

African horse sickness control Movement Report



JD Grewar & CT Weyer

Introduction

Movement controls of equines between African horse sickness (AHS) controlled zones remains the mainstay of the day to day AHS regulations in place to ensure the health status and AHS free status on the AHS free zone in South Africa. Two broad categories of movements occur – those that originate in the AHS infected part of the country (see Figure 1 for the general requirements for these movements) and those that move within the AHS controlled area, but to a zone of higher control. With regards to movement from the infected zone: since November 2016, a requirement for movement has been the issuing of a permit by the State Veterinary authority in the Western Cape (State Vet Boland more specifically) for every movement. Movements within the AHS controlled area do not require permits, although these movements must be notified to the State authorities, and these movement patterns are evaluated in this report based on those prenotifications.

There are a further two sub-categories of movements evaluated in this report: the movement of wild equids (predominantly Plains and Cape mountain Zebra) and stop-over movements for domestic horses. Permits to move wild equids from any holding originating in, or to any holding in, the AHS controlled area are required from both the Veterinary Authority and the conservation authority (CapeNature). Furthermore, the movement of wild equids from the AHS infected zone into the AHS controlled area can only occur between July and September and require pre-movement testing and quarantine.

Stop-over movements are where horses are required to travel through a quarantine facility from the AHS infected zone before travelling to their final destination within the AHS controlled area, and there are certain control and AHS testing requirements specific to these movements. While these step-wise movements are included in the overall infected to controlled area movement analysis, they are evaluated in more detail in their own subsection. Movements into the controlled area of South Africa are limited by the risk of AHS from the area of origin. Part of the movement protocol is ensuring that the origin is considered low risk by the local State Veterinarian based on epidemiologic factors and local knowledge of the equine population and health status. These AHS Area Status Declarations (ASD's) form part of the movement not be applicable then the stop-over movement protocol may be considered by clients.

This report gives an overview of the movement patterns of horses and wild equids whose travel is regulated as a result of AHS – the period evaluated is the 2017/2018 AHS season, namely 1 September 2017 to 31 August 2018.





Figure 1: A schematic highlighting the basic requirements for movements into the AHS controlled area from the infected part of South Africa.



Permit based movements - infected zone to controlled area

This section deals with any equid moving from the AHS infected part of South Africa into the AHS controlled area in the Western Cape Province.

Domestic equines

A total of 1989 movement events consisting of 4128 domestic equines, of which 2 were donkeys, occurred over the 2017/2018 AHS season, with on average 2 equines moving per movement application.

The most horses moved were by far Thoroughbred's with 52% of the total representing this breed. The remaining movements were evenly spread across breed with the only other pure-breeds moving relatively frequently being the American Saddlebred (7%), Arabians (7%) and SA Warmbloods (6%). Table 1 below shows the breed distribution of moved horses.

Breed	Total moved	% of total
Thoroughbred	2130	52%
Cross Breed	372	9%
American Saddlebred	306	7%
Arabian	303	7%
SA Warmblood	235	6%
Hackney horse	127	3%
Welsh	116	3%
Other/Unknown	539	13%
Total	4128	

Table 1: Domestic equines moved by breed in the 2017/2018 AHS season into South Africa's AHS controlled area from the infected part of the country

Figure 2 shows the time series analysis of domestic horses moved. Most horses moved in September and October 2017 and then a sharp spike in August 2018. The AHS surveillance zone was by far the most common destination (62%) of horses moved (Table 2).





Figure 2: Time series lot of total domestic equines moved and their destination within the AHS controlled area

Table 2: The destination zone of do	omestic equines moving fro	om the infected area i	into the AHS controlled	area of South
Africa in 2017/2018				

Destination	Total moved	% of total
AHS free zone	327	7 8%
AHS protection zone	1240) 30%
AHS surveillance zone	2563	1 62%
Total	4128	3

Figure 3 gives an indication of the primary sources of horses moving into the AHS controlled area. In this case we have categorised the movement by the State Veterinary area of origin. These areas are specifically labelled if 200 or more horses moved from that region during the season. The primary two regions of origin are both in the Western Cape Province, namely the George and Beaufort West State Veterinary areas. These two areas of origin accounted for 46% of all horses moved from the infected area during the season. The primary reason for this is that George is a common region of equine events and a significant number of those movements would be horses originating in the controlled area and then returning after the event. Both George and Beaufort West have stop-over quarantine facilities as well and this would contribute to the ongoing movements into the controlled area – see the stop-over movement section below.





