



## Western Cape avian influenza surveillance: January-June 2023

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Routine surveillance for avian influenza (AI) in South Africa is necessary to assist with detection of high pathogenicity (HP) strains, i.e. H5Nx or H7Nx, that can cause serious economic losses in poultry and are the most likely strains to lead to human influenza pandemics. These characteristics also make surveillance important for export certification of poultry products.

Biannual surveillance in backyard chickens, commercial poultry and ostriches is prescribed by Appendix 9 (Notifiable Avian Influenza (NAI) Surveillance), of the

HPNAI contingency plan of 2009.

Bird serum is screened with an influenza A enzyme-linked immunosorbent assay (ELISA). Positive ELISA tests are followed by haemagglutination inhibition (HI) tests to screen for H5, H6 and H7 antibodies.

A farm where serology results in a positive ELISA test should be retested as soon as possible. Further serum samples are taken and also tracheal swabs for detection of viral RNA via polymerase chain reaction (PCR).

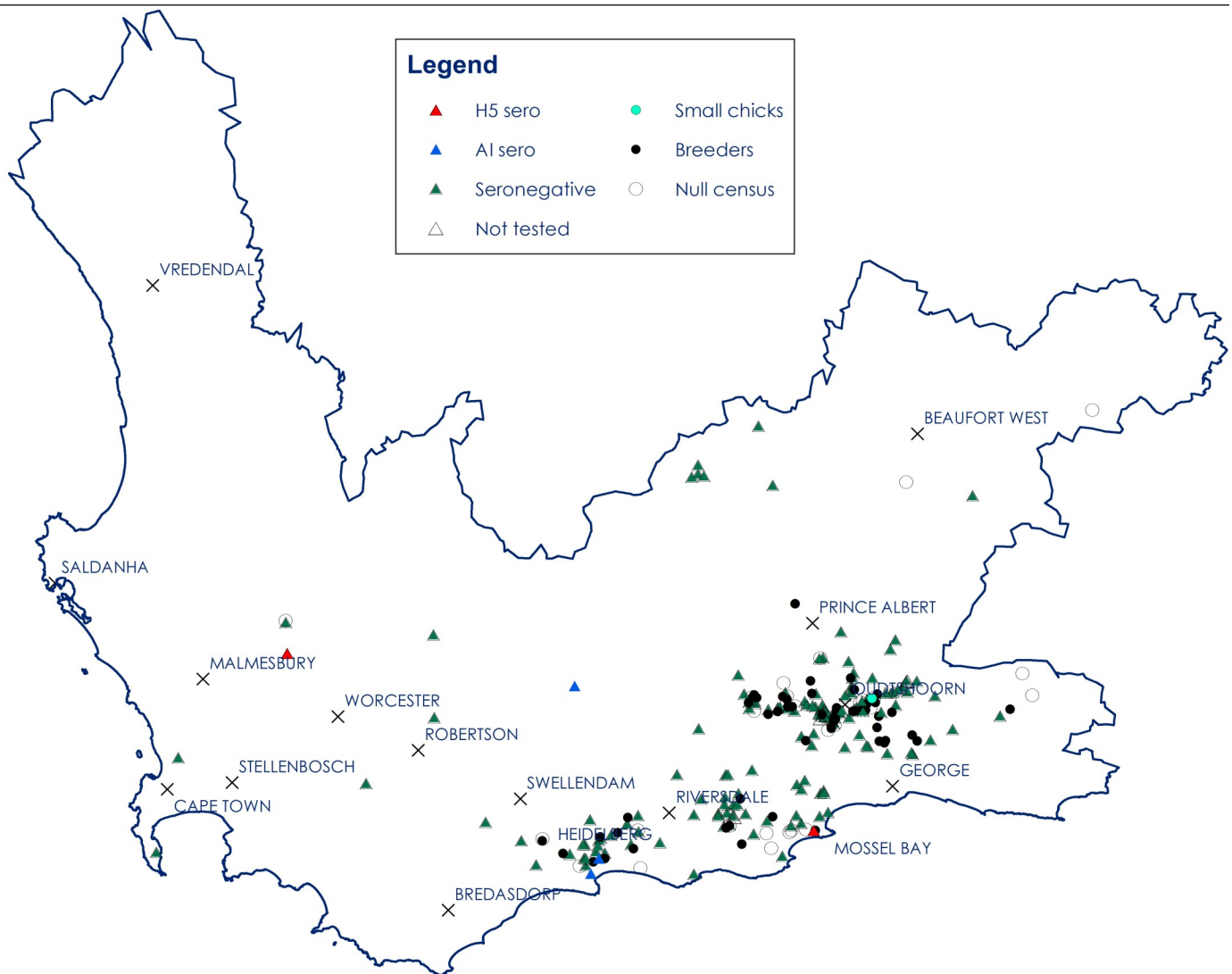


Figure 1: Avian influenza surveillance in commercial ostriches in the Western Cape, January - June 2023. All registered farms are shown. Farms with ostriches suitable for testing are shown with triangles and those without testable birds with circles.

Samples that are PCR positive for avian influenza RNA must then be screened further for H5 and H7 RNA, using more specific PCR tests. RNA sequencing is required to determine other (non-H5 and H7) subtypes and to provide further information on the exact strain involved and its possible origins. For more details on the surveillance strategy, please read the introduction to the [June 2020 Epidemiology Report](#).

