NEWS FROM MARIN CONSERVATION LEAGUE

May-June 2020

To our members, friends, and colleagues:

As the final text is being prepared for this Newsletter, we are sheltering-in-place and observing social distance. In that mode, many of you may have lost chunks out of your lives and livelihoods and endured loneliness – or too much togetherness. Above all we have missed our connections with the mountains, woods, grasslands, and coastal open spaces of Marin that are MCL's legacy, and we look forward to transitioning toward safe mobility that will allow us to hike again on trails and savor wildflowers with family and friends.

Today as I write, we are also missing the opportunity to celebrate the 50th anniversary of Earth Day together. Denis Hayes, co-founder with Senator Gaylord Nelson of that first Earth Day that unified the globe as no other event had before, wrote recently in the Seattle Times: "COVID-19 has robbed us of Earth Day this year." Although the focus then was not on a changing climate, that reality has gradually taken the fore in the constellation of earthly concerns that April 22 observes.

At MCL, the need to make every day earth day is not lost even amidst this threat to public health. We are taking advantage of the unique opportunity for focus and ingenuity. We have strengthened personal relationships through new ways of engaging. Committees have become more resourceful in "getting the work done." In fact, we are looking forward to future life with ZOOM and other recent technologies that enable more efficient information exchange and expand opportunities for distance communication. As incoming President Bob Miller notes in his inaugural "President's Message" (Page 2): "Life goes on!"

Largely through its committees, MCL is continuing its advocacy work on the critical environmental issues of our time. The impact of COVID-19 varies with each of these. In the near term, the 2020 wildfire season is approaching. Wildfire prevention efforts, funded by Measure C and other sources, were barely off the ground when the demand for emergency first responders to the pandemic diverted attention away from fire preparedness. MCL and other environmental and climate non-profits will continue to advise the Wildfire Prevention Reduction Authority on how to incorporate ecologically sound practices into vegetation fuel removal projects. Public land management agencies like Marin County Parks and MMMD have adapted their field protocols to permit personnel to carry out seasonally important vegetation reductions safely. (See *When Open Space is Not Really Open*, Page 4) Public land managers are also monitoring endangered and sensitive species as the season demands. Under a long-term horizon, local and regional planning for adapting to rising sea levels is moving ahead, with promising projects along the Marin County bay shoreline in various phases of design and construction as social distancing protocols permit. (See Page 2)

The public health menace of the coronavirus is real and existential, and it demands our attention. At the same time, the overarching need to address all facets of climate change and meet the State's ambitious goals to reduce greenhouse gas emissions requires every means. MCL remains actively involved in that quest. And our responses to other environmental issues that occupy MCL's advocacy agenda go on and on.

We also anticipate the day when the immediate threat and consequences of coronavirus subside enough to allow us to once again actively enjoy Marin's ecological riches. MCL is devoted to protecting those treasures through whatever means it can apply.

The Editor

MCL Walk into History, Mt. Burdell, 2019

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A Message from the President: Environmental advocacy during the COVID-19 pandemic

As I take up my new role as Marin Conservation League's President, in these uncertain times of COVID-19 when people's health is threatened and their lives have been turned upside down, my heart goes out to our members and friends who may be experiencing isolation or other hardship as they shelter in place for many weeks.

When I agreed to be nominated as your president early this year, I could not have anticipated the pandemic nor its impact on the work of MCL and other environmental non-profits, let alone its impact on the ability of local agencies and jurisdictions to carry out their environmental responsibilities. How could MCL continue to do its work under the new reality of "social distancing" to protect public health?

Thus it has been heartening to find that, in spite of these challenges, MCL remains as engaged as always in advocating to influence environmental policy throughout Marin: decision-makers continue their work, so we must continue ours, if only to support agencies who are extraordinarily burdened by the new rules of distance. We've quickly adapted to "social distancing" by working from home and meeting by video conferencing. MCL's committees meet virtually, we participate in agency/jurisdiction meetings, communicate and advocate with decision-makers, and carefully develop new policies. Meanwhile, MCL staff continue their work. Life goes on.

While there's much uncertainty about the pandemic's course, the biggest environmental challenges may lie ahead: 1) Will important environmental issues, currently eclipsed by coronavirus concerns, receive the attention they deserve, now and in the future? and 2) Will budgets and services of agencies, jurisdictions and nonprofits devoted to protecting the environment survive the carnage that has hit all sectors of the economy? More on this soon.

Thank you, Linda Novy!

