



September 24, 2014

via email

Bill Shoe, Project Manager
Santa Clara County Planning Office
Bill.Shoe@pln.sccgov.org

Re: Public Draft Health Element of the Santa Clara County General Plan

Dear Mr. Shoe,

Santa Clara Valley Audubon Society (SCVAS) has reviewed the Public Draft Health Element of the Santa Clara County General Plan.

SCVAS's mission is to preserve, enjoy, restore and foster public awareness of native birds and their ecosystems, mainly in Santa Clara County. As stewards for avian species and their environmental resources, we are always concerned with any planning or policies, which may negatively affect the health and well being of wildlife and humans.

After review of the Public Draft Health Element and associated documents, SCVAS has concluded the documents, as currently presented, do not fully address potential human health risks associated with vector borne diseases from feral cat populations. We support changes to the General Plan and the Draft Health Element that pertain to animal control programs including eliminating feral cat Trap-Neuter-Release (TNR) management or other programs that support cats outdoors, since such programs pose increased health risks to the residents of Santa Clara County and to our environment. We consider the release of cats into the environment a health hazard and an environmental issue, and ask for sincere and comprehensive consideration.

We are supportive of the Draft Health Element of the Santa Clara County General Plan, but we see a need to add additional policies, strategies and programs that better connect the intrinsic value of nature, address the biophilic importance of conserving natural ecosystems, and it's role in human well-being. The Draft Health Element focuses on trails and outdoor activities as part of health lifestyles or transportation alternatives. While it mentions recreation and relaxation it does not connect the importance of conserving our natural environment not only as part of the human experience, but due to the intrinsic value nature. Additionally it states that part of its purpose is

to “*improve environmental conditions*” which we see as an ideal situation for the County to illustrate its commitment to its natural heritage and to nature conservation as an intrinsic value, beyond the anthropocentric focus proposed in the Draft Health Element.

Trap-Neuter-Release (TNR) Management

The Draft Health Element proposes, “*As a society, significant efforts have been made to eliminate diseases, prevent or control epidemics, and improve environmental conditions. (p. 3)*” . The health element should consider cat-associated vector borne diseases such as toxoplasmosis, bubonic plague, tularemia, rabies, and bartonellosis (Roebeling et al., 2013; Nutter et al., 2004b; McElroy et al., 2010); which continue to cause disease and mortality in humans and can cause other detrimental health issues including blindness, schizophrenia, and miscarriage (Jessup 2012). The TNR approach to un-owned or feral cat management has become popular over the last two decades as part of the no-kill approach to domestic animal management (Longcore et al., 2009; Longcore, 2013). Opportunities for cat adoptions are continuously diminishing and at the same time, efforts to release more un-wanted cats into the environment are increasing (for example, various “Community Cats” campaigns¹). Responsibly owned domestic cats are typically vaccinated and treated for diseases on an annual basis even if they have outdoor contact with other cats or wildlife. However, TNR management programs do not treat or protect feral cats from zoonotic diseases. Feral cats, unlike wildlife, are common vectors of zoonotic disease because 1) humans often approach stray cats or take home feral kittens; and 2) humans contact cat feces in back yards, parks and playground.

Feral cat colonies commonly feed at group sites, which foster the spread of pathogens through close contact with other cats, wildlife, and humans. Under TNR programs, most feral cats are trapped and treated or vaccinated only once in their lifetime, providing inadequate coverage in large populations. Furthermore, studies have shown TNR programs do not effectively control or reduce stray cat populations. For example, two managed cat colonies in Florida increased in size despite TNR programs (Castillo and Clarke, 2003). Thus, unless sterilization is universal and the colony is closed so unaltered cats cannot immigrate into these populations they will always grow. This is often confounded by supplemental feeding at feral colonies, which attracts other cats and wildlife. Therefore, if TNR programs cannot adequately control cat populations or prevent the spread of zoonotic diseases this solution should not be accepted as part of modern public health policy. Strategy 3 of the Draft Health Element states, “*Continue coordination*