### Ostriches

Between January and June 2023, 272 ostrich compartments were registered in the Western Cape, of which 19 were hatcheries. 163 farms (64%) were tested for avian influenza antibodies (Fig 1).

Of 90 not tested, 54 had breeder birds only, 32 were empty (of which eight were deregistered and two were new registrations), one sells small chicks (younger than 8 weeks), which do not require testing, and three were missed by mistake.

Of the 163 tested, sixteen were positive (10%). Nine of these had been positive since 2022. One of these was investigated for a suspected new infection but the follow-

-up investigation had negative results.

Of the other seven new detections, two had negative follow-up results, leaving **five new infections with avian influenza (3%)**. Of these, three were ELISA positive only. One also had AIV detected on PCR but H5 and H7 PCR tests were negative. Another one had low clade 2.3.4.4 H5 HI titres and one had positive clade 2.3.4.4 H5 HI titres (both PCR-negative). Therefore there were a maximum of two possible HPAI H5 infections, that could not be confirmed.

### Commercial poultry

Serological surveillance for avian influenza was done on 93 commercial poultry farms, eight of which had multiple sites, bringing the total to 117 sites tested (Fig 2). This equates to approximately half the farms in the province. However, 86% of farms tested were part of the broiler industry.

**Twenty sites from 18 farms (17%) tested avian influenza seropositive.** Only one keeps layer chickens. Some sites continued to test seropositive in subsequent months, bringing total detections to 29.

