

Appendix E

Background and Reference Material on Dog-Related Considerations

Adapted/Modified From Golden Gate National Recreation Area

Draft Dog Management Plan and Draft Environmental Impact Statement (2013)

I. Background

The Bureau of Land Management (BLM) does not have a site-specific policy or strategy regarding dogs on the Fort Ord National Monument (FONM), but intends to develop a policy by end of May, 2016 to replace the current interim/temporary dog leash requirement. To guide the development of any dog policy or long-term strategy, it is helpful to have studies to refer to in order to make informed decisions. Because the BLM has not extensively studied the impacts of off-leash dogs, on-leash dogs, and dogs prohibited in certain areas on the former Fort Ord, it is helpful to refer to studies elsewhere that provide some insight regarding the interplay between dogs, wildlife, humans and natural resources. Fortunately, the National Park Service at Golden Gate National Recreation Area (GGNRA) has been developing a dog policy since 2006 and has assembled extensive information that is instructive to the Fort Ord dog management issue. The information below has been adapted from the Draft Environmental Impact Statement covering the GGNRA Dog Management Plan (2013).

II. Wildlife

Site-specific, peer-reviewed studies have not been conducted at FONM for the purpose of documenting impacts to wildlife as a result of dogs. Numerous other studies from outside the monument have documented disturbance to wildlife species as a result of domestic dogs in similar habitats, with similar species, or with similar conditions that occur in the monument. During the past six years, GGNRA park staff collected available scientific and technical information on dog management–related topics. Types of information collected include dog management policies from other jurisdictions, shorebird data from scientists and organizations that monitor San Francisco Bay Area shorebird populations, and other topics including dog interactions with wildlife, diseases, and waste issues. The existing peer-reviewed scientific literature is discussed

in detail below and the potential impacts to wildlife were described as a result of this information.



Figure 1- Bobcats are one of the mammals at FONM that are sensitive to dog intrusion into territories.

This section provides some excerpts from recent incident records at the GGNRA regarding disturbances to wildlife followed by a general review and summary of the literature. The literature review was conducted to document associations between dogs, wildlife, and diseases associated with wildlife. At GGNRA, 36 CFR 2.2 covers the protection of wildlife. Wildlife disturbance is described in 36 CFR 2.2 (a) (2) and the following is prohibited: feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities. Dog-related incidents were recorded at GGNRA using law enforcement’s criminal incident records. From 2001 through 2011, a total of 4,932 dog-related incident reports were filed at the park, which represents 11 percent of all the incident reports filed at GGNRA.

Numerous studies have documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings (Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; George and Crooks 2006, 14; Kirby et al. 1993, 55; Lafferty et al. 2006, 2222; Lenth et al. 2008, 223; Miller et al. 2001, 131, 118; Smit and Visser 1993, 10; Thomas et al. 2003, 69; Yalden and Yalden 1990, 249). In recreational/park settings, domestic dogs and people are generally not mutually exclusive and it is therefore difficult to isolate the impacts and effects of dogs alone on wildlife. It is important to note that dogs are viewed as a contributing factor to impacts associated with wildlife, and the total elimination of dogs in the monument would not eliminate effects on wildlife, because visitors without dogs would continue to visit the monument and use the trails/roads at FONM. Disturbance by all manner of visitors and any associated recreation equipment as well as by dogs has occurred and currently occurs at FONM as

an existing condition. Studies have shown that people with dogs disturb wildlife more than people alone (Yalden and Yalden 1990, 248-249) and that dogs may pose a different kind of threat compared to a pedestrian (Miller et al. 2001, 130). Studies have also suggested that dogs, particularly while off leash, increase the radius of human recreational influence or disturbance beyond what it would be in the absence of dogs (Banks and Bryant 2007, 2; Sime 1999, 8.4; Miller et al. 2001, 125; Lafferty 2001b, 318). For example, golden plovers (Yalden and Yalden 1990), marmots (Mainini et al. 1993, 162), mule deer (Miller et al. 2001, 131), squirrels, and rabbits (Lenth et al. 2008, 218) exhibited a greater response or reduced levels of activity when human hikers were accompanied by a dog compared to hikers without a dog. “Authors of many wildlife disturbance studies concluded that dogs with people, dogs on leash, or loose dogs all provoked the most pronounced disturbance reactions from their study animals” (Sime 1999, 8.2). Animals most often affected by disturbance from dogs include deer, small mammals, and birds (Denny 1974), although larger mammals such as bobcats and coyotes can also be affected by disturbance (George and Crooks 2006, 14-15).

The majority of domestic dogs in the United States are pets that have their food requirements met at home, thus allowing them ample energy to interact with wildlife (Lenth et al. 2008, 218). Domestic dogs behave as carnivores and at some level, still maintain instincts to hunt and/or chase (Sime 1999, 8.2) and are capable of catching and killing prey species (Lenth et al. 2008, 218). Dogs may disturb wildlife either accidentally or deliberately through chase (Andrusiak 2003). “Even if the chase instinct is not triggered, dog presence in and of itself may be an agent of disturbance or stress to wildlife” (Sime 1999, 8.3; Lenth et al. 2008, 218). “The response of animals to predation risk is exactly the same as the response to disturbance; a species with suitable habitat nearby may avoid disturbance simply because it has alternative sites to go to...By contrast, animals with no suitable habitat nearby will be forced to remain despite the disturbance, regardless of whether or not this will affect survival or reproductive success” (Gill et al. 2001, 266).

Potential direct impacts to wildlife as a result of interactions with or disturbance from domestic dogs are broadly classified into three categories: harassment, injury, or death. Secondary or indirect impacts include displacement, avoidance, abandonment of areas and habitat, physical alteration of habitat, and potential disease transmission. Harassment is defined as the disruption of normal maintenance activities, such as feeding, resting, or grooming and can include disrupting, alarming, or even chasing after

wildlife. If dogs chase or pursue wildlife, injuries to wildlife could be sustained directly or indirectly as a result of accidents that occur during the chase rather than direct contact with the dog (Sime 1999, 8.4). Injuries sustained may result in death or may compromise the animal's ability to carry on other necessary life functions resulting in eventual death, or reduced reproductive success (Sime 1999, 8.4). Dogs on leash disturb wildlife less frequently than dogs off leash, but actual direct injury or mortality to wildlife by dogs in either situation is rare (Andrusiak 2003). The type and intensity of disturbance to wildlife by dogs is based upon many factors, including the type and sensitivity of wildlife species; environmental and seasonal conditions; individual animal experience and body condition; habitat type; type, level and regularity of visitor use; among other various factors. 2008, 222; Banks and Bryant 2007, 2-3). The modification of normal behaviors such as feeding, nesting, grooming, and resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment (Sime 1999, 8.4). Additionally, wildlife behavioral responses to disturbance may include reduced prey intake rates, increased vigilance levels, reduction in levels of parental care, or increased time spent in flight, all of which have the potential to affect survival or fecundity, which could possibly affect overall population size (Gill et al. 2001, 266). From a population viewpoint, species most likely to be adversely affected by disturbance include wildlife with high fitness costs (Gill et al. 2001, 266), which influences the ability to survive and reproduce.

