NEWS FROM MARIN CONSERVATION LEAGUE

March—April 2016

Ballot Measure AA to fund wetland restoration

Dru Parker

A Black-crowned Night-Heron waits for his evening supper at the Hamilton Wetlands Restoration Area.

A measure to fund restoration of wetlands and wildlife habitat and projects that protect San Francisco Bay communities from floods due to rising sea levels will be on Marin County's June 7 election ballot. The "San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Program," identified as Measure AA, seeks voter approval for a 20-year, $12 tax on all parcels in the nine Bay Area counties. **MCL supports the measure and urges your support.**

This first-of-its-kind regional proposal was initiated by the San Francisco Bay Restoration Authority, a regional government agency formed by the state legislature in 2008 for the purpose of raising and granting funds to restore the Bay's critical tidal wetlands. Passage requires two-thirds approval from the combined votes of all nine Bay Area counties. If successful, the measure would raise approximately $25 million annually for 20 years for a total of $500 million. Revenues would underwrite multi-purpose projects that restore tidal marsh and wildlife habitat, reduce trash and pollution, improve water quality, increase public access to the Bay, and protect communities from flooding. The Authority, which includes the counties of Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano, and Sonoma, and the City and County of San Francisco,

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Dewey Livingston to speak at MCL Annual Dinner

Marin Conservation League is pleased to announce that Dewey Livingston will be the keynote speaker at its Annual Dinner on April 29. The author of numerous books and many articles on local history, Dewey will discuss the essential role history plays in understanding today's environmental issues, impacts and general natural history. Drawing on examples from his 30-year career, he will talk about the role of research in planning, restoring, and interpreting history in parks and wild areas, and outline some techniques to more fully understand historical land use and its effect on today's environments.

Dewey turned a lifelong interest in

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Dewey Livingston

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A Message from the President—The "tragedy of the horizon"

What if you planned on staying in a place . . . *forever*? How would that change the way you think about it? Would you adopt traditional practices of living with restraint, of respecting natural systems that support life and health? This was a question posed in Naomi Klein's recent documentary "This Changes Everything."

Most of us are familiar with the concept of the "tragedy of the commons" —the idea that individuals, acting independently, will deplete or degrade a shared resource, such as clean air, clean water, infrastructure, or biodiversity, even when doing so is ultimately not in their best interests or the interests of the whole. This stems from the fact that with shared resources, each user receives a direct benefit of using the resource but only bears a fraction of the cost of its use.

However, recognition of long-term consequences of our actions is coming, even in the international banking and insurance sectors. In a farsighted speech last Fall, the governor of the Bank of London, referred to "the tragedy of the horizon", in which he worried that the negative impacts of climate change would be felt well beyond the traditional horizons of most current financial actions, thereby imposing costs on future generations that the current generation has no direct incentive to fix.

Traditionally, conservationists have focused their strategies to counter the "tragedies" of human nature, i.e. the incentives of self-interest and short-sightedness, by either advocating for government intervention (for example, setting aside special lands for national parks or wilderness areas) or, using private foundation funds (buying land or creating conservation easements) to conserve resources and to protect public trust values such as species and biodiversity, water quality, or ecological health.

Recently—as recognition of our need to invest in the future has intensified—more locally organized, collaborative conservation efforts, along with self-imposed planning for costs, have taken on urgency.

In this month's newsletter, you'll find articles about a variety of conservation actions relevant to Marin that range from thoughtfully celebrating the centennial of our country's "best idea" to local initiatives that aim to repair wetlands and their natural systems.

What if you planned on staying in a place . . . *forever*? Our future depends not on our defining "forever" but on our expanded understanding of "you".

Kate Powers

Pat O'Brien serving as Interim Parks Director

When Linda Dahl retired as Director of Marin County Parks and Open Space District in mid-2015, she left a significant gap in leadership. The gap was widened when Ron Miska, Assistant Director, also retired in December. Until a replacement is found, Marin is fortunate to have Pat O'Brien, former Director of East Bay Regional Park District (EBRPD), leading the department. Pat retired from EPRPD in 2010 after more than four decades in parks and recreation administration. He had just begun a term on the Marin Parks and Open Space Commission when he was asked to take on the responsibility.

Pat began his career as a teenager with a passion for swimming and ended it as head of the nation's largest regional park district (115,000 acres and 65 park units). That big leap happened in stages, according to tributes when he received the prestigious Pugsley Medal from the American Academy for Park & Recreation Administration in 2003. A native of the San Francisco Bay Area, Pat's early interest in swimming expanded to lifeguarding. He later earned a double B.A. in linguistic philosophy and recreation, served in the U.S. Army Security Agency, and returned to San Francisco State to complete a Master's degree in recreation. His first real job was with a parks and recreation district in the Sacramento area, where he was effective in building membership and innovating funding strategies.

