

# Considerations in Avicultural Set Up

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Ideally prior to establishment of an avicultural collection, the aviculturist should attempt to envision what he/she would ultimately like to accomplish. The primary objective (commercial vs hobbyist) will also affect how birds are set up. Commercial facilities are typically simpler, more practical in design and more efficient in space utilization than hobbyist facilities. The economy of scale must be considered. Increases in housing density which contribute to economy also contribute to the incidence and potential severity of disease outbreaks and increase the necessity of closely monitoring for potential health hazards. The commercial breeder will likely select species which are productive in captivity, adapt well to the environment in which they will be kept, are popular in the trade and suitable species to be kept as pets.

When selecting species the aviculturist should also consider the suitability of the species for the environment of the aviaries. For example, species which inhabit dry, high altitude environments may be unduly stressed and more susceptible to disease when housed in outdoor aviaries in a warm humid climate, such as attempting to breed Plum-headed Pionus in South Florida.

## Facility Design and Housing

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Housing must provide safety, security, sanitation, ease of maintenance and must fill the psychological needs of the bird for successful aviculture. The first decision to be made in facility planning is indoor vs outdoor aviaries. In most parts of the country and for city dwellers, indoor aviaries may be required.

Indoor housing has the advantages of easier pest control, ability to manipulate lighting, temperature and humidity factors and protection from the elements and theft. Routine care is not affected by seasonal changes, rainfall and weather conditions. Disturbance by nocturnal predators or other wildlife and introduction of disease by wild birds is eliminated.

Due to the increased proximity of birds however the potential for the spread of disease may be heightened. The lack of seasonal cycling of light and other climatic factors may also be a factor in breeding success. Cost per unit of housing as well as maintenance costs are typically higher for indoor facilities. Indoor areas require more cleaning to prevent accumulation of feces, food wastes, and dust as well as preventing stagnation of the air. The potential hazard that dust poses for human health should also be considered. Provision of full spectrum light should be considered to aid in Vitamin D synthesis and contribute to well-being. Indoor facilities are usually less spacious than outdoor aviaries.

When planning an indoor avicultural facility, ease of cleaning must be paramount. Drainage to allow hosing or pressure cleaning must be considered. If floor drains are installed they must be of adequate size to prevent blockage by feed (especially seed which sprouts in drains) or debris. Floor drains may be utilized by pests, especially rats, to enter a facility. Design to reduce excessive movement around or under birds during cleaning may be important to reduce disturbance.



Air quality is important to reduce stress and spread of disease. The use of ventilation fans, air filters and ozone generators should be considered for improvement of air quality. Provision of full spectrum light or supplementation of the diet with Vitamin D-3 should be considered. In dry climates or during northern winters, supplemental humidity, by air humidifiers or misters, may be required for the comfort of tropical species.

Outdoor aviaries are common in southern states and provide the advantages of a more natural setting for birds. Usually more space can be provided due to decreased per unit construction and maintenance costs. Exposure to natural seasonal variations in weather may stimulate reproduction. The beneficial effects of fresh air and sunshine to health and productivity may play a role in avicultural success.

Disadvantages include the inability to control climatic factors when the weather is inclement, increased difficulty in pest control, the potential for noise irritating neighbors and increased risk of theft. Some birds may exhibit sensitivity to biting insects or other allergens. Predation and the potential for introduction of disease by wild animals poses some risk. Protection of food bowls and nest boxes from heavy rains also poses some problems. Some of these problems can be corrected by utilization of combination indoor/outdoor facilities where birds can be allowed outside in good weather.

Site selection and preparation is the first step in outdoor aviary planning and construction. Items which should be addressed in the initial site planning include - location of aviaries in relation to support buildings, flow of traffic through the aviaries, source of water and electric power, the effects of noise on neighbors, and the potential for disturbance of the birds from people, animals, traffic etc. Drainage may be critical if aviaries are built in low lying areas. Weather protection should be evaluated. Natural or artificial windbreaks may be necessary in some parts of the country for protection from cold or high winds. The primary direction of wind and rain should be considered in the design of roofs in order to maximize protection of nest boxes and food bowls from rain. Privacy may be provided by the use of vegetation or fences, or by placement of birds as far as possible from roads or houses. The need for shade will vary among species. Desert species may prefer a more sunny, open aviary while forest species may feel more secure in wooded or secluded aviaries. A vital component in outdoor aviaries is security from predators which may attempt to prey upon the birds or spread disease in the aviary. Raccoons, opossums, foxes, cats, dogs, and rats may injure birds, frighten them into self-inflicted injuries or introduce disease. Electric fences are helpful in excluding wild predators from aviaries. Dogs are often used in an attempt to exclude predators. Poorly trained, noisy or excitable dogs may affect production by killing birds or disturbing or frightening birds, reducing productivity or incubation success. A fenced kill zone surrounding bird holding areas may reduce some pest control and predator problems.

