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COMMENTARY

The term "Unwanted Horse" was first coined by the American Association of Equine Practitioners (AAEP) in 2005. Unwanted horses include both unadoptable feral horses and domestic horses that are no longer wanted by their owners because they are geriatric, incurably lame, not athletic, unmanageable, cost too much to maintain, unmarketable, or fail to meet their owner's expectations. Most of the American public was unaware that there was a subset of horses that become unwanted until the bovine spongiform encephalopathy (BSE) outbreak in Europe in 2000 and the foot-and-mouth disease epidemic that occurred in the United Kingdom in 2001. Both outbreaks were responsible for temporarily changing European consumers' preference from beef to horse meat due to concerns with beef safety. This change drew U.S. media attention to the fact that many unwanted horses were being processed in the United States and their meat exported to Europe. The result was pressure from the American public and animal activists' groups to pass federal legislation to prohibit the processing of horses in the United States for human consumption. Because horses processed for human consumption epitomize the unwanted horse, they continue to be a part of the discussion, but normal, healthy horses of all breeds and disciplines can become unwanted.

At the 2005 American Horse Council meeting, leaders from across the industry came together to discuss options for resolving the unwanted horse issue. The result was the formation of the Unwanted Horse Coalition, which was placed under the umbrella of the American Horse Council. The goal of the organization was to raise awareness of the unwanted horse and provide a medium for the exchange of information about adoption, proper care, alternative careers, and responsible ownership. In 2018, it was agreed that awareness had been accomplished, so the Unwanted Horse Coalition transitioned to the United Horse Coalition with a goal of "providing information for existing and prospective owners, breeders, sellers, and horse organizations regarding the long-term responsibilities of owning and caring for horses, as well as focusing on the opportunities available for these horses through industry collaboration." Particular attention has been given to education regarding the cost of care, proper husbandry, training requirements, expectations and life-ending decisions. In addition, since 2001 virtually every horse breed and discipline has developed a program to identify unwanted horses and to provide options for retraining, rehoming and post-career care. These include the American Quarter Horse's Re-ride Adoption program, the U.S. Trotting Association's Full Circle Program, The American Horse Council's Time to Ride Initiative, and several programs in the Thoroughbred industry including the TB Aftercare Alliance, Take the Lead Program, and Retirement Check-off Program. A new unwanted-horse advocacy group, The Right Horse Initiative, brought years of experience in finding homes for shelter dogs and cats to the horse industry.

The horse industry will never completely eliminate unwanted horses. Horses will always age, sustain career-ending injuries, or not meet their owner's expectations. However, I'm optimistic that the future is brighter for these horses, because the horse industry has turned its attention to the issue and continues to develop strategies to both reduce the number of unwanted horses on the front end through responsible care and breeding as well as the rear end through rescue/retirement programs, retraining for alternative careers, and low-cost euthanasia options.

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INTERNATIONAL

Second Quarter 2019

The International Collating Centre, Newmarket, United Kingdom, and other sources reported the following equine disease outbreaks. African horse sickness was reported in Cameroon, Chad, Eswatini, and the Republic of South Africa (RSA). Significant losses were recorded in Chad with a case-fatality rate of 85%. An increased incidence was seen in the endemic areas in RSA, with outbreaks confirmed in eight of the nine provinces. No cases were documented in the Western Cape Province, either in the historically affected area or in the AHS controlled zone.

Outbreaks of equine influenza were confirmed by France (19), Germany (11), Ireland (19), Italy (three), Senegal (one), the UK (97), and the USA (three). The majority of outbreaks involved unvaccinated horses or horses with incomplete vaccination histories.

Belgium, France, Germany, Ireland, and the USA recorded outbreaks of strangles. The number of outbreaks ranged from one (Belgium and Ireland) to 20 (France) with three in Germany and 14 in the USA. Strangles is considered endemic by many countries.