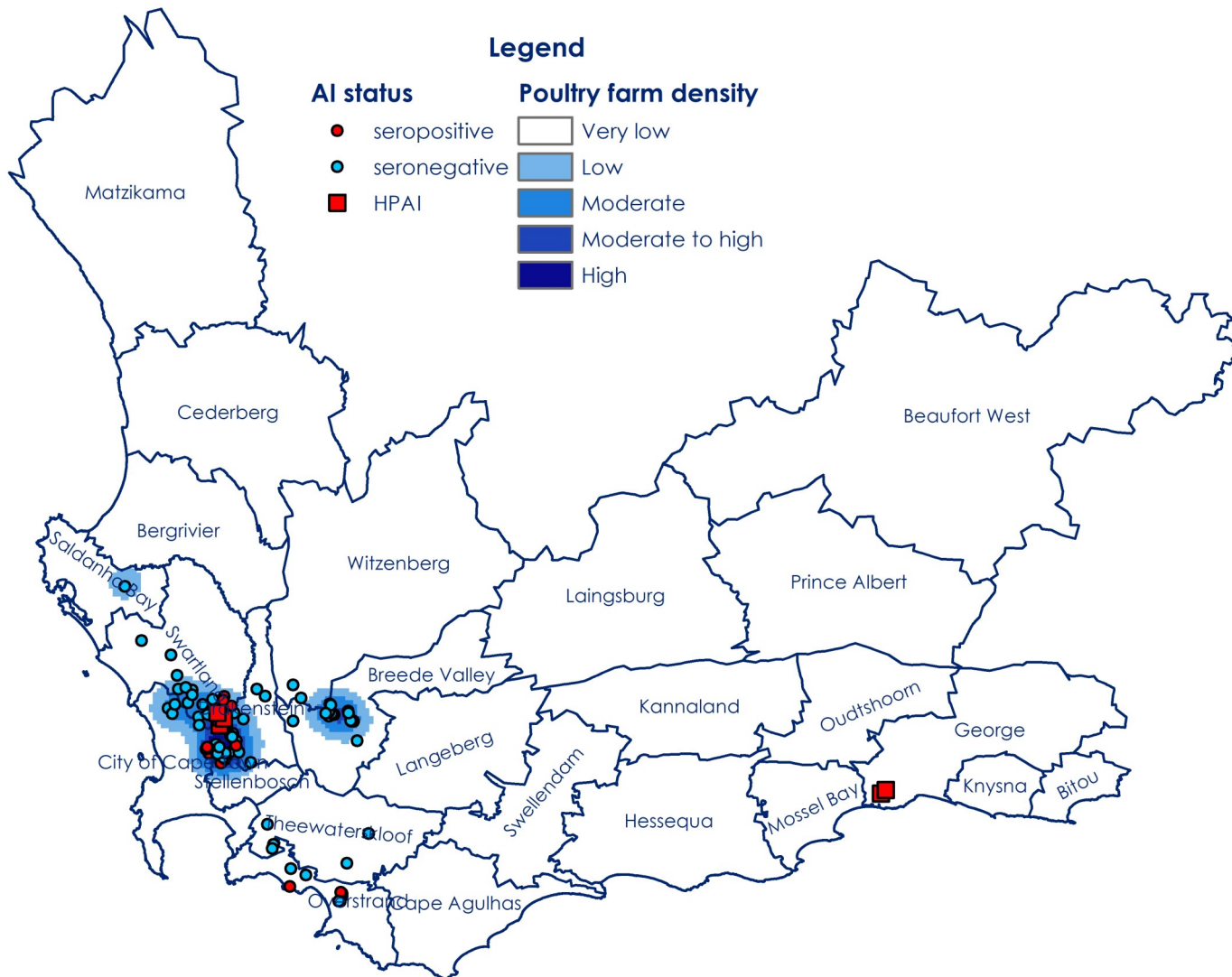


Figure 2: Avian influenza surveillance coverage in commercial poultry in the Western Cape, January - June 2023

Twenty-seven antibody detections were followed up. The other two were not followed up because the broilers had already been slaughtered.

There were single positive HI tests without matching titres, so serology could not give an indication of serotype, though H5 and H7 is unlikely.

Four farms had positive AIV PCR tests, though H5 and H7 tests were negative and there were no reported clinical signs. All farms were PCR-negative on further PCR testing and post mortem samples were included from at least one farm.

One smaller layer farm tested seropositive after a drop in egg production. The hens were otherwise healthy and PCR tests were negative. Only non-specific (HI-negative) AI antibodies were detected, but were confirmed with a second round of sampling.

### Backyard poultry

Eighty-one properties with backyard chickens were sampled (Fig 3). Of these, **55 (68%) tested avian influenza seropositive** but HI tests were negative. No

