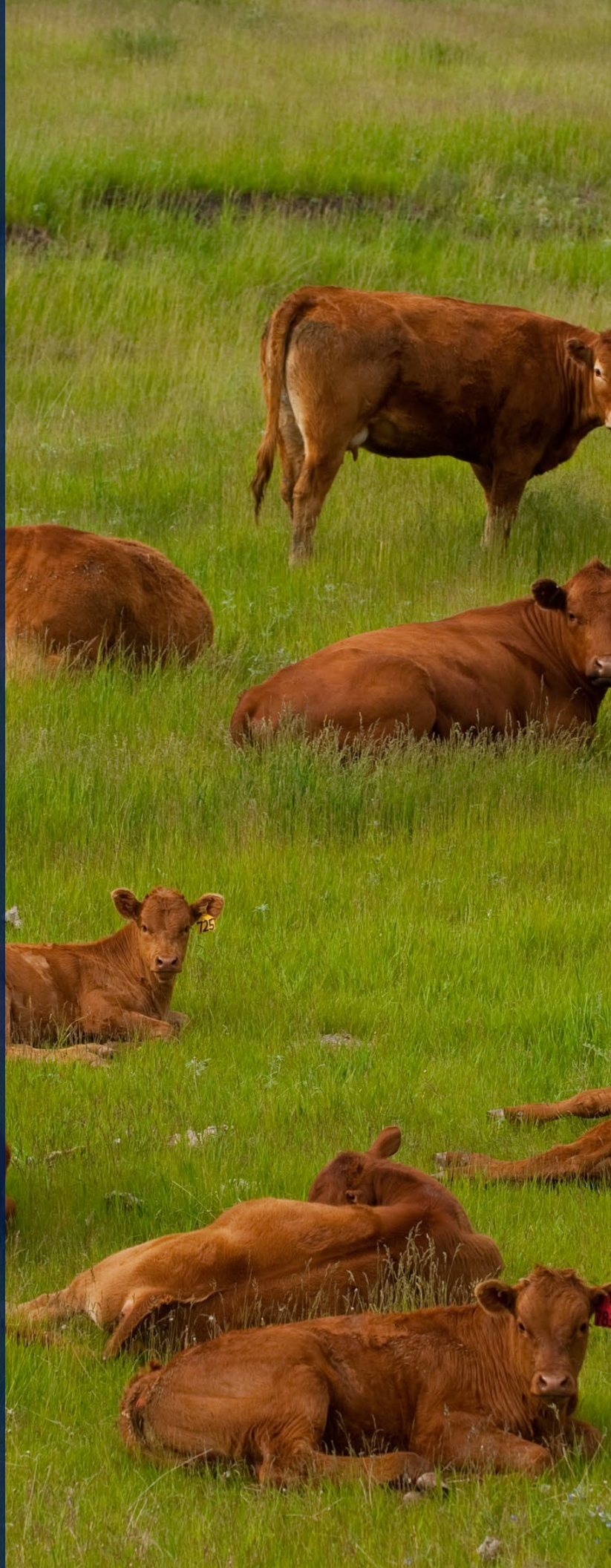
SDSU Extension

BEEF

Chapter 6

Low-Stress Handling Basics

Heidi Carroll



Chapter 6:

Low-Stress Handling Basics

The Importance of Good Stockmanship

All interactions with cattle influence the well-being and behavior of the animals and the stockman. It is important to remember that it is the stockman that is the primary influence on training his or her cattle to be wild and stressed or calm and quiet. After all, poor and inefficient handling can lead to financial losses from increased carcass bruising, higher cattle treatment costs, poor reproductive performance and feed efficiency, poor meat quality, and lost work days due to injury of the stockman. Appropriate cattle handling skills are invaluable for managing cattle and producing high quality beef products. Low-stress handling should lead to more efficient cattle handling with less chance of injury to both handlers and cattle.

Handling cattle properly throughout their lives reminds the public that cattlemen value the welfare of the beef animals they raise and the quality of the products they produce. When cattlemen choose to humanely handle their cattle throughout the food production chain, they maintain a larger number of consumers that confidently buy beef products.