¹ Even among its proponents, there is no agreement on the several terms used to describe programs which release unowned cats. Currently, the term “community cats” is most commonly used for the broadest umbrella under which we see a spectrum from “trap-neuter-release” or TNR (through which cats are released under the admittedly loose supervision of volunteers who may feed and be attentive to exigent medical needs, ideally on property owned by a cooperative landlord and with limited impacts to native wildlife) to “return to field” (cats surgically neutered and simply returned to where they were found). A linked approach, many animal shelters (both municipal and nonprofits) are now requiring appointments before accepting cats, fees for the surrender of even stray cats, or are simply refusing to accept cats who may prove difficult to adopt into new homes. It is important to note that while there are organizations with national sounding names (e.g., Humane Society of the U.S., American SPCA), the thousands of sheltering organizations are all independent entities rather than chapters or affiliates, and while the two aforementioned national groups are both currently proponents of “community cats” many local sheltering organizations are not. Ken White, President, Peninsula Humane Society & SPCA (Personal Communication)

between the Department of Environmental Health, Public Health Department, and other State and local agencies to ensure that vector populations are managed to protect public health and maintain ecological integrity. (p. G-9)” TNR programs do not meet these criteria and should be reconsidered.

Rabies continues to be a cause of human mortality globally and is therefore of public health concern. Rabies is a viral disease that can infect any mammal and is transmitted through saliva of infected animals, typically via bites that break the skin. In the United States feral cats are the leading vectors of rabies (Blanton et al. 2007). In the US, only a few deaths a year are recorded due to effective control programs which include appropriate animal vaccines and vaccination schedules, use of post exposure treatments and stray animal management (Roebeling et al., 2013). However, TNR management programs for feral cats have begun undermining this progress for the last few decades.

In 2010, 303 rabid cats were reported through national surveillance, compared with only 69 dogs (Blanton et al., 2011). The US Center for Disease Control (CDC) reports that the “*decline in dog rabies from over 8000 cases a year to fewer than a hundred was accomplished through policies that promote mass vaccination coverage and control of strays, but adherence to these policies appears limited for cats*” (CDC, 2008a;). While domestic cats may be only a small proportion of the number of animals recorded as rabid, they are disproportionately responsible for human exposure to the rabies virus. This appears to be due to the fact that people are far more likely to approach a cat and come into contact with it than to approach wildlife (Eidson and Bingman, 2010). In 1994, 665 persons in New Hampshire received post exposure treatments after contact with a rabid feral kitten. This was one of the largest documented mass exposure events recorded in the United States (CDC, 1995). Additionally, a study in Montgomery County, Virginia, attributed 63% of post-exposure vaccine treatments (PEP) to feral cat exposures compared with only 8% for wild animal contact (Hensley, 1998). In this county, the high rate of PEP was due to a lack of a county animal shelter facility for cats. Post-exposure treatment for rabies is costly and very painful thus it should not be relied upon as an effective control measure (Blanton et al., 2009).

The current treatment recommendations of the American Association of Feline Practitioners (AAFP) states that kittens should be vaccinated against rabies between 12-16 weeks of age, have booster at a year and then again at the interval recommended by the manufacturer (Richards et al. 2006). Most feral cats may only be trapped once in their lifetimes in a TNR management program (Richards et al., 2006). Therefore, one vaccine dose does not offer lifetime coverage (Levy et al., 2003). Foley’s (et al., 2005) study of TNR programs found that they had annual trapping rates of less than 10% of the total population. Often feral cat colony feeding stations attract wild raccoons, bats, skunks and foxes (Gehrt, 2003) –all vectors for rabies. Evidently, TNR programs do not provide effective rabies vaccination coverage or cat population control (Levy et al., 2003) and are not effective in reducing public health risks related to rabies exposures. Alternatively, responsible pet ownership, universal rabies vaccination of pets and removal of strays remain essential components of the control of rabies (Roebeling et al., 2013).

Toxoplasmosis

Toxoplasmosis infections in humans have been associated with serious psychological and mental health conditions and are of public health concern. We believe that its control is important as Santa Clara County's General Plan Draft Health Element acknowledges "*Strategies and policies are necessary to ensure that all residents, across the life span, experience maximum social and emotional well-being. While much of the health (including mental health) care delivery system focuses on treating disease and extending life, social and emotional health focuses on improving the "quality of life years" for all* (p. 21)."

