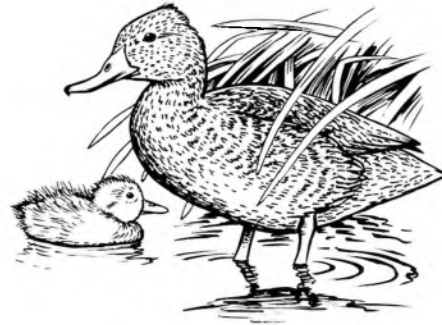


Progress in Aviculture by The Wildfowl & Wetlands Trust (WWT) during 1992

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1992 saw few significant changes in the total number of captive birds kept by the Trust. At the end of the year, 8319 birds were recorded of 161 different kinds, which is a slight drop (151) from the December 1991 figure. It is intended that this figure will fall further during 1993 as collection exhibits are rationalised. Any changes in aviculture will take full account of the Conservation Assessment and Management Plan (CAMP) requirements for threatened species, as well as education and strategic management needs. Fewer birds were reared at Centres (Slimbridge, Martin Mere, Washington, Arundel, Llanelli and Castle Espie) than in 1991 – a total of 1935.

Washington reared only 89 birds but also sent 126 eggs to Slimbridge and Martin Mere. Their major success was the breeding of Chilean Flamingos *Phoenicopterus chilensis* whose first egg was laid on 27 June. Following the disappearance of that egg, a subsequent 11 were removed to the safety of incubators. Dummy ones fashioned from clay were substituted (they closely resembled the texture and weight of the originals). The real flamingo eggs were replaced prior to hatching, and five chicks were reared (two later eggs were sent to Slimbridge and hatched under the nesting Chileans there).

Arundel's highlight was the successful breeding of Orinoco Geese *Neochen jubatus*, seven young were reared, as were eight Smew *Mergus albellus* and nine Baer's Pochard *Aythya baeri*. There was less success, however, with the Blue Ducks *Hymenolaimus malacorhynchos* - both pairs that had nested in 1991 laid again, but all 11 eggs were infertile. The young pairs established at Slimbridge and Llanelli failed to breed, so care will be needed if we are to retain these fine birds in captivity.

The problem of infertile eggs was also ex-

perienced at Martin Mere although, in this case, with certain predictability. The Trust only holds female Falkland Island Flightless Steamer Ducks *Tachyeres brachypterus*, two of which are at Martin Mere. The nine eggs laid merely added to the frustration of not having a male, a situation which will be rectified if at all possible. Two Greater Flamingo eggs *Phoenicopterus ruber roseus* were laid for the first time but failed to hatch. Although rearing successfully one Orinoco Goose, Martin Mere intends to specialise in the northern and southern temperate species in the future, as tropical species do less well there.

Llanelli became virtually self-sufficient in birds, with 85% of the 300+ youngsters reared having been bred at the Centre itself. Highlights were five Eyton's Whistling Duck *Dendrocygna eytoni*, 16 Laysan Teal *Anas laysanensis* and six Australian White-eye *Aythya a. australis*. Amongst the incoming 15%, were four 10-day-old ducklings of Freckled Duck *Stictonetta naevosa*. These, plus a single bird reared at Slimbridge, were bred in the Vaughan Aviary at Slimbridge. This was not only a first breeding for the Trust, but also a first in captivity outside their native Australia. The single duckling was hatched on 15 May and came from the second of three nesting attempts made by one female. This female, and the two males with her, were sent to Slimbridge from the Commonwealth, Scientific and Industrial Research Organisation (CSIRO) in Canberra in 1985. Years of observation and nest site creation followed, but with no attempts at breeding and, when one of the females died, hope faded for any nesting success. Behaviour had been documented at Canberra (P.Fullagar, D.Rushton pers. comm.), where a breeding and study programme has been underway since the early 1980s; this helped the Trust to duplicate the

necessary conditions. The first 'clutch' consisted of three eggs, but the first was misshapen, the second soft-shelled and the third merely contained in a membrane. The female was treated successfully for oviductitis and, a month later on 4 April, began a second clutch. Of four structurally sound eggs, three were fertile but only one hatched. The eggs had been incubated artificially, and the duckling was reared with 'foster' siblings, initially New Zealand Brown Teal *Auckland chlorotis* and finally African Yellowbill *Anas undulata*. Freckled ducks use a filter-feeding technique as they forage for food, and a wet-mix diet of chick crumb and duckweed was offered. The bird grew well and fledged at about eight weeks. The female later laid a clutch of six superb eggs and it was four of these that were reared and established at Llanelli. In early June, five pairs of Freckled Duck arrived at Slimbridge from CSIRO and were also placed in the Vaughan Aviary. They have settled down extremely well and there are hopes that, in 1993, we can parent-rear some young.

