

Rabies in Cape fur seals: outbreak update report

31 July 2024*



agriculture, land reform
& rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

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* This report includes all information as available by close of business on the indicated date. All the updates contained in this report may not currently reflect on the WOAHS WAHIS system due to technical difficulties with the WOAHS reporting system.

1. Introduction

Rabies is endemic in South Africa. It is a zoonotic disease, which means that people can become infected by an infected animal. The rabies virus is transmitted through saliva of an infected animal when it bites, scratches or licks a person. Rabies affects the brain and is fatal once a person or animal shows clinical signs. Animals infected with rabies show changes in behaviour and neurological signs. They may drool a lot, become paralysed, lose the ability to swallow, continuously vocalise (barking, whining, howling etc.), and become aggressive, or on the contrary, they may appear weak and unresponsive. Any mammal can become infected with rabies, but the biggest threat to human health is infected dogs and cats. South Africa is aiming for the goal of zero cases of dog-mediated human rabies cases by 2030, through the “National Strategy for the Elimination of Canine Mediated Human Rabies in South Africa”, which is available at <https://www.dalrrd.gov.za/index.php/publication/425-animal-health-information>

Cape fur seals (*Arctocephalus pusillus pusillus*), occur along the coast of Africa between southern Angola and Algoa Bay, South Africa. They are a social species that live close together in colonies. They are known to approach people and other animals out of curiosity or if motivated by food. They are predated on by wild carnivores on land, including black-backed jackal and brown hyena. Cape fur seals can travel extensively in the ocean in search of food or territory, swimming hundreds of kilometres in a matter of days. Reports of Cape fur seals showing aggressive behaviour, especially towards people, have increased since several mass mortality events occurred in South Africa in 2021 and 2022. Initially, seal samples collected during one of these events in 2021 tested negative for rabies.

The only known positive case of rabies in seals recorded in literature was of a ringed seal (*Phoca hispida*) in the Svalbard Islands (Norway) in 1980, which was associated with an outbreak in the arctic fox population. Rabies occurs in a wide range of wild and domesticated mammals, but this is the first detected occurrence in cape fur seals in Southern Africa. It should be emphasized that in South Africa, the vast majority of human rabies cases are caused by exposure to rabid dogs.

