Status Overview and Recommendations for Conservation of the White-headed Duck *Oxyura leucocephala* in Central Asia

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FOREWORD

The White-headed Duck is an endangered species listed both in the IUCN Red List and on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). The global population, which was probably over 100,000 in the early twentieth century, has decreased to 8,000-13,000 individuals in 2002. On the basis of this alarming decline, the 6th meeting of the Conference of the Parties to CMS (Cape Town, November 1999) identified the White-headed Duck as a priority species for action by designating it for Concerted Actions under the Convention. These include the preparation of a detailed report on the status of the species.

The rapid decline of the Central Asian population of the species is the cause of particular concern among conservationists. As an indicative example of the gravity of the situation, the flock wintering in South Asia (mainly in Pakistan) has decreased from 1,039 in 1968 to around 10 individuals in 2001. This was confirmed by a survey undertaken in Pakistan in 2002 by Wetlands International with the support of CMS. The Convention has therefore welcomed and been pleased to support the initiative from Wetlands International to undertake a study aimed at reviewing the current status and identifying the conservation issues of the Central Asian population.

The present study provides a comprehensive review of the best available information on the current status of the White-headed Duck in the 12 countries of the Central Asian region. It identifies the most important threats to the species and makes recommendations on priority actions to address those threats. Urgent actions are clearly needed, in particular to conserve the wetlands on which this and many other waterbird species are dependent.

The CMS Secretariat would like to invite the Contracting Parties and other Range States to use this report as a key reference and tool for planning and implementing conservation efforts for the species in the region. It also encourages the Contracting Parties and other Range States, bilateral and multilateral development agencies and other donors to provide funding and other necessary support to conservation departments, NGOs and individuals to carry out activities for the conservation of this emblematic species and its habitat.

This report integrates in a broader initiative of Wetlands International and CMS for the development of an Action Plan for the Central Asian Flyway, aimed at providing a comprehensive framework for the conservation of all migratory waterbird species and their wetland habitats in this region. The success of this initiative will depend on the active participation and endorsement of Range States, and CMS invites all Parties and non-Party countries to support the development and subsequent implementation of this Plan.

Finally, I would like to take the opportunity to congratulate Wetlands International for this excellent piece of work.

Arnulf Müller-Helmbrecht
Executive Secretary of CMS

PREFACE

The White-headed Duck is the only stifftail (Oxyurini) indigenous to the Palearctic; it is restricted to a small area of Central Eurasia and North Africa and currently has the distinction of being "endangered". Over the last decade or so, there has been considerable interest in this species, particularly in Spain where the population underwent a considerable decline and has recently recovered. Populations have declined rapidly, especially in the Central Asian region and details of the life cycle and precise migratory habits of the species largely remain an enigma. In this arid region of Central Asia, the species appears to be adapted to living in a range of shallow, fresh, brackish to saline wetland types, many of which are transient in nature. This appears to force the birds to modify its habits and choice of wetlands in which to breed, moult, stop on migration and spend the northern winter. As the region undergoes an extended periodic drying cycle and is currently in the throes of an extended drought, the challenge of ensuring maintenance of wetlands in their natural condition, ensuring allocation to these wetlands of regular supplies of water as competition increases from human needs - domestic, industry and agriculture; the fate of the small population of White-headed Duck that migrate to Pakistan each winter in South Asia remains in question.

In its 2002-2005 Strategy, Wetlands International has identified the need to "enhance the conservation and management of waterbirds through the development and implementation of action plans". The Asia-Pacific Migratory Waterbird Conservation Strategy: 2001-2005 calls for the conservation of threatened species and the conservation of migratory waterbirds in the Central Asian Flyway.

The White-headed Duck has been selected as a species in need of special attention and with funds from the Convention on Conservation of Migratory Species of Wild Animals (CMS) it has been possible to undertake a rapid field assessment of the main wintering ground in northern Pakistan and a survey of published and unpublished information across the flyway.

The format of the report is based on that of the Species Review Reports developed by the CMS for Appendix I Species for Concerted Action and adopted by the Conference of Parties (Resolution 3.2). The report provides an introduction to the species, its distribution, basic ecology, population status, threats, conservation measures, recommendations and detailed national status overviews. A key to the scientific and English name of species of birds, plants, animals, fish and insects covered is available in Appendix C.

We have been able to access much of the available information on the White-headed Duck with the assistance of a great number of people. To collect information on the White-headed Duck in the Central Asian region, a questionnaire has been developed and distributed among the experts. Contact details for contributors are provided in Appendix D. Nevertheless there remains a lot of gaps in our knowledge of the biology and migration patterns of this species.

With the publication of this report, Wetlands International hopes to contribute to a greater awareness and understanding of this important and endangered species. Conservation efforts for this species will be pursued by CMS and the African Eurasian Migratory Waterbird Agreement and Wetlands International under our Joint Work Plan for 2003-2004.

This report will also integrate in a broader initiative of Wetlands International and CMS have underway for the development of an Action Plan for the conservation of migratory waterbirds and wetlands in the Central Asian Flyway.

We look forward to receiving feedback on the report and on conservation measures being undertaken to conserve this threatened species.

David Li Zuo Wei and Taej Mundkur
Wetlands International

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SUMMARY

The White-headed Duck *Oxyura leucocephala* is a globally threatened species classified as Endangered by the IUCN Red List of Threatened Species (IUCN 2000) and Threatened Birds of the World (BirdLife International 2000). The global population of the White-headed Duck was probably over 100,000 in the early twentieth century, but its numbers have fallen to an estimated 19,000 individuals in 1991. BirdLife International (2000) estimated a world population of 2,500-10,000 individuals. The South Asian wintering population (mainly in Pakistan) has decreased from 1,039 in 1968 to 733 in 1987 to around 10 individuals in 2001. This has caused a great concern among conservationists.

With funding from the Convention on Conservation of Migratory Species of Wild Animals (CMS), Wetlands International has undertaken a comprehensive review of the status of the White-headed Duck in the Central Asian countries during 2002 and has provided recommendations for the conservation of this species. This report focuses on the Central Asian region, and covers Afghanistan, China, India, Iran, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Russia (Asian part only), Tajikistan, Turkmenistan and Uzbekistan. This report will serve as an important reference for the development of an Action Plan for Migratory Waterbirds in the Central Asian Flyway, as well as for the development of waterbird and wetland conservation activities at the regional and national level.

Under this project, a field survey has been carried out in northern Pakistan to evaluate the current status of the White-headed Duck wintering population. However, only 5 birds were counted in January 2002.

A questionnaire has also been developed and distributed among waterbird experts in the Central Asian region to collect information on the White-headed Duck. According to the information received, the East Mediterranean/Turkey/Southwest Asia wintering population has been estimated at 5,000-10,000 birds and the South Asian wintering population is estimated at 10 birds as reported in *Waterbird Population Estimates* (Wetlands International 2002).

Major threats to the conservation of the White-headed Duck have been identified. The drought in Central Asian region over the last few years has greatly reduced wetland habitat for the White-headed Duck and many other waterbirds. The long-term effects of drought on the viability of the White-headed Duck population is unknown although potentially serious. Habitat loss and degradation due to unsustainable use of water resources has further reduced the available habitat for White-headed Duck. Human disturbance and hunting are also recorded as additional threats.

Six main recommendations have been proposed for conservation of the White-headed Duck in the Central Asian Region. These include:

- **All countries need to undertake a review of their national policy and legislation to ensure adequate legal protection for the White-headed Duck and its enforcement.**

  The study has revealed that this species is not recognised as a globally endangered species in need of protection in the national legislation of all the countries.

- **Sustainable management of water resources is needed to ensure adequate allocation of water to maintain viability of wetland habitats used by White-headed Duck.**

  This is the highest priority for the conservation of the threatened populations of White-headed Duck, and many other waterbird species in the Central Asian region. The Action Plan for Migratory Waterbirds in the Central Asian Flyway, is also expected to include measures to address water management and wetland conservation issues in Central Asian countries. The Action Plan should be endorsed by conservation authorities in each country and adequately resourced to ensure its implementation.

- **Site conservation measures, such as the establishment of an international network of sites of importance for migratory waterbirds, including the White-headed Duck, need to be pursued.**

  The site network should ensure the conservation of important wintering, migratory and breeding sites of this species. Restoration of previously important wetlands for migratory waterbird species should also be considered.

- **A flyway-wide project should be developed for conservation of the White-headed Duck and its wetland habitats through building and strengthening links between wetland managers and organisations involved in the conservation of the White-headed Duck across the region.**

  The project should include activities on site management, habitat restoration, species identification and monitoring, training, publication of information material, education and awareness raising.

- **A comprehensive population monitoring programme should be developed to monitor the distribution and the status of the White-headed Duck in the Central Asian region during the wintering, migratory and breeding seasons.**

  Information on the distribution and number of birds is still inadequate for many areas and countries. Therefore a comprehensive approach is required to monitor the status of the species.

- **Research to define the migration routes and population boundaries of the White-headed Duck is urgently required.**

  Satellite-tracking of selected individuals should be able to provide useful information on the main routes and staging areas (once satellite-tracking technology can be used for this species). This should be considered a priority. Migration studies through colour marking and banding (ringing) activities should also be considered, with the involvement of all countries.

In addition to these recommendations, a number of country specific recommendations have been made.

SUMMARY IN SPANISH (RESUMEN)

La malvasía cabeciblanca *Oxyura leucocephala* es una especie globalmente amenazada clasificada como En Peligro en la Lista Roja de Especies Amenazadas de la IUCN (IUCN 2000) y *Threatened Birds of the World* (BirdLife International 2000). La población mundial de la malvasía cabeciblanca probablemente superaba los 100,000 ejemplares a principios del siglo veinte, pero se estima que sus números han descendido a 19,000 individuos en 1991. BirdLife International (2000) estimó que la población mundial constaba de 2,500-10,000 individuos. La población invernante del sur de Asia (principalmente Pakistán) ha decrecido de 1,039 en 1968 a 733 en 1987 y a alrdedor de 10 individuos en 2001. Esto ha causado gran preocupación entre los conservacionistas.

Con fondos de la Convención para la conservación de las especies migratorias de animales silvestres (CMS), Wetlands International ha emprendido una extensa revisión del estado de la malvasía cabeciblanca en los países de Asia Central durante 2002 y ha proporcionado recomendaciones para la conservación de esta especie. Este informe se centra en la región de Asia Central y cubre Afganistán, China, India, Irán, Kazajistán, República de Kyrgyz, Mongolia, Pakistán, Rusia (sólo la parte asiática), Tajikistán, Turkmenistán y Uzbekistán. Este informe servirá como una importante referencia para el desarrollo del Plan de Acción para las Aves Acuáticas en la Ruta Migratoria de Asia Central, así como para el desarrollo de las actividades de conservación para aves acuáticas y humedales tanto a nivel regional como nacional.

Bajo este proyecto se ha llevado a cabo un seguimiento en el campo en el norte de Pakistán para evaluar el estado actual de la población invernante de la malvasía cabeciblanca. Sin embargo, sólo 5 aves se contabilizaron en enero de 2002.

También se ha preparado un cuestionario y se ha distribuido entre los expertos de Asia Central para recabar información sobre la malvasía cabeciblanca. De acuerdo a la información recibida, la población invernante del este del Mediterráneo/Turquía/suroeste de Asia se ha estimado en 5,000-10,000 aves, mientras que la población invernante del sur de Asia se ha estimado en 10 aves, tal y como se indica en *Waterbird Population Estimates* (Wetlands International 2002).

Las principales amenazas para la conservación de la malvasía cabeciblanca han sido identificadas. La sequía en Asia Central en los últimos años ha reducido enormemente la superficie de humedales para la malvasía cabeciblanca y para muchas otras aves acuáticas. Los efectos que a largo plazo pudiera tener la sequía sobre la viabilidad de la población de malvasía cabeciblanca son desconocidos, aunque potencialmente serios. La pérdida de hábitat debido al uso insostenible de los recursos hídricos ha contribuido aún más a reducir el hábitat disponible para la malvasía cabeciblanca. La caza y la presión humana se han identificado también como amenazas adicionales.

Seis recomendaciones se proponen para la conservación de la poblacion de malvasía cabeciblanca en Asia Central. Éstas incluyen:

- **Todos los países necesitan llevar a cabo una revisión de su normativa y lesgislación nacionales para asegurar una protección legal adecuada de la malvasía cabeciblanca y su cumplimiento.**

  El estudio ha revelado que esta especie no está reconocida como una especie globalmente amenazada con necesidad de protección en la legislación nacional de todos los países.

- **Se necesita un manejo sostenible de los recursos hídricos para asegurar un reparto del agua capaz de mantener la viabilidad de los humedales utilizados por la malvasía cabeciblanca.**

  Ésta es la prioridad principal para la conservación de las poblaciones amenazadas de malvasía cabeciblanca y otras muchas especies de aves acuáticas en Asia Central. También se espera que el Plan de Acción para las Aves Acuáticas en la Ruta Migratoria de Asia Central incluya medidas que traten el manejo del agua y las cuestiones sobre la conservación de humedales en los países de Asia

Central. El Plan de Acción debería ser aprobado por las autoridades de conservación de cada país y dotado de recursos adecuados para asegurar su implementación.

- **Se necesita implementar medidas de conservación para localidades importantes, tales como el establecimiento de una red internacional de localidades de importancia para la migración de aves acuáticas, incuyendo la malvasía cabeciblanca.**

  La red de localidades debería asegurar la conservación de localidades importantes de invernada, migración y reproducción para esta especie. La restauración de humedales previamente importantes debería también considerarse.

- **Debería desarrollarse un proyecto a escala de ruta migratoria para la conservación de la malvasía cabeciblanca y sus humedales mediante la construcción y el refuerzo de conexiones entre los directores de humedales y organizaciones implicadas en la conservación de la malvasía cabeciblanca por toda la región.**

  El proyecto debería incluir actividades de manejo de las localidades, restauración del hábitat, identificación y seguimiento de especies, formación, publicación de material informativo, toma de conciencia, y educación.

- **Debería desarrollarse un extenso programa de seguimiento de la población para estudiar la distribución y el estado de la malvasía cabeciblanca en Asia Central durante las temporadas de invernada, migración y cría.**

  Todavía es inadecuada en muchas áreas y países la información sobre la distribución y el número de aves. Por tanto, un enfoque amplio es necesario para realizar un seguimiento del estado de la especie.

- **Se requiere urgentemente definir las rutas migratorias y las fronteras entre poblaciones de la malvasía cabeciblanca.**

  El seguimiento por satélite de determinados individuos debería poder proporcionar información útil sobre las rutas principales y áreas de paso migratorio (siempre y cuando la tecnología de seguimiento por satélite pueda ser utilizada para esta especie). Esto debería ser considerado una prioridad. También deberían tenerse en cuenta para su implementación estudios sobre la migración mediante marcas y anillas de colores, con la participación de todos los países.

