CHAPTER 17
Management of blind horses

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Introduction
A variety of ophthalmic diseases may cause horses to lose their sight [1]. Recurrent uveitis is the most common cause of bilateral blindness; but glaucoma, corneal disease, cranial trauma, blunt or penetrating globe trauma, neoplasia, and infection also can cause vision loss. (See online material for further discussion.) In many cases, attending veterinarians have provided proper treatment and caretakers have followed medication schedules, but blinding sequelae still occur. Data on the incidence of blindness in horses are scant, but field experience suggests that at least 1% of horses lose sight in one or both eyes during their lifetime [2]. Several facts are of concern if vision loss is imminent:

• Horses have a natural history as grazing animals hunted by predators. This gives them a wary temperament. They are prone to display sudden fight or flight responses. When cornered, frightened, or threatened, horses may kick, strike, or run.

• Horses are herd animals that follow a strict social hierarchy. Visual cues are paramount in establishing the dominance order of the group. Individual animals that ignore the visual cues of their herd mates are often bitten, shoved, or kicked by dominant individuals. Dominant herd members may limit the food and shelter access of nondominant members.

• Horses are large, strong creatures, usually weighing more than 500 kg. Yet their lower legs have a diameter not much larger than a baseball bat. Horses trapped in fences or other hazards often panic. The result can be fractured extremity bones and other severe injuries.

Given these truths of equine social life, behavior, and anatomy, how do horses cope with the loss of their primary orienting sense? Some horses adapt poorly and must be euthanized to protect the safety of their handlers and themselves. However, others show a remarkable ability to adjust to blindness. Adaptation to blindness depends on the inherent temperament of the horse, the dedication of the owner, and the presence of a safe and predictable environment.

While a large number of horses are euthanized if they become blind, many horse owners have an interest in blind horses and opt to provide for them throughout their natural lifespan. Some are kept at pasture as pets; others are used in a variety of ways. Ultimately, management choices for blind horses are made considering many factors, including how well the horse adapts to loss of sight, the horse’s obedience and aptitude for training, and the economics of the situation at hand.

Adaptation to blindness: give them time
Although blindness can occur suddenly, onset in most horses is gradual. Caretakers of horses with failing vision usually notice progressive uncertainty, especially in low-light situations. As sight dims, horses may bump into walls or fences and show reluctance to walk over terrain that is unfamiliar. Herd behavior changes, even among horses that have been pastured together for years. Horses that are ridden may shy frequently, refuse to obey simple commands, and show reluctance to move forward. Balance may be altered, and horses with minimal acuity may show a head tilt or postural change.

When vision finally fails, caretakers report that blind horses go through a “transition period” where their behavior is unpredictable, reflecting fear and anxiety [3]. Rapid circling, “freezing” in place, prolonged neighing, spooking, and aggressive body motions (e.g., crashing into walls, running over a handler) may be observed. This initial adjustment period can be dangerous to both the horse and handler, but it is usually transient, lasting anywhere from a few days to several weeks. Cautious handling, patience, and common sense are needed to help the horse adjust to vision loss during this critical period (Figure 17.1).

In most situations, newly blind horses should not be turned out with a large group of horses. They will do best if they are initially kept by themselves in a stall or turned out in a small corral or paddock with a single carefully chosen companion,
Figure 17.1  (A) Contact with familiar handlers and stablemates facilitates adaptation to blindness. Mindy, a 38-year-old mare, has just gone blind from glaucoma. She is anxious but is calmed by the presence of her long-time companion Suntan. (B) Mindy shows a head tilt and wary posture the first time out of the barn, but she is settled by the voice and touch of her owner and by Suntan. (C) Soon Mindy accepts her vision loss, and grazes with contentment.  
(Source: Photographs courtesy of Deborah and Rocco Distaffen, Spencerport, NY.)
such as a quiet horse, goat, or donkey. It may be helpful to hang a bell on the halter or neck strap of the companion (Figure 17.2).

Newly blind horses show anxious behavior but appear to be settled by the voice, smell, and touch of people they knew and trusted when they had sight. While the transition/adaptation period is not a time to try to train a blind horse to do new things, frequent handling and attention are appropriate. All owners report that talking is a key part of blind horse management. The constant murmur of a handler's voice provides reassurance, lets the horse know where the handler is, and avoids surprise. Handlers also report that frequent touch in the form of grooming and petting is calming and comforting to blind horses. The blind horse soon learns that auditory and tactile signals from a trusted handler indicate a safe place.

Adjustment to vision loss is helped if the horse is given a predictable daily routine. Feeding should be done at the same time and in the same place every day. Fresh water should always be available. If the horse is turned out, it should be led out along the same path each time and released at the same spot. Free-choice access to hay is a good settling aid. If the horse is being managed with a companion, the pair should not be separated during the adjustment period. Personnel visiting the farm must be aware of the status of the newly blind animal and should be cautioned to act with common sense and respect. Startling stimuli (farm vehicle traffic, aggressive dogs, flapping tarps, etc.) should be kept to a minimum.

