



MARIN AUDUBON SOCIETY



Marin chapter
California Native
Plant Society

www.cnpsmarin.org

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Monty Schmitt, Chair
Board of Directors
Marin Water
220 Nellen Avenue,
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Subject: Comments on Environmental Review of Watershed Recreation Management Plan Projects from Marin Audubon Society (MAS) and Marin Chapter of the California Native Plant Society (CNPS).

Dear Marin Water Board of Directors,

MAS and CNPS are devoted to preserving the clean water and healthy biodiversity of the Marin Water watershed. We are pleased that Marin Water is engaging in a process to create a Watershed Recreation Management Plan (RMP). The Mount Tamalpais watershed that Marin Water manages has become a heavily used recreational area. Unfortunately, recreational activities, including those that are unauthorized and illegal, have caused predictable and serious environmental damage to the watershed. A comprehensive review of recreational activities on the watershed and their environmental impacts is long overdue. The RMP constitutes a project or series of projects that require the preparation of an Environmental Impact Report.

The environmentally destructive history of recreation on the watershed evidences to a near certainty that recreational activities and persons who engage in recreational activities on the watershed will have a significant environmental impact that requires an EIR for projects resulting from Marin Water's Recreation Management Planning. In addition, we believe that as a good steward of the watershed, Marin Water should conduct a comprehensive assessment of the past environmental impacts of recreational activities and remediate those impacts, including closing and restoring the extensive network of non-system often illegally created trails that now *degrade the watershed*.

Applicable CEQA Requirements

An agency must prepare an EIR whenever it is presented with a “fair argument” that a project *may have* a significant effect on the environment, even if there is also substantial evidence to indicate that the impact is not significant. (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75; see also *Friends of B Street v. City of Hayward* (1980) 106 Cal.App.3d 988; Guidelines § 15064(f)(1)) The EIR requirement is the heart of CEQA. (Guidelines § 15003(a)) A purpose of the EIR is to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action. (Guidelines § 15003(d)) CEQA is intended to afford as full as possible protection to the environment, and imposes a duty to minimize environmental damage, where feasible. (Guidelines § 15003(a),(f)) Consequently, a project should not be approved if feasible alternatives or mitigation measures are available that would substantially lessen any significant effects that the project would have on the environment. (Guidelines § 15021(a)(2)) Mandatory findings of significance about a project must include:

Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (Guidelines, Appendix G, XXI and IV Biological Impacts)

Projects must also be analyzed for whether they result in substantial soil erosion or loss of topsoil. (Guidelines, Appendix G, VII); and whether they substantially alter existing drainage patterns of a site or area that result in substantial erosion or situation on or off site. (Guidelines, Appendix G, X) Projects must also be analyzed for whether they exacerbate wildfire risks. (Guidelines, Appendix G, XX)

The agency must also make a determination about whether the project conflicts with any local policies or ordinances protecting biological resources. (Guidelines, Appendix G, IV Biological Impacts) Marin Water’s Watershed Biodiversity, Fire and Fuels Integrated Plan (BFFIP) is a policy protecting the biological resources of the watershed. Consequently, RMP projects must be reviewed for conflicts with the BFFIP.

In addition, the agency must consider whether the project would induce substantial unplanned population growth directly or indirectly. (Guidelines, Appendix G, XIV)

After an agency determines there is substantial evidence that a project may have a significant effect on the environment, the agency must prepare an EIR unless the legal requirements for use of an alternative method of review are met. The two alternative methods are (1) use a previously prepared EIR which would adequately analyze the project at hand; or (2) “determine, pursuant to a program EIR, tiering or other appropriate process, which of the projects effects were

adequately examined by an earlier EIR or negative declaration.” (Guidelines §15063(h)) A recent case held that “if any aspect of the project triggers preparation of an environmental impact report, a full environmental impact report must be prepared...” *Farmland Protection Alliance v. County of Yolo* (2021) 71 Cal. App. 5th 300)

In determining whether a project has a significant effect on the environment, an agency must consider both “direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes which may be caused by the project.” (Guidelines §15064(d)) An indirect physical change is a “physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project.” (Guidelines §15064(d)) “[W]here a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project.” (Guidelines §15064(e)) CEQA Guidelines emphasize that effects include “indirect or secondary effects which are caused by the project and are later in time or farther removed in distance” (§15358) And these may include “growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.” (Guidelines §15358)

The agency must also consider cumulative effects that are significant and cumulatively considerable. (Guidelines §15064(h))

An EIR must be prepared if the cumulative impact may be significant and the project’s incremental effects, though individually limited, is cumulatively considerable.

“Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (Guidelines §15063)

Cumulative impacts are further defined as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” “Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” (Guidelines §15355)

Recreational activities are subordinate to the primary purposes of Marin Water to provide reliable high quality water and manage natural resources in a sustainable manner

The mission of Marin Water is to “manage our natural resources in a sustainable manner and to provide our customers with reliable, high-quality water at a reasonable price.” (Marin Water Policy no. 1) Consistent with this mission, the number one value of Marin Water is to “promote environmental stewardship and sustainability.” Consequently, Marin Water’s goals include:

- Provide responsible stewardship of land under district management, balancing existing mandates to safeguard ecological integrity, protect against wildfire, and maintain water quality.

- Provide for visitor access and activities on watershed lands consistent with the constraints of watershed stewardship.

Marin Water's Policy 7 elaborates on the importance of these priorities:

The Mt. Tamalpais Watershed is one of Marin's most valuable natural resources, providing and protecting the major source of domestic water for Marin Municipal Water District ("District") residents. Besides this primary purpose, the watershed is held in trust as a natural wildland of great biological diversity, as scenic open space and as an area for passive outdoor recreation for Marin and much of the Bay Area. Passive outdoor recreation is defined as those activities that are based on nature and that require little or no development or facilities.

The mission, number one value, and goals of Marin Water are further reinforced in Marin Water Policy 7 which states: "The District will ensure that public recreation activities on watershed lands are consistent with the district's mission to safeguard water quality and protect natural resources." (5.1 Goals) These statements of Marin Water's purpose make abundantly clear that recreation is subordinate to the primary reasons for Marin Water's existence to provide water and protect natural resources.