In 1988, Pat was persuaded to become general manager of EBRPD. In his 22 years, he built up the park's assets and broadened its constituencies. He believed that to secure funding and gain wide voter support for tax and bond measures and other public sources, it was necessary to go beyond the traditional environmental/conservation constituencies by promoting diverse and popular recreational programs. Perhaps Pat's greatest strength over the decades, however, has been his legislative advocacy at regional and state levels in behalf of parks and recreation programs, and his effectiveness in energizing others into action.

In receiving the Pugsley Award, Pat cited Edward O. Wilson's Biophilia hypothesis—that recreation in open space and nature are deep values in the human spirit. "You cannot go to a park on a computer. You have to experience it." In his brief time leading Marin's Parks and Open Space District the County can benefit from his experience and counsel.

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Editorial

National Park Service prepares for next 100 years

On August 25, 1916, President Woodrow Wilson signed the **National Park Service Organic Act** into law, thereby establishing the National Park Service (NPS) in the Department of the Interior. The Centennial this year is an opportunity to celebrate the astonishing diversity of irreplaceable resources that have been preserved by the Act, and also to reflect on the challenge of keeping them timeless and, at the same time, resilient and relevant in a fast-moving world.

Marin has such "irreplaceable resources" in Point Reyes National Seashore, in (half of) the Golden Gate National Recreation Area, and in Muir Woods National Monument. These treasures are our pride, but they can be our burden if we view them only through a zoom lens. Under such close scrutiny, both the beauties and the blemishes show up. We are easily entangled in the tensions between parks and communities, whose residents are understandably dismayed by the national and international reach of their federal neighbors and by the millions who visit them. Maybe we are also a burden when we seek out a "Yellowstone" or a "Grand Canyon" or a "Great Smoky National Park." These all belong to us, but their popularity can be a trial for locals in close view. So for a moment, put on a wide-angle lens to contemplate the breadth and challenges of "America's best idea" in the coming century.

Beginning of the NPS

In 1916 there were already 35 national parks and monuments; among them in California were Yosemite and Sequoia National Parks and Muir Woods National Monument. They were administered variously by the Department of the Interior, the War Department, and the Forest Service.

The basic intent of the Organic Act was to bring together the loose collection of national parks and monuments—roughly 8 million acres at that time—under one agency, the NPS, with a staff, a budget, and a broad range of authorities. In the four years it took to gain legislative approval, the language changed many times. Rep. William Kent co-authored the bill and was one of its most ardent supporters. Possibly the least controversial words at that time were contained in the statement of national purpose:

" ...to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such a means as will leave them unimpaired for the enjoyment of future generations."

To *provide for enjoyment* and *leave unimpaired*? This fundamental contradiction between public use and conservation, and the meaning of *unimpaired*, would be interpreted over and over in the years to come.

One hundred years later, a vastly changed NPS oversees 401 "units" across the country, 84 million acres (more than half in Alaska), in 50 states and five territories, including District of Columbia. Of these, 58 are national parks, 333 are national monuments, and the rest include historic sites, recreation areas, seashores, and two to three dozen other designations, depending on who is counting. They range from America's most spectacular landscapes, to little known historic sites that represent, as one observer put it, "a chapter in American history."

One or many "best ideas?"

Wallace Stegner first called the national parks "the best idea we ever had." Filmmaker Ken Burns turned the "best idea" into a cinematic panorama of America's most iconic landscapes. It became one of the most watched public television series, tracing the birth and the constantly evolving nature of the national park idea. His introduction hints at the complexity of that evolution:

"Like the idea of freedom, the national park idea has been constantly tested

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Dru Parker

Valentine's Day 2016 on the Marin Headlands' Coastal Trail in the Golden Gate National Recreation Area.

NPS *from page 3*

and is inherently full of contradictory tensions: between individual rights and the community, the local and the national interests, between preservation and exploitation, the sacred and the profitable, and between one generation's immediate desires and the next generation's legacy."

From a beginning in which the main park attractions for tourists were spectacles like "Old Faithful" and feeding bears at Yosemite, multiple conceptions of the national park idea have waxed and waned, shifting with societal swings, national political priorities, evolving scientific knowledge, and emerging technologies. Robert B. Keiter, eminent conservation lawyer who has spent his career exploring America's public lands, questions that the national parks rest on ONE idea only. (*To Conserve Unimpaired* [2013]) In reality, the national parks are not a single idea, but rather a complex assortment of ideas whose commonality rests in their national significance (variously defined) and in a shared commitment to safeguard a legacy for present and future generations.

