Western Cape Government
Agriculture

EPIDEMIOLOGY REPORT

VETERINARY SERVICES
June 2018
Volume 10 Issue 6

Highly pathogenic avian influenza (H5N8) in coastal birds

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This report has been compiled based on reports of suspect and positive cases of avian influenza submitted by CapeNature, SANParks, Birdlife South Africa, West Coast District Municipality and seabird rehabilitation centres: SANCCOB, APSS, SAPREC and Tenikwa. It underestimates total mortalities and infections but shows trends with regard to areas and species affected.

Introduction and background

The H5N8 strain of highly pathogenic avian influenza was first detected in the Western Cape in early August 2017. The first wild bird that tested positive was a guinea fowl near Swellendam in mid-August. Outbreaks continued to occur in poultry, ostriches and wild birds, mostly found inland, until late October 2017. Wild bird species confirmed positive included a pigeon, spur-wing goose, Guinea fowls (3), doves (2), blue cranes, house sparrow, owl, peregrine falcons (2), pied crows (3), sacred ibis, black-headed heron and an Egyptian goose. There was then a lull in reported cases in wild birds until December, when reports of increased mortality in terns started. Mortalities in coastal birds continued until May 2018 and now seem to have decreased drastically.

Swift terns (36 positive, 1 negative, 5330 suspect): From December 2017 to March 2018, 243 suspected avian influenza cases in swift terns were reported as part of widespread, frequent incidents, but with a maximum of 20 birds involved at one place and time. Symptoms included initial weakness and inability to fly and cloudy eyes, suspected to be due to corneal oedema. As the disease progressed, birds developed neurological signs, including head tremors, poor balance, circling, seizures and death. Between March and April, an estimated 1700 of 2500 chicks and juveniles in a major colony at the V&A Waterfront in Cape Town were found dead. The H5N8 virus was detected in a sample of 5 chicks. In March, 167 swift terns were found dead on Dyer Island, where there is a breeding colony of about 4000 pairs, and a total of 222 were found dead between Dyer Island and Kleinbaai in the first few months of 2018. In April, an estimated 3000 of approximately 10 000 swift terns were found dead at the colony on Malgas Island, Saldanha Bay. Most were recorded as juveniles. H5N8 was confirmed from samples from 10 of the freshest carcasses. Another 152 suspect swift terns were counted in Mossel Bay, Port Elizabeth and around Hermanus.

African penguins (24 positive, 12 negative, 79 suspect): The presence of and deaths from avian influenza in African penguins is of great concern because the South African population is estimated at only 16 000 breeding pairs with the only other population being approximately 5000 pairs in southern Namibia. The numbers have decreased by 60% over the last 20 years due to factors such as declining fish stocks and unsuitable breeding areas. At the current rate of decline, ignoring possible effects of avian influenza, African penguins could be extinct in the next 20 years. The first confirmed African penguin AI case was a bird found in January near Hermanus. Clinical signs included mucoid ocular discharge, apparent blindness, lethargy, emaciation, open-mouthed breathing, head tremors and a head tilt. The bird recovered under clinical care but was the only penguin to do so. Other symptoms observed in penguins were torticollis (fig 1), twitching, cloudy eyes (presumed corneal oedema), ataxia and seizures. Six cases were confirmed from False Bay and a total of twenty carcasses found. The first positive penguin carcass from Boulders Beach colony was found in late January. Another 4 cases from Boulders were confirmed, up until March, out of 1 sick bird and 18 carcasses. No more mortalities have been reported since the end of March. There have been four positive penguin cases from the Stony Point/ Betty's Bay colony. One other carcass and a suspect sick bird were recorded at Stony Point in April. Four penguin carcasses found at the Dyer Island colony also tested positive in February and April and another ten carcasses were reported from the colony between April and May. Four confirmed positive penguin cases originated from beaches within 20km of Dyer Island and one from 100km east, at Arniston. Thirty-two penguin carcasses were found among hundreds of gannet carcasses on a 40 km stretch of beach, 40 km east of Dyer Island, between February and April. Fifteen carcasses were found off the coast of the Eastern Cape, near Port Elizabeth, between January and April but only one tested positive. The last positive penguins were four carcasses found on Robben Island in May.

