Livestock and Horses:

Emergency Management of Large Animals

Training Guide

SART Training Media
Livestock and Horses: Emergency Management of Large Animals

Training Guide

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About Florida SART

- SART is a multi-agency coordination group.
- SART is made up of over 25 partner agencies (state, federal and non-governmental organizations).
- SART provides preparedness and response resources for Emergency Support Function 17 [(ESF 17) Animal and Agricultural Issues].
- SART statutory authority
  - State Emergency Management Act (Section 252.3569, Florida Statutes)

SART Mission

Empower Floridians through training and resource coordination to enhance all-hazard disaster planning and response for animal and agricultural issues.

SART Goals

- Support the county, regional and state emergency management efforts and incident management teams.
- Identify county resources available for animal and/or agricultural issues.
- Promote the cooperation and exchange of information of interested state, county and civic agencies.
Specific Learning Objectives

At the end of this training module, participants will be able to:

- Know that top priority is health and safety of caretakers and personnel
- Know basics of cattle and horse behavior
- Know emergency management procedures for cattle and horses
- Know principles of humane euthanasia for cattle and horses
- Prevention and preparedness are the keys
Resources

The following are sources of additional information about the subjects mentioned in this introduction.

Florida Division of Emergency Management
http://www.floridadisaster.org

SART
http://www.flsart.org
Visit this Web site for updates and training materials.

United States Department of Agriculture (USDA)
http://www.usda.gov

Florida Department of Agriculture and Consumer Services (FDACS)
http://www.freshfromflorida.com

Federal Emergency Management Agency (FEMA)
http://www.fema.gov

IFAS Disaster Handbook
http://disaster.ifas.ufl.edu

National Agricultural Safety Database (NASD)
http://nasdonline.org/

Florida AgSafe
http://www.flagsafe.ufl.edu

General seaport and airport information
http://www.dot.state.fl.us/aviation

Tourism Statistics
https://www.visitflorida.org/resources/research/

Florida Agriculture Brochures and Publications
https://www.freshfromflorida.com/Forms-Publications/

Florida Hurricanes and Tropical Storms 1871-2001
Book by John M. William and Iver W. Duedall
Resources, continued

Extension Disaster Education Network (EDEN)
http://www.agctr.lsu.edu/eden

FEMA On-line Courses
On-line training courses from the Emergency Management Institute (EMI) are available at no cost on the FEMA Web site:
http://training.fema.gov

CEU certificates are available.

Especially useful may be the Introduction to CERT (Community Emergency Response Teams), IS-317. It provides background information on the concept of community members being able to work together during a disaster. Access this course at:

<http://training.fema.gov/EMIWeb/IS/is317.asp>.

Other courses which might be useful with this module include:

- Role of Voluntary Agencies in Emergency Management (IS-288)
- Introduction to Community Emergency Response Teams (IS-317)
Emergency Management of Large Animals

Appendix A - Training Slides

SART Training Media
Learning Objectives

- Know that top priority is health and safety of caretakers and personnel
- Know basics of cattle and horse behavior
- Know emergency management procedures for cattle and horses
- Know principles of humane euthanasia for cattle and horses
- Prevention and preparedness are the keys

Primary Objective

When assisting animals during an emergency situation:

- Your safety is ultimately the highest priority!
- Don’t endanger yourself or fellow first responders to attempt historic rescue measures for animals

Priority #1

Avoid injury to yourself

- Animals in emergency situations are:
  - Nervous, anxious, possibly injured
  - Unpredictable
  - Dangerous!
Avoid Injuries from Horses

Horses
• Can “kick” with either one or both back feet – Roundhouse (out to the side) or straight back
• Can “strike” with front feet
• Can bite and “bite hard”
• May hit you with their head
• Will crowd or crush
• Will run over you if they have no other way out

Avoid Injuries from Cows

Cows
• Kick with back feet – usually one foot, but sometimes with both – Bovines are “masters of the roundhouse”
• Will hurt you with their head
• Will crowd and/or crush
• Don’t bite
• Will run over you if they have no other way out

Cattle Management in an Emergency Setting
Management of Emergencies in Cattle

How cattle perceive their environment
- Safety in numbers – the “herd instinct”
- Vision
- Hearing
- Handling
  - Flight zones
  - Point of balance

