

Safe, effective, and humane techniques for euthanizing wildlife in the field

By MICHAEL APRILL

RESOURCE MANAGERS ACROSS THE NATIONAL park system are occasionally faced with the need to destroy wildlife species for a number of reasons, such as protection of endangered species, protection of the public health, and population control of species.

When choosing euthanasia techniques as part of a resource management program, managers must select techniques that are humane for the species being euthanized, safe for personnel carrying out the procedure, not dangerous to park visitors or non-target species, and appropriate for the location and feasible within personnel and budgetary constraints.

In selecting a euthanasia technique, the manager must first consider that the technique is efficient and humane for the target species (American Society of Mammalogists 1987). The universally accepted standards for these criteria are found in the "1993 Report of the American Veterinary Medicine Association (AVMA) Panel on Euthanasia" (American Veterinary Medical Association 1993). These techniques fall into three general categories: injection (barbiturates), carbon dioxide, and gunshot. Whichever of these techniques the manager selects must be species-specific and correctly performed by trained personnel to be safe and effective.

Euthanasia by the injection of barbiturates (e.g., sodium pentobarbital) is perhaps the most humane euthanasia technique, and it is suitable for most species, safe for personnel performing the procedure, and moderate in cost (Fakkema 1994; Grier and Clovin 1990; American Humane Association 1988). Barbiturates are one of the cheaper euthanasia agents. However, as a controlled substance, the use of barbiturates requires a permit from the Drug Enforcement Administration, secure storage, and veterinarian supervision. The animal must be restrained during administration (e.g., squeeze cage) and personnel performing the procedure must be skilled. Dosages must be correct for the species and the animals' weight. A park's maintenance staff

may construct squeeze cages of their own design or by using designs found in the literature. If a veterinarian is not on staff, one may be available from a nearby humane society or a local vet may be willing to consult as a nonpaid volunteer.

Another effective, humane, safe, and inexpensive euthanizing technique is carbon dioxide (Erickson 1994). This technique works well for most animals; however, some species and neonates may have some increased tolerance to carbon dioxide. Because carbon dioxide is heavier than air, care must be taken to completely fill the chamber before exposing the animal to the gas. This is of special concern with tall or

climbing animals. Carbon dioxide is low cost. Supplies include a carbon dioxide canister, carbon dioxide, appropriate plumbing, and a chamber that can be constructed by park personnel. The main disadvantage of this technique is that it may not be suitable for remote or inaccessible locations due to difficulties transporting heavy CO₂ canisters.

If done properly by trained personnel, gunshot may be used as a humane form of euthanasia. For each species, the shot must be fired at a specific site on the animal to assure rapid death (Australian Veterinary Association 1987; Longair et al. 1991). One danger of this technique is that a bullet may

Table 1. Humane euthanasia techniques*

Method	Advantages & Disadvantages	Cost
Injection (barbiturates)	Most preferred method of euthanasia Suitable for most species Safe for personnel performing procedure Requires DEA permit, secure storage, and veterinary supervision Requires squeeze cage, which may be easily constructed by park personnel	Moderate
Carbon Dioxide (CO ₂)	Works well for most species Some species and neonates may exhibit increased tolerance to CO ₂ Special care must be taken with tall or climbing animals to completely fill the chamber before exposing the animal CO ₂ chamber may be easily constructed by park personnel Safe for personnel performing the procedure May not be suitable for remote locations due to weight of CO ₂ canisters	low
Gunshot	Firearm must be of appropriate caliber and impact for species and must be delivered to specific site on animal Requires skilled marksman Possible danger to shooter from ricochet Possible legal constraints in some parks	Moderate

*All methods can be humane and safe if administered by properly trained personnel

ricochet off the substrate or cage and injure the shooter or others. The shooter must also have adequate eye and hand protection due to the possible danger from blood-borne pathogens. Additionally, there may be legal reasons why a manager may not want to use firearms in a park.

Managers wishing to learn more about specific euthanasia techniques are encouraged to consult the resources cited in this article or attend a euthanasia seminar sponsored by an organization such as the American Humane Association. For a summary of humane euthanasia techniques see table 1. **P_S**

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