Ten years of celebration

Preparation for the Centennial began almost 10 years ago under then-President Bush, who issued a "National Parks Centennial Challenge," calling on the NPS *"to enhance the national parks during the decade leading up to the 2016 centennial celebration and put America's National Parks on track for another century of conservation, preservation, and enjoyment."* He directed the Service to select signature Centennial projects and committed a budget of $100 million a year over ten years, to be matched by funds from philanthropy and partnerships.

Thousands of pages have been written since then in anticipation of the Centennial. Among them is a Centennial Essay Series launched in 2007 by the George Wright Society to encourage serious reflection on critical park-related issues. (The Society is named for a young forester who initiated the first serious study of wildlife and other natural resources in the parks. The father of Mill Valley's Pam Lloyd, Wright was killed in his thirties in an accident.) The 26 essays that resulted are both guarded and optimistic about the future of the "best idea," but all are thought-provoking.

In a 2010 essay, William "Bill" Tweed, retired Chief Park Naturalist at Sequoia and Kings Canyon National Parks, called for redefining the NPS's core dual mission, which requires both preserving resources and providing for their appropriate enjoyment. To successfully meet this challenge, he wrote, the Service should adopt more nuanced, even controversial, approaches to managing its cultural and natural resources, while, at the same time, sustaining iconic resources (giant sequoias, for example) that attract tourists and, thereby, garner essential public support.

Countering Tweed, Michael Soukup, retired scientist with the Service, wrote in December, 2015, that "the real magic of the national park idea rests in the language and implications of the Organic Act." Each park unit, to preserve the nation's heritage, has learned how to protect resources as well as use them and restore when feasible. "Unimpairment means allowing nature to operate unfettered *to the extent possible* [emphasis added]—a clear and possible goal for every site in the national park system."

Although the Organic Act serves as the "Magna Carta" for the national park system, some critics suggested rewriting the Act, in view of its inherent contradiction. With today's Congress, however, this would open Pandora's Box! In any case, interpretations, policies, and laws that have accumulated around the Organic Act already enable new policies and strategies needed to address contemporary issues like climate change, changing public needs, and technology.

Finally, Rolf Diamant, President of the George Wright Society and a career NPS Superintendent, wrote in his 2013 essay: *"My hope is that our national park system will continue to appeal to our best instincts: love for the American landscape, respect for nature and the lessons of history, and the possibility that, through acts of intentional conservation and stewardship, we might raise the bar on our responsibilities to each other and to the world around us."*

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The Point Reyes Peninsula, Point Reyes National Seashore

These visions of our national parks at 100 are mixed, but a wide-angle view allows us to appreciate their extraordinary diversity and to celebrate their collective aim. The close-up view is also important. It prompts us to be grateful for our own local national parks, and, when problems arise, work constructively with them.

—Nona Dennis

Climate change: another reason to restore SF Bay wetlands

Forty years ago, a backhoe stood poised on a levee separating the "Muzzi" property from Corte Madera Bay. A small band of officials, reporters, and other spectators had gathered to witness as the backhoe bucket took several large bites out of the levee and, with one final gouge, opened a small channel to the bay. On an advancing tide, bay water found the gap and began to rush into the dry 125-acre former wetland that had been cut off from the Bay by levees more than a decade earlier. That event in 1976 was only the second such tidal restoration in San Francisco Bay (The first was in eastern Palo Alto in 1972.).

Jocelyn Knight

Muzzi Marsh as seen from Ring Mountain Preserve.

Funds to acquire and partially restore over 200 acres of private land slated for development had come from the federal government, enabling the Golden Gate Bridge District to mitigate the loss of mudflats and marsh at the mouth of Corte Madera Creek caused by dredging for the Larkspur Ferry Terminal approach channel. The resulting restored tideland joined existing salt marsh to the north (Greenbrae Boardwalk area) to become the Corte Madera Ecological Reserve, inhabited by endangered species such as Ridgway's rail (formerly clapper rail) and teeming with shorebirds, waterfowl, and other wildlife

Forty years later, a new focus for restoring Bay wetlands has emerged, prompted by the global concern about climate change. Roughly a dozen years ago wetland researchers began to recognize that, in addition to other benefits, coastal and bay wetlands could play a significant role in addressing climate change. Wetland plants could capture CO_2 from the atmosphere, accumulate carbon compounds in below-ground plant parts, and store (sequester) carbon in wetland soils, thus helping to mitigate greenhouse gas emissions (GHGs). At the same time, engineers began to incorporate wetlands into "natural," as opposed to structural, design concepts for protecting land from rising sea levels and extreme storm surges.

