

# Understanding the Principles of Stress Reduction in the Aviary

by James Bratt

Every morning I wake up between 6:30 and 6:45 a.m., stumble into the kitchen and start a pot of coffee. While the coffee is brewing, I let the dogs out, walk to the end of the driveway and get the paper. Then I return to the kitchen where I pour two cups of coffee, take out a prepared container of soft food and bag of frozen vegetables and head out to the barn where my aviary is located. Once there, I feed the horse and chickens, and then sit down to watch the birds and drink my first cup of coffee. At 7:30, I put down seed, change drinkers, put soft food in the breeding cages and flights, along with some frozen vegetables, and then sit again to watch the birds and drink my second cup of coffee. My routine is consistent, day in and day out, broken only by the occasional rushed morning due to other commitments.

Each of our animals has adjusted to my routine. Ami whinnies and starts walking to her stall as the back door opens—not the first time when I let the dogs out—but when she sees me coming with coffee cups in my hands. As I approach the barn, the budgies are already starting to chatter, even in the winter when the sun is not yet up. As I get about 20 yards from the barn, one of the roosters crows and I can hear the turkey and hens starting to rustle around. When I sit with my first cup of coffee, none of the budgies go down for food. It is only after I put the soft food and vegetables out that the first will fly down to see what the goodies are for the day.

As I became increasingly aware of these routines (habits), both mine and the animal's, I was struck by the thought of a number of articles I have read over the years regarding need for consistency and routine in aviary management.

Routines (habits) conserve mental energy by eliminating the need to think things out in advance and to make moment to moment decisions. Physically, they eliminate random, purposeless motions. When altered over a period of time, they cause little stress because of our ability to adjust our behaviors and create new behaviors based on our experiences with the

new situation. Although budgies do not possess varying degrees of intelligence like we do, they do possess the ability to learn specific things. Biologically, this makes a lot of sense. There is a real reproductive advantage for any species which happens to have the capacity to modify its behavior in specific ways when confronted with variability in its environment. So, not unlike us, changes in routine over time are met adaptively with little need for our concern. However, I have also recognized how natural my own routine feels and how out of sorts I feel on those occasional days where it is interrupted because of other commitments.

This feeling, "out of sorts", is my body's physiological response to the stress caused by sudden change. Without routine, in a constantly changing, unpredictable environment this physiological response is intensified. In humans we refer to it as anxiety. In a biological sense it means that we are expending an inordinate amount of energy adapting to environmental changes.

In the animal world, the ultimate consequence of all behaviors is the ability or inability of the individual to transmit its genes to the gene pool of the next generation. All behaviors center on finding food, avoiding predators, locating a mate, inducing a mate to breed and caring for the offspring of that breeding. When budgies are required to expend a lot of energy adapting to changes in their environment, it interferes directly with their ability to conserve and focus their energies on these objectives. In this respect, while routine is certainly important to the conservation of energies, it is not the only adaptation to an environmental factor that represents a threat to our budgerigars' ability to ultimately pass on their genes.

While most fanciers would acknowledge that sudden and dramatic alterations to routine or management practices, such as changing feeds or feeding schedules should be avoided when possible, few have considered the stress exerted on their birds by the addition or removal of a number of birds to or from their flights.

That budgerigars have some sort of established social order and display social behavior in the wild is arguable. The establishment of flocks seems to be regulated by the density of available seed rather than by the need for social interaction. As local crops are abundant, flock size is large. As the food sources are more geographically dispersed, the flock sizes are smaller. In observations of nesting hens sharing the same nesting sites and sometimes the same nest holes, the comparability seemed more a response to necessity (the absence of other nesting sites in that locale than to the desire to "be together." Even the degree of strict pair bonding that we observe within our aviaries may not be observed in the wild, as single hens have been seen to copulate with one cock and then immediately accept a second and third cock without leaving her position on the perch. What social interactions do occur within the feral populations seems mostly to center on activities associated with reproduction.

In this feral setting, the impact of environmental stress caused by the changing densities of the flock are counteracted by the fact that loosely bonded groups tend to break off together. The impact of sudden individual deaths due to predators, while it may require adaptational changes for those other individuals loosely bonded to it, has essentially no effect on the flock as a whole due to the sheer numbers of individuals involved.

In comparison, it has been fairly well established that within an aviary and especially within a flight some sort of established social order does exist. One, seen infrequently in the wild, is a hierarchy of dominance, or pecking order as one would find in a flock of chickens. This has been evidenced not only in feeding trials and situations of overcrowding, but is dramatically demonstrated by the territorial behaviors of the hen in defense of the nest box and immediate vicinity of the nest box in colony breeding situations. While cocks, other than the pair bonded mate, are allowed to sit on the box perch without reaction, other hens are attacked savagely and only the pair bonded cock is allowed to enter the box.

Other experiments with budgerigars in captivity have consistently supported the notion that pairs appeared

to remain stably attached even when no breeding activity was observed. Although it has been observed that some cocks may pair bond with more than one hen, indications are that the older established pair bond is the strongest with the cock often abandoning the later mate when the demand of attending to two hens becomes too great. In general, pair bonds of considerable duration are formed and maintained within the group. Social activity within the flights, as in the wild, seem to center on mating behaviors i.e., allopreening, display, etc.