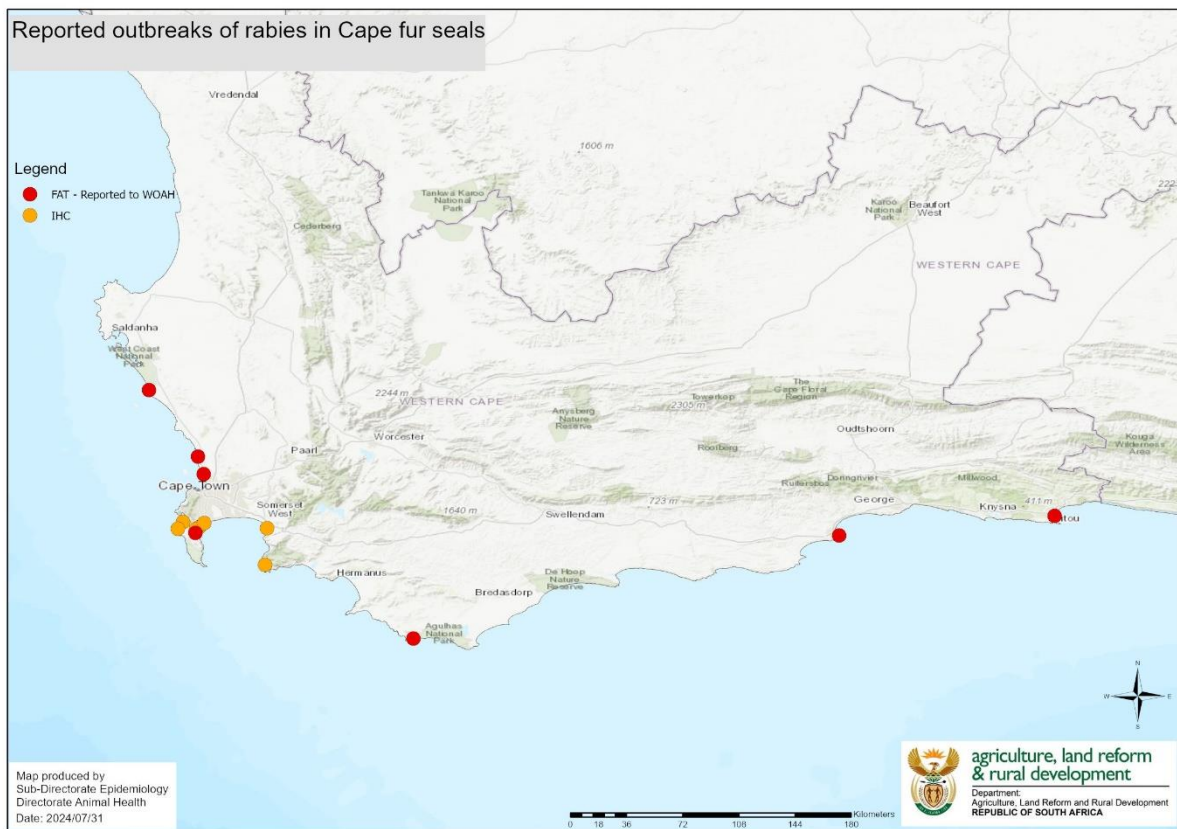
2. Background

In June 2024, a rabies outbreak was detected in South African Cape fur seals, a species in which rabies has not been recorded previously. The events leading up to this detection started on 20 May 2024, when a three-year-old dog in Cape Town was euthanised at a private veterinary practice after showing signs of severe aggression which triggered a suspicion of rabies. The dog was sampled and its brain subsequently tested positive for rabies with the fluorescent antibody test

(FAT). The owner of this dog suspected that the dog had been bitten by a Cape fur seal while walking on the beach two weeks before the onset of clinical signs. Shortly after this incident, there were reports of aggressive Cape fur seals from two Cape Town beaches. Two of these Cape fur seals subsequently tested positive for rabies. This finding triggered retrospective testing of stored samples collected from Cape fur seal mortalities (2021-2024) for rabies. Some of these retrospective samples have tested positive for rabies, indicating that this outbreak is not new. To date, positive samples originated from the South African coast between Yzerfontein and Plettenberg Bay and the earliest positive case so far occurred in August 2022.

Map 1: Reported outbreaks of rabies in Cape fur seals in the Western Cape Province

Note: Dots on the maps that indicate locations in close proximity might appear as single dots



3. Diagnostic tests

Only the ARC Onderstepoort Veterinary Research (ARC-OVR) Rabies Laboratory and the Allerton Provincial Veterinary Laboratory (PVL) are SANAS accredited and Director Animal Health (DAH) approved to conduct animal rabies diagnostic testing using the fluorescent antibody test (FAT) – This test is conducted on fresh/ glycerosaline brain samples (that include the hippocampus portion). Formalinised seal brain samples (retrospective samples) that were submitted for histopathology were available at the Pathology Section of the Faculty of Veterinary Science,

University of Pretoria, Onderstepoort. The DAH allowed rabies testing of these samples using an immunohistochemistry (IHC) test at the Pathology Section, Onderstepoort, as these samples cannot be tested using the FAT. For diagnostic purposes for all suspect rabies cases, fresh/glycerosaline brain samples should be submitted to either ARC-OVR or Allerton PVL. Any suspected case of rabies must immediately be reported to the responsible state veterinary office.

Samples that have tested positive on FAT at the ARC-OVR Rabies Laboratory are being sequenced through the ARC-OVR. Samples that have tested positive on IHC testing at the Pathology Section, Onderstepoort, are being sequenced through the Centre for Viral Zoonosis (CVZ), University of Pretoria.

The first FAT positive case was reported to the World Organisation for Animal Health (WOAH) and all additional FAT positive cases are reported to the WOAH as well. IHC positive cases are not reported to the WOAH, as this method is not SANAS accredited and DAH approved for official diagnostic use in South Africa. The IHC test's current value is limited to adjunct use in rabies diagnosis for brain tissue that is fixed in formalin (FAT testing cannot be conducted on formalin fixed brain tissue).