Acceptance of vision loss and adjustment to blindness occurs in most innately calm horses over a period of days to weeks. A few horses take several months to display full adaptation but still exhibit progressive acceptance and increasingly confident behavior. Well-adapted blind horses tend to be cautious and careful and do not have a high rate of injury. Some horses, particularly those that have innately high-strung temperaments, never adapt. Horses that do not adapt well continue to exhibit anxious behavior and are prone to injuring themselves and their handlers.

**Decision-making for owners**

Owning a horse is a big responsibility; owning a blind horse is an even greater one. Horses have a lifespan of approximately 30 years; owners who are faced with the decision of what to do with a horse that is blind should consider the ramifications of supporting that animal for many years to come. Decisions on whether to keep the horse as a pet, use the horse in some capacity, or choose humane euthanasia are dependent on many factors, including the horse's temperament, applicable herd dynamics, facility limitations, economics and welfare considerations. Decision-making must prioritize the security and welfare of the horse and the safety of the handlers.

Adaptation to blindness in the horse is highly dependent on the individual's temperament. Horses that are high strung, nervous, and reactive are usually the most challenged. When sight is lost these horses appear to experience more fear and anxiety than horses of calmer disposition. Frantic behavior such as constant stall circling, compulsive calling to former herd mates, and intolerance of lead rope or cross tie restraint may be displayed. Anxious blind horses may crash into walls or fences.
or run over people who try to help them. Such behavior poses obvious risk to both the horse and its handlers. Blind horses that persist in exhibiting dangerous behavior after being allowed a generous trial period for adjustment may need to be euthanized for safety reasons (Figure 17.3).

Horses that exhibited calm behavior and quiet temperaments when they had sight are usually the best candidates for adapting to blindness. Once the adaptation period is complete, these horses usually transition to patterns of behavior that are predictable and easy to manage. However, the owner must commit to extra safety precautions that are implicit when an animal as large as a horse is kept on a property, especially if there are other horses on site and/or frequent visitors. These precautions include special care to “blind-proof the environment,” vigilant handling of the blind horse, and prudent choices in confinement. The owner may need to provide turnout for the blind horse that is separate from the rest of the herd, and identify a quiet companion for that enclosure. People that handle a blind horse must be aware of its nonvisual status and be coached in safe handling protocols.

Some owners do not have the resources to provide a suitable environment for a sightless horse, even if it has adapted well to vision loss. Some of these animals are donated to sanctuaries or placed in foster homes, and some are euthanized. Ultimately, individual circumstances will dictate the choices that are made in managing every horse that loses sight.

Mapping their world—how do they do it?

“Experience is the cane of the blind” (popular Haitian saying).

Horses that have lost vision appear to have the ability to construct a “mental map” of their environment (Figure 17.4). Owners of blind horses cite remarkable stories of the navigational skills of their horses. Blind horses traverse the perimeter of their paddock or pasture boldly, following paths and lane ways without hesitation. Blind horses often run and play in their fenced enclosures, halting just short of the boundary. “Dark-adapted” horses travel their home terrain with such confidence that outside observers may mistake them for sighted animals. No one knows just how blind horses are able to orient themselves so well, but current research on the neuroscience of vision and navigation in other species suggests a few mechanisms that may facilitate spatial awareness in blind horses:

Neuroplasticity of the visual cortex

Neuroplasticity is a term that describes the brain’s ability to reorganize itself by forming new neural connections throughout life. In humans, the visual cortex region of the brain is massive, occupying over a third of the anatomy of the cerebral cortex. The visual cortex processes light signals in sighted individuals, and is an area of high activity. Abundant
research has shown that the neuronal circuitry of the visual cortex in blind individuals of many species is not abandoned but is instead “rewired” and reallocated to the processing of other sensory input, particularly that associated with auditory and tactile stimuli [4, 5].

Spatial navigation and neural representation, or the brain’s positioning system
A cellular basis for the higher cognitive function of spatial navigation and route recognition has been postulated in recent decades. Dr John O’Keefe, Dr May-Britt Moser, and Dr Edvard I. Moser shared the Nobel Prize in Physiology or Medicine in 2014 for related research investigating the cellular nature of a “positioning system” in the mammalian brain that governs spatial orientation and navigation [6]. This “internal GPS” is activated when certain cells in the brain are triggered because the host has moved into a new place. The activation occurs at the specific point in time that the change in position occurs. A unique “map” of activated neural cells is created, and the “map” changes as the animal moves through space. This “internal GPS” is thought to function to direct individual route navigation in a process termed “path integration”.