Flight Zone & Point of Balance

Figure 1 provides the basic concept of a bovine's wide, 300-degree range of vision and identifies the main blind spot directly to its rear. With a wide range of vision comes poor depth perception. Cattle have difficulty discerning depth in front of them and need to lower their heads in order to examine shadows and objects on the ground before crossing them. When cattle handlers have a thorough understanding of an animal's flight zone, it greatly improves their ability to move cattle in a calm, quiet manner. The flight zone refers to a boundary surrounding the animal, relating to a specific distance they allow something to come before they move away from it (e.g. a human). When a handler stands outside of the flight zone (point A in Figure 1), the animal will remain still or face them. When a handler steps into the flight zone (point B Figure 1), the animal will

Key Points

- When cattle handlers have a thorough understanding of an animal's flight zone, it greatly improves their ability to move cattle in a calm, quiet manner.
- Facility designs are typically based on five concepts: cattle want to come back the way they came, cattle want to go around anything that has been pressuring them, cattle want to see the handler, cattle want to stay with and follow other cattle, and cattle can only process or focus on one main thought at a time.
- Temperamental, or 'excitable' cattle are highly alert and typically experience heightened stress responses as compared to calmer cattle.
- Cattle well-being should be maintained during every level of handling and transporting cattle, from gathering and loading to processing and unloading.

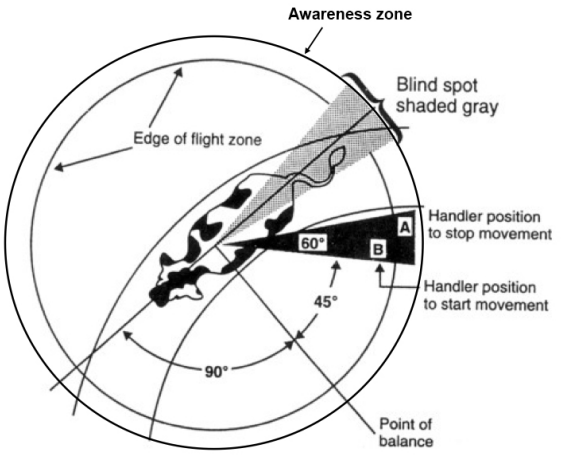


Figure 1: Bovine range of vision.
Adapted from Dr. Temple Grandin, 2011

begin moving away from the handler. The response of the animal corresponds to the speed, distance, and direction of the handler's approach.

The awareness zone is located outside of the flight zone. This area is where a handler gains the attention of the animal, whether it be the animal turns their head, flicks their ears, or changes body position towards the handler. It is important to understand the awareness zone because it gives the first indicator of how comfortable the cattle are to handling. Handlers should maintain an animal's attention through body position and eye contact during handling to minimize the chance of the animal spooking or kicking the handler while moving in and out of the flight zone or blind spot. Minimal, quiet voice can be used to let an animal know you are in its blind spot when it is not possible to approach from the front.

A good stockman must understand that each animal has unique awareness and flight zones, and every herd has different social dynamics. It is important to be able to observe individual differences within a herd and adjust handler position and pressure accordingly. As cattle are adapted to positive human handling and gain trust of the handler, they will become less fearful and their flight zone will shrink. Cattle that are less fearful exhibit lower rises in cortisol levels and a decrease in stress, which improves the overall well-being and performance of the cattle (Grandin, 1997). Cattle subjected to rough handling or other negative experiences will retain those memories and may maintain a higher level of stress during future interactions. It is important to ensure that every interaction with cattle promotes trust and minimizes stress.

Another important concept is the point of balance. The point of balance is the area along the animal which allows you to manipulate the forward-backward direction or stop the animal's movement. Typically this point is at the shoulder. However, the eyes are also considered a point of focus because the animal desires to keep the handler in view and can indicate when and how the animal will move according to the handler's position. Stepping ahead of the shoulder will encourage backward motion while stepping behind the shoulder will encourage forward motion. Realize, that unless the handler can see an eye of the animal, the animal may not see him, and even though the handler walks past the shoulder, the animal may not move forward since it is not giving its attention to the handler. When working in front of an animal, pressuring to one eye or to the other will encourage movement in the opposite direction. It is the responsibility of the stockman to implement these principles as well as to evaluate and understand the behavior of the cattle within the given environment.

Handling Tips

Protecting assets, both cattle and people, is especially important to the success of an operation. Livestock related injuries can account for up to 46% of on-farm injuries, with handling of cattle and horses representing the majority of cases (Dogan and Demirci, 2012). The leading cause of livestock handling injuries is human error. Thus, keen observation to detail and continued improvement of stockmanship skills that focus on cattle behavior are essential.

For comprehensive videos on low-stress handling, please visit the National Beef Quality Assurance (BQA) channel on YouTube (http://www.youtube.com/user/NationalBQA). National BQA covers topics such as transportation, feedlot pen riding, typical cow-calf procedures, moving cattle on pastures or in pens, and much more.