MCL is tracking the progress of research into how Bay wetlands can mitigate and adapt to the effects of climate change. In January, Dr. Stephen Crooks, an internationally recognized wetland scientist with ESA, gave an overview to MCL's Climate Action Working Group (CAWG) of the relatively new field of research called "Blue Carbon," which calls for improving the management of existing and restored coastal wetlands to mitigate greenhouse gas emissions as a co-benefit to the other known benefits of wetlands. "Concepts of soil carbon sequestration developed in agricultural soils have come 'down slope' from drylands to include soil carbon conservation in coastal wetlands," he told the group.

On the adaptation side, attendees at a Water and Watersheds Speakers Series meeting in February heard from Marin County Public Works planner Chris Choo and engineer Roger Leventhal about progress in the County's assessment of assets along the Bay shoreline that are vulnerable to sea level rise (BayWAVE Project) and adaptation strategies that incorporate wetlands as an ecosystem-based form of shoreline protection (See Measure AA article on page 1). Both of these concepts are prompting a heightened interest in restoring the Bay's former wetlands.

Redressing wetland losses

The loss of 90 percent of tidal marshes in the San Francisco Bay-Estuary through fill and development and other forms of destruction since the 1850 is part of our regional history. We have made significant progress since the 1976 work on the Larkspur-Corte Madera levee to redress that loss, but with the reality of climate change more clearly seen, solutions have become more complex and more urgent. The early 1970's marked a significant turning point in that story. As the pace of filling the Bay slowed with Save the Bay movement and enactment of laws restricting fill, efforts to restore diked wetlands began in earnest. The Muzzi Marsh project was followed rapidly by other projects as one diked property after another around the Bay was opened to tidal action.

Initially it was enough to breach the

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Events

Walk Into (Conservation) History #19, Saturday, March 12, 9:30 AM to 1:00 PM

West Peak of Mt. Tamalpais with historian Gary Yost

On Saturday, March 12, from 9:30 AM to 1:00 PM, join MCL on its 19th Walk Into (Conservation) History to the West Peak of Mt. Tam. With Gary Yost, Mill Valley filmmaker and unofficial historian, we will visit the site of the former US Air Force radar installation that operated throughout the Cold War and consider how the area might be restored.

This is an easy two-mile round-trip hike with spectacular views and fascinating tour of the "ruins."

Dress in layers, bring water, snack, binocs, and camera. Free and family-friendly. Dogs allowed on-leash only.

Please RSVP by phone at 415-485-6257 or to mcl@marinconservationleague.org.

©Gary Yost

Filmmaker Gary Yost in production of his award-winning documentary film "The Invisible Peak." See the 20-minute film at vimeo.com/83733185.

Directions: From 101, take the Stinson Beach/Highway 1 exit, turn left on Highway 1 at the Tam Junction traffic light. Turn right on Panoramic and continue to Pantoll Road in Mt. Tamalpais State Park. Turn right onto Pantoll Road, and at Rock Spring parking area turn right on East Ridgecrest Blvd. Park in overflow lot on the right about ½ mile beyond entrance to Mtn. Theater.

Annual Dinner *from page 1*

California history into a profession. A native of suburban Marin, he settled with his family in Point Reyes Station before moving to Inverness, where he now lives with his wife, Stinson Beach librarian Kerry Livingston. For more than 30 years he has researched and written about Marin County and Point Reyes, the California Channel Islands, Death Valley and the East Mojave Desert, and many other places in the West. His award-winning work with the National Park Service continues today on a contract basis after stints as a historian at Point Reyes National Seashore and Golden Gate National Recreation Area. He is completing a 1,000-page history study of Channel Islands National Park.

Dewey is currently working on a book on the history of Point Reyes and Tomales Bay. If you ask him why he is drawn particularly to West Marin history, he will tell you that the foundation of Marin County's magic was laid in its earliest days by the plain and hardworking people, mostly immigrants, who worked the land and passed it on through the generations. Dewey is the longtime curator at the Jack Mason Museum of West Marin History and carries the mantle of "Historian of West Marin," a title previously held by Jack Mason until his death in 1985.

MCL will also be presenting its annual Awards for Environmental Achievement at the dinner. The John M. McPhail, Jr. Green Business Award will be given to **Kamman Hydrology**; **Kathy Cuneo** will receive the Green Award for Environmental Leadership; **Laurette Rogers** of Students and Teachers Restoring a Watershed (STRAW) will be awarded the Ted Wellman Water Award; **Vicki Nichols** will be honored with the MCL Volunteer Award; and the Peter Behr Award for Lifetime Achievement will be given to former Marin Supervisor **Gary Giacomini**. MCL members who attend the dinner will elect Directors and Officers for the upcoming term (see the election notice on Page 12)

MCL's Annual Dinner and Meeting
Friday, April 29, 5:30 p.m.
The Key Room, Hamilton
$75 per person
Pre-registration required
mcl2016annualdinner.eventbrite.com

The event will be held at 5:30 p.m., Friday, April 29, at the Key Room at Homeward Bound, 1385 North Hamilton Parkway in South Novato.

