The Closed Aviary Concept

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"Study principles rather than methods. A mind that grasps principles can devise its own methods …. " B. Gill

In aviculture, "success" usually is defined by the successful production of young. The production of viable offspring probably remains as the only fairly uniform goal of most avicultural efforts. Good productivity, when achieved, is traditionally assumed to represent good management efforts by the aviculturalist.

The purpose of this chapter is to provide a common unifying concept as a foundation from which individual aviculturalists as well as avian veterinarians can approach avicultural productivity related concerns. The term chosen to describe this unifying concept is The Closed Aviary Concept.

The Closed Aviary Concept serves as perhaps the single most unifying theme in progressive psittacine aviculture (see "References and Suggested Reading"). In the conceptually closed aviary, both clinical and subclinical disease are controlled and monitored through adherence to the basic principles of designated areas and controlled flow of human, animal and supplies traffic. This concept of traffic control is used to reduce avicultural variables during movements within individual designated areas of the aviary as well as within the aviary as a whole. Minimized variables should lead to reduced problems and maximized production goal attainment.

The conceptually closed aviary attempts to prevent the introduction of infectious disease or other disruptive problems before they occur in the facility. The closed aviary also controls traffic flow within the collection in a regimented manner to prevent spread of infectious disease or disruptive factors within the facility.

For the aviculturalist as well as the avian veterinarian, an in-depth understanding of the principles of the closed aviary concept is fundamental to success. Record systems that are generated and used in management are targeted for the designated areas within the closed aviary. These records are then used to help clarify and monitor potential problems or current management areas. A lack of control of human or bird

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movements entering and within the breeding facility will result in increased disease, impaired production and increased risk of failure to meet desired production goals.

The closed aviary, in this light, is best defined by the concepts and function that it is predicated and operating on. These concepts and functional aspects of the aviary hold valid regardless of specific management and structural design of the facility. Careful note should be made regarding the differences between these philosophies and the typical approach of the standardized or individual patient medicine. These differences serves to clarify and focus an avicultural medical management effort.

Fundamental Concepts of the Closed Aviary

Aviculture is farming

Farming, by definition, is productivity oriented animal stewardship. Many correlations can be drawn between the goals of the dairy, pork, poultry and beef industries and aviculture. The avicultural "farm" can vary immensely between individual owners, but still conceptually has all of the significant components of a farming operation. Where one "farm" may be a single breeding pair of macaws, the next may be a backyard aviary collection of macaws, the next may be an intensely monitored and maintained group of 450 pairs of large psittacines in a series of specifically designed and built breeding barns. If success is to be dell. ned by degrees of productivity, aviculture must be viewed as productivity oriented avian stewardship, or "bird farming." This concept also includes avicultuml efforts of non-psittacine bird species such as raptors, ratites, waterfowl, game birds, etc.

Productivity is the lifeblood of the farm

Farming is productivity oriented animal stewardship. The product from this investment and effort is what maintains the farm. Without production, numerous difficulties are experienced by the farm. Severe or continuous hardship will ultimately threaten the existence of the farm. Productivity, therefore, has the significant role of maintaining the "life" of the farm unit.

Time and cost must always be justified

Justification for time and cost in each avicultural effort varies immensely between individual owners. Regardless of the individual farm's manner of justification, there must always be thought applied to this concept. As we all know, neither money or human labor grows on trees. Physical time and expense invested in new management efforts must not compromise current maintenance efforts. Otherwise, ramifications from those distractions can pose a significant threat to the overall effectiveness or the farm.

The flock always takes precedence over the individual

Flock and herd health is oriented to the group rather than the individual. Individual diseased birds are still diagnosed and treated, but the emphasis is always carried towards prevention of the occurrence of the problem(s) in the future. Protection of the group from infectious or management-induced disease is always the primary concern in a farm. Widespread or recurring disease could endanger overall farm productivity, where individual birds do not alone pose this threat, but may represent the keynote birds of an infectious disease outbreak. No single bird can be prioritized ahead of the entire collection deemed at risk.