Another import through the Slimbridge quarantine pen was of three Magpie Geese *Anseranus semipalmata* from Philadelphia Zoo. They have added new blood to the birds within the Trust, many of which descend from the breeding pair that still produce clutches of eggs 18 years after they arrived at Slimbridge in 1974. Other new arrivals were 12 captive-bred Red-breasted Mergansers *Mergus s. serrator* and, from our own breeding, ten Caribbean Flamingos *Phoenicopterus r. ruber* and 14 Chilean Flamingos *Phoenicopterus chilensis*.

Animal Health

Routine *post mortem* examinations of captive and wild birds were continued through 1992. A total of 996 birds was submitted to the Slimbridge laboratory during the year. All *post mortem* examinations at Martin Mere were carried out by Dr John Baker (University of Liverpool - Leahurst). These comprised:-

Slimbridge Adults	351
Juveniles	65
Downy young	118
Llanelli	96
Washington	79
Arundel	64
Peakirk	28

Wild Anatidae	176
Various non-anatidae	9
Martin Mere	198
Total	1215

Avian tuberculosis remained the most important cause of mortality in captive adult birds, accounting for approximately 25% of all deaths. Losses from tuberculosis at individual Centres varied, but were as high as 38% in adult birds at Slimbridge. Dr Ruth Cromie continued her work on a reliable diagnostic test for avian tuberculosis, and demonstrated excellent results in several species of waterfowl. The experimental vaccination of young birds against TB continued, with all birds hatched at Llanelli, and one half of those hatched at Slimbridge, receiving vaccine during their first week of life. Limited results from the vaccine trial, which is in its fourth year, showed promise, although it will be some time before the long term immunity of vaccinated stock is truly known. Alterations to the diet of several species, notably the sea ducks, resulted in a reduction in the number of deaths from renal disease, with no apparent effect on breeding success.

Outbreaks of Duck Virus Enteritis (DVE) occurred at Slimbridge and Martin Mere during the spring, but were controlled largely by the experimental use of a new vaccine 'Anserivac' which has been produced by the Central Veterinary Laboratory at Weybridge. It is hoped that, if vaccine trial results are satisfactory, the vaccine may become readily available to veterinary surgeons for use at private waterfowl collections where, at the present time, heavy losses from DVE-related mortality have become commonplace.

Parasitic infections were controlled during the year by the regular use of Mebenvet (Janssen Pharmaceutical Ltd) and latterly Flubenvet compounded into our normal pelleted rations. Over 1000 geese throughout the Trust Centres were also treated using injectible Ivermectin (Ivomec - Merck Sharpe & Dohme Ltd). This reduced greatly the number of birds suffering from gizzard worms *Amidostomum* sp. and gape worms *Cyathostoma* sp. on the heavily grazed areas within the enclosures.

Outbreaks of respiratory disease due to *Mycoplasma* infection in young birds were controlled largely by the use of suitable antibiotic therapy. Similarly, outbreaks of bacterial enteritis in the rearing areas were con-

tained by the use of soluble antibiotics in the drinking water.

In an effort to reduce the number of losses in ducklings from yolk sac infections, the shells of all eggs brought in from the grounds for incubation at Slimbridge were sterilised by the use of ultra-violet radiation. This achieved a significant reduction in early mortality.

The continued incidence of growth abnormalities in the legs of some late-hatched flamingos gave cause for concern. Miss Helen Crosby (University of Wales, Cardiff) began a three year Ph.D. study to investigate the causes of these abnormalities.

An increasing emphasis was placed on the study of disease and mortality in wild waterfowl, especially those visiting our Centres. Many of the wild birds caught for ringing were monitored for diseases, such as tuberculosis, using the recently developed diagnostic test.

At our Caerlaverock reserve in southwest Scotland, lead poisoning in wild Whooper Swans *Cygnus cygnus*, due to the ingestion of spent shotgun pellets, continued to cause significant mortality and highlights the need for a mandatory use of steel shot in wetland areas. An outbreak of avian botulism at Purton timber ponds, a wetland area within three

miles of Slimbridge, was investigated and diagnosed successfully. The close proximity of this outbreak to the National Centre gave cause for concern.

The continuing absence of disease at the Trust's newest Centre at Llanelli, South Wales, demonstrates the success of stocking new collections with birds hatched and reared on site from eggs transported from other Centres, rather than adults. It is hoped that Llanelli will play a major role in the propagation of rare and endangered wildfowl, with its ability to produce 'clean' birds for breeding programmes elsewhere.

Main causes of death among Slimbridge wildfowl in 1992.

	% mortality
Adults	
Tuberculosis	38
DVE	5
Renal disease (Visceral gout) (Renal failure)	
(Nephritis)	6
Aspergillosis	5
Juveniles	
Air sacculitis	20
Enteritis	6
Downy Young	
Chilling/Pneumonia	28
Yolk sac infection	26
Enteritis	15
Air sacculitis	5

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