Midpeninsula Regional Open Space District

R-21-26
Meeting 21-06
February 24, 2021

SPECIAL MEETING AGENDA ITEM 1

AGENDA ITEM

Natural Resources Restoration Priorities

GENERAL MANAGER'S RECOMMENDATION

Receive and discuss information about Natural Resources Restoration Priorities. No Board action is required.

SUMMARY

The Midpeninsula Regional Open Space District (District) Natural Resources Priorities are set by the Board of Directors (Board). The focus on natural resource protection is evident in the District's mission, which states in part, **"***protect and restore the natural environment"*. The Board also establishes natural resource protection as a priority in its Basic Policy and Resource Management Polices. Natural Resource Priorities are also influenced by federal, state, and local regulations and recovery plans. During the 2014 Vision Plan process, the District identified areas of high conservation value where restoration would be the most beneficial at regional, watershed, and ecosystem scales. During individual project design and implementation, the District is often required to mitigate for potential impact(s) and may also elect to provide discretionary site-specific natural resource enhancements. While site specific mitigation and enhancement measures may reduce impacts of a specific action or improve a site-specific condition, they rarely provide regional or ecosystem-wide benefit. To fulfill the District's mission *to protect and restore the natural environment* and provide regional net-positive environmental benefits (producing greater benefits at a landscape scale), the District places strong emphasis on implementing high priority restoration and recovery work focused on specific sensitive habitats, populations, and ecological processes in high conservation value areas. On February 24, 2021, the Board will have an opportunity to gain a deeper understanding of the District's high priority restoration and recovery work and how this work provides region-wide, net-positive environmental benefits across District lands and the broader Santa Cruz Mountain region.

DISCUSSION

The District applies the best available science and uses a robust Geographic Information System (GIS) to identify District restoration priorities and inform District programs, plans, and projects that are reviewed by the public and approved by the Board. Examples of these plans include: the 2014 Vision Plan and associated Conservation Atlas, Preserve Plans, Use and Management Plans, the Integrated Pest Management Annual Plan, and the Climate Action Plan. Measure AA also includes habitat restoration priorities. These plans, along with District policies, inform how site-specific projects are planned, designed, and implemented. Because there is insufficient

time/capacity and funding to invest in all locations, and in some areas there are other factors that affect whether restoration actions are possible or advisable (i.e., insufficient physical space, poor cost-benefit outcome, low ecological benefit), high quality restoration sites and habitat enhancement sites are carefully evaluated and prioritized. As a result, high priority restoration sites may not always be located near or within the footprint of public access projects or other projects that cause ground disturbance.

Often, public access improvements, such as parking areas, are located on previously disturbed sites with a prior history of human use. These areas of low habitat value are rarely deemed suitable for habitat restoration work because the extent of disturbance or distance from high quality habitats. Trying to do restoration at these sites requires more staff and financial resources to achieve a local benefit, whereas restoration work at high-priority sites that already support sensitive resources onsite or nearby can often achieve a noteworthy regional benefit by aiding in the recovery and health of important plant/animal populations and rare species.

There is also great benefit in aligning habitat restoration work with approved regional plans since these plans focus on individual efforts that provide the greatest resource benefit for the region to improve habitat health and ecological resiliency. At times, this alignment dovetails well with the District's site-specific project work. When this is not the case, the District evaluates the specific site conditions to determine how best to utilize its limited resources – i.e., whether to allocate resources to a site where a new facility or repair project is being planned or whether it is best to direct resources elsewhere to high priority resource restoration sites. A highly disturbed site can have high restoration value if it effects core habitat or connectivity. For example, a dam or other barrier to salmonids is a very significant disturbance to aquatic habitats and restoring salmonid passage can provide regionally significant habitats. The Lobitos Creek watershed has a salmonid barrier underneath Highway 1 and Verde Road that, if corrected, could open the entire watershed to steelhead. Other times, the habitat enhancement potential for a disturbed site is very low, with a conclusion that it is best to allocate habitat restoration efforts elsewhere where greater net benefits are truly possible.