Moving aids

The use of electric prods should be minimized by proper handler position within the cattle's flight

zone and point of balance. Electric prods should not be the primary moving aid, and should be the last resort to move a stubborn animal. It should be used briefly and then put out of reach after the animal cooperates. An electric prod should never be used on sensitive areas such as eyes, face, rectum, genitalia, or the udder. Preferred moving aids include: plastic paddles (rattle paddles), sorting sticks, flags, or handles with streamers attached. These aids utilize cattle's vision to direct them away from one side or the other; they can also be used as an extension of the arm to give light taps to guide or encourage movement in a certain direction. When moving young calves, a sort board may be beneficial to protect the handler from being kicked and it provides a larger object for the calves to see and guide them. If cattle continually balk in a facility, stop and investigate why they are balking instead of resorting to excessive electric prod use or additional force.

Emptying pens

Emptying pens does not have to be a frustrating task. The key to remember is work from the front of the pen, not circling around behind the cattle. Circling around behind the cattle triggers their prey instincts of a predator circling before an attack; this will likely cause the cattle to turn and face you. Instead, enter the pen and determine how you are going to set yourself up to allow the cattle to come by you. In Figure 2 the cattle are being set up to go out the pen and turn to their left. Put some pressure on the front and side of the group by stepping into their flight zone to begin grouping and setting up the cattle toward the gate. Focus on the cattle in the front of the group to initiate movement and they will draw the other cattle to follow. If the cattle trust you, they will begin walking by you toward the gate. If cattle refuse to walk past you, back up giving them a larger hole to walk through. Once motion is initiated, stand still or continue to move back and forth slightly at position A in the diagram so the cattle can discern where you are. Use eye contact to encourage cattle in the front to keep moving ahead and then look to where you want them to go.

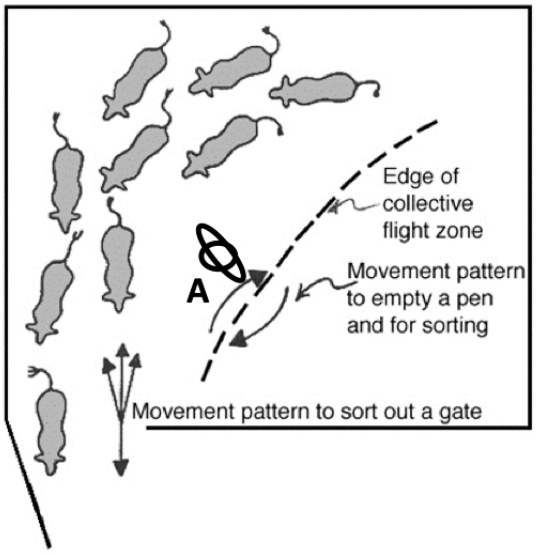


Figure 2: Handler position to empty pen.
Adapted from Dr. Temple Grandin, 2012

When the handler's body position is angled so their back/shoulder is toward the back of the group, the cattle will be more comfortable walking past because the handler's eyes are not staring them down like a predator. Some cattle may be more fearful and hesitant than others, therefore handlers may need to adjust the amount of pressure by backing farther out of their flight zone before the cattle are comfortable walking past the handler. The goal is to guide the cattle's movement and maintain a calm walk out of the pen. Going slow and confident gives the cattle clear communication of where you want them to go, which minimizes the stress.

Cattle on pasture

Cattle on pasture typically maintain strong herd tendencies. When moving cattle on pasture use this herd instinct to initiate movement and get cattle to follow each other. Figure 3 demonstrates handler positions for a group of cattle being moved on pasture. Handler 1 stays with the leaders to guide movement and pace. Handler 2 works on the flight zone of the group to encourage movement. Notice that handler 2 angles away from the herd when walking with the motion and then angles toward the group when walking against the motion. This pattern relieves pressure when the cattle are walking the desired direction and then puts pressure back on as the handler moves past each animal's point of balance to encourage forward motion. After a group starts moving the desired direction, a handler can bring stragglers back to the group, but don't focus on stragglers until organized herd movement is achieved (Figure 4).