De manera adicional a estas recomendaciones, se han realizado un número de ellas específicas para cada país.

SUMMARY IN FRENCH (RESUME)

L'erismature à tête blanche est une espèce considérée comme globalement menacée selon la liste préparée par l'UICN (« The IUCN Red List of Threatened Species », IUCN 2000), et celle de BirdLife International (« Threatened Birds of the World », BirdLife International 2000). Au début du vingtième siècle, la population mondiale de l'érismature à tête blanche était probablement supérieure à 100.000 individus, mais ces chiffres ont baissé jusqu'à atteindre 19.000 oiseaux en 1991. Récemment, BirdLife International (2000) a estimé que la population mondiale est comprise entre 2500 et 10.000 oiseaux. La population hivernante sud-asiatique (surtout concentrée au Pakistan) s'est réduite de 1039 oiseaux en 1968, à 733 en 1987, et à une dizaine d'oiseaux en 2001, ce qui inquiète fortement le monde de la conservation.

Avec l'aide financière de la Convention de Bonn (Convention pour la conservation des espèces animales migratrices), Wetlands International a entrepris en 2002 une revue complète du statut de l'érismature à tête blanche dans les pays d'Asie centrale, et a présenté des recommandations pour la conservation de cette espèce. Ce rapport se concentre sur l'Asie centrale, et englobe l'Afghanistan, la Chine, l'Inde, l'Iran, le Kazakhstan, la République Kirghize, la Mongolie, le Pakistan, la Russie (partie asiatique), le Tadjikistan, le Turkménistan et l'Ouzbékistan. Ce rapport servira de point de référence important pour le développement d'un plan d'action pour les oiseaux d'eau migrateurs de la voie de migration d'Asie centrale (« *Central Asian flyway* »), et pour le développement d'actions de conservation des oiseaux d'eau et des zones humides aux niveaux national et régional.

Sous l'égide de ce projet, une enquête de terrain a été menée au nord du Pakistan pour évaluer le statut actuel de l'érismature à tête blanche. On n'a recensé que 5 oiseaux en janvier 2002.

Un questionnaire a été développé en direction des experts d'Asie centrale, pour recueillir des renseignements sur l'érismature à tête blanche. Selon l'information reçue, la population hivernante de Méditerranée orientale, de Turquie et du Sud-Ouest de l'Asie a été estimée entre 5000 et 10.000 oiseaux, et celle d'Asie du sud à 10 individus (selon les chiffres rapportés dans "Waterbird Population Estimates", Wetlands International 2002).

Les menaces les plus importantes pour la conservation de l'érismature à tête blanche ont été identifiées. La sécheresse en Asie Centrale au cours des dernières années a largement réduit l'étendue des zones humides, habitat de l'érismature à tête blanche et d'autres oiseaux d'eau. Les effets à long terme de la sécheresse sur l'espèce ne sont pas connus, mais sont potentiellement graves. La perte des habitats à cause de la surexploitation des ressources en eau a réduit encore davantage l'habitat disponible. Enfin, le dérangement par l'homme et la chasse constituent aussi des menaces.

Six recommandations principales ont été proposées pour la conservation de la population d'érismature à tête blanche d'Asie Centrale :

- **Tous les pays doivent réviser leurs politiques et législations nationales pour assurer la protection juridique de l'érismature à tête blanche, et mettre en oeuvre ces législations.**

  L'étude a révélé que cette espèce n'est pas encore reconnue comme globalement menacée par la législation nationale de tous les pays concernés.

- **Une gestion durable des ressources en eau est nécessaire pour assurer une allocation d'eau suffisante au maintien des zones humides utilisées par l'érismature à tête blanche.**

  Ceci constitue la plus grande priorité pour la conservation de l'érismature à tête blanche et de nombreuses autres espèces d'oiseaux d'eau d'Asie Centrale. Le plan d'action pour les oiseaux d'eau de la voie de migration de l'Asie Centrale prévoit d'inclure des mesures sur la gestion de l'eau et la conservation des zones humides dans les pays d'Asie centrale. Le plan d'action doit être approuvé par

les autorités environnementales de chaque pays, et être doté de moyens suffisants pour assurer son exécution.

- **Des mesures pour la conservation des sites doivent être visées, telles que l'établissement d'un réseau international des sites d'importance pour les oiseaux d'eau migrateurs, érismature à tête blanche compris.**

  Le réseau des sites doit assurer la conservation des sites d'hivernage, de migration et de nidification de cette espèce. La restauration des zones humides qui ont été importantes pour les oiseaux d'eau dans le passé doit être envisagée.

- **Un projet de conservation de l'érismature à tête blanche et des zones humides doit être mis en place tout au long de sa voie de migration, en créant et en renforcant les liens entre les gestionnaires de sites et les organisations travaillant à la conservation de l'erismature à tête blanche dans la région**.

  Ce projet doit comprendre des activités de gestion de sites, de restauration des habitats, d'identification et de suivi des espèces, de formation, de sensibilisation et d'éducation du public, et de publication.
- **Un programme de suivi complet des populations doit être développé pour étudier la distribution et le statut de l'érismature à tête blanche en Asie centrale pendant l'hivernage, la migration et la nidification**.

  Les données sur la distribution et les effectifs des oiseaux d'eau sont encore insuffisantes dans plusieurs territoires et pays. Il faut donc développer une méthodologie complète pour le suivi du statut de cette espèce.

- **Des recherches doivent être lancées sans délai pour définir les routes de migration et la distribution des populations d'érismature à tête blanche.**

  La télémétrie par satellite de quelques individus devrait fournir des renseignements utiles sur les principales routes de migration et les quartiers de stationnement, lorsque la technique pourra être utilisée sur cette espèce. Ceci doit être considéré comme une priorité. De plus, l'étude de la migration à l'aide de baguage et de marquages de couleur doit être mise en oeuvre, avec la participation de tous les pays.

En outre, un certain nombre de recommandations ont été faites pour des pays particuliers.

1. INTRODUCTION

1.1 Background

The White-headed Duck *Oxyura leucocephala* is a globally threatened species classified as Endangered by the *IUCN Red List of Threatened Species* (IUCN 2000) and *Threatened Birds of the World* (BirdLife International 2000). Its range and population size has decreased drastically since the 1900s, owing to habitat destruction and hunting pressure (Green and Hughes 2001). The global population of the White-headed Duck was probably over 100,000 in the early twentieth century, falling to an estimated 19,000 birds in 1991, and since then its numbers have probably declined to fewer than 10,000 individuals (Green and Hunter 1996). BirdLife International (2000) estimated the world population as 2,500-10,000 birds. In Pakistan, where a small population regularly winters, numbers have dropped from 1,039 in 1968, to 733 in 1987, to less than 10 in January 2002 (Chaudhry 2002). This has caused great concern among conservationists.

To promote the conservation of this species, an "*Action Plan for the White-headed Duck (Oxyura leucocephala) in Europe"* (Green and Hughes 1996) has been prepared by BirdLife International on behalf of the European Commission. The Action Plan covers Algeria, Azerbaijan, Bulgaria, Greece, Israel, Romania, Russian Federation, Spain, Tunisia, Turkey and Ukraine. In addition, it is implemented in the following range-states of the introduced Ruddy Duck *O. jamaicensis*: Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Morocco, Norway, Netherlands, Portugal, Sweden, Switzerland and United Kingdom. However, the Action Plan did not include the countries in Central Asia, which hold the main White-headed Duck breeding population.

The White-headed Duck is one of the few migratory Anatidae species that is Endangered in this region. It should also be seen as a flagship species for the Action Plan for conservation of migratory waterbirds and wetlands in the Central Asian flyway, which is currently being prepared by Wetlands International with CMS and others.

This report aims to review the status of the White-headed Duck in the Central Asian region (herein after defined as the following countries: Afghanistan, China, India, Islamic Republic of Iran, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Russia (Asian part only), Tajikistan, Turkmenistan and Uzbekistan) and to provide comments and recommendations to protect the species and its habitats. This report should also provide valuable input to the development of an Action Plan for the migratory waterbirds in the Central Asian Flyway, as well as for developing waterbird and wetland conservation activities at the regional and national levels.

The report does not cover Saudi Arabia and Iraq. In Saudi Arabia, there is only a single record in 1983 (Evans 1994). Information on the status of the species in Iraq is difficult to access. The species is known to have occurred in the wetlands of Lower Mesopotamia (Scott 1995), although with the drainage of the marshes and widespread hunting and trapping of ducks (Al-Robaae and Salem 1996), it is unlikely that the species continues to visit the area in any significant number.

1.2 Common names

The White-headed Duck, also goes by other English (common) names – such as White-headed Stifftail, White-headed Stiff-tailed Duck, Stiff-tailed Duck, Spiny-tailed Duck, Ural Duck and Spanish Duck.

1.3 Taxonomy

Anas leucocephala Scopoli, 1769, no locality, but probably northern Italy. Type specimen in Turin Museum. Monotypic, 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. Amat and Sánchez (1982) found western birds had larger bills on average. Two colour phases (pale and dark) now occur in Spain, possibly associated with a bottleneck suffered by the

tiny remaining population in the 1970s (Urdiales and Pereira 1993, Torres and Moreno-Arroyo 2000). Considered by some to form superspecies with Ruddy Duck *O. jamaicensis* (of North America), sometimes including other species, but probably more closely linked to the Maccoa Duck *O. maccoa* (of Africa); its relationship between the *Oxyura* species is uncertain (del Hoyo *et al.* 1992). However, DNA fingerprinting has now clarified the relationships (McCracken *et al.* 1999). Within *Oxyura*, Old World species (*Oxyura leucocephala*, *Oxyura maccoa*, and *Oxyura australis*) appear to form a clade, with New world species (*Oxyura jamaicensis*, *Oxyura vittata*) branching basally. Hybridisation with *O. jamaicensis* in the wild, producing fertile progeny, has occurred in Spain, where birds from the introduced English population have arrived.

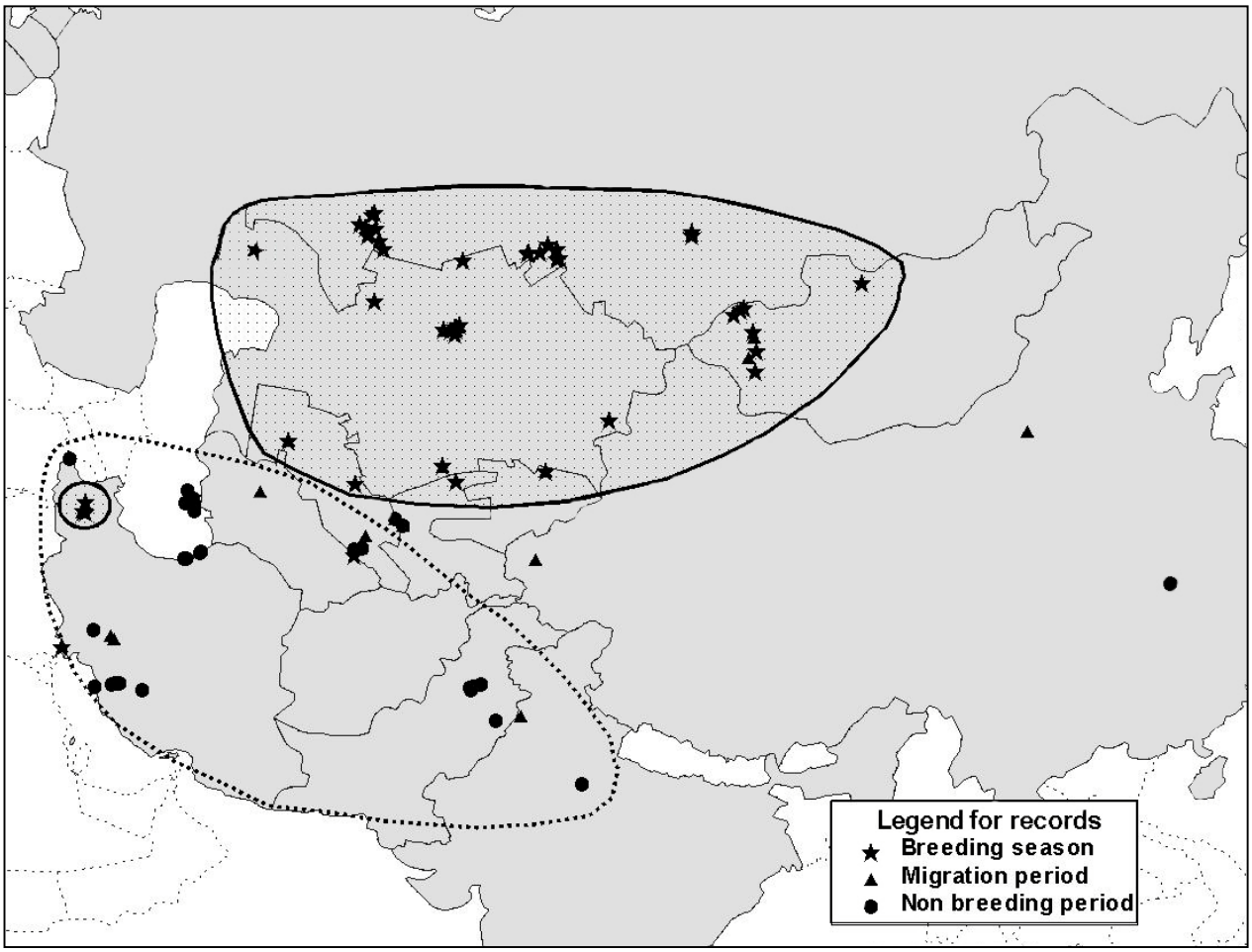
2. SPECIES DISTRIBUTION

The White-headed Duck regularly occurs in Algeria, Azerbaijan, Bulgaria, Greece, Kazakhstan, Iran, Israel, Mongolia, Morocco, Pakistan, Romania, Russia, Spain, Syria, Tunisia, Turkmenistan, Turkey and Uzbekistan. It has also been occasionally recorded in Afghanistan, Albania, Armenia, China, France, Georgia, Hungary, India, Iraq, Italy, Kyrgyz Republic, Saudi Arabia, Ukraine and Yugoslavia. However, accidental populations have also been found in Austria, Belgium, Cyprus, Germany, Jordan, Libya, Portugal, Malta, Netherlands, Poland and Switzerland. Historically, the species was also found in Egypt and Tajikistan (Green and Anstey 1992, Green and Hughes 1996, 2001).

Within the Western Palearctic, there has been a drastic historical decline in range. Former breeding populations have become extinct in Italy, France, Hungary, Albania, Yugoslavia, Greece, Israel and Egypt, and probably also in the Ukraine and Armenia (Green and Anstey 1992, Green and Hughes 1996).