The type and intensity of disturbance to wildlife by dogs is based upon many factors, including type of wildlife species (mammals versus waterfowl), habitat type (coastal habitat versus grassland), type of study (on-trail versus off-trail), among other various factors. Dog presence has been correlated with altered patterns of habitat use for wildlife species (Lenth et al. 2008, 222). The modification of normal behaviors such as feeding, nesting, grooming, resting can occur through repeated disturbance and wildlife may relocate from preferred habitat to other areas to avoid harassment, including the displacement of wildlife from public to private lands (Sime 1999, 8.4). Reactions are most often short term but may result in responses that range from direct and obvious (flight, confrontation) to covert and physiological (loss of energy, stress), which complicates the documentation of disturbance to wildlife from the presence of dogs (Sime 1999, 8.4). Although disturbances are generally nonlethal and temporary, the cumulative effects of disturbance may be significant, particularly to sensitive species (Lafferty et al. 2006, 2217). Chronic, cumulative disturbance could ultimately reduce shorebird reproduction and survivorship (Lafferty 2001a, 1949). Additionally, wildlife

behavioral responses to disturbance may include reduced prey intake rates, increased vigilance levels, reduction in levels of parental care, or amount of time spent in flight, all of which have the potential to affect survival or fecundity, which could possibly affect overall population size (Gill et al. 2001, 266). From a population viewpoint, species most likely to be adversely affected by disturbance include wildlife with high fitness costs but little excess habitat available; these species are thus constrained to stay in disturbed areas and to suffer the costs in terms of reduced survival or reproductive success (Gill et al. 2001, 266).

Peer-reviewed literature has documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings. Wildlife species have different threshold responses to disturbance (Pfister et al. 1992, 118), and therefore, a more detailed discussion of dog impacts to wildlife were separated into the following categories for this section: shorebirds, landbirds (or songbirds), land mammals, and marine mammals.

II.A. Birds



Figure 2 - Burrowing owls within the FONM grasslands are particularly vulnerable to disturbance from dogs.

Birds usually are more sensitive to the approach of dogs than to the approach of human beings (Andrusiak 2003, ES) and the “presence of dogs may intensify bird responses to pedestrians” (Sime 1999, 8.10). Disturbance by dogs generally occurs when unleashed dogs chase feeding and roosting birds; however, birds can also be disturbed by the physical proximity of on-leash dogs and/or by barking (Andrusiak 2003, ES). It has

been shown that birds react when dogs accompany walkers and that even dogs restrained on leashes can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna (Banks and Bryant 2007, 2). Although leashing makes it difficult for pets to chase birds and reduces the probability of disturbance and the number of birds impacted per disturbance, leashed pets still disturb birds (Lafferty 2001a, 1955). “Dogs can disrupt habitat use, cause displacement responses, and injure or kill birds” (Sime 1999, 8.10). In addition, the predictability of disturbance is reduced

when dogs are off leash. Dogs that are off leash in natural areas during the breeding season can result in a higher level of disturbance to wildlife, including ground-nesting or colonially nesting birds (Andrusiak 2003, 20; Sime 1999, 8.4, 8.9). Birds may not habituate to dog disturbance because it is unpredictable and represents an actual physical threat (Andrusiak 2003, 3.2). Some studies have shown that local wildlife does not become habituated to continued disturbance by dogs (Banks and Bryant 2007, 2). Because shorebird species have different threshold responses to disturbance (Pfister et al. 1992, 118), the discussion of impacts to shorebirds was separated from impacts to landbirds (or songbirds) in this section as described in the paragraphs that follow.

II.B. Landbirds (Songbirds)

This category encompasses landbird species such as songbirds in grasslands, forested lands, shrublands, and other non-coastal habitats. In a study of forested areas by Banks and Bryant (2007), ground-dwelling birds were the most affected by dogs (Banks and Bryant 2007, 2). This study suggested that birds were seeking refuge away from the immediate vicinity of the threat from dog walking and confirmed that birds responded uniquely and additively when dogs accompany walkers (Banks and Bryant 2007, 2). Even dogs restrained on leash can disturb birds sufficiently to induce displacement and cause a decrease in local bird fauna (Banks and Bryant 2007, 2). However, other studies conducted in grasslands for vesper sparrows (*Poocetes gramineus*) and western meadowlarks (*Sturnella neglecta*) have shown that the smallest area of influence, the shortest flush distance, and the shortest distance moved resulted from the dog-alone treatment, and that these responses were greater for the pedestrian-alone and dog-on-leash treatments (Miller et al. 2001, 124). Even though the dog-alone treatment resulted in the smallest area of influence for grassland birds in the study, the authors state that the area of influence will increase if recreationists allow their dogs to roam away from a trail (Miller et al. 2001, 131). This study also stated that either dogs were not viewed as a threat to songbirds or that dogs may have posed a different type of threat in which the birds responded by holding their position until the last moment, trying to remain undetected (Miller et al. 2001, 129-130). One shortcoming of the study was that the authors did not stop and view the subjects for extended periods of time (Miller et al. 2001, 131). For American robins (*Turdus migratorius*) in the forested habitat, the area of influence, flush distance, and distance moved did not generally differ between the pedestrian-alone and dog-on-leash treatments (Miller et al. 2001, 130). This is possibly due to the fact that the domestic dog is not typically considered a

significant predator on songbirds and these bird species may not have perceived dogs as a threat (Miller et al. 2001, 130).

Another songbird study to document the effects as a result of on-leash and off-leash dog areas was completed by Forrest and St. Clair (2006) in deciduous, coniferous, and grassland communities of an urban park. The songbird species black-capped chickadee was the most abundant species observed in the study, accounting for 30 percent of all observations. Other common species, each accounting for at least 5 percent of all observations, were the least flycatcher, red-eyed vireo, red-breasted nuthatch, and yellow warbler (Forrest and St. Clair 2006, 55). The data showed no difference in the diversity and abundance of birds within on-leash and off-leash areas (Forrest and St. Clair 2006, 55). The results of this study concluded that off-leash dogs have no impact on the diversity or abundance of birds because these species are fairly tolerant of moderate levels of human activity (Forrest and St. Clair 2006, 61). In conclusion, it is possible that dogs can disturb landbirds such as songbirds, although ground-dwelling birds may be particularly affected by dogs (Banks and Bryant 2007, 2), while other songbirds may be more tolerant to disturbance by dogs (Forrest and St. Clair 2006, 55).

II.C. Land Mammals

As stated above, domestic dogs behave as carnivores (Lenth et al. 2008, 218) and animals that are prey of wild canids (carnivorous mammals of the family Canidae, which includes dogs, wolves, foxes, coyotes, and jackals) may perceive dogs as predators and may be subject to nonlethal, fear-based alterations in physiology, activity, and habitat use (Lenth et al. 2008, 218). When dogs participate in “marking” (scent marking with urine), it could also attract wildlife or cause wildlife to avoid an area. The “impacts of dogs on native carnivores are not well understood, but may include disruption of carnivore behavior through chasing after, barking, and scent marking via urine and scat” (George and Crooks 2006, 14). As cited in Lenth et al. (2008, 223), the City of Boulder Open Space and Mountain Parks has noted that dogs often defecate very soon after arriving at a trail, and many visitors do not walk dogs much beyond the trailhead.

Recreational trails with abundant dog scent could appear to carnivores to be linear dog territories, necessitating increased vigilance and activity (Lenth et al. 2008, 219). In a study conducted by George and Crooks (2006, 14-15), coyotes specifically showed a trend of temporal displacement in response to dogs, and bobcats were also affected by the presence of dogs. These inverse correlations of dog and native carnivore activity in

areas that allow dogs indicate that native carnivores may be avoiding trailheads where dog activity is concentrated (Lenth et al. 2008, 223). Lenth et al. (2008, 223) also found that wildlife species that are preyed upon by native canids demonstrated sensitivity to the presence of domestic dogs (Lenth et al. 2008, 223). Reed and Merenlender (2008 and 2011) studied the impacts of recreation on native and non-native carnivores (including domestic dogs) using scat samples from 28 parks and preserves in northern California (Reed and Merenlender 2008, 1; Reed and Merenlender 2011, 504).



Figure 3 - Park managers are aware of reported incidents where American badgers have been harassed by off-leash dogs in the grassland regions of FONM.

