Is it ethical to feed live food to reptiles

Environment, Animals

Is it ethical to feed livefoodto exotic pets? Abstract Live food items are often fed to exotic pet species whether they be birds, amphibians, reptiles or mammals. This raises issues of welfare, both of the animals fed live prey Items and the prey Itself. Concerns over live food welfare are particularly marked In the feeding of vertebrate prey Items and evidence presented here shows the prolonged time taken for rodents to die, this fuelling these concerns.

And yet the welfare of all exotic pets relies both on providing optimal nutrition and ensuring, as such as possible, that their natural behaviors can be expressed. Does that mean that predatory species must be fed live prey? This paper discusses this problem and seeks potential solutions. Introduction Many of the " exotic" species that are kept as pets (companion animals) or for study, or which form part of a zoo or rescue centre, are wholly or partly carnivorous and therefore require food of animal origin.

Many omnivores also feed In part on live or dead animals and some essentially herbivorous/carnivorous species, such as finches (Freeloading), require invertebrate food when they are nestlings. In this paper emphasis is on the provision of still living food, but brief mention will be made of dead animals. The discussion relates mainly to live food given to captive exotic animals but it must be remembered that free-living Individuals also kill and eat live prey. The use of live food Food comprising live animals or their derivatives is widely considered to serve two main purposes.

First, from a nutritive perspective, It contains important, sometimes essential, amino acids, vitamins and other nutrients; secondly, from a

behavioral viewpoint It provides captive animals with stimulation, especially when It Is resented to them in an imaginative way, providing a very important form of environmental enrichment. The subject of " live-feeding" of animals in zoos and private collections has become a specialist topic, with numerous papers in the literature about how best such diets should be chosen and presented. These include precautions to minimize damage to the prey species by attacks from the animals provided as live food. O be well-substantiated; as noted above, it provides behavioral enrichment and represents a natural or near-natural method of providing essential nutrition . There s, however, another important consideration, which is sometimes forgotten or ignored. This is the question of the wellbeing of the live food that is being offered. After all, the food consists of living animals which, regardless of their taxonomic status, may be subjected to and affected by stresses, including pain during the period before and during being eaten. There are several stages at which the prey species may be subjected to stresses.

The first of these is during production or collection. Live food is either bred in captivity or collected in the wild and in many cases such breeding or collection may involvestressfor the animals involved. When offered as food, prior to being devoured the live food prey item is often in what for it is an unusual, an " alien" environment. It may, for example, be exposed to abnormally high temperatures or bright lights, rendering the individual, by definition, vulnerable to attack/apprehension by the animal to which it is being fed.

The key welfare issue for many animals provided as live food will be when they are being devoured. Some live food is killed almost instantaneously by the predator, using physical or chemical means from trauma to veneration, both of these potentially rendering the prey immobile while losing consciousness. In such circumstances there may be little in risk of poor welfare. But often death takes much longer - for instance, a rodent constricted and thus killed by suffocation by a snake, or a cockroach dismembered while it is still alive.

Some prey items may be swallowed whole and are therefore still alive - and presumably conscious - for some time until they die of asphyxia or the effect of the predator's gastric Juices; If not immediately devoured uneaten prey may be taken and consumed abstinently, perhaps on another day, but in the meantime it has to survive in an alien environment, often without water, food or appropriate shelter. Sometimes the prey item is never eaten, either because the predator is no longer hungry or because the prey escapes.

As a result, it may die as a result of starvation, dehydration, hyperthermia or hypothermia in the predator's cage. It may, alternatively, establish itself in that cage or escape into the home/zoo environment. Here crickets (Grilled) are the best example. The debate Vertebrate food Some decades ago concern began to be voiced by some individuals and certain institutions about the practice of feeding live vertebrates to captive mammals, birds and reptiles. The methods employed began to be subjected to greater scrutiny and criticism as a greater understanding of, and sensitivity to, issues of animal welfare evolved.

Society of London) introduced a ban on the feeding of living vertebrate food to its captive reptiles and instead to train the latter to take freshly-killed prey or items (for example, a freshly dead rabbit) that could be moved to simulate life or placed in an unusual environment, such as a hollow tube, to interest the hungry predator. In Britain, at any rate, many other zoos and herpetologists followed suit and by the late asses the use of dead, not living, prey was considered to be " good practice".

During the decade of the asses claims were regularly made by animal welfare groups that live-feeding was " illegal" in the I-J but these assertions were countered in lectures and articles (1). The point was made that there was no specific legal ban on live- feeding but that such a practice might lead to a prosecution under the Protection of Animals Acts (2). Herpetologists who still wanted to feed live food to their charges ere encouraged to take steps to minimize suffering in various ways - for example, by not leaving live food in the various for long periods of time and by providing shelter and water for it.

Those recommendations in Britain were in a large part a modification and refinement of the approach taken by the senior author nearly a decade beforehand, when, in an attempt to encourage a more humane approach to live-feeding of snakes in East Africa, a document was drawn up by the Kenya Society for the Prevention ofCruelty to Animals. (KAPPA). This is reproduced as Appendix A. Force-feeding" of non-living food is also a possibility, particularly used for 'difficult' species such as Royal pythons (Python argues) but this can be stressful.

Another argument used on both sides of the Atlantic, to dissuade reptile-keepers from feeding live vertebrate food was that the latter could easily attack and damage the predator species. Thus, for instance, live rodents put in Bavaria as food can cause severe skin lesions in snakes (3, 4, 5). Having said that, a casual glance through online video clips, as detailed further below, shows that live vertebrate prey are still fed to pitiless by a number of keepers. Invertebrate food Questioning the feeding of live invertebrates to captive animals is less common even today .

