddy Duck records. The 26 activities identified in this Action Plan focus on measures to prevent further habitat loss and degradation; to reduce direct mortality of adults and improve reproductive success; and to remove the threat of hybridisation with the introduced North American Ruddy Duck. These measures include protecting the White-headed Duck and its habitats, appropriate management of key sites, eradicating the Ruddy Duck from Europe and North Africa, and increasing public awareness of the need to conserve the White-headed Duck. Each country within the range of the White-headed Duck should be committed to implement this plan and to develop National Action Plans and establish White-headed Duck Working Groups to help facilitate this. All countries with records of Ruddy Ducks should endorse and implement the International Ruddy Duck Eradication Strategy of the Bern Convention, and produce official statements of intent regarding Ruddy Duck control.

1. Biological assessment

General Information	The White-headed Duck *Oxyura leucocephala* is a highly aquatic diving duck of the stifftail tribe Oxyurini. The species is globally threatened, recognised as Endangered by IUCN (BirdLife International 2000; IUCN 2003). Globally, there are four populations; two of which are declining, one stable and one increasing. The decreasing populations include the main Central Asian population of 5,000-10,000 wintering birds and the Pakistan wintering population, which may be on the verge of extinction (Li & Mundkur 2003; Wetlands International 2002). The resident North African population (400-600 birds in winter) is stable and the Spanish population has increased from 22 birds in 1977 to around 2,500 wintering birds today. White-headed Duck population declines in the first half of the 20th century have been attributed mainly to habitat loss and over-hunting (Green & Hughes 1996). The main threats to the Central Asian population are habitat loss due to unsustainable use of water resources and the recent drought in Central Asia (Li & Mundkur 2003). These impacts are likely to be exacerbated by the effects of global climate change. The greatest long-term threat to the White-headed Duck's survival, however, is thought to be introgressive hybridisation with the non-native North American Ruddy Duck *Oxyura jamaicensis*. Ruddy Ducks have now been recorded in 21 Western Palearctic countries with breeding records in at least 11, and regular breeding attempts in six (France, Ireland, Morocco, Netherlands, Spain, and the UK). However, outside the UK only France holds significant numbers of breeding pairs (*ca*. 20). Other threats include competition with introduced carp, drowning in fishing nets, lead-poisoning, pollution and human disturbance. In Spain, inadequate hydrological management of wetlands and their basins has caused a reduction in water quality. Key international documents on White-headed Duck conservation include a global action plan (Anstey 1989), European Community action plan (Green 1994), European species action plan (Green & Hughes 1996), a Bern Convention report on the status of the Ruddy Duck in the Western Palearctic and an action plan for eradication (Hughes *et al*. 1999), and a Wetlands International / Bonn Convention report on the conservation of the White-headed Duck in Central Asia (Li & Mundkur 2003). International workshops for White-headed Duck conservation have been held in Arundel (UK) in March 1993, Córdoba (Spain) in September 1994, Porto Lagos (Greece) in March 2000, Gargano National Park (Italy) in May 2001, and Thessaloniki (Greece) in March 2002.
Taxonomy	Phylum: *Chordata* Class: *Aves* Order: *Anseriformes* Family: *Anatidae* Tribe: *Oxyurini* Species: *Oxyura leucocephala* (Scopoli 1769) Synonym: *Anas leucocephala*

	No subspecies are recognised, although Amat and Sánchez (1982) reported differences in plumage coloration and bill dimensions between skins from western Mediterranean (Spain, Tunisia and Algeria) and from populations further east. Genetic differences between the different biogeographic populations are too small to be consistent with existence of subspecies (Muñoz *et al*. *unpubl. data*). Two colour phases (pale and dark) now occur in Spain, possibly associated with the bottleneck suffered by the population in the 1970s (Urdiales & Pereira 1993). Hybridises to at least the 3rd generation with North American Ruddy Duck, but genetic studies show these species have been geographically isolated without gene flow for several million years (McCracken *et al*. 2000).
Population Development	The global population of the White-headed Duck was probably over 100,000 in the early 20th century, falling to an estimated 20,000 individuals in 1996 (Green & Hunter 1996). BirdLife International (2000) estimated the world population as 2,500-10,000 individuals. The South Asia wintering population (mainly in Pakistan) decreased from 1,039 birds in 1968 and 733 in 1987 to less than 10 individuals in 2002 (Li & Mundkur 2003). However, the peak count has subsequently increased slightly to 33 in January 2003 and 24 in January 2004 (Ali & Akhtar *in press*, Li *et al*. *in prep*.). The resident North African population (400-600 birds) is stable and the Spanish population has increased from 22 birds in 1977 to around 2,500 birds today. Surveys conducted between 2001 and 2003 by the Spanish White-headed Duck Working Group suggest the population may be beginning to stabilise. The most recent assessment of global status suggested a wintering population of 8,000-13,000 birds in 2002 (Li & Mundkur 2003).
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; a small and declining migratory east Asian population, wintering in Pakistan and perhaps originating from southern Russia and Mongolia; a population resident in Spain; and another resident in North Africa (Tunisia and north-east Algeria). The White-headed Duck occurs regularly in 26 countries (Tables 1 & 2), and in another 22 countries as a vagrant. Nine countries hold significant breeding numbers (Algeria, Islamic Republic of Iran, Kazakhstan, Mongolia, Russian Federation, Spain, Tunisia, Turkey, and Uzbekistan), but most are concentrated in only four countries (Mongolia, Kazakhstan, Russian Federation, and Spain). Birds occur commonly on migration in 10 countries, and in winter (December to February) in 13. The most important wintering countries differ from year-to-year, presumably depending on weather conditions. In recent years, ten countries have held over 1,000 birds (Azerbaijan, Bulgaria, Greece, Islamic Republic of Iran, Israel, Kazakhstan, Russian Federation, Spain, Turkey, and Uzbekistan – see Table 2). Seven countries hold significant numbers of White-headed Ducks throughout the year (Algeria, Islamic Republic of Iran, Russian Federation, Spain, Tunisia, Turkey, and Uzbekistan).
Survival and Productivity	Given the paucity of ringing information, there are no known data on adult or juvenile survival rates. Productivity data are also sparse.

Life History	**Breeding:** The species forms monogamous pair bonds of seasonal duration. The nest is usually located over water in emergent vegetation. Females lay 4-9 eggs, more usually 5 or 6, at 1.5 day intervals, and may relay if the first clutch is removed (Johnsgard & Carbonell 1996). Relative to body mass, lays the largest egg of any waterfowl, and total clutch mass may approach 100% of a female's non-breeding body weight. Incubation begins from April to June in southern Europe, and up to a month later further north. Eggs hatch after 22-24 days in the wild (Gordienko *et al*. 1986). Only one brood is reared per year. Little information on hatching or nesting success. Brood size at hatching 3-7 ducklings, usually 5-6 (Green & Hughes 2001). The fledging period is 8-10 weeks (Johnsgard & Carbonell 1996), somewhat longer than most ducks. Females can breed first at one year old although the proportion doing so is unknown.	**Feeding:** White-headed Ducks feed almost entirely by diving, mainly at night (Green *et al*. 1999). Benthic Chironomid larvae are the major diet component at most sites, both for adults and ducklings, but polychaetes (especially in coastal lakes used as wintering sites), amphipods and a variety of other invertebrates are eaten, as well as seeds and vegetative parts of *Potamogeton*, *Ruppia*, *Scirpus* and many other aquatic plants (Torres & Arenas 1985; Green *et al*. 1999; Panayotopoulou & Green 2000; Sánchez *et al*. 2000). The availability of chironomid larvae is a key feature in habitat selection (Green *et al*. 1996, 1999). Old literature overstates the importance of hard food items well preserved in the gizzard (in contrast to soft-bodied invertebrates). Thus wintering birds on Caspian Sea contained snails *Hydrobia*, red seaweed *Polysiphonia*, and stonewort *Chara*, and seeds of *Ruppia maritima* (Dementiev & Gladkov 1952). Females from central Kazakhstan, in July, contained seeds of *Potamogeton* and *Najas*, and waterboatmen *Corixa* and *Micronecta*. Young caught at same time had only insects (Dolgushin 1960).	**Outside breeding season:** 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, largest numbers occur in September, but birds leave the region completely by mid-October (Schielzeth *et al*. 2003). In Uzbekistan, major passage through the Amu Darya delta in October (Kreuzberg-Mukhina & Lanovenko 2000). In Pakistan, birds first appear in October and leave by the end of March (Chaudhry 2002). It is currently unknown whether there is interchange between the Spanish and North African populations. However, the recent increase in the number of White-headed Ducks in Morocco suggests that interchange does occur. Emigration of birds from Algeria or Tunisia was suggested as a possible explanation for the peak count of 4,489 birds in Spain in September 2002. However, as over 1,000 ducklings were hatched at El Hondo that year, it seems equally likely that these numbers could be explained by a bumper breeding year.

Habitat Requirements	Habitat Type	Breeding	Non-breeding
(The number preceding each descriptor is the Global Land Cover Characteristics (GLCC) classification number, see: *http://edcdaac.usgs.gov/glcc/glcc.html*)	**5. Wetlands (inland)**		
	5.3. Shrub Dominated Wetlands	¦	¦
	5.4.2. Marsh Wetland	¦	¦
	5.5. Permanent Freshwater Lakes [over 8ha]	¦	¦
	5.6. Seasonal/Intermittent Freshwater Lakes [over 8ha]	¦	¦
	5.7. Permanent Freshwater Marshes/Pools [under 8ha]	¦	¦
	5.8. Seasonal/Intermittent Freshwater Marshes/Pools [under 8 ha]	¦	¦
	5.9. Freshwater Springs and Oases	¦	¦
	5.13. Permanent Inland Deltas	¦	¦
	5.14. Permanent Saline, Brackish or Alkaline Lakes		¦
	5.15. Seasonal/Intermittent Saline, Brackish or Alkaline Lakes and Flats	¦	¦
	5.16. Permanent Saline, Brackish or Alkaline Marshes/Pools	¦	¦
	5.17. Seasonal/Intermittent Saline, Brackish or Alkaline Marshes/Pools	¦	¦
	9. Sea		
	9.2. Shallow [usually less than 6m deep at low tide; includes sea bays and straits]		¦
	10. Coastline		
	10.3. Estuarine Waters	¦	¦
	10.6. Coastal Brackish/Saline Lagoons	¦	¦
	10.7. Coastal Freshwater Lagoons	¦	¦

	12. Artificial – Aquatic		
	12.1. Water Storage Areas (over 8ha)	¦	¦
	12.2. Ponds (below 8 ha)	¦	¦
	12.3. Aquaculture Ponds	¦	¦
	12.4. Salt Exploitation Sites	¦	¦
	12.6. Wastewater Treatment Areas	¦	¦
	12.9. Canals and Drainage Channels, Ditches	¦	¦

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

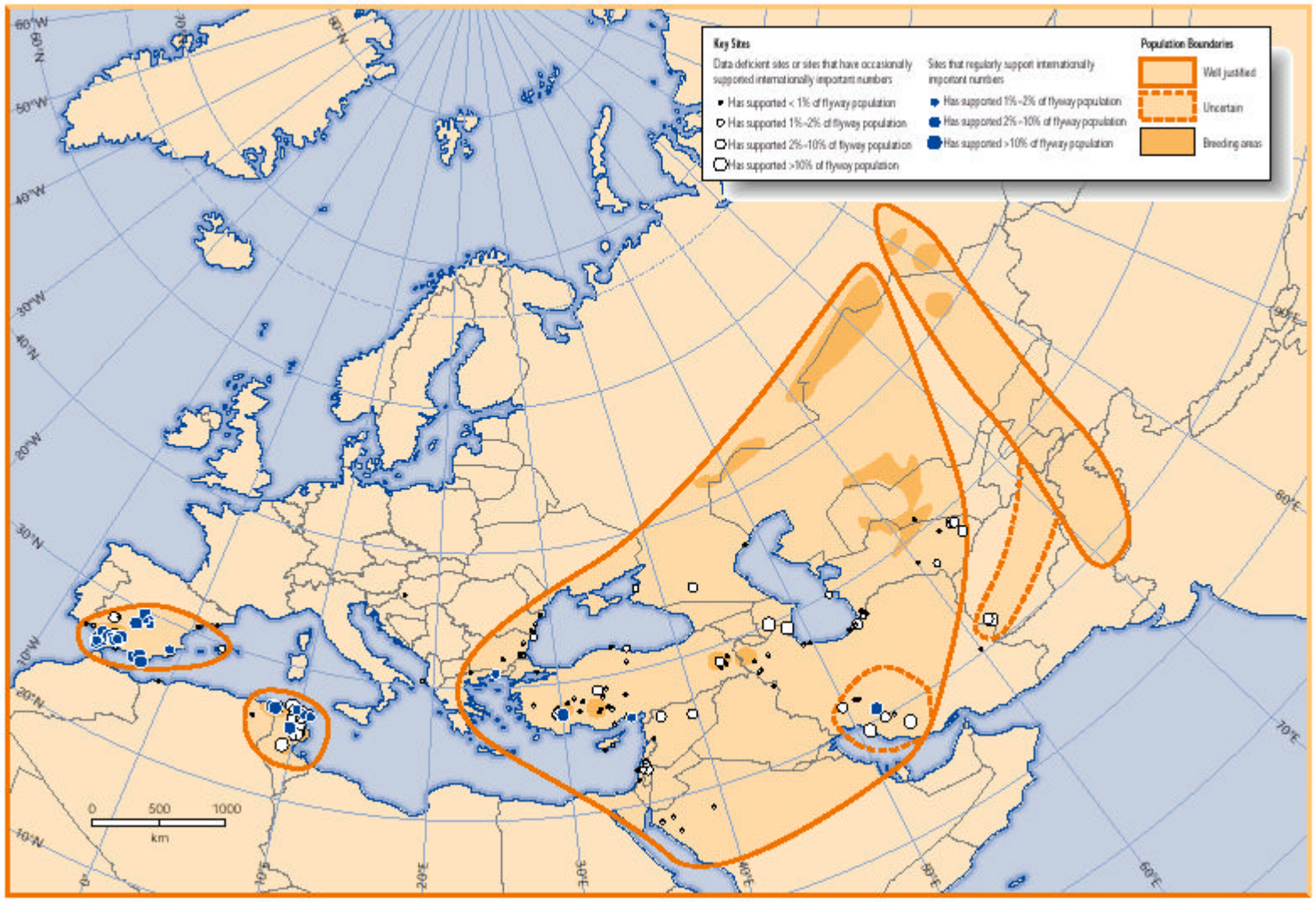


Table 1. Geographical distribution of the White-headed Duck *Oxyura leucocephala* during the annual cycle. Note: Country names follow those used by the International Organization for Standardization. Excludes the following countries where the species only occurs as a vagrant (Austria, Belgium, Bosnia and Herzegovina, Cyprus, Czech Republic, Denmark, Egypt, Germany, India, Jordan, Kyrgyzstan, Libyan Arab Jamahiriya, Macedonia (former Yugoslav Republic of), Malta, Netherlands, Poland, Portugal, Saudi Arabia, Slovakia, Slovenia, and Switzerland). Countries in bold are thought to have held > 40 breeding pairs or > 300 staging or wintering individuals, 1993-2003. Sources: BirdLife International World Bird Database; International Waterbird Census; Li & Mundkur 2003).

Breeding Season **19 Countries, 9 Key**	**Formerly Breeding** **9 Countries** (Date of Extinction)	**Migrating** **22 Countries, 10 Key**	**Non breeding Visitor** **23 Countries, 12 Key**
Afghanistan[1]		Afghanistan[1]	Afghanistan[1]
	Albania (1920)		
Algeria		**Algeria**	**Algeria**
Armenia			
	Azerbaijan (early 20th century)	**Azerbaijan**	**Azerbaijan**
		Bulgaria	**Bulgaria**
China		China	China
France[2]	France (late 1960s)	France[2]	France[2]
		Georgia	Georgia
	Greece (19th century)		**Greece**
	Hungary (1961)		
Iraq[1]		Iraq[1]	Iraq[1]
Islamic Republic of Iran		**Islamic Republic of Iran**	**Islamic Republic of Iran**
	Israel (19th century)		**Israel**
Italy[2]	Italy (1977)	Italy[2]	Italy[2]
Kazakhstan		**Kazakhstan**[2]	
Mongolia		**Mongolia**[2]	
Morocco		Morocco	Morocco
			Pakistan
	Romania (1920)	Romania	**Romania**
Russian Federation		**Russian Federation**	**Russian Federation**
	Serbia (1962)		
Spain		**Spain**	**Spain**
Syrian Arab Republic		Syrian Arab Republic	Syrian Arab Republic
Tunisia		Tunisia	Tunisia
Turkey		**Turkey**	**Turkey**
Turkmenistan		**Turkmenistan**	**Turkmenistan**
Ukraine		Ukraine	Ukraine
Uzbekistan		**Uzbekistan**	**Uzbekistan**
	Yugoslavia (1965)		

[1] Species thought to be present in Afghanistan and Iraq, but status unclear.

[2] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

2. Available key knowledge

The most contemporary information on the numbers and trends for the White-headed Duck across its range is presented in Table 2. Baseline population data do not exist for most White-headed Duck Range States.

Table 2. Numbers and trends for the White-headed Duck *Oxyura leucocephala* in individual Range States (in alphabetical order). Shaded cells represent periods when the species is probably not present in the country.