Additional restoration priorities are set by Federal and State Conservation Plans, such as species recovery plans and watershed total maximum daily loads ("TMDLs") for water quality impairments (such as sediment)[1], are driven by laws such as the Endangered Species and Clean Water Acts. These regulatory plans and actions fully inform and affect how the District plans and implements its projects. The District also stays abreast of multi-agency local and regional plans such as Plan Bay Area, which designates Priority Conservation Areas, and the Bay Area Critical Linkages Report, which designates areas of core habitat and critical linkages for a suite of species throughout the Bay Area. Ensuring the priorities in these federal, state, and regional plans align with the District's internal planning processes is critical to effecting meaningful restoration and recovery actions across the District's land holdings that then scale up to region-wide goals and benefits.

Natural Resources Department staff provide important consultation and review of District projects to impart their subject matter expertise and site-specific recommendations to "*protect and restore the natural environment, and to provide opportunities for ecologically sensitive public enjoyment and education"*. Natural Resource staff work closely with District project

[1] A Total Maximum Daily Load establishes a threshold for a water quality constituent that cannot be exceeded and directs landowners to mitigate the impairment overtime. For example, the Pescadero-Butano watershed is impaired for sediment and has a TMDL that requires landowners to develop a long-term sediment reduction plan.

teams to scope and modify projects to avoid or minimize impacts to the greatest feasible extent, and otherwise offset any remaining impacts with mitigation when required. Adding habitat enhancements and restoration work as an added component to the scope of work is done on a case-by-cases basis, depending on the cost-benefit effect of the work (as discussed above) and staff/funding capacity. As noted above, these additions are not possible for every project given limited staffing capacity and budget targets to avoid redirecting internal capacity away from high-value natural resources restoration priorities and/or substantially increasing project and operational budgets.

When a capital project and a priority natural resources restoration project are located in the same preserve or watershed, staff evaluates the opportunity for combining, connecting, or phasing the two projects into one larger project or multi-phased plan to achieve multiple objectives, especially when timelines align or when implementation of the restoration project can further offset any potential impacts from introducing a new use, trail, or visitor amenity. For example, much of the restoration activities at lower La Honda Creek Open Space Preserve occurred as a first phase of work before parking lots and trails were open to the public. This important environmental restoration and rehabilitation work focused on addressing sedimentation issues, pond rehabilitation, remediation of contaminated sites, and cleanup and site restoration of old dump sites to improve habitat conditions and prepare the area for future public access. Work to enhance ponds and streams, and repair ranch roads significantly reduced sedimentation and improved water quality and scaled up to providing high value restoration benefits at a watershed level ahead of introducing ecologically sensitive public recreation. The District utilized this approach to focus time, energy, and funding on high priority restoration work to improve habitat quality for the benefit of known sensitive resources that exist on the site, including the federally-threatened California red-legged frog (CRLF) and Western pond turtle (WPT), a species of special concern. The scale and magnitude of benefit from this work cascades across the larger San Gregorio Creek watershed and provides a positive net environmental benefit for our larger region and for the Santa Cruz Mountains populations of CRLF and WPT.

In response to Board interest in maximizing net benefits and reducing site-specific project impacts, staff is proposing to formalize the existing practice of scoping and adjusting projects to avoid or minimize to the greatest feasible extent any potential environmental impacts in a new policy chapter in the Resource Management Policies. Board discussion on natural resource restoration priorities will inform the development of the new policy. Additionally, the proposed policy will also consider requests from third parties to conduct and fund mitigation/restoration on District lands for external projects, especially when it affords the District an opportunity to implement high priority restoration work. The draft policy is scheduled to be presented to the Board at a study session in April.

FISCAL IMPACT

This item poses no immediate fiscal impact. The decision on which Natural Resources Restoration Priorities projects to advance in a given year occurs during the annual Budget and Action Plan process.

BOARD COMMITTEE REVIEW

This item is being presented to the full Board of Directors, given full Board interest. A separate meeting with the Board to review and consider a draft new Resource Management Policy chapter

is scheduled for April 28, 2021. That policy would inform how and/or when Priority Restoration projects occur and/or are funded.

PUBLIC NOTICE

Public notice was provided as required by the Brown Act.

CEQA COMPLIANCE

This item does not constitute a project subject to the California Environmental Quality Act.