Indiscriminate additions and deletions of numbers of birds to or from this group will have a dramatic affect on the stability and cohesiveness that has developed over time. This destabilization gives rise to stress in the entire colony. Unlike its feral counterpart, where thousands of birds are involved, or in which loosely bonded individuals have broken off as a group, we have, in this case, impacted a significant number of the overall group as well as a number of individually bonded birds. Obviously, the more often the individuals of any cohesive, small group of budgerigars are altered, the more frequent and prolonged the stress they will encounter. This may be particularly true of stock cages or small flights where the addition of new members also causes situations of overcrowding. By adding or deleting single birds to the group, however, the destabilization will be temporary and its overall effect will impact the individual bird or, at most, the bond of it and its mate rather than the group as a whole.

While disruptions in routine and flock cohesion certainly attribute to the overall stress and possibly an increased disease incidence or shorter life span in a number of our birds, they are not the only sources of stress reactions that occur in our aviary. Budgerigars, like most creatures, exhibit both a startle reflex and escape alarm reaction. While both may work in unison, it could be said that the reflex initiates the bird to action, while the reaction motivates the bird to put distance between itself and the source of its distress. In a number of flock or social species, of which the budgerigar is one, these responses are also often accompanied by vocalizations designed to initiate the reflex action of others. The ultimate goal of each

action is preservation of the species. In other words, biologically speaking, these mechanisms enhance the individual's chances of surviving a threat and ultimately his/her chances of contributing to the gene pool.

At the same time, it is nature's way that the conservation of energy allows more time to attend to the necessities of life (food gathering) and promulgation of life (breeding/reproduction). If, at every moment and every movement, the startle reflex and escape/alarm reaction were initiated, a budgerigar's life would be one of fright and flight. Attenuation is a mechanism of inhibition . . . in other words, it inhibits the reflex up to a point and then allows it to function in its normal way. In the same manner that routines (habits) conserve mental energy, attenuation conserves physical energy.

We have all seen it in operation at one point or another in our lives but we may not have recognized what it was. Perhaps the most universal experience I can relate is that of birds eating from the carcass of a fresh road kill alongside the highway. Cars are whizzing by at 50 miles an hour and it seems not to faze the birds as they continue with their preoccupation, perhaps at most moving slightly out of the way. If, however, I swerved the car toward them or slowed to a stop, they would immediately fly off. The escape/alarm reaction would have been activated by the change in movement/direction or speeding . . . something was different from what the bird had attenuated itself to.

It is not unreasonable to expect that the mechanisms of startle reflex, escape/alarm reaction and attenuation are at work in our aviary. That the startle reflex and escape/alarm reaction still occurs even after 150 years of domestication is evidenced by the wild, panicked fluttering of the flock at the site of a cat climbing the wire of the aviary or a pet dog barking close by. Likewise, it may very well be attenuation that accounts for the lack of a fluttering, wild panic demonstration in our neighbor's aviary as he and his pet dog together enter the aviary to feed his birds as they have daily for the past five years. Attenuation may have its roots in routine, the more routine an action, the more attenuated the flock becomes to it. Or, in the case of our budgerigars, another phenomenon, called imprinting, may be an

inhibiting factor of the alarm reaction involving man or, in the case of our neighbor, man's best friend. Imprinting was a phenomenon observed by Conrad Lorenz, where geese hatchlings attached themselves to the first object they observed upon exiting the egg. It was as if this object, man/animal/bird was interpreted to be the parent. Whether it is imprinting, or familiarity with close contact or even an adaptation to routine, it is universally accepted that handfed parrots are tamer and more responsive to humans. They appear more settled on approach and the inhibition of the escape/alarm response makes them well adjusted to the ever changing household environment; even the sudden ringing of the telephone seems not to startle them.

In the aviary setting, under the conditions and constraints imposed by limited space in which to escape, budgerigars have come under an inordinate amount of stress as they are deprived of their natural defense, flight from fright. With little consideration given to the concepts of attenuation, imprinting, and the startle reflex-escape/alarm reaction it is not surprising that stress induced disorders are a leading cause of mortality in budgerigars. In fact, statistical analysis of aviary kept versus pet budgerigars shows a significant disparity in life expectancy between the two. As a percentage of total populations studied, pet birds outlive their aviary raised and housed counterparts by nearly twice as many years. After discounting high breeding pressures and high productivity as causes, autopsy studies confirmed that stress was the major factor for the difference in longevity.

In terms of disease process, it is fairly well established that stress-induced conditions are a major factor not only in high mortality but as a percentage of illnesses appearing in a flight. Bowel/gut disorders (stress enteropathy), aortic rupture, cardiac/circulatory conditions, enteritis, cranial and other hemorrhages, obesity and a number of behavioral disorders are all linked in one way or another to stress. With an acceptance that many aspects of the budgerigar hobby are outside of our control, it only makes sense that we should make the most of those things that we can influence. Reducing factors related to stress is one of them. ●