This report focuses on Asian countries that are not covered by the Action Plan of the European population by Green and Hughes (1996), including Afghanistan, China, India, Iran, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Russia (Asian part only), Tajikistan, Turkmenistan and Uzbekistan (see Map 1).

Map 1: Distribution of the White-headed Duck in the Central Asian countries in 1980-2002.



3. ECOLOGY

The White-headed Duck is adapted to live in a fairly dry climatic zone and uses a range of shallow, fresh, brackish to saline wetland types, many of which are transient in nature. This appears to force the birds to modify its habits and choice of wetlands in which to breed, moult, rest on migration and spend the northern winter. The species tends to prefer small wetlands at which to breed but in uses small and large wetlands during the winter. The species has been well studied in Europe. Information on habitat selection, food, breeding and migration habits summarised below is extracted primarily from BirdLife International (2001) and Green and Hughes (2001), unless otherwise stated.

3.1 Habitat

The White-headed Duck prefers freshwater or brackish, alkaline, eutrophic lakes, which often have a closed basin hydrology and are frequently semi-permanent or temporary. Breeding sites have dense emergent vegetation around the fringes and are small or enclosed areas within a larger wetland system. They typically have extensive area of 0.5-3 m depth. Wintering flocks often occur in saline inland lakes (Green and Hughes 2001). In Pakistan, the duck prefers to occupy wetlands with a fairly high pH of 7.5-10 (Chaudhry 2002). In winter, the birds congregate on relatively large, shallow, brackish to saline wetlands, usually with considerable areas of open water devoid of any emergent vegetation. Many of these wetlands are temporary or semi-permanent, leading to fluctuations in distribution and population size of the birds in response to climatic variations, notably rainfall and water abstraction for human needs.

3.2 Food

The White-headed Duck feeds almost entirely by diving, mainly at night. However, researchers have also found that this species feeds during daytime in Pakistan (Zulfiqar Ali, pers. comm., August 2002). Benthic Chironomidae larvae are a major component of the diet, both for adults and young (Sánchez *et al*. 2000). They feed on submerged plant material and seeds, especially Straight Vallis *Vallisneria spiralis* and the sedge *Cyperus eleusinoides*, both found in abundance in lakes in northern Pakistan (Roberts 1991). A specimen taken in Pakistan had eaten "purely …vegetable matter" (Whitehead 1931), and the seeds of Yellow Sweetclover *Melilotus indicus* and Ruppia *Ruppia rostellata* were identified in the crop of another bird (Savage 1965). Female ducks examined in central Kazakhstan, in July, were found to contain seeds of Pond Weed *Potamogeton* and Naiad *Najas*, and insects – Water Boatmen *Corixa* and *Micronecta*. Young birds examined at the same time were found to contain only insects (Dolgushin 1960).

3.3 Breeding

Details of the breeding biology of the White-headed Duck is well covered by Green and Hughes (2001), based largely on work in Europe. Reviews of the breeding biology of the species in Kazakhstan and south-central Siberia are provided by Dolgushin (1960) and Gordienko *et al.* (1986). These observations indicate that data on Central Asian birds is more incomplete and the information is provided below.

In Russia, eggs are laid from late April to early July (Dementiev and Gladkov 1952). Sparse data from Tuva suggests that breeding at Ubsu Nur takes place in June and July: fresh and only slightly incubated eggs (albeit in nests of Common Pochard *Aythya ferina*) were recorded in mid-June, when two males with well developed gonads were shot nearby. A female was also captured "in the breeding season" (8 July) at another lake (Baranov 1991). In Uzbekistan, breeding birds were observed in July on the Sudochye Wetland when females were recorded - with downy covered and partially feathered ducklings (Kreuzberg-Mukhina, in press; Lanovenko *et al*., in press).

3.4 Migration

Due to the lack of sufficient banding/ringing information, the exact migration routes of the White-headed Duck are unclear. Scott and Rose (1996) suggested the Central Asian population breeding in north Kazakhstan and southern Russian winter in Western Asia, the Middle East and Eastern Europe as far west

as Greece. Further, they suggested that South Asian wintering population to breed in southern Russia (Novosibirsk Oblast). While Green and Hughes (2001) stated that a small and declining east Asian population breed in southern Russia and Mongolia and winter in Pakistan.

In Pakistan, the birds arrive on the lakes in October and leave by the end of March (Chaudhry 2002). In the Central Asian breeding grounds, White-headed Ducks are one of the last waterbird species to arrive, having been observed in passage between late April and early May, and in breeding sites from mid-May (Dementiev and Gladkov 1952, Gordienko *et al.* 1986). The main northward (spring) passage in Kazakhstan occurs from 29 April to 5 May, and by mid-May, the movement is complete even for the west Siberian breeders (Dementiev and Gladkov 1952, Johansen 1959). Birds arrive on the Russian breeding grounds already paired (Dementiev and Gladkov 1952). They leave in late August (Gordienko *et al.* 1986); southward (autumn) departure begins in late September and northern breeding areas are deserted by mid-October. Concentrations on the east Caspian Sea grow during the second half of October and November. In Uzbekistan, the major southward passage through the Amu Darya Delta occurs in October (Kreuzberg-Mukhina and Lanovenko 2000).

4. POPULATION STATUS

The world population of the White-headed Duck has declined markedly since the 1930s from about 100,000 to less than 20,000 individuals in early 1990 (Green and Hunter 1996). BirdLife International (2000) estimates the world population at 2,500-10,000 individuals.

Although divisions between biogeographical populations are poorly understood, Rose and Scott (1997) differentiate the White-headed Duck into four discrete populations based on the breeding and wintering ranges: West Mediterranean (700, resident in Spain), Algeria/Tunisia (400, resident), East Mediterranean/Turkey/Southwest Asia (8,000-15,000, mainly wintering in Greece, Bulgaria, Romania, Turkey, Azerbaijan, Israel, Iran, Turkmenistan, Afghanistan and Uzbekistan) and a South Asian population (300, mainly wintering in Pakistan).

Details on trends and current status of the four biogeographic populations are outlined in the following section. This information provides a basis and an understanding of the population changes of the species across its range.

4.1 Winter population

South Asian population
The South Asian wintering population (mainly in Pakistan) has rapidly decreased since the 1960s. The peak count in Pakistan declined from 1,039 birds in 1968 to 733 individuals in January 1987. In 1994, 148 White-headed Ducks were counted, however, the species further declined sharply to about 10 birds in 2001 and 2002 (Chaudhry 2002; Rahat Jabeen and Zulfiqar Ali, pers. comm., May 2002). In India, the species is now rarely recorded and the latest record is of a single individual in January 1997 in Uttar Pradesh (M. Zafar-ul Islam, pers. comm., May 2002).

East Mediterranean/Turkey/Southwest Asia population
The January population in Iran and Turkmenistan varies every year with peak total count of 1,300-1,500 birds. In Iran, 591 birds were counted in January 2002 (Hamid Amini, Sadegh Sadeghi Zadegan and Yavar Shahbazi, pers. comm., May 2002). In Turkmenistan, 820 were counted in January 1998, 476 in January 2001 and 723 in January 2002 (V. I. Vasilyev and Myrrhy E. Gauser, pers. comm., May 2002).

In Uzbekistan, in January 2001, an unexpected high count of 1,137 birds was recorded at Dengizkul Lake, southern Uzbekistan for the first time with only 14 birds counted in January 2002 at Dengizkul Lake, Aydar Lake and Deukhona Lake. The low number is presumed to be due to the main wetlands being affected by drought and water abstraction for agriculture (Kreuzberg-Mukhina *et al*. 2001 and pers. comm., May 2002).

Evgeniya Lanovenko (pers. comm., October 2002) suggests that the lower count in January 2002 may also be due to the survey being incomplete.

The numbers of birds in Turkey and Azerbaijan have fallen consistently over the past ten years. In Turkey, from 10,927 birds in January 1991, numbers have fallen to 2,575 birds in January 1999, to about 1,000 birds during January 2000 to 2002 (Bahtiyar Kurt, pers. comm., July 2002). In Azerbaijan, from 3,520 birds in January 1991 to 1,100 birds in January 1998 and 334 in January 2000. However, there has been no survey of all the important wetlands for the White-headed Duck in Azerbaijan. Due to lack of funding, counts were not conducted during some years. Therefore, even a maximal figure is thought to be an underestimate (Elchin H. Sultan, pers. comm., July 2002).

However, in eastern Mediterranean, numbers have apparently increased: 2,213 and 1,472 birds were recorded in Greece in January 1997 and 2000, respectively (Panayotopoulou and Green 2000); 1,970 birds were recorded in Bulgaria in December 2000 (Profirov and Dimitrov 2001); and 520 birds were recorded

in Romania in November 1999 (Munteanu 2000). This could suggest that the main wintering grounds of the White-headed Duck is shifting westwards.

In the last five years (January of 1998 to 2002), the total number of the wintering White-headed Duck in the East Mediterranean/Turkey/Southwest Asia region was 3,260 to 4,852 (see Table 1). Due to a lack of information during some years, the data may represent an incomplete picture of the wintering population in this region. However, if we assume that the highest count of 4,852 birds (January 2000) is a minimum estimate for this species, the East Mediterranean/Turkey/Southwest Asia would number around 5,000-10,000 birds.

Table 1: Winter counts of White-headed Duck, 1990-2002.

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
South Asian population													
India								1	0	0	0	0	0
Pakistan	76	64	146	145	148	51	32	52	56	36	23	10	10
East Mediterranean, Turkey, Southwest Asia population													
Afghanistan	-	-	-	-	-	-	-	-	-	-	-	-	-
Iran	0	19	20	82	482	1,485	13	356	-	26	-	4	591
Turkmenistan	0	223	-	3	-	-	-	-	820	7	287	476	723
Uzbekistan								-	-	-	1,137	-	14
Albania	-	-	-	-	-	4		0	0	0	0	0	-
Azerbaijan	-	3,520	-	-	-	1	136	210	1,100		334		
Bulgaria	-	8	81	186	34	-	76	0	175	634	-	1,970	554
Greece	423	170	54	5+	349	900	632	2,213	689	261	1,472		
Georgia									2				
Israel	410	191	256	140	19	75	1	127	72	62	102	274	-
Romania	18	5	3	4	75	17	9	12	284	350	520		-
Syria	-	-	-	30	35	140							
Turkey	7,526	10,927	4,478	3,576	3,428	2,970	1,300	-	1,002	2,575	1,000	989	1,378
Yugoslavia	-	-	-	6	-	6		0	0	0	-	-	-
West Mediterranean population													
Spain	420	-	786	447	558	556	537	746	908	1,453	2,396	2,678	2,269
Morocco													12
North African population													
Algeria	13	-	210	86	17	53	2	3	186	348	-	-	-
Tunisia	28	-	50	29	63	103	131	368	297	14	572	496	406

Sources: Anon. 1997a, Azafzaf 2001, Criado 1997, Delany *et al*. 1999, Dimitrov *et al.* 2000, Eken 1998a and 1998b, Gilissen 2002, Green and Anstey 1992, Green and Hunter 1996, Green and Yarar 1996, Handrinos 1995, Handrinos 1998, Lanovenko and Kreuzberg-Mukhina 2000, Lopez and Mundkur 1997, Mundkur and Taylor 1993, Munteanu 1995, Munteanu 2000, Panayotopoulou and Green 2000, Perennou *et al.* 1990, Rose 1992, Perennou and Mundkur 1991, Perennou and Mundkur 1992, Perennou *et al*. 1994, Poslavski 1992, Profirov and Dimitrov 2001, Rose and Taylor 1993, Rose 1995, Scott and Rose 1989, Scott and Rose 1996, Sultanov 2001, Torres 2000, van der Ven 1987, van der Ven 1988.

Information contributed by: Abdul Aleem Chaudhry (Pakistan), Alex Filatov (Uzbekistan), Andy Green (overall range), Bahtiyar Kurt (Turkey), Baz Hughes (overall range), Behrouz Behrouzi-Rad (Iran), Elena Kreuzberg-Mukhina (Uzbekistan), Evgeniya Lanovenko (Uzbekistan), Gradimir Gradev (Bulgaria), Hamid Amini (Iran), Hichem Azafzaf (Tunisia), José Torres (Spain), M. Zafar-ul Islam (India), Myrrhy Gauser (Turkmenistan), Paul Isenmann (Tunisia and Algeria), Rahat Jabeen (Pakistan), Sadegh Sadeghi Zadegan (Iran), Vladislav Vasilyev (Turkmenistan), Yavar Shahbazi (Iran), Zulfiqar Ali (Pakistan), International Waterbird Census (IWC) and Asian Waterbird Census (AWC) results 1987-2002.

Note: The counts are mainly made in January. In some countries where coverage is poor, data from November-December of the previous year and February have been included.

West Mediterranean population
The Spanish population has increased significantly in the last 20 years: from 22 birds in 1977 to 4,500 in September 2000. However, there has been a subsequent drop in numbers to 2,678 in January 2001; and 2,269 in January 2002. White-headed Ducks have also been recorded in Morocco since 1997, with a current population estimate of around 12 individuals (Torres Esquivias and Andy Green, pers. comm., June 2002).

The West Mediterranean population is now estimated at 2,500 birds (Wetlands International 2002).

North African population
In Tunisia, the January 2000-2002 counts have been 572, 496 and 406 birds respectively (Hichem Azafzaf, pers. comm., July 2002). Wintering data for Algeria is available for January 1999 with 348 birds counted (Data from the International Waterbird Census). At present, the total population in both countries is estimated at 400-600 birds (Wetlands International 2002).

4.2 Breeding population

In Asia, the main breeding sites of the White-headed Duck are in Kazakhstan, southern Russia, Uzbekistan and western Mongolia, while they are rare in west China. There are also small breeding populations in Iran and Turkmenistan. This section provides an overview of the current knowledge of the breeding populations in each country for which recent information is available.

China
The White-headed Duck is a very rare species in China. Breeding birds have been recorded in the Junggar Basin and Tian Shan Mountain in western Xinjiang Autonomous Region (Cheng Tso-hsin 1987). The current status is unclear due to lack of information (Ma Ming, pers. comm., May 2002).

Mongolia
In Mongolia, 32 birds were recorded during the breeding season in 1995, 12 in 1996, 2 in 1998, "a large colony" in 2000 and 5 in 2001. Post-breeding concentrations of 238 birds were recorded at Khar Us Lake in September 1998 and 40 in August 2001. Tseveenmyadag N. (pers. comm., April 2002) estimated 500-1,000 White-headed Ducks in Mongolia, mainly in following areas:

- 100 pairs in the Tes River Delta, east of Uvs Lake,
- 5-10 pairs at Shuvuun Tsuglaan Lake, west of Uvs Lake,
- 10-20 pairs in the Zost lakes, west Airag Lake,
- 100-150 pairs in the region of Khar Us Lake, Chono-kharaikh, Khoit Dalai (Northern Sea), Island of White River (Tsagaan Gol), and
- a single record of 5 individuals in central Mongolia.

