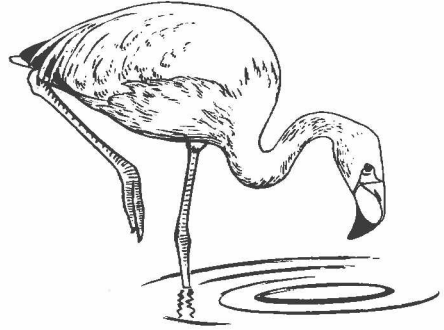


Progress in Aviculture by The Wildfowl & Wetlands Trust (WWT) during 1994

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At the end of 1994, WWT held 8,250 captive waterfowl of 157 species. The Slimbridge Tropical House maintained 11 varieties of non-waterfowl and was particularly successful at rearing Fairy Blue-bird *Irena puella* and Turquoise Tanagers *Tangara mexicana*. Although this total is, in fact, higher than that of 1993, the figure does not represent a change in the policy that will reduce, overall, the number of birds kept at the six WWT Centres that have captive wildfowl.

The 1994 breeding season saw 116 different species reared, some with parents but most in the "Duckeries" – altogether, a total of 1,655 birds. These were made up of: Slimbridge 632, Arundel 135, Martin Mere 234, Washington 98, Llanelli 169, Castle Espie 387. Special emphasis was placed on rearing those species that are less popular with other breeders, are threatened, or are unusual such as some *Oxyura* ducks (stifftails). We hope increasingly to populate our Centres with birds that are considered threatened or endangered in the wild. This policy, along with a planned increase of stock at Castle Espie, and a decision to over-winter more young stock before passing them on to other zoos and private collections, explains the apparent increase in captive waterfowl numbers.

In general, WWT had a good breeding season in 1994, with some notable successes. Slimbridge again reared Magpie Geese *Anseranas semipalmata*; one male and two females in the grounds reared a single bird and three more came through the Duckery. The parents have been breeding at Slimbridge for 17 years; they are fully-winged and have never flown from the reserve. When

they eventually die, they will be missed but, of course, not replaced.

The pair of Bewick's Swans *Cygnus columbianus bewickii* at Slimbridge produced two male cygnets that were foster-reared by Whistling Swans *C. c. columbianus*. This is the second year that these Bewick's have laid; in 1993, they "dropped" eggs, two of which were hatched and reared artificially at Llanelli. In 1994, a proper nest was built, and the female incubated, although not well. We hope that the learning process will be complete by 1995 and the birds will be capable of more involvement in their eggs and offspring.

It was not a bumper year for the Hawaiian Goose or Nene *Branta sandvicensis* (a parent-rear policy and a wet spring did not help). Nonetheless, every Centre contributed to the 42 birds reared – Slimbridge nine males and nine females, Arundel 2:6, Martin Mere 3:2, Washington 1:1, Llanelli 2:0 and Castle Espie 2:4. At Slimbridge they were studied intensively as part of the ongoing behavioural research programme which is linked to the threatened species work that WWT and others are undertaking in Hawaii. The current work is studying the effects on Nene youngsters of potential predators, to see whether birds released into the wild can be conditioned so as not to make them vulnerable to dogs, for example. A pair of Orinoco Geese *Neochen jubatus* was very successful at Arundel; eight goslings were reared which represented a trebling of WWT's holding of this species. Washington reared three Abyssinian Blue-winged Geese *Cyanochen cyanopterus*, the first time for years that WWT has been successful with these unusual birds from the highlands of Ethiopia.

Five Patagonian Crested Duck *Anas (Lophonetta) specularioides specularioides* were raised at Martin Mere from a second clutch from the breeding pair. The first brood of ducklings was amongst birds, and other items, stolen from Martin Mere's Duckery. Sadly, security from thieves is now a major consideration when deciding where to place birds for breeding or rearing.

The aggressive little New Zealand Brown Duck *Anas aucklandica chlorotis* is popular with private breeders, and WWT lends pairs of this threatened bird for breeding. In 1994, over a dozen young were returned as part of this successful arrangement.