The Herd Instinct

- Cattle sense security in numbers
  - Always move cows in groups
  - An animal separated from the group will try to get back to the group
- Maternal instinct is strong
  - Cows and horses will protect their young

Vision in Cattle

Because of the location of their eyes:
- Cattle have panoramic vision (310-360 degrees)
- Blind spot is directly behind their head
- Vertical vision
  - Cattle – 60 degrees
  - Humans – 140 degrees
- Sensitive to unusual movements
- Depth perception is poor
- Ability to focus on items close up is poor
Cattle Handling 1

- A small flag on a stick is useful for moving or sorting cattle
- Cattle respond negatively to abuse, loud noises, and other confusing situations
- Keep noisy equipment away from cattle

Cattle Handling 2

- Yelling at cattle increases the stress level of both cattle and handler
- Cattle are creatures of habit – An established daily routine will ease handling
- Handle animals in groups – A single animal may be hard to handle, get back into a group if possible

Cattle Handling 3

- Handler’s movements should be slow and deliberate
- If cattle refuse to move, look for distractions
  - Something on a fence
  - Trash on the ground
  - Other people trying to help!
- Mixing groups of cattle can add to the stress of these animals

Appendix A: Slides 13-15
### Herding Cattle 1

Starting to move cattle
- Locate majority of the herd
- Start making a series of wide back and forth motions on the edge of the herd
- Move in the pattern of a giant windshield wiper

— Bud Williams

### Herding Cattle 2

When the majority of the herd has come together into a loose bunch, increase pressure on the collective flight zone to initiate movement in the desired direction

— Bud Williams

### Herding Cattle 3

To continue movement in the desired direction, the handler continues to zig-zag back and forth behind the animals

— Bud Williams

Bud Williams is well-known among cattle owners for his guidance.

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Appendix A: Slides 16-18
Cattle Well-being and Care

• Even in an emergency setting, animals will have basic needs that must be met
• In order to know how to care for animals, their needs must be known and understood
  – Nutrition
  – Environment or Housing
  – Health concerns
• If these are addressed, animal care and welfare concerns involving cattle are fulfilled

Needs: Nutrition 1

Cattle are ruminants – they are able to utilize food such as hay and grass
• If possible, provide access to grass pastures
• Hay may be fed as necessary
• Cattle enjoy equine sweet feeds (6-8 lbs per head per day)

Needs: Nutrition 2

• In an emergency situation, cattle can survive for days without feed
• Calves being nursed by cows need no additional feed other than what is supplied to their mothers
• Orphan calves can be fed a commercial milk replacer
  – Feed 8% of calf’s body weight of reconstituted milk replacer
  – Patience is required when feeding orphans
Needs: Water 1

• Cattle need access to water 24 hours per day
• Regardless of the amount of feed given to cattle during an emergency, cattle cannot go without water for an extended period of time (more than 24 hours)
• Cattle can utilize standing water as well as fresh water (but not brackish or salt water)

Needs: Water 2

Water Needs for Various Species (gallons per head per day)

<table>
<thead>
<tr>
<th>Species</th>
<th>Needs</th>
</tr>
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<tbody>
<tr>
<td>Beef cattle</td>
<td>7-12</td>
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<tr>
<td>Dairy cattle</td>
<td>10-16</td>
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<tr>
<td>Horses</td>
<td>8-12</td>
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<tr>
<td>Swine</td>
<td>3-5</td>
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<td>Sheep and Goats</td>
<td>1-4</td>
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<tr>
<td>Chickens</td>
<td>8-10 per 100 birds</td>
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<tr>
<td>Turkeys</td>
<td>10-15 per 100 birds</td>
</tr>
</tbody>
</table>

Extreme hot-heat stress could increase high values by 20-30 percent

Needs: Environment and Housing

• A majority of beef cattle are reared in a range environment. Providing drained pasture with available shade should be adequate
• Fencing should be adequate to confine animals to a specified area
State Agricultural Response Team

Needs Summary

- Grass in an open pasture (trees)
- Available water
- Adequate fencing

Cattle Health Concerns and an Environmental Disaster

- Generally, there are few if any medical emergencies for beef cattle during environmental disasters
- Lack of available water may leave some animals dehydrated
- Lack of shade and water may lead some animals to heat stress and heat stroke