Tickets are $75 per person. Pre-registration is required, no tickets will be sold at the door.

Invitations will be mailed in early March but this event sells out—register early! Register online at *Eventbrite* or call 415-485-6257.

Events

Thursday, March 24, 9:45 a.m.

Senior Walk at Hamilton Wetlands Restoration

After two successful Senior Walks in 2015, MCL will again lead Walks this spring and, tentatively, in the late summer and fall. First in the 2016 series is at Hamilton Wetland Restoration Project and the Bay Trail. After decades of preparation for the tides to enter the former airfield, evidence of renewal is everywhere. The tides flow in and out daily; birds have moved in, at least for the winter; and thousands of native plants are getting established. Views across the 750-acre restored expanse continue to amaze! The trail is wide, smooth, and pleasant. We hope to visit the native plant nursery.

A free shuttle van will pick up participants at 9:00 at the Mill Valley Community Center and 9:20 from Smith Ranch Road Park and Ride (south entrance off Redwood Hwy).

Participants coming by private car will meet at the Hamilton baseball field parking lot at 9:45.

Directions: From the **south**: Exit 101 at Nave Dr. toward Hamilton Field. Turn right onto Main Gate Rd. which becomes S. Palm Dr. Take a right onto Hangar Dr. The parking lot is about ½ mile down the street on right. No parking in the cul-de-sac.

Stu Smith

Walk participants coming by private car from the **north**: Exit 101 toward Hamilton Field/Nave Dr. and head east on Ignacio Blvd. Take a right onto Nave Dr. Turn left onto Main Gate Rd. which becomes S. Palm Dr. Take a right onto Hangar Dr. The parking lot is about ½ mile down the street on right. No parking in the cul-de-sac.

Please call 415-485-6257 to RSVP. Senior Walks are supported by a grant from Marin County Parks Measure A funds.

A beautiful day for creek restoration at Chileno Valley Ranch

Volunteers from MCL, Students and Teachers Restoring a Watershed (STRAW) and others had a fulfilling day at Chileno Valley Ranch on November 14 staking willows for creek restoration. The planted willows will create riparian habitat for birds and other wildlife and provide erosion control.

The willow staking crew included Mahina Gordon (far left) and MCL Directors Sally Gale, Vicki Nichols and Linda Novy (below right).

photos courtesy Sally Gale

Measure AA *from page 1*

is governed by a Board of seven elected officials appointed by the Association of Bay Area Governments (ABAG), representing each of the four major regions of the Bay and one each from a Bayside city or county and a regional park or open-space district.

A major flood prevention tool

Wetlands and tidal marshes not only support abundant wildlife, but also can protect shoreline communities from floods. As Bayside governments scramble to adapt to rising sea waters, the marshes lining San Francisco Bay have emerged as a major line of defense against encroaching waters and the predicted increase in high tides and storm events. Analysis indicates that tidal marshes can reduce wave energy in extreme storms by more than 50 percent, and that the hybrid system known as a "horizontal levee," which includes a landward levee fronted by an adjacent tidal marsh, can provide flood protection equal to that of a much larger traditional levee on its own and at greatly reduced cost. With this new understanding there is increased urgency to restore tens of thousands of acres of wetlands that have been filled since the Gold Rush and to do it in a manner that also protects, to the extent possible, roads, homes, utilities, businesses, and environmental resources threatened by advancing waters.

How funding would work

One half of Measure AA revenue would be distributed to the four Bay regions (north, south, east, west) based on their population. Marin County would receive nine percent of this funding, about $45 million over 20 years. The remaining 50 percent of revenue would be allocated on a competitive grant basis according to specified criteria, without regard to county location. Sponsors expect that Measure AA funds could also be used to leverage increased state and federal, as well as private foundation, funding for Bay restoration. San Francisco Bay, historically, has been a beneficiary of far fewer federal dollars than comparable ecosystems. For example, the federal government in 2015 contributed about $5 million to San Francisco Bay restoration projects while $28 million went to Puget Sound, $73 million to Chesapeake Bay, and $300 million to the Great Lakes.

The list of potential projects eligible for funding around San Francisco Bay is extensive. In Marin, a number of eligible potential projects have been identified: Richardson Bay, Bothin Marsh, lower Corte Madera Creek, Tiscornia Marsh, lower Miller Creek/McInnis Marsh, Novato Creek baylands, Bel Marin Keys, and Bahia wetlands.

