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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SART Training Media are available for download from the Florida SART Web site <www.flsart.org>.

Contents

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
https://dos.myflorida.com/library-archives/research/florida-information/business/seaports-of-florida/
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 certifi-cates 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)

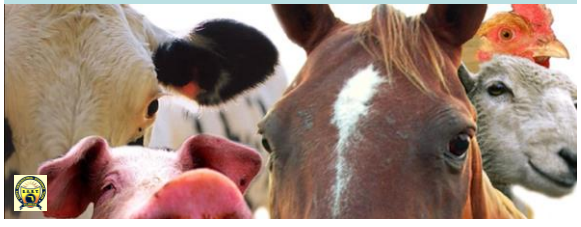
Emergency Management of Large Animals

Appendix A - Training Slides

SART Training Media

Livestock and Horses

Emergency Management for Large Animals



Emergency Management for Large Animals

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The authors wish to express their appreciation to the various agencies and individuals that have supplied images for this presentation.

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

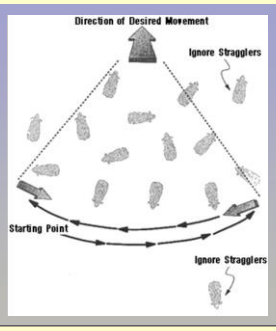
- Handler's movements should be slow and deliberate
- If cattle refuse to move, look for distractions
  - –Something on a fence
  - –Trash on the ground
  - –Other people trying to help!
- Mixing groups of cattle can add to the stress of these animals

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

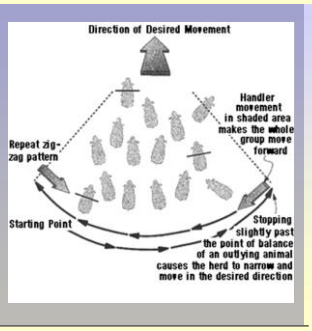
– Bud Williams



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

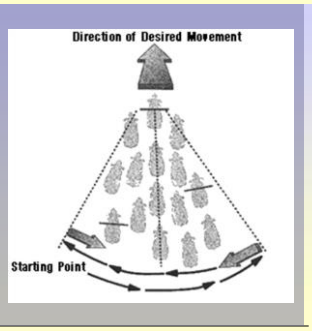


Herding Cattle 3

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 on animal handling.



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)

Beef cattle	7-12	
Dairy cattle	10-16	
Horses	8-12	
Swine	3-5	
Sheep and Goats	1-4	
Chickens	8-10	per 100 birds
Turkeys	10-15	per 100 birds

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

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)

Temperature (EF, dry bulb) \ Relative Humidity (%)	30	35	40	45	50	55	60	65	70	75	80	85
100	84	85	86	87	88	90	91	92	93	94	95	97
98	83	84	85	86	87	88	89	90	91	93	94	95
96	81	82	83	85	86	87	88	89	90	91	92	93
94	80	81	82	83	84	85	86	87	88	89	90	91
92	79	80	81	82	83	84	85	85	86	87	88	89
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86	75	76	77	78	78	79	80	81	81	82	83	84
84	74	75	75	76	77	78	78	79	80	80	81	82
82	73	73	74	75	75	76	77	77	78	79	79	80
80	72	72	73	73	74	75	75	76	76	77	78	78
78	70	71	71	72	73	73	74	74	75	75	76	76
76	69	70	70	71	71	72	72	73	73	74	74	75

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

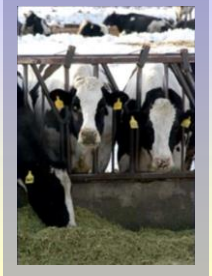
Health Concern	Treatments (Call veterinarian)
• Bloat • Diarrhea	• Manage nutritional concerns
• Pneumonia	• Broad spectrum antibiotics – Baytril – Nuflor – Excede – AS 180 – Tetradure

Most Common Health Concerns 2

Health Concern	Treatments
• 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

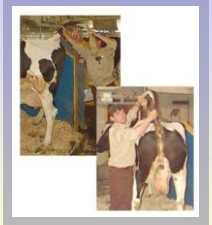
- Rope Halter
  - Apply properly
  - The part that draws goes under the jaws
  - Made for cattle not horses
- Lariat
  - Assumes that there is something that can secure the animal after being caught

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

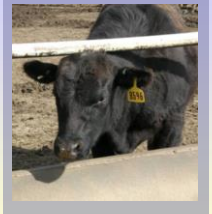
- Concerns and Precautions
  - Use under the supervision of a veterinarian
  - Decreased heart and respiratory rates
  - Bloat
  - Avoid usage in debilitated cattle
  - Watch out when used in high temperatures – Animals unable to cool themselves
- Antidote – Tolazine: 0.4 to 4.0 mg/kg

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



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**

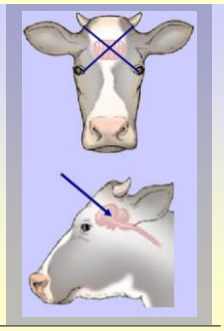
Euthanasia: Positioning

- 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

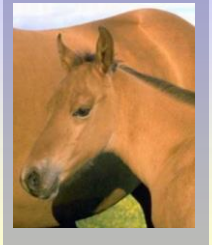
Closing Thoughts on Cattle 2

- 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

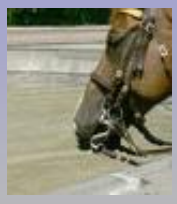
- Horses need good quality hay
  - Coastal-bermuda grass hay
  - Timothy hay
  - Orchard grass hay
  - Alfalfa or peanut hay
- Round bales should be avoided

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



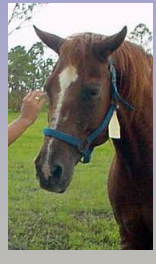
Hurricane Preparation for Horse Farms

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

Should they evacuate?

Flood

Severe wind

Where can horses go?

Contact…

Sunshine State Horse Council

- 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

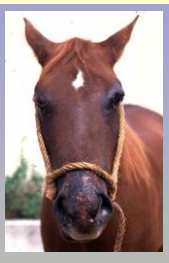
Move horses from flood-prone areas

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

Before therapy

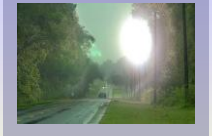


1 week later

Also, beware of fire ants!

Electricity

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



Drinking Water

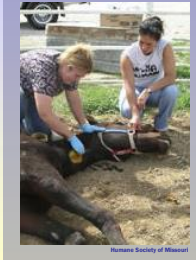
- 12-18 gallons per horse per day
- Generator for well
- Large garbage cans with liners

Fences

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

Emergency Treatment: Triage

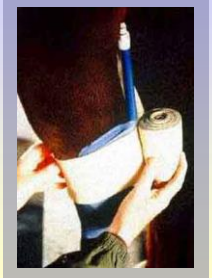
- When presented with the situation, the animal that is the most critical but with the best chance of living should be attended to first



Humane Society of Missouri

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]

Resources

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

- Livestock Handling and Transport. Temple Grandin. [2d edition; 3d edition due 8/2007]
  - 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!

SART Training Media