NEXT STEPS

A draft new Resource Management Policy chapter will be brought to the Board on April 28, 2021. Natural Resources staff will present an overview of the proposed policy and its intersection with District Restoration Priorities for Board review and feedback. The proposed policy will formalize the District's Best Management Practices for project planning to reduce the potential for environmental effects and guide the acceptance of external mitigation/restoration funding.

Attachment
1. Conservation Atlas

Responsible Department Head:
Kirk Lenington, Natural Resources Department

Prepared by:
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Contact person:
Julie Andersen, Senior Resources Management Specialist, Natural Resources Department

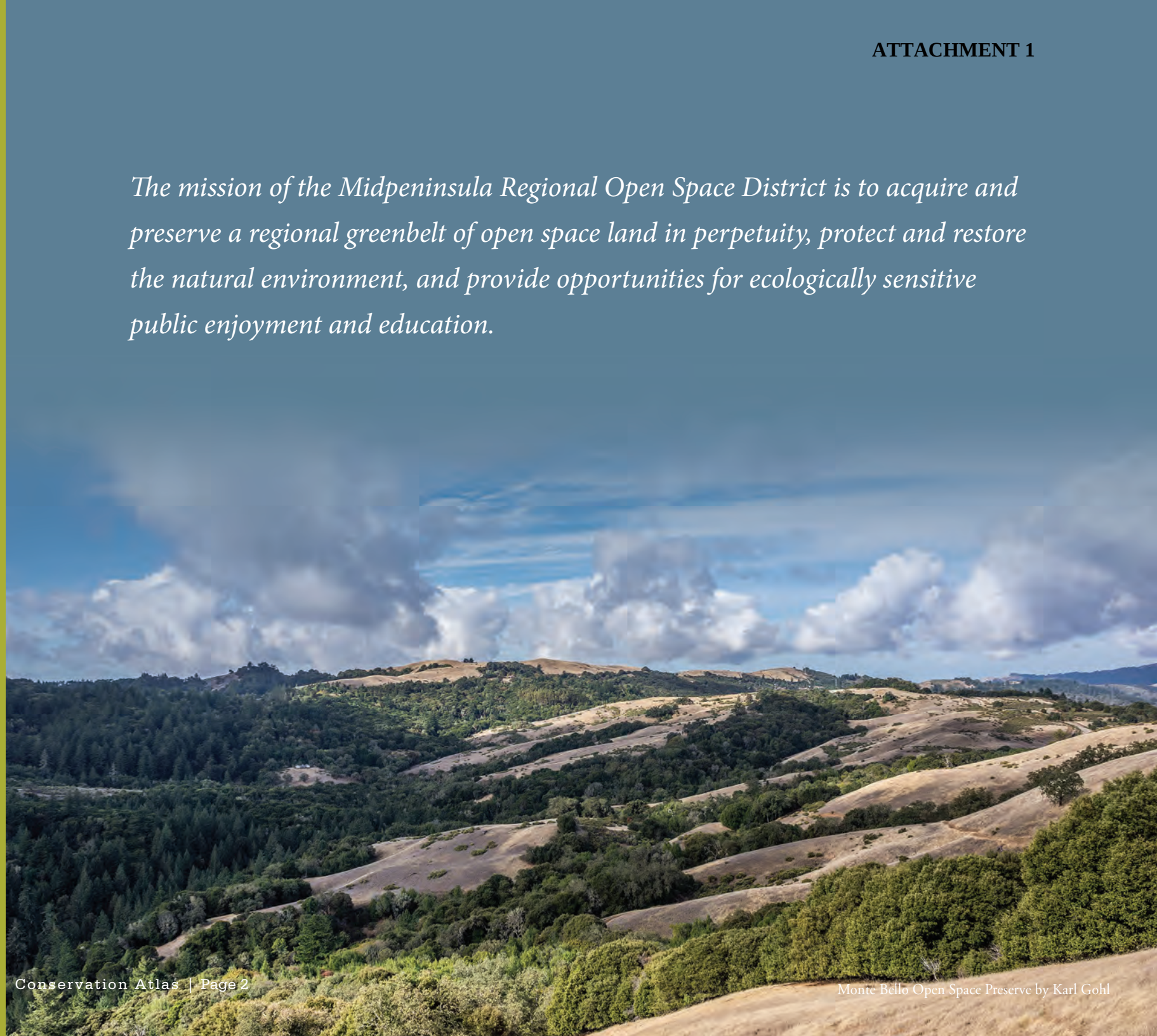
ATTACHMENT 1

2014 Vision Plan

Conservation Atlas

MIDPENINSULA REGIONAL OPEN SPACE

The mission of the Midpeninsula Regional Open Space District is to acquire and preserve a regional greenbelt of open space land in perpetuity, protect and restore the natural environment, and provide opportunities for ecologically sensitive public enjoyment and education.