Questions raised

Given the broad geographic scope and untried nature of the measure, numerous questions are being raised about issues such as exemptions from the tax, use of funds for land acquisition, and the criteria by which projects would be selected. Any parcel owner who currently pays property taxes, including non-profits, will be subject to this tax. The measure does not list specific exemptions, but does suggest that claimants could apply for an exemption subject to criteria to be determined by the Restoration Authority. Acquisition of property for the purpose of wetland restoration is not prohibited from being funded by the measure. It is unlikely, however. The amount of available money raised would not be sufficient even to complete the restoration projects on existing publicly-owned lands.

The Restoration Authority, under the guidance of an Advisory Committee and staff, would employ selection criteria developed by the State Coastal Conservancy, San Francisco Bay Conservation and Development Commission, and the San Francisco Bay Joint Venture to prioritize projects. These entities are already guiding restoration work in the Bay.

Highest priority would be given to projects that a) have the biggest benefit for the Bay as a whole, b) are ready the soonest (i.e., are almost "shovel ready"), and c) are geographically diverse. The Authority would favor projects that benefit present and future generations of residents, giving particular attention to disadvantaged communities. It would ensure that there are projects in each of the nine counties in the San Francisco Bay Area and that they would benefit the region's economy by developing employment opportunities in nature-based flood protection for shoreline communities and assisting youth and young adults in gaining skills related to natural resource protection.

An overriding goal of the authority is to foster stewardship as the basis for implementing the most efficient and effective strategies for achieving restoration benefits. Projects that leverage state and federal resources and public/private partnerships would also receive priority. According to sponsors of the measure, the project selection process would provide ample opportunity for public comment on the proposed projects.

MCL supports Measure AA and urges your support. Visit peopleforacleanandhealthybay.org

Bel Marin Keys, 1600 acres of which are farmed for hay, has been identified as a potential restoration site.

Dru Parker

The campaign to pass Measure AA is led by three main groups: the Bay Area Council, Save the Bay, and Silicon Valley Leadership Group. For further information see **peopleforacleanandhealthybay.org.**

Wetlands *from page 5*

levee and let the tide flow in, but restoring a fully functioning marsh was found to be more complicated. Lands diked decades ago had dried and been grazed by cattle or cultivated for crops (or used as an airfield, as at Hamilton). The plant material stored in the mud had oxidized ("burned off"), lowering surface elevations often many feet below sea level. Simply to let in water from the Bay would result in a lagoon, requiring many years of sediment deposition to raise ground elevation sufficiently to support marsh vegetation.

By the turn of the 21st century, the Bay had become a "laboratory for testing restoration methodologies," according to Philip Williams and Marin biologist Phyllis Faber in their 2001 review of major tidal restoration projects in the Bay estuary. With advancing scientific knowledge and practical experience, the initial modest goal of "no net loss" of wetland acres morphed into a goal of restoring 100,000 acres of former wetlands around the Bay, many of them in the North Bay. That was the ambitious agenda set in 1999 by the *Baylands Ecosystem Habitat Goals*, a report of the San Francisco Bay Estuary Institute (SFEI).

New knowledge

Forty years ago, the ecological functions of tidal wetlands were based primarily on research in East Coast marshes. Wetlands were known to be among the most productive of ecosystems, measured by annual above-ground plant growth. They were known to support abundant wildlife, provide nursery habitat for fish, buffer storms, collect nutrients and filter pollutants from upstream waters, and recharge groundwater. These were equivalent to "doctrine." Known now as "ecosystem services," these functions could be measured and factored into restoration designs.

Since the early 2000s , new knowledge has expanded our understanding of ecosystem services to include the capacity of wetlands to sequester carbon and to serve as a resilient natural means of protecting land from rising sea levels. That is the central theme in the recently updated SFEI habitat goals report—*The Baylands and Climate Change: What We Can Do. Bay Ecosystem Habitat Goals Science Update 2015* ("2015 Goals Report"). The Intergovernmental Panel on Climate Change (IPCC) also specifically recommends restoring former wetlands as a way to sequester carbon from the atmosphere.

Nona Dennis

Salt marsh soil, exposed here in a Gallinas Creek mudbank at low tide, sequesters carbon from the atmosphere.

The Introduction to Chapter 6 of the "2015 Goals Report," co-authored by Steve Crooks, states: "Thoughtful management of San Francisco's Estuary's wetlands and Baylands can contribute to local ecosystem resilience as well as play a part in global climate regulation. We also have an opportunity to transfer knowledge gained here to other parts of the country and the world."

Steve Crooks admits that measuring the mitigation benefits of wetland restoration and management is at an early stage of development and must take into account not only the uptake of CO_2 and storage in soils, but also the release of both CO_2 and methane from wetlands—i.e., the flux of carbon in different wetland soils.

There is also much to be learned about the influence of water salinity and the quality and availability of sediment, key physical factors that determine how a marsh develops over time and how much carbon it stores. Just as marsh soils can store carbon, so too, when they are disturbed, they can release massive amounts of carbon that may have been stored for hundreds or thousands of years. Researchers are measuring many factors to determine best approaches to managing and restoring salt and brackish marshes as well as other coastal wetlands, such as mangrove swamps and seagrass beds.