Culling and replacement is fundamental for improvement

The concept of culling and stock rotation is a fundamental part of any progressive animal production oriented operation. Exotic bird species should not be excluded from this basic animal production principle. Based on the individual aviculturalist's defined production parameters and criteria desired, those individual birds not meeting desired goals should be culled. Sale or physical removal from the breeding aviary, nursery, quarantine or isolation areas as well as destruction of certain individuals are properly included under the umbrella of culling. "Culling" should not include relocation within the aviary or reevaluation to seek the link(s) barring successful production. When working with particularly rare or valuable species, culling should be a final management step when eftotis to identify limiting factors to production have failed. These elfotis may include infedility examinations, behavior analysis and management or husbandry changes.

Stock management protocols are dictated by productivity parameters

Stated in simpler terms, management eftotis are influenced greatly by desired production parameters. Declining productivity is a symptom of avicultural disease. Therefore, declining productivity should be followed by diagnostic evaluation by the aviculturalist as well as their attending veterinarian and a management plan to improve production and monitor that improvement. New parameters for productivity evaluation will be developed based on changes in the goals and needs of the aviculturalist. These new parameters in turn lead to new or changed management protocols. This pattern should continue to feed itself and progress ~nto a more sophisticated avicultural medical management effort.

Productivity success will be best achieved by restriction to one or a few taxonomic orders or genera

Commercial poultry, dairy, swine, beef and sheep farms accomplish best success when focusing on their own respective species only. Very few large production oriented farms can be found that have multiple species of animals being produced in the same location. This principle should hold true in psittacine bird breeding efforts

as well. Extremely varying disease susceptibilities, management requirements and nutritional needs will interject more variables into the operation from which failure or complications can rise. Aviculturalists who specialize in species from one continent of origin or one taxonomic genus or family are becoming more common with the passage of time and the progressively declining availability of imported breeding stock. Aviculturists who have focused on macaws should be expected to reach a higher level of production success.

Preventative medicine is more desirable and economical than symptomatic medicine

Tradition states, "An ounce of prevention is wodh a pound of cure." With very few exceptions, it will be less costly to establish the preventative mechanism to avoid disease than to treat it medically. Cost must be defined in cost and labor terms and be weighed in view of perceived risk to the flock. Disease prevention through improved management efforts should be a common goal for both the aviculturalist as well as the attending veterinarian. As mentioned earlier, however, cost must be justified.

Most flock diseases are a symptom of management flaws and are not a viable avicultuml diagnosis unto themelves

Both the aviculturalist as well as their attending veterinarian must be convinced that the conventional companion animal approach focused on diagnosis, treatment and control of clinical disease as the sole objective is incomplete in an avicultural medical management effod. This approach frequently fails to recognize the strong relationship between management and disease. Veterinarians and aviculturalists must seek answers above and beyond the standard pet bird diagnoses - again, with the betterment of the flock in mind. Once an individual disease or cluster of diagnoses has been established, attention should be focused on the attempt to locate the management links that could have potentially set the stage for the disease to be manifested. Failure to view most disease in this manner will result in failure to identify potential management or husbandry flaws. This failure locks the veterinarian and aviculturalist into a "symptomatic" treatment regimen - addressing the disease but ignoring or down-playing the potential causes for the development of disease.

Short-term goals must be prioritized and realized to achieve long-term goals

Without the ability to achieve the short-term goals desired by the aviculturalist, progression to newer and further reaching goals is inhibited. Immediate financial or emotional return is a frequently desired goal by the aviculturalist. A classic example of a shod-term goal may include an outbreak of disease in the numery or the breeding aviary with the immediate cessation of mortality and morbidity the targeted goal. Inability to achieve some degree of success as measured by the aviculturalists' standards will directly inhibit progression towards a long-term goal of preventative medical management effort to avoid recurrence of that type of disease problem in the

future.

Drugs are not a substitute for sound management

Antibiotic usage on an empirical basis in psittacine flock management should be regarded in the same light as trying to prevent infection with antibiotics following surgery with poor sterile technique. Any persistent or cyclical drug therapy warrants careful evaluation for an underlying source of the problem. Sound management has never been founded on drug therapy alone. An idealistic, but necessary goal in management is to use as little drug therapy as is necessary to meet production goals. Regular antibiotic usage on a maintenance or empirical flock basis is a currently widespread avicultural problem. The result is an ever-increasing spiral of background bacterial resistance and subclinical disease. Improved management in the vast majority of instances will result in less demand for drug therapy on an empirical basis. Background management flaws and their resultant stresses to the birds are frequently an overlooked primary problem.