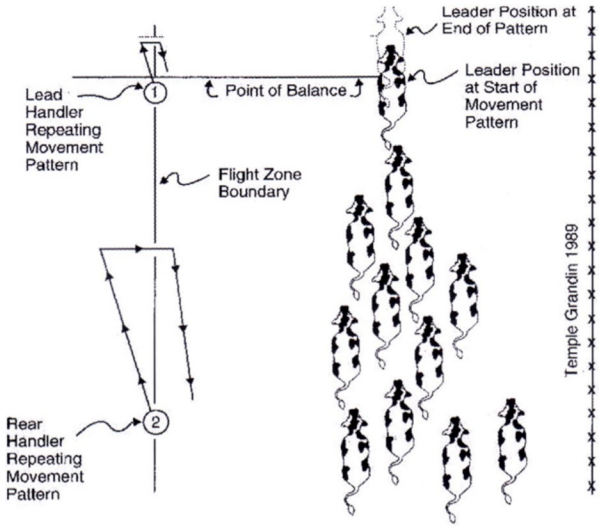


Figure 3: Handler positions to move groups of cattle on pasture.

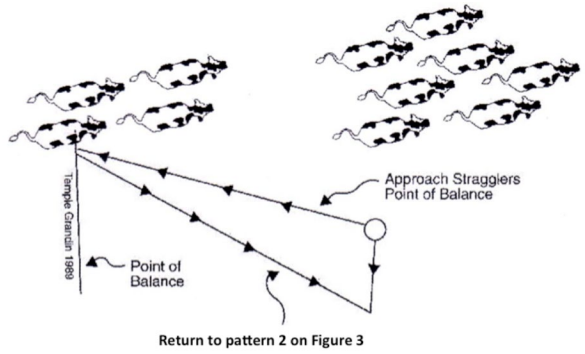


Figure 4: Handler position to bring stragglers back into the herd.

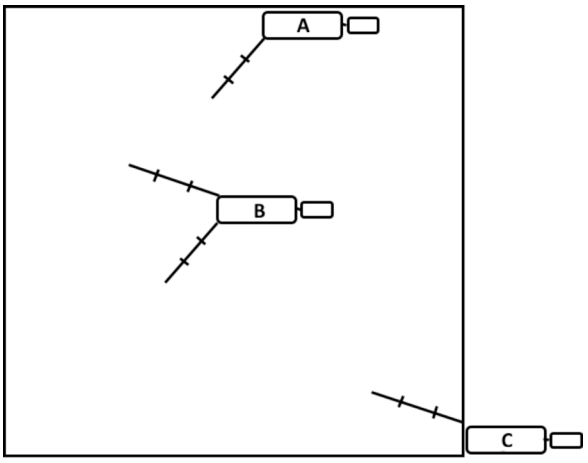


Figure 5: Trailer positions for loading cattle on pasture without permanent facilities. *Heidi Carroll, 2013*

When loading one animal or a group on pasture without a permanent handling facility, utilize portable panels and existing perimeter fences to guide the animal(s) onto a trailer (Figure 5). Position A in the diagram takes advantage of the perimeter fence and utilizes fewer portable panels than position B. Position C utilizes the gate to the pasture and the perimeter fence to funnel the cattle to the trailer. Use position C if you are backed into the gateway enough to not leave space that cattle think they can escape on the side of the trailer. Position B utilizes all portable panels to create a funnel to guide cattle into the trailer. It is important to be patient while gathering and loading, remember if an animal is injured or isolated it can be dangerous and unpredictable. Avoid chasing the cattle if they turn back away from the trailer, calmly work from the edge of their flight zone and apply and release pressure as the cattle walk in the desired direction. Clear, consistent communication with the cattle prevents their fight or flight instincts from being activated.

Applying cattle behavior concepts within handling facilities

Regardless of the type of handling facility, low-stress handling methods can be implemented by applying the concepts of cattle behavior. A stockman can guide cattle through a working facility efficiently while minimizing stress. Facility designs are typically based on five concepts: cattle want to come back the way they came, cattle want to go around anything that has been pressuring them, cattle want to see the handler, cattle want to stay with and follow other cattle, and cattle can only process or focus on one main thought at a time. This section highlights two common types of facilities, the Bud Box and a curved alley with a tub.

The "Bud Box" was created by Bud Williams. A Bud Box typically has open sides with a solid gate that is closed once cattle enter the box. The open sides encourage cattle to enter willingly. Box 1 (Figure 6) shows cattle entering the Bud Box from the right side. Notice that the handler (represented by X) is not in the blind spot, but off to the side to encourage forward movement. The cattle enter the box and reach the end while the handler shuts the solid gate (boxes 2 and 3). To set the cattle up to