Figure 3: The total number of horses per State veterinary area of origin that moved into the AHS controlled area in 2017/2018. Areas are labelled if more than 200 horses moved from the region during the season.

Outside of the Western Cape common areas of origin are in the Eastern Cape (Port Elizabeth), Gauteng (Germiston) and KwaZulu Natal (KZN - Umgungundlovu and Ethekwini). Port Elizabeth has a racecourse and many of the movements from this area are race horses returning to the controlled area following temporary residence at the racecourse for weekend races. Gauteng and KZN are the primary horse population areas of the country, and movements for competition (both racing and non-racing) from these regions are common.

Stop-over quarantine movements

To facilitate domestic horse movements for the following conditions a stop-over movement protocol has been put in place.

- Horses originating from areas considered a high or unknown AHS risk based on disease/population conditions (see Introduction).
- Unvaccinated horses, such as weanlings not travelling at foot or for horses imported into South Africa from countries that don't allow AHS vaccination.



This is a step-wise movement via a quarantine facility that is either vector protected or occurs in a historically low risk part of South Africa. Most stop-over quarantine facilities are located in the AHS infected zone, and for those that aren't (two registered facilities in the AHS protection zone used in the 2017/2018 season) are required to be vector protected. The basic requirements for stop-over facilities and movements are:

- A minimum 14 day quarantine period
- Twice daily temperature monitoring of horses.
- Negative AHS testing prior to exiting the facility for ongoing movement to the final destination.

Furthermore for those facilities that are vector protected in the AHS protection zone: a preentry negative AHS test is required prior to arrival at the facility. In these facilities horses must be stabled in a completed vector protected, approved facility between 15:00 PM and 10:00 AM to avoid contact with midges (which are crepuscular) and a double door system must be in place to further diminish the chance of midges entering the facility. The use of insect repellent is used on protective netting and on horses when entering and exiting the stables.

A total of 366 horses moved under this protocol in the 2017/2018 season, with the months most active in April and May 2018 which coincides with the time of year that large parts of the South African AHS infected area are considered high risk for direct movements into the AHS controlled area (Figure 4). The final destination of these movements is also shown. A total of 38 (10%) of the 366 horses moved made use of vector protected quarantine facilities in the AHS protection zone.



Figure 4: Horses moving under the stop-over quarantine protocol during the 2017/2018 season with their month of movement and final destination after leaving quarantine shown.



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Wild equids

A total of 118 wild equids were moved in the 2017/2018 AHS season, excluding wild equids moved within the AHS infected area. In this season the only species that moved were Burchell's zebra (*Equus burchelli*) which are also known as Plains Zebra and include the zebra associated with the Quagga project in the Western Cape. No permits were issued for Cape Mountain Zebra in this season.

Figure 5 shows the origin and destination of zebra moved relative to the respective AHS controlled zones. No zebra moved from the AHS infected area during the season, and the majority (86%) of zebra moved were movements within their zone of origin (n=52, 44%) or from a zone of higher control to lower control (n=50, 42%).



Figure 5: Number of wild equids moved during the 2017/2018 AHS season. The zone of origin is shown horizontally and the zone of destination is shown vertically. Movements within the infected zone are not available

Figure 6 shows the average movement distance (in km) matrix of zebra movements (straight line distance) within and out of the AHS controlled area.



FROM					
то	Infected	Protection Surveillance Fre			
Infected (NA	819	558	NA	
Protection	NA	81	145	NA	
Surveillance	NA	102	46	NA	
Free	NA	NA	NA	NA	

Figure 6: Distance matrix of wild equids moved during the 2017/2018 AHS season. The average distance per movement per zone of origin and destination is shown. The zone of origin is shown horizontally and the zone of destination is shown vertically. Movement figures within the infected zone are not available for wild equids



Figure 7: Wild equids moved during the 2017/2018 season with their month of movement and final destination shown.