Figure 1: African penguin with torticollis (DG Roberts)

The Cape gannet (2 positive, 16 negative, 1627 unresolved deaths) is classified as endangered as it has undergone a large population reduction over the past three generations and is projected to continue to decline rapidly over the next three generations. Cape Gannets only breed in 6 localities globally, 3 in Namibia and 3 in South Africa. Cape gannets have only been found dead in significant numbers along the 40 km stretch of beach from Quoin Point to L'Agulhas, with no noticeable increase in mortality in the colonies. The carcass numbers are estimated at over 1500, found between February and April. The 40 km stretch of beach was surveyed from a SANParks vehicle on 28 February and 450 carcasses were counted. On the same day, a shorter (1.4 km) stretch of coastline was surveyed, and every two weeks thereafter (increasing the stretch to 2km). During most surveys of this smaller study area, 124-200 Cape gannet carcasses were found each time. During the survey on 20 April, only 38 gannet carcasses were found and none on 8 May. The carcasses were at various stages of decomposition, with substantial scavenging. Some of the first carcasses found floating at sea and some that were collected on 15 March tested positive, but at least another 16 tests have been negative. Another 42 gannet carcasses were counted in Addo Elephant National Park in the Eastern Cape between March and April. However, no increased mortality in breeding colonies has been observed and tracheal swab samples from 30 adults and 30 chicks at the Lambert's Bay colony tested PCR negative in February.

Cape cormorants (endangered): 59 dead, 24 with neurological signs and 12 sick or weak. The majority have been reported from between De Mond Nature Reserve and Gansbaai. There have been 6 positive tests (some on pooled samples) and another 9 negatives at the Stellenbosch Provincial Veterinary Laboratory. The birds that tested positive showed neurological signs. There have been over 150 young, emaciated birds found in and around Cape Town that have not shown neurological signs and were not tested or counted as suspected cases. There were also reports (no numbers yet) of Cape and white-breasted cormorants dying recently at Brandfontein, near L'Agulhas.

Fig 2: Common terns at Olifantsrivier Estuary (C Malherbe)

Common terns (6 positive, 0 negative, 253 suspect): Common terns breed in North America and Eurasia and numbers usually peak in Southern Africa between October and April at approximately 100 000. The only other outbreak of avian influenza reported in sea birds in South Africa was detected in common terns in 1961, from April to May when at least 1300 birds died between Port Elizabeth and Lambert's Bay. In the current outbreak, the first deaths in common terns were recorded at the same time as those in swift terns, but the numbers have generally been far lower. The largest number recorded at once is 62 found dead in Mossel Bay in March. It is suspected (based on photographs) that 132 sick and dead birds reported as swift terns at Olifantsrivier Estuary in April/May were in fact common terns (fig 2). Another 55 were found along the Western Cape coast: and 6 from Port Elizabeth. The five common terns that tested positive were found at a rate of approximately one a month until May. Only 18 of the approximately 259 suspected cases were found alive.

Kelp/ Cape gull (0 positive, 16 suspect) **and Hartlaub's gull** (6 positive, 6 negative, 10 suspect,) carcasses have

