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# Waterbirds around the world

A global overview of the conservation,  
management and research of the  
world's waterbird flyways

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*Cover photography:* Whooper Swans *Cygnus cygnus* arriving at Martin Mere, England. Photo: Paul Marshall.  
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## Waterbirds in Tanzania: what we know and what we do not; where are the knowledge gaps?

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This paper presents a summary of current knowledge of waterbird numbers in Tanzania. Reports from earlier surveys contained in the literature have been supplemented by recent survey work. Recommendations are made for monitoring.

Prior to 1995 only four sites had been "counted" in Tanzania for the African Waterbird Census (Table 1). Counting waterbirds on some of the larger lakes and swamps is extremely difficult. At 945 000 km<sup>2</sup> Tanzania is the size of Germany, The Netherlands and France combined (941 965 km<sup>2</sup>) (Times Atlas 1985). It is estimated that 5.8% (5 439 000 ha) of Tanzania is covered by lakes and swamps but this does not include the many seasonal wetlands (Hughes & Hughes 1992).

With close to 15 million waterbirds frequenting Tanzania and 42 sites known to hold internationally important numbers (1% of populations) it is clear that coverage remains poor and must be improved upon.

The larger lakes, swamps and dams are listed in Table 2. Many of the swamps have boundaries that are difficult to define and only now are they beginning to be mapped with any degree of accuracy. There are many hundreds of small cattle dams and many thousands of ephemeral ponds, lakes and swamps. The lengths of coastline and shorelines of the larger lakes are also given in Table 2 but again these have yet to be delineated accurately. The major wetlands are shown on Map 1.

The preliminary Atlas map for the African Fish Eagle *Haliaeetus vocifer* gives an indication of how few dry squares there are in Tanzania (Map 2). The pale grey squares on all these maps indicate poor coverage and clearly indicate sites for future fieldwork.

In 1995 the first co-ordinated count of the major wetlands took place with significant assistance from the Royal Society for