Aviary design

The closed aviary should have its own anatomy, similar to the birds that live within it. Each aviary, if it is to be conceptually closed, must have designated areas for quarantine, breeding, nursery, and isolation. Each designated area should have a distinct and separate location in the entire breeding operation. The attending veterinarian as well as the aviculturalist must have these areas well understood and properly conceptualized. It is the rules regarding traffic flow between these areas that allows for managerial control and improved preventative management efforts. Without these areas clearly understood, progressive management is at best difficult and sporadic.

Design and Function of the Designated Areas

Quarantine

Quarantine is the designated area where newly arriving birds enter a facility. New arrivals to the facility do not leave quarantine until such time as they are deemed admissible to the breeding aviary collection. In this manner, quarantine serves to protect the breeding collection from the introduction of infectious disease risk. Physical segregation of newly arriving birds away from the remainder of the established group is the primary goal of the quarantine area. Properly quarantined birds provide the breeding aviary or collection with a more uniform population of birds - with more known fact about the birds and less unknown details. Those birds that fail to meet the preset criteria for entry to the breeding collection are not admitted. In this light, the significance of proper quarantine facilities and protocols is immense.

The designated quarantine area of a facility may be an entirely separate location, a separate building, or a separate room and still serve the functional requirements of the quarantine concept depending on the size of the individual facility. In some circumstances, multiple designated quarantine areas may be desirable or indicated within a single facility. The quarantine time frame recommended or required varies depending on the species being managed, l ~ acility constaints, the number of birds being brought in as well as the existing size of the collection deemed potentially at risk from infectious disease.

Breeding aviary

The breeding aviary is the designated area where the adult breeding birds are housed and maintained. In the conceptually closed aviary, the breeding area is the area with the lowest human and bird traffic flow. Focus is maintained on productivity management within the breeding aviary, and reproductive success is generally the desired product.

The breeding aviary may be at a separate location, placed in a separate building, or located in a separate room within the house. Multiple designated breeding areas may be present or desirable within a single facility.

In the breeding aviary, setup and design must be in such a manner so as to minimize stress and maximize production. Careful attention to detail in facility design and construction is important. Birds entering with a standardized health status, acclimatization, uniform dietary acceptance, and preestab!ished pair bonding, have had most of the potential breeding area stressors preeliminated by the quarantine protocols instituted. Unnecessary human traffic in the breeding facility poses potential stress to the birds. Traffic within the breeding aviary is strictly controlled. All external disruptive factore: human, animal, or other, are minimized in the breeding aviary. The greater the number of variables eliminated *prior to* entry to the breeding aviary, the greater the chances of productivity success.

Isolation

Isolation is the designated area where birds that have already been admitted to the collection through quarantine or on-site hatching are housed if they become ill or no longer meet the criteria that were required for admission to the breeding aviary or nursery. Adult birds from the breeding facility and chicks from the nursery should each have a separate isolation area. The isolation area includes the "hospital" area by definition.

Adult birds or chicks that have been transferred to their respective isolation areas are deemed fit to return to the breeding aviary or nursery by meeting uniform entry requirements. This type of protocol allows for protection of the uniformity of the breeding collection, as well as protection from potential introduction of infectious

disease.

Nursery

The nursery is the location where the young are hand fed and raised, These young represent the productivity of the breeding aviary as well as the primary desired product of the breeding facility. Young altricial birds such as macaws are environmentally and immunologically more vulnerable to lapses in management protocol and infectious disease. As such, attention to detail in nursery management tech unique and traffic flow control is important to minimize stress and reduce the risk of infectious disease introduction and transmission within the nursery.

Any breeding facility that does not have a clearly designated nursery area cannot hope to protect its young from infectious disease and outside stressors. Increased mortality and decreased productivity from the nursery is usually experienced in nurseries with poor conceptually closed design or nursery management techniques.

Summary

The closed aviary concept offers both the aviculturalist and the veterinarian an foundation to build on. In a conceptually closed facility, there is consistently adequate thought applied towards traffic control. Therefore, risk of infectious disease as well as other disruptive factors should be significantly reduced. Standardized medical and avicultural knowledge about breeder populations within the closed facility allows for more potential success in population management protocols. The specific

management protocols recommended and structural design or each component of the closed aviary will vary significantly between facilities depending on the numerous outside variables. Consistent application of closed facility concepts, however, should always remain constant.

References and Suggested Reading

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