

The 2015 African Horse Sickness season: Final Report

1 September 2014 to 31 August 2015



Report by Dr M de Klerk, Ms M Laing, Dr C Qekwana and Ms N Mabelane

Directorate: Animal Health

2015/08/31

Contents

| | |
|---|----|
| Introduction | 3 |
| The 2015 AHS season: Climatic conditions | 4 |
| Laboratories involved in AHS diagnostics | 4 |
| Reported outbreaks | 4 |
| Comparison of the number of reported AHS outbreaks for the previous AHS seasons..... | 5 |
| Temporal occurrence of AHS from 1992: countrywide | 6 |
| Comparison of the number of AHS outbreaks that have occurred in various provinces for the current season based on SR1 reports and lab reports. | 7 |
| Comparison of all lab results and SR 1 reports for each province | 11 |
| Precautions to limit outbreaks..... | 14 |
| Reporting of outbreaks | 15 |
| References | 16 |

Figures

| | |
|---|----|
| Figure 1: Percentage of normal rainfall for July 2014 – June 2015..... | 3 |
| Figure 2: Comparison of the number of reported AHS outbreaks for the previous AHS seasons..... | 5 |
| Figure 3: Comparison of the number of reported AHS outbreaks in each province from September 2014 – Aug 2015. | 7 |
| Figure 4: AHS virus serotypes in South Africa | 9 |
| Figure 5: AHS virus serotypes in Gauteng for current AHS season..... | 10 |
| Figure 6: Comparison of the number of AHS outbreaks that were detected with lab results and SR1 reports | 11 |
| Figure 7: Categories of the detected outbreaks according to report status | 12 |
| Figure 8: Reported number of AHS outbreaks in each province from September 2014 – Aug 2015..... | 13 |
| Figure 9: Reported number of initial AHS outbreaks for each province for September 2014 – Aug 2015 | 14 |

Tables

| | |
|---|----|
| Table 1: African Horse sickness outbreaks form September 1992 to February 2015 occurrence and number of outbreaks | 6 |
| Table 2: African Horse Sickness outbreaks based on lab and SR1 reports received: September 2014 to Aug 2015 | 8 |
| Table 3: Number of serotypes in each State Veterinarian Area in Gauteng as illustrated in Figure 5 | 10 |
| Table 4: The table indicates the dates for administration of African horse sickness vaccinations for each AHS zone: . | 15 |

Introduction

African Horse sickness (AHS) virus is an Arbovirus from the Reoviridae Family. The virus is transmitted mainly by *Culicoides imicola* and *C. bolitinos*. AHS is seasonally endemic in the north eastern part of South Africa with seasonal epidemics spreading to the south and west of the country. The existence of endemic areas other than the areas described above could never be proven.

African Horse Sickness outbreaks are recorded from 1 September to 31 August of the next year for practical reasons to include all the outbreaks in a single summer season. An outbreak is defined as a laboratory confirmed or epidemiologically linked positive case or cases on a property (farm or village) in a calendar month. If the disease persists for more than a calendar month in a single location, the responsible Veterinarian or Animal Health Technician should decide if the severity of the situation warrants further action.

The 2015 AHS season: Climatic conditions

Favourable climatic conditions will increase the breeding and spread of the *Culicoides* vector. Periods of drought followed by heavy rains are particularly favourable for the field vector. AHS has both seasonal and cyclical incidence with outbreaks occurring mainly in late summer and autumn.

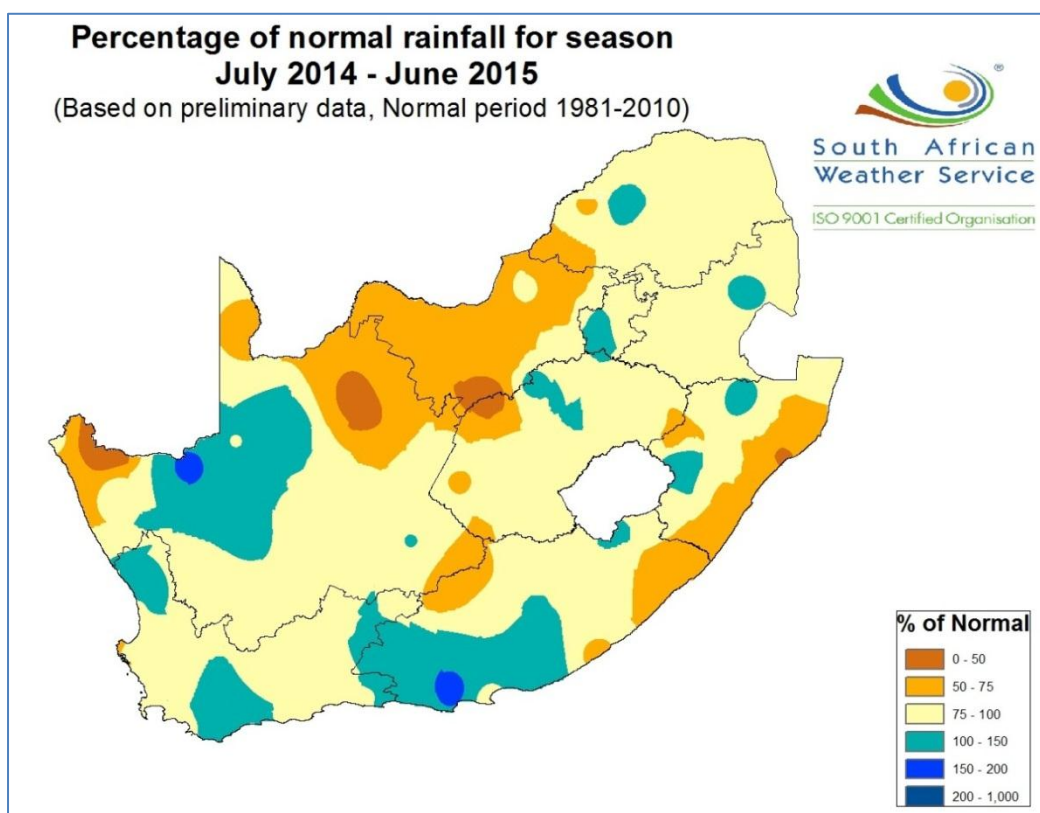


Figure 1: Percentage of normal rainfall for July 2014 – June 2015

Figure 1 indicates that large parts of the country received lower than average rainfall, particularly over large areas of KZN, Limpopo, North-West, Northern Cape and Western Cape. Very few areas received above average rainfall.