Equine herpesvirus 1 (EHV-1) related diseases were reported by Belgium, France, Germany, the UK, and the USA. Respiratory disease was confirmed in Belgium (four outbreaks), France (two outbreaks), Germany (five outbreaks), the UK (one outbreak), and the USA (one outbreak; the disease likely occurred in many states). Outbreaks of EHV-1 abortion were recorded by a number of countries, most involving a single case of the disease. The number of outbreaks ranged from one (Australia and the USA), two (Canada and Germany), three (France and Japan), and 11 (Belgium). Two reported cases had co-infections with *Leptospira interrogans* and one with *L. interrogans* and *S. zooepidemicus*. Abortions were confirmed in vaccinated and unvaccinated mares. EHV-1 neurologic disease was recorded in Canada (one case), Germany (two cases), the UK (one case), and the USA (11 outbreaks, the majority involving single cases of the disease, six of which had recently attended an equine event). Equine herpesvirus 4 (EHV-4) respiratory disease was reported by France (12 outbreaks), Germany (several outbreaks), Sweden (three horses in one outbreak), and the UK (eight outbreaks involving one to multiple horses). France recorded a single case of EHV-4 abortion.

Rhodococcus equi infection was confirmed by France (one case), Ireland (two cases), and the USA (at least 42 cases).

The UK reported asymptomatic equine arteritis virus infection in three non-Thoroughbred stallions on one premises and an additional case in a non-Thoroughbred stallion on a separate premises epidemiologically linked to the first.

Equine infectious anemia was confirmed by Canada (five cases, of which one was clinically affected), Chile (one case), France (one clinical case), the USA (19 cases, the majority representing isolated cases), and Uruguay (18 cases on a premises; all were euthanized).

Equine piroplasmosis was reported as endemic in the RSA, the disease being recorded in every province.

Germany reported outbreaks of contagious equine metritis on several premises involving a total of 22 horses (19 stallions and three mares). Single cases of leptospirosis were recorded by France and the USA, both involving infection of the placenta.

There were two reports of equine coital exanthema, one from France (single case) and the other from the USA (two cases).

Salmonellosis was recorded by the USA. Thirty cases were associated with infection with *Salmonella* Group B and two with *Salmonella* Group C2.

France, Germany, and the USA reported outbreaks of rotaviral enteritis in foals. Number of cases ranged from two in Germany, 24 in France, and 65 in five states in the USA, of which 59 were of the G14P genotype and six of the G3P genotype. The greatest number of cases were recorded in June.

Clostridial enterocolitis due to *Clostridium perfringens* was recorded in the USA (27 cases). An additional 15 cases of *C. difficile* infection were also diagnosed.

Vesicular stomatitis was confirmed in the USA late in the second quarter of 2019. Three outbreaks caused by the Indiana serotype were identified, two in Texas and one in New Mexico.

Equine Disease Quarterly

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A total of 13 cases of Eastern Equine Encephalomyelitis were reported by the USA, the majority in Florida. The RSA and the USA reported cases of West Nile Virus infection, one in the RSA and two in the USA.

Equine encephalosis was reported in six of the nine provinces in the RSA.

A case of Hendra virus infection was confirmed in New South Wales, Australia.

Three cases of Tyzzer's disease in foals were recorded by the USA. The USA also reported two cases of equine coronavirus infection that were diagnosed at necropsy. Germany confirmed single cases of equine ehrlichiosis on two premises.

Preservation of Rare Horse Breeds

Genetic erosion is a topic of international debate found in all sectors of the livestock industry. Selective breeding in food and fiber species is done for specific effect that has an economic value. Alternatively, the same actions are taken in the companion animal industry for less quantifiable, but equally significant reasons. The diversity of the horse industry is testament to our unique position straddling these two worlds, where competitive advantage may be as important as color, size, or temperament. While the national horse population is trending down, the abundance of options available to horse buyers have left some segments teetering on the edge of catastrophic loss.

In 2017, The Livestock Conservancy (TLC) identified an interest in discussing the unique needs of "endangered" breeds, or registries with fewer than 2,000 registrations per year. With a grant from the USA Equestrian Trust, and collaboration between Texas A&M University and Virginia Tech, the TLC brought together representatives from approximately 50 associations and registries to participate in the first national Endangered Equine Summit. Attendees were asked to identify what they believe are the leading causes of breed population decreases and decide what actions may be taken to stabilize that decline.