In April of 1994, we heard that the wild population of Laysan Teal *A. laysanensis* had dropped dramatically, and only 38 birds were known on Laysan Island which is situated at the western end of the Hawaiian archipelago. By an extraordinary coincidence, this was the exact number of Laysan Teal reared by WWT in 1994. Martin Mere produced the lion's share with 27 birds. The value of maintaining vulnerable species in captivity is clear in such a situation. Whilst there is no reason yet to augment the natural population, there could be if numbers were to decline further or, indeed, if the wild teal were to die out completely.

New Zealand Blue Duck *Hymenolaimus malacorhynchos* are continuing to be difficult – a clutch of infertile eggs was all we had to show following some re-pairing of birds that had been unsuccessful for the previous three seasons. The Freckled Duck *Stictonetta naevosa* at Slimbridge, however, added 15 more to our holding and, for the first time, eggs were laid at Llanelli (unfortunately they were infertile).

South American successes included seven Greater Brazilian Teal *Amazonetta brasiliensis ipecutiri*, 11 Comb Duck *Sarkidiornis melanotos melanotos* and some charming fully-winged Ringed Teal *Calonetta leucophrys* which are the stars of Slimbridge's Tropical House.

We are especially pleased with the nine Black-headed Duck *Heteronetta atricapilla* raised at Slimbridge. The "cuckoo duck" (so-called because it lays its eggs solely in other birds nests) had been in serious decline in WWT collec-

tions, but careful selection of pairs, and placement within a pen of other good breeding birds, has now improved this situation. One problem had been an imbalance between the sexes; if one or two females die (as they are prone to during egg-laying), then the remaining females can be subject to a greater amount of attention from the males so that, if unchecked, the problem worsens. This situation can often occur when many species are kept in groups.

Twelve Barrow's Goldeneye *Bucephala islandica* were reared at Llanelli and six at Castle Espie; these were excellent results for a duck that is not common in captivity. Castle Espie also did well with Smew *Mergus albellus*, Bufflehead *Bucephala albeola* and Hooded Merganser *Mergus cucullatus*.

For the second successive year, no North American Ruddy Duck *Oxyura jamaicensis jamaicensis* were reared by WWT. This is part of a continuing endeavour to reduce the numbers of these stiff-tails held in captivity. White-headed Duck *O. leucocephala*, however, remain a high priority for all Centres. Llanelli's 16 ducklings were the most impressive result.

The larger flamingos had a good year. At Slimbridge, eight Caribbean *Phoenicopterus ruber ruber*, 18 Chilean *P. ruber chilensis* and 17 Greater Flamingos *P. r. roseus* were reared. Martin Mere produced three Greaters but, sadly, Washington's Chilean flock failed to lay. Work on a new Flamingo House and pen for Slimbridge's Andean *Phoenicoparrus andinus* and James' Flamingos *P. jamesi* was underway; the birds will move in early 1995. Slimbridge's Lesser Flamingos *Phoeniconaias minor* failed to breed, although several birds built nests and one pair incubated a small clod of earth. This was replaced eventually with a spare Chilean egg and, much to everyone's delight and, indeed, surprise, this egg was hatched and the chick reared by two confused but instinctively correct "parents". The Chilean flock which is maintained on loan to Peakirk Waterfowl Gardens again had a good breeding season; in 1995, some of these birds will be added to the Slimbridge flock.

The first Taxonomic Advisory Group (TAG) meeting for waterfowl and flamin-

gos was held at Chester Zoo in February. It is early days, and it will take time to establish co-ordinated programmes for many waterfowl species. Birds being considered for initial schemes include White-winged Wood Duck *Cairina scutulata*, White-headed Duck and New Zealand Brown Duck.

Animal Health

Mortality

A total of 897 birds was submitted to the Slimbridge laboratory for post mortem examination during 1994. Examinations of the 220 birds that died at Martin Mere were carried out by Dr John Baker (University of Liverpool - Leahurst). The 58 birds that died at Castle Espie were examined by the Veterinary Sciences Division (Stormont).