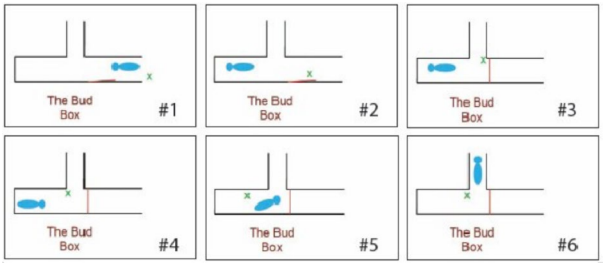


Figure 6: Handler position and cattle movement through a Bud Box. *Michelle Proctor, University of Missouri Extension, 2013.*

enter the alley, the handler must move to the side of the box that is adjacent and perpendicular to the alley (box 4). This sets up the cattle to be willing to enter the alley by going back toward the gate and going around the handler. The handler should stand close to the entrance of the alley and wait a few seconds for the cattle to get set up. For highly excitable cattle, the handler can step outside of the Bud Box to initiate movement. Setting the cattle up means allowing them to begin turning around toward the gate they entered looking for the way out. The handler can then step toward the front cattle to initiate movement toward the alley (box 5). Slow, small steps back and forth allows the handler to put pressure on and then provide a bigger hole for the cattle to flow around to the alley entrance. The handler should lead the cattle with his eyes by looking ahead to the corner the cattle should be going toward which continues to draw the cattle in the back of the group past the handler. Once the cattle enter the alley, the handler can follow the group, however, do not over pressure the cattle because this may cause them to back out of the alley and face the handler (box 6). If cattle approach the alley and refuse to enter, be patient and use slight back and forth motion to encourage the cattle to turn toward the alley again. If cattle continue to balk, check the alley for distractions or shadows. It is important to never overfill a Bud Box to allow the cattle to turn around.

The Bud Box can be used for loading cattle into a chute or for loading trucks. How the cattle are worked (on horseback or foot) will influence the dimensions of the Bud Box. The lead-up alley and chute or a trailer compartment size can guide how large the Box is and how many animals it can hold. An alley to a squeeze chute should hold a minimum of 4 mature cows and might need to hold 20 head depending on the speed of processing and corral design. Cow-calf operations may typically have lead-up alleys that hold 5 to 6 cows, so 4 to 5 cows can be brought into the Bud Box. If facilities working calves or yearlings have longer lead-up alleys for 12 to 20 head of cattle, then always bring 1 to 2 less animals than will fit in the alley. This will help prevent too much stress being placed on the last animal trying to push into the alley or piling up of cattle in the squeeze chute or alley. For loading semi-trucks, a depth of 30 feet may be needed to fill compartments quickly. If a permanent facility needs to accommodate semi-trucks and a lead-up alley, consider a block gate in the Box to get the necessary Box depth. Drs. Ron Gill and Rick Machen, professors and Extension livestock specialists at Texas A & M, compiled William's recommendations on the size of a Bud Box in Table 1.

Table 1: Bud Box Dimensions

Handler	Width	Depth[1]
Always on foot	12'	Minimum 20'
On foot and horseback	14'	20-30'
Always on horseback	16'	Maximum 30'
[1]Depth is determined by the size of the cattle group being worked.		

Dr. Temple Grandin designs working facilities with round crowd pens and/or tubs and curved alleys (Figure 7). The curved design takes advantage of the theory that cattle like to move in circles. When crowd pens are built in a 180 degree arc, it gives the cattle the impression they are heading back the way they came. Crowd pens and tubs should never be overfilled to allow for cattle to

Figure 7: Arial view of a curved alleyway and tub system. *Dr. Temple Grandin.* *http://www.grandinlivestockhandlingsystems.com*

turn; just less than half full is ideal. The sides are solid so the cattle focus on the animal in front of them and follow. Man gates are also incorporated into the designs to provide efficient movement and escapes from charging animals. Some of Grandin's designs can be viewed online at www.grandinlivestockhandlingsystems.com.

Cattlemen can evaluate current facilities to determine if simple adjustments can be made to minimize cattle stress and facility costs. Before investing money in a new facility, improve cattle handling skills. A good understanding of cattle behavior and low-stress handling methods is more valuable than any facility.