Recreation has significantly degraded the environment of the Watershed

Recreation degrades the environment in many different ways. These environmental harms have been acknowledged by Marin Water. The 2005 Watershed Road and Trail Management Plan (RTMP), which focused primarily on erosion and sedimentation from roads and trails, stated that "[r]oads and trails can have many undesirable effects on the environment." (RTMP, p. 2-6) It then listed, but its Program Environmental Impact Report (RTPEIR) did not analyze or seek to mitigate, the many ways that the recreational uses of roads and trails can significantly damage the watershed.

They can increase the number of visitors and intensify human use in seldom-visited areas. They can provide migration routes for non-native invasive plants into previously uninfested areas and facilitate the spread of Sudden Oak Death syndrome. They can fragment habitats (in some cases environmentally sensitive habitats) by creating migration or foraging barriers to some wildlife. They can physically remove habitat or a portion of it. Moreover, construction of roads and trails can disturb or destroy, directly or indirectly, plants or animals that are legally protected. Wetland areas, riparian areas, serpentine soils (which are fragile, erodible soils that can contain a host of endemic, rare and endangered species of plants), and active nesting or roosting areas, are all sensitive habitats that require protection in one form or another. Furthermore, an increase in the density and amount of human presence in previously untrammled or seldom visited areas leads to an increase in the severity of effects and a proliferation of additional effects. (RTMP, p. 2-6)

We will discuss each one of these environmental harms as it applies to the Watershed.

- *Roads and trails can increase the number of visitors and intensify human use in seldom-visited areas.*

The total number of visitors engaging in recreational activities on the watershed has increased significantly from year to year and is now estimated at two million or more visitors annually. (Information provided by Marin Water consultants in Marin Water public engagement session on the RMP)

Large numbers of people on the watershed can have an environmental impact regardless of the recreational activities in which they engage. A reasonably foreseeable impact of additional recreational users on the watershed is significant additional environmental damage. This is clear from the history of recreational growth on the watershed and its relationship to accelerated environmental damage such as proliferation of illegally created trails. Environmental analysis must consider the overall environmental impact of all recreational activities as well as impacts of specific ones such as mountain biking, e-bike use or walking. Any trail improvements, additional trail interconnectivity or increased bicycle or electric bicycle access to watershed trails is certain to increase this growth trajectory. All projects must be analyzed for whether they will increase the number of visitors to the watershed. (Guidelines, Appendix G, XIV)

One policy of Marin Water that we believe has led to a significant growth in recreational activity on the watershed is the promotion of trail “interconnectivity”. This is a policy that has favored the creation of trails that interconnect with other trails on the watershed or on adjoining lands to create a circuit that can be traversed without having to return on the same path. This has been sought by certain user groups as a way of creating a more satisfying recreational experience. The consequence of this policy has been to dramatically increase the number of bicycles and total recreational users on the watershed.

We are of the firm opinion that the capacity of the watershed to accommodate additional recreational activities has been reached, and any further growth in recreational activities will cause additional significant environmental damage that will be impossible to mitigate. The express legislative intent for CEQA recognizes that the capacity of the environment is limited, capacity thresholds should be determined and action should be taken to prevent such thresholds from being reached. (CEQA Statute, chap. 1, §21000 (d)) Environmental review must analyze the overall environmental impact of increasing numbers of recreational users on the watershed and consider options for mitigating the environmental harm anticipated from any expected influx of recreational users.

In similar circumstances, other public land managers have analyzed and implemented measures to reduce and further regulate visitor access. Two recent examples are Muir Woods and Yosemite National Park. The environmental review for the RMP needs to include serious analysis of measures to reduce overall recreational activities and visitor access to the watershed as a whole and to its most environmentally sensitive and remote areas.

- *Roads and trails can provide migration routes for non-native invasive plants into previously un-infested areas*

The RTMP identified roads and trails as vectors for non-native invasive plants to infest pristine natural areas. Significant areas of the watershed are invaded by broom. According to the BFFIP, most of the watershed is susceptible to broom invasion. (p. 3-6) As of 2019, the watershed had 690 acres of unmanaged broom with a total broom infestation of 1400 acres. (p. 3-5) Even though Marin Water has targeted large areas of broom for restoration, broom and other invasive weeds continue to spread. As of 2019, broom was continuing to infest an additional 56 acres per year on average. (p. 7-7) Indeed, the BFFIP reported that invasive species are spreading at an exponential rate. (p. 3-5) Although the 2005 RTMP identified recreation as major vector for the spread of invasive plants, its RTPEIR did not analyze this environmental impact or seek to mitigate it. And neither did the BFFIP.

Marin Water maps show that invasive plant infestations on the watershed are associated with areas of high recreational use. The BFFIP recognized that disturbance can cause huge broom infestations and that the main broom and yellow star thistle infestation were in high traffic areas. (BFFIP, p. 3-6 and accompanying maps of weed infestations) The BFFIP pointed to fuel breaks as an example of a disturbance causing broom infestations. Recreational activities can be equally disturbing to the natural environment. This is particularly so for recreation that is off trail or on non-system illegally created trails. Indeed, Marin Water has recognized that the areas most susceptible to weed infestations are areas of high recreational activity: The Marin Water Best Management Practices (BMPs) for weed prevention call for monitoring and maintenance of staging areas for recreational use for new weed infestations in recognition of the great danger of infestations from recreational uses (BFFIP, Appendix F):

Implementing a periodic monitoring program for detecting new weed infestations in highly susceptible locations such as pull outs, trailheads, picnic areas, parking lots, and concessionaire locations. (BMP-1. 1.a.)