Monte Bello Open Space Preserve by Karl Gohl

Conservation Atlas

Russian Ridge Open Space Preserve by Greg Hughes

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Welcome to your Open Space!

Photo above: Rancho San Antonio Open Space Preserve by Anrdrea Reid; Photo below: Purisima Creek Redwoods Open Space Preserve by J. Martin

The Midpeninsula Regional Open Space District (Midpen) is a regional greenbelt system near busy Silicon Valley in the San Francisco Bay Area. Founded in 1972, Midpen comprises over 60,000 acres of land in 26 open space preserves protected for public enjoyment, providing an open space network of diverse and unparalleled beauty in one of the country's most populated areas. Midpen preserves cover the spectrum from redwood forests and chaparral-covered hillsides to sensitive wetlands along the San Francisco Bay. Midpen provides over 220 miles of trails for hiking, mountain biking, nature study, dog walking, and more.

This region, along with most of California, has been named a world biodiversity hotspot by Conservation International due to the unusually high concentration of plant and animal species as well as the loss of over 70% of vegetation and the great risk of human impact to biodiversity.

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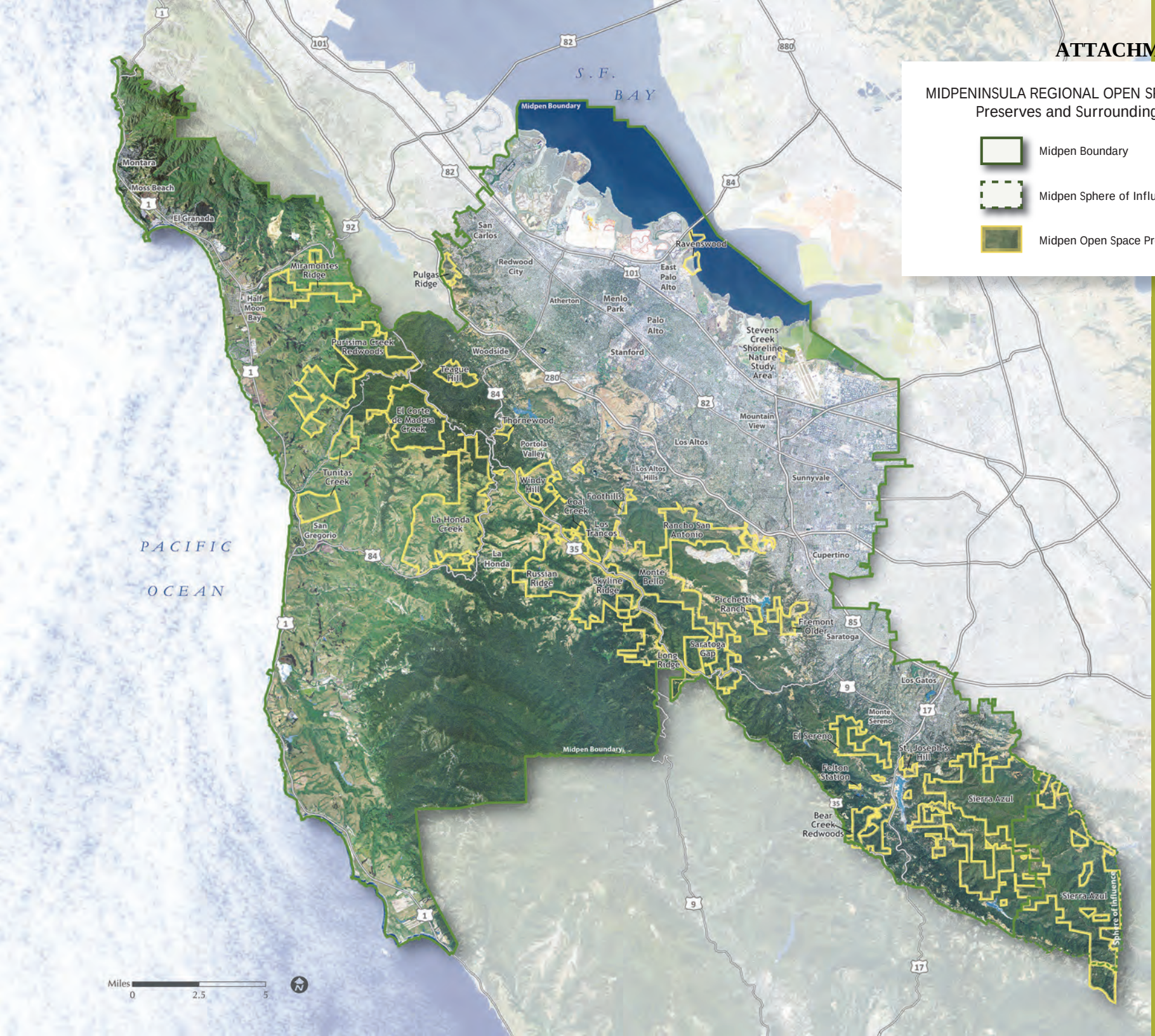