WWT post mortems comprised:

Slimbridge	Adults	331
	Juveniles	53
	Downy Young	193
Martin Mere	Adults	98
	Juveniles	17
	Downy Young	88
	Wild anatinae	17
Washington		75
Llanelli		69
Castle Espie		58
Arundel		57
Wild anatinae		106
Various non-anatinae		7
Birds from private collections		6
		—
Total		1,175

Avian tuberculosis remained the largest single cause of mortality of adult birds at Slimbridge, accounting for 36% of adult deaths. Findings at other centres - Arundel (46% dead of TB), Washington (34%), Castle Espie (19%) and Martin Mere (16%) - reinforce the requirement for continued research into this debilitating infectious disease. The loss of three birds from tuberculosis at the Llanelli centre was a serious setback, following the considerable efforts made to keep this collection TB-free. Work is in progress to identify other birds that may be infected at Llanelli,

and to monitor wild waterfowl and other species that may be responsible for introducing tuberculosis into the area where tame wildfowl live. The experimental use of TB vaccine in young birds hatched at Slimbridge and Llanelli was continued, 770 individuals receiving vaccine during the first week of life.

Outbreaks of Duck Virus Enteritis (DVE) occurred at Slimbridge and Martin Mere during April and May but were controlled effectively by prior vaccination of susceptible species with 'Anserivac', a vaccine still under test that is produced by The Central Veterinary Laboratory (Weybridge).

The number of adult birds dying from renal disease continued to decline reflecting, we hope, further improvements in waterfowl diets.

Continued regular treatment of the goose flocks with injectable ivermectin ('Ivomec', Merck Sharp & Dohme Ltd) has reduced the number of birds suffering from gizzard worm *Amidostomum* spp. infection to a very low level. Compounding of flubendazole ('Flubenvet' Janssen Pharmaceutical Ltd) into pelleted rations similarly has reduced parasitic infection in the rest of the tame flocks.

At Martin Mere an outbreak of *Streptococcus bovis* in the Duckery, involving 2-3 week old ducklings, accounted for the deaths of 60 birds before it was brought under control by the use of antibiotics. A further 70 adult birds at this Centre were lost to predation after a fox gained access to the waterfowl gardens. Work is in hand to erect electric strands around the perimeter fence, a system that has worked satisfactorily at Slimbridge for several years.

An unusual problem was encountered in young Orinoco Geese at Arundel. Eight juvenile birds developed photosensitivity of the skin on their legs and feet during a spell of very hot weather; this condition was possibly due to the ingestion of plant toxins as two of the birds died from hepatic failure, a common finding in such cases. Following intensive daily treatment by the Arundel staff, the remaining birds were moved to Slimbridge where sheltered wintering accommodation was available. This has

enabled a slow but successful recovery.

Continued improvements in hygiene within the incubator and Duckery areas at Slimbridge, reduced further the occurrence of bacterial disease in young birds. Yolk sac infections, however, remained at the same level as in the previous year, despite ultra-violet sterilisation of egg-shells prior to incubation and improved incubator disinfection.

Wild Whooper Swans *Cygnus cygnus* wintering in Lancashire and on the Solway Firth in southwest Scotland, continued to die from lead poisoning following the ingestion of spent lead shotgun pellets. A high proportion of deaths of wild swans was due to collision with overhead power lines; the number of incidents over many years near the Slimbridge Centre has, at last, resulted in the 11 Kv cables there being routed underground.

The PhD study of Miss Helen Crosby (University of Wales, Cardiff), investigating growth abnormalities in the legs of young flamingos entered its final year. In an attempt to boost calcium and vitamin levels in late hatched young, a supplement was added to the feed of the

Chilean Flamingo flock with favourable results.

Thirty-two new specimens were added to the Slimbridge museum collection; these were mainly study skins. Surplus materials were donated to The Natural History Museum (Tring) and the National Museum of Scotland (Edinburgh).

Main causes of death among Slimbridge wildfowl in 1994

	% mortality
ADULTS	
Tuberculosis	36
Renal disease	8
DVE	3
Aspergillosis	3
JUVENILES	
Enteritis	13
Aspergillosis	13
Air sacculitis	4
DOWNY YOUNG	
Yolk sac infection	26
Enteritis	8
Chilling/Pneumonia	7

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