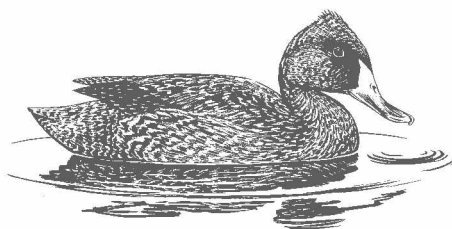


## Progress in Aviculture by The Wildfowl & Wetlands Trust during 1993

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The total number of different kinds of waterfowl and flamingos kept in the Trust's collections in 1993 was 161, while the Slimbridge Tropical House maintained an additional ten varieties of non-waterfowl species. The six Centres with captive birds held 7630 at the end of December 1993, some 689 fewer than the previous year. This fall in numbers reflects WWT's intention to keep fewer pinioned birds. WWT is working closely with members of the Federation of Zoological Gardens, and with private waterfowl keepers; this enables us to monitor the requirements of threatened and endangered wildfowl, and to plan, with others, joint management and breeding programmes.

The first meeting of the Taxonomic Advisory Groups (TAGs) for wildfowl and flamingos (chaired by The Wildfowl & Wetlands Trust) will take place early in 1994. It is the intention of the Groups to identify birds held in captivity currently that appear in the endangered and threatened categories of the 1992 Conservation Assessment and Management Plan (CAMP) and to direct time and resources to those species. This does not mean that other wildfowl will be neglected, but some will be given a lower priority than they once were. Likely species to be targeted for captive breeding and research are the Hawaiian Goose or Nene *Branta sandvicensis*, White-winged Wood Duck *Cairina scutulata*, White-headed Duck *Oxyura leucocephala* and Marbled Teal *Marmaronetta angustirostris*.

The 1993 rearing season produced a total of 1274 birds. In a difficult financial year it was important not to over-reach our resources, so a planned breeding programme was implemented. Washington contributed very few youngsters as most of their eggs were sent to Martin Mere for hatching and rearing.

Cape Barren Geese *Cereopsis novae-hollandiae* were the earliest to lay, a pair at Martin Mere were successful - as were the

first *Cereopsis* to be parent-reared at our Welsh Centre at Llanelli. Like many territorial and thus aggressive birds, *Cereopsis* usually have to be kept apart from other waterfowl and, consequently, few are maintained in captivity. There is often however a problem when any of our four or five pairs breed and produce young birds that are surplus to requirements. Hawaiian Geese in captivity play an important role, especially in behavioural research. These programmes run in parallel with an endangered species programme currently ongoing in Hawaii. At Slimbridge, over 40 Nene nests were built by birds that had selected their own partners and were allowed to raise their own young. Scientists were able to study the birds' reaction to one another within the family unit, and the relationships between different broods. There are, of course, more losses of goslings that are parent-reared than when they are all hand-raised, but this strategy ensures that the surviving birds are as robust as possible and will behave as much like wild-reared geese as their situation allows.

Llanelli had a good year with *Oxyura* or stiff-tail species; young White-headed Duck *O. leucocephala* and Maccoa *O. maccoa*. Spotted Whistling Duck *Dendrocygna guttata* were also produced for the first time. The *Cereopsis* were not the only birds to be parent-raised. Western Bean Geese *Anser fabalis fabalis*, Barnacle Geese *Branta leucopsis*, Black Swan *Cygnus atratus* and Coscoroba Swans *Coscoroba coscoroba* all reared their own young. This is significant, as the strategy that has so far kept Llanelli free of avian diseases (no imported adults - all birds exhibited being raised from eggs) initially meant that the whole Llanelli collection had to be hand-raised. This has given rise to a few problems, as today's hand-tame gosling or cygnet is tomorrow's aggressive, non-human-fearing, breeding goose or swan! In the case of some species, therefore, there will need to be a phased re-

placing of the original stock with parent-raised individuals.

Arundel's Bewick's Swan *Cygnus columbianus bewickii* reared one cygnet and, at Slimbridge, this swan bred for the first time for a decade. Three eggs were laid, but not incubated, by a pair of birds, the male being a wing-damaged wild bird rescued from the Welney region. The eggs were incubated under a female Whistling Swan *Cygnus columbianus columbianus* and a domestic goose, before being taken to an incubator, where two hatched. The resulting young pair were moved to Llanelli at five days of age, and established a new species at that Centre.

For the second successive year, both female New Zealand Blue Ducks *Hymenolaimus malacorhynchos* at Arundel laid infertile eggs, as did a pair on loan to a private breeder. As a result, a change-round of at least four pairs will take place during the off-season in an attempt to remedy the situation. The programme was not helped when a male Blue Duck was among 35 birds stolen from Slimbridge in September. As the WWT Blue Duck are the only ones outside New Zealand, this seemed a particularly unnecessary crime. The theft is one of many occurring in the captive bird world at the moment, and places an extra headache on avicultural planning.