Four groups of cells that are part of the path integration system have been studied in rats and mice [7–10], and functional MRI studies have demonstrated similar cells in human subjects [11]. “Place cells” are a group of cells in the hippocampus that become activated when the individual is in a very particular place, such as a corner of a room. “Grid cells” are another group of cells located in the entorhinal cortex (parahippocampus) that fire in a grid-like pattern when an individual moves and crosses a space. Firing activity of these cells creates a pattern of neuronal activity that forms a grid made up of 3-D equilateral triangles. The grid pattern is unique to the particular space traversed. Evidence is mounting that electrical activity of grid cells and place cells, working through networks with additional “border cells” (cells that are active in a closed environment) and “head direction cells” (cells that act like a compass), generates an internal navigation system—a kind of “cellular mental map” that can be imagined as a virtual model of the outside environment [6]. The network is activated through the visual cortex in sighted subjects, but subsequent research on blind subjects has shown that path integration can also develop in the visual cortex in the absence of visual stimuli. In these blind subjects the “plastic” visual cortex was retooled to process spatial information received by nonvisual senses such as touch. Moreover, “place cells” fire in response to certain exact “places” independent of visual stimuli in both sighted and blind individuals [12, 13].

Echolocation
Echolocation is a term that describes the acquisition of spatial information about the environment that is perceived when a subject senses sound waves that travel through the environment, bounce off nearby surfaces, and are reflected back to the ears of the recipient. Long studied in species like bats and marine mammals, the principle of echolocation is the same as that of sonar.
Some blind people have become highly skilled in echolocation [14]. Using distinct “tongue clicks” that propel sound waves into their surroundings, these individuals have trained their brains to process the reflected sound to generate a detailed “mental map” of the objects in the immediate environment. Information gathered on the location, dimension, and density of nearby objects allows these individuals to move easily in a complicated environment, often fooling observers into thinking they possess sight. As with the reallocated pathways of the cellular GPS system, and evidence showing reallocation of the visual circuitry to process tactile stimuli, research has shown that the visual cortex of the brain in blind individuals is very active in processing audible echo signals because it has undergone a “rewiring” process where resident neurons now respond to nonvisual stimuli [15].

Research on neuroplasticity, path integration, and echolocation has not been performed in horses, but these concepts have been studied extensively in multiple other mammalian species, including humans. It is interesting to speculate that similar neural processes may contribute to the remarkable ability that blind horses demonstrate in navigating a wide range of environments.

Coping in the dark

Whatever the underlying neurophysiologic mechanisms of their perception, simple observation confirms that blind horses rely heavily on increased use of their remaining special senses, just as blind people do. Blind horses consistently demonstrate increased use of their sense of hearing. Their ears move often, collecting sound waves like satellite dishes. They act as if their hearing is more acute than the average horse and orient themselves in their environment on the basis of the loudness and direction of the sounds they hear. They recognize the voices of their handlers and are calmed by learned verbal cues. Sounds from their regular pasture companions attract special attention.

The sense of smell of blind horses also appears enhanced. They often scent the ground or air, moving their noses toward perceivable smells as they search for other horses or food sources. They do not have difficulty locating hay, succulent pasture, grain, or water.

Blind horses use their sense of touch, specifically their muzzles, to investigate their environment. The muzzle is one of the most richly innervated regions of the horse’s body. The density of sensory nerves in the equine lip and nose region is similar to the concentration of sensory nerves in the human hand. A blind horse running its nose over a pasture fence or stall gathers information in much the same way that a blind person reads Braille with his or her fingertips. Blind horses should be encouraged to explore their surroundings and touch new people and things with their muzzles. The long whiskers of the periocular region and muzzle should not be clipped because these structures help the horse “map” and understand the environment (Figure 17.5).

Blind horses with even temperaments often modify the fight-or-flight behavior that can be so hazardous to the health of a
sighted horse. Many anecdotes demonstrate that these animals override their natural tendency to panic when faced with a situation in which they are stuck or trapped. Many blind horses that get tangled in fences or farm machinery escape injury because they calmly wait for assistance. A sighted horse in a similar situation would be expected to panic and sustain severe trauma.

**Common-sense safety concerns**

A safe environment is important as blind horses can easily be traumatized. Walls and fences should be smooth and free of nails, sharp pieces of wood, or projecting pieces of wire. Stall entry and exit will be easiest if the stall has a sliding door or a door that swings out into the aisle. All hardware should be free of any sharp or hook-like projections. The J-shaped handles of water buckets should be taped over, as these often become gapped with use, presenting a hazard that can trap and tear an eyelid (Figure 17.6).

A blind horse may spook and jump sideways if something like snow sliding off a roof or a loose dog scares it. Another great stressor for blind horses is wind. The exact reason that wind causes alarm is not known, but it may be that wind interferes with the usual audible cues that blind horses use for orientation. People working with blind animals should be especially careful if high winds, unusual loud noises, or loose animals are present, and should always be prepared to take evasive action if the horse gets startled and makes a sudden move. Like all horses, blind horses can be dangerous to be around if they are frightened.

Signage can be posted on stalls or paddocks of blind horses to alert visitors to the animal’s disability. Regular handlers should stand near a blind horse’s shoulder when working with it, because this is the safest position from which to react if the horse makes any quick moves. Veterinarians and farriers must be aware that the horse is blind and should take a little extra time to reassure the horse using “talk” and “touch” before initiating any actions that might be painful or surprising to the horse.