The concerns addressed at this summit are not unique to the United States. The Rare Breeds Survival Trust based in England monitors the number of rare and native breeds in the UK. Every year they collect data from breed registries and use that information to estimate the total number of breeding females. From this data they produce an annual "Watchlist" that they make available on their website at https://www.rbst.org.uk/. Additionally, the group monitors internal threats to breed health. These factors include inbreeding and geographical over-saturation.

In December of 2018, the TLC released a "Manual of Methods for Preservation of Valuable Equine Genetics in Live Animals and Post-Mortem." The manual was created as an educational resource for owners and veterinarians on how properly to collect vital tissues in ways that minimize loss and preserve significant genetic material for conservation. The manual is available for free to download on the TLC's website at https://livestockconservancy.org/.

In addition to the efforts of the TLC to educate the horse owning public, biotechnological companies have highlighted advances in cell collection, storage, embryo flushes, implantation, and even cloning. The future of "resurrecting" lost breeds may be possible and even cost effective due to the technological strides being made. The industry would benefit from the availability of secure "banks" for stallion semen or somatic cell materials for preserving the future of important bloodlines.

The first step taken includes the recent approval to have additional material preserved within the repository of the National Animal Germplasm Program at the USDA's Agricultural Research Service. This program already has shown the value of re-introducing previously "lost" genetics into livestock species, and those stories can be found on the USDA's website at https://www.ars.usda.gov/.

The health of the equine industry is tied directly to the health of the animals and the diverse uses of those animals. The genetic health of an animal has a direct correlation to its usability and the financial opportunities open to that animal's owner as well as all generations to follow. While we may not know the ultimate value of a specific group of animals to the overall health and future of the industry, we do have the technology to protect them and thus ourselves.

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Management Challenges for the BLM Wild Horse and Burro Program

Management of wild horses and burros living on the Bureau of Land Management's (BLM) western rangelands continues to be challenging. As of March 2018, there were approximately 82,000 animals (67,000 wild horses and 15,000 wild burros) on 30 million acres of BLM rangelands in 177 herd management areas. These populations usually grow by 15-20% a year, often doubling in 4 to 5 years, and the annual foal crop alone is expected to be between 16,000-25,000 animals. In addition to the animals on the range, the BLM also maintains about 12,000 animals in off-range corrals that serve as adoption and training centers as well as about 37,000 animals in 33 off-range pastures. The pastures, located in the Midwest and Western US, each house between 200 and 3,000 horses under federal contracts between the private landowners and the BLM. While no reproduction occurs on these pastures, the BLM still pays for the animal's care and feeding in these semi-free-roaming environments.

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When the Wild Free Roaming Horses and Burros Act (the Act) was passed in 1971 and amended in 2005, it instructed BLM to maintain equid populations in balance with other uses of the range such as wildlife management, recreational use, livestock grazing, and mineral, oil, and gas extraction. Toward this end, the Bureau determined that the appropriate population size on the range should be about 27,000 animals. The animals that exceed this target number (currently about 55,000) can be considered excess along with the 49,000 animals already in BLM corrals and pastures. The Act as originally written directs the BLM to offer the excess animals for adoption and sale without limitation followed by the humane destruction for the remaining excess animals. However, in the annual budget provided to BLM since the 1980s, Congress has prohibited the BLM from euthanizing healthy animals or selling animals in a manner that may lead them to being processed for commercial use (i.e. slaughter). This leaves the BLM in the position of having to feed and care for about 50,000 excess animals off-range, which literally "eats up" almost two-thirds of the program's $80M budget. Another 55,000 excess animals struggle to survive on public rangelands that exceed population targets and are often overgrazed.

To address population growth rates and excess numbers on the range, the BLM has supported the development of contraceptives for wild horses and burros since the 1980s. A couple of contraceptive products (porcine zona pellucida and GnRH vaccines) work well to prevent mares from conceiving if given annually or boostered following the initial vaccination. This approach can work well on smaller herds where animals can be individually identified and approached for darting. Unfortunately, repeatedly catching the animals for treatment just isn't practical. Most wild horses and burros on BLM rangelands can't be approached within half a mile, let alone the 20-60 yards needed for darting. Longer lasting contraceptives have not proven reliable in larger field trials. Recent efforts to spay mares in the context of a field research/feasibility project have been stopped by litigation from wild horse advocacy groups.