Batdelger Dashnamjilyn (pers. comm., May 2002) believes that the number of White-headed Duck in Mongolia is increasing, and the population is 150-200 individuals. However, recent counts suggest that the Mongolian breeding population could be around 250 pairs.

Russia
Estimates of the current national breeding population of the White-headed Duck in Russia vary considerably. Linkov (2001) estimated it to be 170-230 pairs, whereas Sergey Bukreev (pers. comm., October 2002) suggests a minimum of 300-500 pairs.

In the Asian part of Russia, the current distribution of breeding pairs is:

- Baraba forest-steppe and Kulunda steppe, 30-40 pairs in 2002 (A.K.Yurlov, pers. comm., June 2002);
- Tobol-Ishim forest steppe, and Chelabinsk Region – a few pairs (Linkov 2001). Krivenko (1999) estimated that there were 5-50 pairs in this region whilst Gordienko Nadejda Sergeevna (pers. comm., May 2002) suggested a total of 30 pairs in the southern Ural region in the 1990s;
- Tyumen region: 20-30 pairs (Linkov 2001); and
- Khakassia and Tuva: 40-50 pairs (Linkov 2001).

In the European part of Russia, the current distribution of breeding pairs is:

- Krivenko (2000) estimated 17-20 pairs on the Lakes of the Sarpa lowland near Volgograd City. Bukreev and Chernobay (2002) believe there are 75-100 pairs during 1999-2001; and
- Adzhi Lake in Dagestan, 8-11 pairs in 2001 (Dzhamirzoev 2002).

Kazakhstan

In Kazakhstan, breeding was recorded at the Presnovskiy and Mibalykskiy Lakes and Naurzumskiy Lakes in northern Kazakhstan in the 1980s. Gordienko (1986) estimated 300 pairs in north Kazakhstan and southwest Siberia (Russia). The latest count was of 3 birds in June 2001 in the Naurzumskiy Lakes Region (Goetz Eichhorn, pers. comm., August 2002).

The Tengiz-Korgalzhyn Lakes Region is the most important breeding area for White-headed Duck. During the breeding season, 119 birds were recorded in May 1999 and 860 birds in end of July to early August 1999. In May 2000, a few hundred pairs were recorded in this area, while 270 birds were counted during end of July to early August 2000. In June 2001, 166 birds were counted in this area while 308 birds were present in July 2001 (Lachmann *et al*., in preparation). The latest count is of 72 birds in July 2002 by Holger Schielzeth (pers. comm., October 2002).

The Kamysh-Samara Lakes in the north Caspian region was an important area for breeding and spring migration in the 1970-1980s. During the breeding season in 1986, 105 birds were recorded (Morozov and Shevchenko, 1998). However, recent breeding records in this area are not available although birds are observed each summer. Also, around the Ural Delta the birds are now observed each summer but no breeding has been recorded.

In northwest Kazakhstan, the birds are now known to breed although the population is not known (Sergey Yerokhov, pers. comm., October 2002).

In the south and southeastern Kazakhstan, this species has been recorded at the Sorbulak Lake (6 birds on 1 May 2001), Kyzylkol Lake (20 birds on 28 May 2001), lakes of Kaldykol and Biyikkol (2 males on 30-31 May 2001) (Belyalov *et al.* 2002).

In eastern Kazakhstan at Alakol Lake, since it was last recorded during the breeding season in the 1970s (Sergey Yerokhov, pers. comm., October 2002), 6 birds were recorded in September 1998 (Cresswell *et al.*1999) but it is not known if the birds bred here.

However, it is still not possible to estimate the overall national population and trends with the current available information (Andrew Grieve, pers. comm., May 2002). Conservative estimates for the minimum breeding population of Kazakhstan could be at least 300-500 pairs, although this figure is probably an underestimate of the true population.

Uzbekistan

In western Uzbekistan, Akushpa Lake of the Sudochye Wetlands is an important breeding area for White-headed Duck. A total of 2,835 birds, including ducklings and broods, were counted in this area in July 2000 and 1,149 in July 2001. Evgenia Lanovenko (pers. comm., Sept. 2002) suggested 500 pairs bred in 2000, followed by absence of breeding in 2001 since no broods were found. Elena Kreuzberg-Mukhina (pers. comm., September 2002) believes that in the years of ecological stress such as drought, the birds gather in big groups at the Sudochye Wetlands and only some of the birds breed. However, the population in this region fluctuates markedly depending on the level of rainfall. In the summer of 2002, no White-headed Duck were recorded, presumably owing to the degradation of the lake as a result of drought during the previous two years (Elena Kreuzberg-Mukhina, pers. comm., May 2002).

Turkmenistan

Breeding has been formerly recorded along the middle Amu Darya River at Soltantagt Lake in eastern Turkmenistan during 1984-1991, where 5-6 broods were seen in May 1987 and 19 breeding pairs were recorded in 1989 (Poslavski 1992, Green 1992). On the western side of the country, M. E. Gauzer (pers. comm., May 2002) has recorded a pair of White-headed Duck nesting at the Krasnovodsky Bay of the Caspian Sea during 21-22 May 1982 and observed 8 birds in the area in April 2002.

Iran

The distribution of breeding birds in Iran has changed over time. Behrouzi-Rad (1996) reported that the birds bred in the wetlands of Gorigol, Parishad Lake and Gobi in the 1970s and in the 1980s in Haftbarm, Gorigol, Chogakhor and Gandoman, with a total breeding population of less than 50 pairs (Anstey 1989). The small breeding population in east Azerbaijan has been regularly observed during the breeding seasons of 1996 to 2001. Up to 241 birds have been recorded during the breeding seasons in 1998 and 170 in 2001 (data received from the Department of Environment, Iran, April 2002), however the number of pairs that bred is not known.

Table 2: Summer counts of White-headed Duck, 1990-2002.

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
China													
Mongolia						31	12		2+238 in Sept		Large colony	5+40 in Aug	
Russia								1	10		8	20	
Kazakhstan									24	595	105+A few hundred pairs	505	72
Uzbekistan											2,835	1,149	0
Turkmenistan													8
Iran							54	67	241	125	83	170	
Turkey	30-35	105				342	300-400	62	"Quite a few pairs"+50				
Spain		391	487	697	579	667	932	1,087	1,460	2,396	4,489	2,269	2,619
Morocco								1			24		
Algeria		145	110										
Tunisia	19			43	33	2					14	94	344

Sources: Anon. 1997b, Buckley *et al.* 1998, Green and Hughes 2001, Heinicke 2001, Kirwan 1995, Kreuzberg-Mukhina *et al*. 2001, Morozov and Shevchenko 1998, Munteanu 1995, Shahbazi 2000, Torres 2001.

Information contributed by: Axel Braunlich (Mongolia), Alex Filatov (Uzbekistan), Andrew Grieve (Kazakhstan), Andy Green (overall range), Bahtiyar Kurt (Turkey), Baz Hughes (overall range), Batdelger Dashnamjilyn (Mongolia), Behrouz Behrouzi-Rad (Iran), Elena Kreuzberg-Mukhina (Uzbekistan), Evgeniya Lanovenko (Uzbekistan), Goetz Eichhorn (Kazakhstan), Gordienko Nadejda Sergeevna (Russia), Hamid Amini (Iran), He Fenqi (China), Hichem Azafzaf (Tunisia), Joerg Ratayczak (Kazakhstan), José Torres (Spain), Lars Lachmann (Kazakhstan), Ma Ming (China), Myrrhy Gauser (Turkmenistan), N. Tseveenmyadag (Mongolia), Paul Isenmann (Tunisia and Algeria), S. Gombobaatar (Mongolia), Sadegh Sadeghi Zadegan (Iran), Thomas Heinicke (Kazakhstan), Vladislav Vasilyev (Turkmenistan), Yavar Shahbazi (Iran).

Note: The counts are mainly made in June-July. In some countries, counts from May and August are included. The Spain data are mainly from September.

4.3 Post-breeding population

In Kazakhstan, large numbers have been recorded during southward migration at the Tengiz-Korgalzhyn Lakes Region. A maximum count of 1,918 birds was counted at the end of August and 1,420 birds in September of 1999. In September 2000, 3,700 birds were counted in this area. In August 2001, a maximum count of 1,708 birds was recorded. Beside the Tengiz-Korgalzhyn Lakes Region, 2,838 birds were counted at Kyzylkol Lake, in southern Kazakhstan in September 2001 at a time when simultaneously at least 1,100 White-headed Duck were still present in the Tengiz-Korgalzhyn Region. The latest count in the Tengiz-Korgalzhyn Region is 4,021 birds in September 2002 with two important sites uncounted (Lachmann *et al*., in preparation; Andrew Grieve, pers. comm., May 2002) and in the same month aound 2,000 birds were counted in the Kyzylkol Lake by Andrei Gavrilov (Joost van der Ven, pers. comm., November 2002). These records suggest that Kazakhstan would host at least 5,000 birds in September.

The difference between this number and the breeding population estimate of 300-500 pairs may be explained either by an underestimate of the breeding population, or by the fact that breeding birds from Mongolia and Russia may pass through Kazakhstan, after breeding, or a combination of the two.

Big flocks of White-headed Duck have also been recorded in autumn in Uzbekistan. In October 1999, more than 3,000 birds were counted at Akushpa Lake (4,300 in Kreuzberg-Mukhina *et al.* 2001, however, the number was presented differently by the counters). In the same area, 1,370 birds were counted in October 2000 and only 9 birds in October 2001, when the Sudochye Wetlands had been degraded owing to drought (Kreuzberg-Mukhina and Lanovenko 2000; Kreuzberg-Mukhina *et al.* 2001; Elena Kreuzberg-Mukhina, pers. comm., May 2002). However, the White-headed Duck seems to have returned to Akushpa Lake with more than 700 birds counted in early October 2002 (Elena Kreuzberg-Mukhina, pers. comm., October 2002).

5. CONSERVATION STATUS AND ACTIONS

Due to the rapid decline of the White-headed Duck in the Central Asian region, a number of actions have been taken for conservation of the species and its habitat at the national level, through the recognition and designation of the species as a protected species and declaration and management of important sites as protected areas/Ramsar sites, etc. The following section provides an overview of the international and national actions; additional details are provided in Chapter 8. Country Reports.

5.1 International Level

The White-headed Duck is a globally 'Endangered' species on the IUCN Red List (IUCN 2000).

It is listed on Appendix I of the Convention on Conservation of Migratory Animal Species (CMS) and on Appendix II of the Convention on the International Trade of Endangered Species of Flora and Fauna (CITES). It is also recognised as a priority species for conservation in the African-Eurasian Migratory Waterbird Agreement and in the Asia-Pacific Migratory Waterbird Conservation Strategy: 2001-2005.

Action plans have been produced at a global (Anstey 1989) and regional level in Europe (Green and Hughes 1996). The White-headed Duck is a flagship species for the Action Plan for conservation of the migratory waterbirds and wetlands in the Central Asian Flyway and is currently being developed by Wetlands International with CMS and others.

5.2 National Level

The following section outlines the status of current national legislation and protected areas that support White-headed Duck and conservation issues in each of the countries.

Afghanistan
No available information.

China
The White-headed Duck is listed in the Red Data Book of China (Wang *et al*. 1998). The species is not listed as a nationally protected species.

Several potential habitats for the White-headed Duck in Xinjiang Autonomous Region, western China have been given protected status, including, Bayinbuluk National Reserve, Tian Shan Tianchi Nature Reserve and Hanasi Nature Reserve. In other regions, all the sites for which there are records of White-headed Duck, have also been given protected status, including, Ordos Nature Reserve in Inner Mongolia Autonomous Region, Honghu Nature Reserve in Hubei Province and East Dongting Lake Nature Reserve in Hunan Province.

India
The White-headed Duck is included in the Red Data Book of India (1994). Hunting/poaching of the duck is not allowed as per the Wildlife (Protection) Act 1972 of India.

The White-headed Duck may also be protected at a local level as local people often do not allow hunters to enter these areas protect many Indian wetlands with large waterbird congregations (especially those occurring during the northern winter months).

Iran
Hunting of White-headed Duck is prohibited under the Game and Fish Law (1967, amended in 1996); Article 13 of which forbids the hunting of rare and endangered wild animals.

Except for the Zoulbin, Yanigh and Bozojigh areas, all of the other important sites for the White-headed Duck in Iran are protected. Ghorigol is a Ramsar Site and a Non-hunting Area, Miankaleh is a Ramsar Site

and Protected Area, Arjan and Parishan are Ramsar Sites and Protected Areas, Gandoman is a Wildlife Refugee and Hamoun-I Puzak is a Ramsar site.

Kazakhstan
The White-headed Duck is listed in the Red Data Book of Kazakhstan as an endangered species (1996).

Tengiz-Korgalzhyn Lakes Region, the most important sites for breeding and migrating White-headed Ducks, were declared strictly protected nature reserves in the late 1980s /early 1990s. They were also Ramsar sites during Soviet Union times, but as ratification of the Convention by Kazakhstan is still pending, the status of these sites remains unresolved.

Kyrgyz Republic
The White-headed Duck is included in the national Red Book (1985) and is not listed as a species that can be hunted.

Mongolia
The White-Headed Duck is listed as a rare species in the earlier Law on Hunting (1995), the new Law on Fauna (2000) and the Mongolian Red Book (1997).

The main breeding sites are protected: Uvs Lake Basin was declared a Strictly Protected Area in 1993 and Khar Us Lake and Khyargas Lake were declared National Parks in 1997 and 2000, respectively. Khar Us Lake is also listed as a Ramsar Site.

Russia
The White-headed Duck is included in the Red Data Book (2001) of the Russian Federation. The species is also protected by the Wildlife Law (1995) for conservation of rare species and protected by a shooting ban throughout the former USSR.

Some of most important sites for White-headed Duck are protected, though mainly as non-hunting areas or "Zakazniks" (corresponding to IUCN category IV for protected areas). There are a total of 9 protected areas in the Asian part of Russia and 5 in the European part.

Regular monitoring of the status and distribution of breeding White-headed Ducks are being conducted.

Pakistan
The White-headed Duck is legally protected in all provinces and federal units in Pakistan. It is included in Schedule 3 of protected animals under the Punjab Wildlife Protection, Conservation and Management Act 1974, revised in 1991.

Khabekki, Jahlar, Nammal and Kharal have all been declared as Wildlife Sanctuaries where habitat disturbance, hunting and trapping are prohibited. Ucchali Lake has been declared a Game Reserve where hunting is allowed only under special permit.

