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Subject: PRO/AH/EDR> COVID-19 update (542): animal, Greece (EM) mink mutation, human, OIE
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CORONAVIRUS DISEASE 2019 (542): ANIMAL, GREECE (WESTERN MACEDONIA), MINK MUTATION, HUMAN, OIE
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A ProMED-mail post
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International Society for Infectious Diseases
http://www.isid.org

Date: Tue 15 Dec 2020
Source: OIE, WAHIS [edited]
https://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=37059

Infection with SARS-CoV-2, Greece

Information received on [and dated] 15 Dec 2020 from Mrs Chrysoula Dile, Head, Animal Health Directorate, Ministry of Rural Development and Food, Athens, Greece

Summary
Report type: immediate notification
Date of start of the event: 4 Dec 2020
Date of confirmation of the event: 8 Dec 2020
Reason for notification: emerging disease
Morbidity: 2 (scale 0 to 5)
Mortality: 1 (scale 0 to 5)
Zoonotic impact: The Y453F mutation in the spike (S) protein of the virus, referred to as mink-related-variant, has been detected in 5 sequenced SARS-CoV-2 genomes from human cases directly related to mink (farm workers/owners). With regard to the sequenced mink samples, the latest results show the presence of the Y453F mutation in 1 of the farms tested so far. None of the other mutations described on the Rapid Risk Assessment of the 12th Nov 2020 from EU agencies (ECDC, EFSA, EMA) has been found up to now neither in humans nor animals. Sequencing of virus genomes from human and mink samples is ongoing.
Causal agent: SARS-CoV-2

New outbreaks (3)
Total outbreaks: 3
Outbreak location 1: Regional unit of Kozani, local community of Klima, municipality of Voio, Dytiki Makedonia [Western Macedonia]
Date of start of the outbreak: 4 Dec 2020

Outbreak status: continuing (or date resolved not provided)
Epidemiological unit: farm
Affected animals:
Species / Susceptible / Cases / Deaths / Killed and disposed of / Slaughtered
Mustelidae / 2300 / 43 / 43 / 0 / 0
Affected population: The animals are bred in a commercial farm for their fur. Suspicion was raised in the framework of passive surveillance following notification about a) increased mortality and b) a confirmed human case (farm owner) for COVID-19. Samples (oropharyngeal swabs) were collected from 10 dead animals, and all of them were tested positive with RT-PCR. Mink that died were relatively old and fat and showed mild respiratory symptoms and reduced feed intake. It is assumed that more animals were infected, but their number cannot be calculated because of missing information.

Outbreak location 2: Regional unit of Kozani, local community of Peponia, municipality of Voio, Dytiki Makedonia [Western Macedonia]
Date of start of the outbreak: 4 Dec 2020
Outbreak status: continuing (or date resolved not provided)
Epidemiological unit: farm
Affected animals:
Species / Susceptible / Cases / Deaths / Killed and disposed of / Slaughtered
Mustelidae / 7500 / 900 / 160 / 0 / 0
Affected population: The animals are bred in a commercial farm for their fur. Suspicion was raised in the framework of passive surveillance following notification about a) increased mortality and b) 4 confirmed human cases (farm owner and workers) for COVID-19. Samples (oropharyngeal swabs) were collected from 10 dead animals, and all of them were tested positive with RT-PCR. Infected mink showed respiratory symptoms and reduced feed intake.

Outbreak location 3: Regional unit of Grevena, local community of Kivotos, municipality of Grevena, Dytiki Makedonia [Western Macedonia]
Date of start of the outbreak: 4 Dec 2020
Outbreak status: continuing (or date resolved not provided)
Epidemiological unit: farm
Affected animals:
Species / Susceptible / Cases / Deaths / Killed and disposed of / Slaughtered
Mustelidae / 4000 / 0 / 0 / 0 / 0
Affected population: The animals are bred in a commercial farm for their fur. Suspicion was raised in the framework of passive surveillance following notification about a confirmed human case (farm worker) for COVID-19. Samples (oropharyngeal swabs) were collected from 20 animals and were tested positive with RT-PCR. Mink showed no respiratory symptoms, and feed intake was not reduced. Mortality did not increase. It was negligible and within the expected range based on the farm records, thus is considered unrelated to the outbreak.

Summary of outbreaks
Total outbreaks: 3
Total animals affected:
Species / Susceptible / Cases / Deaths / Killed and disposed of / Slaughtered
Mustelidae / 13 800 / 943 / 203 / 0 / 0

Outbreak statistics [rates apparent, expressed as percentages]
Species / Morbidity rate / Mortality rate / Case fatality rate / Proportion susceptible animals lost*
Mustelidae / 6.83 / 1.47 / 21.53 / 1.47
*Removed from the susceptible population through death, destruction, and/or slaughter

Epidemiology
Source of the outbreak(s) or origin of infection: unknown or inconclusive, farm staff from all infected farms tested positive for COVID-19