Laboratories involved in AHS diagnostics

Three laboratories supplied AHS test results to DAFF:

The Veterinary Genetics Laboratory: Molecular Diagnostics (University of Pretoria) is DAFF approved. An AHSV/Xeno Real-Time PCR is used to detect AHS virus. Serotypes are identified by a serotype specific RT-qPCR which is not yet DAFF approved.

The Biotechnology Laboratory (Onderstepoort Veterinary Institute) is DAFF approved and SANAS accredited. An AHSV hnRT-PCR is used to detect AHS virus.

Deltamune in Oudtshoorn is DAFF approved. A lightcycler PCR test is used to detect AHS virus.

Reported outbreaks

Passive surveillance depends on owners to report suspect cases to the veterinarian who then further investigates the case. All AHS outbreaks must be reported to the local state veterinarian. State veterinarians are required to report all outbreaks to the Department of Agriculture, Forestry and Fisheries on a SR1 report. The SR1 reports can either be e-mailed to Epidemiology@daff.gov.za or faxed to 012 319 7470.



Comparison of the number of reported AHS outbreaks for the previous AHS seasons

The number of outbreaks for the period 1 September to 30 August of the years 2011 to 2015 is compared in Fig. 2. The 2012 season had the lowest number of AHS outbreaks whereas the 2011 season had the highest. As can be seen in Figure 2, there is generally a low occurrence of AHS in the 2015 season throughout the country.

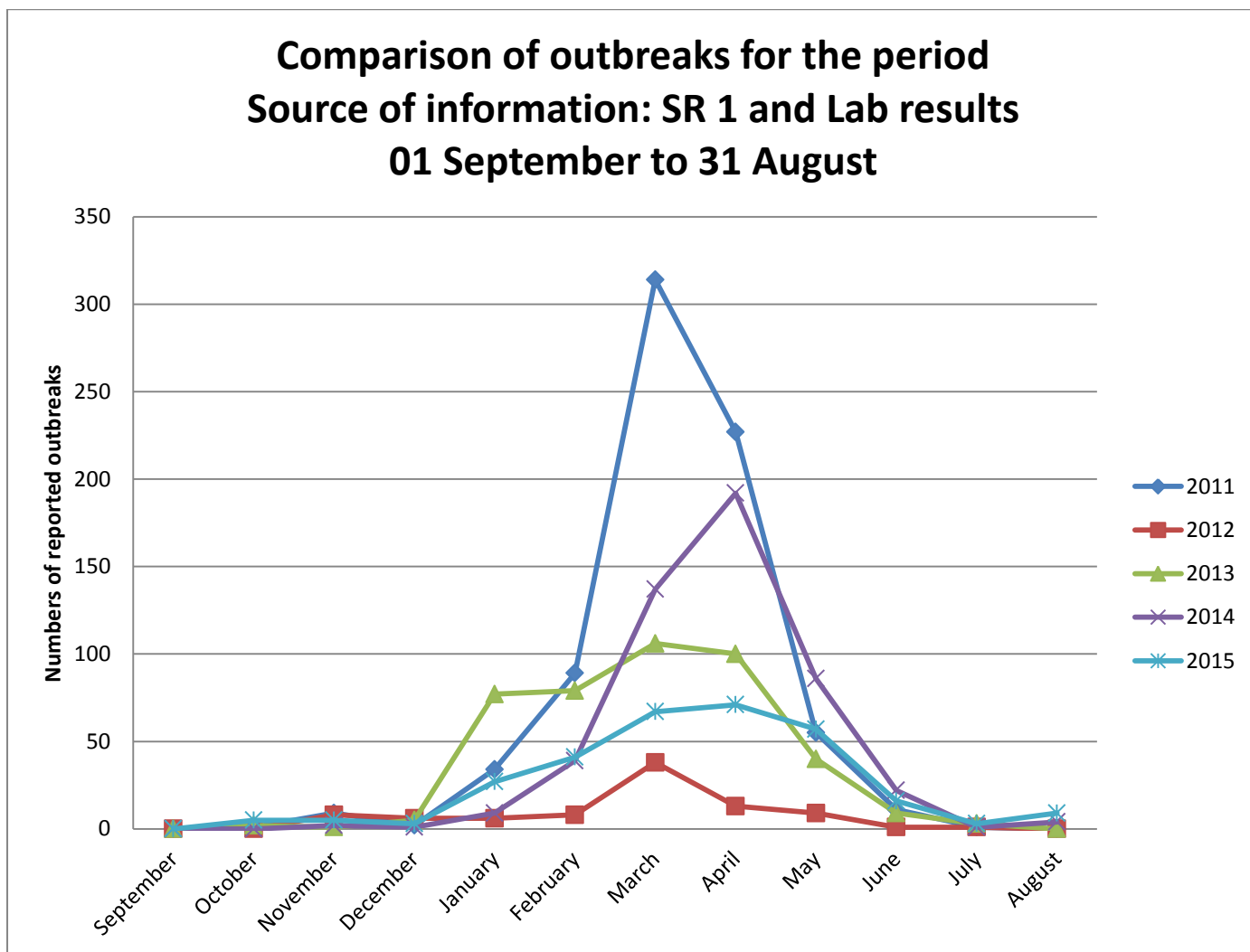


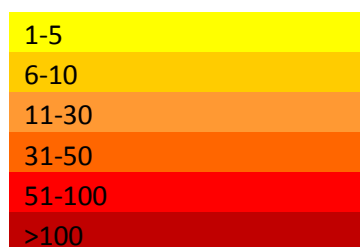
Figure 2: Comparison of the number of reported AHS outbreaks for the previous AHS seasons

Temporal occurrence Of AHS from 1992: countrywide

The number of reported outbreaks combined with the temporal distribution of outbreaks is illustrated in Table 1. Outbreaks commonly occur between January and June. The frequency of outbreaks usually drops during the winter months due to the significant drop in vectors populations.