After two highly productive years, Linda Novy is stepping down as MCL President. Linda brought her exceptional managerial and communication skills and her big picture thinking to MCL's policy development and advocacy work. She was key in initiating a review of MCL's organizational capacity and effectiveness and communication with members, resulting in MCL's current strategic planning process. While MCL correctly points to 85 years of past successful environmental advocacy, Linda has focused on ensuring success today and for years to come. Plus she has been terrific to work with and will continue to be going forward. Thank you, Linda!

I thank you for your ongoing support of MCL, and I look forward to meeting you as we transition into a more forgiving world.

Robert Miller

Coordinating regional and local sea level rise adaptation planning

by Kate Powers

On an overcast King Tide morning last fall, a group of kayakers launched from Mill Valley's Bayfront Park, near the northwest corner of Richardson Bay, and quietly paddled south observing the shoreline. The grey-blue water of the swollen bay was calm and as smooth as glass. The tour was one of several "Evolving Shorelines" community events designed to help the public learn about sea level rise (SLR) at Bothin Marsh Open Space Preserve. Co-sponsored by the County's partner One Tam, the tour was led by ecologist Peter Baye, an expert in the evolution of local marshes and co-author of a scientific report focused on restoring and conserving the natural functions and values of Bothin Marsh. During the tour, Baye pointed out that restoring natural processes to artificial and highly modified bayshore landscapes often means salvaging and adapting rather than attempting to restore to a natural state.

The Bothin Marsh adaptation project is one of several nature-based restoration projects taking place along Marin's bay shoreline. (See Marin SLR Bayland Adaptation Projects listed on page 10.) These projects are among many others in various phases of planning and development around the whole of San Francisco Bay. They will help reshape the Bay's future shoreline as it adapts to accelerating sea level rise, associated rise in groundwater levels, and a projected increase in powerful and damaging storms.

Adapting to Rising Tides' (ART) study and Marin County projects

The recently released March 2020 *Adapting to Rising Tides Bay Area: Regional Sea Level Rise Vulnerability and Adaptation Study* repeats the call for a regionally coordinated, prioritized planning process for Bay Area-wide adaptation strategies. The call was sounded initially in 2009, when San Francisco Bay Conservation and Development Commission (BCDC) released *Living With a Rising Bay*, its assessment of future sea level rise in the San Francisco Bay. BCDC's ART Bay Area was built upon subsequent years of collaboration with other regional agencies that understand the need for comprehensive shoreline vulnerability assessments to underpin collaborative, large-scale adaptation response. The March 2020 report links local vulnerabilities with regional consequences. It categorizes into

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Sea level rise *from page 2*

common risk areas the four broad areas of impact that shorelines around the entire Bay share: Transportation Networks, Vulnerable Communities, Future Growth Areas, and Natural Lands.

Although Marin's risk areas fall into all four categories in the Adapting to Rising Tides report, many of its vulnerabilities are related to transportation. Like most of the Bay Area, much of Marin's transportation system is concentrated along the shoreline. Marin County and the Bay Area depend on highways SR-37, US-101, I-580, and SR-1, not only to move large numbers of people and goods through the region, but also to serve as critical emergency response routes. Segments of all four highways are already experiencing some of the earliest impacts from flooding due to King Tides and storms. In addition, roadway flooding in Marin is complicated by a lack of alternate routes. In some cases, highways and railways along the shoreline also double as flood protection for the communities behind them.

Other areas of particular concern in Marin's transportation network are the extreme subsidence at the Manzanita Park-and-Ride under US-101 and at the shoulder of SR-37. SMART's railroad tracks, the multiuse Bay Trail, and the Gnoss Field Airport runways are all assets highly exposed to flooding even at low levels of sea level rise. While ferry terminals are generally adaptable due to floating docks, the passenger loading platforms at Golden Gate's Larkspur ferry terminal are on a hydraulic system and soon may reach their maximum height.

In addition to categorizing regional vulnerabilities, the ART report also identifies "regional hot spots" around the Bay where high-consequence assets like transportation hubs, disadvantaged communities and priority development areas are clustered together -- and are predicted to flood together. The high consequence hot spots identified in Marin include downtown San Rafael, Corte Madera/ Larkspur, and Marin City.

Marin County completed its own, locally-focused BayWAVE Sea Level Rise Vulnerability Assessment in May 2017. The assessment catalogs expected impacts of various sea level rise scenarios on important assets along the eastern Marin bay shoreline.

Interdependence

Rising sea levels are accelerating and that alone is altering the physics and fluid mechanics of San Francisco Bay. Scientists are beginning to model these changes and are developing methods to study how individual local adaptation choices may transform water levels and the vulnerability of communities that surround them as well as conditions throughout the entire Bay.