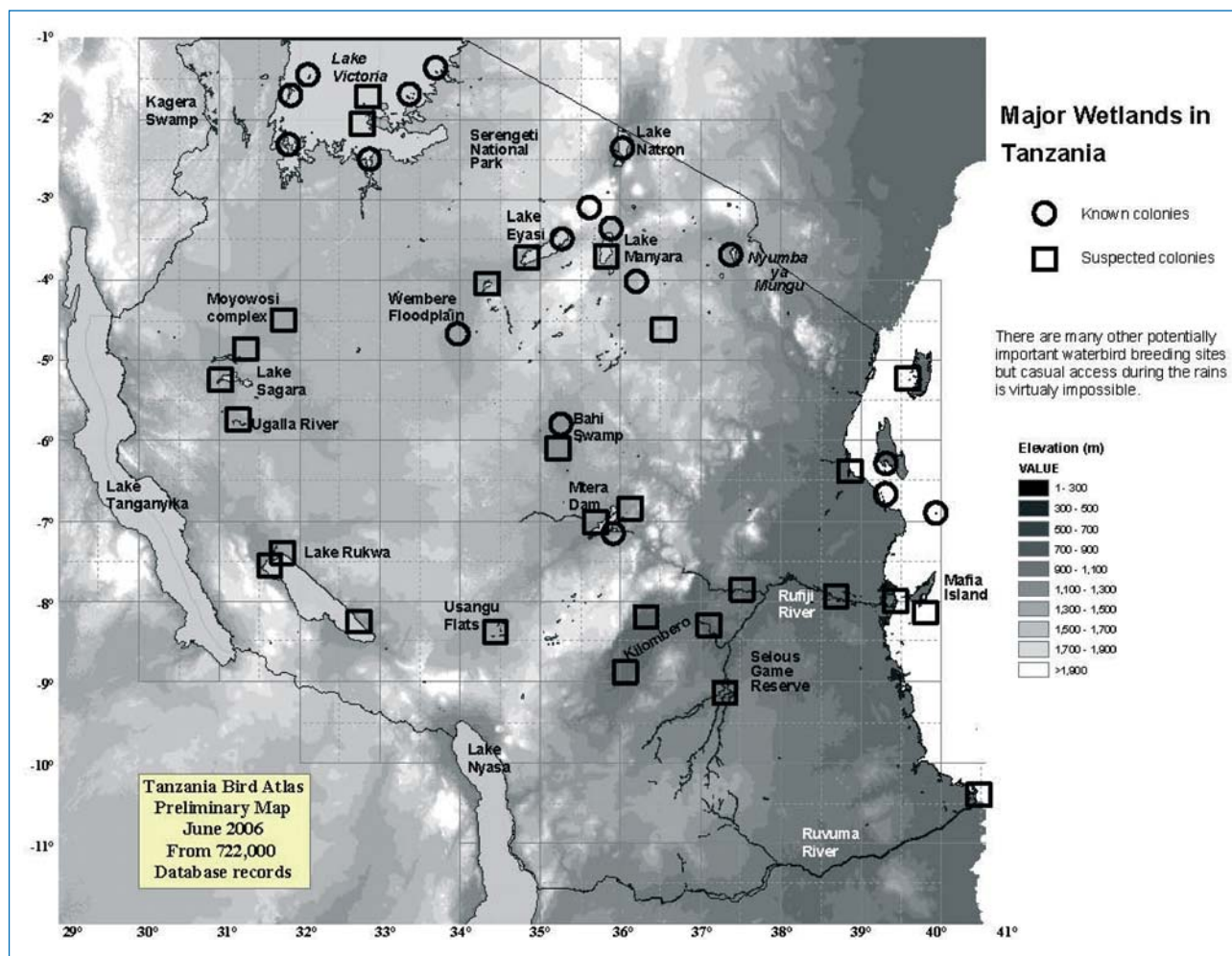
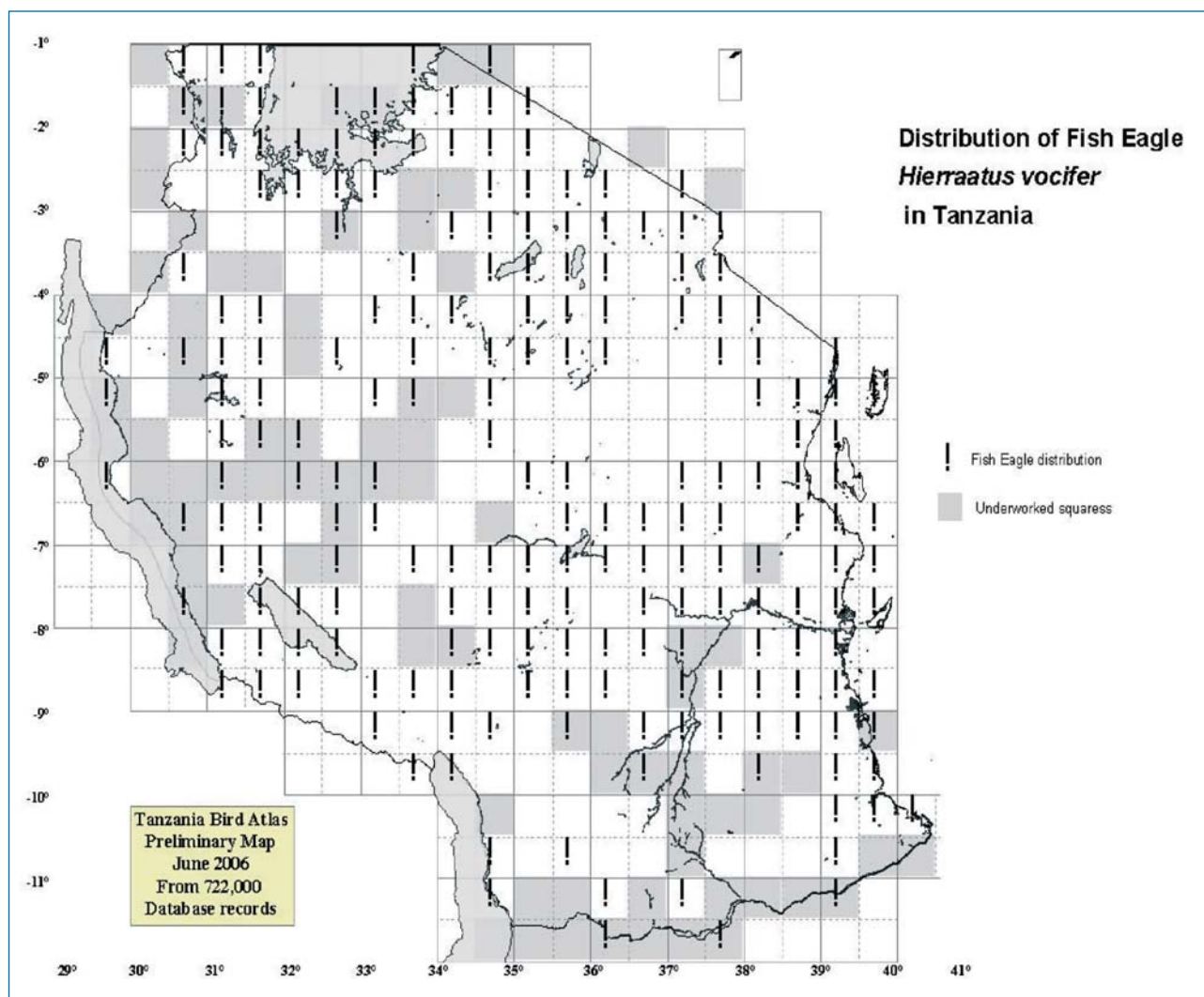