Maintain trailheads, picnic areas, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Make high-use recreation areas a high priority for weed detection and eradication **if not already heavily infested.** (BMP-1. 3.b.)(emphasis added)

The BFFIP recognized that the vegetation management projects it authorized could also spread invasive plant infestations. It responded to this environmental impact by pointing to the Marin Water BMPs referred to above. The BMPs require that project operations begin in non-infested areas and restricts the movement of equipment and machinery from weed-contaminated areas to non-contaminated areas. The BMPs require staging areas to be in weed-free areas. They require that travel be avoided or minimized through weed-infested areas or that travel be restricted “to those periods when spread of seed or propagules is least likely, such as prior to seed development.” (BMP-2) They also require equipment be washed before traveling on the watershed. (BFFIP, p. 3-22)

Every day, bicycles and hikers are doing the things Marin Water employees and contractors are prohibited from doing because they spread invasive plants: traveling from weed infested areas to areas that are still pristine; traveling when seeds of invasives are on the ground and available to be imbedded in tires or shoe soles for germination in a weed-free area; and traveling into weed-free areas without washing tires, other equipment, cuffs of pants and the soles of shoes.

Marin Water documents candidly acknowledge that recreational activities are a major cause of invasive plant infestations. They specify a set of procedures employees and contractors must follow to prevent the introduction and spread of invasives on the watershed. However, recreational users remain free to spread invasives by doing all the things that employees and contractors are prohibited from doing.

A reasonably foreseeable consequence of any project that expands recreational activities into previously un-infested or lightly infested areas of the watershed is the spread of non-native invasive plants. To date, Marin Water has not conducted any environmental analysis or proposed mitigation for the admitted cause of much of its huge infestation of invasive plants – recreational activities. This must be a part of any environmental impact report for the RMP.

- ***Roads and trails can facilitate the spread of Sudden Oak Death syndrome.***

The RTMP recognized that roads and trails can facilitate the spread of Sudden Oak Dead (SOD). In the decades following the preparation of the RTMP and RTPEIR, other phytophthera species have attacked and devastated parts of the watershed including destroying a madrone forest.

Marin Water BMPs for plant pathogen control focus primarily on restoration sites; however, the pathogen transmission vectors the BMPs address operate throughout the watershed. (BMP-5) Plant pathogens can be spread through mud, debris and soil that may be lodged in tire treads and in the soles of shoes. As a result the BMPs require that “[e]quipment, vehicles and large tools must be free of soil and debris on tires, wheel wells, vehicle undercarriages, and other surfaces before arriving at the planting area.” The BMPs require extensive cleaning and sanitizing of equipment, clothing and footwear, which must be free of debris, mud and soil. (BMP-5)

Again, recreational users are freely moving through the watershed, including on non-system dirt trails at all times of year, muddy or dry, without any of these environmental mitigations to avoid the introduction and spread of plant pathogens. This too must be the subject of environmental analysis and proposed mitigation for RMP projects.

- ***Road and trails can fragment habitats (in some cases environmentally sensitive habitats) by creating migration or foraging barriers to some wildlife***

By their very creation and existence, the 70 miles of non-system illegally created trails on the watershed are fragmenting habitats and bringing unauthorized recreational activities into areas that had been largely off-limits to human activities. The fragmentation caused by existing non-system trails should be analyzed as a matter of sound watershed stewardship. And the potential for fragmentation must be analyzed for any new projects under the RMP as system trails can also fragment habitat.

- ***Roads and trails can physically remove habitat or a portion of it***

A major source of habitat destruction from recreational activities is the growth of non-system illegally created trails, which have proliferated on the watershed. In 2005 the RTMP reported 50 miles of non-system trails created by recreational users. The current estimate is 70 miles of non-system trails, a 40% increase. This means that recreational users have created over a mile of additional unauthorized environmentally damaging trail each year on average. If the RTMP had been a recreation plan, it would have to be considered an abject failure.

The major focus of the RTMP and its RTPEIR was erosion and sediment from roads and trails that would end up in reservoirs. It largely ignored seriously degraded and eroded trails that did not flow into reservoirs. Some of these would have to be considered environmental disasters. They are now “zombie trails”, trails that are listed on trail maps but are so degraded and eroded as to have largely lost their function as pathways. These trails are like open wounds in otherwise largely pristine natural areas. On large portions of these trails, the trail has eroded to a rocky gully formed into a series of small cliffs that must be climbed or jumped down. And some of these trails are in sensitive native plant communities. Examples include the Temelpa Trail and the Simmons Trail.

The RTMP tied the growth of illegal trails directly to recreational uses:

Because there is no direct prohibition of hiking off-trail (or “cross-country”), some illegal routes originally constructed by bicyclist become adopted by hikers. For trails such as these, or for other routes decommissioned where the success is being thwarted by continued use, area closures by notice of the Superintendent of Watershed Resources is a possible enforcement tool. (RTMP, pp. 5-6 – 5-7)

The RTMP also identified the problem of persistent illegal trail builders. In discussing options for dealing with the significant problem of illegally constructed trails, it lists as an option that “the majority of the District effort might be directed to patrol and stake out of the persistent illegal trail builders.” (P. 5-5)

It is obvious that the prescriptions of the RTMP, made in the absence of a recreation plan and the environmental analysis that such a plan requires, have failed. An important objective of the RMP must be to bring to an end the creation of non-system trails by recreation users, to close off and stop the recreational use of existing non-system trails and to restore the habitat that their unauthorized construction has degraded.

- ***Construction of roads and trails can disturb or destroy, directly or indirectly, plants or animals that are legally protected***

This history of recreation users creating non-system trails on the watershed demonstrates that the creation of new environmentally damaging non-system trails is a reasonably foreseeable consequence of additional recreational access to existing trails, new trails or of actions that have the potential to increase the volume of, or certain types of, recreational activities on the

watershed. The environmental analysis for the RMP must include an analysis of the potential for new unauthorized trails to be constructed by recreational users and for those trails to disturb or destroy, directly or indirectly, plants, animals, plant communities and animal habitats that are legally protected. This analysis must also be conducted for new recreational uses on existing system roads and trails (e.g., ebikes) since new methods of recreation or more recreational users on existing trails have the potential for greater environmental impacts than existing recreational uses.

- ***Wetland areas, riparian areas, serpentine soils (which are fragile, erodible soils that can contain a host of endemic, rare and endangered species of plants and active nesting or roosting areas, are all sensitive habitats that require protection in one form or another***

The watershed includes wetland areas, riparian areas and serpentine soils that contain a host of endemic, rare and endangered species of plants. It also includes active nesting and roosting areas for the Northern Spotted Owl (NSO). The watershed's NSO habitat is particularly valuable because Marin County has one of the largest and most stable populations of this special status species. A recent study conducted for the Mid-Peninsula Open Space District found that ebikes emit noises that are both higher and lower pitched than the human ear can hear that can disturb nesting bats. This is significant for environmental analysis since eight species of special status bats are found on Marin Water's lands.