King Tides continue to flood Manzanita parking lot in Tam Valley. The County is planning two projects in this area aimed at reducing flooding -- would regional collaboration help fund and accelerate local priority adaptation projects like this one?

Currently, flood control is the responsibility of many independent local jurisdictions around the Bay's shoreline. Local adaptation is at the core of Bay Area adaptation, yet piecemeal decision-making and local-only adaptation and flood control efforts will likely lead to unintended consequences. Short of a single agency responsible for governance, adaptation to sea level rise in the Bay Area will require a collaborative multi-scale effort to prioritize and act regionally. It would likely require planning and policy change, capacity-building, risk reduction, fast-tracking projects, and collectively unlocking funding sources. Project success will still depend on local community engagement and garnering public support.

Next steps

Even before the recent ART Bay Area vulnerability and adaptation study was complete, BCDC was facilitating a new initiative to build consensus-driven regional agreement on a shared set of actions "to adapt better and adapt faster to a rising Bay." The initiative, called Bay Adapt: Regional Strategy for a Rising Bay, is now six months into a one-year timeline and has a 25-member leadership advisory group consisting of leaders with relevant expertise from a broad range of Bay Area agencies and organizations.

As the number of Bay Area scientists, engineers, planners and policymakers working on adaptation continues to grow, optimists say the region has an unprecedented opportunity to prepare and to choose a more resilient future – an opportunity to reimagine shorelines with community-inspired vision and sea level rise policies that evolve over time. Not-so-optimistic others point out that the complexities of multi-jurisdictional

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Public lands

When open space is not really open

by Nona Dennis

Among the many deprivations residents have suffered since Marin County's health officer issued the order to shelter-in-place on March 16, the most frustrating may be the inability to escape into the public open spaces and parks that surround us and are, indeed, the reason many of us live in Marin. After less than a week of sheltering in March, already restless residents were joined on Marin trails and beaches and in crowded parking lots by people from all over the region, with little attention paid to maintaining the prescribed 6-foot social distance. Clearly to shelter-in-place at home during the week, then climb into the family auto and join weekend throngs in public open space lands, was not the intent of the order to protect lives from the COVID-19 pandemic.

By rough estimate, Marin's public parklands, watersheds, and County preserves add up to about 180,000 acres of land open to the public. That's almost 55 percent of the county's land mass. Theoretically that should be sufficient to allow the public safe separation, but these lands are visited annually by millions, who access them through hundreds of entry portals. On that March weekend, families and friends met up on Marin beaches and walked or biked in clusters all over the county open space preserves, watershed, and national and state parks, forgetting the self-interested principle of social distance.

First order of business: protect public health

To comply with the county's health directive would take actions by each of the four primary land agencies and local community parks departments to ensure safe separation of people recreating within their parks. The first response was to install temporary signage warning hikers, beachgoers, dog walkers, and bikers to maintain social distance. When that didn't work, the next move was to close small parks, and tape off parking lots for the major parklands, and finally to bring in legal assistance to enforce these measures by issuing parking fines, including on nearby streets. "Stay home!" was the message, unless you are from the neighborhood or on a bike or disabled.

On April 9, MCL's Parks & Open Space Committee asked Marin public land managers to join a meeting by ZOOM to report their experience with the public after three weeks of closures and their own compliance with social distancing. Basically, how were they coping with day-to-day uncertainties in the behavior of the COVID-19 pandemic and its elusive metric: "the flattened peak"? Were restrictions on automobile access and parking sufficient to protect public health? How were they carrying out their own work safely – by shifting to work from home, and by re-staging field crews to conduct the essential work of managing natural resources safely? And what will be the likely financial "hit" on programs and budget? MCL's meeting could only touch the surface of these questions that will likely continue to affect operations in coming years.

Kirsten Nolan

Max Korten, Director and General Manager of Marin County Parks, described the early weeks of the pandemic as hectic, as the department made daily decisions to determine staff requirements, facilities closures, logistics and equipment needs. All group activities – interpretive walks, volunteer days, and other public events ceased. Roughly a third of the staff were redeployed to support the county's Emergency Operations. Staff planners and managers relocated to work remotely from home. Maintenance personnel assigned their work crews to single-occupancy trucks and recast work scenarios to ensure minimum social distance for essential field work. Protective equipment was secured for rangers and other field personnel dealing with the public.

These actions are typical of the other land managers, who continue to communicate at least weekly with each other and also with other land managers throughout the region, to share concerns and strategies, and coordinate their activities to support each other. Collaboration has become embedded in the culture of Marin's land managers, honed in recent years by their participation in One Tam.