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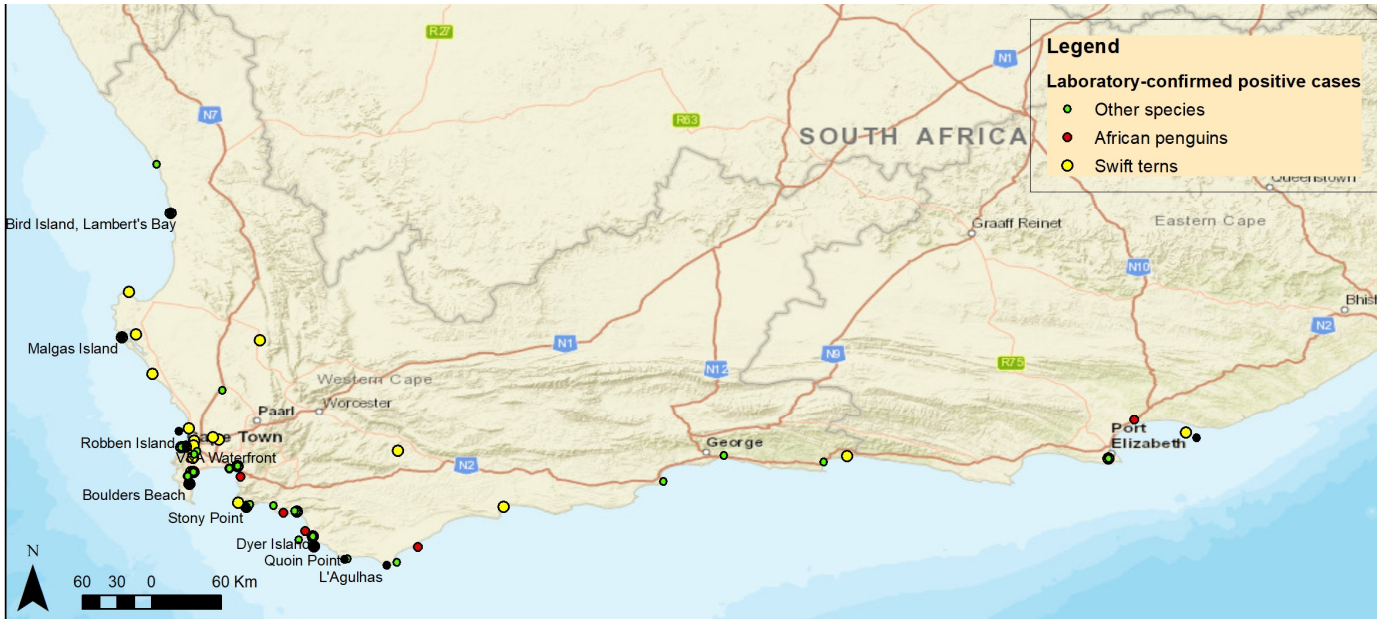