Table 1: African Horse sickness outbreaks form September 1992 to February 2015 occurrence and number of outbreaks

| Season | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Sept 1992-Aug 1993 | | | | | 3 | | 1 | | | 1 | | |
| Sept 1993-Aug 1994 | | 1 | | 2 | 2 | 1 | 2 | | 3 | 1 | | |
| Sept 1994-Aug 1995 | | | | | 1 | | 2 | 3 | | | | |
| Sept 1995-Aug 1996 | | | | | | 6 | 24 | 27 | 8 | 1 | | |
| Sept 1996-Aug 1997 | | 2 | | 2 | | | 10 | 4 | 1 | 2 | 1 | |
| Sept 1997-Aug 1998 | | 1 | | 3 | 6 | 7 | 8 | 5 | 6 | 1 | | |
| Sept 1998-Aug 1999 | 1 | 1 | 1 | 5 | 7 | 30 | 16 | 29 | 10 | 2 | 2 | 1 |
| Sept 1999-Aug 2000 | | | 1 | | 2 | 5 | 33 | 69 | 36 | 35 | | 2 |
| Sept 2000-Aug 2001 | | | | | 2 | 1 | 8 | 16 | 29 | 24 | 1 | |
| Sept 2001-Aug 2002 | 1 | 1 | | 4 | 17 | 27 | 31 | 24 | 14 | 2 | 2 | 6 |
| Sept 2002-Aug 2003 | | | | | 1 | 9 | 26 | 16 | 31 | 5 | | |
| Sept 2003-Aug 2004 | | 1 | | | 2 | 15 | 51 | 58 | 61 | 9 | | |
| Sept 2004-Aug 2005 | | | | | 20 | 19 | 35 | 79 | 36 | 2 | 1 | |
| Sept 2005-Aug 2006 | 1 | | 1 | 2 | 14 | 36 | 107 | 77 | 62 | 16 | | |
| Sept 2006-Aug 2007 | 2 | | 2 | 2 | 9 | 8 | 11 | 17 | 5 | 2 | 1 | |
| Sept 2007-Aug 2008 | | | | 7 | 24 | 83 | 137 | 91 | 40 | 5 | 1 | |
| Sept 2008-Aug 2009 | | 7 | 1 | 3 | 10 | 31 | 90 | 91 | 47 | 16 | | 1 |
| Sept 2009-Aug 2010 | | 1 | | | 6 | 13 | 17 | 44 | 14 | 21 | 2 | |
| Sept 2010-Aug 2011 | | 8 | 10 | 11 | 32 | 110 | 255 | 226 | 44 | 9 | 1 | |
| Sept 2011-Aug 2012 | | | | | 7 | 11 | 38 | 14 | 9 | 1 | | |
| Sept 2012-Aug 2013 | | 2 | 2 | 5 | 70 | 79 | 105 | 98 | 40 | 9 | 4 | 1 |
| Sept 2013-Aug 2014 | | | 2 | 1 | 7 | 25 | 82 | 94 | 23 | 13 | 1 | 2 |
| Sept 2014-Aug 2015 | | 5 | 5 | 3 | 27 | 41 | 67 | 71 | 57 | 16 | 3 | 9 |



Comparison of the number of AHS outbreaks that have occurred in various provinces for the current season based on SR1 reports and lab reports.

Figure 3 Illustrates the number of outbreaks for 9 provinces in the current AHS season based on Lab results and SR1 reports. Gauteng has the highest number of outbreaks from December 2014 to June 2015 compared to the rest of the provinces.