The "take-away" from the 2015 Goals Report and other research into the causes and effects of climate change around the world is that coastal wetlands, such as we have in San Francisco Bay, are vital as both carbon sinks and shoreline protection, and that management and policy must prevent their further destruction and continue to promote extensive restoration.

Trail Management

The Final **GGNRA Dog Management Rule** will be discussed by the MCL Parks and Open Space Committee, March 10, 3:00 – 5:00, MCL conference room.

A public workshop to consider **trail designations in Region 3**, Marin County Open Space District, will be scheduled by County Parks staff this spring. Region 3 includes Lucas Valley, Indian Valley, Ignacio Valley, Pacheco Valle, and Loma Verde Open Space Preserves. For further information, go to marincountyparks.org.

Artificial turf vs. grass: a second look

In the previous edition of the *Newsletter*, (January-February 2016) MCL posed the question: "Does artificial turf offer a solution in drought-prone climates?" That is, is it possible to have a low-maintenance playing field with a reasonable life expectancy that conserves water and avoids adverse environmental and health consequences? Such questions continue to nag sports professionals and the landscape architects who are contracted to design environmentally sustainable, injury-resistant, and affordable playing fields.

Dru Parker

The newly installed artificial turf field at the Branson School.

Although artificial turf may not be problem-free, increasing numbers of local schools are opting for it. It seemed prudent for MCL to hear another view. At MCL's Land Use and Transportation Committee meeting in January, an official from the Branson School in Ross and the school's landscape architect, Peter Arnold (abeyarnold.com), whose experience covers the gamut of both natural and artificial turf playing fields, defended the school's recent installation of artificial turf as safe for players and environmentally sustainable. The Branson School conducted careful research into health and environmental issues and found that the technology of artificial turf continues to advance as sports professionals confront negative reports of high maintenance cost, direct and life-cycle environmental impacts, and worrisome rates of injury.

To address concerns about heat (artificial turf can reach up to 177 degrees on an 85 degree day and be hotter than asphalt by 30 degrees) and health (typical rubber granules from tires contain carcinogens, and synthetic turf can cause or contribute to sports injuries), cork or coconut fibers are now being substituted for rubber as infill within the blades of synthetic turf. Another product—the one selected by Branson—uses sand as infill in turf that is installed over a permeable pad to attenuate shock impact.

Although cork and coconut pellets do not off-gas carcinogens, emit heat, or pollute receiving waters, they do require some irrigation—albeit substantially less than grass—to prevent their becoming brittle and blowing away. Sand is also non-polluting but does not require water. (Water is used occasionally to "cool" the field). An effective drainage system, such as at the Branson School, requires installing a subgrade foundation of french drains, baserock, and geotextile, designed to withstand 10-year storm water discharge. It is unlikely that Branson's turf will be entirely maintenance-free, however. Sweepers and rakes may be needed to avoid degradation or compaction of the plastic material, and the field may need to be disinfected periodically by spraying with anti-statics

Continued on page 11

On the trail

Dru Parker

Big Rock Trail, shown above, is in the County's Lucas Valley Open Space Preserve. See box on page 9 for announcement of pending trail designation workshop.

Below: The Drake High Mt. bike team learns how to pass equestrians safely at "Tails and Tires" Workshop, February 6. Hosted by Marin County Bicycle Coalition and Marin Horse Council, the workshop is a program of Trail Partners, a collaboration of MCBC, MHC, and MCL to promote safe and responsible trail etiquette on Marin's park and open space lands. (safetrailsmarin.org)

Tom Boss

MCL Business Member Profile

Cagwin and Dorward: leader in sustainable landscaping

By Linda Novy

Welcome to MCL's newest business member: Cagwin and Dorward (C&D). They joined MCL in 2015, and sponsored our Business and Environment Breakfast in January this year! Aaron Majors, Owner, and Division Manager – Construction, explained why: "We became a business member because our mission aligns with MCL's and we want to support the League's work." Aaron quoted C&D's environmental vision statement: "Becoming part of the solution… by committing to preserve the beauty that surrounds us and to healing our planet for future generations."

C&D, established in 1955 and based in Novato, is a leader in sustainable landscaping. The firm manages over 1,200 maintenance accounts and countless construction projects, so their impact on the planet really does count. Their services include Bay-Friendly Landscaping, Calculation of Bay-Friendly Site ratings, LEED (Leadership in Energy and Environmental Design) points, organic weed and pest management, soil testing, water recharge techniques, and Water Efficient Landscaping Ordinance (WELO) compliance and

water conservation. Among the many examples in their portfolio (*cagwin.com*), one water conservation example stands out. C&D recently saved an East Bay client over 2.9 million gallons annually in the largest Bay-Friendly project in the area by converting extensive grass medians to low water use plants and no-mow grasses. The savings in labor and green house gas emissions just from eliminating mowing are impressive!