In the 2008 study, domestic dogs were detected (through scat samples) more frequently and in much greater densities than other carnivores in the recreation areas, but there was no evidence to suggest that native carnivores avoided recreational trails (Reed and Merenlender 2008, 7). The 2008 study concluded that native carnivore density was much higher in protected areas compared to areas with

recreation (Reed and Merenlender 2008, 1). Similarly, the 2011 study found that native carnivore species richness was greater and the relative abundances of native coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) were greater in the sites that did not allow human visitors or dogs (Reed and Merenlender 2011, 504). However, abundances of bobcats and all carnivores declined as the number of visitors increased (Reed and Merenlender 2011, 504). One shortcoming of the Reed and Merenlender studies was that the 2008 study did not describe how human recreation disturbs wildlife (Reed and Merenlender 2008, 7) and the 2011 study did not separate the effects of humans from the effects of dogs (Reed and Merenlender 2011, 513). Additionally, scat may be an unreliable indicator for sites that allow dogs, since dogs can eat or roll in scat of other wildlife.

In addition to affecting carnivore behavior, dogs can physically damage burrows used by ground-dwelling mammals (squirrels, pocket gophers, chipmunks, and other rodents) by

digging up or collapsing the burrows. Although not occurring in FONM, a study of marmots by Mainini et al. (1993) provides some indication of potential responses of ground-dwelling mammals to the presence of dogs and/or people. This study showed that the reaction of marmots was least when hikers remained on trails and greatest from hikers with a free-running dog (Mainini et al. 1993, 163). With trail hikers and no dogs, the marmots hardly ever took refuge in the burrows; this happened more often in the experiments when these hikers had a leashed dog and with cross-country hikers (Mainini et al. 1993, 163). Even more animals took to their burrows in the experiments with burrow hikers (people walking off the trail and across the marmot burrow) or hikers with free-running dogs (Mainini et al. 1993, 163). A free-running dog elicited more whistles and more animals retreated into their burrows than in the experiments with a leashed dog on the trail, which shows that a free-running dog represents a greater risk than a leashed dog (Mainini et al. 1993, 164). Marmots observed were located in the vicinity of frequently used trails; comparison studies of marmots living in more remote areas had even stronger reactions (Sime 1999, 8.11). Other studies have shown that small mammals, including squirrels (*Sciurus* spp.) and rabbits (*Sylvilagus* spp.) have exhibited reduced levels of activity within 50 meters of trails in areas that allowed dogs when compared with areas without dogs (Lenth et al. 2008, 218).

In conclusion, dogs behave as carnivores (Lenth et al. 2008, 218) and could affect wildlife such as small mammals through chasing and occasionally capturing individuals as well as digging and collapsing burrows. Dogs have the potential to encounter larger mammals such as deer, bobcats, or coyotes and may either displace these larger mammals from high quality habitat that is degraded by the presence of dogs (George and Crooks 2006, 14-15) or cause increased vigilance or activity (Lenth et al. 2008, 219).

II.D. Aquatic Animals

Dog play can trample aquatic vegetation and ground dwelling (benthic) invertebrates(e.g. crustaceans and insects). Emergent aquatic vegetation along the edge of wetlands provides critical habitat for some listed species, and disturbance of this vegetation from dog play, such as by trampling, could compromise its value to wildlife or dislocate amphibian egg masses.

Those species of animals found on Fort Ord National Monument which are dependent on wetlands(e.g. vernal pools, freshwater marshes, and ponds) for their reproductive cycles include California tiger salamander (federally listed as Threatened), California

Red-legged Frog (federally listed as Threatened), California fairy shrimp, and several others such as California newt, western toad, seed shrimp, and many insects such as dragonflies and beetles. California Fairy Shrimp, also known as California linderiella. This crustacean only occurs in Calif. and Fort Ord National Monument is 1 of 3 Monterey County locations and one of 9 locations outside California's Central Valley where this species is found. Once proposed to be listed as an endangered species this fairy shrimp remains covered by the Fort Ord Multi-Species Habitat Management Plan. This fairy shrimp can be observed on Fort Ord from October to May depending on when vernal pools fill with rainwater and when pools dry out. Female fairy shrimp carry eggs in an a small bag-like structure(brood sac). The eggs are either dropped to the bottom of the pool or remain attached to the female until she dies and sinks. The eggs will not hatch until the next rainy season the vernal pools fill again with rainwater.

California tiger salamander. The California tiger salamander is a federally-listed threatened species. It occurs in west-central California between Sonoma and Santa Barbara counties, parts of the Central Valley, and the foothills surrounding the Central Valley. This salamander's breeding season is November through March. Egg laying occurs December thru March depending on timing of when pools fill from rainfall. Females usually attach their eggs singly to twigs, grass stems, vegetation, or debris. Eggs hatch within 2 weeks and larvae (often called tadpoles). Larvae change into terrestrial forms and leave the pools in 2-3 months. On Fort Ord the entire breeding and larval cycle would fit between November – May, depending on the timing of when pools fill and how quickly they dry out.

California Red-legged Frog. The California red-legged salamander is a federally-listed threatened species. It's current range is from Point Reyes National Seashore to northern Baja California. It breeds from November through March. Egg masses are typically attached to vegetation. California red-legged frogs lay their eggs during or shortly after large rainfall events in late winter and early spring. Eggs hatch within 2 weeks. Larvae (often called tadpoles) change into adult forms 3.5 to 7 months after hatching.

California newt, Pacific tree frog (aka Pacific chorus frog), western toads, and other aquatic species share similar life cycles and breeding seasons as the above three species.

On many occasions dogs off leash have been observed running through various vernal pools and ponds on Fort Ord National Monument. The potential trampling of vegetation which is being used as egg-holding substrate or trampling of aquatic larvae when dogs

enter water bodies could cause mortality of aquatic organisms. There have been no studies on Fort Ord National Monument to document mortality or lack of mortality during dog visits to pools and ponds.

III. Disease

Domestic dogs that are not vaccinated can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites from, or transmit diseases to, wild animals or wildlife habitats (Sime 1999, 8.2), although the role of dogs in wildlife diseases is not well understood (Sime 1999, 8.4). While dogs can be vaccinated against many of these diseases, adherence to recommended vaccination schedules is necessary for even adult dogs to maintain immunity (Sime 1999, 8.12). Domestic dogs can be vectors for transmission diseases as canine distemper, which can affect wild carnivore species (Sime 1999, 8.9).

Viruses related to the canine distemper virus have been documented in the deaths of a wide variety of wild animals from seals, dolphins (Delphinidae), and porpoises (Phocoenidae) in Russia to lions in Africa, but there are fewer documented instances of deaths caused by canine distemper in areas where domestic animals are regularly vaccinated (Mills 1999). Dog feces have been implicated in the transmission of muscle cysts (*Sarcocystis* spp.), which can infect a variety of ungulate species, including mule deer and white-tailed deer. Dogs may also introduce diseases or parasites to small mammals. While dog impacts on wildlife likely occur at the individual scale, the results may still have important implications for wildlife populations (Sime 1999, 8.4). Rabies is a preventable viral disease transmitted in the saliva of infected



Figure 4 - Flagging pet feces along trails is one method Park Rangers have used to educate visitors about the abundance of pet waste (Salinas Californian, 2009).

mammals and is the most common source of infection for humans and domestic animals such as dogs (City and County of San Francisco 2010, 1). More than 90 percent

of all animal rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals like raccoons, skunks, bats, and foxes (City and County of San Francisco 2010, 1). In California, domestic animals, farm animals, and pets such as dogs, cats, and cattle account for approximately 3 percent of the reported rabies cases (City and County of San Francisco 2010, 1). In San Francisco, all animal rabies cases in the past 60 years occurred in bats, recently at a rate of one to five confirmed cases per year from 2004 through 2009 (City and County of San Francisco 2010, 1). Studies by Riley et al. show that proximity to urban areas (which describes the situation for wildlife in FONM lands) or contact with humans and their pets can increase the risk of disease exposure for wild carnivore populations (e.g., canine parvovirus in foxes and feline calicivirus in bobcats) (Riley et al. 2004, 12, 18). However, the collection of dog waste and reducing feral and unaccompanied domestic animals in parks could help reduce the risk of transmission of many diseases (Riley et al. 2004, 19).