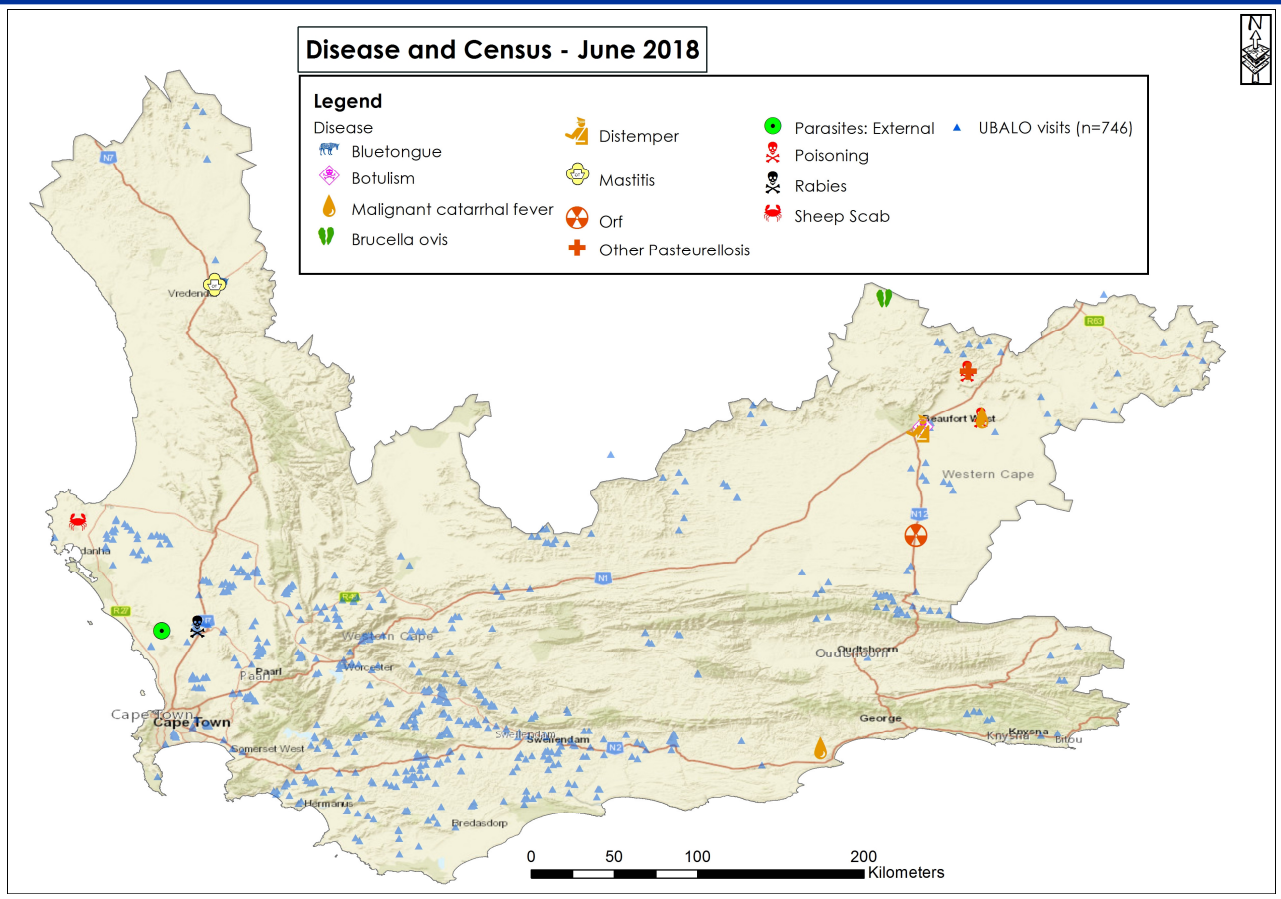
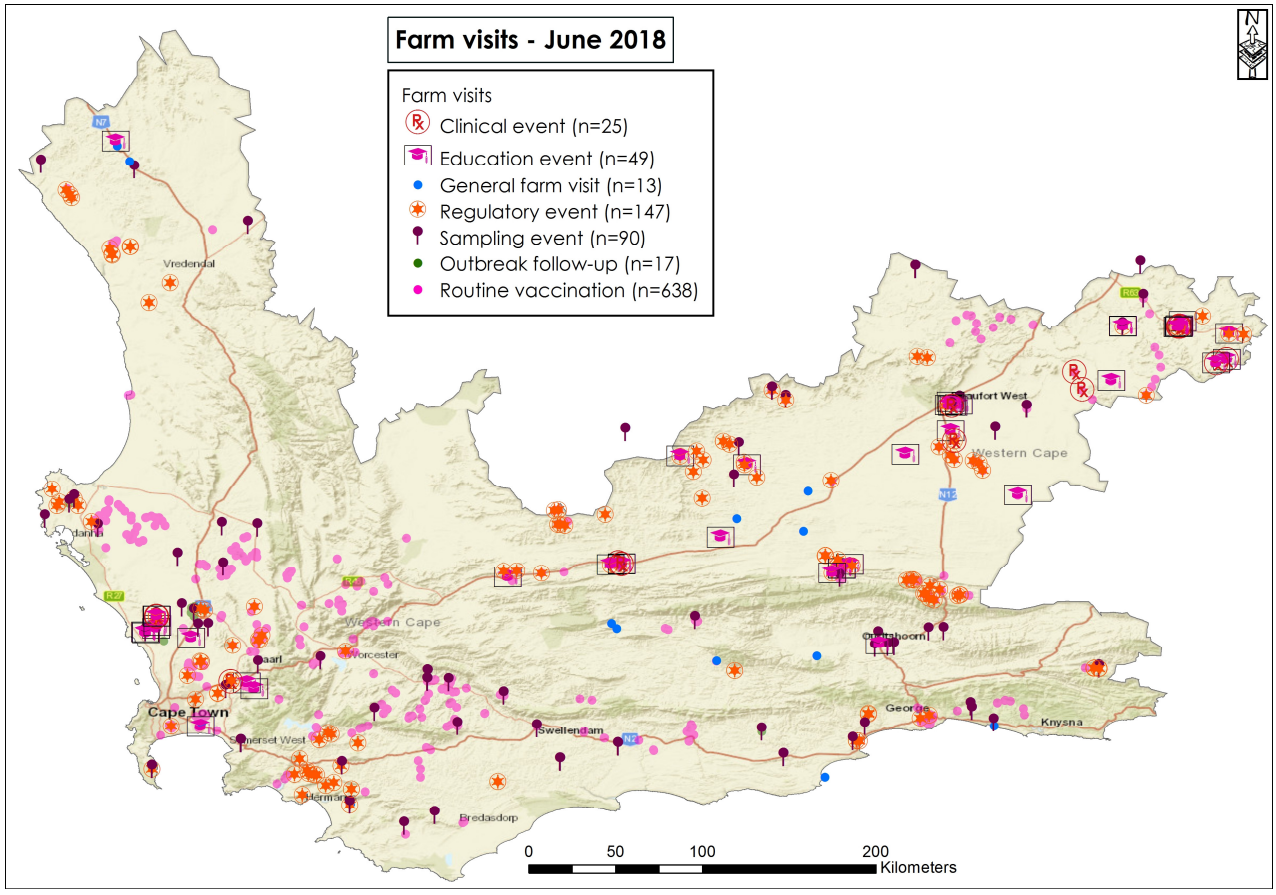