The Ucchali Complex, which includes Khabekki, Ucchali and Jahlar Lakes, was designated as a Ramsar site in March 1996. A management plan for this area was formulated by WWF-Pakistan and the Punjab Wildlife and Parks Department in 1994. It was revised subsequently by the Department in 1999.

The White-headed Duck is proposed for inclusion in the official list of threatened bird species (Red Data Book) currently being compiled by WWF- Pakistan.

Tajikistan
Due to the unclear status of the White-headed Duck in Tajikistan, it was not included in the new edition of the Red Data Book of Tajikistan (1988).

Turkmenistan
The White-headed Duck is listed as Vulnerable species – under the category of a "species with declining number" in the second edition of the national Red Data Book (1999).

Legislation and regulations relating to White-headed Duck conservation in Turkmenistan include: Act about preservation and rational usage of fauna, 1997; Act about protected areas, 1992; The Model Statute about Governmental Nature Reserves of Turkmenistan, 1994; The 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); and a "National Caspian Action Plan" (in preparation).

Uzbekistan
The White-headed Duck is protected under the law of the Republic of Uzbekistan on protection and usage of animals (December 1997).

It is included in the national Red Data Book (1983) as a "species close to extinction in Central Asia". In the new edition (in press), the species is categorised as Endangered. The Red Data Book of Uzbekistan is a judicial document, which provides protection for all species included.

The national hunting regulations of Uzbekistan list the White-headed Duck as a species that can not be hunted. High fines are imposed on violators of this regulation.

The most important sites for White-headed Ducks in Uzbekistan are the Sudochye Wetlands and Dengizkul Lake. Both are protected as "Zakazniks" or non-hunting areas (corresponding to IUCN category IV for protected areas). Dengizkul Lake was designated as a Ramsar Site in February 2002.

6. THREATS

Reviews of threats to the White-headed Duck and its conservation by BirdLife International (2000, 2001) conclude that the species has largely suffered from drainage of about 50% of breeding habitat during the 20th century, the threat of pollution to existing sites, competition and hybridisation with Ruddy Duck, drowning in fish nets, hunting and ingestion of lead shot and that the droughts in Kazakhstan could have caused the recent poor breeding seasons.

This section provides information on threats to White-headed Duck and its habitat within the Central Asian region (Table 3) with additional country-specific details provided in Chapter 8 Country Reports. There have been some studies and reports of specific threats to the species and these relate largely to climatic changes and drought, habitat loss and degradation, and hunting and other disturbances. A potential threat to White-headed Duck also exists through the possibility of competition and hybridisation with the introduced Ruddy Duck.

Table 3: Overview of current threats to the White-headed Duck and its habitat in the Central Asian region

Threat	Afghanistan	China	Iran	Kazakhstan	Mongolia	Pakistan	Russia (Asian part)	Tajikistan	Turkmenistan	Uzbekistan
1. Climate change and drought	X	X	X	X	X	X	X	X	X	X
2. Habitat loss and degradation										
Water abstraction	X	X	X	X		X	?	?	X	X
Pollution				?		X				
Introduction of fish species	X		X			X				
Destruction to reed beds			X		X	X				X
Agricultural practices in/around wetlands				X	X	X				
3. Hunting and disturbance										
Hunting				X	?X					
Fishing			X	X		X				
Agricultural practices in/around wetlands				X	X	X				

Notes:
1. India, Kyrgyz Republic and Tajikistan are not included, as there are none/few records of White-headed Duck
2. X indicates the reported occurrence of a threat to the species and/or its wetlands. Further verification is needed on the impact of each threat to the White-headed Duck and its wetlands.

6.1 Climatic changes and drought

Anstey (1989) concluded that continued decline of suitable wetland habitat is the main threat to White-headed Duck in Russia and Kazakhstan. The wetlands are affected by a natural phenomenon of cyclic climatic changes that result in the short-term fluctuation of water levels. As these are naturally shallow wetlands, they only conducive for the species to breed in certain years (Sergei Yerokhov, pers. comm., October 2002). The negative effect of natural climatic changes on the breeding habitat of the species is aggravated by drainage of wetlands for agricultural and other uses.

The drought in the Central Asian region over the last few years has greatly reduced wetland habitat for White-headed Duck and other waterbirds. Many important sites for the White-headed Duck have totally dried out, or its area and water level have greatly reduced in the last few years. For example:

- The Ucchali Complex in Pakistan used to host more that 700 White-headed Duck in the 1980s, but less than 10 birds were recorded in 2002 as the wetlands have almost completely dried out.
- At the Sudochye Wetlands in western Uzbekistan, only 9 White-headed Duck, less than 50 other ducks and three hundred gulls were counted in October 2001. This wetland almost completely disappeared after the very dry summer of 2001. However, in the previous two years, more than 70,000 waterbirds, including 3,800 White-headed Ducks, were recorded here. A GEF World Bank project being implemented in this area includes a lake restoration component that aims to ensure enhanced storage of water in these wetlands and is expected to result in increased waterbird numbers in the future.
- The Dengizkul Lake in Uzbekistan is also degraded as a result of drought over the past years.
- The Sistan wetlands that straddle southwest Afghanistan and Iran have largely dried out.

In 2001, the International Research Institute for Climate Prediction reported that: "A persistent multi-year drought in Central and Southwest Asia has affected close to 60 million people as of November 2001." The principal conclusions of this report were:

- Central and Southwest Asia represent the largest region of persistent drought over the past three years anywhere in the world.
- From a regional perspective, the ongoing drought has been the most severe in recent decades.
- Significant shortfalls in precipitation have led to widespread social and economic impact, particularly in Iran, Afghanistan, Western Pakistan, Tajikistan, Uzbekistan and Turkmenistan. Agriculture, animal husbandry, water resources, and public health have been particularly under stress throughout the region.

Preliminary analysis suggests that the drought is related to large-scale variations in the climate across the Indian and Pacific Oceans, including the recent "La Niña" in the eastern Pacific.

The long-term effects of drought on the viability of White-headed Duck populations are unknown although potentially serious. The lack of water has resulted in degradation and desiccation of critical 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.

6.2 Habitat loss and degradation

The natural climatic changes outlined above have caused significant loss of habitat for White-headed Ducks. However, a range of human uses of the wetlands and their catchment areas have further reduced and degraded the available habitat and has limited the range of wetlands that are presently available to the species. These factors include:

- Overuse and unsustainable use of water resources for irrigation and man-made modifications to many wetlands is the most serious threat. For example, 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 that 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.
- Agricultural practices in and around lakes and rivers have a negative impact by increasing run off and sedimentation rates in some wetlands that affect the productivity and food availability for the White-headed Duck.
- Pollution of wetlands from human activities is reported as a threat in several countries. Leaching and run-off of fertilisers and pesticides from agricultural fields that surround the wetlands of the Ucchali complex in Pakistan are known to pollute the wetlands, although their impact has not been determined (Chaudhry 2002). Pollution from industrial and household sources is affecting several wetlands (Scott 1989).

- Damage to reed beds in wetlands in Uzbekistan and Mongolia results in the loss of nesting habitat of White-headed Duck. Damage occurs through harvest of reeds for human use, cattle grazing (especially through overgrazing) or burning of reed beds for improved fodder production for cattle. Introduction of the Muskrat *Ondatra zibethicus* for its pelt has resulted in the destruction of many reed beds in the temperate regions of Central Asia.
- 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. These introductions are thought to have impacts on the availability of food for White-headed Duck and other waterbird species.

6.3 Hunting and disturbance

Hunting of White-headed Duck is legally banned in most countries. This species is extremely susceptible to hunting pressure (Green *et al.* 1996). While in the last several decades, there is little documented evidence of it being deliberately hunted in the region, it is possible that it is hunted and not reported, especially if it is shot by poachers or accidentally by hunters who are unable to identify this species. Though there is widespread use of lead shot by hunters in the region, there are no reports of the impact of ingestion of lead shot in White-headed Duck from Pakistan or elsewhere in the Central Asian region. This may be due to the lack of sufficient observations and inability of hunters and local authorities to detect the symptoms and cause of death of birds poisoned by lead.

Additionally, human activities in or around lakes have both direct and indirect effects on White-headed Duck. Fishing activities and disturbance by monofilament fish nets are recognised as an increasing problem in Iran, Kazakhstan and Pakistan.

6.4 Competition and hybridisation with Ruddy Duck

The European population of White-headed Duck is threatened with competition and hybridisation with the Ruddy Duck that was introduced in UK in the 1950s. It has established itself in UK and thereafter spread to continental Europe where it has also established itself in Spain, and has been regularly recorded from north, west and eastern Europe. It has been recorded in North Africa (Morocco) and Asia (Hughes 1996). Control measures have been successful but the species is still persists in Europe. Observations in UK, Spain and elsewhere have demonstrated that the hybrids are stable over several generations. Ruddy Ducks known to be the most aggressive of all Anatidae species (Hughes 1992) and limited observations from Spain suggest that the Ruddy Duck and hybrids are dominant over all Anatidae with which they have been observed (Hughes 1996).

Although records of Ruddy Duck in Asia are scarce (with very few records from Israel and Turkey), these serve as evidence of the bird's migratory capabilities and potential to spread into the breeding population in Central Asia. Monitoring of the eastward movement of Ruddy Duck and of hybrids would be valuable to enable preventive measures to be undertaken before there is a threat to the main Central Asian breeding birds.

7. RECOMMENDATIONS

Six main recommendations have been proposed for conservation of the White-headed Duck in the Central Asian Region. These include:

7.1 All countries need to undertake a review of their national policy and legislation to ensure adequate legal protection for the White-headed Duck and its enforcement.

The study has revealed that this species is not recognised as a globally endangered species in need of protection in the national legislation of all the countries.

7.2 Sustainable management of water resources is needed to ensure adequate allocation of water to maintain viability of wetland habitats used by White-headed Duck.

This is the highest priority for the conservation of the threatened populations of White-headed Duck, and many other waterbird species in the Central Asian region. The Action Plan for Migratory Waterbirds in the Central Asian Flyway, is also expected to include measures to address water management and wetland conservation issues in Central Asian countries. The Action Plan should be endorsed by conservation authorities in each country and adequately resourced to ensure its implementation.

7.3 Site conservation measures, such as the establishment of an international network of sites of importance for migratory waterbirds, including the White-headed Duck, need to be pursued.

The site network should ensure the conservation of important wintering, migratory and breeding sites of this species. Restoration of previously important wetlands for migratory waterbird species should also be considered.

7.4 A flyway-wide project should be developed for conservation of the White-headed Duck and its wetland habitats through building and strengthening links between wetland managers and organisations involved in the conservation of the White-headed Duck across the region.

The project should include activities on site management, habitat restoration, species identification and monitoring, training, publication of information material, education and awareness raising.

7.5 A comprehensive population-monitoring programme should be developed to monitor the distribution and the status of the White-headed Duck in the Central Asian region during the wintering, migratory and breeding seasons.

Information on the distribution and number of birds is still inadequate for many areas and countries. Therefore a comprehensive approach is required to monitor the status of the species.

7.6 Research to define the migration routes and population boundaries of the White-headed Duck is urgently required.

Satellite-tracking of selected individuals should be able to provide useful information on the main routes and staging areas (once satellite-tracking technology can be used for this species). This should be considered a priority. Migration studies through colour marking and banding (ringing) activities should also be considered, with the involvement of all countries.

In addition to these recommendations, a number of country specific recommendations have been madein Chapter 8 Country Reports.

8. COUNTRY REPORTS

This Chapter contains detail information on the status of White-headed Duck in all countries in the Central Asian region. A list of all sites with location details for all White-headed Duck records since 1980 is provided in Appendix A. Detailed information sheets for some key sites for White-headed Duck is provided in Appendix B.

8.1 AFGHANISTAN

8.1.1 Historical records and distribution

The status of the White-headed Duck is generally unclear in Afghanistan. However, this species has been recorded at a few sites in Afghanistan in the 1960s-1970s.

At the Kole Hashmat Khan Lake, White-headed Ducks were recorded in small numbers on passage in the 1960s and 1970s, and may have bred (see Map 2). At the Ab-I Istada Lake near the Pakistan border, White-headed Duck was recorded in May 1977 (Anstey 1989).

The Hamun-i Puzak Lake, located on the border with Iran, seems to have been one of the most important sites for White-headed Duck in Afghanistan (Scott 1995). The species is known to have been sedentary and bred in the marshes in the early part of the last century. The only record of White-headed Duck on the Iranian side of the border was a flock of 42 birds at the south end of the Hamun-i Puzak in one winter during the 1970s. Most of the Hamun-i Puzak which lies in Afghanistan, normally does not dry out, and provides a good habitat for White-headed Duck. An aerial survey of this lake in January 1976 by Derek Scott and others found at least 10 White-headed Duck (Scott 1995 and pers. comm., April 2002).

Map 2: Distribution of the White-headed Duck in Afghanistan during the 1960s-1970s.

No.	Site name	Location
1	Ab-I Istada Lake near the Pakistan border	32°30'N, 67°55'E
2	Hamun-i Puzak Lake border with Iran	31°20'-31°40'N, 61°35'-61°50'E
3	Kole Hashmat Khan Lake	34°30'N, 69°12'E

However, it is expected that the severe drought over the last years (International Research Institute for Climate Prediction 2001) would have resulted in the desiccation of this wetland and other wetlands previously used by White-headed Duck.

8.1.2 Recent records and distribution
No available information.

8.1.3 Population and trends
Unclear.

8.1.4 Conservation status
Unclear.

8.1.5 Threats
Drought. Other threats are unclear.

8.1.6 Recommendations
The long running war and its negative impact on the national economy has resulted in a breakdown in government structures and functions. As these are being rebuilt, it is to be expected that government agencies will have a limited capacity and consider it a lower priority to undertake conservation efforts for a threatened species in the next few years.

The authors of the report have proposed the some recommendations in recognition of the limited current knowledge base that exists and/or is being reported on birds and habitats in the country:

- Conduct a comprehensive survey of wetlands to identify important sites and population status of White-headed Duck in Afghanistan.

- Identify conservation needs of White-headed Duck and restoration/management needs of the important staging and wintering sites for the species.

- Establish a regular monitoring programme of waterbirds, in conjunction with the Asian Waterbird Census and other monitoring programmes, at all potential and suitable habitats for the threatened White-headed Duck and other species.

- Identify training and other needs of local government personnel to undertake monitoring and conservation measures of White-headed Duck and other waterbirds and their habitats.

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8.2 CHINA

8.2.1 Historical records and distribution
The White-headed Duck is a very rare species in China. The status and distribution of its population is unclear. Breeding birds have been recorded in the Junggar Basin and Tian Shan Mountain in western Xinjiang Autonomous Region (Cheng Tso-hsin 1987). There is a single wintering record of a bird in November 1961 in Honghu Lake, Hubei Province (Guan Guanxun and Cheng Tso-hsin 1962).