Birds which are housed outdoors and exposed to natural sunlight should not require supplemental Vitamin D3. Macaws are especially susceptible to Vitamin D toxicity which could be potentiated by supplementation of birds which receive natural sunlight.

## Caging

The two primary styles of caging are suspended cages and flights, both having pros and cons. A suspended cage is off the ground and is not entered by a person. Suspended cages have the advantages of simplicity of construction, ease of cleaning, minimal expense, ability to modify or move if necessary and increased security for the birds. As birds have less exposure to their feces and accumulated food, disease and parasite control is simplified. Larger cages and perches placed above eye level of the care taker contribute to security and contentment of the birds housed within.



Flight cages extend to the floor or ground. The major benefits of large flights are they are aesthetically pleasing to people, they provide more space for species which may require it due to their size or temperament, and they provide more space for exercise for individuals or species that have a tendency to become obese in captivity. Disadvantages include difficulty in sanitation and pest and parasite control. Caretakers walking from one flight into the next can track disease organisms or parasites.

Feeders should be designed to reduce contamination of bowls, reduce dumping, prevent or reduce perching on bowls and protect food from rain. Alcove feeders or basket feeders can be utilized.

Adequate cage doors are necessary to allow capture of birds with minimal amount of chasing. Escape proofing is suggested and may be accomplished by safety aisles or suspended safety netting. In outdoor cages without safety aisles or netting, a portable catching cage or drape can be suspended over the door, surrounding the catcher in order to reduce the chance of escape.

Adequate spacing of individual cages or double wiring of flights is recommended to prevent fighting of birds between cages which could result in severe trauma to feet and beaks.

Nest boxes should be placed in or on the cage in such a way as to allow easy and frequent examination. Placement on the same end as the feeding/watering station allows simultaneous feeding and nest box examination. Very shy birds may be more likely to utilize a nest box which is more distant from high traffic areas. Nest boxes must be constructed so that water does not soak through or must be shielded from rain or direct sunlight which may cause overheating. Some aviculturists believe that some species, such as amazons, require visual isolation around the nest box while others, such as cockatoos, are less affected by visual contact with conspecifics. Such behavior may arise from flocking behavior and the existence or lack of communal nesting in the species.

Perches must be secure and non-movable in order to provide a optimal site for successful copulation. Natural wood perches with variable diameter and surface textures provide optimal exercise for feet, however unless very hard woods such as manzanita or Australian pine are used they will be rapidly chewed down by many psittacines. If very large or flat perches are used to avoid frequent replacement, pressure lesions may result on the ventral surfaces of the hocks from excessive and continuous pressure. More permanent perches may be used such as PVC, steel pipe, rolled wire perches and some synthetic materials. Some foot and leg problems may be associated with long term perching on hard perches, especially in cold climates where chilling of the feet may occur.

Nest Boxes may be constructed of many materials, plywood being the most common. Pressure treated plywood should not be used due to the potential of ingestion of toxins. Wire lining reduces nest box chewing, however chewed wires can produce dangerous projections which could damage eggs, or injure chicks or adults. Plastic or metal barrels have the advantages of being more permanent, and can be disinfected, however they are more susceptible to environmental temperature variations. Nesting materials can contribute to disease problems. The use of potting soil, corn cob bedding, soil or hay may contribute to fungal growth. Pine shavings are recommended for nesting material.

## **Acclimation**

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Acclimation of new arrivals begins when the bird arrives in the quarantine facility and continues after the pair are set up. Introduction of new prospective mates is recommended prior to placing in the breeding cage.