Fig. 1. Major wetlands in Tanzania.

**Table 1.** African Waterbird Census results for Tanzania.**African Waterbird Census: Tanzania - January waterbird counts**

Year	Sites	Species	Numbers	Reference
1992	1	1	372 670	Perennou 1992
1993	-	-	-	
1994	3	56	46 377	Taylor & Rose 1994
1995	107	148	1 735 963	Dodman & Taylor 1995; Baker 1997
1996	?	109	57 324	Dodman & Taylor 1996
1997	?	54	22 891	Dodman <i>et al.</i> 1997
1998	?	126	207 430	Dodman <i>et al.</i> 1998
1999	1	27	5 192	Dodman & Diagana 2003
2000	7	84	22 265	Dodman & Diagana 2003
2001	16	?	91 518	Dodman & Diagana 2003

**Fig. 2.** Distribution of the Fish Eagle *Haliaeetus vocifer* in Tanzania.

the Protection of Birds and the Global Environmental Facility. The publication of these results and the first waterbird population estimates for Tanzania provided the raw data to designate shadow Ramsar sites (Baker 1997). These data were also used to designate sites of global importance using IUCN Red List criteria and Ramsar 1% levels. Of the sites holding 1% of a population, 41 are listed in the IBA inventory (Baker & Baker 2002) and more are being added with continuing fieldwork.

The second co-ordinated count took place in January 2005 (N.E. Baker in prep.). The Tanzania Bird Atlas database held 105 000 records in 1996; by May 2006 it held 722 000 records of which 114 600 (15.8%) are for waterbirds. With records being submitted on a regular basis from a growing number of observers it is anticipated that the one million mark will be reached within three years. From this increased knowledge base it is possible to revise the population estimates for many waterbird species utilising Tanzania.