In the asses an " animal rights" group based in Scotland lobbied for more awareness of the welfare needs of invertebrate animals and included in their concerns the use of crickets, maelstroms and other species as food items for captive mammals, birds and reptiles. In the past two decades interest amongst veterinarians and others in thehealthand welfare of invertebrates has grown (6, 7). In its wake, discussion and studies on whether or not invertebrates " suffer" pain have become reverent (7), including some limited analysis and discussions of the ethical considerations of using these animals as live prey.

A problem, of course, is that the term " invertebrate" is very broad, covering around 30 distinct phyla, and the ability of such animals to react to a noxious stimulus varies greatly between, say, a coelenterate that has no generalized nervous system and a cephalic with a well-developed nervous system and pain responses (7). The main groups of invertebrate that are used as food for other animals are arthropods, phyla produce endorphins and may, therefore,

be able not only to respond to pain by appropriate escape behavior but be aware of it.

Research on the nematode Conservationist elegant, for instance, has shown that activation, an invertebrate homologue of morphogenesis, together with improprieties, modulates aversive activity that mimics behaviors associated with chronic pain in vertebrates (9). While such primitive species can exhibit inception, it would be questioned by many as to whether they feel pain, defined as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage' (italics added) (10).

Even a single- led amoeba moves away from a noxious stimulus, but cannot be said to have an emotional response - so where on the evolutionary 'ladder' does such a response occur? Certainly there are behavioral indicators of pain in several crustacean species (11) and some mollusks (12). In some situations such as the use of live insects in biomedical research, the approach advocated by certain authors has been " to give them (invertebrates) the benefit of the doubt" and therefore (for example) to employ an anesthetic agent when a procedure to be performed that might cause pain (13).

Such a precautionary Renville has not apparently, however, been applied to the use of these same species as live food for mammals, birds or reptiles - and probably would not be realistic. We are, after all, here in a situation where the benefits of one species, the predator, must be weighed against those of the prey species. Such is the very essence of nature. Hopefully, wherever possible, in a captive environment the welfare needs of both

predator and prey can be considered and predator species trained to accept dead prey rather than live. ' A preliminary study of welfare of live prey species

Perhaps a start on such a Journey is to ask for evidence regarding the welfare of prey species when being fed to a predator species. For that reason, we present here a preliminary study using online You Tube videos of various captive reptiles as the predator and mice, rats and crickets as live prey items. Clearly this cannot be a controlled study, but the videos were sampled by accessing the first ten adequate clips defined by 'reptile eats live mouse', 'reptile eats live rat', and 'reptile eats live locust' and recording the time taken from apprehension of the prey item to death as determined by the time of last movement of prey item.

It could be argued that the prey species may not lose consciousness until after that period and, in some cases, vivification by the prey item may occur after the last obvious movement, but in those documented in Table 1 this was not the case. The time to death as estimated by cessation of any movement was 62B±29 seconds for mice, 54B±21 seconds for rats and 18B±17 seconds for locusts, with ranges from 38 to 120 seconds for the mice, 24-82 seconds for the rats and 5-62 seconds for the locusts .

These figures are clearly influenced by the size of both prey and of predator. Euthanasiaof laboratory rodents by carbon dioxide may take 2-3 minutes (14) while cervical dislocation successfully killed animals apparently instantaneously in 79% of animals in one study (15). In another study electroencephalographic activity during the 30 seconds immediately (at 5 to

10 s), 10-15 seconds after exposure to 100% CO, 15-20 seconds after decapitation and at 20-25 seconds with cardiac arrest caused by KC injection but not after administration of 70% CO (15).

A painful and fear-provoking death taking p to 2 minutes as seen in many live food subjects would not, we argue, be acceptable in any circumstances. Interestingly, few if any rodents seemed aware that a predator shared the various with them, many mice actively investigating the snake until the moment of attack. Other rodents in the enclosure did not appear to show behavioral evidence of fear even when other rodents in the same various were attacked, constricted and killed.

On the other hand, the fear and pain indicated by rapid movements and vacillations of the prey item, was clear in many of the cases as noted in Table 1 . These author found it disturbing to watch the video clips in many cases and we would argue that the suffering of prey species in many of these video clips and in many is contrary to the requirements of the Animal Welfare Act (2006) in the United Kingdom, as discussed further below. Discussion There can be no hard-and-fast rules about the feeding of live food to captive animals.

However we advocate that, if it is not necessary to sustain the life of the prey species in order to stimulate the predator to pretend and swallow, live-feeding should not take place.. When such a feeding practice is necessary - and is not De facto in intervention of legislation - it should be carried out with care and sensitivity and follow a code of practice. As noted at the beginning

of this paper, there are two elements to live-feeding - the predator and the prey - and these both warrant a humane approach.

Although reptiles have attracted particular attention in the debate about live-feeding, other carnivorous tax have also come under some scrutiny, especially in Europe. The feeding of large felid such as lions, tigers and cheetahs with live vertebrates, such as rodents or alligators, has long ceased to be accepted practice in zoos in cost of Europe. The use of living animals, such as mice or quail, to encourage falconers' birds and wildlife casualties to perfect their hunting skills has, likewise, been officially phased-out.

Some of the practices alluded to above have stopped because of public attitudes but legislation has also, indirectly, had a result. Thus, for example, the I-J Animal Welfare Act 2006, while not specifically outlawing the feeding of live food to carnivorous species, puts an onus ofresponsibilityon keepers on aduty of careto all animals in their possession and thus an obligation to ensure as far as possible that ere species are killed before being offered as food.