Additional tips

1. Be patient, go slow, and observe the cattle's body language during the whole process so you can adjust your position to minimize cattle stress.
2. Remove distractions – walk through facilities to check for garbage, shadows, poor footing, or objects hanging in cattle's line of sight.
3. Prepare – set gates, check handling equipment, ready processing equipment before bringing any animals into a handling system.
4. Allow an animal to completely exit a squeeze chute and the operator to set the head gate appropriately before opening the back gate to let the next animal in. This will help minimize bruising of animals that rush into the squeeze chute and crash the head gate.
5. Don't pressure an animal that has nowhere to go or that does not see its exit.
6. Move cattle in small groups to minimize isolation stress. A lone animal is dangerous and more easily agitated.
7. Never fill crowding pens, tubs, or Bud Boxes more than half full to allow cattle enough room to move around and find the chute entrance.
8. When extra labor assists, review expectations of low-stress cattle handling. Make it clear that cattle abuse will not be tolerated and communicate each individual's role and responsibilities. Remember, people cannot read minds.
9. Cattle prefer to move from dark to light areas; poor lighting may cause cattle to balk.
10. Maintain secure, non-slip footing in facilities for cattle to prevent unnecessary fear or injuries from struggling or falling.
11. If cattle get worked up, let them sit for 15-30 minutes to relax. After cattle have regained the ability to think instead of flee, slowly ask cattle to move in the desired direction using pressure and release of the flight zone at the point of balance.
12. Cattle can be trained. Use consistent body language, positive reinforcement, and stick to routines when possible, especially when working with replacement heifers that will be in the herd for years to come. Consider training cattle to come when called.
13. Consider culling highly excitable cattle that cause disruption to the rest of the herd or pose a serious safety threat to handlers or other animals.
14. Walking with the flow of cattle will slow them down or stop them; whereas, walking against the flow of cattle will initiate or encourage faster movement.

Consideration of Temperament

Temperament refers to the manner in which an animal responds to stimuli within their environment: humans, novel objects, or frightening situations. Genetics and breed type have a large role in dictating the temperament of an animal (Grandin and Deesing, 1998). Since temperament is heritable (Hearnshaw et al., 1976; Fordyce et al., 1988), it is wise to identify the most flighty animals and manage them appropriately during handling episodes. Temperamental, or 'excitable' cattle, are highly alert and typically experience heightened stress responses as compared to calmer cattle. A more in-depth discussion about temperament can be found in Temple Grandin's recent book Livestock Handling and Transport. In the reference section, add the citation: Grandin, T. (Ed). 2014. Livestock Handling and Transport. 4th ed. CABI. Boston, MA.

Stockmen must be aware that interactions with each animal has the potential to influence the final beef product that consumers purchase. When cattle experience an increased physiological response to stressful stimuli or increased muscle contraction during physical activity, the occurrence of

darkcutting beef can result (Tarrant, 1989). Dark-cutting beef is undesirable because it has a shorter shelf-life and suffers economic penalties. In addition to minimizing dark-cutters, gentle handling methods can result in less bruising (Grandin, 1981). Calm handling when cattle enter a feedlot allows them to gain confidence in the new handlers and unfamiliar surroundings, which promotes positive vaccination responses and improved feed intakes (Noffsinger and Locatelli, 2004).

In the feedlot, highly excitable cattle typically have lower initial and final body weights, lower average daily gains, reduced total body weight gains, and increased death loss than cattle that are calmer (Reinhardt et al., 2009; Vann et al., 2008; Voisinet et al., 1997; Turner et al., 2011). Additionally, Reinhardt et al. (2009) found that the carcasses of excitable cattle have decreased yield grade, quality grade, marbling score and lower hot carcass weights. These undesirable effects may be amplified if the handling needs of excitable cattle are not recognized by the stockman. Handling techniques subsequently impact the financial equation of an operation because the well-being and performance of the animals determines the net returns for the stockman. According to Busby et al. (2006), calm calves returned $62.19/head more than aggressive/nervous calves when the effect of disposition on quality and yield grade, feedlot gain, death loss, and treatment costs was figured into the equation. Such evaluation places real dollar figures to a heritable trait and reveals the importance of the stockman's ability to identify and adjust handling methods to accommodate the needs of highly excitable cattle.

Handling concerns also exist in the cow-calf sector. Reinaldo Cooke (2011) elaborates on the effects of temperament and handling that can have an impact on a breeding program. First, highly excitable cattle have decreased feed intake than calmer herd mates. Along with this, excitable cattle have altered metabolism and partition nutrients toward a sustained behavioral stress response, which takes nutrients away from other body functions. Since the nutritional status of a female impacts her reproductive performance, these excitable animals may be impairing their success within the breeding herd. When a stress response is triggered, cortisol levels rise and disrupt the mechanisms of reproductive regulation, such as ovulation, conception, and establishment of pregnancy. Calmer heifers reached puberty sooner, likely due to greater levels of luteinizing hormone (LH, a hormone required for puberty establishment and ovulation) and lower cortisol levels, than excitable herd mates. To have a positive impact on the productivity of a cow-calf operation, invest time in weaned replacements to adapt them to human handling. This will help to improve responses to future handling and minimize the negative impacts of elevated cortisol levels on the attainment of puberty and reproduction.

