

A Cat-Borne Threat to Monk Seals

How *Toxoplasma gondii* makes its way from mountains to ocean

A Microscopic Parasite

Toxoplasma gondii is a parasite that causes the disease toxoplasmosis.



Develops in the Guts of Cats

T. gondii can infect any warm-blooded animal (including humans, birds, and seals), but only reproduces in the digestive system of a cat.

Spreads Via Cat Feces

Millions of *T. gondii* eggs can be spread into the environment via the feces of just one cat and survive for many months. These eggs are the source of *T. gondii* infection in monk seals. It only takes one egg to cause an infection.



Contaminates Natural Resources

T. gondii eggs contaminate water and soil, along with the plants that grow in it. Wildlife and livestock can consume the eggs and become infected. Even people can get infected by accidentally ingesting cat litter/fecal particles or consuming under-cooked meat or unwashed produce.

Travels Through Waterways

Rainwater and runoff transport the eggs to the ocean through streams and gutters.



Exacerbated by Human Behavior

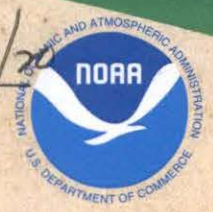
People unintentionally contribute to the spread of *T. gondii* by allowing pet cats to roam outdoors, abandoning unwanted cats, and not controlling feral cat populations.

Impacts Marine Environment

Hawaiian monk seals become infected with *T. gondii* by consuming contaminated water or prey.



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Hawaiian Monk Seals and Toxoplasmosis

How does toxoplasmosis compare to other seal threats?

Toxoplasmosis is a leading cause of Hawaiian monk seal mortality and a growing concern for the species in the populated main Hawaiian Islands.

Difficult to Treat

A seal suffering from toxoplasmosis is difficult to detect and treatment options are extremely limited. Once a seal becomes sick with toxoplasmosis, it dies rapidly. Unlike hook ingestion, malnutrition, and trauma, where public reporting can help locate affected seals and NOAA can take action to help them, toxoplasmosis requires dealing with the threat at the source — free-ranging cats.

No Vaccination

No safe, preventative vaccine exists for toxoplasmosis in monk seals.

What is the outlook?

The large size and continued growth of outdoor cat populations in Hawai'i (estimates of feral cats on O'ahu alone range from 50,000 to 300,000) will increase the number of eggs being spread in the environment and risk of monk seals being exposed. Infections in people and other species are widespread, although not all infections result in illness or death. The factors that lead to death for some seals but not others are poorly understood. Even if the infection does not lead to death, *T. gondii* may impair reproductive, brain or immune system function, and make seals less able to withstand natural stressors or other threats. NOAA Fisheries and its partners continue to study the ecology of *T. gondii*; however, the lack of treatment options for infected seals and other species means that solving this problem requires multiple approaches aimed at preventing cat feces from contaminating Hawai'i, from mountain to sea.

Where can you go for more information?

Centers for Disease Control and Prevention: www.cdc.gov/parasites/toxoplasmosis/
American Association of Zoos and Aquariums: c.yumcdn.com/sites/www.aaazv.org/resource/resmgr/IDM/IDM_Toxoplasmosis_2013.pdf

How can you help?

You can help prevent toxoplasmosis from affecting monk seals and other wild animals by doing your part to reduce the spread of *T. gondii* eggs.

- Keeping cats exclusively indoors improves their longevity, protects native birds from cat predation, and is the best way to prevent the spread of toxoplasmosis.
- Make sure to spay and neuter your cats — while this won't prevent them from contracting or spreading *T. gondii* parasites, it will curb unwanted litters of kittens.
- It is illegal in Hawai'i to abandon unwanted cats or kittens outdoors or at feral cat colonies; take them to a shelter where they may be adopted.
- Please do not feed feral cats, as this may perpetuate colony growth and further abandonment, ultimately increasing the amount of *T. gondii* eggs spread into the environment.

Questions?

Please send an email to monksealinfo@noaa.gov



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NEWS

NOAA concerned with parasite that kills monk seals that's spread by cat feces

According to scientists with the National Oceanic Atmospheric Administration, it can kill within 48 hours.

Thursday, February 20th 2020, 4:50 PM HST by Nicole Tam



Toxoplasmosis, a parasite found in cat-feces is threatening the survival of Hawaiian Monk Seals. It's deadly and it works quickly. According to scientists with the National Oceanic Atmospheric Administration, it can kill within 48 hours. It's listed as one of the top three threats against the endangered species.

Dating back to the 90's, NOAA reports at least 12 seals have died because of toxoplasmosis. There's no exact count because not every corpse has been recovered.

"That doesn't sound like a very high number but when there's only 250 to 300 animals in the population that are being impacted by this, it's significant," Charles Littnan, Protected Species Division Director, NOAA Pacific Islands Fisheries Science Center, said.

It spreads when cat feces are washed into the ocean, contaminating the water. One seal was killed last month. Another, Pohaku, is recovering after a bystander spotted her logging or floating in the water.

"We had to administer via IV, via tube feeding, which is inserting a tube into the mouth down the stomach and providing nourishment and medications that way," Angela Amlin, Hawaiian Monk Seal Recovery Coordinator, NOAA Pacific Islands Regional Office, said.

Researchers say treatment for the parasite isn't cheap, costing roughly \$1,500 dollars a day. When Pohaku is released back into the wild, she'll be monitored for the rest of her life so scientists can record long-term effects of the disease.

"We'll be super sensitive to any abnormal behaviors that she demonstrates, particular if it's around pupping season. Again, being pregnant reduces your immune system, stresses your system out, which could allow for an opening for the parasite to relaunch its infection," Littnan said.

If you ever see a monk-seal, NOAA would like you to call its Mammal Hotline at 888-256-9840.