Country	Breeding Season						Passage and Wintering						
	No. Breeding (pairs)	Quality [1]	Year(s) of Estimate	Trend [2]	Quality [1]	Year(s) of Estimate	No. Migrating or Non-breeding (indivs)	Quality [1]	Year(s) of Estimate	Trend [2]	Quality [1]	Baseline Population [3]	References
Afghanistan	?	-	-	?	-	-	?	-	-	?	-	?	Li & Mundkur (2003)
Algeria	40+	MI	1991	0?	MI	1991	2-348	MI	1995-1999	?	2	?	Li & Mundkur (2003) Green & Hughes (2001) M. Smart (*pers. comm.*)
Armenia	20-30	P	1997-2002	+1	ME	1997-2002	100-1000	ME	1990-2002-	-1	ME	?	L. Balyan (*pers. comm.*)
Azerbaijan							3-5,000	MI	1995-2004	F	MI	?	Sultanov (2001) Sultanov unpublished data
Bulgaria							76-1,970	GO	1996-2002	F	GO	?	Li & Mundkur (2003)
China	?	P	2002	?	P	2002						?	Li & Mundkur (2003) Batbayar & Natsagdorj (*pers. comm.*)
France [4]	0	GO	2001	-	-	2001	<5	GO	2001	?	GO	?	C. Perennou (*pers. comm.*)
Georgia							<10	P	2003	?	U	?	Li & Mundkur (2003)
Greece							261-2,213	GO	1995-2000	F	GO	Common	Li & Mundkur (2003) Green & Hughes (1996)
Iraq	?	-	-	?	-	-	?	-	-	?	-	?	
Islamic Republic of Iran	100+	ME	2001	0?	ME	2001	4-1,485	ME	1995-2002	F	ME	20-30 pairs, 25-100 wintering birds	Li & Mundkur (2003)
Israel							1-1,350	ME	1995-2001	F	ME	Common	Li & Mundkur (2003) Green & Hughes (1996) Alon (1997) O. Hadzofe (*pers. comm.*)
Italy [4]	0-1	MI	2002-2003	?	MI	2002-2003	0-1	GO	2002-2003	+1	GE	<10 pairs	Brunner & Andreotti (2001) M. Grussu (*pers. comm.*)
Kazakhstan	300-500	ME	2002	?	ME	2002	5,000	ME	2002	ME	2	?	Li & Mundkur (2003)
Mongolia	500-700	MI	2004	+1	MI	2004	100-200	MI	2004	+1	P	500-1000	Li & Mundkur (2003)
Morocco	5-15	GO	2003	+1	GO	1995-2003	up to 130	GO	2003	2	GO	Common	Anon (2004) Torres (2001)
Pakistan							30-40	GO	2003-2004	-2	GO	1,000	Chaudry (2002) Ali & Akhtar (*in press*)

Country	Breeding Season						Passage and Wintering						
	No. Breeding (pairs)	Quality [1]	Year(s) of Estimate	Trend [2]	Quality [1]	Year(s) of Estimate	No. Migrating or Non-breeding (indivs)	Quality [1]	Year(s) of Estimate	Trend [2]	Quality [1]	Baseline Population [3]	References
													Sheikh (1993) Sheikh, K. & Naseem, K. (*in press*)
Romania							9-800	GO	2000-2004	F	P	?	Li & Mundkur (2003) D. Munteanu (*in litt.* 1999) A. Sandor (*pers. comm.*)
Russian Federation	250-500	MI	2002	-1	MI	2002	2,000-3,000?	MI	1996	-1	MI	Common	Li & Mundkur (2003) Green & Hughes (1996)
Spain	250-1,000	GO	2003	+2	GO	1990-2003	537-2,678	1	1995-2003	+2	GO	400	BoE II data Torres *et al.* (1986) Torres (2003a, b) M. Giménez (*pers. comm.*)
Syrian Arab Republic	<10	MI	2004	F	MI	2004	60-200	MI	2003-2004	F	MI	?	Li & Mundkur (2003) G. Kirwan (*pers. comm.*) Murdoch *et al.* (*in press*)
Tunisia	10-100	ME	2000	0	ME	2000	14-572	GO	1995-2002	0	GO	400	Li & Mundkur (2003) Green & Hughes (2001) H. Azafzaf (2001 & *pers. comm.*) Hamrouni (1997) M. Smart (*pers. comm.*)
Turkey	200-250	GE	2001	-1	GE	2001	989-2,970	GE	1995-2002	-1	GE	?	Li & Mundkur (2003) Green & Hughes (2001) BoE II data
Turkmenistan	20	MI	2002	?	2	2002	7-820	MI	1998-2002	F	MI	?	Li & Mundkur (2003)
Ukraine	<5	P	2001	?	-	2001	1-8	GO	1990-2001	F	P	?	Beskaravayny *et al.* (2001) Kostin & Tarina (2002)
Uzbekistan	20-50	P	2004	-2	ME	2002	1,500-5,135	ME	1999-2005	-2	ME	?	Li & Mundkur (2003) E. Kreuzberg-Mukhina (*pers. comm.*) E. Lanovenko (*pers. comm.*)

[1] **Quality:** **Good (Observed):** based on reliable or representative quantitative data derived from complete counts or comprehensive measurements.
Good (Estimated): based on reliable or representative quantitative data derived from sampling or interpolation.
Medium (Estimated): based on incomplete quantitative data derived from sampling or interpolation.
Medium (Inferred): based on incomplete or poor quantitative data derived from indirect evidence.
Poor (Suspected): based on no quantitative data, but guesses derived from circumstantial evidence.
Unknown: information on quality not available.

[2] **Trend** (in the last 10 years (or three generations): **+2** Large increase of at least 50%; **+1** Small increase of 20-49%; **0** Stable, with overall change less than 20%; **-1** Small decrease of 20-49%; **-2** Large decrease of at least 50%; and **F** Fluctuating with changes of at least 20%, but no clear trend.

[3] **Baseline population**: earliest population figure available for breeding or non-breeding populations.

[4] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

Data on habitat use and diet of White-headed Ducks is available from few Range States, with high quality scientific data only from Spain and to a lesser extent from Turkey, Bulgaria and the Russian Federation. Comprehensive IBA data is as yet only available for European Range States.

Table 3. Level of available knowledge on habitat use, diet and occurrence of the White-headed Duck *Oxyura leucocephala* in Important Bird Areas and Protected Areas. Shaded cells represent periods when the species is probably not present in the country.

	Breeding		Non-breeding		Site Protection - Breeding			Site Protection – Non-breeding		
Country	**Habitat Use[1]**	**Diet[1]**	**Habitat Use[1]**	**Diet[1]**	**No. IBAs with WHDs[2]**	**% of Pop. in IBAs[2]**	**% of Pop. in Protected Areas[2]**	**No. IBAs with WHDs[2]**	**% of Pop. in IBAs[2]**	**% of Pop. in Protected Areas[2]**
Afghanistan	None	None	None	None	Low	None	None	Low	None	None
Algeria	Low	None	Low	None	**High**	**High**	**High**	**High**	**High**	**High**
Armenia	None	None	None	None	Low	None	None	Low	None	None
Azerbaijan			Low	None				Low	Low	Low
Bulgaria			**Medium**	**High**				**High**	**High**	**High**
China	None	None			None	None	None			
France[3]	Low	Low	Low	None	**High**	**High**	**High**	**High**	**High**	**High**
Georgia			Low	None				Low	Low	Low
Greece			**Medium**	**High**				**High**	**High**	**High**
Iraq	None	None	None	None	Low	None	None	Low	None	None
I.R. Iran	**Medium**	None	**Medium**	None	**High**	**High**	**High**	**High**	**High**	**High**
Israel			Low	None				**High**	**High**	**High**
Italy[3]	Low	None	Low	None	**High**	**High**	**High**	**High**	**High**	**High**
Kazakhstan	**Medium**	None	**Medium**	None	Low	None	None	Low	None	None
Mongolia	Low	None	Low	None	**High**	**High**	**High**	**High**	**High**	**High**
Morocco	Low	None	**Medium**	None	**High**	**High**	**High**	**High**	**High**	**High**
Pakistan			**Medium**	Low				**High**	**High**	**High**
Romania			Low	None				**High**	**High**	**High**
Russian Federation	**Medium**	**Medium**	**Medium**	**Medium**	Low	None	None	Low	None	None
Spain	**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**
Syrian Arab Republic			Low	None				**High**	**High**	**High**
Tunisia	Low	None	Low	None	**High**	**High**	**High**	**High**	**High**	**High**
Turkey	**Medium**	None	**High**	**High**	**High**	**Medium**	**Medium**	**High**	**Medium**	**Medium**
Turkmenistan	Low	None	Low	None	None	None	None	None	None	None
Ukraine	None	None	**Medium**	Low	Low	None	None	**Medium**	**Medium**	**Medium**
Uzbekistan	**Medium**	None	**Medium**	None	Low	None	None	Low	None	None

[1] **Level of available knowledge: High** - quantitative scientific studies; **Medium** - qualitative scientific studies; **Low** - anecdotal information.

[2] **Level of available knowledge: High** – comprehensive IBA data available, and good knowledge of White-headed Duck status and distribution; **Medium** - IBA programme completed, and basic knowledge of White-headed Duck status and distribution; **Low** - IBA programme completed, but poor knowledge of White-headed Duck status and distribution; **None** - IBA programme not yet completed, and poor knowledge of White-headed Duck status and distribution.

[3] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

3. Threats

This section provides a general description of the threats facing the White-headed Duck, together with an appraisal of the relative importance of each threat to the global population (see below) and to the four biogeographic populations (Table 4), according to the following criteria:

Critical	a factor causing or likely to cause **very rapid declines** (>30% over 10 years);
High	a factor causing or likely to cause **rapid declines** (20-30% over 10 years);
Medium	a factor causing or likely to cause relatively **slow, but significant, declines** (10-20% over 10 years);
Low	a factor causing or likely to cause **fluctuations**;
Local	a factor causing or likely to cause **negligible declines**;
Unknown	a factor that is likely to affect the species but is not known to what extent.

Annex 1 states these threats according to categories listed in the IUCN Species Survival Commission Species Information System Threats Authority file.

3.1. Description of Threats

Hybridisation with Invasive Alien Species *Importance: Critical*

Note: (Note: hybridisation has been scored as a CRITICAL threat even though it will not lead to declines of >30% over 10 years because it could ultimately cause the extinction of the White-headed Duck).

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 5,000 birds have now 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). However, outside the UK only France holds a significant numbers of breeding pairs (*ca*. 20). Ruddy Duck sightings are concentrated along the North Sea coasts of the Netherlands, Belgium, and Germany, in France and in southern Spain. Flocks of up to 120 wintering birds now occur annually in France. The spread of the Ruddy Duck is also partly due to escapes from waterfowl collections in the Netherlands and probably other countries (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). This compares with only six countries in 1999. At least 471 Ruddy Ducks and hybrids have now been controlled in six countries excluding the UK (Denmark – 1, France - 246, Iceland - 3, Morocco - 2, Portugal - 3, and Spain - 217) and a further three countries have indicated that attempts will be made to shoot birds if they occur (Hungary, Italy, Slovenia). Concerted eradication programmes are in operation in four countries (France, Portugal, Spain, and the UK) and one is planned in Morocco. A total of 5,069 Ruddy Ducks have been shot in the UK since 1999.

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.

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). The drying up of sites in Kazakhstan caused a redistribution of White-headed Duck in the region, forcing birds into the southern regions of the Aral Sea basin and onto previously unused irrigation water-reservoirs in Uzbekistan, and, perhaps, Turkmenistan. Many important sites for the White-headed Duck totally dried out, or their area and water level were greatly reduced. For example, the Ucchali wetland complex in Pakistan which used to host more that 700 White-headed Duck in the 1980s has now almost completely dried out; and 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 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, *in press*).

Groundwater Extraction and Infrastructure Development: *Importance: Critical*

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[1] 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 Mongolia, a proposed dam in the Dalai Lake and Khar Lake area, an important breeding site for White-headed Duck, is predicted to have an impact on water levels and ecology (Li & Mundkur 2003). At the Ucchali wetland complex in Pakistan, over-abstraction of groundwater, both for drinking and for agricultural purposes, has caused a lowering of the water table and a subsequent reduction in the extent of lakes/wetlands. In Tunisia, upstream barrages have severely affected the breeding site Sebkha Kelbia, increasing the frequency of dessication by two and a half times (Hughes & Hughes 1992). In Pakistan, Kallar Kahar Lake has now been developed into a recreational resort and due to disturbance, very few waterbirds visit the lake (Li & Mundkur 2003). These are just a few examples of specific cases, and many other key sites are affected by similar activities.

[1] It is important to note that in some countries, such as Tunisia, the construction of small dams may actually increase White-headed Duck populations by providing additional habitat.

Arable Farming *Importance: Critical*

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, especially in Central Asia, where new wintering sites have been colonised as a consequence of the irrigation process. 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. For example, in Pakistan, the land around the Ucchali wetland complex is privately owned and any reduction in the extent of the lakes prompts landowners to start cultivating exposed areas. This practice is most destructive at Khabekki Lake where the owners have cultivated the land right up to the edge of the water.

Over-hunting *Importance: High*

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). Over-hunting therefore undoubtedly played an important role in its decline. Over-hunting 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 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). At the Ucchali wetland complex in Pakistan, illegal hunting has been reported but not in recent years. 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. In Uzbekistan, White-headed Ducks are shot only occasionally, but are regularly trapped with nets. (Kreuzberg-Mukhina pers. comm.).

Inadequate Wetland Management *Importance: High*

In Spain and in Central Asia, wetlands often dry out (sometimes irreversibly) due to inadequate management. This also increases the effects of pollution and eutrophication (M. Giménez *pers. comm*.).

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). Leaching and run-off of fertilisers and pesticides from agricultural fields that surround the wetlands of the Ucchali wetland complex in Pakistan are known to pollute the wetlands, although their impact has not been determined (Chaudhry 2002). In Central Asia, wetlands used by White-headed Ducks are polluted by agricultural pesticides and herbicides, but the impact of this is unknown.

Drowning in Fishing Nets *Importance: Medium*

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, Li *et al. in prep*.).

Lead Poisoning *Importance: Medium*

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. 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.

Human Disturbance *Importance: Medium*

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, including Iran, Kazakhstan, Pakistan, and Turkmenistan (Li & Mundkur 2003).

Invasive Alien Species (Directly Impacting Habitat) *Importance: Low*

Introduction of the Muskrat *Ondatra zibethicus* for its pelt has resulted in the destruction of reed beds in the temperate regions of Central Asia, for example in Mongolia (Li & Mundkur 2003). 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). Introduction of Tilapia *Oreochromis* sp. and Grass Carp *Ctenopharyngodon idella* into wetlands in Pakistan and Afghanistan, respectively, has affected the ecological balance of vegetation, fish and other species (Li & Mundkur 2003).

Competition with Invasive Alien Species *Importance: Low*

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). The harmful effect of the widespread carp on breeding waterfowl is well known.

Livestock Farming *Importance: Local*

Damage to reed beds in wetlands in Uzbekistan and Mongolia, 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). In Pakistan, vegetated areas around the lakes of the Ucchali wetland complex are heavily grazed by domestic livestock. Grazing is much beyond the grazing capacity levels as found in the Participatory Rural Assessment exercise undertaken by WWF-Pakistan and the Punjab Wildlife & Parks Department in 1995 (Li & Mundkur 2003). The harvest of reeds to build fences for protection of cattle in winter in Mongolia results in the loss of nesting habitat of White-headed Duck (Li & Mundkur 2003). Such harvesting is also an important problem in Turkey, Morocco (Green *et al*. 2002) and no doubt other countries.

Wildfire *Importance: Local*

In Mongolia, natural steppe fires sometimes spread into reed beds and destroy White-headed Duck nesting habitat (Li & Mundkur 2003).

Predation by Brown Rats *Importance: Local*

The presence of humans and their activities leads to an increase in the densities of 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*.).

Table 4. Relative importance of threats to the four biogeographic White-headed Duck *Oxyura leucocephala* populations. Medium, High and Critical threats in bold type.

Threat	Migratory Central Asian Breeding	Migratory South Asian Wintering	Resident North African	Resident Spanish
Hybridisation with invasive alien species[1]	**CRITICAL**	**CRITICAL**	**CRITICAL**	**CRITICAL**
Climate change/drought	**CRITICAL**	**CRITICAL**	**CRITICAL**	**CRITICAL**
Groundwater extraction and infrastructure development	**CRITICAL**	**CRITICAL**	**HIGH**	**CRITICAL**
Arable farming	**CRITICAL**	**CRITICAL**	**MEDIUM**	**MEDIUM**
Over-hunting	**HIGH**	**HIGH**	**HIGH**	LOCAL
Inadequate wetland management	**HIGH**	-	-	**HIGH**
Pollution	**MEDIUM**	**HIGH**	**MEDIUM**	**MEDIUM**
Drowning in fishing nets	**HIGH**	LOW	LOCAL	LOCAL
Lead poisoning	**MEDIUM**	LOW	LOW	**HIGH**
Human disturbance	LOW	**MEDIUM**	LOW	LOW
Invasive alien species (directly impacting habitat)	LOW	LOW	LOW	LOW
Competition with invasive alien species	LOW	LOW	LOCAL	LOCAL
Livestock farming	LOCAL	LOCAL	LOCAL	-
Wildfire	LOCAL	LOCAL	LOCAL	-
Predation by Brown Rats	-	-	-	LOCAL

[1] Hybridisation with invasive alien species is scored as Critical for all populations even though it will not lead to declines of >30% over 10 years because it could ultimately cause the extinction of the White-headed Duck

A 'Problem tree' for the White-headed Duck is shown in Figure 2. It has been produced to explain how the threats affect the population and how they are related. The root causes of the problems facing the species are shown on the right hand side of the tree.