Serpentine areas and grasslands are also of particular concern. These are open areas with few obstructions such as trees and bushes and as a result are prone to illegal bike activity and foot traffic. Research has found that significantly more informal trails are created by recreational activities in grasslands, which is consistent with their easier access. (Appendix, Study #1) Some of the most open areas on the watershed are serpentine that harbor a disproportionate number of sensitive protected plant species. RMP projects must be thoroughly analyzed for their potential impacts on serpentine areas.

Environmental analysis for RMP projects must specifically analyze the threats of proposed recreational uses to all areas with protected plants and plant communities and animals and their habitats and provide mitigations reasonably calculated to leave them uninvaded and untrammelled.

- ***An increase in the density and amount of human presence in previously untrammelled or seldom visited areas leads to an increase in the severity of effects and a proliferation of additional effects***

The RTMP noted that an increase in the density and amount of human presence [recreational activities] in untrammelled or seldom visited areas leads to an increase in the severity of effects and a proliferation of additional effects. (p. 2-6) Another term for this is "cumulative impacts". The BFFIP, in a similar vein, noted that ecosystem risk factors interact synergistically to amplify each other:

Studies of major changes in the world's ecosystems, such as desertification and deforestation, show that changes stem from synergistic interactions in which the combined effects of multiple causes are amplified by reciprocal actions and feedback loops. Simply put, the sum total of biodiversity losses can be increased when risk factors interact. (p. 3-1)

The BFFIP elaborated on this cascade of environmental impacts that add up to environmental damage greater than the sum of the individual impacts:

Fire, invasive species, forest disease, and climate change pose a combined threat to the health of the local ecosystem. The composition of native species, native habitat, and ecosystem functions are threatened by competition with invasive species, loss of food sources for wildlife, reduced recruitment of replacement trees in the canopy, increasing temperatures that drive local extinction, erosion, water quality, and changes in fire frequency and intensity. The combined effects of the interacting threats pose the risk of a cascade of changes that affects the entirety of the ecosystem. (p. 3-3)

The BFFIP did not consider the environmental damage from recreational activities. However, as acknowledged by the RTMP, recreational activities are directly related to the spread of invasive species and forest disease. And in urban-proximate settings, the major cause of wildfires is human ignition. Recreation is an additional “interacting threat” that contributes to the cascade of changes now degrading the watershed. The environmental damage recreation has done and will do in the future if not constrained is significant in its own right. The environmental damage from recreation also exacerbates and magnifies the cascade of other threats to the watershed including fire, invasive species, forest disease and climate change. Recreation fully meets the test of cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” (Guidelines §15355)

RMP projects must be reviewed for consistency with the BFFIP in an EIR

All RMP projects must be reviewed under CEQA for conflicts with the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP) which adopted policies that protect biological resources on the watershed. Under CEQA, a conflict between a plan or ordinance and the Project is a significant impact that must be disclosed and analyzed in an EIR. (See *Pocket Protectors v. City of Sacramento* (2005) 124 Cal.App.4th 903, 929-36; CEQA Guidelines, Appendix G, IV Biological Impacts)

The 2019 BFFIP serves as the roadmap to maximize ecological health and enhance existing significant biological resources on its watershed lands while at the same time seeking to minimize fire hazards. The BFFIP created three major ecosystem categories that it applied to the watershed. The most pristine natural areas of the watershed were placed in the Ecosystem Preservation Zone. Land still dominated by native species but threatened by invasive species and plant pathogens was placed in the Ecosystem Restoration Zone; this zone has two subzones determined by proximity to existing infrastructure and whether natural resources are at high risk of permanent degradation in the event of a high intensity wildfire. The most environmentally degraded areas were placed in a category called the Ecosystem and Fuels Deferred Action Areas. Land in this category is dominated by “large, persistent populations of perennial weeds, hard to

access stands of diseased trees, lack of special-status species, and diminished ecosystem function.” (p. ES-4)

The BFFIP anticipates that the Ecosystem Preservation Zone, the most ecologically pristine zone, will stay that way with little effort. The BFFIP anticipates that the ecosystem in the Ecosystem Restoration Zones can be improved within current resources. In contrast, land in the Ecosystem and Fuels Deferred Action Area is viewed as beyond the ability of Marin Water to make significant ecosystem improvement with current funding. Although the BFFIP does not discuss the factors that caused the environmental degradation on which these categories are based, there can be no doubt that recreation on the watershed was a major contributor.

These Ecosystem categories are highly relevant to environmental impact analysis for the RMP and provide a baseline for environmental impact analysis.

- **The Ecosystem Preservation Zone**

This includes the most pristine natural areas of the watershed. Native plants and wildlife flourish in this zone and invasive plants and forest pathogens have minimal impacts. Here the focus is “the preservation of ecosystem health, including the persistence of special-status plant species and communities.” “The District’s wildfire and biological goals are met within this zone”. With a “minimization of disturbance” this zone can remain free of established weed populations. It notes that Marin Water’s “long-term strategy is to *maintain the existing conditions without increasing effort.*” (p. 3-40)(emphasis in the original)

We believe that any additional recreational activities in the Ecosystem Preservation Zone would violate the “minimization of disturbance” criterion, environmentally degrade the area and defeat the strategy to “maintain existing conditions without increasing effort”.

- **Ecosystem Restoration Zone**

The Ecosystem Restoration Zone is dominated by native species but has diminished ecosystem function “due to disease, fire suppression, and/or weed invasion.” The focus here is on ecosystem improvement. Weed populations are present but with sufficient effort could be contained or eliminated. The BFFIP notes, however, that “the District’s biological goals are not met within this zone at this time, but significant gains are possible.” (BFFIP, p. 3-40)

This is a critical category as well for environmental analysis. Areas in this category may be one step away from being classified as a Deferred Action Area in which Marin Water has largely given up all hope of restoring to ecosystem health. Since biological goals are not met in this zone, additional recreational activities would threaten to further degrade these ecosystems without the possibility of remediation.

