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CORONAVIRUS DISEASE 2019 UPDATE (84): USA, ANIMAL, TIGER

A ProMED-mail post

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Date: Mon 6 Apr 2020

From: Paul P Calle <pcalle@wcs.org> [edited]

On [Fri 3 Apr 2020], qPCR testing for SARS-Coronavirus-2 (SARS-CoV-2) on duplicate nasal and oropharyngeal swabs and tracheal wash samples from a 4-year-old female Malayan tiger (*Panthera tigris jacksoni*) with respiratory signs living at the Wildlife Conservation Society's (WCS) Bronx Zoo was performed at the Animal Health Diagnostic Center and New York State Veterinary Diagnostic Laboratory at Cornell University College of Veterinary Medicine and the University of Illinois College of Veterinary Medicine Veterinary Diagnostic Laboratory. The swabs yielded presumptive positive results that were confirmed by the USDA National Veterinary Services Laboratory on [Sat 4 Apr 2020].

The index case was one of 2 Malayan tigers, 2 Amur tigers (*Panthera tigris altaica*), and 3 African lions (*Panthera leo*) that developed respiratory signs over the course of a week characterized by a dry cough and in some cases wheezing, but no dyspnea or nasal or ocular discharge. Mild anorexia was noted in some cases. All of the cats are long term residents of the zoo, do not have chronic medical conditions, and there have been no new animal introductions to these groups for several years.

All other Amur and Malayan tigers, snow leopard (*Panthera uncia*), cheetah (*Acinonyx jubatus*), clouded leopard (*Neofelis nebulosa*), Amur leopard (*Panthera pardus orientalis*), puma (*Puma concolor*), and serval (*Leptailurus serval*) at the Bronx Zoo remain healthy without evidence of clinical illness.

The source of infection is presumed to be transmission from a keeper who, at the time of exposure, was asymptotically infected with the virus or before that person developed symptoms [i.e., presymptomatic]. The cats have received antibiotics and supportive care as needed, and all of the affected cats are doing well with no worsening of their clinical signs and daily gradual improvement. Enhanced PPE [surgical masks (not N95 masks), face shields, gloves, coveralls] use has been implemented for staff caring for all non-domestic felids in the 4 WCS zoos.

SARS-CoV-2 is a World Organisation for Animal Health (OIE) reportable disease with country-specific mandatory reporting requirements by national governments of positive results, and national and international veterinary and public health agency notifications. We will provide more technical details and answer questions as we can, but as I'm sure you can imagine it is quite

challenging right now to keep up with everything that is going on. We will also be publishing this information in peer-reviewed scientific venues.

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[We are grateful to Dr. Calle for this report.

By the end of March, the cat of a woman with COVID-19 tested positive in Belgium (see post# 20200327.7151215). This cat presented clinical signs: diarrhea, vomiting and difficulty breathing. A few days later, a cat in Hong Kong, owned by a COVID-19 infected patient, also tested positive (post# 20200403.7179945), although in this case no clinical signs were detected.

A recent experiment carried out in China, so far published as a pre-print (<https://www.biorxiv.org/content/10.1101/2020.03.30.015347v1>), found that cats and ferrets exposed by SARS-CoV-2 by intranasal inoculation develop active infection, replicating efficiently. Moreover, in cats it was shown that the virus can be transmitted via droplets, as sentinel cats housed next to infected ones also became infected. Dogs, pigs and birds, on the contrary, proved to be poor hosts, with limited replication (although it is noteworthy that 2 dogs became infected from their owners in Hong Kong).

Cats are in the _Felidae_ family, and so are cougars, lions, tigers, jaguars, and all the other wild felids. This report in tigers and the other observations and experimental results alert us to the fact that felids (and maybe also mustelids) may become infected by SARS-CoV-2. The significance of this is yet to be established (conservation concern?; source of transmission for humans?; role in propagation?). In the meantime, cautionary measures should be taken so that domestic and wild animals are not exposed to patients with COVID-19. - Mod.PMB

HealthMap/ProMED map available at:

United States: <https://promedmail.org/promed-post?place=7191352,106>

See Also

COVID-19 update (76): China (HU) animal, cat, owned, stray, seropositive 20200403.7179946
COVID-19 update (75): China (Hong Kong) animal, cat, OIE 20200403.7179945
COVID-19 update (70): China (Hong Kong) animal, cat, pets & stock 20200402.7173286
COVID-19 update (58): Belgium, animal, cat, clinical case, RFI 20200327.7151215
COVID-19 update (56): China (Hong Kong) animal, dog, final serology positive 20200326.7146438
COVID-19 update (50): China (Hong Kong) animal, dog, 2nd case PCR positive, OIE 20200323.7129951
COVID-19 update (45): China (Hong Kong) animal, dog, 2nd case PCR positive 20200319.7112693
COVID-19 update (37): China (Hong Kong) animal, dog, prelim. serology negative 20200312.7081842
COVID-19 update (30): China (Hong Kong) animal, dog, susp, serology pending 20200306.7057595
COVID-19 update (25): China (Hong Kong) animal, dog, susp, OIE 20200302.7040373
COVID-19 update (22): companion animals, dog susp, RFI 20200229.7036661
COVID-19 update (17): China, animal reservoir, wildlife trade & consumption 20200225.7024245
COVID-19 update (11): animal reservoir, intermediate hosts, pangolin susp 20200220.7009213
COVID-19 update (08): companion animals, RFI 20200218.7002276
COVID-19 update (06): animal reservoir, intermediate hosts 20200217.6997782
Novel coronavirus (40): animal reservoir, pangolin poss intermediate host, RFI 20200210.6972104

