

Wildfowl of the Far North

by Paul Dye
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Everett, Washington*

Aviculture as a conservation tool is a concept rapidly coming of age, not just for the gross numbers of a species produced, but for the familiarity gained with the characteristics, needs and weaknesses of a species. If properly recorded and published, this knowledge can provide a valuable tool not only for other aviculturists and zoologists, but for wildlife management personnel in the field as well.

At Northwest Waterfowl we have successfully worked with several rather difficult species of fowl such as bufflehead, canvasback, and harlequin ducks and both ruffed and blue grouse. As a result of fairly extensive study of the social characteristics, dietary preferences, and nesting requirements of these species in the wild, we have been able to markedly improve our captive breeding success. This, in turn, reinforces our observations regarding the wild population studied, and can provide a valuable management tool. A problem inherent in this approach is that most successful aviculturists are so busy with their breeding and study efforts that there is little time left for adequately recording their discoveries. A method of alleviating this problem that I'm investigating is to make your operation available for undergraduate or graduate study by students of a local university wildlife management or zoology program.

Although I've been raising wildfowl for many years, my enchantment with arctic breeding species is relatively recent. In the mid seventies, wildlife agents brought me a few hopelessly crippled Brant geese found after the hunting season along both Washington and Oregon coasts. The track record for breeding crippled and wild-caught waterfowl in captivity was poor so I fully expected to simply be a custodian to these geese for as long as they lived. I provided them with a one acre enclosure with varied terrain, some of which I hoped might stimulate nesting.

One pair formed a solid pair bond the first spring but it was to be six years before I was rewarded with my first nest. Of the five eggs laid, two hatched and began to grow rapidly on the usual 30% protein starter ration. It was then that my education on the specialized needs of arctic geese began, as both Brant began to show early signs of leg disorders. One of the corrective measures I tried was to cut way back on the protein level of their food, and a rapid improvement was noted. Several years later, after studying, collecting, banding, and installing transmitters on Brant in the arctic I observed that this characteristic was an evolutionary adaptation that allowed Brant to subsist on the sparse vegetation of their nesting area.

Later that year, while visiting with a Fish & Wildlife research biologist who expressed an interest in my Brant breeding efforts, I asked if there was any way that I could find additional bloodlines, so as to carry my work and study of Brant past one or two generations without inbreeding.

Wild populations of Brant had declined to the point where hunting had been stopped so the opportunity to receive crippled birds no longer existed. The biologist informed me that very little arctic work with Brant was being done at that time, so probably the only way I could acquire the ten or so birds I needed was to request federal, local, and Eskimo permits and, once secured, travel to the arctic to do my own collecting. Months of letter writing, persistence, and supplying references finally paid off when federal and local permits to study and collect small numbers of Brant, emperor geese, tundra (whistling) swans, eiders, sandhill cranes and ptarmigan arrived. The natives still had to be convinced of the benefits of our captive research and that ultimately was going to require a face-to-face meeting on our arrival in the arctic.

Between 1981 and 1986, four study

and collection expeditions were mounted in arctic areas ranging from the lush estuarine environment of Alaska's Bering Sea coast to the arid, sparsely vegetated high arctic of Canada's Northwest Territories. Records of all wildlife seen were kept and provided to wildlife authorities. Nesting areas and feeding habits of species selected were studied in detail. Although several different species were usually allowed on our permits, most expeditions were considered successful if only one species was located (especially Brant). Travel in the arctic was accomplished using whatever could be arranged, including everything from shoeleather and rubber rafts, through Eskimo boats to light airplanes and helicopters. Until one tries to travel the arctic, its vastness and primitive beauty cannot be comprehended. Often, the melting icepack or arctic storms, fog or other weather conditions would ground us in camp for three to four days at a time.

Portable generators were usually used to power incubators and brooders in camp. A commercial game bird starter feed and mealworms were taken along and used along with locally collected plant and insect foods. The diets for each species was customized for its needs, based either on our studies or, in a few cases, on existing data for that species. Eggs collected in the field were carried in soft, thermal bags, like those used to carry six-packs, with insulating material around a lukewarm hot water bottle. For the later and longer trip home, homemade, battery powered, portable incubators were used.

When armed with the proper licenses and equipped with the required gear such as a helicopter and catching nets, we would round up flightless non-nesting Brant for banding with U.S. Fish and Wildlife bands and if a bird looked exceptionally strong we would fit it with a tracking transmitter so its winter migration movements could later be studied. In 1985 one of the Pacific Brant we so equipped on Mellville Island, N.W.T. was tracked four months, and over 4,000 miles later, at Cold Bay, Alaska!

To date, we have successfully bred both Atlantic and Pacific Brant, emperor geese, whistling swans, and spectacled eiders from those collected in the arctic. The sandhill cranes and rock ptarmigan have nested, however as yet, without fertility. Adequate numbers of Pacific Brant, emperor geese, and whistling swans are being raised to allow continuation of our studies for some

time.