The BFFIP constitutes a commitment and plan of action by Marin Water to protect its most pristine natural areas and to improve and reverse the degradation of the ecosystem health of areas of the watershed that are not yet significantly degraded by invasive plants and disease. The RMP must operate within the parameters of the BFFIP, and environmental analysis under the RMP

must assure that this is case. Environmental analysis for the RMP must analyze the effects of recreation uses and users in amplifying existing environmental risks. RMP environmental analysis, for example, should consider whether an RMP project could directly or indirectly result over time in land in the Ecosystem Preservation Zone being downgraded to the Ecosystem Restoration Zone, or from the Ecosystem Restoration Zone to a Deferred Action Area.

The BFFIP analyzed the cascading, interrelated environmental threats of fire, invasive plants, plant pathogens and climate change. Recreation, which was not analyzed in the BFFIP, is a threat of the same order that requires the same level of environmental analysis as the BFFIP.

The RTPEIR cannot be used to avoid EIR review of RMP projects

It should be abundantly clear that there is substantial evidence that Recreation Management Plan projects may have a significant effect on the environment (Guidelines §15002) Many reasonably foreseeable physical changes may be caused by recreation projects. These are discussed above and have been acknowledged by Marin Water. Any project which, for example, increases the total number of recreational users or the intensity of recreational activities on the watershed or authorizes new recreational uses on existing roads and trails will result in reasonably foreseeable environmental damage. Indeed, this is a major conclusion that must be drawn from the history of recreational activities on the watershed.

It has been suggested, however, that Marin Water could avoid preparing an EIR for RMP projects by tiering off or supplementing the Programmatic Environmental Impact Report (RTPEIR) prepared for the 2005 Road and Trail Management Plan (RTMP). Because of the limitations of the RTPEIR, this would not comply with the requirements of CEQA.

- **The RTPEIR did not address the environmental impacts of RMP projects**

The RTMP explicitly states that it is not a recreation plan and did not “reconsider or change the bicycle use or access policies within the Watershed” (RTMP, p. 1.9) or consider any other new or changed recreational uses. It assumed no change in Marin Water rules about access to particular roads and trails. The RTMP’s primary focus was erosion and sedimentation resulting from roads and trails. The only environmental impacts examined in the RTPEIR were those from projects proposed in the RTMP.

As discussed above, the RTMP identified many adverse environmental impacts of roads and trails. However, the RTPEIR did not analyze or seek to mitigate these impacts. Its focus was on road and trail modifications needed to address erosion and sedimentation. The RTPEIR made recommendations for decommissioning, abandoning, rerouting and re-vegetating sections of roads and trails, but, again, the primary focus was on erosion and sedimentation. The RTMP contains some observations and predictions about trail use, but this was not based on an analysis of recreational uses or users in the RTPEIR. And the RTPEIR did not analyze the environmental impacts of various recreation scenarios resulting from constructing or modifying trails to authorize different or expanded recreational usages. Nor did it analyze the impacts of particular recreational activities or the overall impacts of the large number of visitors engaging in recreational activities on the watershed.

Clearly, any projects proposed through the current Recreation Planning Process “would have effects that were not examined in the program EIR.” (CEQA Guidelines sec. 15168(c)(1)). Because the RMP is not within the scope of the RTPEIR, it should be treated as a separate project, subject to the fair argument standard, and requiring a new Initial Study leading to further environmental review. (*Id*; *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1321.). Indeed, we believe these effects are so apparent and profound that Marin Water would be wise to not conduct an Initial Study, but go directly to an EIR.

- **The RTMP is obsolete**

The useful life of the RTMP was estimated to be 20 years. It was issued in 2005 and that 20-year period is almost up. The inventory of roads and trails on which the RTMP was based was conducted in 2002 and 2003, making the underlying facts used for the RTMP at least 20 years old. Much has changed since the RTMP was issued, and not always for the better. The RTMP reported 50 miles of non-system often illegally created trails. Since 2005 that mileage has increased by about 40% to 70 miles currently, according to Marin Water staff. Furthermore, the RTMP left much of those 50 miles of non-system, illegally created, trails unmitigated, and many seriously eroded trails still exist on the watershed. We acknowledge that Marin Water has made progress in reducing erosion and sedimentation on many trails by installing culverts and other anti-erosion measures. However, the RTPEIR, a document which did not analyze the environmental impact of any recreational activities, cannot be used as an excuse for avoiding comprehensive environmental review on the basis that it improved some roads and trails.

- **Changed circumstances would make reliance on the RTPEIR inappropriate**

Changed circumstances would make reliance on the RTPEIR inappropriate even if it had addressed some of the environmental impacts of RMP projects, which it did not. In the nearly 20 years since the RTPEIR was issued, much has changed on the MW watershed that would affect the environmental analysis of RMP projects. The growth of non-system trails from about 50 to 70 miles during that period is a hugely significant changed circumstance that provides direct evidence of accelerating environmental damage from recreational activities. This environmental damage is overlaid on a watershed that is under increasing stress from climate change, the threat of invasive plants, new plant diseases and increased fire risk. As acknowledged by the RTMP, recreation can be a vector for the introduction and spread of both invasive plants and plant diseases and a source of wildfire ignition. These threats have grown since 2005 and their environmental impacts on the watershed have been exacerbated by extreme drought. The greater threat from invasive plants and disease and increased risk of fire constitutes a changed circumstance. Reliance on a nearly two-decade old PEIR would be inappropriate, even if it had analyzed and sought to mitigate the environmental impacts of projects like those proposed through the RMP, which it did not.