Figure 2. Problem tree for the White-headed Duck *Oxyura leucocephala* (thick bold frame – CRITICAL; bold frame – HIGH, normal frame – MEDIUM, dashed frame – LOW; no frame – LOCAL. a) direct threats.

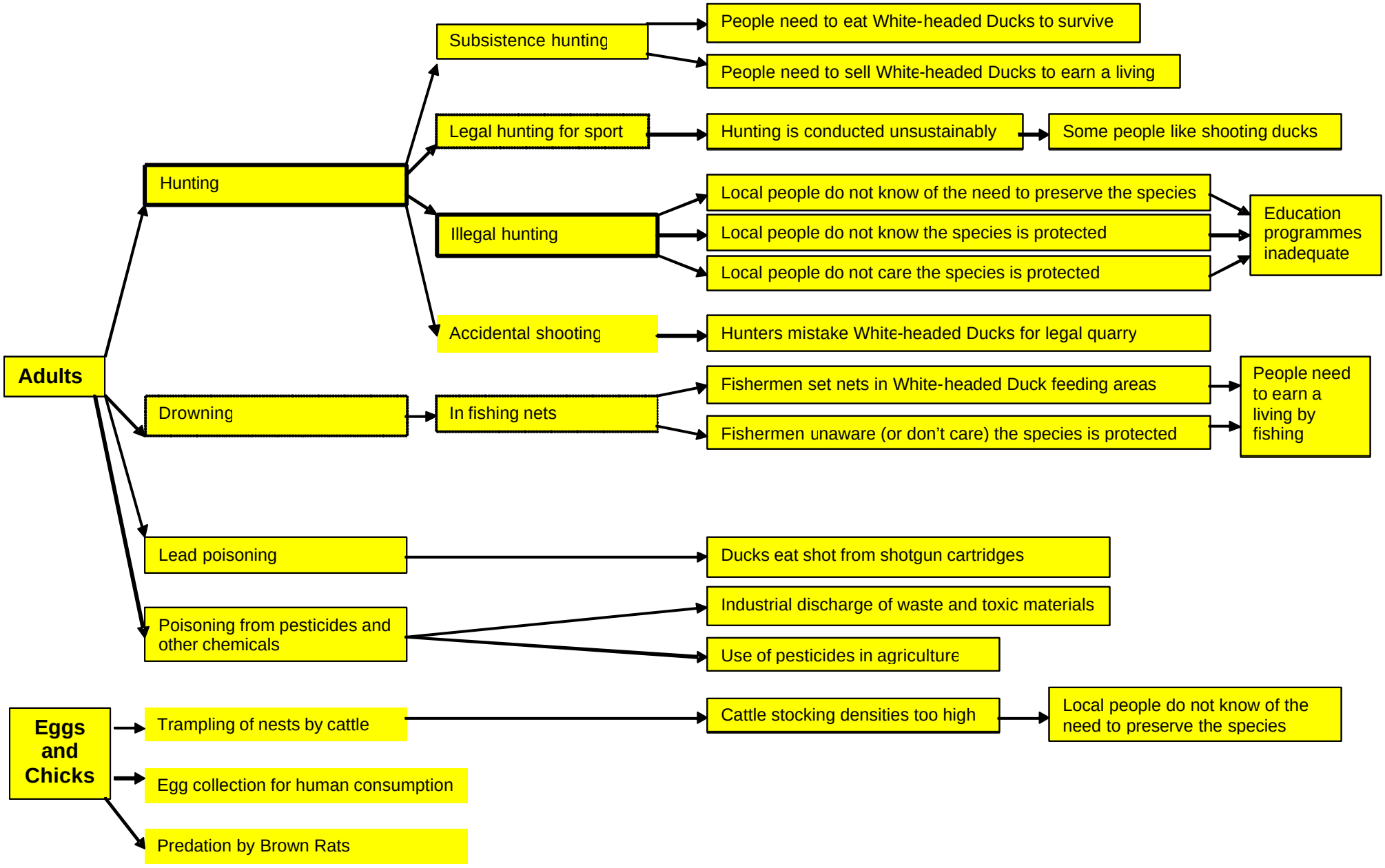


Figure 2. Problem tree for the White-headed Duck *Oxyura leucocephala* (thick bold frame – CRITICAL; bold frame – HIGH, normal frame – MEDIUM, dashed frame – LOW; no frame – LOCAL. b) indirect threats.

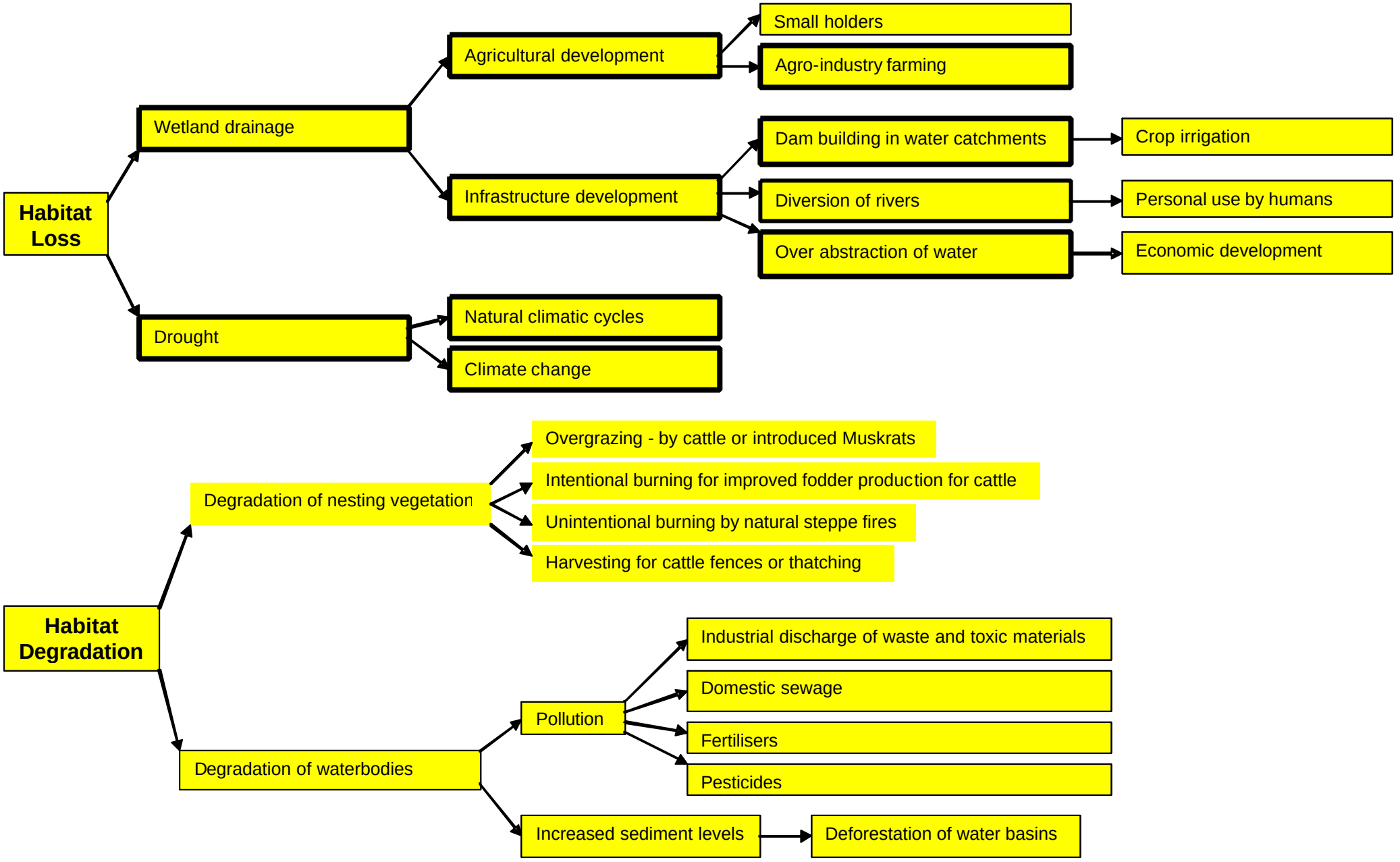
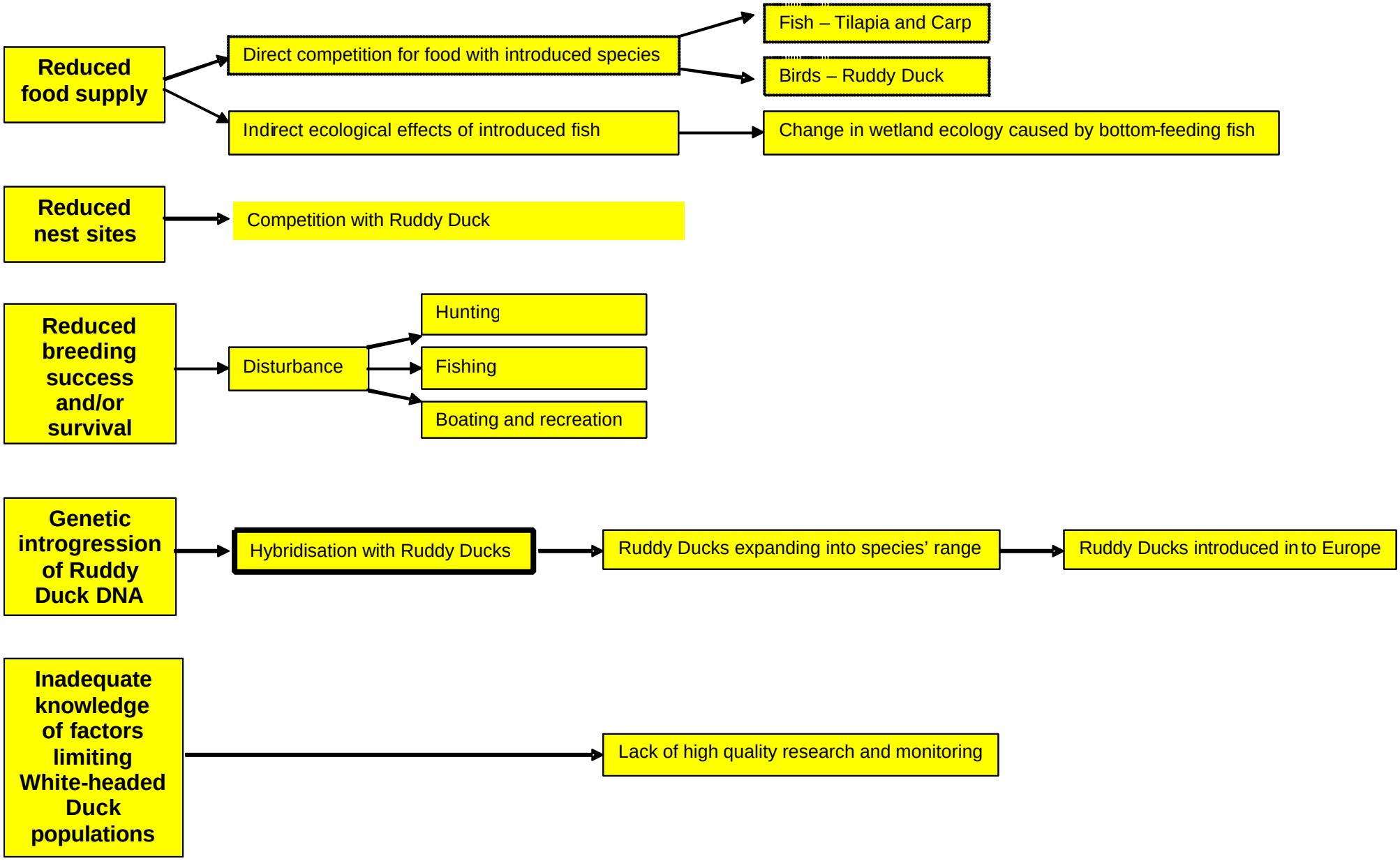


Figure 2. Problem tree for the White-headed Duck *Oxyura leucocephala* (thick bold frame – CRITICAL; bold frame – HIGH, normal frame – MEDIUM, dashed frame – LOW; no frame – LOCAL. b) indirect threats (continued).



4. Policies and legislation relevant for management

4.1. International Conservation and Legal Status

Table 5 shows the status of the White-headed Duck under the main international legislative instruments for conservation.

Table 5. International conservation and legal status of the White-headed Duck *Oxyura leucocephala*. (Note: Headers in grey relate to measures relevant to European countries only). Letters in parenthesis are IUCN Red List criteria (World Status) and AEWA categories (African-Eurasian Migratory Waterbird Agreement).

World Status	European Status	SPEC category	EU Birds Directive Annex	Bern Convention Appendix	Bonn Convention Appendix	African-Eurasian Migratory Waterbird Agreement	Convention on International Trade in Endangered Species
Endangered A1acde	Endangered	SPEC 1	Annex I	Appendix II	Appendix I	west Mediterranean (Spain) A1a 1b 1c Algeria/Tunisia A1a 1b 1c east Mediterranean, Turkey and south-west Asia A1a 1b 2	Appendix II

4.2. Member States/Contracting Parties Obligations

The obligations/commitments of Member States/Contracting Parties under various Directives/Conventions are presented in Annex 2.

White-headed Duck Conservation

EU Directive (79/409/EEC) on the Conservation of Wild Birds (Birds Directive)

As the White-headed Duck is listed on Annex I of the EU Directive (79/409/EEC) on the Conservation of Wild Birds (Birds Directive), the species should be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Member States should classify in particular the most suitable territories in number and size as special protection areas for the conservation of these species.

Convention on Biological Diversity (Biodiversity Convention)

Article 8 of the Convention on Biological Diversity (Biodiversity Convention) states that "Each Contracting Party shall, as far as possible and as appropriate:

(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;
(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
(d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
(f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies".

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

As the White-headed Duck is listed on Appendix II of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Contracting Parties should take appropriate and necessary legislative and administrative measures to ensure the special protection of the White-headed Duck. The following will in particular be prohibited for these species: a) all forms of deliberate capture and keeping and deliberate killing; b) the deliberate damage to or destruction of breeding or resting sites; c) the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and wintering, insofar as disturbance would be significant in relation to the objectives of this Convention; d) the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty; e) the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof.

Convention on Migratory Species of Wild Animals (CMS)

As the White-headed Duck is listed on Appendix I of the Convention on Migratory Species of Wild Animals (CMS), Range States should endeavour: a) to conserve and, where feasible and appropriate, restore those habitats of the species which are of importance in removing the species from danger of extinction; b) to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species; and c) to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species.

African Eurasian Migratory Waterbird Agreement (under CMS)

As the White-headed Duck is listed in Column A of the action plan to the African-Eurasian Migratory Waterbird Agreement, Parties should: a) prohibit the taking of birds and eggs of those populations occurring in their territory; b) prohibit deliberate disturbance in so far as such disturbance would be significant for the conservation of the population concerned; c) prohibit the possession or utilization of, and trade in, birds or eggs, or any readily recognizable parts or derivatives of such birds and their eggs, d) cooperate with a view to developing and implementing international single species action plans; e) prepare and implement national single species action plans; and f) phase out the use of lead shot for hunting in wetlands.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

As the White-headed Duck is listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the regulation of trade in White-headed Duck specimens requires the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met: (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species; (b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and (c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

Ruddy Duck Control

EU Directive (79/409/EEC) on the Conservation of Wild Birds (Birds Directive)

With regards to Ruddy Duck control, Article 11 of the EU Directive (79/409/EEC) on the Conservation of Wild Birds (Birds Directive) states that "Member States shall see that any introduction of species of bird which do not occur naturally in the wild state in the European territory of the Member States does not prejudice the local flora and fauna."

EU Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive)

Article 22 (b) of the EU Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) states that "Member States shall ensure that the deliberate introduction into the wild of any species which is not native to their territory is regulated so as not to prejudice natural habitats within their natural range or the wild native flora and fauna and, if they consider it necessary, prohibit such introduction. The results of the assessment undertaken shall be forwarded to the committee for information."

Convention on Biological Diversity (Biodiversity Convention)

Article 8 (h) of the Convention on Biological Diversity (Biodiversity Convention) states that "each Contracting Party shall, as far as possible and appropriate, prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species."

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

Article 11 (2) (b) of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) states that "each Contracting Party undertakes to strictly control the introduction of non-native species."

Convention on Migratory Species of Wild Animals (CMS)

Article III (4c) of the Convention on Migratory Species of Wild Animals (CMS) which relates to endangered migratory species states that "parties that are Range States of a migratory species listed in Appendix I shall endeavour to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species."

African Eurasian Migratory Waterbird Agreement (under CMS)

Article III 2 (g) of the African Eurasian Migratory Waterbird Agreement (under the Bonn Convention) states that "Parties shall prohibit the deliberate introduction of non-native waterbird species into the environment and take all appropriate measures to prevent the unintentional release of such species if this introduction or release would prejudice the conservation status of wild fauna and flora; when non-native waterbird species have already been introduced, the Parties shall take all appropriate measures to prevent these species from becoming a potential threat to indigenous species." Article IV of the AEWA, the Action Plan and Conservation Guidelines, provides further guidance over the management of non-native waterbirds – "Parties shall take measures to the extent feasible and appropriate, including taking, to ensure that when non-native species or hybrids thereof have already been introduced into their territory, those species or their hybrids do not pose a potential hazard to the populations listed in Table 1".