Our aviaries cover approximately five acres and are surrounded by 200 acres of sanctuary which we manage for all native wildlife. Between the sanctuary and aviaries there are ten ponds, all man-made, that range in size from eight acres to fifteen feet in diameter. There are two streams, one of which hosts a spawning population of sea-run coho salmon. The sanctuary is home to a good number of grouse and waterfowl, in addition to beavers, muskrats, deer, bear, raccoons, mink, possums, owls, hawks, osprey, and small mammals and birds too numerous to list here. Many are attracted by our nest boxes or our eight acres of grainfields.

You can see how critical it is for us to have good, solid, secure fences for our aviaries. All fencing is buried 18 inches in the ground and has an electric fence wire installed outside the fence approximately 18 inches above the ground. The purpose of the electric fence wire is to deter climbing predators. On the top of the fence are installed floodlights, pointed skywards, to let the captive birds see approaching owls so they can escape. Water for the six ponds within the aviaries is pumped from deep wells to minimize the danger of toxins or bacteria being brought in from one of the creeks. The entire aviary area is designed to provide security and comfort for our charges while simulating their natural habitat as closely as practicable.

Ducks and grouse are incubated under bantams and brooded artificially until ready to be transferred out of doors. Geese and swans are allowed to incubate and rear their own, to eliminate all danger of imprinting on foster parents or keepers. The incubating and rearing methods described were chosen by me to maximize our ability to rear birds that, when mature, will make good breeders. Incubators are available, if needed, as backup to the banties and natural mothers; however, it's been my experience that the percentage of fertile eggs that hatch is slightly lower with incubators.

Except for the most common species on the farm, bloodline and origin records are kept and correlated to aluminum legband numbers. A conscientious effort is made to avoid inbreeding.

A good number of observations have been made regarding our arctic species, however, we feel it is still too early to draw firm conclusions. Among our observations are the following:

1) Although both emperor geese and Brant seem to relish high protein feeds, emperors appear to thrive on it while Brant develop several physiological disorders, such as ameloidosis and gout. When the protein level in the diet is dropped to 12%, most of these disorders disappear. This could be the result of the emperor's winter adaptation to feeding on shellfish and marine invertebrates while the Brant are strictly vegetarians.

2) Nesting of arctic geese appears to be triggered by weather conditions and average temperature. Male fertility seems to be tied to both photoperiod and aggressive territorial defense. In the case of an early spring such as the one experienced this year, the incidence of infertility increases. The effect on these same species in the wild would be much less as both weather conditions and photoperiod would change simultaneously during the course of spring migration.

3) Three of the Brant have selected the same location to reneest in successive years. As more Brant reach sufficient age for reneesting, this characteristic may prove to be uniform, and could have implications in the management of wild populations.

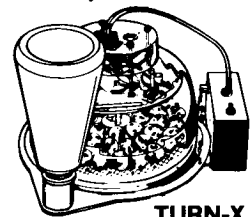
Predation has proven to have a much harsher impact on nesting Brant than on other species of geese such as emperors or Canada geese. Upon the appearance of a family of weasels in their enclosures, all Brant abruptly stopped all nesting efforts for that entire season. My partner in the Canadian arctic had the same experience when raccoons raided his facilities in Nova Scotia. Could the shortage of young, wild Brant some years be due to the same tendency, when arctic foxes or native subsistence egg gatherers are in abundance?

4) While emperor geese and whistling swans are calm, adaptive species, such is not the case for Brant. Just as in the wild, a captive Brant flock is constantly on the move, probably trying to escape some imaginary danger. I suspect that wild Brant are heavily predated and have developed this characteristic for survival. This frequent rushing about makes them vulnerable to injury from any obstacles in their enclosure. They appear to be easily stressed, which may also contribute to their higher incidence of ameloidosis.

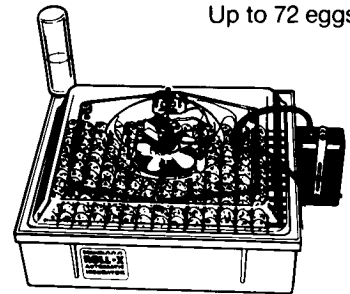
5) A pair of whistling swans that seemed reluctant to nest were stimulated into doing so by enclosing them adjacent to a good nesting pair. While the reliable pair was nest building and

Marsh Farms INCUBATORS

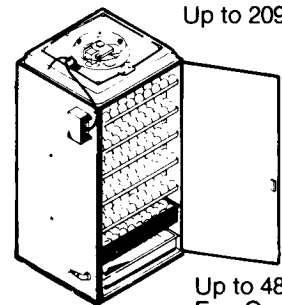
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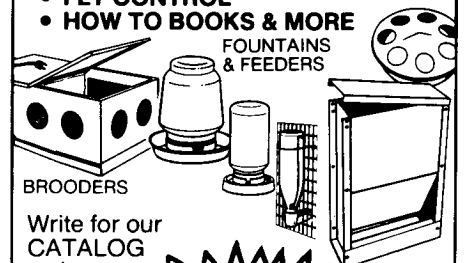
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Pacific Brant.



Tundra (whistling) swans.