MIDPENINSULA REGIONAL OPEN SPACE

About the Atlas

Photo above: Monte Bello Open Space Preserve by Jack Owicki; Photo below: Rancho San Antonio Open Space Preserve by Charles Tu

The Vision Plan Area supports tremendous natural resources, including old-growth redwood forests, streams with rare ocean-going fish, and habitats for species with large home ranges, such as mountain lions. The region features critical landscape linkages that are essential to maintaining connectivity within the Peninsula and between the Santa Cruz Mountains and adjacent mountain ranges. This interconnected landscape, along with the varied topography and abundant cooler, moister microclimates, will help the region's species and ecosystems be resilient to a future hotter, and likely drier, climate.

This Conservation Atlas contains maps that illustrate many of the resources, conservation values, and opportunities identified in the planning and analysis assessments conducted for the Vision Plan. Developed using spatial data from Midpen and its conservation partners, as well as other publicly-available information, each map features text explaining the information illustrated and how it was used to inform the Vision Plan. The Atlas also serves as a resource for land protection and stewardship coordination across the Vision Plan Area.

The Vision Plan Area is the 371,000-acre area that comprises the Midpen jurisdiction, sphere of influence, and open space preserves

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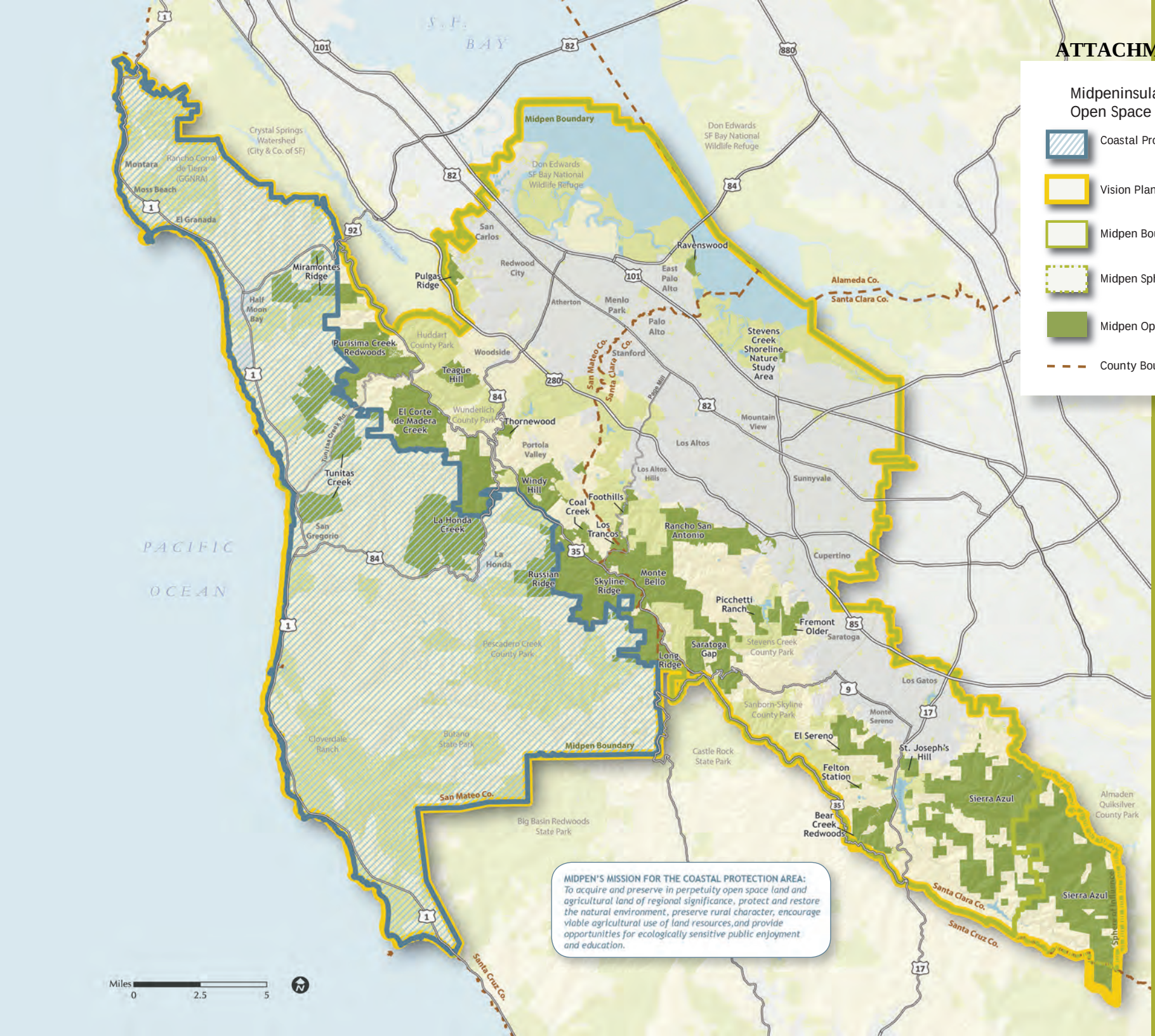

Vegetation

Photo above: Buckeye, Skyline Ridge Open Space Preserve by Karl Gohl; Photo below: Buckeye Tree, Skyline Ridge Open Space Preserve by Karl Gohl

This map illustrates vegetation types that were identified as sensitive or biologically highly significant within the Vision Plan Area. It was developed by integrating vegetation data for Midpen lands (MROSD 2013) with regional data from the Conservation Lands Network (BAOSC 2012) and the National Wetland Inventory (USFWS 2011) to create a composite vegetation map.