The decision to turn a blind horse out into a pasture once it has adapted to vision loss is dependent on the horse and the safety of the pasture. It is a good idea to walk a horse around the perimeter to introduce it to the new pasture space. The process of “mental mapping” may be aided if the handler taps on the fence as it is circumnavigated. Extra time should be spent at the water trough and gate (Figure 17.7). Audible signals like “swishing” the water and rapping on the gate will help the horse locate the key features of the pasture [16].

The footing of all enclosure(s) should be level and free of holes. Obstacles like mounting blocks, jumps, or farm equipment should be removed. Corral or paddock fencing must be horse-safe. Post and pole, split rail, plastic or wooden boards, woven wire-mesh fencing, or metal pipe panels are good choices for fence boundaries. Barbed wire and stand-alone electric wire fences are inappropriate, as wire barbs pose obvious safety hazards and the electric shock transmitted from electrified wire can panic a blind horse, causing it to run through the fence. Smooth wire-strand fencing is not optimal for safety reasons, but if this type of fencing is the only option, strips of fabric can be tied to the wire at 1.5- to 2.5-m intervals. The strips will flutter in the wind and the associated noise will aid the horse in respecting the fence boundary.

Tree branches, holes, ponds, ditches, insecure fencing, and farm equipment are obvious hazards that should be eliminated.

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Figure 17.6 (A) The handles of water buckets pose a risk for eyelid laceration as the J-shaped hooks can develop a gap wide enough to trap the lid margin if a horse rubs its face on the handle. (B) This hazard can be eliminated by taping up the bent hooks.
if possible (Figure 17.8). Immovable vertical obstacles like trees or poles can be made safe if they are rimmed with tires filled with sand, or marked by spreading an apron of gravel or rock around their base. The water trough should be located along the fence line and should not contain any sharp corners or rough edges. Seasonal hazards must be taken into consideration, as very wet weather can create dangerous bogs or high water in pasture creeks, and very cold weather paired with freezing rain can create ice patches that are treacherous for blind horses (Figure 17.9).
Bullies and buddies: social interactions with other horses

Horses in herd situations establish a social hierarchy, with dominant individuals ranking higher in the pecking order than submissive ones. In a herd situation, a blind horse usually falls to the bottom of the social order. Dominant sighted horses will take advantage of the blind one, chasing it away from feed sources. They will bully, bite, and push the handicapped horse, keeping it away from others. Blind horses are threatened and frightened by dominant individuals and will become skittish and nervous. Blind horses in herds tend to lose weight because of poor access to food and they may not come up to the pasture gate when other horses are being brought in. For all these reasons, it is generally not advisable to turn blind horses out in herds.

However, horses are social individuals and are usually happiest if they have a companion. Many calm horses are well suited to a “buddy” role for a blind horse. By all reports, bonding between two well-matched horses usually develops quickly. Once a compatible pair has been identified, the two equine friends can be turned out together in their own enclosure and will be content to live together as a pair (Figure 17.10). Often “buddies” are housed in adjacent stalls. In some cases they have the ability to touch noses and smell each other when stabled if the stall wall that separates them has a grating or does not go to the ceiling.

Companion horses that are visual act as “seeing eyes” and often appear to lead their unsighted companions over unfamiliar terrain. Sometimes the guidance is in the form of a nose-to-tail physical presence. Other times, the blind horse listens and scents for clues that define the location of the buddy. Vocal contact is frequent, with both individuals calling back and forth to each other. In some cases the sighted horse may wear a bell on its halter that provides guidance. Observers have seen buddy horses appear to lead the blind partner through lanes and gates.

Several sanctuaries have been developed that house multiple blind horses. Managers of these facilities often pair two compatible blind horses together as pasture companions or “buddies” (Figure 17.11). They report that the bond between the pair of blind horses is just as strong as the bond between a sighted and blind horse. The horses stick close together and figure out the boundaries of their world, navigating their environment together. They will groom each other’s coats with their muzzles, use each other’s tail as a fly switch, and graze nose to nose [17].

Whatever the visual status of the buddies, the attachment between the pair is usually strong (Figure 17.12). As such, one horse will become quite anxious if separated from the other, and this fact must be taken into consideration if the two are pulled apart. If circumstances arise where a pair must be separated permanently (e.g., if one becomes ill and dies), the remaining horse will go through a period of anxiety and distress. However, the horse will generally accept and bond quickly with a replacement “buddy” if their temperaments are compatible.

Blind broodmares with foals

Mares that become blind for nonheritable reasons are often bred, and may produce several foals during their lifespan [18]. Blind broodmares are as maternal as sighted mares and show strong protective behavior toward their offspring, especially in...
Figure 17.10  A calm, sighted horse is a good “buddy” for a blind horse. Blind Mindy never strays far from buddy Suntan. (Source: Photograph courtesy of Deborah and Rocco Distaffen, Spencerport, NY.)