Getting the work done

For **Shaun Horne, Watershed Manager for Marin Municipal Water District (MMWD)**, the order to protect public health was somewhat more complex. MMWD's priority has always been the production of high-quality water from the five reservoirs in the Mt. Tam watershed. To manage this production, field crews comprise nearly 70 percent of the district's workforce and do the essential work of repairing and maintaining critical infrastructure. Water treatment and water quality teams are also on the job. All of these personnel are now subject to COVID-19 safety protocols, including social distancing, additional safety equipment, disinfection of work areas, and adjusted work schedules.

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Open Space *from page 4*

The watershed is also a traditional magnet for recreational visitors – hikers, equestrians, and bikers. In compliance with the health order, the district closed the most popular entry points, like Sky Oaks Road, to automobile parking (except for disability-marked vehicles). It left the watershed otherwise open to bikes and hike-ins, but effectively closed to all others. For those entering, Shaun said that maintaining social distance is required, but to discourage clustering, the district has closed drinking fountains. The district also suspended all volunteer activities.

Courtesy Marin County Parks

Marin County Parks' Community Volunteer Days, like the one pictured above on March 8, 2020, have been temporarily suspended as a result of COVID-19's social distancing requirements.

Managing natural resources must continue

Vegetation growth and wildlife activity on wild lands don't come to a halt to accommodate the demands of a pandemic! **Mischon Martin, Chief of Natural Resources and Science for Marin County Parks**, outlined ongoing projects on open space preserves that haven't been interrupted by COVID-19 restrictions. Maintenance of fuel breaks and other fuel reduction projects are critical as another fire season approaches. Ongoing contracts for season-critical surveys and monitoring, such as for northern spotted owls and spring-blooming flora, are underway as scheduled. Crews carry out their work in accordance with social distance protocols. Across the county, Marin's public lands are finding a way to manage their natural resources for the long-term despite disruptions to operations and the need to protect employees' safety during normal operations.

State Parks Ecologist Bree Hardcastle described the closure of state parks in Marin as "soft," that is, all water and sewer systems, including restrooms and drinking fountains, have been kept open, but parking has been closed, effectively limiting most of the public. Most staff are working remotely from home. Those in the district office observe social distance. Vegetation management work on the parks continues, scaled back, however, to high priority sites. Research has been suspended, except for work in vector control, which is considered essential.

It was gratifying to learn from Bree that Mt. Tamalais State Park, supported by a $500,000 grant, will be able to move forward with plans for realignment and other improvements to the popular Redwood Creek Trail between Muir Beach and Muir Woods. By relocating a length of the trail out of the Creek flood plain, the project will help restore salmonid habitat. **Mia Monroe, Golden Gate National Recreation Area's Community Liaison to Marin County**, also reported that long-anticipated "Redwood Renewal" habitat restoration projects inside Muir Woods, will move forward during the summer, subject to worker safety protocols.

The high price of closures

It was obvious from the report of land managers to MCL's Park & Open Space Committee that although the strict provisions of social distancing have precluded the majority of public access except for bikers and fortunate walk-in neighbors for the immediate future, they have not prevented routine work from going forward.

The losses are only beginning to emerge, however, beginning with the cessation of all group activities – volunteer days, interpretive programs, youth activities – and the dilemma of reassigning staff responsible for those programs. More dramatic losses are coming from the complete closure of all national park facilities that cater to crowds, such as Muir Woods, Alcatraz, and visitor centers at GGNRA and Pt. Reyes National Seashore. The near term loss of visitor revenue, coupled with anticipated loss from a long-term decline in tourist dollars, are taking a huge toll. **Janet Klein, One Tam's Director of Science and Conservation Programs**, outlined the challenges faced by Golden Gate National Parks Conservancy, non-profit partner of GGNRA and the One Tam collaboration.The Conservancy has suspended its many public programs and has closed all viisotr faicilities, which also sell the conservancy products that support the programs at GGNRA. as it has eliminated its many programs based on public engagement and has closed all

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Microgrids: Can they help with wildfires and GHG reduction?

by Doug Wilson

Do you remember the Public Safety Power Shutoffs (P.S.P.S) last year? They may have been precursors of sheltering in place, a concept that was unknown at the time. The endurance period was briefer but houses were colder and freezers were warmer. The P.S.P.S. events were in some views a rather draconian response that exposed an utter unpreparedness of power utilities to respond to climate change-aggravated wildfires. There is wide agreement that better options should have been available.