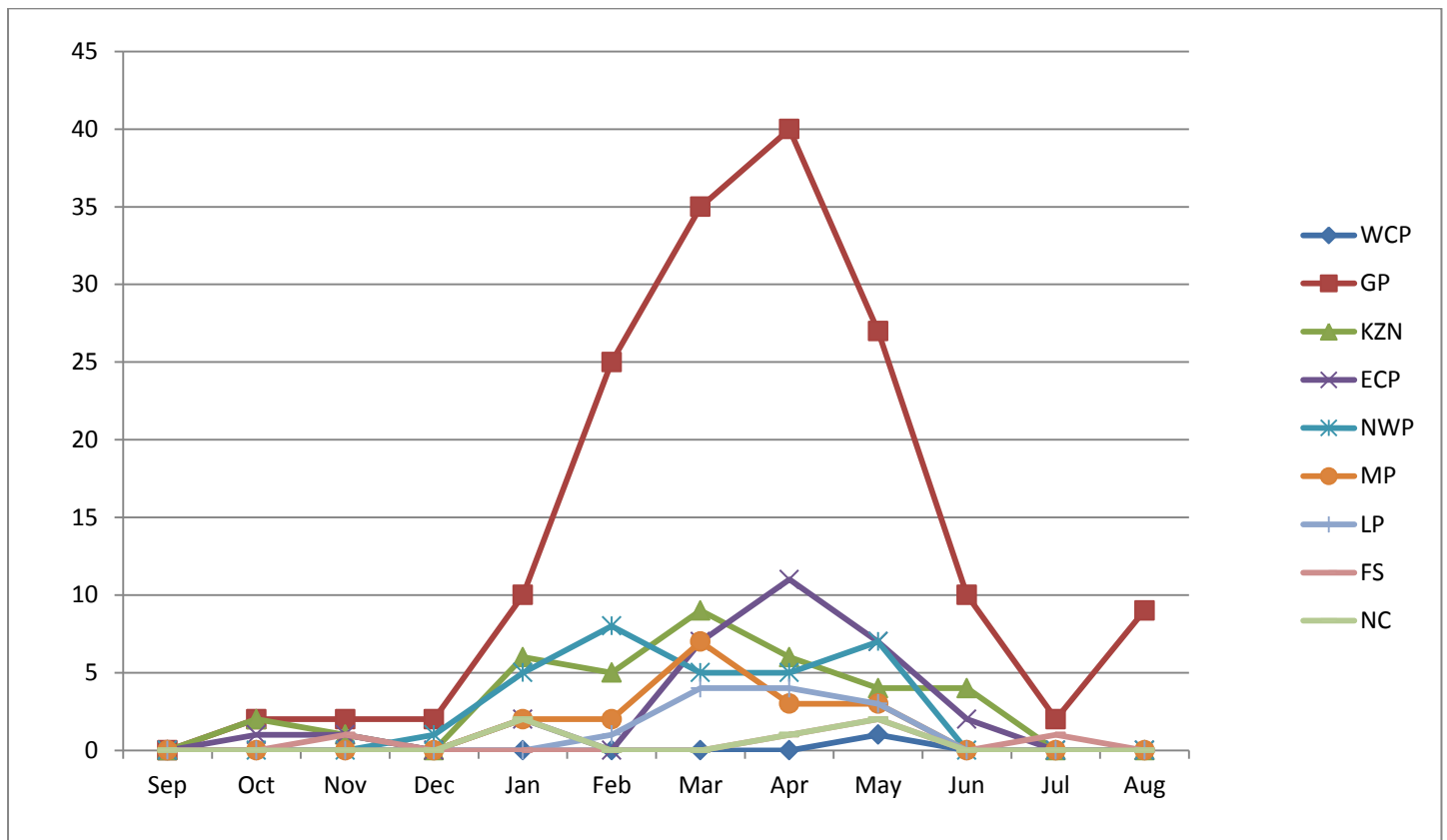


Figure 3: Comparison of the number of reported AHS outbreaks in each province from September 2014 – Aug 2015.

The source of outbreak reports were derived from SR1 reports and Lab results received.

The table (Table 2) indicates the number of AHS outbreaks in each province based on SR1 reports and lab results. According to the Animal Disease Act (35 of 1984) all AHS outbreaks must be reported. Only 48% of the positive locations were reported with SR1 reports.

Cases that have been diagnosed with serology have not been included in the report because background information regarding vaccination history was not available. Positive serological results received could be as a result of vaccination or natural infection.

Table 2: African Horse Sickness outbreaks based on lab and SR1 reports received: September 2014 to Aug 2015

| Province | Number of outbreaks reported with SR1 reports | Number of outbreaks reported without SR1 reports | Total number of outbreaks | Total number of disease related deaths based on SR1 reports only |
|--|---|--|---------------------------|--|
| Gauteng | 75 | 90 | 165 | 21 |
| KZN | 22 | 15 | 37 | 4 |
| North-West | 17 | 14 | 31 | 4 |
| Northern Cape | 2 | 3 | 5 | 1 |
| Western Cape | 1 | 0 | 1 | 6 |
| Eastern Cape | 19 | 12 | 31 | 21 |
| Mpumalanga | 3 | 14 | 17 | 3 |
| Free State | 1 | 4 | 5 | 0 |
| Limpopo | 5 | 7 | 12 | 2 |
| TOTAL (1 September 2014 to 31 Aug 2015) | 145 | 159 | 304 | 62 |

African Horse sickness virus is divided into 9 serotypes that are known to be circulating in South Africa. The map (Figure 4) illustrates the location of the laboratories or practices that detected each serotype, 22% of these results are linked to SR1 reports. Six out of the 9 serotypes were detected since the beginning of the current season countrywide, namely: Serotype 1, Serotype 3, Serotype 6, Serotype 7, Serotype 8 and Serotype 9.

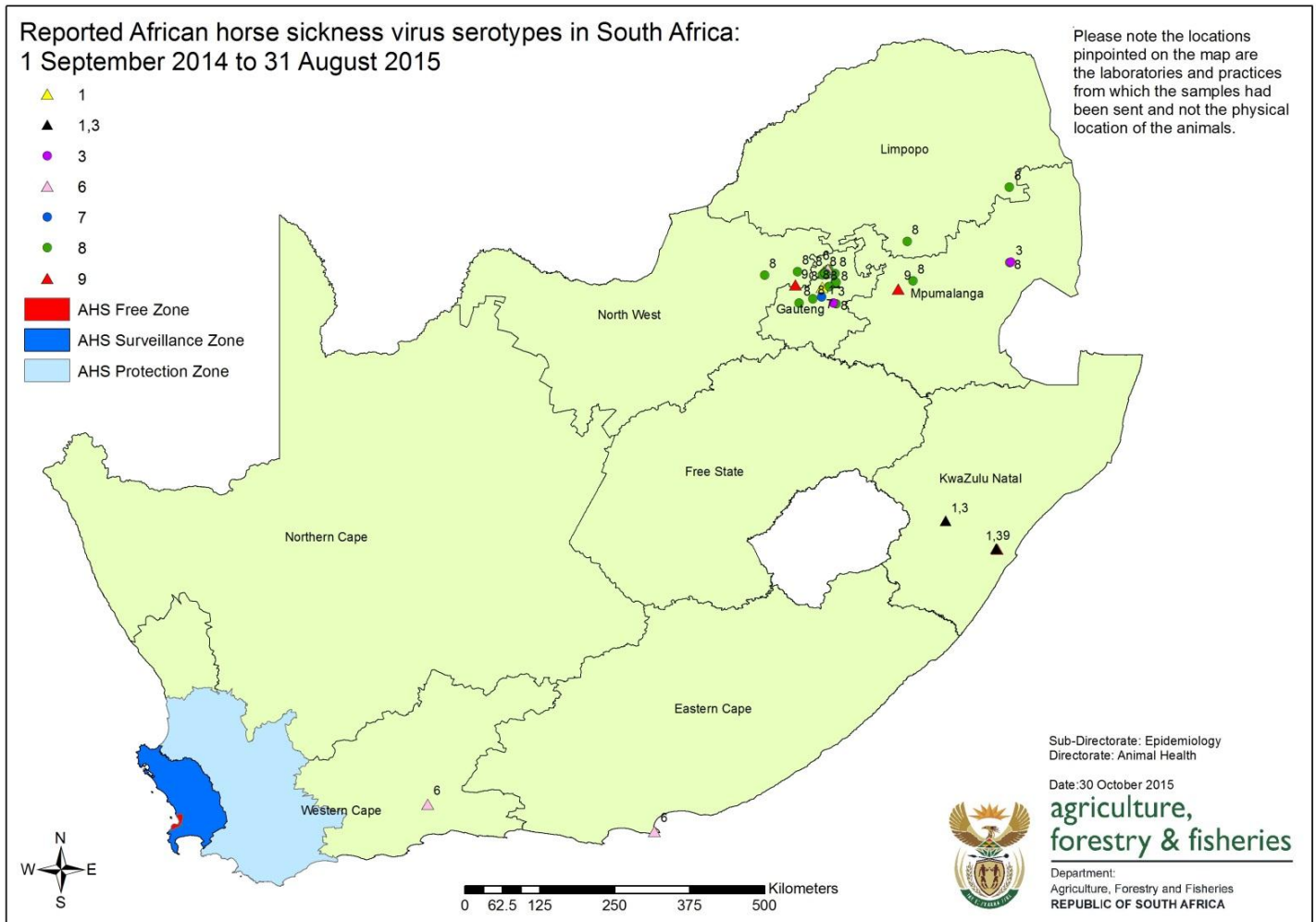


Figure 4: AHS virus serotypes in South Africa

Figure 5 illustrates a central distribution of the serotypes identified and reported by laboratories and practices in the 3 State Veterinarian Areas of Gauteng Province.