In summary, peer-reviewed literature has documented disturbance to wildlife species as a result of domestic dogs in recreational/park settings (Burger et al. 2004, 287; Davidson and Rothwell 1993, 101; George and Crooks 2006, 14; Kirby et al. 1993, 55; Lafferty et al. 2006, 2222; Lenth et al. 2008, 223; Miller et al. 2001, 131; Smit and Visser 1993, 10; Thomas et al. 2003, 69; Yalden and Yalden 1990, 249). Each of the wildlife species discussed in detail above, including shorebirds, landbirds (songbirds), land mammals, and marine mammals have different threshold responses to disturbance (Pfister et al. 1992, 118). Management actions such as closing or limiting areas to people and/or dogs have been suggested to reduce disturbance to wildlife species as demonstrated in studies discussed above (Banks and Bryant 2007, 2; George and Crooks 2006, 14; Lafferty et al. 2006, 2224; Miller et al. 2001, 131; Reed and Merenlender 2011, 513). Similarly, management actions such as enforcing or requiring leash laws have also been suggested to reduce impacts to wildlife as a result of domestic dogs (Burger et al. 2004, 287; Lenth et al. 2008, 223; Miller et al. 2001, 131; Thomas et al. 2003, 71). Because recreational activities that occur on trails can be defined as frequent and spatially predictable, animals may habituate to these activities, though some more sensitive species may not. However, off-trail recreation can be both infrequent and unpredictable; animals are not accustomed to activity in these areas, resulting in a greater area of influence, flush distance, and distance moved (Miller et al. 2001, 130). Specifically, the spatial behavior of off-leash dogs is unpredictable; and when dogs wander off trails, they are more likely to elicit flushing responses (Miller et al. 2001, 130; Lenth et al. 2008, 223). Some studies have shown that “local wildlife does not become

habituated to continued disturbance” by dogs (Banks and Bryant 2007, 612). When compliance is assumed, management alternatives that would prohibit dogs from accessing wildlife habitats would eliminate disturbance to wildlife from dogs chasing after wildlife and barking at wildlife, as well as potential direct or indirect mortality as a result of dog/wildlife encounters. Prohibiting dogs from areas also prevents habitat degradation and loss of species that are sensitive to the presence of dogs.

On-leash dog walking restrictions would physically restrain dogs, reducing direct impacts on wildlife and wildlife habitat, and should also eliminate any potential chasing after wildlife. Additionally, dog waste, nutrient addition, trampling, digging, or spread of invasive species would either be reduced or eliminated if dogs were prohibited or leashed in certain areas. Because of mobility, wildlife can usually avoid areas with dogs present during peak activity or habituate to these activities, but the displacement of wildlife from high quality habitat and preferred habitat that is degraded by the presence of dogs would indirectly affect wildlife. On-leash dog walking restrictions would physically restrain dogs, which would protect wildlife and reduce chasing after shorebirds and marine mammals on the beach, but on-leash dogs would still be able to disturb wildlife and/or cause a flight response through their presence on the beach and by lunging/barking at roosting, resting, and feeding birds. This could cause birds to flee or relocate, using energy reserves unnecessarily, and could result in the loss of preferred habitat. Disease transmission that results from direct contact between dogs and wildlife, especially canids such as coyotes, would also be reduced but not necessarily eliminated as a result of dog waste removal requirements.

IV. Vegetation and Soils

Site-specific, peer-reviewed studies have not been conducted at the FONM sites for the sole purpose of documenting impacts to vegetation or soils from dogs. While it is generally accepted and well documented that the presence of dogs in natural areas can result in disturbance to wildlife (as described in detail in the “Wildlife” section), specific published and peer-reviewed studies regarding impacts on soils and vegetation as a result of dogs are not as widely available as other studies documenting impacts as a result of domestic dogs. During the past six years, park staff from GGNRA amassed scientific and technical information that is available on dog management–related topics. Data and information related to dog impacts on soils and vegetation, including waste issues, were collected from a variety of sources, including published journal articles and organizations that have conducted applicable studies. This section provides a general

summary of the literature review conducted to determine the associations between dogs, soils, and vegetation, which are used for the purposes of the impacts analysis presented in this chapter. The potential disturbance from dogs to soils and vegetation at FONM is discussed in this section based upon the review and extrapolation of results from published and peer-reviewed studies. The results of this literature review therefore provide a general nexus for dog-related impacts to soils and vegetation. The existing credible scientific literature is discussed in detail below and the potential impacts to vegetation and soils are described as a result of this information.

It has been documented that recreational activities can affect vegetation and soils, resulting in damage to plant communities (Cole 1978, 281; Douglass et al. 1999, 9.2). In recreational/park settings, domestic dogs and people are generally not mutually exclusive and it is therefore difficult to isolate the impacts and effects of dogs alone on soils and vegetation. It is important to note that dogs are viewed as a contributing factor to impacts associated with soils and vegetation, but the total elimination of dogs in the FONM would not eliminate effects on soils and vegetation, because visitors without dogs would continue to visit the monument and use the trails/roads at FONM. Disturbance by all manner of visitors as well as by dogs has occurred and currently occurs in FONM as an existing condition. However, visitors with dogs could impact natural resources to a greater extent than visitors without dogs.

Soils and vegetation can be both indirectly and directly affected by recreational activities. Vegetation can be affected indirectly by trampling through the consolidation of the soil and directly by treading upon the plant itself (Bates 1935, 476). Trampling, which initially bends and weakens leaves and branches, can ultimately cause breaking and injury to the plant (Douglass et al. 1999, 9.3; Bates 1935, 476). Some plant species can be damaged and completely destroyed by the action of treading, while other species are comparatively immune to harm of this kind (Bates 1935, 476). Vegetation along trails is particularly vulnerable to damage (Cole 1978, 281). Sensitive environments can be subject to physical disturbance by dogs (through digging or bed-making), and dogs could damage vegetation and soils, with resulting influences on vegetation, soils, and wildlife such as small mammal populations (Sime 1999, 8.9). “High foot traffic (both people and dogs) resulting from an off-leash area would result in trampling and disturbance of vegetation” (Andrusiak 2003, 5). In addition, heavy off-leash dog use increases deterioration of native dune communities (Shulzitski and Russell 2004, 5). As cited in Andrusiak (2003, 3.2), the Greater Vancouver Regional District

collected observational data on dog walkers and dogs in individual regional parks and observed dogs in the water and uprooting beach and dune vegetation by digging. Both dog and human traffic compact the soil and crush vegetation and dogs can dig in the soils; this is unlikely to have significant effects on the unvegetated areas, but could contribute to degradation of vegetated areas (Andrusiak 2003, 3.2).

Trailside plant communities usually contain locally occurring species and invaders from other sources, which are favored by the environmental conditions adjacent to trails (Cole 1978, 282). Dogs (as well as horses, bicyclists and hikers) may also alter dispersal of native and non-native plants along trail corridors, as seeds that adhere to their paws and fur are then transported to other locations, possibly resulting in the spread and establishment of new populations of invasive and/or non-native plants (Sime 1999, 8.9-8.10). Monument park rangers have observed the creation of social trails by dogs and dog walkers also increases erosion, damages root systems, further fragments habitat, and can alter reproductive success by isolating plants, thus reducing the opportunities for cross-pollination and effective seed dispersal. However, this has not been documented in peer-reviewed studies.