Domestic cats are the primary hosts and vectors of Toxoplasmosis (*Toxoplasma gondii*) a protozoan parasitic disease. Toxoplasmosis presents serious health risks to humans and wildlife (The Wildlife Society, 2011). The parasite reproduces by forming oocysts, (egg-like structures) which facilitate the disease's spread beyond the host (a cat) into the environment. While birds and mammals (including humans) can ingest oocysts of *T. gondii*, which can then lead to infection, the parasite can only reproduce in the digestive system of cats. Cats typically ingest the parasite from feces of other cats or from prey species such as rodents. Once they are infected cats shed millions of oocysts in their feces, which can persist in the soil for up to 18 months (Frenkel, 2000). Additionally, infected cats are commonly asymptomatic. Thus, feces from free roaming cats often contaminate playgrounds, garden soil, sandboxes and other outdoor recreational areas, which provide sources of infections in humans (Holland and Smith, 2006). A scientific study found that the transmission of *T. gondii* to humans from soil, water, and uncooked vegetables that carry oocysts from the soil (from gardening where infected feral cats have access) are all potential sources of infection (Dabritz and Conrad, 2010). Feral cat colonies provide a reservoir for Toxoplasmosis and perpetuate the opportunity for transmission between cats and humans. A scientific study in North Carolina that found that toxoplasmosis is more common in feral cats compared to pet cats (Elmore et al., 2010). Additionally, a large number of free ranging cats' results in the constant persistence of a large volume of oocysts in the environment and an increased likelihood of transmission to humans (Dabritz, 2006).

The largest modern outbreak of Toxoplasmosis was in Canada in 1995 as a result of contamination of a municipal water supply by oocytes (Bowie et al., 1997). The Draft Health Element states "*Heavy rainfall and run-off and higher water temperatures could potentially contaminate drinking water by carrying household, industrial, transportation, and agricultural chemicals, sewage, and animal waste into drinking water supplies and further increase the incidence of water and food-borne diseases and the need for careful monitoring* (p. G-5)." Therefore, we suggest the control of this zoonotic disease falls in line with our County's commitment to control water and food-borne diseases that pose a human health risk.

Toxoplasmosis has significant human mental health effects, including personality changes (Lafferty, 2006), increased risk of schizophrenia in offspring of infected mothers (Brown et al. 2005), increased risk of suicide attempts (Yagmur et al., 2010), and an association with psychosis (Zhu, 2009). Nineteen scientific studies have found an increased presence of *T. gondii* antibodies in patients with schizophrenia and other severe psychiatric disorders compared to a control group (Wilcox, 2012). Acute infections can produce psychotic symptoms similar to those

of schizophrenia. Additionally, some of the medications for treating schizophrenia inhibit the replication of *T. gondii*. A scientific study found that humans infected with *T. gondii* produce high levels of cytokines as part of the immune response (Pedersen et al., 2012). Unfortunately, high levels of cytokines are linked to depression and suicide attempts. The Health Element states “*Strategy 5: Reduce death by suicide, suicide attempts, and related risk factors* (p. B-5).” Controlling Toxoplasmosis should therefore be a priority of the Santa Clara County General Plan Health Element.

Toxoplasmosis has also been found to cause psychiatric problems, especially among pregnant women and people with compromised immune systems. Toxoplasmosis infections pose increased risks to the fetus during pregnancy including abortion, blindness, and birth defects (Dubey and Odening, 2001; Stray-Pedersen, 1993). In 2003, a study found that women with high levels of *T. gondii* were more likely to give birth to schizophrenics-to-be suggesting an association between *Toxoplasma* and schizophrenia (Torrey and Yolken, 2003). Additionally, there is a possible association with Parkinson's disease (Miman et al., 2010), and Alzheimer's (FePrandota, 2010). Toxoplasmosis is also a significant risk for people with compromised immune systems like those receiving immunosuppressive therapy; transplant recipients and HIV/AIDS patients (Elmore et al., 2010).

“The conditions within our built and natural environments that are most conducive to improvements in public health are also intrinsically related to the sustainability of our environment and society.” – Public Draft Health Element page – 4

This statement illustrates the central theme of this policy issue. Domestic cats are a predatory species, which have been introduced globally and are listed among the 100 worst invasive species (Lowe et al., 2000). A scientific study estimated that free-ranging domestic cats kill 1.4–3.7 billion birds and 6.9–20.7 billion mammals annually (Loss et al., 2012). This suggests that free-ranging cats are the largest source of anthropogenic mortality for US birds and mammals. The assertion that TNR is effective in reducing cat populations, and, therefore, wildlife mortality, is not supported by peer-reviewed scientific studies (Longcore et al., 2009). Feral cats have profound ecological effects on native species. Therefore, removing feral cats is not only beneficial to health of Santa Clara County's residents but it is also beneficial to the conservation of our natural ecosystems.