Epidemiological comments: In total, 15 out of 91 mink farms have been tested positive for SARS-CoV-2 since the 1st outbreak was confirmed on [13 Nov 2020]. Stamping out and official disposal of carcasses were only applied to the 1st confirmed farm. At that point, it was decided to stop culling animals. The whole country is practically considered a single zone. Movement restrictions (complete standstill for live animals) and strict biosecurity measures, including the mandatory use of personal protective equipment (PPE), have been imposed not only to the infected mink farms, but also to all fur farms in Greece. Reporting of increased mink morbidity and mortality to the veterinary authorities is obligatory at national level. When human vaccines become available, everyone who comes in close contact with mink (farm workers, owners, veterinarians) shall be included in the highest priority group to receive vaccination. In the framework of the One Health approach, veterinary and health authorities have been closely collaborating both at local and central level. Active repeated weekly surveillance (rapid tests and RT-PCR) is conducted by health authorities in all mink farm workers/owners. Results are notified directly to veterinary authorities, which investigate every farm that is epidemiologically linked to a confirmed human case. In addition, veterinary authorities investigate every notification for increased animal morbidity and mortality. Oropharyngeal swabs are collected from the animals and tested with RT-PCR. Sequencing of virus genomes from human and mink samples is conducted.

Control measures
Measures applied: movement control inside the country, surveillance outside containment and/or protection zone, surveillance within containment and/or protection zone, traceability, quarantine, zoning, vaccination permitted (if a vaccine exists), no treatment of affected animals
Measures to be applied: no other measures
Diagnostic test results
Laboratory name and type / Species / Test / Test date / Result
Centre for Research and Technology Hellas (CERTH) (national laboratory) / Mustelidae / real-time -PCR / 8 Dec 2020 / positive

Future reporting
The event is continuing. Weekly follow-up reports will be submitted.

[The location of the outbreaks can be seen on the interactive map included in the OIE report at the source URL above.]

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[The gist of the above OIE update, which, in contrast to earlier reports is referred to as an "emerging disease" (see commentary in 20201208.8002636), are the genotyping results obtained from the national laboratory, CERTH (Centre for Research and Technology Hellas, Saloniki). CERTH detected, on 8 Dec 2020, the Y453F mutation in the spike (S) protein of the virus, referred to as mink-related-variant, in 5 sequenced SARS-CoV-2 genomes from human cases directly related to mink (farm workers/owners). The presence of the Y453F mutation was established in minks in one of the farms tested; the investigation is continuing.

The following excerpts from ECDC "Rapid Risk Assessment: Detection of new SARS-CoV-2 variants related to mink," dated 12 Nov 2020 (see 20201112.7939110) are applicable:

- "Genetic adaptation in mink populations could give rise to a selective advantage in regions with mink-farming activity. The mutation Y453F, defining mink-related variants, has also been detected outside of Europe, indicating the potential for circulation of such strains. In the past few months, community transmission has occurred in Denmark and, to some extent, in the Netherlands, which could lead to cross-border spread.

- "Based on the information currently available on transmissibility, severity, immunity, and cross-border spread, the overall level of risk to human health posed by SARS-CoV-2 mink-related variants can be determined as
1. low for the general population and moderate for medically vulnerable individuals, which is no different than other SARS-CoV-2 strains (not related to mink);

2. low for the general population in areas with a high concentration of mink farms and moderate-to-high for medically vulnerable individuals living in the same areas; and
3. moderate for non-medically vulnerable individuals with occupational exposure and very high for medically vulnerable individuals with occupational exposure.

- "If the concerns raised in relation to immunity, reinfection, vaccination, and treatment are confirmed, the risk assessment will be immediately reviewed to reassess the overall level of risk to human health and the potential implications for COVID-19 diagnosis, treatment, and vaccine development. This also applies to any further mink-related variants with mutations in the S protein that may arise and spread."

Greece applied a culling policy only on its 1st infected farm. Denmark, which acted similarly during the initial phase of its mink event (June 2020), when it discontinued culling from the 4th farm onwards, was compelled to revise its policy to the extreme when the disease spread widely, and mink-to-human infections were confirmed. The Danish lesson is available to all.

Internationally agreed guidelines for the prevention and control of COVID-19 in minks while protecting public health, a classic One Health issue, deserve to be discussed continuously and updated by the relevant international agencies, collectively.

OIE's draft "Guidance on working with farmed animals of species susceptible to infection with SARS-CoV-2," published 16 Nov 2020, includes short sections on mustelids (mink, ferrets) and raccoon dogs. (https://www.oie.int/fileadmin/Home/MM/Draft_OIE_Guidance_farmed_animals_cleanMS05.11.pdf). It states that "natural infection of farmed mink has been observed in Denmark, the Netherlands, Italy, Spain, Sweden, and the USA." Since then, the disease has been reported also from farmed minks in Greece, France, Canada, and Lithuania; one can guess that it has entered mink farms wherever COVID-19 has been circulating in humans, lying in wait to be discovered and addressed. - Mod.AS

HealthMap/ProMED-mail map:
West Macedonia, Greece: https://promedmail.org/promed-post?place=8027113,30403]