The primary detrimental soil impacts from recreation are loss of productivity, erosion, compaction, rutting, and displacement (Douglass et al. 1999, 9.5). Impacts to soils can generally result in impacts to vegetation. For example, the changes in soils as a result of trampling and compaction can affect plant growth and survival, although the effects are highly variable and dependent upon existing conditions (Kuss 1986, 643 and 647). Monument users can also damage and destroy vegetation and create soil compaction, which reduces infiltration of moisture into the soil and increases the volume of runoff and the potential

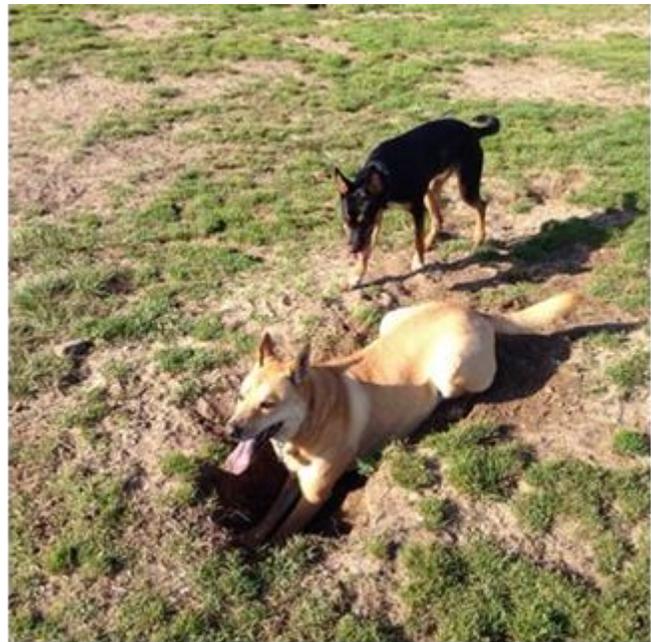


Figure 5 - Unattended dogs will occasionally dig holes.

for loss of topsoil (Douglass et al. 1999, 9.3). Sources of soil disturbance in the monument include natural forces, such as wind and weather, and human disturbance,

such as development, stream diversion, road or trail creation for cars, bicycles, hiking, running, or horseback riding, and dog walking. Trampling and digging by dogs can lead to accelerated erosion of cliffs and dunes at FONM, which can also be exacerbated by high visitor traffic. In areas with unconsolidated or unvegetated surficial deposits, dog traffic can physically move the soil, but other factors also influence soils such as human traffic, wind, and storm events. Dog traffic can compact the soil, which could kill vegetation and expose the soil to erosion although this has not been documented in peer-reviewed studies. Soil compaction is common along social trails that have been created by—and are heavily used by—bikers, hikers, runners, and dog walkers. Dogs and dog walkers as well as hikers and equestrians that do not stay on designated trails and venture off trail create social trails that become denuded of vegetation and result in increased soil compaction at FONM.

Dog waste contains nutrients and can increase the amount of nitrogen and phosphorus in the soil (CRCCD 2009, 1). Soils and vegetation can be affected by dogs through defecation and urination, although this has not specifically been documented in peer-reviewed studies. The act of “marking” (scent marking with urine) could also affect vegetation by concentrating nutrients in particular areas. Although nitrogen and phosphorus are nutrients required for plant growth, dog waste could increase the amount of nutrients in the soil above natural levels; dog urine could increase the natural salinity of soil. An increase in nutrients from dog excrement in concentrated areas could result changes in plant species and distribution as well as changes in soil organisms. Nutrient addition to nutrient-poor serpentine soils can alter soil chemistry, which may result in changes to the plants that occur in these soils (USFWS 1998a, I- 12). At sites with serpentine soils, adding nutrients could change soil composition and eventually cause detrimental effects on sensitive plant species adapted to serpentine soils.

At FONM, visitors are encouraged to pick up pet waste. When visitors fail to do this, dog waste can accumulate in the soils and affect the vegetation. The total amount of waste can become substantial in certain areas, depending on the number of dog owners in the area and their frequency of use of the area. Natural nutrient levels in the soils in the monument can also be altered by dog waste (NPS 1999, 40).

In conclusion, very little peer-reviewed literature is available that documents disturbance to vegetation and soils specifically as a result of domestic dogs in recreational/park settings. However, BLM Park Rangers have observed dogs affecting

soils and vegetation at FONM in some ways. Dogs could affect vegetation and soils by trampling and digging. When dogs are on a 6-foot leash, it is unlikely that digging or bed-making would occur due to proximity to the owner and the physical restriction of the leash. When visitors fail to comply with pet excrement removal requirements, dog waste can accumulate in the soils and affect the vegetation.

V. Visitor Use and Experience

V.A. GGNRA experience

This impact analysis of visitor use and experience is based on three GGNRA user groups: visitors who would prefer to walk dogs on GGNRA lands, visitors who would prefer not to have dog walking on GGNRA lands, and visitors who do not have a preference regarding dog walking in GGNRA.

V.A.1. Visitors Who Would Prefer to Walk Dogs in GGNRA

Park visitors with dogs typically use GGNRA for dog walking because of the leash laws in the surrounding areas, where off-leash dog walking experiences are limited or prohibited, and because they prefer to visit areas with access to beaches and the shoreline. During the public comment period for the draft plan/EIS, the public noted the importance of off-leash dog walking within GGNRA. One commenter stated “With off-leash areas dwindling everywhere, I have to come all the way from Oakland for beach access and good walking paths for my dog and I both to exercise” (NPS 2011a, Correspondence 200).

Another stated, “GGNRA parks are one of the few open areas that dog owners can let their dogs off their leash, ensuring an active lifestyle for the animal” (NPS 2011a, Correspondence 726). Other commenters stated the importance of off-leash dog walking areas for their dogs, “Off leash allowance encourages proper training and socialization of dogs. It affords greater physical and emotional health of dogs and their owners. And it therefore contributes to a better overall society” (NPS 2011a, Correspondence 222). Many commenters noted that they had never had an incident with dog owners or other users of the park, or seen altercations between humans and dogs. Visitors had not experienced issues with dogs entering restricted areas, or disturbing vegetation or wildlife. Commenters stated that all the user groups were able to utilize the space harmoniously, and many visitors felt dog owners improved the parks. The park also received many comments concerning off-leash dog walking when

the GGNRA Advance Notice of Proposed Rulemaking (ANPR) was published in the Federal Register. Of the 8,580 comments received, 71 percent of the comments supported some form of off-leash dog walking in the park. Like the comments received on the draft plan/EIS, commenters stated that off-leash dog walking provided exercise and sociability benefits for dogs and their owners (NAU 2002a, 4).

In a review of dog regulations and issues affecting beaches in California, dog advocates point out the benefits of off-leash dog walking, including the following from Foster (2006, 1; 27):

Off-leash play is essential to the well-being of dogs.

Regular off-leash play makes for healthy, well-adjusted dogs.

It burns up pent-up energy, builds confidence, improves a dog's social skills and helps prevent aggression.

Off-leash recreation also benefits communities (as described in the remaining items in this list) in addition to dog owners and their dogs.

Well socialized and exercised dogs are less aggressive and are less likely to create a public nuisance.

Designating off-leash space for dogs reduces the likelihood that dogs will be let loose in other areas where they could bother or infringe on the rights of other park users.

Off-leash areas promote exercise for dog owners.