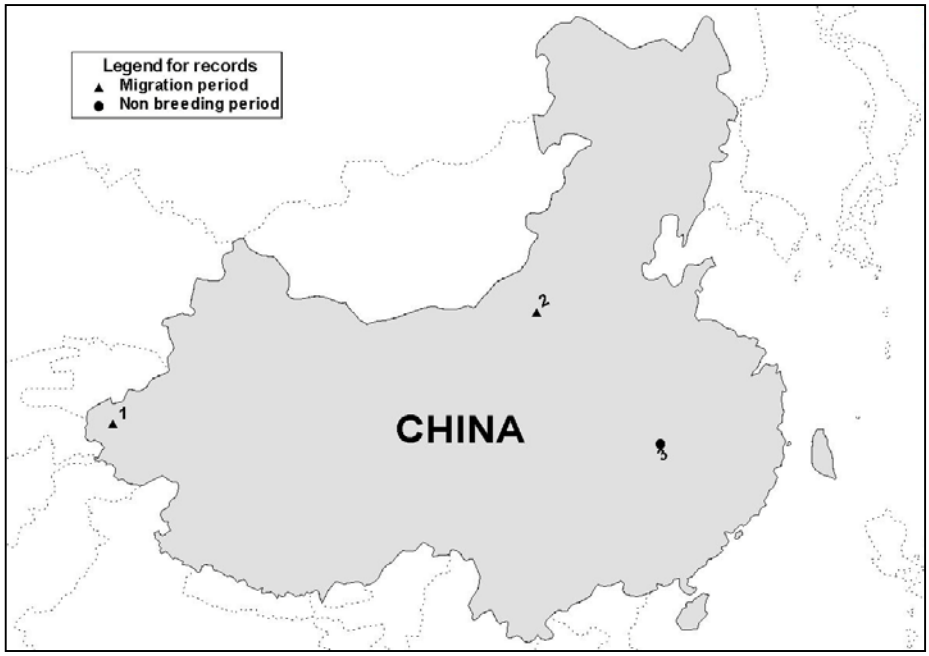
8.2.2 Recent records and distribution
One female was recorded in Ordos Lake, at the Inner Mongolia Autonomous Region in late March 1999 (He Fenqi, pers. comm., May 2002). In March 2001, one bird was recorded at Caisang Lake, in the northwestern corner of East Dongting Lake, Hunan Province. As with the record from Honghu in 1991, this bird was most likely a vagrant (Lei Gang, pers. comm., October 2002; Sebastian and Davies 2001). According to Ma Ming (2001), the species could be found at several locations in western Xinjiang Autonomous Region - Tian Shan, Kezilesu Autonomous Region, Aktao, Boston Lake, Yanqi, Heshuo and Changji during the migratory, wintering and breeding seasons.

An overview of records of White-headed Duck in China is summarised in Table 4 and site locations are provided in Map 3.

Table 4: Recent records of the White-headed Duck in China, 1980-2002.

Date	No. of birds recorded	Site name and location	Counter/source
March (1981-1988)	Some specimens	Akto, Near Kashi City, West Xinjiang Autonomous Region	Ma Ming 2001
Late March 1999	1 male	Ordos Lake, Inner Mongolia Autonomous Region	MacKinnon *et al.* 2000
March 2001	1	Caisang Lake, northwest corner of East Dongting Lake, Hunan Province	Sebastian and Davies 2001

Map 3: Distribution of the White-headed Duck in China during 1980-2002.



No.	Site name	Location
1	Akto, Near Kashi City, Western Xinjiang	39°10'N, 76°00'E
2	Ordos, Inner Mongolia	39°48'N, 109°20'E
3	Caisang Lake, northwest corner of East Dongting Lake, Hunan Province	29°27'N, 112°48'E

8.2.3 Population and trends

With very few observations, the population size and trend of White-headed Duck is unclear in China. However the species may be decreasing in Xinjiang (Ma Ming, pers. comm., May 2002); as increased use of water for agriculture in the region and a cycle of extended drought have changed water conditions in many wetlands.

8.2.4 Conservation status

The White-headed Duck is listed in the Red Data Book of China (Wang *et al*. 1998). The species is not listed as a nationally protected species.

Several nature reserves have been established in the Xinjiang Autonomous Region; these are potential areas for the White-headed Duck. These include the Bayinbuluk National Reserve (148,689 ha), Tian

Shan Tianchi Nature Reserve (38,069 ha) and Hanasi Nature Reserve (220,162 ha). Other areas where White-headed Duck have been recorded such as East Dongting Lake in Hunan Province, Ordos Lake in Inner Mongolia Autonomous Region and Honghu Lake in Hubei Province, have been legally protected as nature reserves.

8.2.5 Threats

In Xinjiang the main threats to White-headed Duck and it's habitats are fishing, hunting, agricultural expansion and over-grazing. Additionally, the rapid increase of human population has resulted in increasing pressure on natural resources, including water (Ma Ming, pers. comm., May 2002).

Drought and unsustainable use of water resources in Xinjiang and Inner Mongolia may also pose a threat to White-headed Duck and its habitats.

8.2.6 Recommendations

The following recommendations have been proposed primarily on the basis of information and feedback from government and non-government respondents to the survey.

- Conduct a comprehensive survey to determine the population status and distribution of breeding and staging sites of White-headed Duck in Xinjiang Autonomous Region and Inner Mongolia Autonomous Region.

- Undertake regular winter waterbird census in the lakes of southern China to identify and monitor this threatened species.

- Strengthen ongoing waterbird monitoring activities to ensure coverage of White-headed Duck sites to determine population trends of this threatened species.

- Establish nature reserves covering the main White-headed Duck habitats on the basis of surveys to ensure conservation of breeding, staging and wintering sites of this eastern-most population.

- Ensure protection of key sites for White-headed Duck from hunting and other disturbances and changes in ecological character of the wetlands.

- Promote sustainable use and management of water resources, especially during drought years, to ensure adequate water levels at breeding and staging sites of White-headed Duck.

- Undertake awareness raising activities through the media to highlight the need for conservation of key sites for White-headed Duck.

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8.3 INDIA

8.3.1 Historical records and distribution

The White-headed Duck is a rare winter visitor to North India. Historical records in the late 19th and early 20th century reveal that the birds were found from northern India, south to eastern Rajasthan and central Uttar Pradesh (Ali and Ripley 1983, BirdLife International 2001). Hume (1887) remarked that this duck population has not recovered for many years, and many immature birds were shot during the early 1880s.

8.3.2 Recent records and distribution

In January 1997, a team of eight persons, from the Centre of Wildlife and Ornithology, Aligarh Muslim University, conducted a waterbird count in Amakhera wetland, near Aligarh in Uttar Pradesh (see Table 5 and Map 4). One White-headed Duck was found, representing a new record for this area and the most recent record from India (M. Zafar-ul Islam, pers. comm., May 2002). Other than this, one bird was recorded in Harike Lake in Punjab in September 1984 by the Bombay Natural History Society (BirdLife International 2001).

Table 5: Recent records of the White-headed Duck in India, 1980-2002.

Date	No. of birds recorded	Site name and location	Counter/source
September 1984	1	Harike Lake, Punjab	BirdLife International 2001
January 1997	1	Amakhera wetland, 40km from Aligarh, Uttar Pradesh	M. Zafar-ul Islam, pers. comm., May 2002

8.3.3 Population and trends

The species is a rare and declining winter visitor to northern India (M. Zafar-ul Islam, pers. comm., May 2002).

8.3.4 Conservation status

The White-headed Duck is included in the Red Data Book of India. Hunting/poaching of the species is not allowed as stated in the Wildlife (Protection) Act 1972 of India.

The White-headed Duck may also be protected at a local level as many Indian wetlands with large waterbird congregations (especially during the northern winter months) are protected by local people who often do not allow hunters to enter these areas.

Given its extreme rare status, no active research has been conducted on White-headed Duck in India. Waterbird counts and a ringing programme coordinated by the Bombay Natural History Society provide quantitative information on many other waterbird species.

Map 4: Distribution of the White-headed Duck in India during 1980-2002.

No.	Site name	Location
1	Amakhera wetland, Uttar Pradesh	27°31'N, 78°19'E
2	Harike Lake, Punjab	31°10'N, 75°00'E

8.3 5 Threats

Intensive hunting in northern India during the early part of the last century has presumably contributed to the decline of the species wintering in this region. Ali (1936) commented, "no one who has visited the

larger dhands or jheels in.…northern India during the cold weather can have failed to remark upon the magnitude of the netting operations that go on throughout this season for supplying the markets of the larger towns, both near and distant, with wildfowl of every description for the table." Local inhabitants around these lakes apparently subsist largely on duck meat during the winter, at least when duck numbers were high enough. With the increasing human population, hunting pressure has presumably been extreme and overall waterbird numbers have fallen dramatically as a result.

In the state of Jammu and Kashmir, an estimated 4,000-8,000 geese and ducks have been killed in each winter hunting season during the 1980s, although this was believed to be an underestimate because a large number of illegal hunting was also being conducted (Pandit 1982). Waterbird populations in the state have been undoubtedly suffering from these high levels of exploitation. Added to the direct pressure on the birds, deterioration of wetland habitats through drainage, siltation and development (Pandit 1982) have presumably led to the apparent disappearance of the White-headed Duck from the state.

Harike Lake where the species has been recorded has become clogged with Water Hyacinth *Eichhornia crassipes* (Ali *et al*. 1983, Scott 1989, Singh 1992). In 1980, only 40% of the lake was covered with the weed, while over 70% of the lake was covered in 1989, and 75% in 1994 (Scott 1989, Ladhar 1994). The Lake also suffers from siltation and there are fears that it is drying out and becoming unsuitable for wildlife (Ali *et al*. 1983, Scott 1989, Singh 1992). Deforestation and erosion of the watershed have accelerated this process dramatically, and at the current rate of shrinkage, the wetland would disappear in 80 years (Ladhar 1994). Similar problems affect many Indian wetlands, especially those in the north (Scott 1989). Harike Lake is also threatened by wildlife poachers (Singh 1992) and 24-hour fishing has been reported to cause disturbance in the 1980s (Scott 1989). Gill nets used by fishermen at the lake have also led to mortality of waterbirds (Scott 1989) and has been considered a threat to White-headed Duck in Pakistan and Kazakhstan (refer sections 8.5.5 and 8.8.5).

8.3.6 Recommendations

The following recommendations have been proposed primarily on the basis of information and feedback from government and non-government respondents to the survey.

- Conduct regular monitoring of waterbirds at all potential and suitable habitats for the threatened White-headed Duck in conjunction with the Asian Waterbird Census and other monitoring programmes.

- Protect key sites for White-headed Duck from hunting and other disturbances and changes in ecological character of the wetlands.

- Undertake awareness raising through the media to highlight the need for conservation of key sites for White-headed Duck.

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8.4 ISLAMIC REPUBLIC OF IRAN

8.4.1 Historical records and distribution

Five elements in the population of White-headed Duck in Iran have been identified during studies in the 1970s (Scott 1995; Derek Scott, pers. comm., May 2002).

- A wintering population in southeast Caspian, based on Gorgan Bay and lakes on the Turkoman Steppes to the east (36°35'-37°23'N, 49°55'-54°52'E). In normal winters, only 20-30 birds are found in this area, but in the winter of 1971/72, there were at least 453.

- A small breeding population in the Azerbaijan and Kurdistan Provinces in northwestern Iran (36°57'-37°50'N, 45°30'-46°40'E). An estimated 5-10 pairs of White-headed Duck were present in lakes in the Orumiyeh Basin (Yadegarlu, Dorgeh Sangi and Kobi Lake), several pairs at Gorigol and Zaribar Lake (Kurdistan). These were summer visitors, as the lakes freeze over in winter. They are assumed

to have migrated west to winter in Turkey, as there were no records from Khuzestan Province in southwestern Iran, and the species seems to be very rare in Iraq.

- Passage birds in the Orumiyeh Basin in Azerbaijan (36°57'N, 45°30'E). A count of at least 100 at Kobi Lake on 23 November 1972 suggested that some birds were passing through Azerbaijan (along with huge numbers of other ducks) during the southward migration. It is supposed that these belonged to the East Mediterranean/Turkey/Southwest Asia wintering population.

- A small and apparently rather sedentary breeding population in the wetlands of the southern Zagros mountains - centred around Dasht-i Arjan and Parishan Lake in Fars Province (28°10'-31°50'N, 50°50'-53°30'E). The highest count in the 1970s was a count of 93 birds at Parishan Lake in the winter of 1969/70. Only a few pairs bred at Parishan Lake, and it is suspected that the others dispersed to breed in lakes at higher elevations in the general area (these lakes freeze over in winter).

- Birds that are occasionally observed in the Seistan wetlands on the Iran/Afghanistan border (31°20'N, 61°45'E). During the early 1970s, the Iranian portion of these wetlands dried out completely, so it is unlikely that there is a resident, regular wintering or passage population here. An aerial survey of the Hamoun-i Puzak in January 1976 by Derek Scott and his team found at least 10 White-headed Duck.

8.4.2 Recent records and distribution

According to data provided by the Department of Environment, Iran (Hamid Amoni, Sadegh Sadeghi Zadegan, Yavar Shahbazi and Behrouz Behrouzi-Rad, pers. comm., April 2002) and Behrouzi-Rad (1996), White-headed Duck are mainly distributed in the following three areas in the last 10 years:

- The wintering population in southeast Caspian Sea, based on Gorgan Bay and the lakes on the Turkoman Steppes to the east appears to have increased. In January 1995, 1,483 birds were recorded in the area and 584 in January 2002.

- The small breeding population in Eastern Azerbaijan (Zoulbin, Yanigh, Bozojigh and Ghorigol). In the breeding season of 1996, 46 birds were recorded in this area, 67 in 1997; 241 in 1998; 125 in 1999; 83 in 2000 and 170 in 2001, although the number of breeding pairs is not known.

- The wintering population in the wetlands of the southern Zagros, centred around Dasht-i Arjan and Parishan Lake in Fars Province. In January 1988, 455 birds were recorded in the Parishan Lake. Small numbers of White-headed Duck were regularly recorded during the 1990s in this region. The latest count was 4 birds recorded at Parishan Lake in January 2001.

An overview of records of White-headed Duck in Iran is summarised in Table 6 and site locations are provided in Map 5.

8.4.3 Population and trends

The size and the trends of the White-headed Duck population in Iran are unclear due to inconsistent surveys and monitoring. Drought conditions in some years result in fluctuations in the status and distribution of the wintering population. The peak counts of the species have been 1,485 in January 1995 and 591 in January 2002 (Hamid Amoni, Sadegh Sadeghi Zadegan and Yavar Shahbazi, pers. comm., April 2002).