Observation of the new pair is also necessary to detect signs of aggression, incompatibility or failure to adapt to the new caging. Birds must be identified and records established prior to or at the time the bird enters the aviary. Each new bird should be given permanent identification at the time of entrance into the aviary utilizing implantable transponders or closed or open bands. Open bands are the least desirable but nonetheless an effective means of identification. Close them as tightly as possible to reduce the risk of the gap slipping over cage wire. Birds should be weighed when put out and watched closely for initial weight loss.

For species which will be housed outdoors, acclimation to environmental temperatures must be strongly considered. Tropical birds placed in outdoor facilities in northern temperate climates should be acclimated for a period of time before being exposed to winter temperatures which would otherwise be easily tolerated. The potential for sunburn on bare skin areas should be anticipated when placing birds in outdoor facilities in which they will be exposed to direct sunlight. Biting insects may also cause dermatological reactions which can become quite severe in the new arrival. Housing of affected birds indoors until the severity of such reactions subside may be helpful. Sensitization to pollens or resins of plants may also occur.

## **Disease Control**

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Good hygiene is vital to good health, however the level of hygiene must be balanced against the disturbance associated with it. Design of cages so cleaning and maintenance is minimized saves labor, and minimizes disturbance which can reduce the chances of successful reproduction in shy birds. Frequent disinfection of cages likewise is not necessary if healthy birds are permanently housed within and organic debris is not allowed to build up in the cage.

Water quality is vital to health and problematic for aviculturists. Water offered to birds must be potable and given fresh daily. Water bowls should be washed as necessary as indicated by algae growth, food or fecal deposition in the bowl. Vitamins should not be added to drinking water unless bowls are washed daily.

Automatic waterers reduce labor and ensure that birds have a clean fresh supply of water at all times. Contamination due to food or fecal deposition in water is eliminated. Contamination of water lines can occur and frequent flushing of water lines is important to maintain good water quality. Water should be flushed through lines daily as part of the maintenance routine. Periodic flushing of water lines with hypochlorite or iodophores may be necessary. Reliance on automatic waterers without a visual check to assure they are working every day can result in die-off of birds due to system failures.

Water source contamination is a major problem especially with well water. The use of filters or reverse osmosis units may actually potentiate contamination problems. Periodic culture of water sources and evaluation of the cleanliness of water supplies is important. Air-conditioners and ventilation systems may be a foci for bacterial and/or fungal growth in an indoor facility.

Cages should be constructed so that feces and food debris either fall through the cage floor or is readily hosed out of the cage, thereby limiting unnecessary disturbance associated with overzealous attempts to maintain the cage.

## Pest control

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Insect and rodent pests are potential vectors for disease and parasites as well as a source of irritation and disturbance for breeding birds.

Cockroaches transmit *Sarcocystis falcatula* from opossum feces and can contaminate a birds food, nest or can be eaten by a bird resulting in fatal illness. Control of roaches, especially in outdoor facilities in southern coastal climates is challenging if not impossible. Limiting access of opossums to breeding facilities containing susceptible species must be considered in design. Ants can transmit some parasites such as the proventricular worm *Dispharynx*. Ants can also reduce food consumption by swarming food bowls or build nests in nest boxes. Control procedures should include baiting of nests and trails, keeping facilities clean and avoiding foods which attract ants into cages.

The red mite (*Dermanysis gallinae*) can be troublesome in an avicultural situation. Five percent carbaryl powder has been used successfully for the control of mites inhabiting nest boxes without apparent harm to chicks or adults.

Rats and mice entering an aviary at night can spread disease, disturb nesting birds and on occasion will kill birds. Biological control methods appear to be most effective. Attempts should be made to build in such a way as to discourage nesting in or around the aviary.

The use of concrete slabs under aviaries often provides shelter under which rats will tunnel and nest. Cages suspended on poles can be fitted with rat guards or the poles can be greased to prevent climbing. Sheet metal guards can be wrapped around trees to prevent nesting in trees by rats or use of trees by predators to cross fences. Bait boxes should be used as needed and with caution.

Outdoor aviaries for small birds, such as finches should be constructed with small wire or screened to prevent entry of snakes.

Large predators such as opossums, raccoons, cats, dogs should be carefully excluded from the aviary. Electric wires run along the top, and/or bottom of a perimeter fence which is buried at the bottom is a very effective means of control. Observe the perimeter of the enclosure to ensure that overhanging trees do not provide access to aviary roofs from points outside the perimeter.