**Table 2. The larger and potentially most important wetlands in Tanzania.**

Name	Size (ha)	Knowledge	1% Levels	Status	Comments	Reference
Kagera valley lakes	35 000	very poor	?	(Ramsar)	15 000 ha in Rwanda	Hughes & Hughes 1992
Moyowosi swamps	320 000	poor	yes	NO		Hughes & Hughes 1992
Moyowosi floodplain	250 000	poor	?	Ramsar	in wet years	Hughes & Hughes 1992
Ugalla floodplain	90 000	very poor	yes	Ramsar		Hughes & Hughes 1992
Lake Sagara	85 000	poor	yes	Ramsar	in wet years	Hughes & Hughes 1992
Masirori Swamp	30 000	unknown	?	NO	papyrus swamp	Hughes & Hughes 1992
Nyumba ya Mungu	22 000	good	yes	NO	impoundment	Baker & Baker 2002
Pangani River	90 000	poor	?	NO	some papyrus	Hughes & Hughes 1992
Wami floodplain	80 000	very poor	?	NO	some papyrus	Hughes & Hughes 1992
Ruvu floodplain	43 200	poor	?	NO		Hughes & Hughes 1992
Kilombero floodplain	626 500	quite good	yes	Ramsar		Hughes & Hughes 1992
Ihefu Swamp	4 000	poor	yes	GR		Hughes & Hughes 1992
Usangu Flats	150 000	poor	yes	NO	in wet years	Hughes & Hughes 1992
Mtera reservoir	66 000	quite good	yes	NO	area of open water	Baker & Baker 2002
Lake Rukwa	600 000	very poor	yes	NO	some GR	Baker & Baker 2002
Katavi National Park	67 000	poor	yes	NP	floodplain	Hughes & Hughes 1992
Katavi National Park	2 520	poor	?	NP	lakes	Hughes & Hughes 1992
Bahi Swamp	125 000	poor	yes	NO	worked in 2005	Hughes & Hughes 1992
Wembere floodplain	140 000	poor	yes	NO	in wet years	Hughes & Hughes 1992
Lake Kitangire	11 500	poor	yes	NO	are of open water	Hughes & Hughes 1992
Lake Eyasi	116 000	poor	yes	NO	in wet years	Hughes & Hughes 1992
Yaida Swamp	16 200	poor	yes	NO	seasonal lake / swamp	Baker & Baker 2002
Lake Natron	85 500	poor	yes	Ramsar	lake level in wet years	Hughes & Hughes 1992
Lake Natron	12 000	poor	yes	Ramsar	swamp	Hughes & Hughes 1992
Lake Manyara	41 300	good	yes	NO	west shore only in NP	Hughes & Hughes 1992
Lake Burungi	4 000	poor	yes	NO		Baker & Baker 2002
Shuriro swamp	36 000	unknown	?	NO	in wet years	Hughes & Hughes 1992
Tarangire NP swamps	>60 000	poor	yes	NP	in wet years	Hughes & Hughes 1992
Lake Buigi	7 000	poor	?	GR		Hughes & Hughes 1992
Lake Ikamba	12 500	unknown	?	NO		Hughes & Hughes 1992
Lake Victoria	3 375 600	poor	yes	NO	area in Tanzania	Hughes & Hughes 1992
Lake Tanganyika	1 350 736	very poor	?	NO	area in Tanzania	Hughes & Hughes 1992
Lake Nyasa	2 975 000	very poor	?	NO	none in Tanzania ???	Hughes & Hughes 1992
The Balangidas	10 000	poor	yes	NO		Hughes & Hughes 1992
Latham Island	<3	good	yes	NO	major seabird colonies	Baker & Baker 2002
Lake Victoria shoreline	1 420 km	poor	yes	NO		Hughes & Hughes 1992
Tanganyika shoreline	650 km	very poor	?	NO		Hughes & Hughes 1992
Nyasa shoreline	305 km	unknown	?	NO		Hughes & Hughes 1992
Indian Ocean coast	>1 500 km	variable	yes	NO	Rufiji Delta - Mafia Ramsar	Hughes & Hughes 1992
Zanzibar coastline	?	good	yes	NO	includes Pemba island	Baker & Baker 2002

GR = Game Reserve NP = National Park NO = not protected

Currently 201 species from 31 families of waterbirds are known from Tanzania, 28 of these are vagrants and 14 are not actually wetland birds (Table 3). Records of the remaining 159 species have been used to plot known waterbird concentrations at the level of the Atlas square ( $\frac{1}{2}$  degree x  $\frac{1}{2}$  degree, approximately 2 500 km<sup>2</sup> at the equator) shown on Map 3.