8.4.4 Conservation status

The White-headed Duck is a threatened bird in Iran and the law prohibits its hunting. Under Article 13 of the 1967 Game and Fish Law (as amended in 1996), the hunting of rare and endangered wild animals is forbidden.

The birds of Iran have not been categorised within a National Red List. However, the IUCN Red List is recognised by the Department of Environment.

Except for the Zoulbin, Yanigh and Bozojigh areas, all of the other sites are protected as follows: Ghorigol - Ramsar Site, Non Hunting Area, Miankaleh - Ramsar Site, Biosphere Reserve and Protected Area, Arjan and Parishan: Ramsar Site -Biosphere Reserve, and Protected Area, and Gandoman -Wildlife Refuge.

Table 6: Records of the White-headed Duck in Iran, 1980-2002.

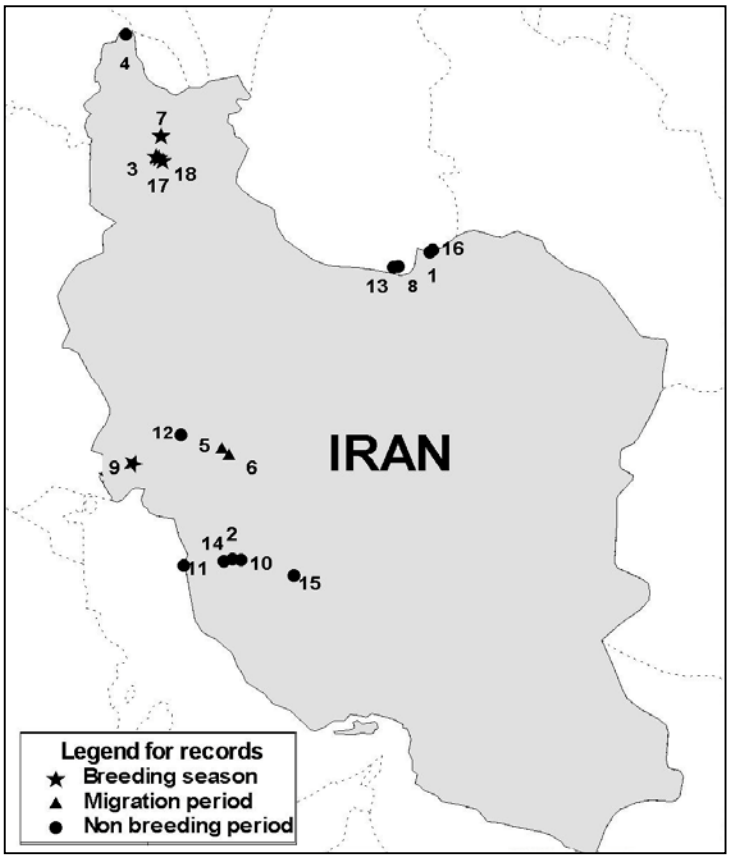
Date	No. of birds recorded	Site name and location	Counter/source[2]
Jan 1988	173	Helleh Region	Asian Waterbird Census database (AWC)
Jan 1988	455	Parishan Lake, Zagros Mountains, Fars Province	AWC
Jan 1991	12	Parishan Lake	AWC
Jan 1991	7	Gorgan Bay	AWC
Jan 1992	17	Parishan Lake	AWC
Jan 1992	3	Miankaleh Protected Area, southeast corner of the Caspian Sea, Mazandaran	AWC
Jan 1993	12	Haftbarm, Fars Province	Heidar Farhadpour
Jan 1993	52	Parishan Lake	Heidar Farhadpour
Jan 1994	37	Arjan, Fars Province	Heidar Farhadpour
Jan 1995	1,450	Ulma Gol Lake, Mazandaran	International Waterbird Census database (IWC)
Jan 1995	33	Miankaleh Protected Area	IWC
Jan 1995	2	Parishan Lake	Heidar Farhadpour
Jan 1996	13	Arjan, Fars Province	Heidar Farhadpour
June 1996	29	Zoulbin, Eastern Azerbaijan	Shahbazi
June 1996	17	Yanigh, Eastern Azerbaijan	Shahbazi
Sep 1996	8	Bozojigh, Eastern Azerbaijan	Shahbazi
Nov-Dec. 1996	17	Izeh, Khuzestan Province	Behrouz Behrouzi-Rad
April 1997	4 (1M+1F+2J)[1]	Gorgor, south Iran	Behrouz Behrouzi-Rad
11 May 1997	1	Gorgor	Behrouz Behrouzi-Rad
Jan 1997	35	Arjan	Heidar Farhadpour
Feb-Mar 1997	10	Chaghakhor, Upper Karun River in Zagros Mountains	Department of Environment (DoE.) Cheharm- ahal Province
Feb-Mar 1997	6	Gandoman, Upper Karun River in Zagros Mountains	DoE. Cheharm- ahal Province
June 1997	42	Ghorigol	Shahbazi
Sep 1997	25	Bozojigh	Shahbazi
June 1998	108	Ghorigol	Shahbazi
June 1998	45	Zoulbin	Shahbazi
Sep 1998	88	Bozojigh	Shahbazi
Jan 1999	26	Tashk and Kamjan, Fars Province	Heidar Farhadpour
June 1999	87	Ghorigol	Shahbazi
Sep 1999	38	Bozojigh	Shahbazi
June 2000	83	Ghorigol	Shahbazi
Jan 2001	4	Parishan Lake	Heidar Farhadpour
June 2001	170	Ghorigol	Shahbazi
Jan 2002	534	Alagol Lake, Mazandaran	DoE, Golestan Office
Jan 2002	50	Miankaleh Protected Area	Vetr and Bathaii
Jan 2002	7	Bur Alan, West Azerbaijan	Raanaghad and Abbasnejad

Notes:
[1] - Male - M, Female - F, Juvenile – J
[2] – Information provided by Department of Environment, Iran (Hamid Amoni, Sadegh Sadeghi Zadegan, Yavar Shahbazi and Behrouz Behrouzi-Rad, pers. comm., April 2002).

8.4.5 Threats

Hunting of White-headed Duck is legally forbidden in Iran. Although illegal hunting may occasionally take place, it is not considered a threat to the population. Egg collecting does not occur. Reduced water levels during the breeding season may cause nests to be abandoned and may allow terrestrial predators access to eggs (Hamid Amoni, Sadegh Sadeghi Zadegan and Yavar Shahbazi, pers. comm., April 2002). Birds are caught and drowned in fishing nets (Derek Scott, in Green and Hughes 1996).

Map 5: Distribution of the White-headed Duck in Iran during 1980-2002.



No.	Site name	Location
1	Alagol Lake, Mazandaran	37°21'N, 54°35'E
2	Arjan, Fars Province	29°37'N, 51°59'E
3	Bozojigh, East Azerbaijan	37°27'N 46°46'E
4	Bur Alan, West Azerbaijan	39°40'N, 44°45'E
5	Chaghakhor, Upper Karun River, Zagros Mountains	31°55'N, 50°54'E
6	Gandoman, Upper Karun River, Zagros Mountains	31°50'N, 51°07'E
7	Ghorigol, East Azerbaijan	37°55'N, 46°42'E
8	Gorgan Bay	36°52'N 53°53'E
9	Gorgor, south Iran	Approx. 30°30'N, 48°30'E
10	Haftbarm, Fars Province	29°40'N, 52°10'E
11	Helleh Region	29°09'N, 50°55'E
12	Izeh, northeast of Ahwaz, Khuzestan Province	31°54'N, 49°52'E
13	Miankaleh Protected Area, southeast Caspian Sea, Mazandaran	36°50'N, 53°45'E
14	Parishan Lake, Zagros Mountains, Fars Province	29°31'N, 51°48'E
15	Tashk and Kamjan, Fars Province	29°40'N, 53°30'E
16	Ulma Gol Lake, Mazandaran	37°25'N, 54°38'E
17	Yanigh, East Azerbaijan	37°25'N, 46°59'E
18	Zoulbin, East Azerbaijan	37°27'N 46°51'E

8.4.6 Recommendations

The following recommendations have been proposed primarily on the basis of information and feedback from government and non-government respondents to the survey.

- Undertake a research project to determine and monitor the breeding population and breeding habitats of White-headed Duck.

- Conduct regular monitoring of waterbirds at important breeding, wintering, and staging sites of White-headed Duck.

- Promote sustainable use and management of water resources, especially during drought years, to ensure adequate water levels at breeding, staging and wintering sites of White-headed Duck.

- Protect all wetland habitats where White-headed Duck has been found in recent years.

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8.5 KAZAKHSTAN

8.5.1 Historical records and distribution

Kazakhstan is known to hold the largest population of breeding White-headed Duck in the world (Cresswell *et al.* 1999). Important habitats for White-headed Duck in Kazakhstan are located in the northern steppe region of the Republic. These habitats have a natural cycle of high and low water that takes place over several years. In the high water periods during summer, a number of areas are available as breeding habitats for the White-headed Duck. There may be about five years of good conditions for breeding of White-headed Duck followed by a drying cycle of 8 to 10 or 12 years of poor rain. So, for 4-6 years after high water, conditions are suitable for breeding, moulting and staging White-headed Ducks. After that, the water becomes shallow and saline and the habitat is no longer suitable for White-headed Duck to breed. The birds prefer a water depth of greater than 2 m (Sergey Yerokhov, pers. comm., October 2002).

The main breeding populations are located in the Tengiz-Korgaldzhyn Lakes Region (see Table 7 and Map 6). The Nura River supplies freshwater to Tengiz-Korgaldzhyn Lakes (Sergey Yerokhov, pers. comm., October 2002). Approximately 30-70 individuals were recorded in the 1960s in this region (Anstey 1989). The Naurzumskiy Lakes receive water from melted snow.

Table 7: Records of the White-headed Duck in Kazakhstan until 1980.

Date	No. of birds recorded	Site name and location	Counter/source
May-September 1969-1989	230 pairs	Presnovskiy and Mibalykskiy Lakes and Naurzumskiy Lakes in northern Kazakhstan. Chany and Baganskiy Lakes, southwest Siberia, Russia[1].	Gordienko *et al*. 1986 Gordienko 1995, 1998
1960s	30-70	Korgalzhyn Lake, Tengiz-Korgalzhyn Lakes Region	Anstey 1989
1960s	30 pairs	Naurzumskiy Lakes	Anstey 1989
16 April 1976	12	Raim Lake, Kamysh-Samara Lakes	Morozov and Shevchenko 1998
19 April 1976	120	Aidyn Lake, Kamysh-Samara Lakes	Morozov and Shevchenko 1998
Breeding season 1976	3	Kamysh-Samara Lakes	Morozov and Shevchenko 1998

Note: [1]The record refers to southern Russia and northern Kazakhstan

The lakes in the south do not have the same natural water cycles and receive water from more regular water sources. Formerly, the east coast of the Aral Sea and the Syr Darya River was an important breeding area, but now the birds are only recorded during migration and reasons for this change are not clear (Sergey Yerokhov, pers. comm., October 2002).

The Kamysh-Samara Lakes in the North Caspian region of Kazakhstan, including Aidyn, Soraidyn and Raim Lakes, near the mouth of Malyj Usen' River, Novaya Kazanka region was an important area for breeding and spring migration during the 1970s to 1980s (Morozov and Shevchenko 1998).

8.5.2 Recent records and distribution

In the last decade there have been a number of studies of waterbirds that have revealed new information on the status of White-headed Duck in Kazakstan. An overview of records of White-headed Duck in Kazakhstan is summarised in Table 8 and site locations are provided in Map 6.

In the Presnovskiy, Mibalykskiy and Naurzumskiy Lakes in northern Kazakhstan, breeding was recorded during 1969 to 1989 by Gordienko (1986, 1995, 1998, 2001). In 1998, White-headed Duck were observed during migration at Naurzumskiy Lakes (Kovshar and Berezovikov 2000). In June 2001, 3 birds were recorded by Goetz Eichhorn (pers. comm., August 2002) in this region.

Around northern Caspian and the Ural Delta, the birds are now observed each summer but no breeding has been recorded. In northwest Kazakhstan the birds are known to breed, but an estimate of the breeding population is not available (Sergey Yerokhov, pers. comm., October 2002). Based on observations made during the northward migration in 1982-1996 at Kamysh-Samara Lakes, 105 birds were recorded during the breeding season in 1986 (Morozov and Shevchenko, 1998).

Figures from lakes in the Tengiz-Korgalzhyn depression, central Kazakhstan, reveal the great importance of this particular region for breeding, moulting and staging White-headed Duck. There was a maximum count of 1,918 individuals in the whole area during summer/autumn 1999 made by Goetz Eichhorn and Thomas Heinicke, a few hundred pairs estimated in May 2000 by Thomas Heinicke, a maximum count of 3,700 counted by Lars Lachmann in September 2000, and a maximum count of 1,708 in August-September 2001 by Joerg Ratayczak (Lachmann *et al*. in preparation). Data collected during the northward migration by these authors is not yet sufficient to provide an indication of the relative importance of this area during this period. However, records of a flock of 800 duck in the spring of 1998 (Cresswell *et al.* 1999) indicate the importance of this area during this period.

The latest count of White-headed Duck in the Tengiz-Korgalzhyn region was conducted in summer/autumn 2002 by Holger Schielzeth. During the survey, 72 birds were counted in July, 1,269 birds in early August, 1,067 birds in late August, 4,021 birds in the middle of September, and 2,709 birds in early October. By 15 October, nearly all the White-headed Ducks had left with only 4 birds present. At this time severe weather conditions with freezing temperatures of -10^{o}C, have caused many lakes to be frozen. The highest count in 2002 was 4,021 birds during 12 to 23 September. However, two important sites, Kumdykol and Nygis Lake are not included, which supposedly hold another 1,000 birds. Therefore the minimum estimate for the White-headed Duck would be around 5,000 birds in the Tengiz-Korgalzhyn Region during the post-breeding and autumn migration season (Lars Lachmann *et al.* in preparation, Holger Schielzeth, pers. comm., October 2002).

Andrew Grieve (pers. comm., May 2002) recorded over 2,800 White-headed Duck at Kyzylkol Lake, southern Kazakhstan in September 2001 at a time when simultaneously at least 1,100 White-headed Duck were still present in the Tengiz-Korgalzhyn Region. Other records for this species at the Kyzylkol Lake are of 20 individuals (6 males and 14 females) counted on 28 May 2001. In mid September 2002, Andrei Gavrilov observed around 2,000 White-headed Duck at Kyzylkol Lake and about 800 birds were seen by Joost van der Ven in mid October 2002 (Joost van der Ven, pers. comm., November 2002). On 30-31 May 2001 on the lakes of Kaldykol and Biyikkol, 2 male individuals were recorded (Belyalov *et al.* 2002).