An off-leash area functions as a social center as it provides a public space and opportunity for dog owners to meet, share information, and form community bonds.

Off-leash areas also promote responsible dog ownership such as cleaning up after a dog and controlling behavior.

During the public comment period for the draft plan/EIS, some commenters stated that they would be unable to provide their dogs the necessary exercise on-leash. Dogs off-leash are able to run much more, and if they were on-leash they would be restricted to the fitness abilities of their walker. One commenter stated, "Dogs need to exercise and

just cannot get enough exercise on a leash. I can walk or run with my dog 6-8 miles a day and it is not enough for him. When he is off the leash, he can chase a ball, run around with other dogs (good for socialization), and run circles around me. So if I walk 6-8 miles he is getting at least twice that from running around me. GGNRA voice control areas allow dogs and their owners to exercise together” (NPS 2011a, Correspondence, 2910).

Twenty-eight percent of the respondents to the Northern Arizona University 2002 telephone survey were dog owners or dog caregivers (NAU 2002b, 16). Of these dog owners/caregivers, 50 percent of the residents have walked their dogs in GGNRA; a larger portion of dog-owning respondents living in San Francisco (75 percent) and Marin counties (69 percent) have taken dogs to GGNRA sites as compared to dog owners living in San Mateo (44 percent) or Alameda counties (29 percent) (NAU 2002b, 17). Among these visitors, one out of five dog walkers visited the park daily or weekly to walk dogs. Approximately 27 percent of all people surveyed (dog owners and non-dog owners) stated that seeing an off-leash dog added positively to their visitor experience (NAU 2002b, 17). A total of 21 percent of all people surveyed support allowing off-leash dog walking on trails used by other user groups. Some of the respondents stated that they enjoy playing with other visitors’ dogs and that dogs add to the park’s visual aesthetic experience (NAU 2002b, 19). During the public comment period, one commenter noted “I’m not a dog owner, nor lover, but I LIKE the dogs running around Crissy Field and the East Beach, Presidio. The owner’s are responsible, clean up is diligent” (NPS 2011a, Correspondence 301). During the recent GGNRA Dog Walking Satisfaction Visitor Study (NPS 2012a), when asked if visitors would be satisfied if dogs off-leash were not allowed at the park, 653 respondents (97 percent) indicated that would not be satisfied or slightly satisfied. Only 21 respondents (3 percent) indicated they would be moderately satisfied to completely satisfied (NPS 2012a, 17). When asked if visitors would be satisfied if both on and off-leash dog walking were reduced at the park, 657 respondents (98 percent) would not be satisfied or slightly satisfied. Only 15 respondents (2 percent) indicated that they would be moderately satisfied to completely satisfied (NPS 2012a, 22).

Elderly and handicapped visitors find it difficult to walk their dogs on-leash; therefore the availability of off-leash dog areas is important to these visitors. In addition, some visitors find it difficult to walk in the sand, so the availability of off-leash dog walking areas with compacted surfaces is important to this user group. During the public review

period of the draft plan/EIS, commenters stated, “For those with disabilities, pregnant, with young children, or elderly, it is often difficult to walk, even a very well trained dog, on leash for great distances” (NPS 2011a, Correspondence 39). Elderly visitors also find enjoyment in watching other visitor’s dogs run and interact. As one commenter noted, “I know a number of senior citizens that go there [Fort Funston] specifically to interact with people and their dogs, it is the only joy in life they have” (NPS 2011a, Correspondence 1752). If funding is available, the park would explore options that would allow improved access for disabled and elderly visitors to ROLAs, such as beach mats or improved trail surfaces. The San Francisco Recreation and Park Department conducted a Community Attitude and Interest Survey in May and June 2004 to establish priorities for the future development of recreation and park facilities, programs, and services within the community (SFRPD 2004). Key recreation issues were identified by the community as part of the survey. From a list of 19 recreation facilities, respondents were asked to indicate which facilities a member of their household has a need for. Approximately 25 percent of the respondents indicated a need for DPAs, referred to as DPAs. Respondents were then asked to select the four most important recreation opportunities out of a total of 19; DPAs were selected as one of the most important by 14 percent of respondents, placing DPAs as ninth on the list of nineteen opportunities. Respondents were asked to select the activities that they currently participate in (from a list of 26 programs or activities available to the public). Twenty percent of respondents currently participate in dog walking and 8 percent of respondents stated that they would participate in dog walking if more opportunities were available (SFRPD 2004, 13-15).

V.A.2. Visitors Who Would Prefer Not to Have Dog Walking in GGNRA

Picnickers, beachgoers, walkers, joggers, bicyclists, horseback riders, wildlife watchers, and those seeking a quiet and natural experience at the park could be affected by running and barking dogs. When a large group of people and dogs are placed together, the situation can lead to confrontation between a dog and an adult, child, or another dog. The Deputy Director of Park Operations for California State Parks observed dogs being a potential threat to visitors, park staff, and other dogs, when not on a leash (Foster 2006, 32). While many people enjoy the companionship of their dogs, many other park visitors complain that their experience is negatively impacted by dogs (Foster 2006, 32). Often visitors who are not familiar with dogs or who have had unpleasant experiences with dogs are easily intimidated by dogs. During the public comment period

for the draft plan/EIS, commenters stated, “The sight of a large off-leash dog bounding toward me is truly scary. I like dogs and I have owned dogs, but with a strange dog I do not know what to expect and fear being knocked down or worse” (NPS 2011a, Correspondence 306), and “I like dogs, but when I see dogs and packs of dogs running together, perhaps towards me, I become anxious. I believe that domestic animals should be kept on leash or tether unless on their owner's fenced property” (NPS 2011a, Correspondence 333).



Figure 6 – Events at FONM like Dog Day helped teach visitors about proper dog management in outdoor settings.

Visitors who are elderly, handicapped, have physical issues (e.g., joint replacements), or who have small children may be intimidated by dogs within the park, based upon public comments received on the draft plan/EIS. Dogs that jump on people can be unpleasant, frightening, or dangerous to children and the elderly. One commenter noted, “As a parent of a young child I am frequently upset that the freedom of myself and my child to enjoy the recreation areas is marred by my child's natural fear of unknown dogs that are often larger than he is. Dogs on leash are intimidating enough when their human companions may not be fully attentive to the dogs' reach at all times, and cannot stop the growling and barking which is inevitably a part of the nature of many dogs, but dogs off leash are a great concern to me in terms of worrying about my

child's safety, and force me to have to regularly actively and defensively manage the distance between us, be on constant watch for approaching dogs, and to insert myself physically between dogs and my child” (NPS 2011a, Correspondence 2076). Elderly and handicapped visitors who have difficulty walking are especially vulnerable to dogs, as noted in a public comment received on the draft plan/EIS, “My husband is disabled and it is important that he walks. He needs a cane because he is unstable and is easily caused to fall. He fell in the park because a dog ran up to him and jostled his cane. Luckily he was on a soft surface and suffered no fractures. However, in a slightly different location the outcome would have been much worse. He no longer goes to the park for this reason” (NPS 2011a, Correspondence 1273). Another commenter stated, “I strongly oppose any dogs in the GGNRA. In this, I am supported by many others; seniors

like myself, disabled people, blind people, many of whom have refrained from using the GGNRA where irresponsible dog owners refuse (and most often are not able) to control their dogs. Dogs are a huge liability. You cannot share spaces with them; they run all over everything -- including you -- they bark, whine, yap, thus destroying the beautiful sounds of nature with their angry, hostile noise. They urinate and defecate everywhere. Some of them are vicious, and attack people and other animals at will. Even the leashed ones befoul any area they are in" (NPS 2011a, Correspondence 2161). Commenters also noted that dog owners who are unfriendly or belligerent with other visitors, and/or do not have their dogs under true voice control undermine the experience of other visitors to the park, who do not like listening to dog owners yelling to control their dogs. In public comments on the draft plan/EIS, some commenters noted that dog owners were rude when asked to leash their dogs, pick up waste, or leave restricted areas, and that when incidents occurred, dog owners often blamed the other visitor.