Zebra generally move during the colder winter months (Figure 7). While such movements didn't occur in 2017/2018, one of the conditions for movement of Zebra from the AHS infected area into the controlled area is that they move between July and September.



Pre-notification only based movements - within controlled area

Within AHS control area movements to a zone of higher control requires that notification of movement occurs within 48 hours of movement. A total of 2788 horses moved in this fashion during the season. By far the majority (80%) moved from the AHS protection zone to the AHS surveillance zone (Figure 8).

An important consideration for these movements is that there are a considerable number of horses that move from the AHS surveillance zone into the AHS free zone on the multiple movement permit system, which is a same day return movement licensing system allowing horses to move in this fashion without notification of movement. This system will not be further detailed here except to say that the surveillance to free zone movements depicted in Figure 8 is an underestimate of the actual movements that do occur.



Figure 8: Movements of domestic equines within the AHS controlled area, where horses move to a zone of higher control, during the 2017/2018 AHS season.

The movement pattern over time (Figure 9) is quite similar to that of infected area origin movements (see Figure 2) with the exception of August 2018 where a spike in movements was not seen for within controlled area movements. The movements from the protection zone into the free zone in January 2018 were primarily associated with a Thoroughbred sale which is historically held at the CTICC in January each year.





Movement type

AHS protection zone to AHS free zone AHS protection zone to AHS surveillance zone AHS surveillance zone to AHS free zone

Figure 9: Time series lot of total domestic equines moved and their origin- destination for movements within the AHS controlled area



Discussion

A total of 6932 equids moved into a zone of higher control during the season, a fairly large number of equines for an estimated country-wide population of 330 000 domestic equines. This averages to 19 a day and highlights the high level of involvement required to maintain systems and control. The vast majority of movements into a zone of higher control consisted of domestic equids (99.7%) and while it's important to understand wild equid movements, the risk mitigation of AHS spread into the AHS controlled area through domestic equid control remains crucial.

The AHS surveillance zone is consistently the most common zone of destination, both for infected area origin and control area origin movements. While the AHS free zone is not a common destination, which is understandable for its relative size and urban structure, the multiple movement system does result in underestimates for the surveillance zone to free zone movement classification.

The majority of movements are associated with Thoroughbred horses, and this breed drives the high areas of origin of Beaufort West and Port Elizabeth where racing and stop-over movements dominate.

Movement regulation requires close communication and interaction between various regulatory and State authorities. Movements originated from 47 of the 126 State vet areas in the country; although only 29 SV areas had more than 10 horses move from them during the year. This shows that centralizing control and administration is a necessity, rather than training the entire Veterinary services. Authorities from areas where uncommon movements occur from can be contacted on a per – movement basis. The use of a single permit issuing office, this season being the first full season this has been in operation, keeps the control relevant while maintaining a central administration.

Stop-over quarantine has assisted in facilitating the movement of 336 horses that would otherwise not have moved or would have required a 40 day residency in an AHS low risk area prior to direct movement. While this system is expensive and intensive it promotes the movement of high value horses or critical movements (such as high-level competition) and allows control and an acceptable system for the public needing to move horses. The cost and intensive logistic burden however is likely the reason for the decrease in the number of horses moved during the high-risk season, and the consequent increase in horse movements when direct movement from the infected zone reopened once the AHS risk from other areas became low enough. This was seen especially clearly in the sharp increase in movements in August, where horses from KZN and Gauteng were again allowed to move directly into the AHS controlled area, together with the fact that the breeding season for Thoroughbred horses would normally cause an increase in movements anyway due to broodmares being moved from the AHS infected area into the AHS controlled area to be covered.



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We are grateful to all private veterinarians and members of the public who comply with movement control. No cases of AHS occurred in the AHS controlled area during the season and movement control has a large part to play in this.