- **New information would make reliance on the RTPEIR inappropriate**

Subsequent to the preparation of the RTMP in 2005, much new information has become available on the environmental impacts of recreational activities, including those that result in the creation of illegal trails. Examples of this new information are summarized in the attached

Appendix. A 2023 study examines the factors influencing the creation and condition of informal trails and considers implications for management. (Spernbauer, et al., *Factors influencing informal trail conditions: Implications for management and research in Urban-Proximate parks and protected areas*, 2023. Appendix Study #1.) A study from 2016 reviews and synthesizes recreation ecology research findings on visitor impacts to wilderness and protected areas. (Marion, et al., *A Review and Synthesis of Recreation Ecology Research Findings on Visitor Impacts to Wilderness and Protected Natural Areas*, 2016. Appendix Study #2.) Another post-2005 study examines the environmental impact of mountain biking. (Marion, et al., *Annex D to SEMBCO Submission MTB Environmental Impact Study Environmental Impacts of Mountain Biking: Science Review and Best Practices*, 2007. Appendix Study #3.) A recent study conducted for the Mid-Peninsula Open Space District found that electric bicycles adversely affect bats by emitting high- and low-pitched sounds above and below the frequency of human hearing.

In addition, the technology of certain recreational activities has changed rapidly since 2005 with the development of e-bikes and the evolution of e-bikes into throttle controlled electric motorcycles and 2-wheeled off-road all-terrain vehicles.

This new information would make reliance on a nearly two-decade old PEIR inappropriate even if it had analyzed recreation impacts.

The 2002/2003 Road and Trail Inventory must be updated and expanded.

In 2002 and 2003, a road and trail inventory was conducted for the RTMP. It identified the erosion and sedimentation potential of Marin Water roads and trails for both system trails and for illegally constructed non-system trails. Non-system trails were rated on a four-point scale from low to very high based on present or expected future environmental damage and need for environmental mitigation. It provides useful information about roads and trails 20 years ago but is no substitute for a current road and trail inventory that is essential for any current recreational planning.

The 2002/2003 inventory provides substantial evidence of some of the environmental impacts of recreation on the watershed even though the 2005 RTMP did not focus on recreational planning. It also provides baseline data on environmental damage from recreational activities as of the date it was prepared. It found over 50 miles of non-system trails. That inventory is now 20 years old. Significant additional non-system trails have been illegally constructed and used by recreational users after that inventory was created. As a result, non-system trails have increased to about 70 miles. This inventory provides baseline data for the condition of roads and trail 20 years ago. However, it provides no information about the current condition of roads and trails on the watershed. It did not consider impacts on biological resources or fire risk. A new road and trail inventory is essential for understanding the environmental impact of recreational activities over the past two decades and to establish baseline data.

This inventory should provide data and maps of the existing natural resource habitats, migration routes, creek corridors, and other sensitive areas with an overlay of the existing trails, both system and non-system.

Although we have anecdotal evidence of degraded trails on the watershed, an objective assessment of the current condition of its roads and trails must be conducted before considering in the RMP whether to authorize new or additional recreational activities on them. A comparison of trail conditions today and 20 years ago also provides important information on the trajectory of environmental damage that can be anticipated from authorizing various recreational activities on existing or newly created trails.

Thank you for considering our comments,

Sincerely,



Barbara Salzman
President, Marin Audubon Society



David Long
Co-President, Marin Chapter California Native Plant Society

cc: Shaun Horne, Watershed Manager

APPENDIX

To support our concerns over the need to protect natural resources from excessive recreation, we bring to your attention four applicable literature and impact reviews regarding recreation and its natural resources implications:

1. Factors influencing informal trail conditions: Implications for management and research in Urban-Proximate parks and protected areas. 2023.

S. Spornbauer, Christopher Monz, Ashley D'Antonio, Jordan W. Smith.

Highlights

- Informal trail networks in urban-proximate parks can cause extensive resource impacts.
- Rapid assessment trail data can be analyzed with predictor effect plots.
- Visitor use should be concentrated considering factors influencing trail conditions.
- Sampling protocols for more precise indicator measures on informal trails are needed.

This paper clearly states that *“The formation of informal trail networks in urban-proximate park and protected areas can lead to extensive resource impacts such as loss of vegetation cover and soil erosion. Use-related, environmental, and managerial factors have been found to influence trail conditions and degradation on formal trails.”* As visitation rises it increases the demands on natural resources, and urban-proximate parks and protected area have not received the research that more wilderness areas enjoy. Selected literature reviews in this paper best documents impact studies that exist on this issue.

Impacts of recreational trails

“The predominant ecological impacts of recreational trails are loss of vegetation cover, soil compaction, and soil erosion (Ballantyne and Pickering, 2015, Hammitt et al., 2015). While only small differences between the impacts of informal and formal trails have been found, informal trails have been repeatedly found to account for a greater cumulative loss of vegetation due to their greater overall extent relative to formal trails (Ballantyne and Pickering, 2015, Barros and Pickering, 2017, Pickering and Norman, 2017). Vast informal trail networks also contribute to habitat fragmentation, causing landscape level damage and potentially detrimental effects to wildlife (Ballantyne et al., 2014, Barros and Pickering, 2017, Leung et al., 2011, Primack and Terry, 2021). Informal trails often proliferate over time (Hammitt et al., 2015, Leung et al., 2002, Lucas, 2020, Marion and Leung, 2011) and since they often experience less use, they may still be prone to rapid degradation in their early stages (Havlick et al., 2016, Monz et al., 2013). Additional environmental impacts can occur when trails form in ecologically sensitive locations (Leung et al., 2002). The loss of vegetation cover, braided trails, soil compaction, and soil erosion can also have impacts on the visitor experience, as they can scar landscapes and reduce their aesthetic appeal, as well as cause safety and liability concerns (D’Antonio et al., 2012, Marion et al., 2006, Peterson et al., 2018, Rodway-Dyer and Ellis, 2018, Verlič et al., 2015). Despite these complex and wide-ranging impacts, informal trails have received less research attention relative to formal trails (Ballantyne & Pickering, 2015).

Informal trails are difficult to manage and of particular concern to managers in urban and urban-proximate PPAs (D'Antonio et al., 2016, Marion and Leung, 2011, Primack and Terry, 2021). For instance, Reed, Larson, Crooks, and Merenlender (2014) found informal trails make up an average of 45 % of the total trail networks in San Diego County (USA) nature reserves, an area providing outdoor recreation opportunities for over 3 million people.”