The fact is that our electric grid is outdated and needs to change. The heritage model of a unified grid like PG&E's distribution system, which was designed to meet total energy demand from distant supply sources, is breaking down, exacerbating the risk of igniting wildfire while relying on P.S.P.S. events as a blunt instrument of defense. The unified grid is unable to adapt quickly enough to meet our critical climate goals. Changes to the way the "big grid" functions to allow greater flexibility, better performance, and resilience, are being widely explored, including the development of "microgrids" in many forms. Smaller, more localized units could offer improved responsiveness to local needs during wildfire season, but also help meet the state's ambitious greenhouse gas reduction goals.

How could microgrids get us to a GHG-free economy?

Nationwide, the energy sector of our economy is responsible for about 25% of our greenhouse gas (GHG) emissions. Getting to California's adopted goal (through SB 100) of net zero emissions by 2045 will require a huge and complex effort on the part of many players. In no other sector of the GHG reduction challenge is getting the policy right so important. Transportation modes must all transition to electric vehicles. The built environment must electrify everything while weaning itself off natural gas. But our entire civilization depends on electric power that must be safe and resilient and which must also soon be GHG free.

This has given rise to a lot of fresh thinking and exploration of new alternatives for generating, storing and distributing energy in a sustainable manner. We are approaching a glut of renewable solar and wind energy, but when the sun doesn't shine and the wind doesn't blow, we still rely on fossil fuels to carry us through. Some of the most exciting work being done in the energy field these days focuses on solving these problems with microgrids, especially as supported by the energy storage component of any functioning microgrid.

Microgrids generally have four basic components: 1) a mechanism that enables switching " from the big grid to a defined "island" of use without sending power back onto the big grid; 2) a power generator; 3) storage capacity such as batteries or stored fuel; and 4) controls that can distribute power loads when needed.

Microgrids can be any size, from a single household, to a hospital or school, to all customers connected to a single substation. There may be a single owner or multiple owners with multiple energy resources. In most places major regulatory and financial hurdles remain, and the technology to manage the much more complex mix of resources is still under development.

The goal, however, is to create a more flexible, and therefore more resilient, energy network where energy can flow not just from the top down through a single huge provider such as PG&E, but may reverse direction when needed, so that localized energy sources might be redirected or sold back onto the larger grid.

A microgrid is only as good as its component parts, especially when considered from a climate change perspective. A proposal from PG&E to install twenty diesel generators at substations in MCE Clean Energy's territory, with seven in Marin, would work directly against California's climate goals. Thankfully that proposal has been postponed. Nonetheless, the lack of cleaner power sources continues to cause concern and motivate the search for alternatives.

With the abundant supply of intermittent solar and wind power, the need has arisen for better means of storing that energy to make it readily available whenever needed. The cost of the lithium-ion batteries used in electric vehicles and home power walls continues to plummet as production is scaled up, but these are not the only types of possible storage. The discharge time for these batteries is

PG&E

A microgrid can be defined as an "island" of any size that can be switched off from the big grid.

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limited practically to four hours, and the need remains for much longer storage and discharge periods – for longer hours, days, or even seasons.

There is not enough space in this Newsletter to describe the various types of storage being explored, including new types of batteries, compressed air, hydrogen production, and others. Diesel powered generators cannot be a long term answer! So it remains imperative that we do whatever it takes to clean up the source and diversify the functionality of our energy distribution and storage systems – locally and beyond. The energy we depend on is only one contributor to the GHG emissions we must curtail, but an important one. It won't be quick or easy, but it's worth paying attention to and understanding. The status quo is untenable and continues to put communities at risk of fire and GHG reduction goals in jeopardy.

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visitor facilities that sell the Conservancy products that support many programs on GGNRA. The immediate consequence has been furloughed employees and across-the-board cuts in hours and pay, including senior, long-term staff.

On a much smaller scale, **China Camp State Park** is also in serious financial straits. The park receives no state funds. Its main revenues come from camping fees and parking permits, which are down 90 to 95 percent since the closure order. Even with many volunteers, the park board is looking at possible furloughs. Although the impact of COVID-19 varies from one public open space to another, it will be felt far beyond what we can now imagine.

Want to attend the next Parks & Open Space Committee meeting? Visit marinconservationleague.org for upcoming dates, speakers, and Zoom details.

Sea level rise *from page 3*

ownership, governance, management and regulatory issues along the shorelines will be hard to surmount.

Harbor seals frequent Richardson Bay

Before the kayakers began to paddle back to the launch area that morning at Bothin Marsh, a small spot on the glassy surface of Richardson Bay began to bubble and churn. "What is that?!" Up popped the large, curious eyes and long whiskers of a harbor seal who was feeding near an escarpment below the old railroad levee/now Bay Trail that will be part of the marsh restoration there. She was the reminder that we are not alone in adapting to rising tides; we are one of many species that will depend on successfully executed adaptation strategies that protect and restore habitat and ecological functions of the bay while safeguarding people and their assets in our built communities. Our futures are intertwined.