**How many waterbirds?** Table 4 below lists crude population estimates (guesses in some cases) for the total number of waterbirds utilising Tanzania. These figures are currently being refined at the species level but the rough figure of 15 million birds appears to be credible. There are 16 million cows in

Tanzania and one rarely sees cattle without a seemingly similar number of Cattle Egrets!

**Breeding species:** Known and suspected colonies are marked on Map 1. Our knowledge of these major breeding sites the numbers involved threats and their success rates are poorly known. Access during the rainy season is the greatest problem. Aerial surveys and counts are essential if our knowledge of these sites is to be improved.

**The knowledge gaps:** From the above it is clear that far more effort is required to visit more wetlands and to count the birds on them as accurately as possible. All wetlands should be

**Table 3.** Families and species of waterbirds\* occurring in Tanzania.

Family	Species	Vagrant	Non wetland	Species used
Dendrocygnidae	2			2
Anatidae	20	5		15
Gruidae	2			2
Heliornithidae	1			1
Rallidae	18		2	16
Scolopacidae	27	3		24
Rostratulidae	1			1
Jacaniidae	2			2
Burhinidae	3	1	1	1
Haematopodidae	1			1
Recurvirostridae	2			2
Charadriidae	22	1	4	17
Dromadidae	1			1
Glareolidae	8	1	4	3
Lariidae	28	7		21
Accipitridae	7	1	2	4
Podicipedae	3			3
Phaethontidae	1			1
Sulidae	4	3		1
Anhingiidae	1			1
Phalacrocoracidae	2			2
Ardeidae	20	2		18
Scopidae	1			1
Phoenicopteridae	2			2
Threskiornithidae	5		1	4
Pelecanidae	2			2
Balaenicipitidae	1			1
Ciconiidae	8			8
Fregatidae	2			2
Diomedidae	1	1		0
Procellariidae	3	3		0
<b>Totals from 31 families</b>	<b>201</b>	<b>28</b>	<b>14</b>	<b>159</b>

order follows Hockey *et al.* 2005

\* waterbirds are defined here as those species counted each year under the AfWC

mapped using current GIS technology. All the known or suspected colonies require monitoring. To achieve this, dedicated teams are required within the two major conservation bodies, National Parks and Wildlife Division and the Tanzania Wildlife Research Institute. Other bodies such as International and National NGOs should be encouraged to support these efforts. WWF, IUCN, African Wildlife Foundation, Frankfurt Zoological Society, the Wildlife Conservation Society and the Wildlife Conservation Society of Tanzania are all active in Tanzania and all are in one way or another involved with wetlands. Tanzania is a signatory to both the Ramsar and the Bonn Convention and has a National Wetlands Working Group in place. Enough resources exist to support regular monitoring of known sites and surveys of new sites - it just requires supporting and organising.

**Table 4.** Waterbird population estimates for Tanzania.

Family	Estimate	Notes
Dendrocygnidae	80 000	
Anatidae	350 000	
Gruidae	3 000	
Heliornithidae	3 000	
Rallidae	1 000 000	(guess)
Scolopacidae	1 000 000	from regular counts
Jacaniidae	300 000	
Burhinidae	50 000	
Recurvirostridae	60 000	
Charadriidae	500 000	from regular counts
Dromadidae	30 000	
Glareolidae	20 000	
Lariidae	2 200 000	2 million White-winged Terns
Accipitridae	5 000	
Podicipedae	100 000	
Sulidae	10 000	
Anhingiidae	10 000	
Phalacrocoracidae	250 000	
Ardeidae	5 400 000	5 million Cattle Egrets !!
Scopidae	150 000	
Phoenicopteridae	2 500 000	50 000 Greater Flamingos ?
Threskiornithidae	135 000	
Pelecanidae	50 000	
Ciconiidae	450 000	250 000 Abdim's Storks
<b>Total</b>	<b>14 656 000</b>	

These figures are being refined at the species level (Baker in prep)



Greater Flamingo *Phoenicopterus roseus*. Photo: Phil Shepherd.