Heat Stress Symptoms

- Signs of heat stress
  - Rapid respiration, open-mouth breathing
  - Head down or extended
  - Animal is usually standing
  - Elbows held away from the body
- Heat stroke
  - All of the above – plus – animal becomes very depressed, goes down and progresses toward death
- Cattle often respond to stress by bunching together, even with heat stress
Heat Stress

• Lack of available shade and water may lead to heat stress in cattle
• Moving animals during periods of high temperature and humidity may also lead animals to heat stress or heat stroke
• Often for cattle during times of heat stress, the best thing to do is leave cattle alone (provide shade if possible)

Heat Stress

• It is the combination of temperature and humidity that determines the severity of the heat stress
• Use the temperature-humidity index (THI) as a guide to heat stress
  – Above 75 THI: ALERT – Cows decrease feed consumption and milk production
  – Above 80 THI: DANGER – Heat stress for cattle on pasture
  – Above 84 THI: EMERGENCY – Fatal heat stress can occur

Temperature-Humidity Index (THI)

<table>
<thead>
<tr>
<th>Relative Humidity (%)</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
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<th>70</th>
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</tbody>
</table>

Normal < 74    Alert: 75-78    Danger: 79-83    Emergency > 84

Appendix A: Slides 28-30
Heat Stress Management Plan

• Have ample water available – 2-3 gallons per 100 lbs weight and make sure of delivery capability
• If watering from a trough, allow 3 inches of linear space per animal
• Avoid handling cattle if at all possible
• Improve air flow, if possible

Cattle Health Concerns

• Emergency conditions where cattle are gathered from various operations can increase the risk of infectious disease
• Difficult to treat individual animals
  – Can medicate the group through water or feed

Most Common Health Concerns 1

<table>
<thead>
<tr>
<th>Health Concern</th>
<th>Treatments (Call veterinarian)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloat</td>
<td>Manage nutritional concerns</td>
</tr>
<tr>
<td>Diarrhea</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Broad spectrum antibiotics</td>
</tr>
<tr>
<td></td>
<td>Baytril</td>
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<tr>
<td></td>
<td>Nuflor</td>
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<td>Excede</td>
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<td></td>
<td>AS 180</td>
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<td></td>
<td>Tetradure</td>
</tr>
</tbody>
</table>
Most Common Health Concerns 2

<table>
<thead>
<tr>
<th>Health Concern</th>
<th>Treatments</th>
</tr>
</thead>
</table>
| Mastitis – Dairy cows | • Antibiotics  
• Milk cow |
| Lacerations | • Can be treated |
| Fractures | • May require euthanasia |
| Analgesia | • Banamine |

Proper Restraint!

• Tools of the trade  
  – Squeeze chutes  
  – Corrals  
  – Rope halters  
  – Lariats  
  – Tail restraint  
  – Nose tongs – Use only with a rope halter  
  – Sedatives/anesthetics  
• Plan ahead

Cattle Restraint 1

• Rope Halter  
  – Apply properly  
  – The part that draws goes under the jaws  
  – Made for cattle not horses  
• Lariat  
  – Assumes that there is something that can secure the animal after being caught

Appendix A: Slides 34-36
Cattle Restraint 2

- Portable chute with head restraint
  - Experienced people should operate the chute
  - Do not stand in front of chute
  - Do not cause discomfort with excessive pressure

Cattle Restraint 3

- Tail jack
  - Will immobilize the rear quarters for examination purposes

Chemical Restraint 1

- Xylazine (Rompun)
  - IV usage ranges from 0.05 to 0.22 mg/kg
  - IM dosage is 0.1 to 0.44 mg/kg
  - At these dosages, Xylazine is safe – Sedation and analgesia for 30 minutes to 2 hours
Chemical Restraint 2

- Concerns and Precautions
  - Use under the supervision of a veterinarian
  - Decreased heart and respiratory rates
  - Bloat
  - Avoid usage in debilitated cattle
  - Watch out when used in high temperatures – Animals unable to cool themselves

- Antidote – Tolazine: 0.4 to 4.0 mg/kg

Emergency Medical Treatment

- Consider and utilize local resources
  - Veterinarian
  - Cowboys
  - Area ranchers
  - Law enforcement

- Proper restraint will be critical to avoid injury to animal and yourself

Treatment or Euthanasia?