Dogs off leash have the potential to interfere with other visitor activities by barking, knocking over visitors, jumping on visitors, tripping visitors, urinating near visitors, or wandering onto picnic blankets, or by biting visitors, horses, or other dogs. During the public comment period for the draft plan/EIS, commenters noted that the sounds of dogs barking negatively affect their visitor experience, particularly for those who were seeking natural sounds, and did not want to hear dogs or noises associated with dogs. These feelings were reflected in the following statement from commenters: "the experience at the park is compromised when dogs are present" (NPS 2011a, Correspondence 245). "I am a frequent hiker who find dogs sniffing at me, barking at me, licking me all extremely noxious" (NPS 2011a, Correspondence 2268). Visitors recognize that dogs need areas to run and play; however, visitors feel that dog owners are not in control of their pets. One commenter noted, "I can appreciate that dog lovers might want their animals to run free BUT many do not and will not control their animals. There are many urban areas for these pets. I do not want to be bothered by other peoples pets and I do not want to see wildlife harassed by them. There is absolutely no reason for dogs to go free in these wildlife rich areas" (NPS 2011a, Correspondence 2566). Also visitors find dog waste to be offensive "...dogs detract from experiences in nature as their owners don't always pick up their waste and when they are off leash, they could be especially disruptive" (NPS 2011a, Correspondence 2057). During the GGNRA Dog Walking Satisfaction Visitor Study (NPS 2012a), when non dog walkers were asked if they would be satisfied if dogs were allowed at their favorite sites at the park, 125 respondents (60 percent) indicated that would not be satisfied or slightly satisfied.

A total of 85 (40 percent) respondents indicated they would be moderately satisfied to completely satisfied (NPS 2012a, 31). One issue identified in the 2004 San Francisco Recreation and Park Department's Community Attitude and Interest Survey was that the maintenance of sports fields does not meet the community's expectation due to over use and abuse from dogs (SFRPD 2004, 30).

A survey was conducted in Austria to explore social conditions related to displacement as a result of different types of users and situations from a popular trail in an urban forest recreation area in Vienna (Arnberger 2007). The trail scenarios were depicted as digital images that displayed combinations of levels of crowding with different mixes of user types, group sizes, compliance behavior, direction of movement, and placement within the image. Potentially unwanted behavior was included by displaying unleashed dogs and groups walking, jogging, or cycling side by side. Dogs were depicted as either dogs on leash, dogs off leash, or no dogs. Intended displacement was measured by interviewing visitors. A total of 237 visitors agreed to complete the 15-minute survey out of the 629 visitors that were asked. The majority of visitors interviewed were walkers (63 percent) and dog walkers (25 percent). Reasons for interview refusal introduced systematic biases because bicyclists and joggers were less likely to stop and

interview when compared to walkers. This resulted in walkers with and without dogs to be overrepresented in the sample compared to actual numbers (Arnberger 2007, 348). A recreational scenario with no dogs depicted resulted in the highest positive intercept while a recreational scenario depicting dogs off-leash resulted in the worst attribute level. Situations with no dogs enticed respondents to continue using the trail, while leashed dogs were regarded as neither contributing to displacement nor keeping users on the trail. Situations with off-leash dogs contributed to displacement of trail users because dogs are not always under control (Arnberger 2007, 349-359). Although this survey was conducted in Austria, it provides useful information regarding visitor use and perception of dogs at recreational settings.

A survey was conducted at 16 locations managed by the City of Boulder Open Space and Mountain Parks in 2006 to evaluate visitor tolerances for 11 off-leash dog behaviors identified as causing potential conflict between visitors. The behaviors included: dogs jumping on, pawing, licking, and sniffing a visitor; dogs approaching uninvited; owners not picking up dog waste; dogs causing wildlife to flee; dogs flushing wildlife; owners repeatedly calling their dog; dogs off trail; and dog "play" such as chasing another dog.

For each of the behaviors, respondents indicated the frequency of observing the behavior, their acceptability ratings of the behavior, and their maximum tolerances for a behavior. All behaviors were thought to be a slight to extreme problem. The most problematic behaviors included dog owners not picking up after their dog; dogs causing wildlife to flee; dogs jumping on a visitor; dogs pawing a visitor; and dogs flushing birds. Nearly half of the respondents rated “dogs off trail” and dog “play” as problematic to some extent (Vaske and Donnelly 2007).

In a random telephone survey conducted in 2002 by Northern Arizona University in counties surrounding GGNRA (Marin, San Francisco, San Mateo, and Alameda counties), two questions were asked to obtain input on dog walking regulations in GGNRA (NAU 2002b). The first question asked whether people supported or opposed allowing off-leash dog walking in GGNRA sites. The majority of the people in the four-county area (53 percent) opposed off-leash dog walking and 40 percent supported off-leash dog walking. Majorities of people in all demographic subsets except for dog owners said they opposed offleash dog walking in GGNRA sites. The second question framed the issue of dog walking regulations within the context of the GGNRA mission. The second question stated, “The mission of GGNRA is the preservation, unimpaired, of the natural and cultural resources and scenic recreation values of the park for present and future generations to enjoy. Knowing this, do you support or oppose allowing off-leash dog walking in GGNRA sites?” After hearing the mission statement, 58 percent of respondents in the fourcounty area opposed off-leash dog walking and 36 percent supported off-leash dog walking (NAU 2002b, 34). More specifically, of those not strongly opposed to off-leash dog walking in the park, 56 percent of all survey respondents opposed allowing off-leash dog walking on trails used by multiple user groups, such as hikers, cyclists, and horseback riders (NAU, 2002b, 49). During the GGNRA APNR process, individuals stated that off-leash dog walking should not be allowed within the park because it is inconsistent with the NPS established laws and policies (NPS 2006c, 46). Additional input originated during the GGNRA ANPR process, when 13 percent of the 8,580 comments received in the GGNRA ANPR cited feelings of discomfort around or fear of off-leash dogs and expressed the opinion that offleash dogs were dangerous to children. A similar percentage also stated that dogs in general make the park unsafe for visitors (NAU 2002a, 10).

V.A.3. Visitors Who Do Not Have a Preference about Dog Walking in GGNRA

Some park visitors do not have a preference regarding whether dogs are on leash, under voice control, or present in the park. There would be no impact on the visitor experience of those who have no preference regarding dogs in a park site. This user group would continue to use the sites throughout GGNRA regardless of whether dogs are present either on leash or under voice control. More than half of the visitors included in the telephone survey conducted by Northern Arizona University (801 visitors or 52 percent) had seen a dog allowed off leash by another visitor in a GGNRA site (NAU 2002b). Of these 801 people, 27 percent (or 217) reported that off-leash dogs added to their experience and 22 percent (or 174) stated dogs off leash detracted from their experience. Of the 801 people who observed dogs off leash, 49 percent (or 393), reported that off-leash dogs had no impact on their experience (NAU 2002b, 17).

V.B. FONM experience



Figure 7 - Dog walkers enjoy the opportunity to hike the trails at FONM with their canine companions. Some like their pets to be leashed, others do not.