See Also

COVID-19 update (535): Denmark, animal, mink, zoonotic, cat, RFI 20201213.8015149
COVID-19 update (530): animal, mink, research, experimental infection, vaccine 20201210.8009205
COVID-19 update (527): animal, Greece (WM) mink, spread, genome analysis 20201208.8002636
COVID-19 update (520): Denmark, Netherlands, mink, human-animal interface, WHO 20201204.7994061
COVID-19 update (516): China (Hong Kong) animal, dog, Lithuania, mink, OIE 20201203.7986508
COVID-19 update (510): animal, mink, Lithuania, Poland, 1st reports, France, OIE 20201127.7976927
COVID-19 update (507): animal, mink, Netherlands spread, Italy control 20201125.7972425
COVID-19 update (503): animal, France, mink, 1st rep 20201123.7965554
COVID-19 update (501): Denmark, Netherlands, mink, human-animal interface 20201122.7963766
COVID-19 update (498): Denmark, animal, mink, zoonotic 20201120.7959431
COVID-19 update (490): animal, Greece (EM) mink, 1st report, OIE, assessment 20201115.7944705
COVID-19 update (487): Denmark, animal, mink, zoonotic, risk assessment ECDC 20201112.7939110
COVID-19 update (482): animal, Denmark, mink, zoonotic, eradication, discussed 20201109.7929573
COVID-19 update (475): animal, Denmark, mink, spike protein sequences 20201106.7922587
COVID-19 update (473): animal, Denmark, mink, mutation, eradication, RFI 20201105.7918210
COVID-19 update (471): animal, Denmark, mink, zoonotic, eradication 20201104.7916300
COVID-19 update (464): animal, Denmark, mink, control, One Health 20201101.7906484
COVID-19 update (458): animal, Italy, mink, RFI 20201028.7897986
COVID-19 update (445): animal, Netherlands, Denmark, mink, spread, epidemiology 20201019.7873326
COVID-19 update (439): animal, Denmark, mink, spread, control 20201014.7861560
COVID-19 update (414): animal, Netherlands (LI), Denmark (ND), farm mink, spread 20200925.7813579

COVID-19 update (406): animal, Netherlands (LI), Denmark (ND), farm mink, spread 20200918.7794239
COVID-19 update (401): Netherlands (NB), Denmark, farmed mink, spread 20200914.7777661
COVID-19 update (394): Netherlands (NB) animal, farmed mink, spread 20200908.7759382
COVID-19 update (387): Netherlands, mink, animal & public health, research 20200902.7740793
COVID-19 update (382): Netherlands, animal, farmed mink, spread, control 20200830.7730463
COVID-19 update (376): animal, ferret, mink, comment 20200827.7721923
COVID-19 update (366): animal, USA (UT) mink 20200818.7692815
COVID-19 update (363): animal, Denmark (ND) Netherlands (NB,LI) mink, spread 20200817.7687830
COVID-19 update (340): animal, China, envir monitoring, Netherlands (NB), mink 20200801.7635820
COVID-19 update (334): animal, Netherlands, mink, spread, UK, cat, 1st rep, OIE 20200727.7617582
COVID-19 update (324): Netherlands (NB) animal, farmed mink, spread 20200719.7591013
COVID-19 update (317): Netherlands (NB) animal, farmed mink, spread 20200716.7578453
COVID-19 update (307): Netherlands (NB), Denmark (ND) farmed mink, spread, control 20200708.7553067
COVID-19 update (301): Denmark (ND) Netherlands (NB) farmed mink, spread, control 20200703.7536980
COVID-19 update (284): Denmark (ND) animal, farmed mink, spread, dog 20200624.7506728
COVID-19 update (281): Netherlands (NB, LI) farmed mink, spread, animal, global 20200623.7502849
COVID-19 update (266): Denmark (ND) animal, farmed mink, 1st rep 20200617.7479510
COVID-19 update (251): Netherlands (NB, LI) animal, farmed mink, spread, culling 20200610.7453845
COVID-19 update (248): Netherlands (NB, LI) animal, mink, spread, culling, cat 20200609.7446478
COVID-19 update (236): Netherlands (NB, LI) animal, farmed mink, spread, culling 20200604.7427849
COVID-19 update (230): Netherlands (NB, LI) animal, farmed mink, spread, control 20200602.7420433
COVID-19 update (215): Netherlands (NB) animal, mink-to-human, epidem., control 20200527.7385049
COVID-19 update (209): Netherlands (NB) farmed mink, animal-to-human, cat, epid 20200525.7375359
COVID-19 update (198): Netherlands (NB) farmed mink, animal-to-human infect susp 20200520.7359976
COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog 20200517.7344274
COVID-19 update (177): Netherlands (NB) animal, farmed mink, Spain (CT) cat susp 20200512.7328587
COVID-19 update (174): Netherlands (NB) animal, farmed mink, comment 20200511.7323845
COVID-19 update (169): Netherlands (NB) animal, farmed mink, spread, rabbit susp 20200509.7316646
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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