- Actions involving debilitated or injured cattle may fall into either the category of treatment or euthanasia
- Euthanasia may be the most humane alternative when dealing with seriously injured or ill cattle

Appendix A: Slides 40-42
Treatment or Euthanasia?

- Criteria in the decision making should include:
  - Pain and distress of the animal
  - Likelihood of recovery
  - Ability to get feed and water
  - Diagnostic information
  - Welfare for the animal; humane considerations

Euthanasia of Cattle

Humane Euthanasia by Gunshot or Penetrating Captive Bolt

Properly applied... “euthanasia by either gunshot or penetrating captive bolt causes less fear and anxiety and induces a more rapid, painless, and humane death than can be achieved by most other methods.”

Euthanasia by Gunshot

Under farm or ranch conditions:
  “Gunshot is the most practical method”

- .22 caliber long rifle bullet
  - Sufficient for young animals
  - Hollow points may not penetrate the skull
- 9 mm, .357, or similar caliber is required for adult or mature animals
  - Bulls, adult cows, mature horses, mature elk and deer

Appendix A: Slides 43-45
Euthanasia: Positioning

• Proper positioning of a firearm (pistol or rifle)
  – Should be held within 6-12 inches of the intended target
  – Position or aim the firearm so that direction of the bullet is perpendicular to the skull to avoid ricochet
• Positioning of the penetrating captive bolt
  – Hold the device firmly against the head over the intended site

Euthanasia: Anatomical Landmarks

Projectile point of entry

• Wrong -- “between the eyes”
• Right -- In cattle, at the intersection of two imaginary lines drawn from the corners of the eyes to the base of the opposite horn

Closing Thoughts on Cattle 1

• During an environmental disaster, cattle may have emergency needs for food, water, shelter, and medical concerns
• Often the best option concerning cattle in emergency situations is to leave them alone
• If they are in harm’s way, look for help
Closing Thoughts on Cattle 2

- Owners of beef cattle, ranchers and cowhands are often the best prepared people to handle the emergency needs for their herds.
- If producers do need assistance from disaster relief personnel, volunteers providing that assistance need to have a basic understanding of beef cattle.

Horse Management in an Emergency Setting

Horse Management 101

- Behavior
- Nutrition
- Basic Hurricane Preparation
Understanding Horse Behavior

- Horses like to be in groups
- They can be territorial
- Separate mares and foals from other horses
- Separate stallions

Horse Nutrition

- Horses need good quality hay
  - Coastal-bermuda grass hay
  - Timothy hay
  - Orchard grass hay
  - Alfalfa or peanut hay
- Round bales should be avoided

How much should you feed?

- Adults (1000 lbs) need 10-15 pounds of hay per day (1/4 to 1/5 bale)
- In emergency setting, grain is not necessary, except for lactating mares, juvenile animals, or severely underweight horses
Water

- Most essential nutrient
- Minimum of 10 gallons per horse per day

Hurricane Preparation for Horse Farms

Preparation through education is less costly than learning through tragedy.

— Max Mayfield,
Director, National Hurricane Center

Horse Identification

- Take Polaroid picture of each horse with its owner
- Label horse
  - Luggage tag on halter
  - Microchip
  - Brand/tattoo
  - Clipper phone number into coat
**Before Hurricane Season...**

- Current immunizations
  - West Nile Virus
  - Eastern Equine Encephalitis
  - Tetanus Toxoid

- Keep documents handy!
  - Coggin’s test
  - Health Certificate

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**Should they evacuate?**

- Flood
- Severe wind

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**Where can horses go?**

Contact...

Sunshine State Horse Council

- [http://www.sshc.org/](http://www.sshc.org/)
When to travel?
- 48 hours before hurricane force winds hit the area
- Winds greater than 40 mph are dangerous

Lessons from 2004
Keep horses out of barns that are not safe!