Six birds have been recorded in eastern Kazakhstan at Alakol Lake in September 1998 (Cresswell *et al.* 1999), where the species has not been recorded during the breeding season since the 1970s (Sergey Yerokhov, pers. comm., October 2002).

In southeastern Kazakhstan, after 10 White-headed Duck were recorded in 1980-1981 at the Sorbulak Lake, 24 individuals (17 males and 7 females) were recorded there on 20 March 2001, and on 1 May 2001, 6 ducks with 1 displaying male were recorded there (Belyalov *et al.* 2002). In September 2001, 6 birds were recorded (Andrew Grieve, pers. comm., May 2002). White-headed Duck sometimes occur on the floodplain lakes of Topar River of the Taukmy Desert on migration. On 12 March 1998, one pair was hunted, and one bird was recorded in this region on 27 May 1998 (Berezovikov *et al*. 1999).

Table 8: Records of the White-headed Duck in Kazakhstan, 1980-2002.

Date	No. of birds recorded	Site name and location	Remarks[1]	Counter/Source
May-September 1969-1989	230 pairs	Presnovskiy and Mibalykskiy Lakes and Naurzumskiy Lakes in northern Kazakhstan. Chany and Baganskiy Lakes, southwest Siberia, Russia.	The record refers to southern Russia and northern Kazakhstan	Gordienko *et al*. 1986 Gordienko 1995, 1998
21 April 1982	46	Raim Lake		Morozov and Shevchenko 1998
21 April 1985	250	Raim and Aidyn Lake		Morozov and Shevchenko 1998
9 April 1986	490	Aidyn Lake		Morozov and Shevchenko 1998
Breeding season 1986	105	Kamysh-Samara Lakes		Morozov and Shevchenko 1998
27 April 1987	51	Aidyn Lake		Morozov and Shevchenko 1998
16 April 1996	18	Raim Lake		Morozov and Shevchenko 1998
17 April 1996	49	Soraidyn Lake, Kamysh-Samara Lakes		Morozov and Shevchenko 1998
Spring 1998	800	Tengiz-Korgalzhyn Lakes Region (TKL) - Korgalzhyn Lake		Cresswell *et al.* 1999
12 March 1998	one pair	Topar River, Taukmy Desert, southeastern Kazakhstan	hunted	Berezovikov *et al*. 1999
27 May 1998	one bird	Topar River		Berezovikov *et al*. 1999
2 May 1998	6	Malyi Aksaut Lake of Naurzumskiy Lakes.		Kovshar and Berezovikov 2000
27 Jul 1998	3	TKL - Korgalzhyn Lake	(1F +2J)	Cresswell *et al.* 1999
29 July 1998	12	TKL - Kokai Lake	(4M+8F/J)	Cresswell *et al.* 1999
24 Sep 1998	6	Alakol Lake, east Kazakhstan	(2M+4F/J)	Cresswell *et al.* 1999
27 Sep 1998	15	TKL - Kokai Lake	(4M+11F/J)	Cresswell *et al.* 1999
9-12 May 1999	119	TKL - Korgalzhyn Lake	48 adult male	Lachmann *et al*. in prep.
23 Jul-7 Aug 1999	860	TKL - Korgalzhyn, Saumalkol, Zhumaj Lakes	481 adult male	Lachmann *et al*. in prep.
14 Aug-1 Sep 1999	1,918	TKL – Korgalzhyn, Saumalkol, Zhumaj Lakes		Lachmann *et al*. in prep.
10-21 Sep. 1999	1,420	TKL – Korgalzhyn, Saumalkol, Zhumaj, Kumkol Lakes		Lachmann *et al*. in prep.
29 Sep 1999	299	TKL – Saumalkol Lake		Lachmann *et al*. in prep.
8-11 Oct. 1999	133	TKL - Saumalkol, Kumkol Lakes	Saumalkol 108, Kumkol 25	Lachmann *et al*. in prep.
15 May 2000	24	Kyzylkol Lake near Syr Darya Karatau, south Kazakhstan	(12 pairs)	Andrew Grieve, pers. comm., April 2002
May 2000	A few hundred pairs	TKL		Lachmann *et al*. in prep.

Date	No. of birds recorded	Site name and location	Remarks[1]	Counter/Source
21 Jul-8 Aug 2000	270	TKL – Korgalzhyn, Sholak, Saumalkol, Zhumaj, Kumkol Lakes		Lachmann *et al*. in prep.
7-21 Sep 2000	3,700	TKL - Korgalzhyn, Sholak, Saumalkol, Zhumaj, Kumkol, Kumdykol and Nygis Lakes		Lachmann *et al*. in prep.
5-9 Oct 2000	715	TKL - Korgalzhyn, Kumkol, Kumdykol and Nygis Lakes		Lachmann *et al*. in prep.
20 March 2001	24	Sorbulak Lake, Almaty, southeast Kazakhstan	(17M+ 7F)	Belyalov *et al*. 2002
1 May 2001	6	Sorbulak Lake	(1M)	Belyalov *et al*. 2002
28 May 2001	20	Kyzylkol Lake	(6 M +14 F)	Belyalov *et al*. 2002
30-31 May 2001	2	Kaldykol and Biyikkol Lakes, south Kazakstan		Belyalov *et al*. 2002
8 June 2001	3	Sholakkopa lake, Naurzumskiy region	(1M+2F)	Goetz Eichhorn, pers. comm., August 2002
13-21 June 2001	166	TKL - Korgalzhyn, Kumkol Lakes	146 AM	Lachmann *et al*. in prep.
29 July 2001	308	TKL - Sholak Lake		Lachmann *et al*. in prep.
11-15 Aug 2001	1,708	TKL - Korgalzhyn, Sholak, Zhumaj, Kumkol Lakes		Lachmann *et al*. in prep.
21-29 Aug 2001	1,343	TKL – Korgalzhyn, Sholak, Zhumaj, Kumkol Lakes		Lachmann *et al*. in prep.
2-4 Sep 2001	1,153	TKL - Sholak, Zhumaj, Kumkol Lakes		Lachmann *et al*. in prep.
16 Sep 2001	1,100	TKL –Saumalkol, Zhumaj and Kumkol Lakes		Lachmann *et al*. in prep.
15 Sep 2001	2,838	Kyzylkol Lake		Andrew Grieve, pers. comm., April 2002
20 Sep 2001	6	Sorbulak Lake		Andrew Grieve, pers. comm., April 2002
6-7 July 2002	72	TKL – Zhumaj, Kumkol, Ashykol Lakes		Holger Schielzeth, pers. comm., October 2002
4-18 Aug 2002	1,269	TKL - Korgalzhyn, Bestobe, Kyzylkol, Zhumaj, Kumkol, Ashykol Lakes		Holger Schielzeth, pers. comm., October 2002
23-28 Aug 2002	1,067	TKL - Korgalzhyn, Bestobe, Saumalkol, Zhumaj, Bajbota, Ashykol Lakes		Holger Schielzeth, pers. comm., October 2002
12-23 Sep 2002	4,021	TKL –Korgalzhyn, Kyzylkol, Kerej, Saumalkol, Zhumaj, Bajbota, Kumkol, Ashykol Lakes		Holger Schielzeth, pers. comm., October 2002
Mid Sep 2002	Around 2,000	Kyzylkol Lake		Observation by Andrei Gavrilov. Joost Van der Ven, pers. comm., November 2002
4-9 Oct 2002	2,709	TKL - Korgalzhyn, Kyzylkol, Kerej, Saumalkol, Zhumaj, Bajbota, Kumkol Lakes		Holger Schielzeth, pers. comm., October 2002
Mid Oct 2002	800	Kyzylkol Lake		Joost Van der Ven, pers. comm., November 2002
15 Oct 2002	4	TKL - Zhumaj, Kumkol Lakes		Holger Schielzeth, pers. comm., October 2002

Note: [1] - M - Male, F - Female, J - Juvenile, AM - Adult Male

8.5.3 Population and trends

Surveys in the 1980s estimated the breeding population of White-headed Duck in north Kazakhstan and southwest Siberia in Russia at about 300 pairs (Gordienko 1986). Recent surveys and research have provided new information on the population and distribution of the White-headed Duck in Kazakhstan. However, it is still not possible to estimate the overall population and trends (Andrew Grieve, pers. comm., May 2002).

Map 6: Distribution of the White-headed Duck in Kazakhstan during 1980-2002

No.	Site name	Location
1	Alakol Lake, east Kazakhstan	45°59' N, 81°28'E
2	Kaldykol and Biyikkol Lakes	43°00'N, 70°30'E
3	Kamysh-Samara Lakes (Raim and Soraidyn Lake)	48°54'-48°57'N, 49°34'-49°42'E
4	Tengiz-Korgalzhyn Lakes Region, include	50°10'-50°50'N, 68°40'-71°00'E
	Korgalzhyn Lake	50°28'N, 69°33'E
	Kokai Lake	50°28'N, 69°23'E
	Kumdykol	50°32'N, 70°44'E
	Kumkol	50°47'N, 70°03'E
	Kyzylkol Lake	50°20'N, 69°42'E
	Nygis	50°31'N, 70°41'E
	Saumalkol	50°39'N, 69°42'E
	Sholak Lakes	50°33'N, 69°49'E
	Zhumaj	50°41'N, 69°48'E
5	Kyzylkol Lake, south Kazakhstan	43°44'N, 69°30'E
6	Naurzumskiy Lakes	51°30'N, 64°00'E
7	Presnovskiy and Mibalykskiy Lakes	Approx. 54°00'N, 70°00'E
8	Sorbulak marshes, Almaty, southeast Kazakhstan	43°36'N, 76°47'E

There are several hundred pairs of White-headed Duck breeding in the Tengiz-Korgalzhyn Lakes region, although the actual number is still unknown (Lachmann *et al*. in preparation). Over the last 15 years, the population at Tengiz-Korgalzhyn Lakes Region has apparently increased. The species has also been recorded more frequently in southeastern Kazakhstan (Almaty region). Thus, such increases in numbers may also have occurred at other sites in Kazakhstan (Goetz Eichhorn, pers. comm., May 2002).

Conservative estimates for the minimum breeding population of Kazakhstan could be at least 300-500 pairs, although this figure is probably an underestimate of the true population.

8.5.4 Conservation status
The White-headed Duck is included in the Red Data Book of Kazakhstan as an Endangered species.

Korgalzhyn Lake and adjacent lakes, the most important area for the species in Kazakhstan, was declared as a Zapovednik (strictly protected nature reserve) in 1968. This area was also declared as Ramsar site in the former Soviet Union, but the ratification of the Convention by Kazakhstan is pending and the status of these sites has not been resolved.

8.5.5 Threats
Generally there is no major threat from habitat destruction, pollution or hunting. Disturbance from fishing activities is common (Cresswell *et al*. 1999). Much of the lake is surrounded by reeds and there is extensive fishing. Due to the use of fishing nets and related disturbance, it is possible that the young ducks are caught in nets. Pressure from fisheries across the country is increasing and is becoming a bigger threat than hunting (Sergey Yerokhov, pers. comm., October 2002).

Climate change is thought to be causing more frequent droughts resulting in reduced water levels and the drying out of many lakes in Kazakhstan. This phenomenon may be a great threat to the survival of the White-headed Duck.

8.5.6 Recommendations
The following recommendations have been proposed primarily on the basis of information and feedback from government and non-government respondents to the survey.

- Conduct regular monitoring of waterbirds at important breeding, wintering, and staging sites of White-headed Duck.

- Undertake a research project to determine and monitor the breeding population and breeding habitats of White-headed Duck.

- Undertake awareness raising activities through the media to highlight the need for conservation of key sites for White-headed Duck.

- Develop and implement a National Species Action Plan for the conservation of White-headed Duck and its habitats in Kazakhstan.

- Extend the "Important Bird Areas" programme to Kazakhstan to identify and conserve important breeding and staging sites for White-headed Duck.

- Ensure legal protection of important breeding and staging sites for White-headed Duck, such as Kyzylkol Lake and enforcement of regulations on hunting.

- Undertake an evaluation of potential threats, such as through contaminants, at all important sites for White-headed Duck.

- Promote sustainable use and management of water resources, especially during drought years, to ensure adequate water levels at breeding and staging sites of White-headed Duck.

- Strengthen conservation and management of the Zapovednik of Tengiz-Korgalzhyn Lakes Region, including through provision of training of rangers and staff.

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8.6 KYRGYZ REPUBLIC

8.6.1 Historical records and distribution

The White-headed Duck is a very rare species in the Kyrgyz Republic. Van der Ven (2002) classified this species as 'vagrant' in the Kyrgyz Republic but noted that no reliable record of this species has been obtained.

8.6.2 Recent records and distribution

No reliable data is available. Reports about visits to several lakes of the country from different time in the last few years do not mention this duck (van der Ven, pers. comm., November 2002).

In the winter of 2001, staff of the Issyk-Kul Nature Reserve (around 42°27'N, 77°16'E) organised regular waterbird surveys in the reserve. They recorded 80-85 species of waterbirds and no White-headed Duck was counted (D. Salmakeev, pers. comm., May 2002). The only record is of the species appears to be of 6-10 birds that were reported to have been seen at a number of different sites in the Issyk-Kul region by the staff of the Nature Reserve (D. Salmakeev, pers. comm., May 2002). However these observations are not supported by additional information, such as names of counters, dates and locations etc., and unless this is avilable, these observations may not be considered reliable.

8.6.3 Population and trends

Vagrant, not relevant.

8.6.4 Conservation status

The species is also included in the National Red Data Book but there have been no special protection measures taken. It is not included on the list of species that may be hunted and by the regulation, all birds not on the hunting list are protected. There has been no research conducted on this duck and no ringed or colour banded individuals have been reported.

8.6.5 Threats

Unclear.

8.6.6 Recommendations

The following recommendations have been proposed primarily on the basis of information and feedback from government and non-government respondents to the survey.

- Conduct regular surveys for White-headed Duck, particularly in the wetlands of southern and southwestern Kyrgyz Republic.
- Provide training and capacity building for staff of nature reserves throughout the country to ensure proper monitoring of waterbirds.
- Coordinate research and conservation measures for White-headed Duck in the Central Asian region with institutions in other countries.

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8.7 MONGOLIA

8.7.1 Historical records and distribution

Based on available information, the White-headed Duck was first recorded in Mongolia on 7 September 1979 at Zost Lake (48°54'N, 93°18E') in Uvs Province by a joint Mongolian-Russian expedition. Since then, this species has been recorded in the Great Lakes Basin of western Mongolia in the 1980s and 1990s at Airag Lake (in 1979), Uvs Lake (in 1981) and Khayrgas Lake (in 1981) (Bräunlich and Tseveenmyadag, in preparation; N. Tseveenmyadag, pers. comm., April 2002).