Informal trails are not intentionally built, often improperly located in relation to surrounding topography, less used, and often receive no maintenance. “Given informal trails are not built with trail grade and TSA in mind, these trails might have an increased potential for degradation relative to formal trails (Leung et al., 2002, Marion et al., 2006, Rodway-Dyer and Ellis, 2018, Wimpey and Marion, 2011). One comparative study found informal trails are steeper, located in steeper terrain, more closely aligned to the fall-line, and narrower than formal trails (Wimpey & Marion, 2011). Farrell and Marion (2001) found that while the number of informal trails does not differ by amount of use and trail position, the number of informal trails does differ by vegetation type with significantly more informal trails found in grassland environments. Studies investigating the relationship between use level and the proliferation of informal trails report mixed results (D'Antonio et al., 2016, Primack and Terry, 2021).”

2. Review and Synthesis of Recreation Ecology Research Findings on Visitor Impacts to Wilderness and Protected Natural Areas [Jeffrey L. Marion, Yu-Fai Leung, Holly Eagleston, Kaitlin Burroughs, *Journal of Forestry*, Volume 114, Issue 3, May 2016, Pages 352–362, <https://doi.org/10.5849/jof.15-498>](#)

Classification of human impact to wildlife include: direct mortality, disturbance, habitat alteration, and pollution. Direct mortality includes death of wildlife through vehicle collisions, etc. whereas disturbance results in harassment that can lead to the displacement of wildlife from favorable to less favorable habitat. Habitat alteration and pollution are indirect forms of impact because habitat is altered, with changes to soil, water, flora and fauna, and/or the associated effects of introduced pollutants, flora, or fauna. Indirect impacts can cause an alteration in behavior, distribution, survivorship, and reproductive.

3. Annex D to SEMBCO Submission MTB Environmental Impact Study
Environmental Impacts of Mountain Biking: Science Review and Best Practices by Jeff Marion and Jeremy Wimpey 2007

Although this paper’s title identifies Mountain Biking, the selected sections apply to all uses. Among other impacts, this paper identifies that trail use can affect water quality by the introduction of soils, nutrients, and pathogenic organisms and by altering the patterns of surface water drainage. In practice, these impacts are avoidable, and properly designed and maintained trails should not degrade water quality. However undesignated trails are usually poorly sited and/or maintained. They can be eroded by water, with sediments carried off by runoff. Trails close to water resources need special consideration in their design and management to prevent the introduction of suspended sediments into bodies of water. Eroded soil that enters water bodies increase water turbidity and cause sedimentation that can affect aquatic organisms.

Poorly designed trails can also alter hydrologic functions and intercept and divert water from seeps or springs, which serve important ecological functions. In those situations, water can sometimes flow along the tread, leading to muddiness or erosion and, in the case of cupped and eroded treads, the water may flow some distance before it is diverted off the trail, changing the ecology of small wetland or riparian areas.

Trails can degrade or fragment wildlife habitat, and can also alter the activities of nearby animals, causing avoidance behavior in some and food-related attraction behavior in others. While most forms of trail impact are limited to a narrow trail corridor, disturbance of wildlife can extend considerably further into natural landscapes. Even very localized disturbance can harm rare or endangered species.

Loud sounds, off-trail travel, travel in the direction of wildlife, and sudden movements can cause animals flee from the disturbance expending precious energy, which is particularly dangerous for them in winter months when food is scarce. When animals move away from a disturbance, they leave preferred or prime habitat and move, either permanently or temporarily, to secondary habitat that may not meet their needs for food, water, or cover. Visitors and land managers, however, are often unaware of such impacts, because animals often flee before humans are aware of the presence of wildlife.

While the paper found no biological justification for managing mountain biking any differently than hiking, they note that bikers cover more ground in a given time period than hikers and thus can potentially disturb more wildlife per unit time.

Environmental degradation can be substantially avoided or minimized when trail users are restricted to designated formal trails. Many studies have shown that the most damage to plants and soils occur with initial traffic. Many environmental impacts can be avoided, and the rest are substantially minimized when traffic is restricted to a well-designed and managed trail. The best trail alignments avoid the habitats of rare flora and fauna and greatly minimize soil erosion, muddiness, and tread widening by focusing traffic on side-hill trail alignments with limited grades and frequent grade reversals. Even wildlife impacts are greatly minimized when visitors stay on trails; wildlife have a well-documented capacity to habituate to non-threatening recreational uses that occur in consistent places.

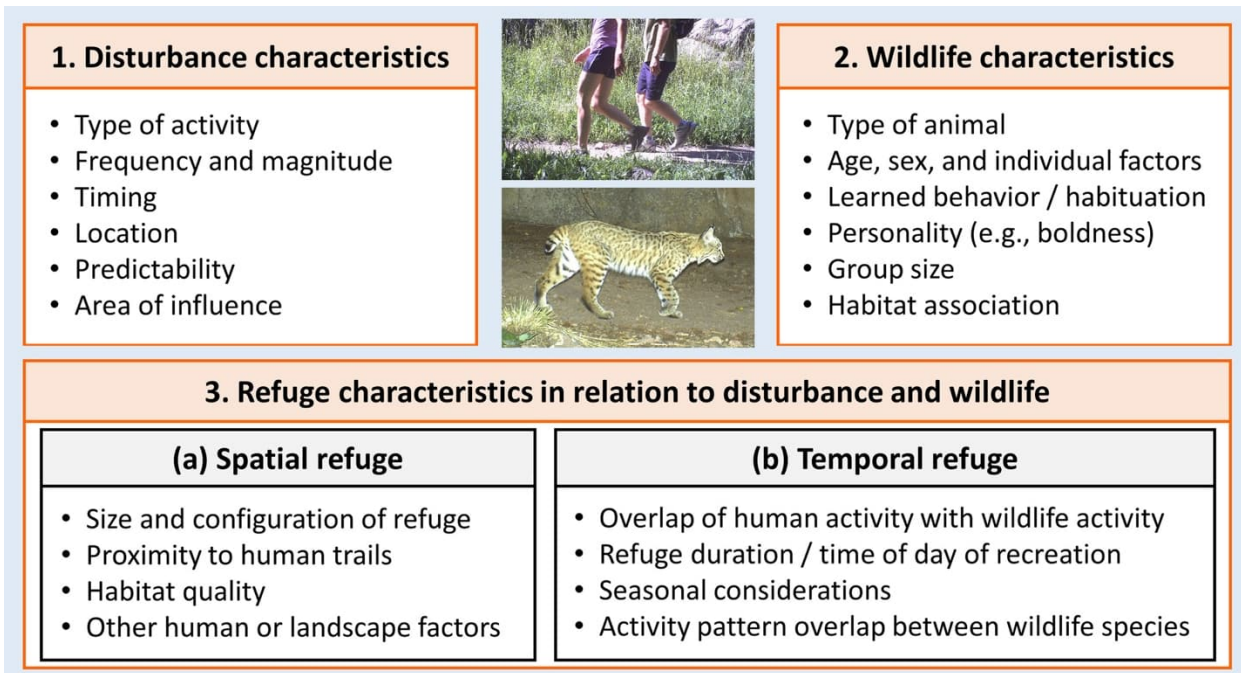
**4. Human activity influences wildlife populations and activity patterns: implications for spatial and temporal refuges, [Jesse S. Lewis](#), [Susan Spaulding](#), [Heather Swanson](#), [William Keeley](#), [Ashley R. Gramza](#), [Sue VandeWoude](#), [Kevin R. Crooks](#).
First published: 13 May 2021**