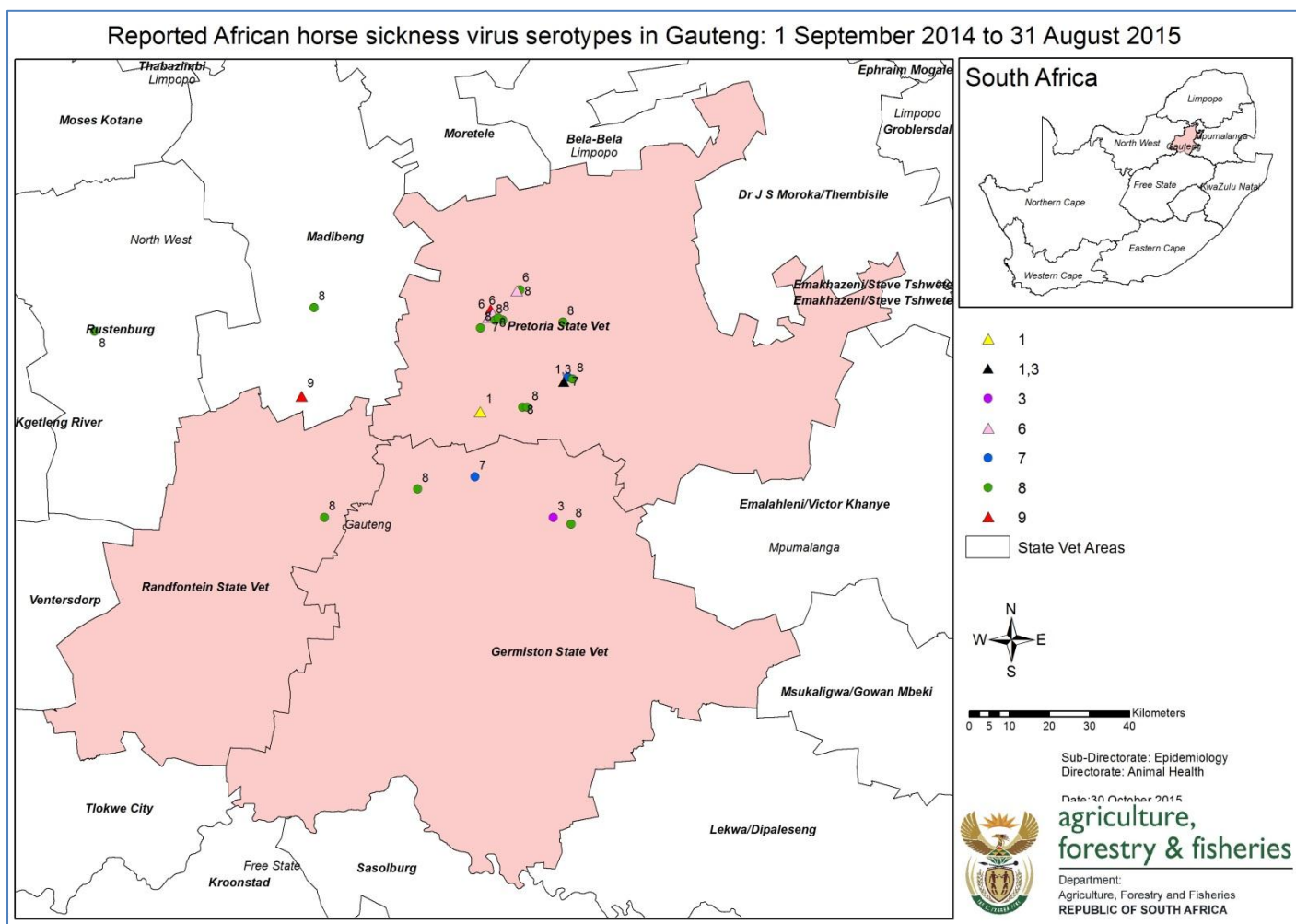


Figure 5: AHS virus serotypes in Gauteng for current AHS season

The table (Table 3) shows all the serotypes that have been identified in Gauteng province from laboratories and practices from the 3 State Veterinarian Areas

Table 3: Number of serotypes in each State Veterinarian Area in Gauteng as illustrated in Figure 5

| State Veterinarian Area | |
|----------------------------|--|
| Pretoria State Vet Area | Serotype 1 × 2 Serotype 3 × 1 Serotype 6 × 3 Serotype 7 × 2 Serotype 8 × 9 |
| Germiston State Vet Area | Serotype 3 × 1 Serotype 7 × 1 Serotype 8 × 2 |
| Randfontein State vet area | Serotype 8 × 1 |

Comparison of all lab results and SR 1 reports for each province

Figure 6 shows the number of positive AHS laboratory reports that were received (red). The blue bars illustrate the number of SR1 reports submitted by each province for the season. Western Cape Province reported 100% and Free State reported 20% of their total outbreaks with SR1 reports.