Launching an Eskimo hunting boat for travel through ice flows.

laying eggs we allowed the males to compete and spar with each other at the fence. Once the first pair began incubation a four foot high visual barrier was installed between pairs. With their privacy assured, the reluctant pair immediately began nest building and as of the date of this writing have four healthy cygnets.

6) In general, arctic waterfowl do not appear to be as effected by blood



Baby sandbill crane.



parasites as more southern species. However, both Brant and emperor geese have shown a vulnerability to respiratory and intestinal parasites. Brant, in particular, show a tendency to be so effected that a secondary infection occasionally proves fatal. I would highly recommend periodic worming for these species if kept in large enclosures and exposed to parasites carried in by wild birds.

7) Eiders, probably due to their aquatic lifestyle in the wild, are very susceptible to aspergillosis in captivity. We have been experimenting with a vaccine manufactured by Willamette Laboratories and feel it has provided some measure of protection. A more scientifically performed study of this product is sorely needed.

We have had one case of a whole brood of Brant lost before three days of age due to aspergillosis, probably caused by mouldy hay being used for nest material.

8) Ptarmigan, like most grouse species, survive by their ability to suddenly burst into high-speed flight. To avoid broken necks and brain trauma, enclosure design must take this characteristic into account.

At approximately two months of age, ptarmigan become very parasitic if crowded and must be provided ample room and escape cover.

Because of the rocky nature of their native terrain, ptarmigan toenails grow more rapidly than other grouse species and must be trimmed in captivity to prevent injury.

They thrive on a diet of commercial game bird feeds supplemented by fruit and willow branches which they naturally strip of their leaves and bark.

9) Sandhill cranes are initially fed by their parents for a short time. This characteristic makes it imperative to hand feed them until they are securing enough feed on their own. An occasional crane chick is reluctant to take food when offered, and it has been discovered that the color red, when presented with the food, seems to stimulate increased interest. This could be a response to the red patch on the forehead of the adults. We feed crane chicks soaked Purina Dog Meal until they begin to accept dry, pelleted feed.

Since they are highly nomadic by nature in the wild, it is imperative to walk young sandhill cranes at least twice a day to assure good, straight leg development.

As you can see from the foregoing, when working with new and delicate species, it becomes very important to



A pair of rock ptarmigan (approaching white winter color phase).



One of six annual nature tours at the farm.



Predator-proof security fencing. Note electric fence wire eighteen inches above ground.


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establish a good, cooperative relationship with a local veterinarian interested in avian medicine, and sympathetic to the husbandry needs of different species. Necropsies of all deceased birds becomes important in large collections to head off disease outbreaks and to correct deficiencies in husbandry methods. A good blood test on a listless specimen can often identify whether the bird is simply anemic, is fighting an infection, or has a compromised liver or kidney. Without this information, treatment procedures are simply guesswork and can do more harm than good. Wild-type aviary birds are vulnerable to all the same diseases and injuries as domestic poultry and for these good treatment procedures are available. Nervous species, such as Brant and ptarmigan, are especially prone to injury some of which are simple skin tears. Suture materials and needles as well as a Nolvosan disinfectant solution can be provided by your veterinarian along with lessons on how to clean and suture skin tears in order to avoid disfigurement and infection.

Another technology that should be learned is tubefeeding and the administering of prescribed drugs by injection.

In conclusion, I hope I've made my point that responsible aviculture can be a valuable conservation tool. The educational benefits of tours through well managed aviaries can be extensive if done properly, explaining the special adaptations of most species to their native environments. The research value of aviculture depends on how thoroughly the unique characteristics of a species are observed and recorded. At the very least, aviculture can highlight a behavior or physiological trait not observable in the wild that is worthy of further detailed study by zoological or wildlife management professionals.

The value of aviculture as a means of preserving genetic strains is another matter. Zoos are developing a reputation for careful breeding of genetically pure and unrelated specimens; a reputation yet to be earned and deserved by private aviculturists in general. Zoologists and wildlife managers are naturally suspect of the smaller, or lesser known aviculturists because of a few who do convenience breeding or accidental breeding rather than well planned and carefully executed reproduction. Responsible aviculture is a thoroughly enjoyable hobby or business that is coming of age in this world of rapidly dwindling native habitats. 

DOMESTICALLY BRED — CONURES: suns, jendays, gold-capped, gold-crowned, Australs, slender-billed, halfmoons, Hispanioian, maroon-billed, green-cheeked, painted, black-capped, maroon-tailed. **PIONUS:** bronze-winged, dusky, white-capped, blue-headed. **LORIES:** iris, blacks, goldies, yellow-streaked, Edwards, chattering & others. **CAIQUES:** black-headed, Congo greys, Senegals, Meyers, red-sided eclectus, macaws & miniature macaws, Alexanderine parakeets, & miniature macaws, Alexanderine parakeets, crimson-winged parakeets, umbrella, citron & lesser cockatoos. References gladly given. **SUPERSTITION AVIARIES,** Stan or Fay, (602) 983-3028. Arizona.

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