Fig 3: Locations of confirmed highly pathogenic avian influenza (H5N8) cases in coastal birds in South Africa in 2018

Disease and surveillance





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been reported in small numbers since the beginning of January. One Hartlaub's gull (of 6 tested) and one grey-headed gull tested positive in February, but 7 Hartlaub's gulls found around Cape Town were positive in April and May. A few individual kelp gulls, and some from a batch of 50 dead on a beach have tested negative.

Other positive species in 2018 include African black oyster catcher, Arctic skua, doves and pigeons, crowned cormorant, Egyptian goose, jackal buzzard, and spotted eagle owl (fig 3).

Outbreak management: Managing this disease in the wild is a severe challenge to conservation authorities, particularly at mainland African penguin colonies. Little can be done to reduce the spread of the virus in the wild, other than carcass disposal whenever possible. Effort has been made to inform the public of the presence of the virus, to limit spread via humans to domestic poultry. Discussions were regarding closing these colonies to the public. It was decided that the risk of spread via wild birds was far greater than via human activity, and that the negative effects of closing the colonies to visitors would outweigh any advantages. The maintenance of the reserves relies on income from visitors. However, monitoring and research programs at the penguin colonies were temporarily halted to reduce stress to the penguins, and prevent possible fomite spread of the virus. It was acknowledged that this would have an impact on long term monitoring and research projects but was deemed a necessary precaution, given the status of the African penguin population. The decision was evaluated in late May and, since mortality rates seemed to have decreased, research projects were allowed to resume. However, projects involving invasive or stressful procedures were excluded.

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Outbreak events

A Nguni **cattle** farmer near **Malmesbury** noticed that one of his cows was behaving strangely and isolated her away from other cattle and without human contact under suspicion of **rabies**. The cow showed staring, salivating, excessive tail swishing, tenesmus and buckling of her hind limbs. Later she began bellowing and subsequently died. A sample taken of her brain tested positive for rabies. Dogs and cats on surrounding properties were vaccinated against rabies and the water trough that had been used by the rabid cow was drained and disinfected with chlorine.

Brucella ovis was diagnosed in **rams** in the **Loxton** area north of Beaufort West.

An outbreak of **bluetongue** occurred in **sheep** near **Vanrhynsdorp**.

Figure 4: A witstorm plant (E Hattingh)

Three **cattle** on a farm next to a wildlife farm where blue wildebeest are kept near **Mossel Bay** died after showing watery ocular discharge and mucoid nasal discharge. The cause of death was determined to be wildebeest-associated **malignant catarrhal fever**.

A farmer in the **Vredenburg** area contacted his private veterinarian regarding his pruritic sheep. After he was referred to the state veterinarian, a diagnosis of **sheep scab** was made. The farmer had already treated his sheep with injectable ivermectin in May, but sheep will be treated again under official supervision after the lambing season is finished.

Sheep died as a result of **witstorm** (*Thesium lineatum*) **poisoning** in the **Nelspoort** and **Beaufort West** areas. This shrub grows in the arid western parts of South Africa. When eaten by livestock, typical signs of cardiac glycoside poisoning are seen: sudden mortalities with cases of diarrhoea and dyspnoea.

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