Figure 17.11  Two compatible blind horses can also make very good pasture companions. (Source: Photograph courtesy of Steve Smith, Rolling Dog Farm, Lancaster, NH.)
the first few weeks of the foal’s life. They need to know that their foal is nearby and are often more relaxed if the foal wears a halter with a bell. Like sighted mares, they show signs of panic if separated from their offspring. A blind mare that is stressed by separation and trying to reach her foal will be heedless of people or obstacles in her path and thus dangerous. Farm employees and veterinarians working on blind broodmares or their foals should always take care to restrain the pair in such a way that the mare is aware that the foal is near. This usually means holding the foal close to the mare’s front end where she can swing her head and touch, hear, or smell the foal.

Management of a blind horse is simplified if the horse is taught a “vocabulary” of a few simple commands that the horse will obey when being led or worked on. At the same time, the handler should establish rules and boundaries for acceptable behavior in any circumstance that can be anticipated. Training should include clear modeling and positive reinforcement of behavior that will maximize safety and ease of handling when the horse is being groomed, led, fed, and transferred from one place to another. As time goes on, additional training will teach the horse proper behavior for interventions like farrier and veterinary visits.

Blind horses must be well adjusted to vision loss before serious training begins. Handlers who practice constant talking and touching will help their horse adapt to blindness and set the stage for future lessons. Caretakers should speak in constant low soothing tones to calm the horse and help it become oriented. They should offer frequent hand contact and close physical presence. Blind horses will be steadied if they are led with a guiding hand on the neck or shoulder (Figure 17.13). With time and patience the horse will relax. Adaptation is complete when the horse navigates its environment with confidence and carries out all parts of the daily routine (eating, turnout, grazing, grooming, etc.) without undue anxiety. Basic training seeks to reinforce good behavior any time the horse is handled or moved, with the end goal of instilling habitual behavior that is safe for both horse and handler.

After the horse has adjusted to blindness, structured training sessions can begin. The habit of constantly touching and talking to the horse should be continued, respecting the fact that tactile and auditory senses are heightened in all blind animals. Trust will grow and basic commands will be learned quickly if the trainer gives consistent cues and stays relaxed and nonthreatening. Initially, commands such as “whoa,” “step up,” “step down,” “stand,” and “back” are taught. Verbal signals for the desired behavior are augmented by tactile cues that help “explain” the desired result.

“Whoa” can be taught by saying the command while restricting forward movement using pressure on the lead shank or rein and a hand on the chest (Figure 17.14). “Step up” can be learned by guiding the horse over a known elevation like a ledge entrance into a barn or the ramp of a trailer while voicing the chosen cue (Figure 17.15). “Stand” can be taught by speaking the command while emphasizing the halt stance with a hand on the body. The most important commands to master are the order to stop (“Whoa”) and a cue to let the horse know there is an obstacle
coming ahead [16]. Good trainers use consistent pronunciation of commands and inflections that do not vary in pitch to teach blind horses the exact meaning of the chosen set of cues. They keep their tactile cues consistent and clear.

As training goes on, the horse will learn to pick up additional nonverbal cues and will start to respond to the trainer’s touch, footfalls, and body position. Blind horses benefit from natural horsemanship exercises that involve positive reinforcement of desired behaviors. Most of these natural horsemanship methods involve frequent auditory and tactile cues, so they are easily adapted to blind horses.

Safety concerns preclude veterinarians from advising their clients to ride their blind horses. Still, many owners choose to use their blind horses for riding. Trainers of blind riding horses report that these horses benefit from long sessions of ground work before any attempt is made to put weight on their back. Equipment like the saddle pad, saddle, bridle, and girth is put on and taken off over and over until the horse is thoroughly familiar with the sensation of being “tacked up” and accepts the pressure of any straps that hold equipment in place. Considerable time is spent teaching the horse the typical mounted aids by giving the same signals from the ground. The rein aids are taught by using rein pressure applied to the bit by a person walking beside the bridled horse, coupled with already learned verbal commands [16].

Advanced riding aids can also be taught from the ground using “long lining” sessions where two long straps or reins are affixed to the bit, one on each side. The straps can be used to “drive” the horse from behind, or do lunge work in a circle. The straps transmit signals that are similar to those that a rider on

Figure 17.13 Blind horses are steadied by the touch of a familiar handler. Daisy, a 38-year-old Shetland pony, who has had both eyes removed, follows her owner just by feeling his hand on her neck.

Figure 17.14 Blind TJ is being taught to halt by his owner. While walking beside him, she gives the appropriate rein aids as she says the command “Whoa.” (Source: Photograph courtesy of Susan Straumann, Woodstown, NJ.)
the back would give, but the signals all originate from a handler who is actually on the ground [16]. Trainers advise that no one should attempt to ride a blind horse alone. Initial weight-bearing sessions should be done with a competent “spotter” on the ground who can help reinforce the cues that the rider gives and also provide an added measure of safety. As basic training is completed, trainers can then add aspects of work that match the intended use of the horse. It is important to introduce new stimuli slowly, and stop the lesson or “switch gears” to a familiar task if something is frightening to the horse. Owners who work with tractable, well-adapted blind horses report that these horses learn their lessons quickly. The horses seem to enjoy regular training sessions and put absolute trust in their handlers. Working with a familiar sighted person seems to give blind horses a sense of “freedom in the dark.” A trained blind horse trusts that the cues the trainer gives are safe and learns to obey directions with confidence.