In Conclusion

The “*County and other entities engaged in community health have a responsibility to promote policy and initiatives necessary to protect the public's health, safety, and welfare, ...* (p. 5).” SVCAS supports appropriate animal control laws and policies including the removal of un-owned cats rather than relying on indirect population management strategies such as TNR to control feral cat populations and reduce the risk of zoonotic diseases (Roeling, 2013). Feral cats destroy native wildlife and act as reservoirs of zoonotic diseases that present a health risk to humans and wildlife (CDC, 1995, 2008b; Nutter et al., 2004a; McElroy et al., 2010). Amending feral cat control policies will benefit residents by reducing zoonotic disease risks while improving and protecting natural environments for them to enjoy.

We appreciate the opportunity to provide comments on this important issue, please include us in the notification list for any additional opportunities to provide public input, and please let us know if we can be of help,



Christine Slocomb, Member
Environmental Action Committee



Shani Kleinhaus,
Environmental Advocate

Cited Work

Blanton, J. D., C. A. Hanlon, and C. E. Rupprecht. 2007. Rabies surveillance in the United States during 2006. *Journal of the American Veterinary Medical Association* 231: 540–556.

Blanton, J. D., K. Robertson, D. Palmer, and C. E. Rupprecht. 2009. Rabies surveillance in the United States during 2008. *Journal of the American Veterinary Medical Association* 235: 676–689.

Blanton, J. D., D. Palmer, and C. E. Rupprecht. 2010. Rabies surveillance in the United States during 2009. *J. Am. Vet. Med. Assoc.* 237: 646–657.

Blanton, J. D., D. Palmer, J. Dyer, and C. E. Rupprecht. 2011. Rabies surveillance in the United States during 2010. *J. Am. Vet. Med. Assoc.* 239: 773–783.

Bowie, W. R., A. S. King, D. H. Werker, J. L. Isaac-Renton, A. Bell, S. B. Eng, and S. A. Marion. 1997. Outbreak of toxoplasmosis associated with municipal drinking water. *Lancet* 350: 173–177.

Brickner, I. 2003. The impact of domestic cat (*Felis catus*) on wildlife welfare and conservation: a literature review with a situation summary from Israel. *Tel Aviv University report*. <<http://www.tau.ac.il/lifesci/zoology/members/yom-tov/inbal/cats.pdf>>.

Brown, A. S., C. A. Schaefer, C. P. Quesenberry, Jr., L. Liu, V. P. Babulas, and E. S. Susser. 2005. Maternal exposure to toxoplasmosis and risk of schizophrenia in adult offspring. *American Journal of Psychiatry* 162: 767–773.

Castillo, D., and A. L. Clarke. 2003. Trap/neuter/release methods ineffective in controlling domestic cat “colonies” on public lands. *Nat. Area J.* 23: 247–253.

CDC. 1995. Mass treatment of humans exposed to rabies—New Hampshire, 1994. *MMWR Morb. Mortal. Wkly Rep.* 44: 484–486.

CDC. 2008a. Human rabies prevention—United States, 2008: recommendations of the Advisory

Committee on Immunization Practices. *MMWR Recomm. Rep.* 57: 1–28.

County of Santa Clara - SCCGVO. 2014. Spray/Neuter Program for Cats & Dogs
<<http://www.sccgov.org/sites/acc/SpayNeuterProgram/Pages/default.aspx>>

Dabritz, H.A., E.R. Atwill, I.A. Gardner, M.A. Miller, and P.A. Conrad. 2006. Outdoor fecal deposition by free-roaming cats and attitudes of cat owners and nonowners towards stray pets, wildlife and water pollution. *Journal of the American Veterinary Medicine Association* 229: 74–81.

Dabritz, H. A. and P. A. Conrad. 2010. Cats and *Toxoplasma*: implications for public health. *Zoonoses and Public Health* 57:34-52.