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

On 18 August 2003, Commission Regulation (EC) No 1497/2003 added the Ruddy Duck to Annex B of the No. 338/97 on the protection of species of wild fauna and flora by regulating trade therein. The Ruddy Duck was added to Annex B in accordance with Article 3 (2d) of the Regulation as a species that would constitute an ecological threat to wild species of fauna and flora indigenous to the Community. This now allows for the prohibition of importation of Ruddy Ducks into the EU, and for restrictions to be placed on the holding and/or movement of birds, including the prohibition of keeping Ruddy Ducks in captivity.

4.3. National Policies, Legislation and Ongoing Activities

The legally protected status of the White-headed Duck in the 26 countries where it regularly occurs is shown in Table 6.

Table 6. Protection of the White-headed Duck *Oxyura leucocephala* under national legislation by country. No info = no information available; N/A = not applicable.

Country	Listing in National Red Data Book	Legal Protection from Killing?	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	For Game Species, give Opening/ Closing Dates	Annual Bag Size	Highest Responsible National Authority
Afghanistan	No info	No info	No info	No info	No info	No info	No info
Algeria	No Red Data Book	Protected under Decree no. 83–509	1983	No info	N/A	N/A	No info
Armenia	"Listed"	Protected by the Wildlife Law (2000)	1987	Policies being developed	N/A	N/A	Ministry of Nature Protection RA
Azerbaijan	Not Listed	None	-	No info	No info	No info	Ministry of Ecology
Bulgaria	"Rare"	Protected – more information needed	1962	No info	N/A	N/A	Ministry of Environment and Water
China	listed (1998)	Not protected under the National Important Wildlife of China Protection Act (1989)	-	No info	No info	No info	State Forestry Administration, China
France[1]	Considered Extinct in French Red Data Book	Protected – more information needed	1972	No info	N/A	N/A	Direction de la Nature et Paysages, of the Ministère de l'Ecologie et du Développement Durable
Georgia	No info	No info	No info	No info	No info	No info	No info
Greece	Endangered	Protected by Joint Ministerial Decision 414985/85	1985	No info	N/A	N/A	No info
Iraq	No info	No info	No info	No info	No info	No info	No info
Islamic Republic of Iran	No Red Data book	Hunting prohibited under the Game and Fish Law (1967, amended in 1996)	1967	No info	N/A	N/A	Department of the Environment
Israel	No Red Data Book	Fully protected under the 1955 Wildlife Protection Law	1955	No info	N/A	N/A	No info
Italy[1]	Endangered	Protected under Law No. 157 (article 2	1992	No info	N/A	N/A	No info

Country	Listing in National Red Data Book	Legal Protection from Killing?	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	For Game Species, give Opening/ Closing Dates	Annual Bag Size	Highest Responsible National Authority
		of the hunting law)					
Kazakhstan	Listed as Category 1 (EN)	Yes	1996	No info	N/A	N/A	Ministry of Environment Protection
Mongolia	Rare	Listed as a rare species in Law on Hunting (1995), Red Data Book (1997) and Law on Fauna (2000). Also protected under the following Laws and regulations: Law on Environmental Protection (1995), Law on Special Protected Areas (1995).	1995	$10-$250 by the Law on Special Protected Areas. Illegal killing or nest destruction is not specified.	N/A	N/A	Ministry of Nature and Environment
Morocco	No Red Data Book	Protected under the Permanent Hunting Order of 1962	1962	No info	N/A	N/A	No info
Pakistan	No national Red Data Book. Under production by IUCN Pakistan's biodiversity program.	Protected in all provinces and federal units. Included in Schedule 3 of protected animals under the Punjab Wildlife Protection, Conservation and Management Act 1974, revised in 1991	1974	No serious penalties are present in current management structure.	N/A	N/A	National Council for the Conservation of Wildlife, Islamabad.
Romania	No Red Data Book	Protected under the Game Management and Hunting Law (103/1996) - hunting is forbidden, and Protected Areas Law (462/2001) - strictly protected.	1996	€14 fine for killing a White-headed Duck	N/A	N/A	Ministry of Waters and Environment
Russian Federation	Category I: Endangered	Protected by Wildlife Law (1995)	1995	No info	N/A	N/A	No info
Spain	Endangered	Protected under national law 4/1989 and listed as "Endangered of Extinction" (the highest possible category) in the National Catalogue of Threatened Species (Royal	1973	Law 4/1989 considers killing threatened fauna a "very serious	N/A	N/A	Ministry of Environment

Country	Listing in National Red Data Book	Legal Protection from Killing?	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	For Game Species, give Opening/ Closing Dates	Annual Bag Size	Highest Responsible National Authority
		Decree 439/1990)		offence " with a penalty of €60,100-300,500. Penal Code (Law 10/1995) considers killing a threatened species a crime which can lead to imprisonment.			
Syrian Arab Republic	No info	No info	No info	No info	No info	No info	No info
Tunisia	No Red Data Book	Protected by the Annual Hunting Decree under Title 1 in 1973 and reinforced in 1994 by Article 7	1973	30 TND to 300 TND or 6 days to 6 months imprisonment	N/A	N/A	Ministère de l'Agriculture, de l'Environnement et des Ressources Hydrauliques (MAEHR), Direction Générale des Forêts (DGF)
Turkey	No Red Data Book	Protected – more information needed	1984	No info	N/A	N/A	No info
Turkmenistan	Listed as Category 1 (EN)	Protected under: Preservation and rational usage of fauna act, 1997; Protected areas act, 1992; Model Statute about Governmental Nature Reserves of Turkmenistan, 1994; Model Statute about Governmental Arboretums of rare and threatened animals and plants in Turkmenistan, 1995; Completion of a National Action Plan on Biodiversity Conservation in Turkmenistan (2002);	1992	No info	N/A	N/A	Ministry of Nature Protection

Country	Listing in National Red Data Book	Legal Protection from Killing?	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	For Game Species, give Opening/ Closing Dates	Annual Bag Size	Highest Responsible National Authority
		National Caspian Action Plan (*in prep*.)					
Ukraine	Category IV (rare species)	Law on Wild Animals (1993), Law on Game Husbandry and Hunting (2000); Law on Red Data Book of Ukraine (2000), National Red Data Book (1980, 1994)	1974	Penalty for killing – 450 UAH (about 85 USD)	N/A	N/A	Ministry for Environmental Protection of Ukraine
Uzbekistan	Endangered (Red Data Book of the Republic of Uzbekistan 2003)	Protected under law on protection and usage of animals (1997). Cannot be hunted under national hunting regulations (Resolution of Parliament "Ordinance on hunting, 1991)	1983	Penalty for foreign poachers is 500 US $, for national poachers 75 US $	N/A	N/A	State Committee for Nature Protection

[1] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

[2] National Red lists might not be up-to-date with the global red-list, but are important since in many countries they have legal relevance.

4.4. Site (and Habitat) Protection and Research

Annex 3 gives a list of 111 IBAs for the White-headed Duck from the World Bird Database, together with their co-ordinates, the numbers of birds they support, the season for which they are important and the criteria used to identify the site (as of March 2004). IBA coverage is fairly comprehensive in Europe, North Africa and the Middle East, but coverage is poor in key Range States in central Asia, such as Mongolia, Kazakhstan, the Russian Federation and Uzbekistan. Only 15 of these 101 IBAs have management plans prepared. The protection status of IBAs is shown in Annex 4, together with their protected area designations. Of the 95 White-headed Duck IBAs for which protected area data is available in the World Bird Database (no information for North Africa), only 36 (38%) are known to be fully protected, 27 (28%) are partially protected and 32 (34%) are not protected. These 95 IBAs include a total of 150 protected areas (Annex 4).

Table 7 presents a summary of the proportion of White-headed Ducks in protected areas in each Range State during the breeding and non-breeding seasons.

Table 7. Site (and habitat) protection for the White-headed Duck *Oxyura leucocephala.* Shaded cells represent periods when the species is probably not present in the country. The breeding season includes estimates of breeding and resident bird numbers and the non-breeding season includes estimates of passage and wintering bird numbers. N/A – not applicable.

	Breeding Season					Non-breeding Season				
	No. IBAs where WHDs Breed[1]	**% Pop. in IBAs[2]**	**% Pop. in SPAs[3]**	**% Pop. in Ramsar Sites**	**% Pop. in National Protected Areas[4]**	**No. IBAs with WHDs**	**% Pop. in IBAs**	**% Pop. in SPAs[3]**	**% Pop. in Ramsar Sites**	**% Pop. in National Protected Areas**
Afghanistan			N/A					N/A		
Algeria			N/A					N/A		
Armenia	1	100	N/A	0	0	3	100	N/A	70	60
Azerbaijan						6	100	N/A	75	75
Bulgaria								N/A		
China			N/A					N/A		
France[5]	1	100	100	100	100	1	100	100	100	100
Georgia								N/A		
Greece						2	100	100	100	100
Iraq			N/A					N/A		
Islamic Republic of Iran			N/A					N/A		
Israel								N/A		
Italy[5]	0	0	0	0	0	0	0	0	0	0
Kazakhstan[6]	0	0	N/A	0	0	0	0	N/A	0	0
Mongolia	5	100	N/A	99	99	-	-	N/A	-	-
Morocco			N/A					N/A		

	Breeding Season					Non-breeding Season				
	No. IBAs where WHDs Breed[1]	**% Pop. in IBAs[2]**	**% Pop. in SPAs[3]**	**% Pop. in Ramsar Sites**	**% Pop. in National Protected Areas[4]**	**No. IBAs with WHDs**	**% Pop. in IBAs**	**% Pop. in SPAs[3]**	**% Pop. in Ramsar Sites**	**% Pop. in National Protected Areas**
Pakistan						3	90	N/A	90	90
Romania						3	95	N/A	1	3
Russian Federation			N/A					N/A		
Spain	11	100	90	80		11+				
Syrian Arab Republic			N/A					N/A		
Tunisia	5	55	N/A	0	0	10	60	N/A	4	4
Turkey			N/A					N/A		
Turkmenistan[6]			N/A					N/A		
Ukraine	0	-	N/A	-	-	2	Up to 100	N/A	Up to 25	Up to 100
Uzbekistan[6]			N/A		40-50			N/A	40-50	40-50

[1] Estimates of the number of IBAs where the species breeds or spends the non-breeding season were obtained from the BirdLife International World Bird Database (data extracted March 2004) and/or from national contacts.
[2] Estimates of the % of the population present in the IBA suite of an individual country were estimated by national contacts.
[3] European Union members only.
[4] National protected areas: Only includes areas which meet the IUCN definition of a protected area: "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means."
[5] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.
[6] The IBA assessment process has just started in Central Asia, although the sites where White-headed Duck occur are mostly already known.

4.5. Recent Conservation Measures and Attitude Towards the Species

There have been conservation efforts for the White-headed Duck in many Range States, although most studies have been conducted in Spain. Four EU-LIFE projects have been conducted for the White-headed Duck and/or its habitats: three in Spain (White-headed Duck Preservation Plan in the Valencian Community (LIFE00 NAT/E/007311); Albuferas de Adra (Almería) Recovery and Conservation Plan (LIFE98 NAT/E/005323); Conservation and restoration of wetlands in Andalucia (LIFE03 NAT/E/000055)) and one in France (*Oxyura leucocephala*'s reintroduction on Biguglia's pond (LIFE97 NAT/F/004226)). Conservation efforts in Spain have led to an increase in the White-headed Duck population from 22 birds in 1977 to around 2,500 in 2003. However, the main Central Asian White-headed Duck population is still in decline and most Range States do not have national White-headed Duck action plans, national working group or monitoring programmes.

Since 1993, when the first international meeting was held to discuss the Ruddy Duck issue in the Western Palearctic, there has been action to control Ruddy Ducks in many countries. An appraisal of the level of implementation of country-by-country recommendations for Ruddy Duck control from the Council of Europe White-headed Duck Action Plan (Hughes & Green 1996) reveals: 1) monitoring of Ruddy Ducks in the wild is adequate in most countries; 2) the legal provision for Ruddy Duck control exists in most countries; 3) many countries have, or are considering, a national Ruddy Duck strategy; 4) there is a commitment to eradication in five countries (France, Morocco, Portugal, Spain and the UK). The UK has conducted research into suitable control measures for Ruddy Ducks (Hughes 1996) and a regional trial that concluded nation-wide eradication was feasible (CSL 2002). 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). This compares with only six countries in 1999. At least 352 Ruddy Ducks and hybrids have now been controlled in six countries excluding the UK (Denmark – 1, France - 160, Iceland - 3, Morocco - 2, Portugal - 3, and Spain - 183) and a further three countries have indicated that attempts will be made to shoot birds if they occur (Hungary, Italy, Slovenia). The annual total of Ruddy Ducks shot in France peaked at 37 in 2000 but declined to only 6 in 2002 and 13 in 2003 despite a continuing increase in winter numbers. A total of 5.069 Ruddy Ducks have been shot in the UK since 1999. There is no ongoing control in three countries in which annual breeding attempts are thought to occur (Ireland, Morocco, and The Netherlands); 5) few countries have acted to address the potential threat posed by Ruddy Ducks escaping from captivity (although it was already illegal to keep Ruddy Ducks in Iceland and Norway and there are no birds in collections in Sweden). Few countries have mechanisms in place to monitor the numbers of birds kept in captivity and in four countries (Ireland, Italy, The Netherlands and Portugal) it is not illegal to release Ruddy Ducks into the wild. Ruddy Ducks can be traded freely in most countries. The Ruddy Duck has now been listed on Annex B of the EC CITES Regulations (338/97) on the grounds that they pose an ecological threat to indigenous species. This now gives member states the opportunity to place restrictions on or ban the keeping of Ruddy Ducks in captive collections; 6) few countries have public relations strategies regarding Ruddy Ducks, although these are in place in those countries with ongoing control. More detailed information on measures to address the Ruddy Duck problem can be found in Hughes *et al*. (1999).

Table 8 (a). Recent conservation measures for the White-headed Duck *Oxyura leucocephala.* White-headed Duck Range States in normal type, Ruddy Duck Range States in *italics*, White-headed Duck and Ruddy Duck Range States in ***bold italics***. Note: the column in this table entitled "General Attitude Towards the White-headed Duck" has been excluded from this table. N/A – not applicable.

Country	National Action Plan?	National Working Group?	National Monitoring Programme?	Monitoring Programme in Protected Areas?	Routines for Informing the Responsible Authorities Regarding Nesting Areas and Nest Sites?
Afghanistan	No	No	No	No	No
Algeria	No	No	No	No	No
Armenia	No	No	No	No	Yes
Austria	N/A	N/A	N/A	N/A	N/A
Azerbaijan	No	No	No	No	N/A
Belgium	N/A	N/A	N/A	N/A	N/A
Bulgaria	Yes	No	Yes	Yes	N/A
China	No	No	No	No	No
Denmark	N/A	N/A	N/A	N/A	N/A
Finland	N/A	N/A	N/A	N/A	N/A
France[1]	No	Yes	No	Yes	No
Georgia	No	No	No	No	N/A
Germany	N/A	N/A	N/A	N/A	N/A
Greece	No	No	Yes	Yes	N/A
Hungary	N/A	N/A	N/A	N/A	N/A
Iceland	N/A	N/A	N/A	N/A	N/A
Ireland	N/A	N/A	N/A	N/A	N/A
Iraq	No	No	No	No	No
Islamic Republic of Iran	No	No	Yes	Yes	No
Israel	No	No	No	No	N/A
Italy[1]	No	No			N/A
Kazakhstan	No	No	No	Yes	No
Mongolia	No	No	No	No	No
Morocco	No	No	Yes	Yes	No
Netherlands	N/A	N/A	N/A	N/A	N/A
Norway	N/A	N/A	N/A	N/A	N/A
Pakistan	No	No	Yes	Yes	N/A

Country	National Action Plan?	National Working Group?	National Monitoring Programme?	Monitoring Programme in Protected Areas?	Routines for Informing the Responsible Authorities Regarding Nesting Areas and Nest Sites?
Portugal	N/A	N/A	N/A	N/A	N/A
Romania	No	No	No	No	No
Russian Federation	No	No	No	No	No
Slovenia	N/A	N/A	N/A	N/A	N/A
Spain	Yes	Yes	Yes	Yes	Yes
Sweden	N/A	N/A	N/A	N/A	N/A
Switzerland	N/A	N/A	N/A	N/A	N/A
Syrian Arab Republic	No	No	No	No	N/A
Tunisia	In prep.	No	Yes	Yes	Yes
Turkey	No	No	No	Yes	No
Turkmenistan	No	No	No	No	No
Ukraine	Yes	No	No	No	No
United Kingdom	N/A	N/A	N/A	N/A	N/A
Uzbekistan	No	No	No	No	No

[1] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

Table 8 (b). Research and conservation efforts for the White-headed Duck *Oxyura leucocephala* over the last ten years. White-headed Duck Range States in normal type, Ruddy Duck Range States in *italics*, White-headed Duck and Ruddy Duck Range States in ***bold italics***.