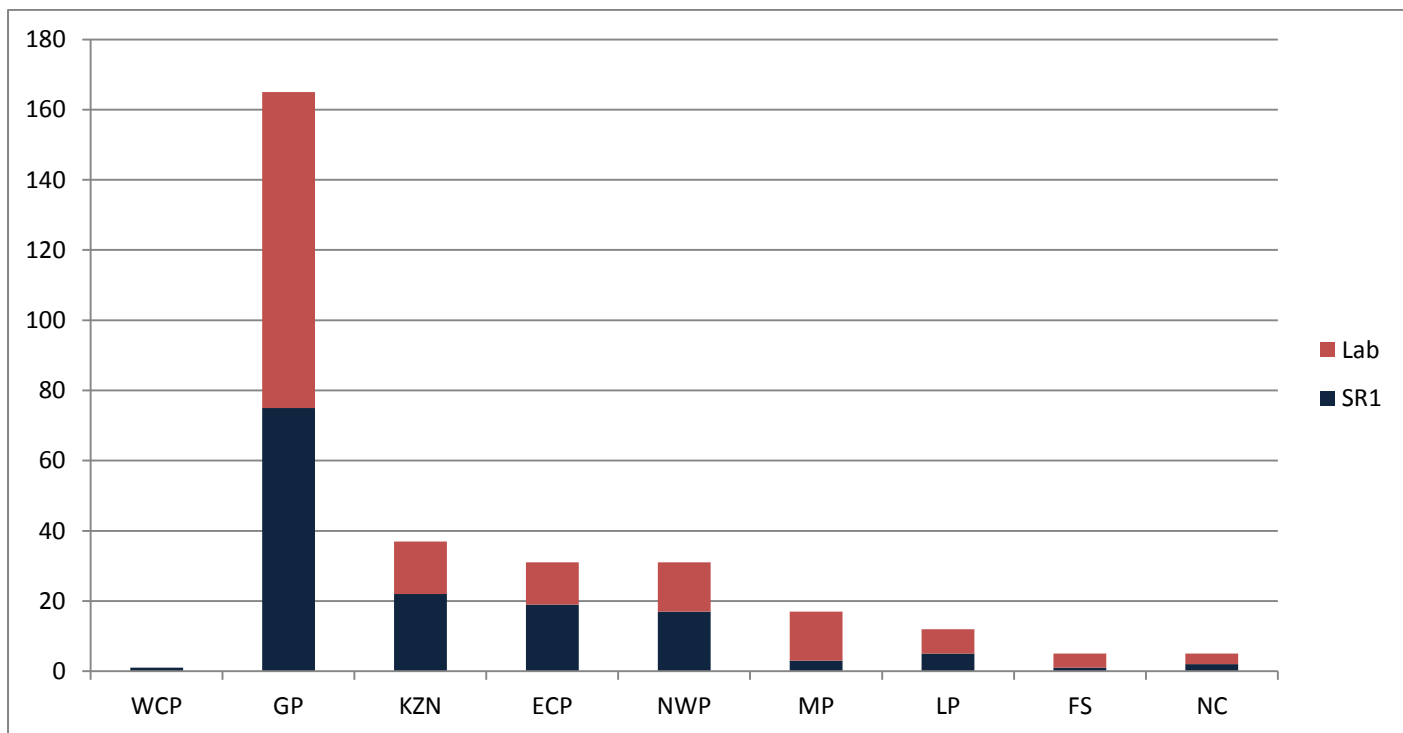


Figure 6: Comparison of the number of AHS outbreaks that were detected with lab results and SR1 reports

Figure 7 illustrates the percentage of SR1 reports and lab results received from all the provinces. So far in the 2015 AHS season only 48% of all detected outbreaks were reported with SR1 reports countrywide as shown in the blue area. All positive locations that were reported with laboratory reports only, are shown in the red section.

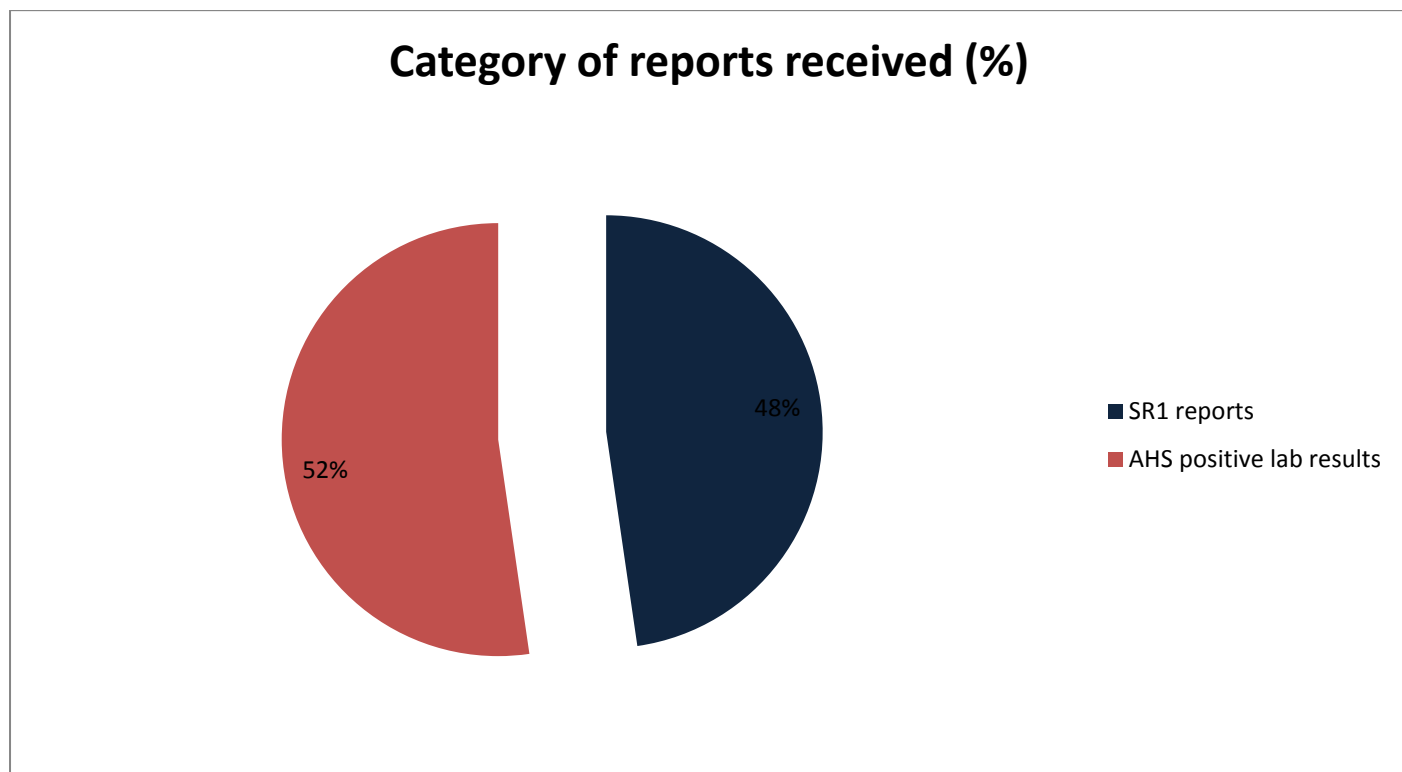


Figure 7: Categories of the detected outbreaks according to report status

The number of outbreaks that have occurred in each province is illustrated in Figure 8, based only on SR1 reports. Results only received from lab reports without SR1 reports do not appear on the map due to insufficient background information. Therefore 52% of all laboratory confirmed outbreaks (159) are not represented in figure 6. The province with the highest number of reported outbreaks was Gauteng Province. Northern Cape and Western Cape Provinces have the least number of reported outbreaks. No SR1 reports were received from Free State.