4. Epidemiology

Sequencing of positive seal samples (prospective and retrospective) has been initiated to better understand the epidemiology of the disease. Initial sequencing results have revealed that the rabies strain involved is a canid strain, possibly of dog- or jackal-cycle origin, indicating a potential introduction from other canid dog and / or jackal rabies cycles to Cape fur seals. The closest links identified to date are to a canid rabies strain from black-backed jackal from Namibia, and a separate link to a canid rabies strain from bat-eared fox from the Western Cape. Some of the sequences that have been obtained to date cluster together and in some cases the sequences are similar, indicating that this rabies virus is very likely circulating within the Cape fur seal population, and may already be established in this population, i.e. representing a canid rabies Cape fur seal cycle. On the other hand, at least one sample seems to have yielded a distinctly separate sequence, thus indicating that there may have been more than one introduction into the Cape fur seal population. Additionally, the dog from Cape Town that tested positive in May 2024 was likely infected by a rabid Cape fur seal, indicating that rabies transmission from seals is possible.

Further investigations and comparisons are required to consolidate any theory around the origin of the current Cape fur seal cycle with the note that phylogenetic trees can only be drawn from other

available sequences. There are vast areas in Namibia and the Northern Cape Province of South Africa that are sparsely populated and some areas are restricted due to mining activities. Observational surveillance in such areas are limited, and hence samples from these areas for rabies testing in animals will be limited. In addition, it has not been possible to date to obtain and sequence all rabies strains from dog cases in South Africa either, not even in the Western Cape Province in which dog rabies remains a relatively rare occurrence.

The table below provides a summary of all reported rabies cases in Cape fur seals. To date, positive Cape fur seal rabies cases have only been reported from the Western Cape Province. Cape fur seals occur along the coast of Africa between southern Angola and Algoa Bay, South Africa. The Eastern Cape and Northern Cape Provinces are aware of the outbreaks and surveillance in Cape fur seals will be enhanced to detect any possible cases. Information has also been extended to the neighbouring countries of Namibia and Angola.

Table 1: Summary of rabies positive Cape fur seals from Western Cape Province

Sample collection date	Area where sample was collected	FAT or IHC positive
2022/08/05	Kommetjie	IHC +
2023/05/24	Noordhoek Beach	IHC +
2023/07/30	Kalk Bay	IHC +
2023/08/09	Melkbosstrand	FAT + and IHC +
2023/10/12	Fish Hoek	IHC +
2024/01/07	Plettenberg Bay	FAT + and IHC +
2024/02/23	Pringle Bay	IHC +
2024/04/08	Plettenberg Bay	FAT +
2024/05/15	Strand	IHC +
2024/05/22	Blouberg	FAT + and IHC +
2024/05/26	Muizenberg	IHC +
2024/06/13	Die Dam (between Gansbaai and Cape Agulhas)	FAT +
2024/06/26	Muizenberg	FAT + and IHC +
2024/06/27	Glencairn	FAT + and IHC +
2024/07/15	Yzerfontein (2 CAPE FUR SEAL)	FAT +
2024/07/17	Mossel Bay	FAT +
Total no. of positive cases = 17		

- A total of 28 Cape fur seal brain samples (fresh/ glycerosaline) have been submitted to the ARC-OVR Rabies Laboratory, of which 10 have tested positive on FAT.

- A total of 140 formalinised Cape fur seal brain samples (that were submitted for histopathology, mainly retrospectively) were available at the Pathology Section, Onderstepoort, of which 12 tested positive on IHC.

5. Control Measures

5.1 Awareness and education

The public is urged to avoid interaction with Cape fur seals encountered at the beach, harbours, etc., as they are wild animals and are therefore potentially dangerous. If a person has been bitten, scratched or licked by an animal that is suspected of having rabies, they are advised to wash the wound well with soap and running water for 10 minutes and go to the nearest clinic immediately for treatment. Any abnormal behaviour or aggression observed in Cape fur seals or any other mammal must be reported to the local state veterinary office for investigation. Pet owners should ensure that pets are always on a leash when on the beach and other seal haul-out sites. It is additionally extremely important for pet owners to ensure that their dogs and cats are fully vaccinated against rabies, to protect them, and the community they live in. These messages are continuously emphasized through awareness material.