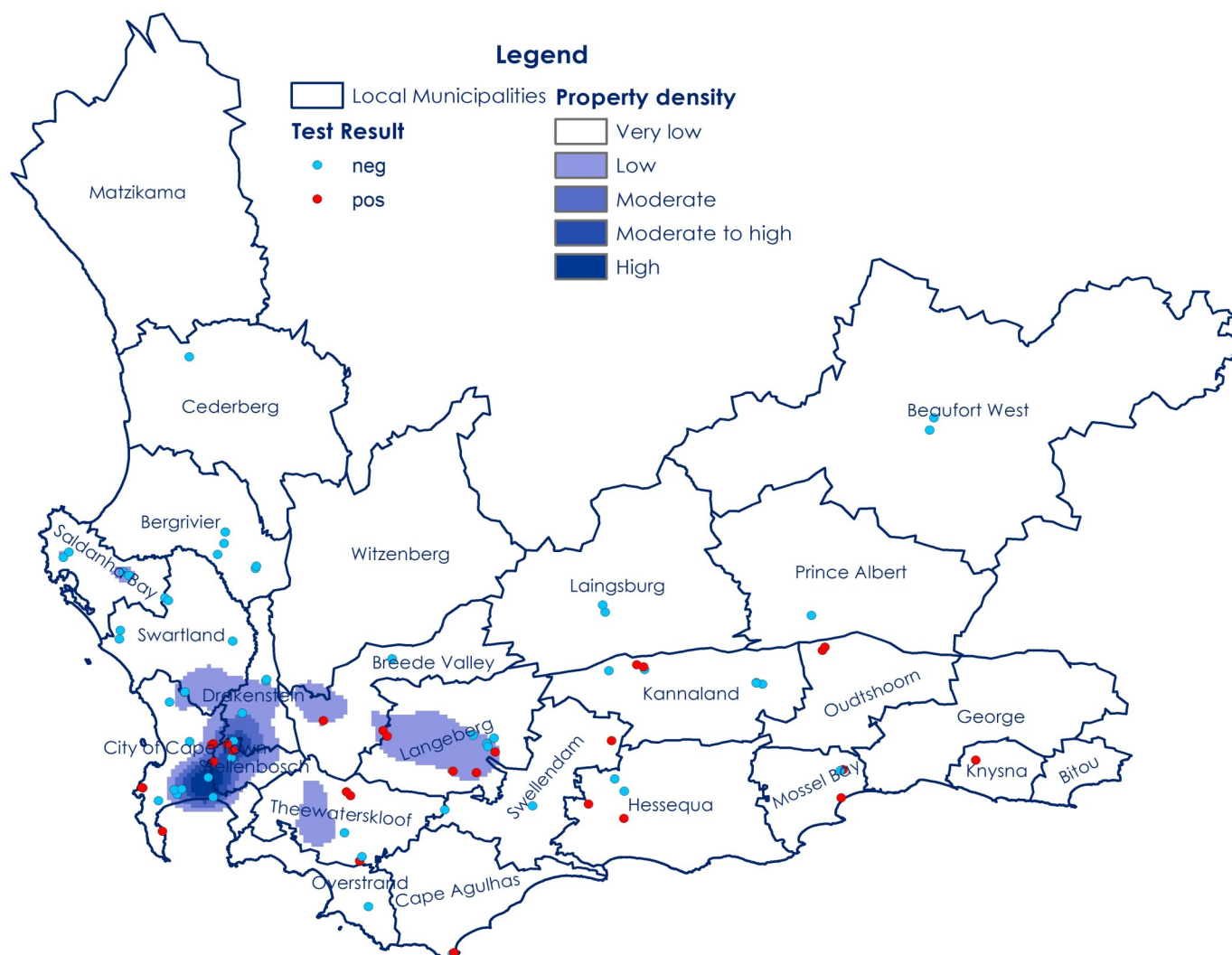
clinical signs were reported. Thirty-seven (67%) of these properties were sampled again and nine (25%) had negative serology on follow-up, indicating that the initial test results may have been false positives. All except two properties had negative HI tests on follow-up. The only positive HI tests were with the H6N2 antigen and both properties were sampled on the same day, in the Ladismith area. Without a matching H6N8 reaction, one cannot conclude there was a H6 infection. However, the H6N8 antigen is not closely matched to some currently circulating H6 viruses, so an H6 infection is still possible.

One backyard property had positive AIV PCR tests after follow-up sampling, but the H5 & H7-specific tests were negative and there were no clinical signs of AI infection, so LPAI virus infections were concluded.

