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CORONAVIRUS DISEASE 2019 UPDATE (169): NETHERLANDS (NORTH BRABANT) ANIMAL, FARMED MINK, SPREAD, RABBIT SUSPECTED
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A ProMED-mail post
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ProMED-mail is a program of the
International Society for Infectious Diseases
http://www.isid.org

[1] Initial research results, new outbreaks, precautionary measures
Date: Fri 8 May 2020 19:01 CEST
Source: Press release, Dutch Ministry of Agriculture, Nature and Food Quality [in Dutch, translated, edited]
https://www.rijksoverheid.nl/ministeries/ministerie-van-landbouw-natuur-en-voedselkwaliteit/nieuws/2020/05/08/eerste-resultaten-onderzoek-naar-covid-19-op-nertsenbedrijven-binnen

First results of research into COVID-19 on mink farms

At the end of April [2020], 2 mink farms were diagnosed with the coronavirus. Subsequently, research was conducted to gain more insight into the virus, the spread of the virus and its spread in the environment. The 1st results show that no virus was found in the air samples outside the house. However, the virus has been found in the immediate vicinity of mink on dust particles within the house. It is still unknown whether people can become infected with COVID-19 through these dust particles. It is therefore important that employees of infected mink farms continue to follow the advice of the GGD [municipal health organisation for preventive healthcare] for personal protection. This is stated in the letter that Minister Schouten of Agriculture, Nature and Food Quality (LNV) sent today [8 May 2020] to the House of Representatives.

New infections

On 7 May 2020, 2 [additional] mink farms were found to have coronavirus infections among mink. It concerns a farm in De Mortel (municipality of Gemert-Bakel) and a farm in Deurne (municipality of Deurne). The farm in De Mortel is the 3rd location of the holder of the previously infected mink farm in Milheeze. In these farms too, contamination from humans to animals seems to be the cause. The same measures apply as for previously infected farms. On the basis of advice from RIVM [Netherlands National Institute for Public Health and the Environment], the mayors of Gemert-Bakel and Deurne will also close off the public road in the 400 meter (about 1300 ft) zone around the contaminated locations for pedestrians and (moped) cyclists.

Precautions remain in effect

Minister Schouten has previously instituted a notification obligation for mink farmers, veterinarians and persons from research institutions. In the event of respiratory problems and increased mortality in minks, this must be reported to the NVWA [Netherlands Food and Consumer Product Safety Authority]. As a precaution and to prevent any possible spread of the virus to other farms, the animals and manure must not leave an infected farm. According to the RIVM, based on current knowledge about COVID-19, the mink farms do not pose a risk for further distribution to humans. RIVM advises further monitoring of the situation on the farms and further research.

Although it is not expected that the virus will spread over longer distances, RIVM advises not to (moped) cycle or walk in a radius of approximately 400 meters (about 1300 ft) around infected mink farms. The research on air and dust samples will be repeated in the coming weeks. RIVM will carry out a new risk assessment next week, if data from more air and dust samples become known. On the basis of this risk assessment, the advice against walking or cycling in a 400-meter zone around an infected farm will be re-examined.

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[2] Initial research results, new outbreaks, precautionary measures, rabbits
Date: Sat 9 May 2020
Source: Corona24.News [edited]
https://www.corona24.news/c/2020/05/09/coronavirus-found-again-on-mink-farms.html

The coronavirus was found on 2 additional mink farms, reports agriculture minister Carola Schouten. This brings the total to 4 mink farms. One of the locations where the virus was discovered this week is from a container that has previously been found to be infected.

That company, in the municipality of Gemert-Bakel (North Brabant), has 10 000 animals, says Schouten. The other farm, in Deurne, has no connection with the previous infections. Animals and manure must not be removed from the farm to prevent further spreading. As a precaution, a "400 meter zone" (about 1300 ft) has been set up around both companies, in which the public road is closed to pedestrians and (moped) cyclists.

Screening research is carried out on the [farms]. This also happens on rabbit farms in the area because research at Erasmus University Rotterdam has shown that rabbits also are sensitive to SARS-CoV-2, the minister said in a letter to parliament. She does not report how many rabbit farms are involved.

The initial findings of the research on the first 2 infected farms show that it is unlikely "that only human-to-mink transmission has taken place on the farms," Schouten writes. "The characteristics of the virus indicate transmission between minks." She points out in her letter that there is currently no evidence that animals play a role in the spread of the virus to humans.

The investigation also shows that the virus had been on those company sites for several weeks. Both companies also have a different source of contamination. Virus has been detected on both farms in the "inhalable dust fraction in the stable," the minister writes. This indicates that people in the barn have been exposed to the virus, which is reason to follow the precautions in the GGD advice.