Minimizing Handling Stress during Necessary Procedures

Calves

The restraint method chosen for calves should be consistent with the procedure being performed. For example, when giving injections it is important to be highly accurate in the location of the injection site to reduce tissue damage or risk breaking off a needle. A squeeze chute may be the ideal option that creates the least amount of stress and provides the best restraint on the animal. In some cases, a head catch may also provide additional stability. Restraint equipment should be inspected regularly for sharp edges that may cause injuries to calves or handlers and rubber pieces can be used to cover edges and decrease the amount of clanging metal. In pasture or range situations, roping may be the preferred method of restraining calves for procedures. It is important to minimize the stress of the whole process from the chase to the release of the calf because a rise in cortisol levels due to an elevated stress response impedes vaccination response and can continue to suppress the immune system of an already sick calf. Implementing low-stress roping methods and gentle, consistent pressure while restraining the calf on the ground also minimizes the chance of the calf injuring itself or the handlers during a struggle. A good resource to review is *Ranch Roping with Buck Brannaman: A practical guide to traditional roping*. Roping can be done in a low-stress manner if the handlers and the horses are well-practiced and can execute the task efficiently to minimize the time of the stressful event.

Whether roping or using a chute, it is important to remain cautious of protective cows to prevent injury to the handlers. Remember that though calves are smaller and can be "man handled" more easily, respect for the well-being of the calf should be maintained during every interaction to promote positive experiences that make them easier to handle in the future. Being conscientious about how calves are handled conveys to the public that cattlemen are responsible and considerate of the smallest form of bovine life. Livestock managers are increasingly aware of public perceptions towards husbandry practices and should be considerate of handling practices to retain consumer confidence.

Cows & Bulls

When mature cows and bulls need to be handled, a squeeze chute is the primary option that offers the safest, most secure restraint. Squeeze chutes offer cattlemen versatility, allow for thorough review of animal health while minimizing stress during routine handling procedures. Chutes also come in mobile styles that can be transported to pastures and setup with temporary panels for easy handling in remote areas. In some pasture situations, loading an animal into a trailer and bringing it to a working facility may be a safer method than performing a procedure with minimal restraint on the pasture. (Refer to the Handling Tips section for suggestions on how to load an animal on pasture.) However on rough terrain, it is not always possible to haul a chute or trailer to a preferable location. In those instances, roping the animal may be the last option.

Doing nothing when an animal is suffering is not a humane option; if it is an extreme case of illness or injury, consider euthanasia. Caution should be used when roping mature cattle. Ensure enough handlers are present and all supplies are prepared before roping the animal to limit the amount of stress and risk of injury. A newer technology that is available for administering injectable treatments is a dart gun. A dart gun allows the handler to keep a safe distance from the animal and administer injectable medications when catching and restraining the animal in the pasture is not feasible. If a dart gun is used, precautions should be taken to avoid broken needles in cattle and injections should still be given in front of the shoulder to maintain optimal meat quality. Regardless of the task and restraint method chosen, handler safety should be the top priority.

Transportation Basics

At some point in a bovine's life, it will need to be transported, either from farm to pasture or feedlots to marketing facilities. Safe transportation of cattle starts with proper maintenance of the truck/pickup and trailer. Maintenance and repairs may get pushed down the list of priorities, however, making the time for maintenance checks will help things run smoother and safer when you haul cattle.

Maintenance should include:

- Inflating tires to the proper air pressure - including spare tires; replace worn or damaged tires
- Checking all lights, turn signals, brakes, electrical hookups, and vehicle fluid levels
- Greasing hitches and wheel bearings - if required; safety chains, gates and latches are functional and secure
- Trailer ventilation or protection are appropriate for current and future weather conditions if travelling long distances
- Checking flooring and ramps are safe and have appropriate traction to prevent slips or falls
- Cleaning and disinfecting the trailer to prevent transmitting pathogens between cattle and locations; remove all manure and old bedding
- Cleaning tires and undercarriage of truck if there is a high risk of disease transmission; consider disinfectants
- Have a safety triangle/cone, tire iron and jack capable of lifting a loaded trailer in case of a flat tire.