Country	Research and Conservation Efforts over the Last Ten Years
Afghanistan	One key site protected. No other information available.
Algeria	Some key sites protected. Key WHD sites monitored annually. Only 1 Ruddy Duck record.
Armenia	Surveys of key sites conducted between 1989-1995 and 2003-2004.
Austria	No Ruddy Ducks controlled, but few records to date. Monitoring strategy in place.
Azerbaijan	Two key sites protected. Surveys of key sites conducted, 1996-2004.
Belgium	Ruddy Duck monitoring strategy in place. There are 10-20 records of Ruddy Ducks annually in Belgium, mainly relating to wintering birds in Flanders. There have been no recent breeding records and only four in total (all in Wallonia before 1993). In November 2002, the Institute of Nature Conservation produced a report on the management of naturalised waterbirds in Flanders. This recommended that: a) All captive Ruddy Ducks should be individually marked and the numbers and locations of all birds should be recorded in a centralised database; b) Trade should be discouraged and a 'list' system established for governing keeping and trade.
Bulgaria	International White-headed Duck workshop held in 2001. Two key sites protected. Key sites monitored annually. Joint Greek, Romanian, Turkish and Bulgarian conservation project conducted in 2001/2002 which aimed to monitor the winter population; determine the level of bycatch in fishing nets; and determine food resources at wintering sites in Greece, Turkey and Bulgaria (Iankov *et al*. 2002). Public awareness materials produced, especially at key waterfowl sites, such as Lake Durankulak.
China	Several potential habitats protected in Xinjiang Autonomous Region, western China. In other regions (Inner Mongolia Autonomous Region, Hubei and Hunan Provinces), all sites with White-headed Duck records protected.
Denmark	Ruddy Duck monitoring strategy in place. Only small numbers of Ruddy Ducks occur in Denmark. The species can now be hunted year-round (S. Pihl *pers. comm.*). One Ruddy Duck shot (T. Nyegaard *in litt*. to BirdLife International).
Finland	Ruddy Duck monitoring strategy in place. No action to control Ruddy Ducks, but few records to date. The Ruddy Duck is protected in Finland, but it can be controlled under special permission.
France[1]	Sole key site (Lake Biguglia) protected. EU LIFE project (LIFE97 NAT/F/004226) to reintroduce White-headed Ducks conducted at Lake Biguglia, Corsica, five birds released in 2001 but self-sustaining population not established. Three of the released birds disappeared rapidly, the fourth a little later and the fifth one year after release. Management plan produced for Lake Biguglia. White-headed Duck used as a flagship species for the Biguglia nature reserve. Education program conducted. Ruddy Duck monitoring strategy in place. There have been up to 198 wintering Ruddy Ducks (winter 2003-04) and 10-15 breeding pairs (2003-2004) at Lac de Grand Lieu in northern France (Boret & Reeber 2005). However the peak number of wintering birds fell to *ca*. 130 in 2003/2004 winter, as a result of increased numbers of birds controlled and/or a redistribution due to disturbance by control teams. The number of Ruddy Ducks occurring in France is still increasing annually, although numbers of breeding birds are still low, with breeding

Country	Research and Conservation Efforts over the Last Ten Years
	records from only three sites between 1996 and 2000. A Ruddy Duck Working Group was established in 1994 and a national eradication strategy has been in place since 1997. A Ruddy Duck network of field ornithologists has been set up by ONCFS to report every Ruddy Duck sighting so that birds can be shot as soon as possible after discovery. A Ministry Decree of 12 November 1996 allows Ruddy Duck shooting by ONCFS agents and environment technicians, including Nature Reserve agents. So far, at least 246 birds have been controlled, with a peak of 90 birds in 2004 thanks to the efforts of ONCFS and reserve staff at Lac de Grand-Lieu.
Georgia	Two key sites protected. Surveys of potential White-headed Duck sites conducted in 1997 and 1998.
Germany	Ruddy Duck monitoring strategy in place. In 2001, one pair of Ruddy Ducks bred successfully in Germany for the first time. Single pairs also bred in 2002 and 2003. As Ruddy Duck is listed in Annex B of EC Regulation 338/97 the species has the status of a protected species under the National Nature Conservation Act. This status is no obstacle for control measures. However, the chances of having control measures imposed for Ruddy Ducks are thought to be extremely low, as neither politicians nor conservationists are said to be as yet convinced that eradication measures are necessary (H-G. Bauer *in litt*. 1998). A control scheme for the Ruddy Duck has to be implemented separately in every Federal State. In Lower Saxony, where the breeding at-tempts took place, the competent authorities are ready to stop hatching and breeding success of Ruddy Duck and to prevent the species from further spreading
Greece	International White-headed Duck workshops held in 2000 and 2002. Two key sites protected. Key sites monitored annually. Joint Greek, Romanian, Turkish and Bulgarian conservation project conducted in 2001/2002 which aimed to monitor the winter population; determine the level of bycatch in fishing nets; and determine food resources at wintering sites in Greece, Turkey and Bulgaria.
Hungary	The White-headed Duck now only occurs as a vagrant in Hungary. A recent analysis identified the main reasons for failure of the White-headed Duck reintroduction conducted during the late 1980s (Bajomi 2003). Although there are only a few records of Ruddy Ducks in Hungary, the Hungarian Government has undertaken to control birds which attempt to breed.
Iceland	Ruddy Duck numbers in Iceland are monitored closely (very few records in recent years). In September 2002, the Icelandic Institute of Natural History shot three Ruddy Ducks. It is illegal to keep Ruddy Ducks in captivity in Iceland.
Ireland	Numbers of Ruddy Ducks are thought to be increasing in Ireland. This has prompted the Irish Government to add the Ruddy Duck to the list of huntable species, with an open season from 1 September to 31 January.
Iraq	No information available.
Islamic Republic of Iran	Except for the Zoulbin, Yanigh and Bozojigh areas, all of the other important sites for the White-headed Duck in Iran are protected. Key sites monitored annually.
Israel	One key site protected. Key sites monitored annually. Only 1 Ruddy Duck record (which may relate to an escape from captivity).
Italy[1]	The White-headed Duck now only occurs as a vagrant in Italy; the records of this species are up-to-date by M. Grussu & Comitato Italiano Rarità (CIR). Regular survey of all known and potential breeding sites of White-headed Duck in Sardinia by Gruppo Ornitologico Sardo (GOS). Ongoing reintroduction project at Gargano National Park, SE Apulia, but self-sustaining population not yet established.

Country	Research and Conservation Efforts over the Last Ten Years
	International White-headed Duck workshop held in May 2001. The Italian Government conservation body Istituto Nazionale per la Fauna Selvatica is working with local administrations to try to control any Ruddy Ducks which appear in Italy.
Kazakhstan	The Tengiz-Korgalzhyn Lakes Region, which holds the most important sites for breeding and migrating White-headed Ducks, was declared a strictly protected nature reserve 1968. Summer and autumn staging numbers there are well documented, but the number of breeding pairs is not known (Schielzeth *et al*. 2003, J. van der Ven *pers. comm*.). A survey of key sites in July-September 1998 found only 25 birds at two sites (Cresswell *et al*. 1999). Numbers monitored on some key sites by NABU and Institute of Zoology. In 2004, a GEF/UNDP project started which will survey and develop management plans for six river basins in Kazakhstan. Ornithological research within this project may discover new breeding and staging sites for White-headed Duck.
Mongolia	Main breeding sites are protected. Surveys of the White-headed Duck have been conducted by WWF, the Mongolian Academy of Sciences and the Wild Bird Society of Japan.
Morocco	Key sites protected. Key sites monitored annually. Ruddy Ducks have been resident in small numbers (up to 17) in Morocco since 1992, breeding was first recorded in 1994 and hybrids have been observed annually since 1999. Two Ruddy Ducks were shot in Morocco in 1994. A Ruddy Duck eradication strategy was produced in 2004, although it has yet to be implemented.
Netherlands	Ruddy Duck monitoring strategy in place. Around 40 Ruddy Ducks winter in the Netherlands with 4-7 breeding records per year (M. van Roomen *pers. comm*.). Some birds are thought to be resident in the Netherlands although some wintering birds may return to breed in the UK. The Ministry of Agriculture, Nature and Food Quality has stated that it does not want the Ruddy Duck to establish itself in the Netherlands and they have the responsibility to prevent this (M. van Roomen *pers. comm*.). The new law on the protection of flora and fauna (which supersedes the old hunting law) gives permission to landowners where Ruddy Ducks occur to remove them without permit (although no birds have yet been shot), however no disturbance of other protected species should occur. When eggs are found it is permitted to destroy them. Wintering birds can be hunted. At present the Ministry believes that these measures will prevent the Ruddy Duck from becoming established in the Netherlands. By December 2004, a policy paper on exotic species will be published, including recommendations regarding the regulation of keeping invasive exotic species. At present more active regulation of the Ruddy Ducks in the wild in the Netherlands is regarded as pointless with so many birds still present in captivity (with the resulting risk of escapes) and with the ongoing risk of immigration from the UK.
Norway	The small numbers of Ruddy Ducks reaching Norway are closely monitored, but no control currently takes place. It is illegal to keep Ruddy Ducks in captivity in Norway without a permit. Such permits have not and will not be granted (T. Bø *in litt*. 1997).
Pakistan	Key sites protected. Management plan for Ucchali wetland complex produced by WWF-Pakistan and Punjab Wildlife & Parks Department in 1994 (revised by the Department in 1999). Government has initiated a GEF/UNDP project for "Conservation of wetlands in Pakistan" in 2005. Wetland awareness campaigns conducted by Punjab Wildlife and Parks Department and WWF-Pakistan. CMS funded surveys at Ucchali wetland complex in 2002. WWF-Pakistan funded survey of historically important sites in Punjab in winter 2002-2003 found 33 White-headed Ducks on four sites. Surveys by the zoology department of Punjab University and independently by Kashif Sheikh in 1998,

Country	Research and Conservation Efforts over the Last Ten Years
	1999 and 2000.
Portugal	Ruddy Duck monitoring strategy in place. National eradication strategy in place and a control team operational since 1994. One Ruddy Duck and two hybrids were shot between 1995 and 2000.
Romania	Some key sites protected (e.g. Danube Delta). Joint Greek, Romanian, Turkish and Bulgarian conservation project conducted in 2001/2002 which aimed to monitor the winter population; and determine the level of bycatch in fishing nets. Launching a LIFE III project for the conservation of the key wintering (breeding?) site in 2004. Will include: site conservation, pollution control, hunting ban in the area, etc. Documentation in preparation for legal protection under national law and for SPA designation of the site.
Russian Federation	Some key sites protected, though mainly as non-hunting areas or "Zakazniks". Regular monitoring of summer numbers and distribution being conducted in the Chelyabinsk, Volgograd and Daghestan Regions.
Slovenia	Ruddy Duck monitoring strategy in place. Only 1 Ruddy Duck record.
Spain	International White-headed Duck workshop held in 1994. Major national conservation initiative for the White-headed Duck – many national and regional conservation initiatives. The White-headed Duck has been used as a flagship species in Spain since the species was on the verge of extinction in 1977. It has been used as a flagship species in campaigns to ban the use of lead shot over wetlands, and to increase awareness of the damage introduced species can pose to native fauna and flora. Comprehensive annual surveys conducted (five times per year). Recovery Plan for Castilla-La Mancha autonomous region approved in 1995. Also produced for Andalusia and Valencia, but not yet approved (thus not legally binding). National working group, formed in 1994, meets annually, coordinated by the Ministry of Environment, with attendance by regional governments, experts and ministry officials. Most key sites protected (12/15 key sites are Ramsar sites) and most have management plans. Three EU LIFE projects conducted - White-headed Duck Conservation Plan in the Valencian Community (LIFE00 NAT/E/007311); Albuferas de Adra (Almería) Recovery and Conservation Plan (LIFE98 NAT/E/005323); Conservation and restoration of wetlands in Andalucia (LIFE03 NAT/E/000055). Some 46Ha of wetlands have been acquired at the El Hondo SPA as part of Life projects B4/3200/92/15183 and B4-3200/96/513. Although the Marbled Teal is the target of this restoration project, the lagoons will also be used by White-headed Ducks. In 2002, Andalucia initiated a conservation plan for wetlands for the region "Plan Andaluz de Humedales". This will produce a legally binding plan for Andalucian wetlands that should prevent their deterioration. Castilla-La Mancha has a Wetland Conservation Strategy that includes: protection of important wetlands, research, hunting regulations and land acquisition. Since 1996, this region has initiated the production of management plans for 19 wetlands. The "Spanish Strategic Plan for the Conservation and Rational Use of Wetlands" should provide a legal guarantee of the sustainable use of wetlands. Reintroduction programme conducted in Majorca, but no birds introduced since 1995 and self-sustaining population not yet established. In 2004, over 30 birds hatched from eggs taken from Tarelo lagoon in Doñana will be released. Extensive research conducted, most recently including studies of spatial and numeric population dynamics in relation to climatic variation; the effects of lead shot ingestion; the densities of lead shot in key sites; and the genetic differences between current and historic (pre-1960) populations. The LIFE00 NAT/E/007311 project includes studies of habitat use, trophic ecology and the effect of Common Carp on the White-headed Duck at the El Hondo and Salinas de Santa Pola SPAs. The hydrology of the El Hondo SPA has been studied with special emphasis on pollution, eutrophication and the hydrological needs of this important wetland. Many pubic awareness initiatives conducted. In 2002, a brochure about the White-headed Duck was published (edited by the Ministry of Environment and environmental authorities of autonomous regions). An environmental campaign within the LIFE00 NAT/E/007311 project started in 2003, including production and distribution of leaflets posters, and

Country	Research and Conservation Efforts over the Last Ten Years
	educational material to local people living around the El Hondo and Salinas de Santa Pola SPAs. The Spanish law (RD 581/2001) has banned the use of lead shot since October 2001 at Ramsar sites and wetlands protected under any legal category. However, regional governments were allowed a moratorium over the when the ban should start. Lead use over wetlands in Andalusía, Madrid and the Balearic Islands has been banned since October 2002, and in Valencia since January 2003. Castilla-La Mancha banned the use of lead in May 1999. Hence, lead shot is now banned at all key White-headed Duck sites. Ruddy Duck monitoring strategy in place. A national Ruddy Duck eradication strategy has been in place since 1989. A national control team attempts to shoot all Ruddy Ducks and hybrids. At least 152 Ruddy Ducks and 65 hybrids have been controlled to date. Identification guides to Ruddy Ducks, White-headed Ducks and their hybrids produced in 1993 and 2002. Captive collections holding Ruddy Ducks contacted to request that all reproduction and escape of the species is prevented. Trade in and possession of live birds or eggs of any species of *Oxyura* (apart from *O. leucocephala*) has been prohibited in the Balearic Islands.
Sweden	The widely used internet reporting system on birds facilitates the monitoring of the occurrence of Ruddy Duck in Sweden. A change in legislation in July 2001 means the Ruddy Duck can now be shot all year round and their nests destroyed. The Ruddy Duck is the only bird species in Sweden that can be hunted irrespective of situation in which it occurs. There is a common understanding by both the authorities and the Swedish Ornithological Society that Ruddy Duck control is justified. The Swedish government has encouraged all 21 country administrations to eliminate any Ruddy Ducks which occur. Articles have also been written in the Swedish Ornithological Society´s magazine to explain why control measures are needed.
Switzerland	Ruddy Duck monitoring strategy in place. Although Ruddy Ducks are not yet controlled in Switzerland, the Swiss Ornithological Institute and SVS/BirdLife Switzerland have suggested a strategy on introduced bird species. A national strategy for the control of Ruddy Ducks is in preparation. It is proposed that all Ruddy Ducks occurring in Switzerland should be killed by hunting guards of the Cantons, but that other waterbirds, especially on nationally and internationally important sites and IBAs, should not be disturbed.
Syrian Arab Republic	Surveys of White-headed Ducks conducted in 2004 (Murdoch *et al. in press*)
Tunisia	All 18 key sites protected under national law (1 National Park and 17 Game Reserves) and hunting prohibited. White-headed Duck numbers monitored on all 18 key sites for at least 3 years. Regular controls are carried out by Hunting Inspectors at all sites. Since 2000, a site warden has been in place at IBA TN012 Lebna Reservoir. Educational booklets summarising previous action plan (Anstey 1989) distributed. The White-headed Duck has been used as a flagship species by AAO in 2000 and a pocket calendar has been published to raise public awareness.
Turkey	International White-headed Duck workshops held in Burdur town in 1991 and 2002. The White-headed Duck has been used as a flagship species at Burdur Gölü since the 1980s, especially in connection with threats to the lake from pollution, human development and over-abstraction of water. Some key sites (e.g. Burdur Gölü) protected. Some key sites monitored annually. Breeding survey of Central Anatolian lakes in 1996 (Buckley *et al*. 1998). Potential White-headed Duck sites surveyed in eastern Turkey in September 2001. Local people (e.g. Burdur Municipality) heavily involved in White-headed Duck conservation Joint Greek, Romanian, Turkish and Bulgarian conservation project conducted in 2001/2002 which aimed to monitor the winter population; determine the level of bycatch in fishing nets; survey breeding areas in Anatolia; and determine food resources at wintering sites in Greece, Turkey and Bulgaria (Kurt *et al*. 2002). Many

Country	Research and Conservation Efforts over the Last Ten Years
	community-based conservation initiatives at Burdur Gölü, including detailed research study during 1990s.
Turkmenistan	Some key sites monitored annually.
Ukraine	Regular monitoring in Crimea, first of all in Crimean Nature Reserve Brunch "Lebyazhi Ostrovy". Monitoring at wetlands in the southern part of Ukraine, which discovered migrating and wintering White-headed Duck on Tarkhankutska peninsula and Yarylgach Bay (Beskaravayny *et al*. 2001, Kostin & Tarina 2002). No special programs on the protection of the species. In 2000, the National Action Plan for the conservation of the White-headed Duck in Ukraine was published by the Ukrainian BirdLife partner (not a state official edition) (Koshelev 2000).
United Kingdom	International White-headed Duck workshop held in March 1993. Ruddy Duck monitoring strategy in place via national monthly Wetland Bird Survey counts. Ruddy Duck numbers and distribution being monitored in Northern Ireland in 2004 as part of government-funded contract. Government-funded research conducted to identify most cost-effective control measures for Ruddy Ducks. Government-funded regional trial of control measures suggested it is feasible to eradicate Ruddy Ducks from the UK (5,069 Ruddy Ducks shot in the UK since 1999). An eradication programme will now take place in the UK with funding from the UK Government and EU-LIFE Nature programme. Legal protection of the Ruddy Duck was removed in England in 2003, enabling control of birds and nests/eggs under the terms of a general licence, but remains in place in Wales, Scotland and Northern Ireland. It has been illegal to introduce Ruddy Ducks to the wild in the UK since 1981. Trade in captive Ruddy Ducks effectively banned in 1995 - numbers of captive Ruddy Ducks are declining. Guide to keeping stiff-tailed ducks in captivity produced and circulated to aviculturalists in 1993. Government currently consulting on whether to ban the keeping of Ruddy Ducks. Research projects also conducted on Ruddy Duck behaviour and ecology; viability and fertility of Ruddy Duck x White-headed Ducks hybrids in captivity; aggressive interactions and display frequencies between Ruddy Ducks and White-headed Ducks in captivity; movements of Ruddy Ducks from Abberton Reservoir, Essex; modelling the spread of Ruddy Ducks into Europe to predict the timescale for extinction of the White-headed Duck under different Ruddy Duck control scenarios. Three Government information leaflets on the threat posed to the White-headed Duck by the Ruddy Duck produced since 1990 (the latest in 2003). A slide pack on the issue was produced in 1994.
Uzbekistan	During the 1970s and 1980s, the White-headed Duck was thought to be extinct in Uzbekistan. Research between 1996 and 2005 has now shown that the species occurs throughout the year. Breeding and migrating White-headed Duck monitored at the Sudochye Lakes system during the GEF project "Aral Sea Basin Program: Water and Environmental Management" sub-project "Restoration of the Lake Sudochye Wetlands" 1999-2002. Breeding surveys have been conducted in the Bukhara region. Wintering White-headed Duck monitored at Dengizkul Lake in 2000 (Ramsar Small Grant Project "Protection of Uzbekistan's wetlands and their waterfowl") and 2003-2005 during IWC (Wetlands International/ WWF Russia project "Towards a strategy for waterbird and wetland conservation in the Central Asian Flyway). Important wetlands in Central and Southern Uzbekistan were monitored in January 2000- 2005. Key sites protected as non-hunting areas or "Zakazniks" (Sudochye and Dengizkul Lakes) in 1991. Lake Dengizkul designated as Ramsar site in 2001.