Dauphine, Nico and Robert J. Cooper. 2009. IMPACTS OF FREE-RANGING DOMESTIC CATS (*FELIS CATUS*) ON BIRDS IN THE UNITED STATES: A REVIEW OF RECENT RESEARCH WITH CONSERVATION AND MANAGEMENT RECOMMENDATIONS. *Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics*, 205–219.

Dubey, J. P., and K. Odening, 2001. Toxoplasmosis and related infections. In: Samuels, W. M., M. J. Pybus, and A. A. Kocan (eds), *Parasitic Diseases of Wild Mammals*: 478–519. Iowa State University Press, Ames, Iowa.

Elmore, S.A., J.L. Jones, P.A. Conrad, S. Patton, D.S. Lindsay, and J.P. Dubey. 2010. *Toxoplasma gondii*: epidemiology, feline clinical aspects, and prevention. *Trends in Parasitology* 26(4): 190-196.

Eidson, M. and A. K. Bingman. 2010. Terrestrial rabies and human post exposure prophylaxis, New York, USA. *Emerging Infectious Diseases* 16: 527-529.

Foley, P., J. E. Foley, J. K. Levy, and T. Paik. 2005. Analysis of the impact of trap-neuter-return programs on populations of feral cats. *Javma-J. Am. Vet. Med. Assoc.* 227: 1775–1781.

Frenkel, J. K. 2000. Biology of *Toxoplasma gondii*. Pages 9-25 in P. Ambroise-Thomas and E. Petersen, editors. Congenital toxoplasmosis: scientific background, clinical management and control. *Springer-Verlag, Paris*.

Gerhold, R.W., and D. A. Jessup. 2012. Zoonotic Diseases Associated with Free-Roaming Cats. *Zoonoses and Public Health*

Gehrt, S. D. 2003. Raccoon (*Procyon lotor*) and allies. In: Feldhamer, G. A., B. C. Thompson, and J. A. Chapman (eds), *Wild Mammals of North America*, 2nd edn: 611–634. Johns Hopkins University Press, Baltimore, Maryland, USA.

Hawkins, C. C., W. E. Grant, and M. T. Longnecker. 1999. Effect of subsidized house cats on California birds and rodents. *T WSec. Wil.* 35: 29–33.

Hensley, J. A. 1998. Potential rabies exposures in a Virginia county. *Public Health Rep.* 113: 258–262.

Holland, C. V., and Smith H. V., eds. 2006. *Toxocara: The Enigmatic Parasite*. CABI Publishing, Cambridge, MA: 301

Jessup, D., 2004. The welfare of feral cats and wildlife. *Journal of the American Veterinary Medical Association* 225:1377– 1383.

Lafferty, K. D. 2006. Can the common brain parasite, *Toxoplasma gondii*, influence human culture? *Proceedings of the Royal Society of London, Series B: Biological Sciences* 273: 2749–2755.

Lelis, L. 2010. Rabies warning issued in Volusia after rabid cats attacks. *Orlando Sentinel*.

Lepczyk, Christopher A., Nico Dauphine, David M. Bird, Sheila Conant, Robert J. Cooper, David C. Duff, Pamela Jo Hately, Peter P. Marra, Elizabeth Stone, and Stanely A. Temple. 2010. What Conservation Biologists Can Do to Counter Trap-Neuter-Return: Response to Longcore et al. *Conservation Biology*, 24

Levy, J. K., D. W. Gale, and L. A. Gale. 2003. Evaluation of the effect of a long-term trap-neuter-return and adoption program on a free-roaming cat population. *J. Am. Vet. Med. Assoc.* 222: 42–46.

Longcore, T., C. Rich, and L. M. Sullivan. 2009. Critical assessment of claims regarding management of feral cats by trap-neuter-return. *Conservation Biology*, 23: 887–894.

Longcore, Travis. 2012. No-Kill Movement Means Death for Birds. Online <<http://www.urbanwildlands.org/Resources/2012LongcoreBirdCalls.pdf>>

Loss S.R. et al. 2012. The impact of free-ranging domestic cats on wildlife of the United States. *Nat. Commun.* 4: 1396.

Lowe, S., Browne, M., and Boudjelas, S. 2000. 100 of the World's Worst Invasive Alien Species: a Selection from The Global Invasive Species Database. *Invasive Species Specialist Group, International Union for Conservation of Nature, 2000*.

