

Wildlife Special Edition

CAHFS

CONNECTION

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Anticoagulant rodenticide (AR) poisoning and exposure was diagnosed in Pacific fishers as part of a three year mortality investigation by biologists at Integral Ecology and CAHFS. The Pacific fisher is a candidate for listing under the Endangered Species Act in the Pacific states. Necropsy and toxicology results indicated four fishers died of anticoagulant poisoning and 79% (58 fishers tested) had AR detected on analysis of the liver indicating exposure. Of those, 96% had evidence of exposure to one or more second-generation AR. No spatial clustering of AR exposure and spatial distribution indicated exposure is widespread and mostly on public forest and park lands indicating illegal marijuana cultivation sites were likely the primary source of exposure. A dog wandering onto an illegal grow site on public lands died acutely from exposure to strychnine used for pest control on the site. Public lands and streams diverted for illegal irrigation have been contaminated with nitrates and poisons used for fertilization and pest control, respectively. Contamination of these public forest and park lands in California is an emerging issue and CAHFS testing of wild animal species serves as a monitor of environmental health.

Mourad Gabriel et al. Anticoagulant rodenticides on our public and community lands: spatial distribution of exposure and poisoning of a rare forest carnivore. PLOSOne, 7(7):r50264, 2012.

Strychnine toxicosis was the cause of death of five birds necropsied from a group of approximately 32 dead blackbirds found in a residential area. The birds were in good nutritional condition and oat and milo seeds with some pale green to turquoise discoloration were found in the proventriculus. Strychnine was found in the proventricular contents of all three birds. Strychnine formulations are often treated oat and milo seeds that are dyed and in California, are labeled only for use to control gophers and for placement underground.

Bromethalin poisoning was diagnosed in a raccoon that died after a short course of neurologic signs at a wildlife care center. Turquoise granular material was noted in the gastrointestinal tract on necropsy and no microscopic lesions were evident. Testing for bromethalin was performed after analysis of the turquoise contents failed to detect anticoagulant rodenticides (AR), strychnine, 4-aminopyridine, starlicide and salts. Poisonings by bromethalin, and zinc phosphide will likely increase as anticoagulant rodenticides become less available.



Green stained material in intestine—
bromethalin treated grain

CAHFS Lab Locations

CAHFS - Davis

University of California
West Health Sciences Drive
Davis, CA 95616
Phone: 530-752-8700
Fax: 530-752-6253
cahfsdavis@cahfs.ucdavis.edu

CAHFS - San Bernardino

105 W. Central Avenue
San Bernardino, CA 92408
Phone: (909) 383-4287
Fax: (909) 884-5980
cahfsanbernardino@cahfs.ucdavis.edu

CAHFS - Tulare

18830 Road 112
Tulare, CA 93274
Phone: (559) 688-7543
Fax: (559) 686-4231
cahfstulare@cahfs.ucdavis.edu

CAHFS—Turlock

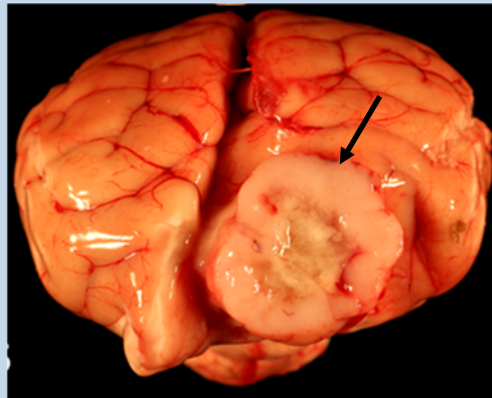
1550 Soderquist Road
Turlock, CA 95381
Phone: (209) 634-5837
Fax: (209) 667-4261
cahfsturlock@cahfs.ucdavis.edu

Your feedback is always welcome. To provide comments or to get additional information on any of the covered topics or services, please contact Sharon Hein at shlein@ucdavis.edu.

We're on the Web
www.cahfs.ucdavis.edu

Two foreign animal disease (FAD) investigations were conducted on mortality events in black-tailed deer last year. In each case, a single representative deer from a herd with six to eight dead deer was submitted to CAHFS for necropsy, one died naturally and one died of multisystemic trauma. Multifocal ulcerative glossitis triggered the FAD investigation in which foot and mouth disease, epizootic hemorrhagic disease, bluetongue, adenovirus hemorrhagic disease, malignant catarrhal fever, parapox and bovine virus diarrhea were tested for by PCR at CAHFS and the Foreign Animal Disease Diagnostic Laboratory (FADDL) at Plum Island. One deer, in which there was multifocal ulceration of the oral cavity and degenerative myopathy with mineralization, was diagnosed with bluetongue virus (by PCR) and selenium deficiency. In the other case, the cause of the ulceration was not determined. All tests in the microarray were negative both at CAHFS and FADDL. Deer pox, which is not available in the microarrays, can also cause ulcerative stomatitis and testing is currently being pursued on the second case.

Aleutian Disease Virus is a parvovirus that primarily infects farmed mustelids (mink and ferrets), but also other fur-bearing animals. Aleutian Disease Virus infection and disease have been rarely described in captive striped skunks; however, little is known about the pathogenicity of the virus and the relevance of the infection in naturally-occurring disease in free-ranging animals of the order *Carnivora*. CAHFS has diagnosed Aleutian Disease in seven skunks in 2010-2013. All animals were from California and showed clinical disease characterized by increased diurnal activity and neurologic signs. The most prominent pathological findings included lymphoplasmacytic inflammation in multiple organs, glomerulonephritis, arteritis, splenomegaly, and ascites/hydrothorax. The tight temporal and geographic clustering of a disease not previously diagnosed in free-ranging striped skunks in California suggests that Aleutian disease is an emerging disease in this species.



Sarcoma in the olfactory lobe (lower right part of picture) of a raccoon.

Olfactory sarcomas were diagnosed post-mortem in nine free-ranging raccoons from four contiguous counties in California, and one raccoon from Oregon over a 2-year period, 2010-2012. All nine California raccoons were found within a localized geographical region in the San Francisco Bay Area. The tight temporal and geographical clustering and the consistent anatomic location in the olfactory system of tumor types not previously described in raccoons (malignant peripheral nerve sheath tumors and undifferentiated sarcomas) strongly suggested either a common etiology or a precipitating

factor leading to induction or potentiation of neuro-oncogenesis. Toxicology testing was performed to determine if a toxin exposure had caused the tumors which would have been a concern to humans in the same environment. No toxin exposure was found; however, further investigation will be pursued in the future. A raccoon polyomavirus was identified in all 10 raccoon tumors suggesting that it may play a role in neuro-oncogenesis. This condition is an emerging disease in raccoons.

Florante Dela Cruz. Novel polyomavirus associated with brain tumors in free-ranging raccoons, western United States, Emerg Infect Dis, 19(1):77-84, 2013.

Federico Giannitti et al. Temporal and geographic clustering of polyomavirus-associated olfactory tumors in 10 free ranging raccoons, Vet Pathol; E-published doi:10.1177/0300985813502817, 2013.