### HPAI (H5N1)

#### Commercial poultry

**Five commercial layer chicken farms in the Paardeberg area**, northwest of Paarl, were confirmed infected with H5N1 high pathogenicity avian influenza between 18 and 27 April 2023 (Fig 2). The farms all fall within a small,



**Figure 3: Avian influenza surveillance on properties with backyard chickens in the Western Cape, January - June 2023**

6km diameter, area and there were only two other farms in that area, that were not affected. The University of Pretoria has assisted with genetic analysis of viruses from four of the five farms and preliminary results indicate that most farms were individually infected by wild birds, some more than once, and that there was little spread of virus between farms. The infection on one farm was linked to a virus detected in a wild goose that was sampled by Western Cape Animal Health officials near McGregor in April. The viruses are related to those that caused outbreaks in 2021 and 2022 but have been introduced to the country more recently.

H5N1 infection was detected on **two more layer farms near George** in late May/ early June. The first has been confirmed to be another introduction by wild birds. Both these farms were also affected by the 2021 outbreak, so appear to have characteristics that predispose them to infection.

All affected farms chose to cull all chickens in the affected houses. Approximately 1.5 million chickens died from H5N1 infection or as a result of the culling operations: about 30% of the layer chickens in the province.

All seven farms have been cleaned and disinfected and, as of end September, quarantine has been lifted on six. One is waiting out the 28 day period after the first disinfection, before quarantine can be lifted.

#### H5N1 in wild birds

The H5N1 detections in commercial poultry were preceded by a detection of a closely-related virus in a wild Egyptian goose that was sampled by veterinary

officials near McGregor on 18 April.

Thirty-four seabirds of six species tested H5N1 positive in March (2), May (13) and June (19). Swift terns (12), African penguins (9) and common terns (7) accounted for most cases. Approximately a third were found in Simon's Town, another third on the west coast and smaller numbers elsewhere on the Cape peninsula and as far east as Nature's Valley. Most viruses detected were related to the strains present since 2021, and only 3/35 sequenced, all in gulls, were more closely related to the viruses from the goose and commercial poultry.

#### Discussion

The AI commercial poultry site seroprevalence for January to June 2023 is not very different from that in the same period in 2022 (17% vs 14% in 2022) and the ostrich farm seroprevalence was also relatively typical. However, only 1% of backyard properties were seropositive between January and June 2022, compared to 68% this year, which is very unusual.

Cape Town International Airport had received rainfall equal to the annual long-term average (500mm) by mid-June and the amount usually received by the end of August (approx. 375mm) had been reached by mid-May (SA Weather Services data). Wild water birds are suspected of being mainly responsible for introduction and spread of avian influenza viruses, and they are believed to move around southern Africa in response to water and food availability. It is possible that the high rainfall attracted a wider variety of water birds than usual, or birds from further away, and this could explain the high AI seroprevalence in backyard flocks, but also the evidence of a variety of H5N1 and LPAI viruses.

## Outbreak events

A farmer near **Piketberg** noticed his dogs playing with a **bat-eared fox**. He went to collect his gun and when he returned, the fox was fighting with one of his dogs in a kennel. The farmer then shot the fox and contacted the local AHT who collected the carcass. The fox tested positive for **rabies**. The farm dogs had been vaccinated previously and no broken skin could be found on them. The dogs were therefore vaccinated against rabies again after this incident and were recommended to be kept in isolation for at least a month.

In the **Oudtshoorn** area, the presence of **high pathogenicity H5 avian influenza** was detected on an **ostrich** farm. On four other ostrich farms in the **Oudtshoorn** and **Witsand** areas, antibodies against **avian influenza** were detected, as well as avian influenza matrix gene on two of the farms, but the viruses could not be typed further.

**Cattle** that had shared grazing with brucellosis infected herds near Darling were moved to the **Hopefield** area in 2021. Four cows in the herd of 56 tested positive for **brucellosis**. The farm was placed under quarantine and will be following a test-and-slaughter strategy to rid the herd of brucellosis.

The carcass of a **Hewitt's red rock rabbit** (*Pronolagus saundersiae*) was found on the Witteberg Road, between Konstabel and **Laingsburg**. The carcass did not show any obvious injuries and was moved to Bijstein Nature Reserve, from where samples were sent that tested PCR positive for **rabbit haemorrhagic disease** virus.

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