Miman, O., O. Y. Kusbeci, O. C. Aktepe, and Z. Cetinkaya. 2010. The probable relation between *Toxoplasma gondii* and Parkinson's disease. *Neuroscience Letters* 475: 129-131.

Moore, D. A., W. M. Sischo, A. Hunter, and T. Miles. 2000. Animal bite epidemiology and surveillance for rabies post exposure prophylaxis. *Journal of the American Veterinary Medical Association* 217: 190-194.

Nutter, F. B., J. P. Dubey, J. F. Levine, E. B. Breitschwerdt, R. B. Ford, and M. K. Stoskopf. 2004a. Seroprevalences of antibodies against *Bartonella henselae* and *Toxoplasma gondii* and fecal shedding of *Cryptosporidium* spp, *Giardia* spp, and *Toxocara cati* in feral and pet domestic

cats. *Javma-J. Am. Vet. Med. Assoc.* 225: 1394–1398.

Prandota, J., 2010: Autism spectrum disorders may be due to cerebral toxoplasmosis associated with chronic neuro- inflammation causing persistent hypercytokinemia that resulted in an increased lipid peroxidation, oxidative stress, and depressed metabolism of endogenous and exogenous substances. *Res. Autism Spectr. disord.* 4: 119–155.

Pedersen, M.G., Mortensen, P.B., Norgaard-Pedersen, B. & Postolache, T.T. 2012. Toxoplasma gondii Infection and Self-directed Violence in Mothers, *Archives of General Psychiatry*, DOI: [10.1001/archgenpsychiatry.2012.668](https://doi.org/10.1001/archgenpsychiatry.2012.668)

Richards, J. R., T. H. Elston, R. B. Ford, R. M. Gaskell, K. Hartmann, K. F. Hurley, M. R. Lappin, J. K. Levy, I. Rodan, M. Scherk, R. D. Schultz, and A. H. Sparkes. 2006. The 2006 American Association of Feline Practitioners Feline Vaccine Advisory Panel report. *J. Am. Vet. Med. Assoc.* 229: 1405–1441.

Roebeling, A.D., D. Johnson, J. D. Blanton, M. Levin, D. Slate, G. Fenwick and C. E. Rupprecht. 2013. Rabies Prevention and Management of Cats in the Context of Trap–Neuter–Vaccinate–Release Programmes. *Zoonoses and Public Health*

Stray-Pedersen, B. 1993. Toxoplasmosis in pregnancy. *Bailliere's Clinical Obstetrics and Gynaecology* 7:107-137.

The Wildlife Society. 2011. Toxoplasmosis in Feral Cats: Health Risks to Humans and Wildlife. <http://joomla.wildlife.org/documents/cats_toxo.pdf>

Torrey EF, Yolken RH. 2003. *Toxoplasma gondii* and schizophrenia. *Emerg Infect Dis* <<http://wwwnc.cdc.gov/eid/article/9/11/03-0143>>

Wilcox, Christie. 2012. Toxoplasma Gondii Brain Parasite Infection From Cats Linked To Schizophrenia, Suicide. <http://www.huffingtonpost.com/2012/07/05/toxoplasma-gondii-brain-parasite-suicide-cats_n_1651523.htmPosted: 07/05/2012>

Winter, L. 2003. Popoki and Hawai'i's native birds. *'Elepaio* 63: 43– 46.

Work, T. M., J. G. Massey, B. A. Rideout, C. H. Gardiner, D. B. Ledig, O. C. H. Kwok, and J. P. Dubey. 2000. Fatal toxoplasmosis in free-ranging endangered 'Alala from Hawaii. *Journal of Wildlife Diseases* 36: 205-212.

Work, T. M., J. G. Massey, D. S. Lindsay, and J. P. Dubey. 2002. Toxoplasmosis in three species of native and introduced Hawaiian birds. *Journal of Parasitology* 88: 1040-1 042.

Zhu, S. 2009. Psychosis may be associated with toxoplasmosis. *Medical Hypotheses* 73: 799-801.

Yagmur, F., S. Yazar, H. O. Temel, and M. Cavusoglu. 2010. May *Toxoplasma gondii* increase

suicide attempt-preliminary results in Turkish subjects? *Forensic Science International in press.*