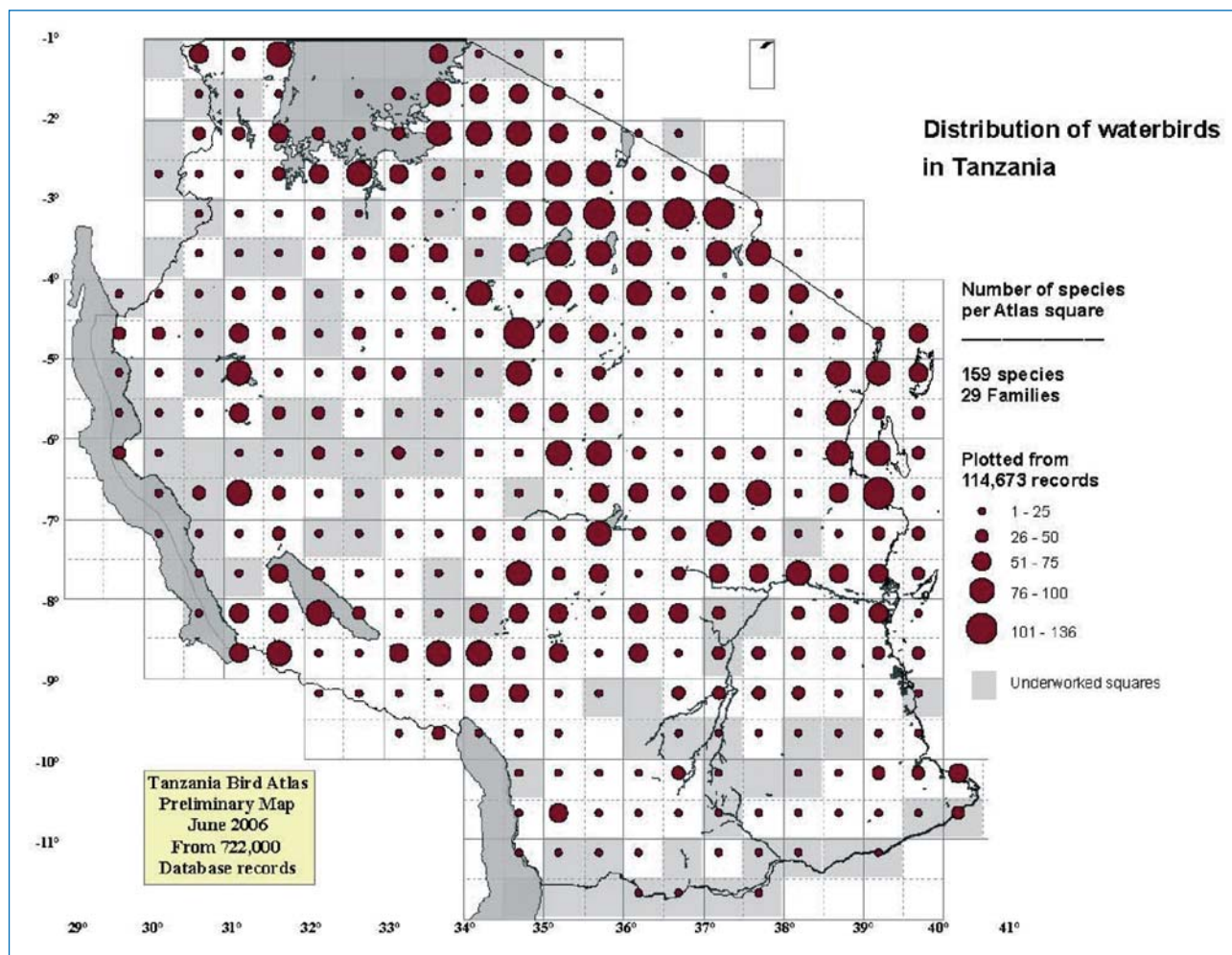


Fig. 3. Distribution of waterbirds in Tanzania.

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