For earlier MCL newsletter articles about sea level rise planning see:

Will Travis believes in a regional approach to sea level rise
Link: http://www.marinconservationleague.org/images/stories/Newsletters/nl12b_marapr2012final.pdf

Southern Marin pilot project: Planning for sea level rise
Link: http://www.marinconservationleague.org/images/stories/Newsletters/nl14a_janfeb2014_forweb.pdf

Measure AA—regional thinking
Climate change planning update
Link: http://www.conservationleague.org/images/stories/Newsletters/nl16c_mayjun2016_forweb.pdf

Sea Level Rise: BayWAVE study completed
Link: http://www.conservationleague.org/images/stories/Newsletters/NL17A_forweb.pdf

Restoration of the South Farallon Islands-or poison drop?

by Nona Dennis

MCL might not have taken on a controversial proposal by U.S. Fish and Wildlife Service to restore the native ecosystem in the Farallon Islands National Wildlife Refuge had it not been for a presentation about the biodiversity and history of the refuge in early March by MCL Board member Roger Harris. The I 's current proposal to rid the islands of its last population of invasive vertebrates calls for eradicating an established population of house mice that were believed to have been accidentally introduced to the islands by humans in the late 19th century. They have been wreaking havoc on the ecosystem ever since. The controversy stems from the planned use of a rodenticide to eradicate the mice. Over the past three months, MCL has been studying the benefits and negatives, with the intent of deciding whether to support the proposal as it continues through the approval process.

Roger Harris retired several years ago from a long career as a wildlife biologist, although he continues to lead eco-tours around the world. Closer to home, Roger has led some 300 boat trips to the Farallones – known as "California's Galapagos" – for the Oceanic Society over the last 30 years. The islands host the largest seabird breeding colony in the contiguous United State) and 25 percent of California's breeding seabirds – more than 300,000 individuals of 13 species. Some 36 species of marine mammals are found in the Gulf of the Farallones, including five species of seals and sea lions.

Some 25 miles off the Marin shore, the islands have endured a history of human exploitation for diverse products, from elephant seal blubber to 13 million common murre eggs first harvested to feed gold miners. Long-term damage to the islands' ecosystem began with deliberate or inadvertent introduction of nonnative vertebrates before the islands became a refuge. Over the past 35 years, USFWS has devoted its attention to ridding the islands of a succession of invasive plants and vertebrate animals – including rabbits – with positive ecological response. Under a long studied proposal, the refuge now hopes to rid the South Farallon Islands of its last invasive vertebrate – a population of house mice that explodes and crashes annually – in an effort to protect a breeding population of the ashy storm-petrel, one of the rarest seabirds occurring in the Farallones. The mice also impact a salamander and a cricket, both unique to the islands, along with native plants. In the process, the plan is to restore the native ecosystem on the islands.

U.S. Fish and Wildlife

The Farallon Islands are also known as "California's Galapgos"

The urgency of action

A year ago this July, after more than a dozen years of study and environmental analysis, the USFWS was ready to bring its proposal to eradicate the mice before the California Coastal Commission to determine the project's consistency with the Coastal Act. This is one of the regulatory reviews the proposal faces on its way to implementation. The USFWS had completed a Final Environmental Impact Statement (EIS) with exhaustive analysis of how the eradication would proceed and what its potential impacts would be. Some impacts, they knew, would be unavoidable.

The announcement on the Coastal Commission's agenda hit the local press with a headline: Refuge plans "poison drop" on Farallon Islands National Wildlife Refuge! The widely broadcast news alarm left little time in the public's mind to understand the complexities of either the problem or its proposed solution, and consequently fueled immediate opposition. At its meeting in July 2019, the Commission was faced with well-orchestrated demands to "deny consistency" – or to seek an alternative to use of rodenticide, such as contraception for

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Farallon Islands *from page 8*

the mice. At a minimum, the Commission was asked to provide "more information" and contingency plans by those who might otherwise be sympathetic with project objectives. The refuge withdrew its proposal and retreated to gather more information.

MCL did not enter the debate at that time, pleading insufficient knowledge of the scientific conditions and ecological threats imposed by the mice. The problem was centered in a complicated seasonal interaction among three species – the non-native mice, a small population of burrowing owls that visit the island seasonally to prey on the mice and, as the mouse population crashes, turn to preying on ashy storm-petrels. It is a complex and fine-tuned dance of nature that has continued to compromise the viability of the ashy storm-petrel and other native species that inhabit the islands.