Communication between a blind horse and its trainer is quite refined, especially in horses that are used for dressage or other riding purposes. Trainers, riders, and owners cite the rewards of working with blind horses, describing heightened awareness of their own special senses and a deep and satisfying sense of partnership with these animals.

**Lives blind horses lead**

There are thousands of bilateral blind horses alive in the world. Their owners choose to manage them in a variety of ways. Most blind horses are kept as simple “pasture pets.” They are not ridden but are treasured family members (Figure 17.16). Their owners enjoy caring for them and are happy to provide them with basic shelter, feed, and handling in return for their affection and companionship. If the horse has a calm and gentle temperament and has successfully adapted to blindness, it may provide a steadying influence in the form of company for flighty youngstock or older sighted horses who do not tolerate solitude.

Horses that are kept as blind broodmares (Figure 17.17) demonstrate breeding behavior that is similar to that of sighted mares. However, lacking photoreceptors, they do not respond to artificial light treatment for inducing estrus early in the year when the natural photoperiod is short. Most blind mares show normal heat cycles by April and thus can be bred relatively early in the year. Their gestational issues are exactly the same as those of sighted horses, and they should be placed on the same schedule for nutrition, deworming, and vaccination as other mares on the farm. If a mare became blind as a result of leptospirosis-associated uveitis, serologic testing is recommended for other broodmares on the farm, because leptospiral infection is well documented as a cause of abortion. Most sighted mares foal in the middle of the night, but blind broodmares tend to foal at any time of day or night, so extra vigilance is warranted when these mares near their due dates.

A veterinary consultation is advised if a blind or visually compromised mare or stallion is under consideration for breeding. Most Appaloosas with insidious uveitis or congenital stationary night blindness have genetic predisposition to visual
problems [19], and horses that display silver dapple coloring often have a genetic predisposition to multiple congenital ocular anomalies (MCOA) syndrome [20–25]. European Warmbloods that are blind from uveitis commonly demonstrate a genetic predisposition to blindness secondary to an inherited equine leukocyte antigen (ELA) haplotype [26]. Animals that present with phenotypes associated with blindness or visual compromise should not be used for breeding.

The majority of blind horses are not ridden or driven: they are maintained as pets or are used as breeding animals. However, some blind horse owners do opt to train their animals to perform some kind of working role, as detailed below. Successful transition to a competitive or working role after sight loss is not guaranteed, but a small number of horses have achieved remarkable training and competitive success in disciplines that do not require navigation of fixed obstacles or work at high speed.

Some blind horses are used as trail horses (Figure 17.18). These animals have a strong bond with their riders and are highly cued to riding aids and voice commands. Mileage on unfamiliar trails cements the trust between horse and rider because the horse depends on the rider for guidance and avoidance of hazards. Blind trail horses are taught to step over logs and small obstacles in their path in response to voice or tactile cues from the rider. Anecdotal reports indicate that many blind horses adopt a very confident attitude on the trail. Some blind horses like to take the dominant “lead” position if riding is done in a group; others prefer to follow sighted horses. Most owners who maintain blind trail horses report that these animals are very agreeable mounts. They are eager to go out on rides and willing to enter and exit trailers. Like blind people who travel with service guide dogs, these horses seem to enjoy an outing using the rider as a pair of “seeing eyes.”

Blindness is a common endpoint for horses, mules, and donkeys that work pulling carts, being ridden, or serving as pack animals to transport people or products in the developing world. Many blind equids continue to work as driving, pack, or riding working equids. They play a crucial role in the economic viability of the families that own them.

Some blind horses have been used in therapeutic riding programs where children and adults with disabilities learn to ride and practice horsemanship. Blind horses who succeed as therapeutic lesson horses must be well trained and quiet and have gentle dispositions. The riding therapy sessions usually involve at least two assistants on the ground. One assistant leads the horse and the other(s) provides guiding hands for rider stability and safety.

Caring for, riding, and observing a horse that has lost the sense of vision may help people who have disabilities. The horse’s ability to cope with blindness may inspire the rider to overcome his or her own special challenges. Also, enucleated or phthisical blind animals have a “different” appearance that is at first a bit startling. These horses teach children and adult family members acceptance of altered appearance relating to physical challenges.