The virus was not found in air samples outside the house. The National Institute for Public Health and the Environment (RIVM) will submit a new risk assessment next week. Based on this, the minister is reviewing the measures surrounding the [farms].

Furthermore, it appears that the infection can lead to pneumonia and death among the minks, but the percentage of sick animals and the death rate is limited. The disease mainly affects highly pregnant animals.

As a precautionary measure, research is also being conducted into possible corona infections in pigs. On the basis of earlier research, scientists do not expect these to exist, according to Schouten, but she wants to rule them out. She expects the results in August [2020]. An investigation into corona in cats will start in June [see comment].

RIVM will also investigate whether research can be done "into a possible relationship between air quality, livestock farming and people's sensitivity to COVID-19." Other factors besides livestock farming that can play a role are also taken into account.

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[The COVID-19 outbreak in the Dutch mink farms and its spread provide a unique opportunity to study the emerging disease and its dynamics in a susceptible animal population. Various pending issues may profit from the knowledge gathered thanks to the Dutch research effort, such as the expected establishment of eventual herd immunity.

Collected epidemiological statistics, clinical observations and pathological changes recorded on the mink farms, even preliminary ones, will be helpful. This has become a considerable event, warranting an OIE-WAHID notification (emerging, zoonotic disease).

The mentioned investigation into corona in cats, planned to start in June 2020, is notable. Is it an experimental infection trial?

So far, there is no information about COVID-19 affecting minks in China, which harbours the world's leading mink industry.

Notably, a (not peer-reviewed) preprint paper, authored by a team of researchers from Peking University, addressing minks as a potential SARS-CoV-2 reservoir, was published on 25 Jan 2020 (Ref 1; https://www.biorxiv.org/content/10.1101/2020.01.21.914044v2.full. Thanks to Dan Silver).

Its abstract follows:

"The recent outbreak of pneumonia in Wuhan, China caused by the 2019 novel coronavirus (2019-nCoV*) emphasizes the importance of detecting novel viruses and predicting their risks of infecting people. In this report, we introduced the VHP (virus host prediction) to predict the potential hosts of viruses using a deep learning algorithm. Our prediction suggests that 2019-nCoV has close infectivity with other human coronaviruses, especially the severe acute respiratory syndrome coronavirus (SARS-CoV), bat SARS-like coronaviruses, and the Middle East respiratory syndrome coronavirus (MERS-CoV). Based on our prediction, compared with the coronaviruses infecting other vertebrates, bat coronaviruses are assigned with more similar infectivity patterns with 2019-nCoV. Furthermore, by comparing the infectivity patterns of all viruses hosted on vertebrates, we found mink viruses show a closer infectivity pattern to 2019-nCoV. These consequences of infectivity pattern analysis illustrate that bat and mink may be 2 candidate reservoirs of 2019-nCoV. These results warn us to beware of 2019-nCoV and guide us to further explore the properties and reservoir of it."

*2019-nCoV was later renamed SARS-CoV-2.

The following noteworthy WEIBO chain's comment, dated 28 Jan 2020, has been forwarded to us also by Dan Silver (https://m.weibo.cn/detail/4465842362011377):

"New coronavirus intermediate host or for water mink.
There are many mink farms in the north east. The purpose of breeding is to take the skin. The peeled meat cannot be processed well. People in the north east do not eat game, and it is unlikely that they will flow [the pealed meat] into the game market in the South. Almost every city in China has a fur city. So wearing mink, killing mink, and even stripping mink is finally retaliated, isn't it?"

(translated from Chinese).

It would be interesting to note if mink farms in China have been subject to COVID-19 surveillance, including serology.

Ferrets, family-related to minks, have been subject to experimental SARS-CoV-2 infection trials in China and Germany. Subscribers are referred to Mod.PMB's commentary in 20200427.7272289.

The mentioned research at Erasmus University Rotterdam reportedly showing that rabbits are sensitive to SARS-CoV-2 has not been, to the best of our knowledge, published hitherto. - Mod.AS

Reference
1. Guo Q, Li M, Wang C, et al. Host and infectivity prediction of Wuhan 2019 novel coronavirus using deep learning algorithm. bioRxiv. 2020.01.21.914044. https://doi.org/10.1101/2020.01.21.914044

HealthMap/ProMED-mail map of North Brabant, Netherlands: https://promedmail.org/promed-post?place=7316646,1250.]

See Also

COVID-19 update (154): Netherlands (NB) animal, farmed mink, research 20200503.7294846
COVID-19 update (146): Netherlands (NB) animal, farmed mink, epidemiology 20200501.7286113
COVID-19 update (135): Netherlands (NB) animal, farmed mink 20200427.7272289
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