Pros and Cons of the USFWS Proposal

Almost a year has passed since the 2019 meeting. The Coastal Commission's upcoming spring meeting, delayed to later this summer by the circumstances of COVID-19, will again consider determination of the project's consistency with the Coastal Act. With further knowledge of USFWS's plan for eradicating the introduced mice, the MCL board agreed to take up the issue and has spent two committee meetings and a board meeting hearing from speakers who have detailed knowledge of the Farallones but who hold conflicting views on merits and risks of the plan.

Among areas of conflict, two philosophical differences stand out: first, the difference between the focus of conservation ecology, which is on preserving biological diversity, represented by ecosystems, species, populations, and genetic variability, and the contrasting focus of animal ethicists, which is on protecting animals as sentient individuals. In the attempt to eradicate all house mice from the islands to protect ashy storm-petrels and other native species, the USFWS project would tolerate the by-take (incidental death) of numbers of the far more populous Western gulls and possible other individuals as an acceptable, if unavoidable, impact as long as it is minimized and does not endanger a population. An animal ethicist would not find this impact acceptable.

A second conflict that now dominates many projects surrounds the use of synthetic chemicals as tools of conservation. In this case, a special formulation of Brodifacoum, a widely used rodenticide with broad commercial applications on land, has been specifically developed for conservation purposes and would be mixed with grain pellets for a one-time broadcast over the islands. (Proponents of specialized one-time use of a synthetic chemical for conservation purposes oppose broad commercial applications.)

Opponents claim that rodenticides are an inhumane way to kill the target species, and argue instead for use of contraceptive methods, which, they claim, would be more humane. Proponents of the project counter-claim that such a product has not been developed for mice, let alone used on islands. Contraceptives would only control the mouse population, not eradicate it, and would have to be repeated frequently if not in perpetuity. Possible development, approvals, and field tests of such a product are years away and likely not feasible.

Opponents also cite the risk of the poisoned pellets escaping into the marine environment and killing fish and other wildlife in the marine environment. Proponents point to the detailed plan set forth in the EIS that would minimize such risk. For assurance, however, opponents have asked the USFWS to provide more detailed contingency plans in case elements of the highly-complex plan go awry.

Opponents also contend that use of similar methods to eradicate invasive rodents on hundreds of islands around the world has not always been successful, as former target populations have returned and some non-target individuals have been killed. Proponents counter that successes have increased to over 90% as the science improves based on past attempts. Questioned by some opponents as experimental, the proposal to eradicate mice from South Farallon Islands, nonetheless, rests on a solid base of scientific study, not only of the Farallones but also of the history of island conservation around the globe.

The MCL Board will consider its organizational position on May 19th and determine whether to support the proposal, with or without further mitigation measures, when it goes before the California Coastal Commission.

While so many events are cancelled, Spring is still open!
For more photos, follow MCL on Facebook and Instagram

Marin County Sea Level Rise Bayland Adaptation Projects in Development

(Note: Table does not include other important adaptation work currently occurring along Marin's coast, at levees and pump stations, on county and municipal General, Climate or Adaptation Plans, or with Living Shoreline grant programs for research and experimental pilot projects.)

Project:	**Deer Island Basin Tidal Wetlands Restoration Project**
Location/acreage:	50-155 acres near the mouth of Novato Creek on San Pablo Bay
Project Lead:	Marin County Flood Control and Water Conservation District
Development Phase:	Design and CEQA compliance underway
Current funding:	SF Bay Restoration Authority--Measure AA
Project:	**SR-37 Corridor Adaptation Study: Segment A-1 Adaptation Strategies**
Location/mileage:	Segment A of SR-37 extends from US 101 in Marin County for 3.4 miles and continues for 3.9 miles in Sonoma County to the SR 121 junction.
Project Lead:	County of Marin and Transportation Authority of Marin
Development Phase:	SR-37 Corridor Adaptation Study (Segment A1) completed. Four conceptual design approaches proposed. Segment A Public Outreach and Environmental Stakeholder Process funded.
Current funding:	Senate Bill 1 (SB 1) 2018 Adaptation Planning Grant
Project:	**Hamilton Wetlands Restoration Project - Bel Marin Keys Unit 5**
Location/acreage:	1,600 acres north of wetlands restoration site of former Hamilton Airforce Base which was completed in 2014
Project Lead:	CA Coastal Conservancy
Development Phase:	Construction Phase 1: new levee, new water pump system, habitat improvements on 100 acres of land, improved drainage and roads
Current funding:	CA Coastal Conservancy, Association of Bay Area Governments (ABAG), US Fish and Wildlife Service
Project:	**McInnis Marsh Restoration Project**
Location/acreage:	180 acres within area of historic confluence of Miller and Gallinas Creeks
Project Lead:	Marin County Parks
Development Phase:	Design and CEQA Phase
Current funding:	CA Department of Fish and Wildlife/Measure A Funds
Project:	**China Camp Road Adaptation**
Location/miles:	1.5 miles of low-lying areas of Point San Pedro Road through China Camp State Park
Project Lead:	San Francisco Bay National Estuarine Research Reserve (NERR)
Development Phase:	Options and Qualitative Evaluation Report completed
Current funding:	NERR Systems Science Collaborative federal catalyst grant
Project:	Tiscornia Marsh Habitat Restoration and Sea Level Rise Adaptation
Location/acreage:	20 acres near the mouth of San Rafael Canal
Project Lead:	Marin Audubon Society
Development Phase:	Environmental review and design
Current funding:	San Francisco Bay Restoration Authority Measure AA funds