C&D has a Sustainability Manager. With their dedicated focus, they can develop landscape solutions that are not only cost-neutral or save money, but also are good for the planet. In 2006, when most landscape architects specified "nitrified sawdust" as a soil amendment, C&D led the way to locally made compost and advocated for its use. According to Aaron "it cost less because it was local, didn't have many transportation miles, and was better for soil organisms. Now we also know compost is important in sequestering carbon." C&D looks at other ways within its own operations to "heal the planet." Their managers drive fuel-efficient Priuses; their 13 office/yards switched from bottled water to filtered municipal water, saving money and thousands of plastic bottles; and, instead of disposable promotional gifts, they offer reusable shopping bags and stainless steel water bottles all saying "BYOB."

Aaron and the 400+ staff members of C&D are committed to leaving the planet in better shape. That's why Aaron joined the Board of Bay-Friendly Landscaping, and why so many C&D staff are Bay- Friendly Certified, CLCA Water Management Certified, and wholeheartedly committed to their vision of sustainable landscaping. The MCL is proud to have C&D as a business member.

Turf *from page 10*

and anti-microbials.

Life-cycle environmental costs will continue to be a challenge. Branson officials claim that their recently-installed turf has a 10 to 15-year life span and can be recycled. Currently only one in every eleven thousand plastic fields is recycled, and millions of tons of discarded turf end up in landfills. Other environmental "costs" of artificial turf have been cited: reduced biodiversity in the landscape and diminished microbial activity in soil.

Underlying all arguments that favor artificial turf is the chronic shortage of playing fields in Marin. This is due, in part, to the seasonality of certain sports. For example, soccer is now considered a winter sport, which conflicts with use restrictions as natural grass takes a well-deserved "seasonal rest." Also, at small schools like Branson, with only one field, players have to drive to an off-campus site to practice and play games, with consequent transportation impacts.

As MCL learned last year from Dan Carney, Water Conservation Manager at MMWD, an informed decision has to weigh the negative factors against claims that artificial turf reduces water use, maintenance cost, and pesticide and fertilizer runoff. In summing up, Dan noted that artificial turf may be a good fit where sports fields are in short supply and are used heavily year round. In such cases—and there be others like Branson, where choices are limited—the demand for sports programs may justify the costs.

MARIN CONSERVATION LEAGUE BOARD OF DIRECTORS

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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.

Staff

Shannon Doherty, Novato
Operations Administrator

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

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

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

Invasive Plant Subcommittee of POS:
3rd Wed. of the month, 3:00—5:00 PM

Climate Action Working Group: 3rd Fri. of the month, 9:00 AM—12:00 PM

Agricultural Land Use: meets quarterly; Water and Watersheds, 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.

Editor: Nona Dennis
Design and Production: Dru Parker.
Printed in San Rafael on recycled paper.

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NEWS FROM MARIN CONSERVATION LEAGUE

Non-Profit Organization
U.S. POSTAGE PAID
Permit No. 151
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March—April 2016

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Marin Conservation League

Annual Meeting & Election, April 29, 2016

Proposed Slate of Officers and Directors for 2016—2017

The Marin Conservation League's Nominating Committee, chaired by Susan Stompe, has nominated the following persons for election as MCL Officers and Directors at the 2016 Annual Meeting and Election. All MCL members who attend the meeting are eligible to vote.

Nominated for Election as Officers for 2016-2017

President—Kate Powers, San Rafael
First Vice President—Nona Dennis, Mill Valley
Second Vice President— Ann Thomas, Corte Madera
Secretary—Larry Minikes, San Rafael
Treasurer—Ken Drexler, Fairfax

Nominated for election as Directors new to the MCL Board:

Term ending April 2018
Ralph Mihan, San Rafael
Bob Miller, San Rafael

Term ending April 2019
David Lewis, Novato
Arlin Weinberger, San Rafael
Greg Zitney, Novato

Nominated for re-election to the MCL Board:

Term ending April 2017
Susan Stompe, Novato

Term ending April 2019
Sally Gale, Petaluma
Doug Wilson, Mill Valley

The following Directors will continue to serve existing terms:

Term ending April 2017
Patricia Nelson, San Rafael
Vicki Nichols, Sausalito
Linda Novy, Fairfax
Judy Teichman, Pt. Reyes Station

Term ending April 2018
Heather Furmidge, Point Reyes Station
Doug Karpa, Mill Valley
Pamela Reaves, San Rafael