- For more information on rabies in humans and in animals, please visit:
 - <https://www.nicd.ac.za/diseases-a-z-index/rabies/>
 - <https://www.dalrrd.gov.za/index.php/publication/204-outbreaks-and-diseases>
- For contact details of State Veterinary Services, please visit:
 - <https://www.dalrrd.gov.za/index.php/component/content/article/451-provincial-veterinary-services-contacts>

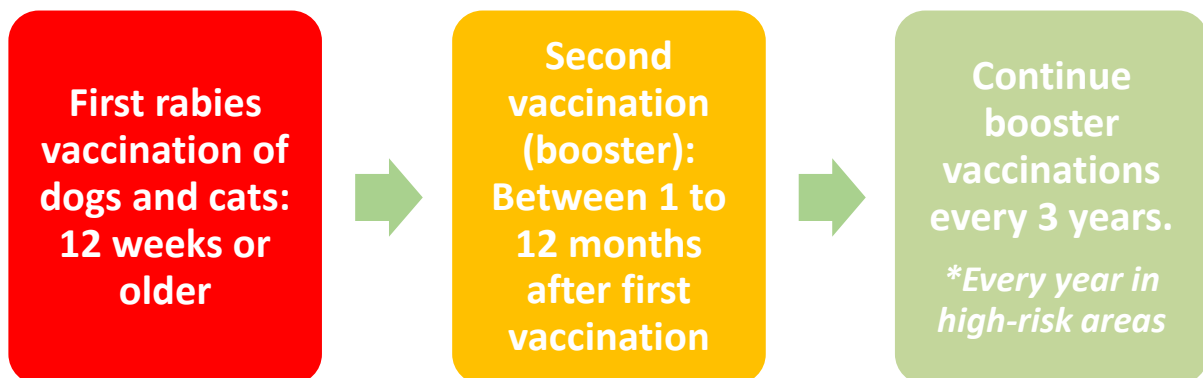
5.2 Surveillance

Surveillance for suspect rabies in Cape fur seals is being enhanced along the Cape coastline. Any suspected incidence must be reported to the local state veterinary office for investigation. Suspect rabies in Cape fur seals may present as behavioural abnormalities (including aggression), neurological signs and death, that cannot be attributed to another known cause. Knowledge of normal Cape fur seal behaviour is required in order to ascertain what is abnormal, hence suspect cases should be reported to the authorities for further investigation. Sampling of suspect rabies cases is required to confirm if rabies is in fact present.

5.3 Vaccination

Due to the novel nature of rabies in Cape fur seals, very little is known about the transfer of the virus in the marine environment, as well as the effectiveness of existing registered rabies vaccines in Cape fur seals. Approved research projects are in process of being conducted on rabies vaccination of Cape fur seals to generate information. Before any research may be conducted, all relevant permissions must be obtained through the Department of Agriculture and the Department of Forestry, Fisheries and the Environment. Large scale vaccination of Cape fur seals against rabies is at this point not practical or feasible, but targeted vaccination of specific populations may be considered, depending on the outcome of the research projects.

This is also a very important opportunity to emphasise that all dogs and cats are required to be vaccinated against rabies, by law [Animal Disease Act, 1984 (Act No. 35 of 1984)]. Dogs are by far the leading cause of human rabies in South Africa, due to our close association with these animals.



7. One Health response

Rabies is a controlled animal disease as per the Animal Diseases Act, 1984 (Act No 35 of 1984) and a Notifiable Medical Conditions as per the National Health Act, 2003 (Act No. 61 of 2003).

A localised Working Group was established within the City of Cape Town, and now includes stakeholders from other municipalities within the migration range of Cape fur seals where positive test cases were reported. Under the Working Group, Task Teams were convened and tasked with different aspects of handling the status quo with respect to positive rabies cases. Participating parties include Municipalities, Provincial and National Departments (Human-, Animal- and Environmental Health), relevant NGOs, management agencies, academia, seal rehabilitation facilities, exhibition facilities, veterinarians and marine mammal experts.

The Directorate: Animal Health of the national Department of Agriculture together with the national Rabies Action Group, that functions under the Ministerial Technical Committee of Veterinary Services led by the Department of Agriculture, is overseeing this development. The Department of Forestry, Fisheries and the Environment and the Department of Health is closely working with Department of Agriculture at the national level to ensure smooth handling of the situation, adopting the One Health approach.

As several of the Cape fur seals that tested positive for rabies displayed aggressive behaviour and were involved in biting people and animals, efforts are being made by the South African government authorities and several NGOs to trace people and animals who have been in contact with suspect rabid seals in order for them to receive medical or veterinary attention. Any person that has an increased risk of exposure to seals (e.g. some animal handlers, veterinarians, researchers, etc.) is strongly advised to receive pre-exposure prophylaxis (be vaccinated) against rabies.



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