A few blind horses have gone on to celebrated careers as high-level athletes. Dressage is an English equestrian discipline...
Figure 17.17 Blind broodmares can make excellent mothers. (A) Begam, one of the first daughters of the famed sire Alydar, was born blind with bilateral microphthalmia. Begam’s breeder, Alice Headley Chandler, of Mill Ridge Farm in Lexington, Kentucky, raised her and bred her several times to the farm’s resident stallions. (B) Begam produced six valuable Thoroughbred foals, three of which were stakes winners. All the foals had normal eyes. (Source: Photographs courtesy of Mill Ridge Farm, Lexington, KY.)
practiced by some well-adapted blind horses (Figure 17.19). The sport involves a high level of precise communication between horse and rider. The signals that are used are primarily tactile because the rider uses subtle changes in the position and pressure of the hands, legs, seat, and body balance to tell the horse to change gait, speed, rhythm, and direction. Unlike other equestrian sports that involve obstacles (jumping), high speed (racing and polo), carriages (driving), or interaction with cows, poles, or barrels (many Western events), dressage takes place in a level arena at fairly low speeds and thus poses fewer hazards.
for a blind animal. The rider tells the horse where the boundaries of the ring are by changes in his or her weight and body position and turns corners as part of the test pattern. A small number of blind horses have been trained to advanced dressage standards by skilled and empathetic trainers and have competed against sighted animals at a variety of levels [27].

Other blind horses have been shown with success in Western show ring events by both adult and youth riders (Figure 17.20). Reining is a discipline that has attracted a few blind competitors in Western shows. Like dressage, reining is a sport that does not involve obstacles but is highly dependent on training and precise communication between horse and rider.

Each horse’s circumstances are unique, and safety considerations must take priority in any choice of equestrian activity. Veterinarians should not make recommendations about riding a blind horse, as their job is to tend to the medical and welfare concerns of the animal and only give advice on general management. Veterinarians must always stress safety for both horses and humans and educate their clients in handling methods that are conservative and safe.

Owners who are pondering decisions about working with their blind horse can be directed to several books [28, 29], articles [30], and websites [16, 31–35] where they can read about choices that other owners have made. They may also find useful information in books that discuss managing blindness in small animals [36].

**Horses with unilateral loss of sight**

Many horses lose vision in a single eye for a variety of reasons, retaining normal vision in the fellow eye. Horses that lose vision in just one eye usually adapt well. If the blind eye has been enucleated they may show a head tilt for a short time after surgery, but generally revert quickly to a normal head carriage. Because they cannot see people or objects that approach on the blind side, they may be skittish when approached on that side. As a result, horses with unilateral vision loss are often led and approached on the visual side. Painful or unpleasant stimuli like injections are best administered on the sighted side. When the horse is handled on the blind half of the body, the handler should talk to the horse in a reassuring tone and keep a hand on the horse's body so that the animal is aware of the handler’s position.

Veterinary ophthalmologists are not able to calibrate acuity or depth perception in either one- or two-eyed horses with certainty. Horses that have unilateral blindness have only half the visual field of a fully sighted horse, so safety questions arise when athletic use of these animals is debated. For this reason, owners are usually advised to use one-eyed horses as sport horses with caution. However, a review of 34 horses enucleated at a referral center showed that 85% (29/34) returned to work in their previous discipline soon after eye removal. Disciplines that the horses were used for prior to surgery included flat and steeplechase racing, dressage, eventing, hunter/jumper shows, trail riding, lesson work, and breeding. Most of the horses in the study had become acutely blind just prior to enucleation, and reasons for eye removal included ulcerative keratitis, perforation, uveitis, glaucoma, and neoplasia [37].

A survey of the world of equestrian competition shows that unilaterally blind horses can be found leading just about every type of sporting life that fully sighted horses lead. Half-blind horses have run in the Kentucky Derby and other premier stakes races, have competed in international combined training events, have won championships in Western events, and have had storied careers as driving, harness, dressage, and show horses. Riders often comment that these horses approach jumps with confidence and appear to gauge distance well.

The show hunter sport sector has a rule that may restrict unilaterally blind horses from their sanctioned competitions. The rules of the governing body that oversees rated hunter competition, the United States Equestrian Federation, state: “Animals with complete loss of sight in either eye may be found serviceably sound at the Judge’s discretion, except in a class over fences where a Judge may ask a rider to change horses” [38]. The language of this ruling is open to interpretation, but it implies that a unilaterally blind or enucleated horse may be dismissed from the hunter ring.

**Figure 17.20** Skips Golden Silk, a Palomino Quarter horse gelding, was performing and winning in Western show classes with 12-year-old owner Victoria Czech in the saddle just 2 months after losing sight in both eyes. (Source: Photograph courtesy of Mary and Victoria Czech of Chippewa Falls, WI.)
Polo matches governed by the rules of the United States Polo Association forbid match play by ponies that have lost the sight in one eye. However, collegiate rules allow unilateral blind ponies in their tournaments. Professional polo ponies that sustain a blinding eye injury may be “handed down” to collegiate teams and are often very successful athletes in that venue. See Chapter 16 for more information on national and international regulations regarding eye disease and medications.

**Enucleation of blind eyes**

Many conditions that cause an eye to lose sight are acutely painful or rapidly progressive. Such cases must undergo prompt enucleation for humane and medical reasons. Decision-making is usually clear in severe disease, like intraocular neoplasia, large globe perforations, or corneal infections that progress to endophthalmitis.

Some conditions that cause blindness are not associated with any apparent pain and are static. Examples include horses that have cortical blindness from old head trauma, and nonphthisical horses that have mature cataracts. These horses do not benefit from ocular surgery and should retain their globes.