At FONM, BLM park rangers and managers have received substantial feedback from visitors over the years regarding their experiences with dogs. The BLM is well aware that many visitors who enjoy hiking/riding with their dogs off-leash value the opportunities provided at Fort Ord. The BLM is also aware that there are visitors at FONM that have had poor experiences with dogs, including serious injuries to themselves or their pet. Fortunately, serious injuries from dog bites are believed to be rare at FONM, however, staff believe that the number of off-leash complaints

has been on the rise. This does not necessarily mean that the rate of off-leash dog conflict is on the rise, but overall visitation has increased since becoming a national monument and more people are having interactions with off-leash pets.

In 2011, BLM estimated that visitation to the FONM was 87,361; in 2012 (the national monument was designated April of that year) visitation was estimated at 167,091. In 2013 visitation measured at sites where BLM maintains beam counters (Creekside Terrace Trailhead, Badger Hills Trailhead, Jerry Smith Corridor and Portola Greenbelt tabulated 318,288 visitors; and in 2014 those same sites tabulated 357,619 visitors. Counters are not installed at intersection of 8th Avenue and Gigling Road, or Laguna Seca which combined are believed to contribute at least 100,000 annual visitors to the FONM.

When the BLM initiated the temporary/interim leash restriction on April 8, 2015, people became more vocal about expressing their opinions about dog use at FONM. In one camp, off-leash enthusiasts led by a coalition of dog owners “Keep Fort Ord Leash Free” have taken to social media to galvanize support for allowing off-leash visitation. Over 700 people have signed a petition or made comments regarding their preference to have leash-optional use of FONM. On the other side, individuals have emailed or called the BLM regarding their desire to have permanent leash laws on FONM, or have commented on social media sites where letters to the editor or press coverage has featured the leash issue. Many of these people indicated they are dog walkers as well. The issue at FONM and across the country can be divisive and emotional on both sides.

Visitor surveys performed at FONM between 2010 and 2013 by the Bicycle Equestrian Assistance (BETA) group illustrate that the ratio of visitors has taken a marked increase in the number of hikers/joggers versus bicyclists and equestrians. In 2013, a survey sample of 1,117 visitors to the FONM indicated that 60% were hikers, 37% were bikers and 3% equestrians. This is a change from a survey in 2010 that sampled 727 visitors to the FONM and found 40% were hikers, 54% were bikers and 6% equestrians. Both samples excluded race event visitors, such as those participating in the Sea Otter Classic. The BLM suspects that local and regional mountain bikers were already aware of the riding opportunities at FONM due to events such as Sea Otter Classic and that is why proportionately their ratio did not increase with the increase in visitation.

In 2009, the BLM conducted a visitor satisfaction survey at FONM to evaluate performance under the Government Performance and Results Act (GPRA). The survey was developed to measure each site's performance related to BLM GPRA Goal 3.1 - *Provide for a quality recreation experience, including access, and enjoyment of natural and cultural resources on DOI managed and partnered lands and waters; and Goal 3.2 -*

Provide for and receive fair value in recreation. The finding from the survey was that visitors sampled had a high overall quality of recreation experience at FONM: 60% indicating a very good experience, 37% had a good experience and 3% had an average experience.

In concert with that 2009 survey, the BLM asked 123 visitors (53% bicyclists, 42% hikers/joggers, and 5% equestrians) about their experiences with dogs on FONM and their preferences regarding leash restrictions. Sixty-eight percent (68%) of respondents reported never having a bad encounter with a dog at FONM. Twenty-six percent (26%) reported having a few bad encounters, but admitted that these encounters were rare. Five percent (5%) reported that they frequently had bad encounters with dogs; and one percent (1%) reported bad encounters every time. When asked what their preference was on a FONM leash law: 26% were strongly opposed to a leash law; 27% were generally opposed to a leash law (but not strongly opposed), 31% were generally supportive of a leash law (but not strongly supportive), and 16% were strongly supportive of a leash law. In summary, surveys in 2009 indicated that 54% were against or strongly against a leash law, and 46% were in favor or strongly in favor of a leash law. This is one of those issues that can split visitors fairly evenly, both at FONM and within other parks across the County.

During the winter and spring of 2014, BETA volunteers sampled 891 visitors at the FONM during random patrols – this is just a small sample of the number of visitors. Those visitors were accompanied by 170 dogs – the number on leash versus off leash was not part of that sample survey, but BLM park rangers believe that about 50% of those pets were on leash all the time, or leashed when BLM personnel encountered them. If the BETA sample was representative of the visitor-use population of FONM, this would suggest that there is one dog for every 5.24 human visitors (i.e. hiker, biker, equestrian). Furthermore, because visitation was believed to be around 400,000 annual visitors in 2014, this would suggest that there were about 76,336 dog visits to the FONM in 2014 and possibly half of those dog visits were not leashed. For illustrative purposes only, if this visitation was spread evenly across the days of the week and the months of the year (which it certainly is not) that would suggest that there was around 209 dog visits every day at FONM in 2014.

Although BLM has not performed any demographic surveys recently at FONM, park rangers believe that there has been a greater than proportional increase in the number

of Latino visitors to the national monument over the last few years. Furthermore, park rangers believe that many of these newer visitors to the national monument are dog walkers and are leashing their pets for various reasons. Over the last few years, the BLM has received sporadic calls and complaints that off-leash pets that are trying to socialize with their leashed pets are causing fights between the animals. The walkers of the unleashed dogs complain that their pets are friendly, and it is the aggressive dogs on leash that are to blame for these circumstances. In some circumstances, walkers who leash their pets have been told to go elsewhere by walkers who allow their dog to roam and socialize.

Overall, the FONM dog experience does not appear much different than many other recreation areas around the country with moderate to high visitation. In July and August of 2015, the BLM will be hosting a series of meeting charrettes with the community in hopes of learning more about the communities recreation experience at FONM – in particular, how that experience is affected ad/or enhanced with off-leash dogs.

V. Livestock

The BLM uses livestock grazing through cooperators to help reduce fuel loadings, regenerate perennial native grasses, and control brush intrusion into grasslands. Since 1996, the BLM has used sheep under a cooperative grazing program. Under the program, up to 2,700 sheep have been used from January through August. The length of the grazing season may change and is dependent upon a number of factors (i.e. rainfall and number of sheep), and shepherders are onsite with herding dogs and guard dogs. Since 2013, the BLM has also utilized a goat herd on a trial basis to reduce brush in areas that the sheep have been less effective. That goat grazing season has generally been from November through February.

Interactions between dogs and goats have been minimal because herders have typically placed temporary electric fences around grazing units that reduces interactions between dogs and sheep. The interactions between off-leash dogs and sheep, however, have been a source of concern for a long time. According to sheep herders, incidents between off-leash dogs chasing, harassing or attacking sheep has limited their ability to graze near some of the roads at FONM. Before 2013, sheep herders estimated that around 2-3 sheep were killed or fatally wounded by off-leash dogs each year. Not all dog interactions result in fatal injury, other dog interactions result in livestock running away from dogs leading to weight loss which is an economic cost. Since 2013, the BLM

has signed the grasslands asking visitors to leash their pets during the grazing season. This has reduced off-leash dog harassment from around 15 incidents each year to around 8 incidents each year, and no sheep have been killed by dogs since that time.



Figure 8 - Sheep along Guidotti Road and Oilwell Road are vulnerable to harassment by off-leash dogs and speeding bikes.

In 2012, the sheep herder lost 16 sheep from predator attacks. Two were from dog attacks and the remainder from coyotes. According to National Agricultural Statistics Service and Animal and Plant Health Inspection Service - Wildlife Services and National Animal Health Monitoring System, nationwide, coyotes are responsible for around 60 percent of sheep losses and dogs for around 15 percent. Coyote attacks at FONM occur during the twilight hours when the Great Pyrenees guard dogs are allowed off-leash to defend the flock. Dog attacks on the sheep occur during the daylight hours when the guard dogs are required to be leashed to prevent guard dog attacks on dogs and visitors.