Novel coronavirus (28): China (HU) animal reservoir 20200201.6943858

Novel coronavirus (22): reservoir suggested, bats 20200129.6930718

Novel coronavirus (20): China, wildlife trade ban 20200127.6922060

Novel coronavirus (18): China (HU) animal reservoir 20200125.6915411

Novel coronavirus (15): China (HU) wild animal sources 20200123.6909913

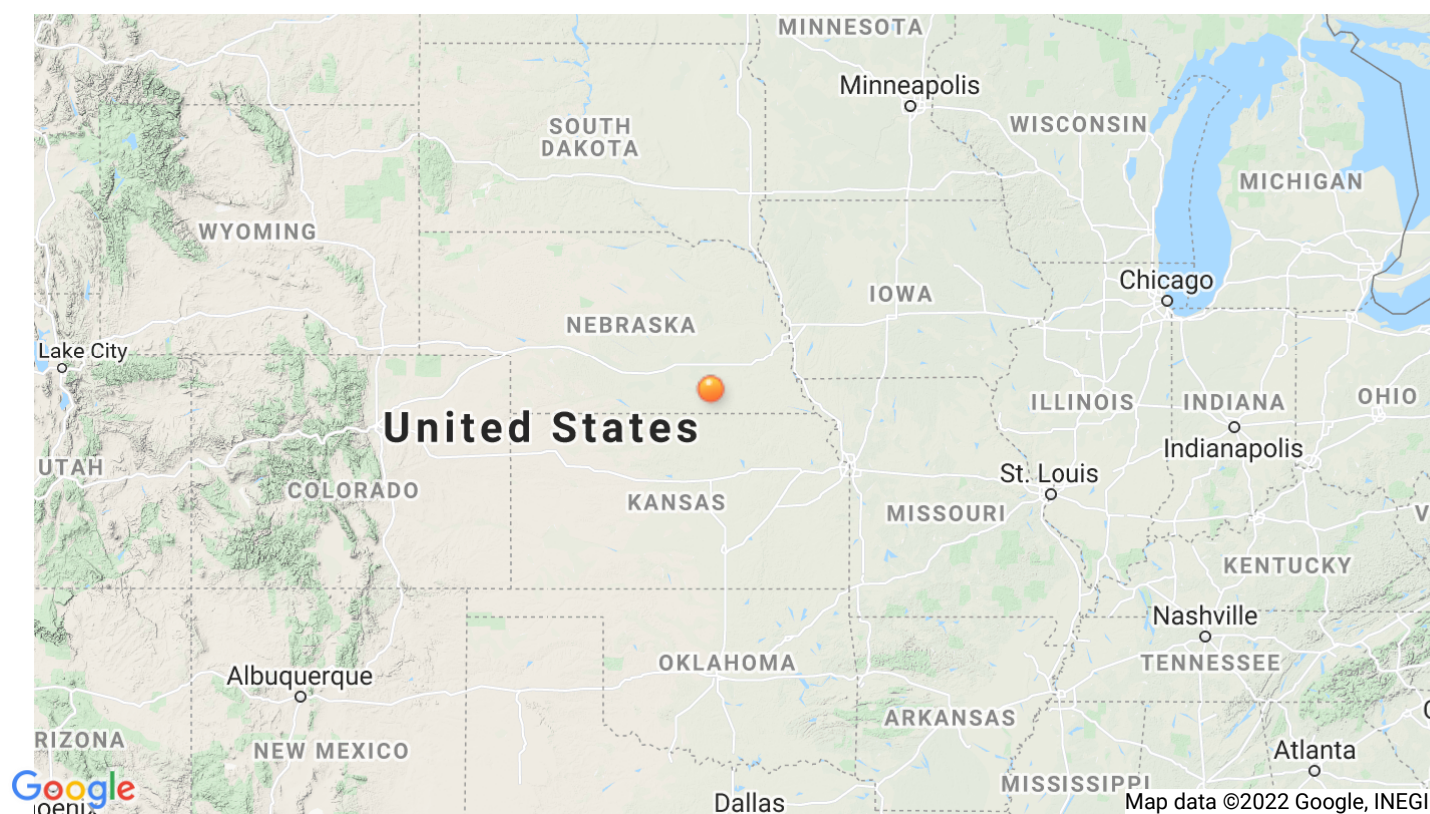
Novel coronavirus (03): China (HU) animal reservoir suggested, RFI 20200114.6887480

Novel coronavirus (01): China (HU) WHO, phylogenetic tree 20200112.6885385

Undiagnosed pneumonia - China (HU) (07): official confirmation of novel coronavirus 20200108.6878869

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