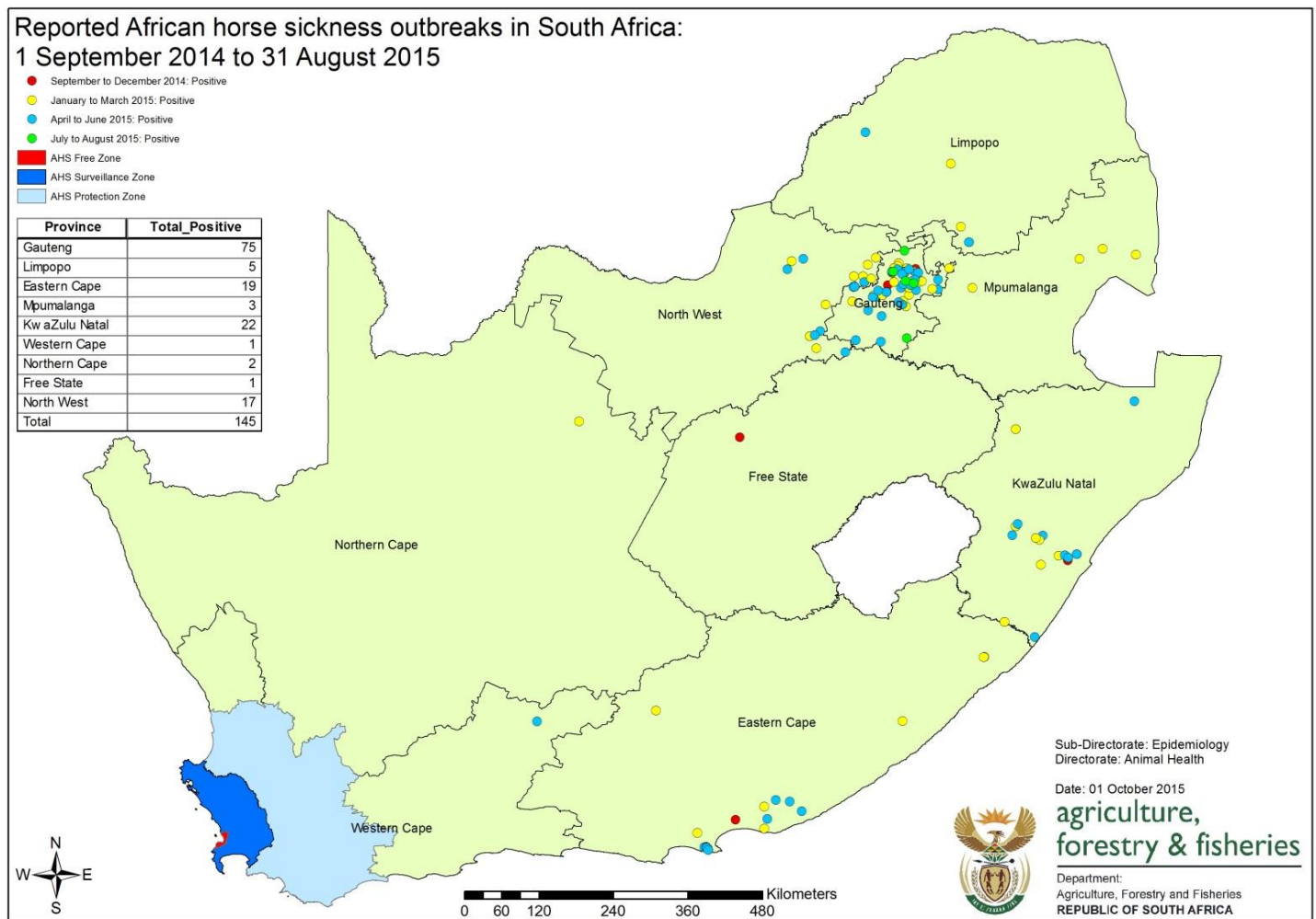


Figure 8: Reported number of AHS outbreaks in each province from September 2014 – Aug 2015

Figure 9 illustrates all the initial outbreaks for each province and the dates thereof based on SR1 reports only. KwaZulu Natal was the first province to report an outbreak in September 2014.