[1] Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

5. Framework for action

This section of the document identifies and defines the Goal, the Purpose, and Results of the action plan and describes Objectively Verifiable Indicators, and Means of Verification made in its implementation. The Goal is the higher level of objective to which the action plan will contribute. The Purpose is the objective or effect of the plan. The Results are the changes that will need to have been brought about by the plan if the Purpose is to be realised. The Objectively Verifiable Indicators (OVIs) are the targets by which the impact of the Results will be measured. Means of Verification are the means of justification of the OVIs. The Goal, Purpose, and Results of this plan have been designed to be Specific, Measurable, Agreed, Realistic and Time-bound following internationally agreed process.

5.1 White-headed Duck Action Plan Goal, Purpose, and Results

A **Priority** for each Result is given, according to the following scale:

Essential: a Result that is needed to prevent a large decline in the population which could lead to extinction.
High: a Result that is needed to prevent a decline of more than 20% of the population in 20 years or less.
Medium: a Result that is needed to prevent a decline of less than 20% of the population in 20 years or less.
Low: a Result that is needed to prevent local population declines or which is likely to have only a small impact on the population across the range.

Timescales are attached to each Result using the following criteria:

Immediate: completed within the next year.
Short: completed within the next 1-3 years.
Medium: completed within the next 1-5 years.
Long: completed within the next 1-10 years.
Ongoing: an action that is currently being implemented and should continue.
Completed: an action that was completed during preparation of the action plan.

Summary of Objectives / Activities	Objectively Verifiable Indicator	Means of Verification
Goal Restoration of the White-headed Duck to favourable conservation status	White-headed Duck removed from the IUCN red list by 2050	IUCN Red List
Project Purpose Maintain global population and range of the White-headed Duck.	White-headed Duck global population stable by 2015 White-headed Duck global range stable by 2015	World Bird Database Wetlands International Waterbird Population Estimates
Results		
1. Further habitat loss and degradation prevented **Priority: Essential** **Timescale: Long**	All key White-headed Duck sites protected and maintained in favourable conservation status by 2015	Natura 2000 database National government reports to the European Commission, the CMS, Bern, Biodiversity and Ramsar Conventions, and AEWA International and national White-headed Duck working group reports BirdLife International IBA reports
2. Direct mortality of adults prevented and reproductive success increased **Priority: High** **Timescale: Long**	No reported adult mortality on IBAs by 2015 Mean fledging success on IBAs maintained above 3 chicks per female by 2015 White-headed Duck numbers on >70% of IBAs stable or increasing by 2015	National government reports to the European Commission, the CMS, Bern, Biodiversity and Ramsar Conventions, and AEWA International and national White-headed Duck working group reports NGO reports and scientific papers BirdLife International IBA reports Monitoring reports from key sites published in TWSG News

Summary of Objectives / Activities	**Objectively Verifiable Indicator**	**Means of Verification**
3. White-headed Duck breeding range increased **Priority: Low** **Timescale: Long**	Self-sustaining White-headed Ducks breeding populations established in two former range states by 2015	National government reports to the European Commission, the CMS, Bern, Biodiversity and Ramsar Conventions, and AEWA International and national White-headed Duck working group reports NGO reports and scientific papers
4. No hybridisation and competition for food and nesting sites with Ruddy Duck **Priority: Essential** **Timescale: Long**	Ruddy Duck eradicated from Europe by 2015	National government reports to the CMS, Bern, Biodiversity and Ramsar Conventions, and AEWA International and national Ruddy Duck working group reports
5. Knowledge gaps filled **Priority: Essential** **Timescale: Long**	Key knowledge gaps filled by 2015	Papers in internationally refereed journals International and national White-headed Duck working group reports

6. Activities by country

This section identifies Activities needed to implement the Results of this White-headed Duck action plan. Activities are given at the generic level (to address the threats identified in the Problem Tree) whilst specific Activities are also identified at the individual Range State level. Where possible, Responsible Organisations are also identified for each Activity. Country groups have been identified depending on whether they are White-headed Duck and /or Ruddy Duck Range States.

6.1 General Activities - White-headed Duck Range States

(Afghanistan, Algeria, Armenia, Azerbaijan, Bulgaria, China, France, Georgia, Greece, Iraq, Islamic Republic of Iran, Israel, Italy, Kazakhstan, Mongolia, Morocco, Pakistan, Romania, Russian Federation, Spain, Syrian Arab Republic, Tunisia, Turkey, Turkmenistan, Ukraine, Uzbekistan).

Result	National Activities	Priority	Timescale	Responsible Organisations
1. Further habitat loss and degradation prevented	1.1 Produce and implement national White-headed Duck action plan	Essential	Short	National governments/NGOs
	1.2 Form national White-headed Duck working group	Essential	Short	National governments/NGOs
	1.3 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	High	Short	National governments
	1.4 Protect all White-headed Duck IBAs under national legislation and ensure this legislation is enforced	High	Short	National governments
	1.5 Implement appropriate assessments for all projects and plans affecting these sites, with special attention to agricultural development, drainage, diversion of rivers, abstraction of water and building of dams	Essential	Ongoing	National governments
	1.7 Introduce legislation to prohibit the introduction, and allow the control and eradication of Common Carp and Grass Carp	Low	Long	National governments
	1.8 Identify all key White-headed Duck sites where Common Carp and Grass Carp occur and eradicate them	Low	Short	National governments
	1.9 Introduce public awareness schemes to promote the conservation of the White-headed Duck and its habitat and circulate this information to relevant policy makers, interest groups (e.g. hunters, fishermen, reserve managers) and local people; provide information on identification of protected species	Low	Ongoing	National governments/NGOs

Result	National Activities	Priority	Timescale	Responsible Organisations
2. Direct mortality of adults prevented and reproductive success increased	2.1 Provide legal protection for White-headed Duck and its habitat	Essential	Short	National governments
	2.2 Provide adequate wardening of all key sites	Medium	Long	National governments and regional administrations, NGOs and other landowners
	2.3 Develop management and zonation plans to regulate human activities at key sites, with special regard to hunting, fishing and boating, in order to reduce causes of disturbance and direct mortality, and increase breeding success	Medium	Ongoing	National governments/NGOs/BirdLife International/FACE
	2.4 Create new breeding and wintering habitat for the White-headed Duck	Medium	Ongoing	National governments/NGOs
	2.5 Ban use of lead shot for hunting waterfowl and over wetlands, monitor lead shot use by hunters and lead shot ingestion by White-headed Ducks	Medium	Short	National governments
	2.6 Introduce systems to monitor by-catch and fishing activity in relation to White-headed Duck feeding distribution	Medium	Long	National governments/NGOs
	2.7 Develop fishing techniques sympathetic to the conservation of the White-headed Duck	Medium	Long	National governments/NGOs
3. White-headed Duck breeding range increased	3.1 Reintroduce White-headed Ducks to formerly occupied sites, if IUCN reintroduction criteria can be met	Low	Long	National governments/NGOs
	3.2 Former breeding sites managed to maximise their suitability for White-headed Ducks	Low	Long	National governments/NGOs

6.2 General Activities – Ruddy Duck Range States
(Algeria, Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Israel, Italy, Morocco, Netherlands, Norway, Portugal, Slovenia. Spain, Sweden, Switzerland, United Kingdom).

Result	National Activities	Priority	Timescale	Responsible Organisations
4 No hybridisation and competition for food and nesting sites with Ruddy Duck	4.1. National and international bodies endorse and implement the International Ruddy Duck Eradication Strategy of the Bern Convention	Essential	Short	European Commission, Bonn, Bern, Biodiversity, and Ramsar Conventions, national governments, BirdLife International, Wetlands International, IUCN
	4.2 Produce national Ruddy Duck control strategy and/or statement of intent	Essential	Short	National governments
	4.3 Monitor Ruddy Duck status and distribution in the wild	High	Ongoing	National governments
	4.4 Introduce national legislation, where needed, to permit the control of Ruddy Ducks	Essential	Short	National governments
	4.5 Prohibit and phase out the keeping of Ruddy Ducks in captivity (in the EU via Article 11 of the Birds Directive and the provisions of the EC CITES Regulations (338/97))	Essential	Long	European Commission, National governments
	4.6 Until a ban on keeping is implemented, monitor the numbers of Ruddy Ducks in captivity	High	Ongoing	National governments
	4.7 Eradicate all Ruddy Ducks x White-headed Duck hybrids	Essential	Immediate	National governments
	4.8 Eradicate all wild Ruddy Ducks in the priority order: 1. Total prevention of breeding; 2. Birds occurring March-September, inclusive (those birds with the potential to breed); Birds occurring October-February, inclusive	Essential	Immediate	National governments
	4.9 Organise international meeting in 2006 to exchange technical information on Ruddy Duck control	Low	Short	Wetlands International/BirdLife International, National governments
	4.10 Raise awareness of the need to control non-native species using the Ruddy Duck as a case in point	Medium	Ongoing	National governments/NGOs/BirdLife International/Wetlands International, IUCN

6.3 General Activities – Knowledge gaps

Result	National Activities	Priority	Timescale	Responsible Organisations
5. Knowledge gaps filled	5.1 Identify all key sites and document their conservation status	Essential	Medium	National governments, NGOs, BirdLife International, Wetlands International
	5.2 Monitor all key sites annually during the winter International Waterfowl Census	Essential	Ongoing	National governments, NGOs, Wetlands International
	5.3 Conduct national censuses during the breeding season and migration	Essential	Ongoing	National governments, NGOs
	5.4 Conduct studies of migratory movements to determine population delineations	Essential	Long	National governments, NGOs, Universities
	5.5 Conduct studies to determine factors affecting survival and reproductive rates	Medium	Long	National governments, NGOs, Universities
	5.6 Conduct studies of habitat requirements and feeding ecology	Low	Long	National governments, NGOs, Universities
	5.7 Conduct studies on the effects of Carp and Grass Carp on the White-headed Duck and its habitat	Medium	Medium	National governments, NGOs, Universities
	5.8 Quantify the impact of bycatch mortality in fishing nets	High	Short	National governments, NGOs, Universities
	5.9 Conduct studies of the rate of exposure to lead shot and the effect on mortality	Medium	Medium	National governments, NGOs, Universities
	5.10 Conduct and/or take part in genetic studies to determine the provenance of Ruddy Ducks in mainland Europe	Essential	Immediate	National governments, NGOS, Estación Biológica de Doñana
	5.11 Conduct and/or take part in genetic studies to monitor rates of introgression with Ruddy Ducks in Spain and Morocco, and to clarify the modes of hybridisation	Essential	Immediate	National governments, NGOs, Estación Biológica de Doñana
	5.12 Conduct study to model timescale for Ruddy Duck eradication from the Western Palearctic and for the extinction of the White-headed Duck with differing levels of Ruddy Duck immigration to Spain	Essential	Short	University of Newcastle (UK)

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8. Annexes

Annex 1. Relative importance of threats to the White-headed Duck *Oxyura leucocephala* in the breeding and non-breeding season scored according to categories listed in the IUCN Species Survival Commission Species Information Service Threats Authority files.

Threat Category	Breeding	Non-breeding
1. Habitat Loss/Degradation (Human Induced)	**CRITICAL**	**CRITICAL**
1.1. Agriculture		
1.1.1. Crops		
1.1.1.1. Shifting agriculture	LOCAL	LOCAL
1.1.1.2. Small-holder farming	**MEDIUM**	**MEDIUM**
1.1.1.3. Agro-industry farming	**CRITICAL**	**CRITICAL**
1.1.4. Livestock		
1.1.4.2. Small-holder	LOCAL	LOCAL
1.2. Land management of non-agricultural areas		
1.2.2. Change of management regime	**HIGH**	-
1.3. Extraction		
1.3.6. Groundwater extraction	**CRITICAL**	**CRITICAL**
1.4. Infrastructure development		
1.4.2. Human settlement	LOCAL	LOCAL
1.4.3. Tourism/recreation	LOCAL	LOCAL
1.4.6. Dams	**CRITICAL**	**CRITICAL**
1.5. Invasive alien species (directly impacting habitat)	**MEDIUM**	**MEDIUM**
2. Invasive Alien Species (Directly Affecting the Species)	**CRITICAL**	**CRITICAL**
2.1. Competitors	LOCAL	LOCAL
2.3. Hybridizers	**CRITICAL**	**CRITICAL**
3. Harvesting [Hunting/Gathering]	**HIGH**	**HIGH**
3.1. Food		
3.1.1. Subsistence use/local trade	**MEDIUM**	**MEDIUM**
3.4. Materials		
3.4.1. Subsistence use/local trade	LOCAL	LOCAL
3.6. Other (Illegal recreational harvesting)	**HIGH**	**HIGH**
4. Accidental Mortality	**MEDIUM**	**MEDIUM**
4.1. Bycatch		
4.1.1. Fisheries-related		
4.1.1.3. Entanglement	**MEDIUM**	**MEDIUM**
4.1.2. Terrestrial		
4.1.2.2. Shooting	LOCAL	LOCAL
4.1.2.3. Poisoning	**MEDIUM**	**MEDIUM**
6. Pollution (Affecting Habitat and/or Species)	**CRITICAL**	**CRITICAL**
6.1. Atmospheric pollution		
6.1.1. Global warming/oceanic warming	**CRITICAL**	**CRITICAL**
6.3. Water pollution		
6.3.1. Agricultural	**MEDIUM**	**MEDIUM**
6.3.2. Domestic	LOW	LOW
6.3.3. Commercial/Industrial	**MEDIUM**	**MEDIUM**
6.3.7. Sediment	**MEDIUM**	**MEDIUM**
6.3.8. Sewage	LOCAL	LOCAL
7. Natural Disasters	**CRITICAL**	**CRITICAL**
7.1. Drought	**CRITICAL**	**CRITICAL**
7.4. Wildfire	LOCAL	LOCAL
10. Human Disturbance	**LOW**	**LOW**
10.1. Recreation/tourism	LOW	LOW

Annex 2. Contracting parties to international conventions, agreements and directives that are relevant for conservation of the White-headed Duck *Oxyura leucocephala* (acc. – accession only; sig. – signatory only; app. – approved only). White-headed Duck Range States in normal type, Ruddy Duck Range States in *italics*, White-headed Duck and Ruddy Duck Range States in ***bold italics***.