Martin Mere's excellent performance in 1993 included the production of young from Cape Shelduck *Tadorna cana*, Greater Magellan *Chloephaga picta leucoptera*, Trumpeter Swan *Cygnus cygnus buccinator*, Ruddy-headed Goose *Chloephaga rubidiceps*, and the first rearing for the Centre of a Greater Flamingo *Phoenicopterus ruber roseus*. This was particularly welcome as the whole flock was captive-reared and originated from Slimbridge. The Slimbridge group failed to breed in 1992, however, there were no difficulties in 1993; 34 eggs were laid and 13 young successfully fledged. The Slimbridge Chilean Flamingos *Phoenicopterus chilensis* produced 59 eggs and eventually reared 12 birds. The Chilean flock is being reduced by 32 birds who will go to another captive breeding unit, as did 12 Caribbean Flamingos *Phoenicopterus ruber ruber* earlier in the year.

Breeding successes at Slimbridge included seven Magpie Geese *Anseranas semipalmata*, 25 Spotted Whistling Duck, two each of Atlantic Brent *Branta bernicla hrota* and Pacific Brent Geese *B. b. orientalis*

and, most spectacularly, 23 Freckled Duck *Stictonetta naevosa*. Freckled Duck bred for the first time, outside their native Australia, at Slimbridge in 1992 when five young were raised. This year, four different females produced eggs, and three clutches were left to be hatched and parent-raised in the Vaughan Aviary. This technique proved hugely successful; the females were very attentive to their young and defended the area around them vigorously. The males were kept at a distance by the females, but played their part in defending larger areas around the nest site, and in keeping the vicinity of the brood clear of other Freckled Duck. Seven of the 23 were hand-reared; they do not hand-rear at all easily but the resulting adults are in good condition, and it seems likely that reports of Freckled Duck breeding successes will become commonplace in the future.

## Animal Health

### Mortality

A total of 900 birds was submitted to the Slimbridge laboratory for post mortem examination during 1993. Examinations of the 161 birds that died at Martin Mere were carried out by Dr John Baker (University of Liverpool - Leahurst).

WWT post mortems comprised:

Slimbridge Adults	359
Juveniles	46
Downy Young	120
Martin Mere	161
Washington	100
Arundel	49
Llanelli	104
Peakirk	18
Wild Anatidae	83
Various non-anatidae	13
Birds from private collections	8
<b>Total</b>	<b>1061</b>

Avian tuberculosis continued to cause the highest mortality of adult birds at Slimbridge, accounting for 38% of losses, an identical figure to the previous year. Findings at other Centres Washington (43% dead of TB), Arundel (33%) and Martin Mere (20% of adult deaths), underline the importance of continued research into this debilitating disease. Dr Ruth Cromie, who was working on a reliable diagnostic test for tuberculosis, left WWT in May to take

up a post at the Durrell Institute of Conservation and Ecology at the University of Kent at Canterbury. The experimental vaccination of all young birds hatched at the Llanelli Centre, and half of those hatched at Slimbridge, continued, and 458 birds received TB vaccine during the first week of life. Results from the TB vaccine trial remain encouraging, giving some hope of an improvement during the coming years. The birds at Llanelli remain free of tuberculosis, a testament to the wisdom of stocking new Centres with eggs rather than introducing adults that may be carrying disease.

Duck virus enteritis (DVE) again caused problems during the spring, but the use of 'Anserivac', a vaccine produced by MAFF (Weybridge) contained outbreaks at Martin Mere and Slimbridge. More than 600 birds of susceptible species were vaccinated at five Trust Centres.

Renal disease, particularly among older birds, was a significant cause of mortality, accounting for 10% of adult losses at Slimbridge. It was encouraging to note, however, that deaths of younger birds, particularly sea ducks, have been reduced greatly by alterations to the diet.

Control of parasitic infections was achieved largely by the use of 'Flubenvet' (Janssen Pharmaceutical Ltd) compounded into the normal pelleted rations on a regular basis. The use of Ivermectin 'Ivomec' (Merck Sharp & Dohme Ltd) in its injectible form was continued in the goose flocks and assisted control of gizzard worm *Amidostomum* sp. and gapeworm *Cyathostoma* sp. infestations.

Improved hygiene measures within the duckery at Slimbridge resulted in fewer cases of bacterial disease in young birds, particularly enteritic and respiratory infections.

The ultra-violet sterilisation of eggshells, prior to artificial incubation, was continued. Despite this, however, a large proportion of mortality of downy young

was still found to be due to yolk sac infection, accounting for 26% of deaths in this age group. More regular and fastidious cleaning of incubators will take place in the coming year in an attempt to improve the situation.

Investigation into the causes of death of wild birds revealed that 20% had died as a result of lead poisoning following the injection of spent shotgun pellets. A large proportion of these cases occurred in wild Whooper Swans *Cygnus cygnus* wintering in the Solway Firth area of southwest Scotland. Cases of lead poisoning from discarded lead weights used by anglers have decreased markedly since the 1988 ban on their sale. Certain areas of the midlands and southern England, however, still have localised 'hotspots' where angling pressure over many years resulted in a large build-up of lead available in the margins of lakes and rivers.

Investigations into growth abnormalities in the legs of flamingos were continued by Miss Helen Crosby who entered her second year of a PhD study at the University of Wales, Cardiff.

**Main causes of death among Slimbridge wildfowl in 1993.**

	% mortality
<b>Adults</b>	
Tuberculosis	38%
DVE	6%
Renal disease	10%
Aspergillosis	3%
<b>Juveniles</b>	
Enteritis	11%
Air sacculitis	4%
Aspergillosis	4%
<b>Downy Young</b>	
Yolk sac infection	26%
Chilling/Pneumonia	16%
Enteritis	12%
Impactions	8%

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