



Guidelines for Acceptable Methods of Euthanasia for Zoo, Exotic Pet, and Wildlife Species Ornamental Fish

Introduction

There are many situations where euthanasia of an animal is necessary. It is essential to the animal's welfare, and a legal requirement, that the method chosen does not cause unnecessary suffering. The guidelines are for informational use only. They are not exhaustive. Other methods may occasionally be applicable.

Overview

Euthanasia of ornamental fish is a difficult task to those not accustomed to treating these species. Problems arise because of unfamiliarity of the anatomy (which limits access to sites for injection) and physiology (different responses to anaesthetic drugs). It is difficult to ascertain with certainty that a fish is dead, rather than heavily anaesthetised.

Suggested Methods of Choice

The following methods are rapidly effective and straightforward to perform.

- Overdose of a soluble anaesthetic agent added to the water.
 - eg. MS222, benzocaine in acetone/alcohol, eugenol (clove oil)
- Intravenous overdose of anaesthetic agent.
 - Primarily pentobarbitone.
- Trauma sufficient to induce complete and instantaneous loss of brainstem activity.
 - eg. shooting, captive bolt, massive blunt trauma, cervical dislocation or fracture.
- Dropping into liquid nitrogen to provide near instantaneous complete freezing.
 - Only for individuals less than 1cm max diameter.

Acceptable Methods (*if methods of choice not possible*)

These methods are effective but involve a prolonged delay (hours) before the animal can be pronounced dead.

- Intracoelomic overdose of pentobarbitone.
- Some methods used in commercial fisheries.

Unacceptable Methods



The following methods have been suggested for ornamental fish euthanasia in the past but should now be considered ineffective or unacceptable.

- Freezing – except through the method suggested above.
- Asphyxiation – simple removal from water preventing respiratory exchange.
- Use of other anaesthetic agents added to the water.
 - eg. pentobarbitone, isoflurane, halothane.
- Carbon dioxide by non-commercial methods.
 - eg. Alka-seltzer tablets, Soda-stream carbonation.
- Trauma other than cranial and cervical trauma as described above.

Confirming Death

Death is difficult to confirm in fish. The following criteria have been suggested for evaluating and confirming death.

- Lack of external reflexes.
 - eg. movement, response to external stimuli.
- Lack of detectable respiratory activity.
 - eg. no spontaneous opercular movements.
- Lack of detectable cardiovascular activity.
 - eg. doppler ultrasound, ultrasound, ECG.

Fish which are heavily anaesthetised will have few, if any, outward signs of activity. They may appear dead by the criteria above but may regain consciousness such as after metabolising or excreting anaesthetics.

Methods of ensuring a fish does not regain consciousness include:

- Do not return a fish anaesthetised by in-water methods to fresh water. Leave it in the euthanasia solution or wrap it in towelling soaked in euthanasia solution to maintain anaesthesia until death occurs.
- Inject a massive overdose of intracoelomic pentobarbitone once unconsciousness has occurred.
- Once the animal is unconscious and insensitive to external stimuli, perform pithing or freeze the carcass.

Definitions

- Euthanasia
 - *Humane destruction, 'putting to sleep'.*
- Death
 - *Loss of brainstem activity.*
- Pithing
 - *Physical destruction of brain tissue.*