Performing maintenance checks a few days before cattle are scheduled to be hauled provides time to fix any problems without pushing back the transport date. Maintenance will minimize the risk of devastating accidents that can damage not only the equipment, but also injure or kill livestock. Temperature extremes and severe weather changes can cause poor welfare conditions for animals, regardless of the distance being transported. Refer to the Temperature Humidity Index (THI) and the Wind Chill Index (WCI) to know when measures should be taken to prevent heat or cold stress. When

hauling cattle in cold weather, close trailer vents and decrease stocking density to minimize the chance of frostbite. Decreasing the stocking density during cold weather seems counter intuitive, but allowing more space gives the animals the opportunity to rearrange themselves away from freezing drafts. When hauling cattle during hot weather, open all trailer vents for maximum airflow and decrease stocking density to prevent heat stress or mortality. Give consideration to the time of day to take advantage of optimal temperature conditions when working and hauling cattle.

The stocking density in trailers is also important to maintain cattle well-being and minimize injuries. The National Cattlemen's Beef Association's recommendations for trailer stocking density are in Table 2. Table 3 has loading recommendations for various weights of cattle and various trailer sizes. In general if you are transporting a group of horned and polled cattle, approximately 1.8 sq ft for the first 100 lbs of cattle and 1.4 sq ft for each additional 100 lbs of cattle should be calculated (AABP, 2014). Additional loading recommendations for cattle pots can be found in the National Beef Quality Assurance Master Cattle Transporter Guide.

Table 2: Trailer stocking densities. *NCBA*

Average Cattle Weight (lbs)	Head per Running Foot of Truck (77-in. width)
200	2.2
300	1.6
400	1.2
600	0.9
800	0.7
1000	0.6
1200	0.5
1400	0.4

Cattle well-being should be maintained during the entire process of transporting cattle, from gathering and loading the animals to unloading. Calm, quiet low-stress handling methods should be used by all people assisting. Sorting sticks, flags, or paddles can be used to safely sort animals and humanely encourage movement. Electric prods should only be used on stubborn animals and then put out of reach after the animal cooperates. Evaluate the facilities and trailer for distractions if cattle continually balk and refuse to flow easily instead of resorting to excessive electric prod use. A shadow, ground surface color change or even clothing placed on a fence may inhibit cattle movement. When hauling cow-calf pairs, separate the cows from the calves in the trailer to ensure the safety of the calves. When hauling bulls, separate them from other bulls and separate them from cows or calves. Bulls unfamiliar with each other should not be mixed on a trailer because damage to the trailer and animals may occur if or when they fight to establish a hierarchy. Horned or tipped cattle should be separated from polled cattle, and space allowance should be appropriate for each group with respect to horn status.

Equipment Maintenance Considerations

Proper handling of cattle is achievable when facilities and equipment are well-maintained. Cattle can experience stress and/or pain during handling through a hydraulic squeeze chute or head catch if the pressure settings are too high. If a large number of animals are vocalizing during handling it may indicate excess discomfort; check the settings on the chute to rule out equipment as the source of discomfort.

Preparing working facilities before bringing cattle into them is important. Walk through all pens, alleys, and chute to ensure proper footing for all weather conditions. This also gives you an opportunity to check for protruding objects or broken parts that need attention to prevent injuring the cattle as they move through the facility. This is especially critical when using portable facilities or facilities with which you are unfamiliar.

By adhering to these simple handling suggestions and reviewing additional materials referenced here, livestock managers can improve their interactions with livestock. In addition, managers can evaluate all aspects of their handling facilities and transport equipment to identify key areas where simple improvements can be made.

Table 3: Recommended maximum number of head for trailers of different lengths for cattle.[1] *Adapted from Jim Turner and Clyde Lane, North Carolina State University and University of Tennessee*

Trailer Size (ft)	Average Cattle Weight (lbs)							Total Cattle Weight (lbs)[2]
	400	600	800	1000	1200	1400	1600	
14 x 6	16	11	8	6	5	5	4	<6500
18 x 6	21	14	10	8	7	6	5	<8400
22 x 6	25	17	13	10	8	7	6	<10200
26 x 6	30	20	15	12	10	9	8	<12000
30 x 6	35	23	17	14	12	10	9	<13900
34 x 6	39	26	20	16	13	11	10	<15700
20 x 7	27	18	13	11	9	8	7	<10800
24 x 7	32	22	16	13	11	9	8	<13000
28 x 7	38	25	19	15	13	11	9	<15100
32 x 7	43	29	22	17	14	12	11	<17300

[1] This chart represents recommendations for polled and dehorned cattle. Reduce the number of cattle by 5% when hauling horned cattle. During hot and cold conditions, decrease the number of head loaded to prevent additional stress.

[2] The maximum weight of cattle for each trailer size with these calculations. Do not exceed the Gross Vehicle Weight Rating (GVWR) for your truck and trailer.

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