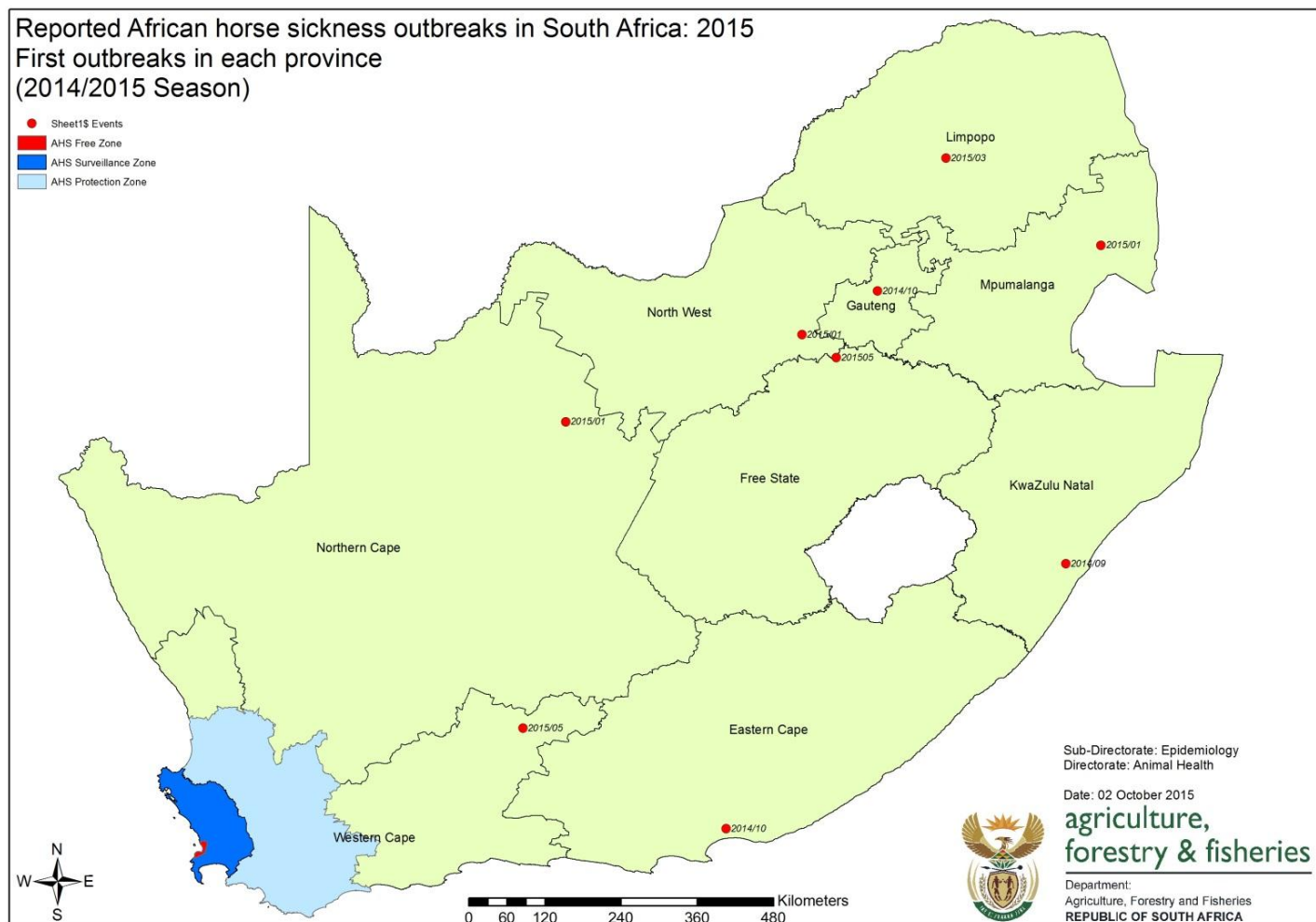


Figure 9: Reported number of initial AHS outbreaks for each province for September 2014 – Aug 2015

Precautions to limit outbreaks

Owners are encouraged to vaccinate their animals annually to limit the impact of the disease. All horses in RSA (except in the AHS free and surveillance zones in the Western Cape Province) must be vaccinated annually using a registered vaccine at the cost of the owner. The African Horse Sickness Vaccine from Onderstepoort Biological Products (Reg No, G116, Act 36 of 1947) is currently the only registered vaccine in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) . According to the OBP AHS vaccine insert, it is important to administer the vaccine in the low vector activity periods when the likelihood of transmission is low. DAFF has issued a directive, restricting vaccination periods from 1 June until 30 October as indicated in Table 3, below.

Table 4: The table indicates the dates for administration of African horse sickness vaccinations for each AHS zone:

| Area | Adjustment |
|-----------------------|---|
| AHS Free Zone | Permission for vaccination will only be given from 1 June to 31 October each year. |
| AHS Surveillance Zone | Permission for vaccination will only be given from 1 June to 31 October each year. |
| AHS Protection Zone | All equines in this area must be vaccinated within the period 1 June to 31 October each year. |
| AHS Infected Zone | Strong recommendation is made to vaccinate during the period 1 June to 31 October each year |

It is advisable to stable horses at least two hours before sunset and keep them stabled until two hours after sunrise. This is the time period when the *Culicoides* midges are most active and known to be feeding. As *Culicoides* midges also colonize around stagnant water sources, all efforts should be made to prevent such pooling of water and to move animals away from these sources.

To aid in the prevention of the AHS virus introduction into the AHS controlled areas of the Western Cape, all movements of equids to the AHS controlled areas are subject to strict State Veterinary movement control. Movement permits and valid identification of the equines will be required before movement. A health certificate must be obtained 48 hours prior to movement and the equid must be vaccinated 40 days prior to movement but not longer than 24 months prior to movement. For more information please contact your private veterinarian, state veterinarian or State veterinarian Boland at 021 808 5253.

Regular testing and active surveillance of sentinel horses allows for early detection of clinical AHS outbreaks and even subclinical carriers in the Free and Protection zones. Sentinel animals are not vaccinated and are managed at fixed locations in order to detect any circulating infection among the herd. The OIE code requires ongoing surveillance to demonstrate freedom of disease in a country or zone. Owners play a crucial role in testing of sick animals. It is therefore important to educate horse owners about early disease detection and the importance of continuous surveillance.

Reporting of outbreaks

African horse sickness is a controlled animal disease in terms of the Animal Diseases Act, 1984 (Act 35 of 1984). Reporting of AHS outbreaks to State Veterinary Services is compulsory according to the Animal Disease Act, 1984 (Act 35 of 1984). In case of a suspect or positive AHS outbreaks please contact the office of Provincial Director, Veterinary Services, if the contact details of the State Veterinarian are unknown.

<http://www.daff.gov.za/vetweb/Contacts/Contact%20list%20Provincial%20Directors.htm>

References

1. AHSV surveillance for the Western Cape AHS controlled area. AusVet Animal Health Services. 25 October 2013
2. Emergency reports on AHS outbreaks. Provincial and Private Veterinary Services.
3. Info Sheet1-10 March 2014: African Horse Sickness – Porterville region of the Western Cape
4. Province. Veterinary Services Animal Health. Western Cape Government, Department of Agriculture.
5. Laboratory reports from ARC-OVI and ERC.
6. National disease database, Directorate Animal Health, Department of Agriculture, Forestry and Fisheries.
7. South African Weather Services: Seasonal Climate Watch – July 2014 to June 2015 on <http://www.weathersa.co.za/web/images/LongRange/gfcsa/scw.pdf>
8. World organisation for Animal Health (2009) – Online World Animal Health Database (WAHID). Website accessed in 2015.
<http://www.oie.int/wahis/public.php?page=home>