The dilemma is clear: excess wild horses and burros on western rangelands and in BLM corrals and holding pastures. The numbers exceed those that can be placed into long-term homes, albeit with restrictions on what new owners can do with the animals, through adoptions and sales. The solutions are anything but straight-forward. BLM continues to explore better, longer lasting, and permanent methods of contraception to control population growth rates. They also continue to try to find new ways to encourage adoption and placement of excess animals into private long-term homes. Ultimately, the direction forward depends on the program's budget and the policy provided by Congress as they work to address the realities of the situation and wishes of the public.

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KENTUCKY

Guttural Pouch Mycosis

Airway dysfunction is one of many causes of poor performance in equine athletes. Airway dysfunction can be classified as either acquired or developmental. One acquired dysfunction that is generally overlooked is a fungal infection of the guttural pouch, known as guttural pouch mycosis (Figure 1). Guttural pouch mycosis (GPM) is a potentially life-threatening disease that may initially present as a simple nosebleed (epistaxis) or even poor performance in an equine athlete. GPM has been documented in various parts of the United States, particularly in the southeast, as well as the United Kingdom. Clinical signs include unilateral (one-sided) or bilateral (both-sided) epistaxis, unilateral nasal discharge, dorsal displacement of the soft palate, dysphagia (difficulty swallowing), and laryngeal hemiplegia (partial or total paralysis of the larynx). Epistaxis occurs due to erosion of the guttural pouch mucosa by a fungal plaque, resulting in hemorrhage from the internal carotid, occipital, or maxillary arteries. Severe hemorrhage may result in rapid death from exsanguination. Dysphagia as well as various forms of pharyngeal dysfunction in GPM result from mucosal penetration and damage by fungal hyphae to the glossopharyngeal, hypoglossal, and/or the pharyngeal branches of the vagus nerves. A variety of fungi have been isolated from GPM with *Aspergillus* spp. being common. *Aspergillus* spp. and other opportunistic fungi are found naturally in the environment and can be found in the upper respiratory tract of normal horses. Wet environmental conditions, prolonged treatment with antimicrobials, an immunocompromised host, or use of corticosteroids have

Images courtesy of Dr. Nathan Slovis.

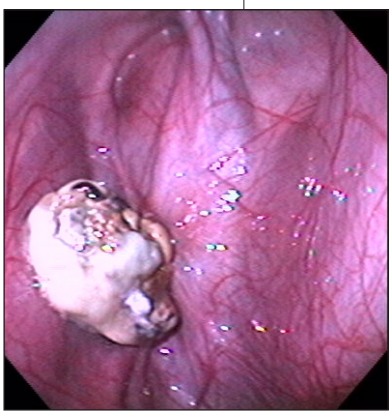

Figure 1. Fungal infection of guttural pouch.

Figure 2. Intravascular coils on X-ray.

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been proposed as factors conducive for fungal overgrowth. It is not fully understood why mycosis occurs in animals that are not immunosuppressed or debilitated. While no age predilection has been reported, the disease is more common in mature horses, but has been documented in foals as young as two months of age.

Dysphagia is the second most common clinical sign associated with GPM, after epistaxis. The cranial nerves within the guttural pouch that innervate the pharynx are the glossopharyngeal, vagus, and hypoglossal. Neurological dysfunction of the pharynx results when the nerves within the guttural pouch are inflamed or fibrosed. Generally, the presence of dysphagia or other neurological deficits at presentation indicates a poor prognosis. The severity of cranial nerve deficits depends on whether nerve injury is restricted to a local neuritis or necrosis of the nerve secondary to fungal infiltration and fibrosis.

Treatments include both medical and surgical options. While there are reports of successful medical treatment of GPM with systemic and topical antifungal medications, medical treatment is generally considered to be less efficacious than surgical treatment. Topical treatments with enilconazole and miconazole have been used with success in some cases. The presence of a diptheritic membrane (necrotic material over the surface of the fungal plaque) may prevent penetration of systemic antifungals. Additionally, there is increased risk of fatal hemorrhage due to the longer course of medical treatment. The preferred method to treat severe guttural pouch mycosis is to surgically insert a coil or balloon into the affected blood vessel to quickly cut off the blood supply (Figure 2). Typically, once the blood supply has been removed, the fungus regresses.

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