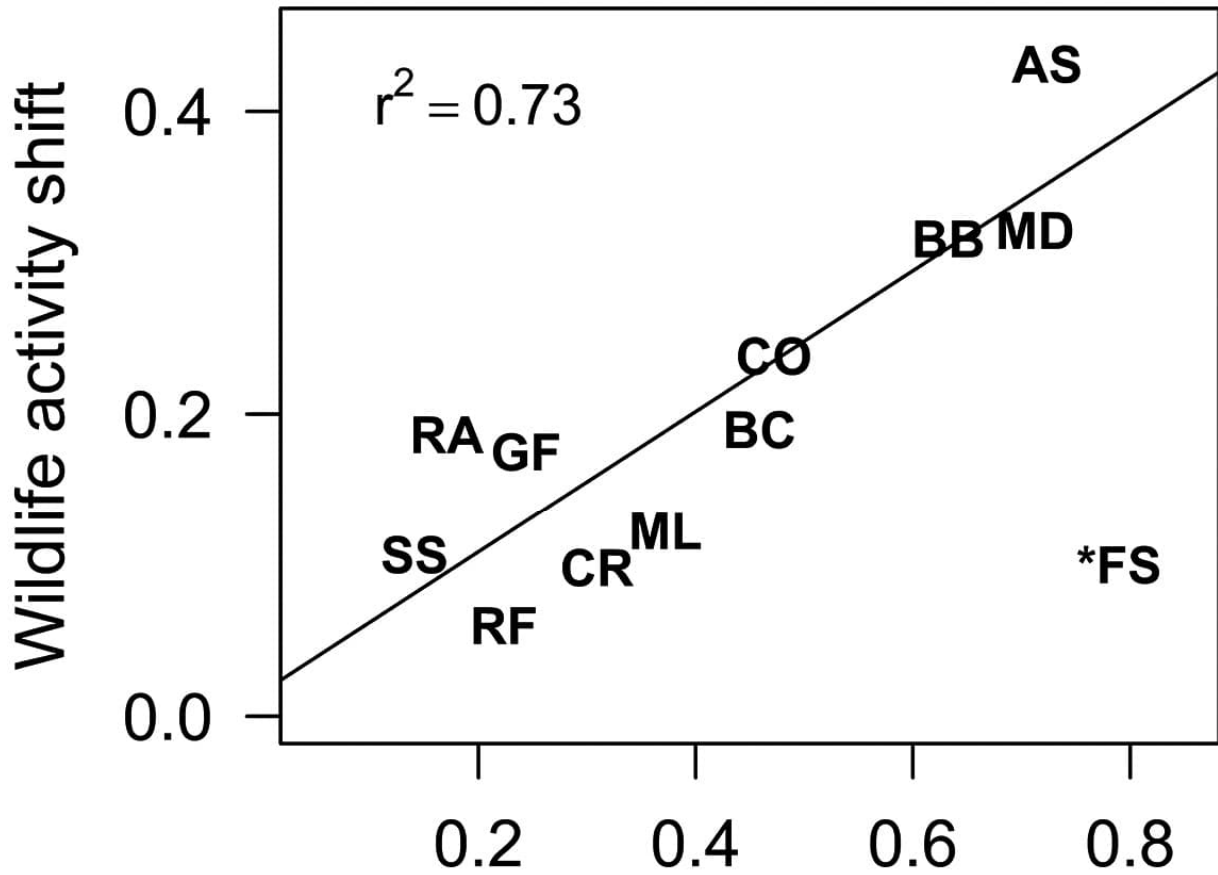
Some species (e.g., fox squirrel, red fox, and striped skunk) did not demonstrate a response to human activity. Other species (e.g., black bear, coyote, and mule deer) altered their activity patterns on recreation trails to be more active at night. Across all wildlife, the degree to which animals altered activity patterns on human trails was related to their natural activity patterns and how active they were during the day when human activity was greatest; species that exhibited

greater overlap in natural activity patterns with humans demonstrated the greatest shifts in their activity, often exhibiting increased nocturnal activity. Further, some species (e.g., Abert's squirrel, bobcat, and mountain lion) exhibited reduced occupancy and/or habitat use in response to human recreation. Managing spatial and temporal refuges for wildlife would likely reduce the impacts of human recreation on animals that use habitat in proximity to trail networks.

At the scale of a recreation area, the effects of human recreation on wildlife can result in animals (1) avoiding or increasing use of an area, (2) reducing or increasing the frequency of use of an area, or (3) changing daily activity pattern to avoid humans (Knight and Gutzwiller 1995, George and Crooks 2006, Naylor et al. 2009, Steven et al. 2011, Spaul and Heath 2016). Each wildlife species responds to human disturbance differently depending upon the characteristics of the human activity and animal, with some species being more sensitive to anthropogenic factors than others.

These two figures from this paper summarize some of the complexities:





Wildlife vs human activity overlap

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