Lessons from 2004
Move horses from flood-prone areas
Flooded Pastures

- Water moccasin snake encounters are likelier in flooded pastures
- Fire ants will move to high, dry ground as will the horses and increase risk of exposure

Snake Bite

- Turn off power to barn
- Do not put horses in a pasture with power lines overhead

Also, beware of fire ants!
Drinking Water

- 12-18 gallons per horse per day
- Generator for well
- Large garbage cans with liners

Fences

- Walk the perimeter of the pasture and make sure that fences are intact and can contain the animals

Emergency Treatment: Triage

- When presented with the situation, the animal that is the most critical but with the best chance of living should be attended to first
**Traumatic Injuries**

- Apply pressure if excessive bleeding
- Keep all wounds clean – Hose with clean water
- Tetanus toxoid
- Seek veterinary care

**Signs to Watch For**

- Emergency situations may require rapid changes in management practices and feedstuffs
- Monitor horses for signs of colic (flank watching, rolling) and laminitis (reluctance to move due to sore feet) as these may be associated with changes
- Seek veterinary care as soon as possible

**Euthanasia**

- In some cases, sustained injuries may necessitate humane euthanasia
- Best performed by a veterinarian or under veterinary guidance
- However, such assistance may not be readily available
Important Considerations

When euthanasia is necessary, always minimize animal distress as much as possible

• Presence of humans may be reassuring for animals accustomed to human contact — penetrating captive bolt/exsanguination (bleeding out) may be preferred

• For wildlife, human contact causes fear and greater distress — gunshot may be preferred
  – Gunshot permits the least amount of human contact

Aesthetic Concerns

Humane euthanasia by gunshot or penetrating captive bolt...

• Despite being humane, both are aesthetically displeasing procedures

• Involuntary movement will occur
  – "Kill the head; the body dies slowly" – Temple Grandin
  – Exsanguination requires several minutes and is visually uncomfortable to observe

• These procedures should be conducted out of the public view

Confirmation of Death

Death should be confirmed by evaluation of the following physical parameters over a period of several minutes

• Lack of a heartbeat
  – A pulse is normally not present under such circumstances

• Lack of respiration
  – These may be erratic in an unconscious animal

• Lack of a corneal reflex

• Lack of movement over a period of several hours
  – The presence of “rigor mortis”
Unacceptable Methods of Euthanasia

The following are forbidden under Florida law (Florida Statutes 828.12):

- Manually applied blunt trauma to the head, such as a large hammer
- Injection of any chemical substance not labeled for use as a euthanasia agent
- Injection of air into a vein
- Electrocution, as with a 120- or 200-volt electrical power

Resources

Animals in Disasters

- Caring for Livestock after Disaster, Colorado State Univ. (Part 1, Part 2, and Part 3)
- Preparing to Evacuate Your Farm When Flooding Is Expected [Link]
- FEMA Course: Livestock in Disasters [Link]
- Animal Health Hazards of Concern during Natural Disasters (USDA-APHIS) [Link]
- Helping Four-Legged Friends Survive the Storm (Univ. of Florida video) [Link]
- Sunshine State Horse Council – Evacuation Resources [Link]

Disaster Preparedness for Animals

- Disaster Planning Tips for Pets, Livestock and Wildlife (HSUS) [Link]
- Disaster Preparedness Guidelines for Livestock Owners (Indiana Public Board of Animal Health) [Link]
- Disaster Preparedness Guidelines for Horse Owners (Indiana Public Board of Animal Health) [Link]
- Guidelines for the Development of a Local Animal Care Plan in Emergencies, Disasters, and Evacuations (Purdue Univ.) [Link]
Resources

Animal Handling

  - Related on-line resource from Grandin [Link]
- Safe Ground Handling of Horses [Link]
- Animal Handling Safety [Link]
- Behavioral Principles of Livestock Handling [Link]
- Cattle Handling Safety in Working Facilities [Link]
- Cattle Handling Safety [on-line video]
- Livestock Safety for Kids [on-line video]

Resources

Agencies with Animal Resources

- Florida Division of Animal Industry [Link]
- Florida Dept. of Agriculture and Consumer Services [Link]
- National Agricultural Safety Database [Link]
- Florida Division of Emergency Management [Link]
- List of US States’ Veterinarian Offices [Link]
- US Dept. of Agriculture [Link]
- Univ. of Florida Extension publication source [Link]
  - College of Veterinary Medicine [Link]
  - Livestock [Link]
- Univ. of Florida IFAS Disaster Handbook [Link]
- World Organization for Animal Health [Link]

Summary

- In an emergency, your safety is of the utmost importance
- Prevention and preparation are the keys
- Providing animals with adequate shelter, water, and food is critical in the immediate aftermath of an emergency
- Treating injured animals may not be feasible without help from trained professionals
Thank You!