However, other conditions that cause blindness may be associated with subtle, low-grade, or chronic discomfort that is debilitating for the horse. Decision-making in these cases is murky as it is difficult to quantify ocular pain in a horse with a misshapen or diseased eye. Horses with phthisis bulbi, insidious uveitis, persistent corneal infections, and certain types of glaucoma may show chronic tearing, conjunctivitis, keratitis, and blepharospasm (Figure 17.21). These horses may be somewhat ill-tempered and show aversive behavior if the periocular region is handled. When such horses have the abnormal eye(s) removed, they often show a great improvement in temperament. This fact suggests that some blind horses endure constant pain in their nonfunctional globes that compromises their quality of life. Veterinarians have a duty to look out for these patients, and thus have a responsibility to try to identify the subset of blind eyes that are accompanied by chronic pain or discomfort.

Veterinarians should explain to owners that disease does not “stop” in a blind horse when vision is lost. Many structures in a nonfunctional globe can still transmit pain or be subject to ongoing complications. Blind eyes that suffer frequent corneal ulceration or show continuous blepharospasm are candidates for removal. Many horses that develop glaucoma secondary to uveitis become painful and difficult to manage as they suffer episodes of corneal disruption, edema, bullous keratopathy, and secondary infection. A point of diminishing returns is often reached where it is not rational to continue treating corneal disease in a nonfunctioning globe. If signs of chronic pain are identified, the owner should be counseled as to the positive welfare benefits of enucleation, and urged to schedule surgery.

Enucleation techniques are discussed in Chapter 5.
Special partnerships: life lessons with blind horses

Working with horses that have lost a special sense such as vision is a humbling and powerful learning experience. Observing how blind horses navigate teaches lessons of perception, adaptability, and persistence. Watching the athleticism of well-trained blind riding horses emphasizes the remarkable communication that occurs between educated horses and their riders. Anyone who helps free a blind horse trapped in a fence will be humbled by the “horse sense” that prevails when the animal needs help.

Blind horses can be an inspiration to children and adults who live with mental or physical disabilities. They can also be beloved pets that teach lessons of tolerance and acceptance of diversity. They are living proof that communication and connection between species occurs on many levels and in many ways. Few sights are more heartwarming than watching blind horses enjoy a good roll and a playful buck in a pasture on a sunny summer afternoon. These horses are telling us that life is sweet and full of value even when it is not perfect (Figure 17.22).

The biggest factor that determines the success of adapting a formerly sighted horse to a life of blindness is the horse’s temperament, but the owner’s resources and dedication to the process also play a key role. Owners must have the patience and risk tolerance to commit to everything that is part of providing a good environment for the horse and to assume the role of visual guide when the horse is in human company (Boxes 17.1 and 17.2). The best human partners create a new perceptive vocabulary for the horse that is centered on verbal and tactile signals. They may also provide a “buddy horse” that acts as a set of “seeing eyes” and provides equine companionship.

Box 17.1 Making the environment safe for a blind horse.
- Fence paddocks and pastures with horse-safe boundaries
- Consider tying fabric strips to fences to increase boundary auditory signals
- Remove objects from the pasture that horse could run into
- Create a ground border (apron of stones, sand-filled tires) around immovable vertical objects in pasture
- Position water and feed receptacles against a fence or stall wall
- Ensure that water and feed tubs have smooth edges
- Police stall walls and doors and paddocks for hazards and sharp projections; remove or cover up
- Tape over all J-shaped bucket handle hooks
- Demonstrate the boundaries of any new enclosure
- Post signage to alert visitors that a blind horse is present

Box 17.2 Common-sense tips for managing blind horses.
Veterinarians can provide the following list of tips to owners of blind horses:
- Talk to the blind horse often, using a calm tone
- Touch the blind horse often, especially when a new stimuli is pending
- Teach the horse basic verbal commands: “Whoa,” “Step up,” “Back,” etc.
- Choose a quiet companion for the blind horse and keep them as a pair
- Keep a consistent daily routine
- Keep food and water in a consistent location
- Do not clip the muzzle whiskers or vibrissae around the orbit
- Practice loading off and on a trailer
- Be aware that sudden noises or high winds may scare blind horses
- Set limits for behavior and reinforce them. Spoiling a blind horse is not a good idea!

Figure 17.22: Blind horses may enjoy life the same way a sighted horse does. This photograph shows Scout, a blind Appaloosa, enjoying a good roll in his field. (Source: Photograph courtesy of Steve Smith, Rolling Dog Farm, Lancaster, NH.)
The partnership that develops between a well-adapted blind horse and its human caretaker is a very special one, based on mutual trust and respect. It is sustained by the emotional satisfaction that comes from helping a creature with special needs. Many people that care for blind horses would not trade their sightless companions for sighted horses. They report great lifespan.

Many people that care for blind horses would not trade their horse and its human caretaker is a very special one, based on sightless companions for sighted horses. They report great

Additional content

The book companion website at

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includes additional text and figures that are not in the printed book or E-book.

Please see the “About the companion website” page at the start of the book for details on how to access the website.

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