Marin County Sea Level Rise Bayland Adaptation Projects in Development

Project:	**Lower Corte Madera Creek Concrete Channel Removal**
Location/acreage:	Downstream segment of Corte Madera Creek, to future tidal wetlands, transition zone
Project Lead:	Friends of Corte Madera Creek Watershed
Development Phase:	Developing 65% designs, conducting stakeholder outreach, Flood Control District conducting CEQA review.
Current funding:	CA Coastal Conservancy/Buck Family Funds of Marin Community Foundation
Project:	**Constructed Bay Beaches as Soft Shoreline Alternatives to Hard Engineering**
Location/acreage:	Richardson Bay Beaches – 3 sites
Project Lead:	Marin County Flood Control District
Development Phase:	Develop conceptual design variations of natural bay beach solutions to erosion from increased wind and waves.
Current funding:	CA Coastal Conservancy/Buck Family Funds of Marin Community Foundation
Project:	**Evolving Shorelines Project: Sea Level Rise Adaptation at Bothin Marsh Open Space Preserve**
Location/acreage:	Mill Valley baylands in northwest reach of Richardson Bay, approx. 67 ac. of tidal wetlands and 1 mile of Bay Trail.
Project Lead:	One Tam partners, Marin County Parks, and the Golden Gate National Parks Conservancy
Development Phase:	Historic research/scientific analysis and long-range public visioning reports complete. Moving forward with development of conceptual designs.
Current funding:	CA Coastal Conservancy, Marin Community Foundation, Measure A funds
Project:	**Highway 1 Corridor in Tam Valley**
Location/acreage:	Transportation corridor from the highway interchange (US-101 and SR-1) to Mill Valley
Project Lead:	Marin County Department of Public Works
Development Phase:	Model Lower Coyote Creek and Bothin Marsh (parallels work on Evolving Shorelines' Bothin Marsh wetland project); gather new topographic information; evaluate risk and possible adaptation measures including historical alignment to reduce flooding from tributaries
Current funding:	Caltrans SB1 grant
Project:	**Transforming Marin City's Urban Wetland**
Location/acreage:	Retention pond in northern Marin City, adjacent to Highway 101
Project Lead:	Audubon California working with Shore Up Marin City
Development Phase:	Conceptual plan for the restoration of an urban wetland
Current funding:	CA Coastal Conservancy/Buck Family Funds of Marin Community Foundation
Project:	**Nature-based Wave Attenuation Project – Dunphy Park**
Location/acreage:	In the waters off of Dunphy Park, Sausalito
Project Lead:	Conservation Corps North Bay
Development Phase:	Public outreach, site analysis, research and conceptual phase is complete including eelgrass and oyster surveys and possible impacts of them on various alternatives considered. A conceptual design is recommended.
Current funding:	CA Coastal Conservancy/Buck Family Funds of Marin Community Foundation

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Board of Directors meetings are held at 7:00 PM on the 3rd Tuesday of the month at the MCL office and are open to the public.

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Issue Committee Meeting Schedule (subject to change—check website)

Land Use and Transportation:
1st Wed. of the month, 9:00—11:00 AM

Parks and Open Space:
2nd Thurs. of the month, 3:00—5:00 PM

Fire and Environment Working Group:
2nd Mon. of the month, 1:00 PM—3:00 PM

Climate Action Working Group: 3rd Fri. of the month, 9:00 AM—11:00 AM

Agricultural Land Use: meets quarterly; North Marin Unit: Check website for times and locations

Marin Conservation League was founded in 1934 to preserve, protect and enhance Marin County's natural assets. MCL is a non-profit 501(c)3 organization. All contributions and memberships are tax-deductible to the extent allowed by law.

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