Country	Species Presence[1]	Ramsar	CMS	AEWA	Bern	EU-25	CBD	CITES
Afghanistan	M, NB						•	•
Algeria	B, M, NB	•					•	•
Armenia	B	•					(•) acc.	
Austria	RD only	•			•	•	•	•
Azerbaijan	M, NB	•			•		(•) app.	•
Belgium	RD only	•	•	(•) sig.	•	•	•	•
Bulgaria	M, NB	•	•	•	•	(EU Candidate)	•	•
China	M, NB	•					•	•
Denmark	RD only	•	•	•	•	•	•	•
Finland	RD only	•	•	•	•	•	•	•
France	RD only	•	•	(•) sig.	•	•	•	•
Georgia	M, NB	•	•	•			(•) acc.	•
Germany	RD only	•	•	•	•	•	•	•
Greece	NB	•	•	(•) sig.	•	•	•	•
Iceland	RD only	•			•		•	•
Ireland	RD only	•	•	•	•	•	•	•
Iraq	B, M, NB							
Islamic Republic of Iran	B, M, NB	•					•	•
Israel	NB	•	•	•			•	•
Italy	B, M, NB	•	•		•	•	•	•
Kazakhstan	B, M						•	•
Mongolia	B, M	•	•				•	•
Morocco	B, M, NB	•	•	(•) sig.	•		•	•
Netherlands	RD only	•	•	•	•	•	•	•
Norway	RD only	•	•		•		•	•
Pakistan	NB	•	•				•	•
Portugal	RD only	•	•	•	•	•	•	•
Romania	M, NB	•	•	•	(•) acc.	(EU Candidate)	•	•
Russian Federation	B, M, NB	•					•	•
Serbia and Montenegro	V	•					•	•
Slovenia	RD only	•	•	•	•	•	•	•
Spain	B, M, NB	•	•	•	•	•	•	•
Sweden	RD only	•	•	•	•	•	•	•
Switzerland	RD only	•	•	•	•		•	•
Syrian Arab Republic	NB	•	•	•			•	•
Tunisia	B, M, NB	•	•		•		•	•
Turkey	B, M, NB	•			•	(EU Candidate)	•	•
Turkmenistan	B, M, NB						(•) acc.	
Ukraine	B, M, NB	•	•	•	•		•	•
United Kingdom	RD only	•	•	•	•	•	•	•
Uzbekistan	B, M, NB	•	•	•			(•) acc.	•

[1] Key: B – breeding; M – migrating; NB – non-breeding; V – vagrant; RD only – Ruddy Duck only.

Annex 3. Important Bird Areas of relevance for the White-headed Duck *Oxyura leucocephala.* Data from the BirdLife International World Bird database, accessed on 12 May 2004. Poor coverage for Asia. Note: some key White-headed Duck sites may be missing from this list (e.g. Cañada de las Norias, Andalucía, Spain).

Country	International Name	Area (Ha)	Location		Year	Season	Population		Units	Criteria
			Lat	Long			Min	Max		
Afghanistan	Hamun-i-Puzak	35000	31.60	61.80	1971	breeding		300	breeding pairs	A1, B1i, B2
Afghanistan	Hamun-i-Puzak	35000	31.60	61.80	1976	winter	10		individuals	A1, B2
Afghanistan	Kole Hashmat Khan	191	34.50	69.20	1972	non-breeding	5		individuals	B2
Albania	Narta Lagoon	4180	40.58	19.38	1993	winter	0	4	individuals	A1
Algeria	Complexe de zones humides de la plaine de Guerbes-Sanhadja	42100	36.88	7.27	1991	resident	1		breeding pairs	A1
Algeria	Lac des Oiseaux---Garaet et Touyour	70	36.78	8.12	1992	non-breeding	209	209	individuals	A1, A4i
Algeria	Lac Oubeïra	2200	36.83	8.38	1984	non-breeding	220	220	individuals	A1, A4i
Algeria	Lac Tonga	2700	36.85	8.50	1999	non-breeding	256	256	individuals	A4i
Algeria	Lac Tonga	2700	36.85	8.50	1991	resident	30	30	breeding pairs	A1
Algeria	Marais de Mekhada	8900	36.80	8.00		resident			unset	A1
Armenia	Armash fish-farm	2795	39.75	44.77	0	breeding	4	6	breeding pairs	A1
Azerbaijan	Divichi liman (or Lake Akzibir)	7000	41.32	49.08	0	passage	0	0	unset	A1
Azerbaijan	Lake Aggel	9173	40.08	47.67	1991	winter	3000	3000	individuals	A1, A4i, B1i
Azerbaijan	Lake Hadjikabul	1500	40.00	49.00	1998	winter	0	620	individuals	A1, A4i, B1i
Azerbaijan	Lake Krasnoie and other waterbodies of the Absheron peninsula	0	40.33	49.75	1998	winter	0	140	individuals	A1, A4i, B1i
Azerbaijan	Lake Sarysu	20000	40.08	48.17	0	winter	0	0	unset	A1
Bulgaria	Burgasko lake	2800	42.50	27.42	1997	winter	5	69	individuals	A1
Bulgaria	Burgasko lake	2800	42.50	27.42	1997	passage	19	43	individuals	A1
Bulgaria	Mandra-Poda complex	2270	42.42	27.38	1997	winter	24	202	individuals	A1, A4i, B1i
Cyprus	Akrotiri salt-lake including Bishop's Pool	4000	34.62	32.97	0	winter	5	10	individuals	A1
Cyprus	Larnaca salt-lakes	1850	34.87	33.62	1995	winter	0	14	individuals	A1
Georgia	Javakheti Plateau	200000	41.50	43.67	1996	unknown	0	0	unset	A1
Georgia	Kolkheti	150000	42.17	41.83	1998	winter	0	0	unset	A1
Greece	Lake Kerkini	12000	41.20	23.15	1993	winter	3	100	individuals	A1, C1
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	15300	41.02	25.08	1997	winter	0	2300	individuals	A1, A4i, B1i, C1, C2
I.R. Iran	Akh Gol	600	39.55	44.78	1992	breeding			breeding pairs	B2
I.R. Iran	Anzali Mordab complex	15000	37.42	49.47	1977	passage	25		individuals	A1
I.R. Iran	Dasht-e Arjan and Lake Parishan	52800	29.57	51.88	1992	winter	17	455	individuals	A1, B1i, B2
I.R. Iran	Dasht-e Arjan and Lake Parishan	52800	29.57	51.88	1977	breeding	4		breeding pairs	B2
I.R. Iran	Gori Gol	120	37.83	46.67	1977	passage	15		individuals	A1
I.R. Iran	Gori Gol	120	37.83	46.67	1977	breeding	4		breeding pairs	B2
I.R. Iran	Harm lake	0	28.17	53.50	1992	winter	230		individuals	A1, B1i, B2
I.R. Iran	Hilleh river delta	42600	29.17	50.83	1988	winter	173		individuals	A1, B1i, B2
I.R. Iran	Lake Alagol, Lake Ulmagol and Lake Ajigol	1540	37.38	54.63	1975	winter	19		individuals	A1
I.R. Iran	Lake Kobi	1200	36.95	45.50	1977	non-breeding	33		individuals	A1
I.R. Iran	Lake Kobi	1200	36.95	45.50	1977	passage	100		individuals	A1

Country	International Name	Area (Ha)	Location		Year	Season	Population		Units	Criteria
			Lat	Long			Min	Max		
I.R. Iran	Lake Zaribar	1550	35.53	46.12	1974	breeding	4		breeding pairs	A1, B2
I.R. Iran	Lapoo--Zargmarz ab-bandans	950	36.83	53.28	1977	winter	28		individuals	A1
I.R. Iran	Miankaleh Peninsula and Gorgan Bay	97200	36.83	53.75	1977	winter	20	453	individuals	A1, B1i, B2
I.R. Iran	Seyed Mohalli, Zarin Kola and Larim Sara	1600	36.75	53.00	1992	winter	2	27	individuals	A1
I.R. Iran	Shur Gol, Yadegarlu and Dorgeh Sangi lakes	2500	37.02	45.52	1977	breeding	4		breeding pairs	B2
I.R. Iran	South end of the Hamoun-i Puzak	14900	31.33	61.75	1970	winter	42		individuals	A1, B2
Iraq	Haur Al Hammar	1350000	30.73	47.05	1973	winter	1		individuals	B2
Israel	Jezre'el, Harod and Bet She'an valleys	40000	32.53	35.33	1991	winter	500	600	individuals	A1, B1i, B2
Israel	Judean foothills	60000	31.75	34.92	1991	winter		100	individuals	A1, B2
Israel	Zevulun valley	5000	32.88	35.10	1991	winter	80	150	individuals	A1, B1i, B2
Romania	Danube Delta and Razelm-Sinoe complex	442000	44.93	29.20	1994	winter	10	0	individuals	A1
Romania	Lake Techirghiol	1170	44.02	28.47	1998	winter	1	800	individuals	A1, A4i, B1i
Russia	Dadynskiye lake	45000	45.27	45.07	1996	breeding	3	5	breeding pairs	A1, B2
Russia	Eastern coast of the Sea of Azov	457300	45.77	38.08	0	breeding	1	0	breeding pairs	B2
Spain	Albufera de Mallorca and Albufereta de Pollença marshes	2800	39.78	3.10	1994	resident	3	8	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Alcázar de San Juan-Quero endorreic lagoons	58500	39.50	-3.17	1996	resident	20	20	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Conde, Chinche and Honda lakes	420	37.58	-4.20	1996	resident	5	7	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	El Hondo wetland	2387	38.33	-0.70	1997	winter	97	155	individuals	A1, A4i, B1i, C1, C2
Spain	El Hondo wetland	2387	38.33	-0.70	1996	resident	10	15	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Fuente de Piedra, Gosque and Campillos lakes	10600	37.17	-4.75	1996	breeding	2	5	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Guadalquivir marshes	230000	37.00	-6.42	1996	winter	100	400	individuals	A1, A4i, B1i, C1, C2
Spain	Guadalquivir marshes	230000	37.00	-6.42	1996	resident	10	0	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Lebrija, Las Cabezas and Espera lagoons	7600	36.87	-5.85	1996	resident	10	0	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Lebrija, Las Cabezas and Espera lagoons	7600	36.87	-5.85	1997	non-breeding	48	0	individuals	A1, B1i, C1, C2
Spain	Los Tollos lake	100	36.87	-6.00	1997	winter	10	444	individuals	A1, A4i, B1i, C1, C2
Spain	Medina and Puerto Real lagoons	4900	36.62	-6.05	1997	non-breeding	104	0	individuals	B1i, C2
Spain	Pedro Muñoz-Manjavacas endorreic lagoons	41500	39.42	-2.75	1995	resident	17	17	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Pedro Muñoz-Manjavacas endorreic lagoons	41500	39.42	-2.75	1997	winter	8	32	individuals	A1, B1i, C1, C2
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	31500	39.00	-3.75	1996	breeding	2	2	breeding pairs	B2
Spain	Tembleque-La Guardia plains	128000	39.67	-3.50	1995	breeding	16	29	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Tembleque-La Guardia plains	128000	39.67	-3.50	1997	winter	9	9	individuals	B1i, C2
Spain	Terry lagoons	350	36.63	-6.23	1997	non-breeding	54	0	individuals	A1, B1i, C1, C2
Spain	Wetlands at south Córdoba	3054	37.42	-4.75	1996	breeding	7	45	breeding pairs	A1, B1i, B2, C1, C2, C6
Spain	Wetlands at south Córdoba	3054	37.42	-4.75	1997	winter	40	100	individuals	A1, B1i, C1, C2
Spain	Wetlands of western Almería	3000	36.67	-2.67	1996	resident	61	61	breeding pairs	A1, A4i, B1i, B2, C1, C2, C6
Spain	Wetlands of western Almería	3000	36.67	-2.67	1995	non-breeding	561	0	individuals	A1, A4i, B1i, C1, C2
Syria	Bahrat Homs	5300	34.62	36.53	1992	winter	30		individuals	A1, B2
Tunisia	El Houareb reservoir	1200	35.58	9.90		winter	334		individuals	A1, A4i
Tunisia	El Houareb reservoir	1200	35.58	9.90	1999	resident	0	0	unset	

Country	International Name	Area (Ha)	Location		Year	Season	Population		Units	Criteria
			Lat	Long			Min	Max		
Tunisia	Ichkeul	12600	37.17	9.67		winter	12	600	individuals	A1, A4i
Tunisia	Lebna reservoir	1000	36.70	10.93		resident			unset	A1
Tunisia	Masri reservoir	150	36.52	10.48		resident	10	50	breeding pairs	A1
Tunisia	Mlaâbi reservoir	200	36.85	10.93		resident	12	80	breeding pairs	A1
Tunisia	Mornaguia reservoir	300	36.83	10.22	1999	breeding	12	220	adults only	A1, A4i
Tunisia	Sebkhet Kelbia	13000	35.83	10.33		winter	5	40	individuals	A1
Tunisia	Sebkhet Sidi Mansour	11000	34.23	9.05		winter	40	80	individuals	A1
Tunisia	Sidi Abdelmonem reservoir	250	36.83	10.97		resident	15	80	breeding pairs	A1
Turkey	Agyatan lake	2200	36.60	35.52	1993	winter	191	191	individuals	A1, A4i, B1i
Turkey	Akkaya Reservoir	500	37.95	34.56	2001	non-breeding	20	30	individuals	A1
Turkey	Akyatan lake	14000	36.62	35.27	1993	winter	230	978	individuals	A1, A4i, B1i
Turkey	Bostankaya Lake	300	39.48	37.02	2001	breeding	5	10	breeding pairs	A1
Turkey	Burdur lake	25000	37.73	30.18	1996	winter	342	10927	individuals	A1, A4i, B1i
Turkey	Çali lake	25	40.52	43.27		breeding	10	10	breeding pairs	A1, B2
Turkey	Çol lake and Çalikdüzü	23000	39.30	32.90	1991	non-breeding	27	27	individuals	A1
Turkey	Çorak lake	1150	37.68	29.77	1974	winter	85	930	individuals	A1, A4i, B1i
Turkey	Erçek lake	9520	38.67	43.58		breeding	2	2	breeding pairs	A1, B2
Turkey	Erçek lake	9520	38.67	43.58		breeding	2	2	breeding pairs	B2
Turkey	Eregli marshes	37000	37.53	33.75	1996	non-breeding	80	508	individuals	A1, A4i, B1i
Turkey	Eregli marshes	37000	37.53	33.75		breeding	50	50	breeding pairs	A1, A4i, B1i, B2
Turkey	Esmekaya marshes	11250	38.25	33.47	1998	breeding	0	2	breeding pairs	B2
Turkey	Hasan Lake	200	38.90	43.03	2001	breeding	5	10	breeding pairs	A1
Turkey	Hirfanli reservoir	26300	39.17	33.65	1996	winter	19	122	individuals	A1, B1i
Turkey	Hotamis marshes	16500	37.58	33.05	1991	passage	37	354	individuals	A1, A4i, B1i
Turkey	Hotamis marshes	16500	37.58	33.05	0	breeding	40	40	breeding pairs	A1, B1i, B2
Turkey	Karatas lake	1190	37.38	29.97	1995	winter	47	82	individuals	A1
Turkey	Kaz Lake	200	38.51	44.22	1988	breeding	5	0	breeding pairs	A1
Turkey	Kizilirmak delta	16110	41.60	36.08	1995	winter	15	1246	individuals	A1, A4i, B1i
Turkey	Kozanli Gökgöl	650	39.02	32.83		breeding	10	10	breeding pairs	A1, B2
Turkey	Kulu lake	860	39.08	33.15	1993	non-breeding	85	319	individuals	A1, A4i, B1i
Turkey	Kulu lake	860	39.08	33.15	1996	winter	56	600	individuals	A1, A4i, B1i
Turkey	Kulu lake	860	39.08	33.15		breeding	30	30	breeding pairs	A1, B2
Turkey	Kus lake	16000	40.18	27.97	1996	winter	20	34	individuals	A1
Turkey	Kuyucuk lake	219	40.75	43.45		breeding	2	2	breeding pairs	A1, B2
Turkey	Kuyucuk lake	219	40.75	43.45		breeding	2	2	breeding pairs	B2
Turkey	Lake Van	390000	38.67	42.92	2001	breeding	30	35	breeding pairs	A1
Turkey	Marmara lake	6800	38.62	28.00	1990	winter	50	120	individuals	A1, B1i
Turkey	Mogan lake	1500	39.77	32.80		breeding	2	2	breeding pairs	B2
Turkey	Salda lake	4370	37.55	29.67	1993	winter	40	128	individuals	A1, B1i

Country	International Name	Area (Ha)	Location		Year	Season	Population		Units	Criteria
			Lat	Long			Min	Max		
Turkey	Sarikum lake	785	42.02	34.92	1995	winter	55	55	individuals	A1
Turkey	Sodalìgöl	1500	38.82	42.98	1990	non-breeding	101	750	individuals	A1, A4i, B1i
Turkey	Sodalìgöl	1500	38.82	42.98		breeding	30	30	breeding pairs	A1, B2
Turkey	Sükümbet Lake	300	38.90	43.64	2001	breeding	1	0	breeding pairs	A1
Turkey	Sultansazligi	39000	38.33	35.27		breeding	20	20	breeding pairs	A1, B2
Turkey	Ulas Lake	350	39.46	37.13	2000	breeding	5	10	breeding pairs	A1
Turkey	Uyuz lake	15	39.25	32.95	1994	breeding	10	10	breeding pairs	A1, B2
Turkey	Yarisli lake	1400	37.57	29.97	1989	winter	46	46	individuals	A1
Ukraine	Karkinitska and Dzharylgatska bays	87000	45.97	33.20	1949	Migration	1	1	Individuals	A1, A4i, A4iii, B1i, B2
Ukraine	Karkinitska and Dzharylgatska bays	87000	45.97	33.20	1977	Migration	1	1	Individuals	A1, A4i, A4iii, B1i, B2
Ukraine	Karkinitska and Dzharylgatska bays	87000	45.97	33.20	1990	Migration	1	1	Individuals	A1, A4i, A4iii, B1i, B2
Ukraine	Karkinitska and Dzharylgatska bays	87000	45.97	33.20	1991	Migration	1	1	Individuals	A1, A4i, A4iii, B1i, B2
Ukraine	Karkinitska and Dzharylgatska bays	87000	45.97	33.20	1992	Migration	1	2	Individuals	A1, A4i, A4iii, B1i, B2
Ukraine	Tarkhankutskyi peninsula	4200	45.42	32.63	1999	Migration	5	5	Individuals	B1i, B2
Ukraine	Tarkhankutskyi peninsula	4200	45.42	32.63	2000	Migration	1	2	Individuals	B1i, B2
Ukraine	Tarkhankutskyi peninsula	4200	45.42	32.63	2000	Winter	8	8	Individuals	B1i, B2

Criteria: the following criteria were used to identify IBAs for the White-headed Duck.

Category A1: Species of global conservation concern: The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.
Category A4: Congregations: i) The site is known or thought to hold, on a regular basis, = 1% of a biogeographic population of a congregatory waterbird species.
Category B1: Congregations: i) The site is known or thought to hold = 1% of a flyway or other distinct population of a waterbird species.
Category B2: Species with an unfavourable conservation status in Europe: The site is one of the 'n' most important in the country for a species with an unfavourable conservation status in Europe (SPEC 2, 3) and for which the site-protection approach is thought to be appropriate.
Category C1: Species of global conservation concern: The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.
Category C2: Concentrations of a species threatened at the European Union level: The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (listed on Annex 1 and referred to in Article 4.2 of the EC Birds Directive).
Category C6: Species threatened at the European Union level: The site is one of the five most important in the European region (NUTS region) for a species or subspecies considered threatened in the European Union (i.e. listed in Annex 1 of the EC Birds Directive).

Annex 4. Protection status of Important Bird Areas for the White-headed Duck *Oxyura leucocephala*. Data from the BirdLife International World Bird database, accessed on 12 May 2004. No data for Algeria and Morocco, poor coverage for Asia. Note: some key White-headed Duck sites may be missing from this list (e.g. Cañada de las Norias, Andalucía, Spain).

Country	International Name	Protected Area	Designation	IUCN Category	Management Plan
Afghanistan	Kole Hashmat Khan	Kole Hashmat Khan	Waterfowl Sanctuary	IV	no
Azerbaijan	Lake Aggel	Agh-Ghol	Ramsar Wetland Site	?	no
Azerbaijan	Lake Aggel	Ak-Gel goryhy	Zapovednik	I	no
Azerbaijan	Lake Aggel	Ak-Gel Zakaznik	Zapovednik	?	no
Bulgaria	Burgasko lake	Vaya	Protected Landscape	?	no
Bulgaria	Mandra-Poda complex	Izvorska Mouth	Protected Landscape	?	yes
Bulgaria	Mandra-Poda complex	Poda Lagoon	Protected Landscape	?	yes
Cyprus	Akrotiri salt-lake including Bishop's Pool	Akrotiri Lake	Game Reserve	IV	yes
Cyprus	Larnaca salt-lakes	Larnaca Lake Permanent Game Reserve (SpPA)	Game Reserve	IV	yes
Cyprus	Larnaca salt-lakes	Larnaca Salt Lake	Ramsar Wetland Site	?	yes
Cyprus	Larnaca salt-lakes	Unknown name	Game Reserve	?	yes
Georgia	Javakheti Plateau	Borjomi-Kharagauli National Park	National Park	II	no
Georgia	Kolkheti	Ispani II Marshes	Ramsar Wetland Site	?	yes
Georgia	Kolkheti	Kolkheti Nature Reserve	Zapovednik	?	yes
Georgia	Kolkheti	Wetlands of Central Kolkheti	Ramsar Wetland Site	?	yes
Greece	Lake Kerkini	Artificial Lake Kerkini	Ramsar Wetland Site	?	no
Greece	Lake Kerkini	Techniti Limni Kerkinis	Special Protection Area	?	no
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	Fanariou / Porto Lagos	Game Refuge	?	no
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	Lake Vistonis, Porto Lagos, Lake Ismaris & adj. la	Ramsar Wetland Site	?	no
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	Lake Vistonis, Porto Lagos, Lake Ismaris & adj. la	Special Protection Area	?	no
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	Porto Lagos, Lake Vistonis, and coastal lagoons (	Protected Area	?	no
Iran, Islamic Republic of	Anzali Mordab complex	Anzali Mordab (Talab) complex	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Anzali Mordab complex	Selkeh	Wildlife Refuge	IV	no
Iran, Islamic Republic of	Anzali Mordab complex	Siahkesheim	Protected Area	V	no
Iran, Islamic Republic of	Dasht-e Arjan and Lake Parishan	Arjan	Protected Area	IV	no
Iran, Islamic Republic of	Dasht-e Arjan and Lake Parishan	Arjan Protected Area	Biosphere Reserve	?	no
Iran, Islamic Republic of	Dasht-e Arjan and Lake Parishan	Lake Parishan and Dasht-e-Arjan	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Gori Gol	Lake Gori	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Hilleh river delta	Heleh	Protected Area	V	no
Iran, Islamic Republic of	Lake Alagol, Lake Ulmagol and Lake Ajigol	Alagol, Ulmagol and Ajigol Lakes	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Lake Kobi	Lake Kobi	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Lapoo--Zargmarz ab-bandans	Miankaleh Peninsula, Gorgan Bay and Lapoo-Zaghmarz	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Miankaleh Peninsula and Gorgan Bay	Miankaleh	Wildlife Refuge	IV	no
Iran, Islamic Republic of	Miankaleh Peninsula and Gorgan Bay	Miankaleh Peninsula, Gorgan Bay and Lapoo-Zaghmarz	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	Miankaleh Peninsula and Gorgan Bay	Miankaleh Protected Area	Biosphere Reserve	?	no
Iran, Islamic Republic of	Shur Gol, Yadegarlu and Dorgeh Sangi lakes	Shurgol, Yadegarlu & Dorgeh Sangi Lakes	Ramsar Wetland Site	?	no
Iran, Islamic Republic of	South end of the Hamoun-i Puzak	Hamoun-e-Puzak, south end	Ramsar Wetland Site	?	no

Country	International Name	Protected Area	Designation	IUCN Category	Management Plan
Israel	Zevulun valley	Afek swamp	Nature Reserve	IV	no
Israel	Zevulun valley	Zevulun Valley	Nature Reserve	IV	no
Romania	Danube Delta and Razelm-Sinoe complex	Danube Delta	Ramsar Wetland Site	?	yes
Romania	Danube Delta and Razelm-Sinoe complex	Danube Delta Biosphere Reserve	Biosphere Reserve	?	yes
Romania	Danube Delta and Razelm-Sinoe complex	Danube Delta Biosphere Reserve	World Heritage Site	?	yes
Russia	Eastern coast of the Sea of Azov	Kuban Delta: Akhtaro-Grivenskaya group of limans	Ramsar Wetland Site	?	no
Russia	Eastern coast of the Sea of Azov	Kuban Delta: limans between rivers Kuban & Protoka	Ramsar Wetland Site	?	no
Russia	Eastern coast of the Sea of Azov	Priazovskiy	Zakaznik	IV	no
Russia	Eastern coast of the Sea of Azov	Tamano-Zaporozhski	Zakaznik	?	no
Spain	Albufera de Mallorca and Albufereta de Pollença marshes	S'Albufera de Mallorca	Natural Park (Spain)	V	yes
Spain	Albufera de Mallorca and Albufereta de Pollença marshes	S'Albufera de Mallorca	Ramsar Wetland Site	?	yes
Spain	Albufera de Mallorca and Albufereta de Pollença marshes	S'Albufera de Mallorca	Special Protection Area	?	yes
Spain	Alcázar de San Juan-Quero endorreic lagoons	Humedales de la Mancha	Special Protection Area	?	no
Spain	Alcázar de San Juan-Quero endorreic lagoons	Lagunas de Alcázar de San Juan	Ramsar Wetland Site	?	no
Spain	Conde, Chinche and Honda lakes	Laguna del Chinche	Natural Reserve	IV	yes
Spain	Conde, Chinche and Honda lakes	Laguna el Conde	Natural Reserve	IV	yes
Spain	Conde, Chinche and Honda lakes	Laguna Honda	Natural Reserve	IV	yes
Spain	Conde, Chinche and Honda lakes	Lagunas del Sur de Côrdoba	Special Protection Area	?	yes
Spain	El Hondo wetland	El Hondo	Natural Park (Spain)	V	yes
Spain	El Hondo wetland	El Hondo	Ramsar Wetland Site	I	yes
Spain	El Hondo wetland	El Hondo	Special Protection Area	?	yes
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna de Campillos	Natural Reserve	?	no
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna de Fuente de Piedra	Ramsar Wetland Site	?	no
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna de Fuentepiedra	Natural Reserve	IV	no
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna de Fuentepiedra	Special Protection Area	?	no
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna de la Ratosa	Natural Reserve	?	no
Spain	Fuente de Piedra, Gosque and Campillos lakes	Laguna del Gosque	Natural Reserve	?	no
Spain	Guadalquivir marshes	Brazo del Este	Natural Landscape	V	yes
Spain	Guadalquivir marshes	Doñana	Biosphere Reserve	I	yes
Spain	Guadalquivir marshes	Doñana	National Park	II	yes
Spain	Guadalquivir marshes	Doñana	Natural Park (Spain)	V	yes
Spain	Guadalquivir marshes	Doñana	Ramsar Wetland Site	?	yes
Spain	Guadalquivir marshes	Doñana	Special Protection Area	?	yes
Spain	Guadalquivir marshes	Doñana National Park	World Heritage Site	?	yes
Spain	Lebrija, Las Cabezas and Espera lagoons	Complejo endorreico de Espera	Natural Reserve	?	no
Spain	Lebrija, Las Cabezas and Espera lagoons	Complejo endorreico de Lebrija-Las Cabezas	Natural Reserve	?	no
Spain	Lebrija, Las Cabezas and Espera lagoons	Lagunas de Espera	Special Protection Area	?	no
Spain	Medina and Puerto Real lagoons	Complejo endorreico de Puerto Real	Natural Reserve	I	yes
Spain	Medina and Puerto Real lagoons	Laguna de Medina	Natural Reserve	IV	yes
Spain	Medina and Puerto Real lagoons	Laguna de Medina	Special Protection Area	IV	yes
Spain	Medina and Puerto Real lagoons	Lagunas de Cádiz (Laguna de Medina y Laguna Salada	Ramsar Wetland Site	?	yes

Country	International Name	Protected Area	Designation	IUCN Category	Management Plan
Spain	Medina and Puerto Real lagoons	Lagunas de las Canteras y El Tejón	Natural Reserve	I	yes
Spain	Medina and Puerto Real lagoons	Lagunas de Puerto Real:Taraje,Comisario y San Anto	Special Protection Area	?	yes
Spain	Pedro Muñoz-Manjavacas endorreic lagoons	Humedales de la Mancha	Special Protection Area	?	no
Spain	Pedro Muñoz-Manjavacas endorreic lagoons	Laguna de la Vega (o del Pueblo)	Ramsar Wetland Site	?	no
Spain	Pedro Muñoz-Manjavacas endorreic lagoons	Laguna de Manjavacas	Ramsar Wetland Site	?	no
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	La Mancha Húmeda	Biosphere Reserve	I	yes
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	Las Tablas de Daimiel	Integral Nature Reserve	I	yes
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	Las Tablas de Daimiel	Ramsar Wetland Site	?	yes
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	Tablas de Daimiel	National Park	II	yes
Spain	Tablas de Daimiel marshes; 'Vicario' and 'Gasset' reservoirs and Malagón lakes	Tablas de Daimiel	Special Protection Area	?	yes
Spain	Tembleque-La Guardia plains	Área Esteparia de la Mancha Norte	Special Protection Area	?	no
Spain	Tembleque-La Guardia plains	Humedales de la Mancha	Special Protection Area	?	no
Spain	Terry lagoons	Lagunas de Cádiz (Laguna de Medina y Laguna Salada	Ramsar Wetland Site	?	yes
Spain	Terry lagoons	Lagunas de Terry: Salada, Juncosa y Chica	Special Protection Area	?	yes
Spain	Terry lagoons	Lagunas Salada, Juncosa y Chica	Natural Reserve	I	yes
Spain	Wetlands at south Córdoba	Embalse de Cordobilla	Natural Landscape	V	yes
Spain	Wetlands at south Córdoba	Embalse de Malpasillo	Natural Landscape	IV	yes
Spain	Wetlands at south Córdoba	Embalses de Cordobillo y Melpasillo	Ramsar Wetland Site	?	yes
Spain	Wetlands at south Córdoba	Laguna Amarga	Natural Reserve	IV	yes
Spain	Wetlands at south Córdoba	Laguna de los Jarales	Natural Reserve	IV	yes
Spain	Wetlands at south Córdoba	Laguna de Tiscar	Natural Reserve	IV	yes
Spain	Wetlands at south Córdoba	Laguna de Zóñar	Natural Reserve	IV	yes
Spain	Wetlands at south Córdoba	Laguna del Rincón	Natural Reserve	IV	yes
Spain	Wetlands at south Córdoba	Lagunas del Sur de Córdoba	Special Protection Area	?	yes
Spain	Wetlands at south Córdoba	Lagunas del sur de Córdoba (Zóñar, Rincón y Amarga	Ramsar Wetland Site	?	yes
Spain	Wetlands of western Almería	Albufera de Adra	Natural Reserve	?	no
Spain	Wetlands of western Almería	Albuferas de Adra	Ramsar Wetland Site	?	no
Spain	Wetlands of western Almería	Punta Entinas--Sabinar	Natural Landscape	?	no
Spain	Wetlands of western Almería	Punta Entinas--Sabinar	Natural Reserve	V	no
Spain	Wetlands of western Almería	Punta Entinas--Sabinar	Special Protection Area	?	no
Tunisia	El Haouareb reservoir	Barrage El Haouareb	Game Reserve	?	no
Tunisia	Ichkeul	Parc National de L'Ichkeul	Ramsar Wetland Site	?	yes
Tunisia	Ichkeul	Parc National de L'Ichkeul	Biosphere Reserve	?	yes
Tunisia	Ichkeul	Parc National de L'Ichkeul	World Heritage Site	?	yes
Tunisia	Ichkeul	Parc National de L'Ichkeul	National Park	?	yes
Tunisia	Lebna reservoir	Barrage Lebna	Game Reserve	?	no
Tunisia	Masri reservoir	Barrage Masri	Game Reserve	?	no
Tunisia	Mornaguia reservoir	Barrge Mornaguia	Game Reserve	?	no

Country	International Name	Protected Area	Designation	IUCN Category	Management Plan
Tunisia	Sebkhet Kelbia	Sebkhet Kelbia	Nature Reserve (partial)	?	yes
Tunisia	Sebkhet Kelbia	Sebkhet Kelbia	Game Reserve	?	yes
Tunisia	Sebkhet Sidi Mansour	Sebkhet Sidi Mansour	Game Reserve	?	no
Tunisia	Sidi Abdelmonem reservoir	Barrage Sidi Abdelmonem	Game Reserve	?	no
Turkey	Akyatan lake	Akyatan Gölü	Ramsar Wetland Site	?	no
Turkey	Akyatan lake	Akyatan Golu GR	Game Reserve	?	no
Turkey	Burdur lake	Burdur Golu	Ramsar Wetland Site	?	no
Turkey	Burdur lake	Burdur Golu GR	Game Reserve	?	no
Turkey	Eregli marshes	Eregli Sazligi	Nature Reserve	?	no
Turkey	Eregli marshes	Eregli Sazligi SIT	SIT	?	no
Turkey	Esmekaya marshes	Esmekaya Sazligi	SIT	?	no
Turkey	Esmekaya marshes	Esmekaya Sazlýgý GR	Game Reserve	?	no
Turkey	Hotamis marshes	Hotamis Sazligi SIT	SIT	?	no
Turkey	Karatas lake	Karatas Golu	Game Reserve	?	no
Turkey	Kizilirmak delta	Kizilirmak Deltasi	Game Reserve	?	no
Turkey	Kizilirmak delta	Kizilirmak Deltasi	Ramsar Wetland Site	?	no
Turkey	Kizilirmak delta	Kýzýlýrmak Delta SIT	SIT	?	no
Turkey	Kozanli Gökgöl	Kozanli Gokgol	SIT	?	no
Turkey	Kulu lake	Kulu Golu	SIT	?	no
Turkey	Kus lake	Kus Golu	Ramsar Wetland Site	?	no
Turkey	Kus lake	Kus Golu GR	Game Reserve	?	no
Turkey	Kus lake	Kus Golu NP	National Park	IV	no
Turkey	Kus lake	Kusgolu SIT	SIT	?	no
Turkey	Kuyucuk lake	Kuyucuk Golu	Game Reserve	?	no
Turkey	Lake Van	Van Golu	SIT	?	no
Turkey	Mogan lake	Mogan Golu	Specially Protected Area	?	no
Turkey	Salda lake	Salda Golu SIT	SIT	?	no
Turkey	Sarikum lake	Sarikum Golu	Nature Reserve	I	no
Turkey	Sarikum lake	Sarikum Golu SIT	SIT	?	no
Turkey	Sultansazligi	Sultan Sazligi	Game Reserve	VI	no
Turkey	Sultansazligi	Sultan Sazligi	Nature Reserve	IV	no
Turkey	Sultansazligi	Sultansazligi	Ramsar Wetland Site	?	no
Turkey	Sultansazligi	Sultansazligi	SIT	?	no
Turkey	Uyuz lake	Uyuz Golu	SIT	?	no
Ukraine	Karkinitsky and Dzharylgatsky Bays	Karkinitsky and Dzharylgatsky Bays	Ramsar Wetland Site	?	no
Ukraine	Karkinitsky and Dzharylgatsky Bays	Lebyazhy Island (Section of Krymskyi zapovednik)	Zapovednik (nature reserve)	I	no
Ukraine	Karkinitsky and Dzharylgatsky Bays	Karkinitsky Bay	Zakaznik (protected area)	IV	no