The Vision Plan Area features a complex mosaic of vegetation, which reflects the fine-scale variability in geology, soils, hydrology, and microclimate; all of which interact to give rise to a diversity of plants and animals adapted to the unique conditions. Sensitive vegetation types include naturally-restricted communities, such as serpentine grasslands and maritime chaparral, as well as once-widespread communities that have been greatly reduced as a result of land use, including old-growth redwood forests, riparian woodlands, and wetlands. Biologically highly significant vegetation types include grasslands and coastal strand communities, which support diverse assemblages of plants and animals, including many special-status species. Maintaining biodiversity within the Vision Plan Area will require conserving the sensitive and biologically highly-significant communities, as well as representative areas of the other natural communities, including the more widespread types, which provide extensive habitat and important ecosystem services.

Midpen open space preserves support 1,356 acres of sensitive communities, including serpentine communities within the Sierra Azul Open Space Preserve, saltwater wetlands in Ravenswood Open Space Preserve and Stevens Creek Shoreline Nature Study Area, and maritime chaparral at Pulgas Ridge Open Space Preserve. The grasslands of the La Honda Creek, Russian Ridge, and Skyline Ridge open space preserves are among the many acres of biologically highly significant communities within Midpen lands. Midpen resource management policies address managing vegetation, grazing, forest, wildland fire, invasive species, and ecological succession for the protection of these and other sensitive communities and habitats on Midpen lands.

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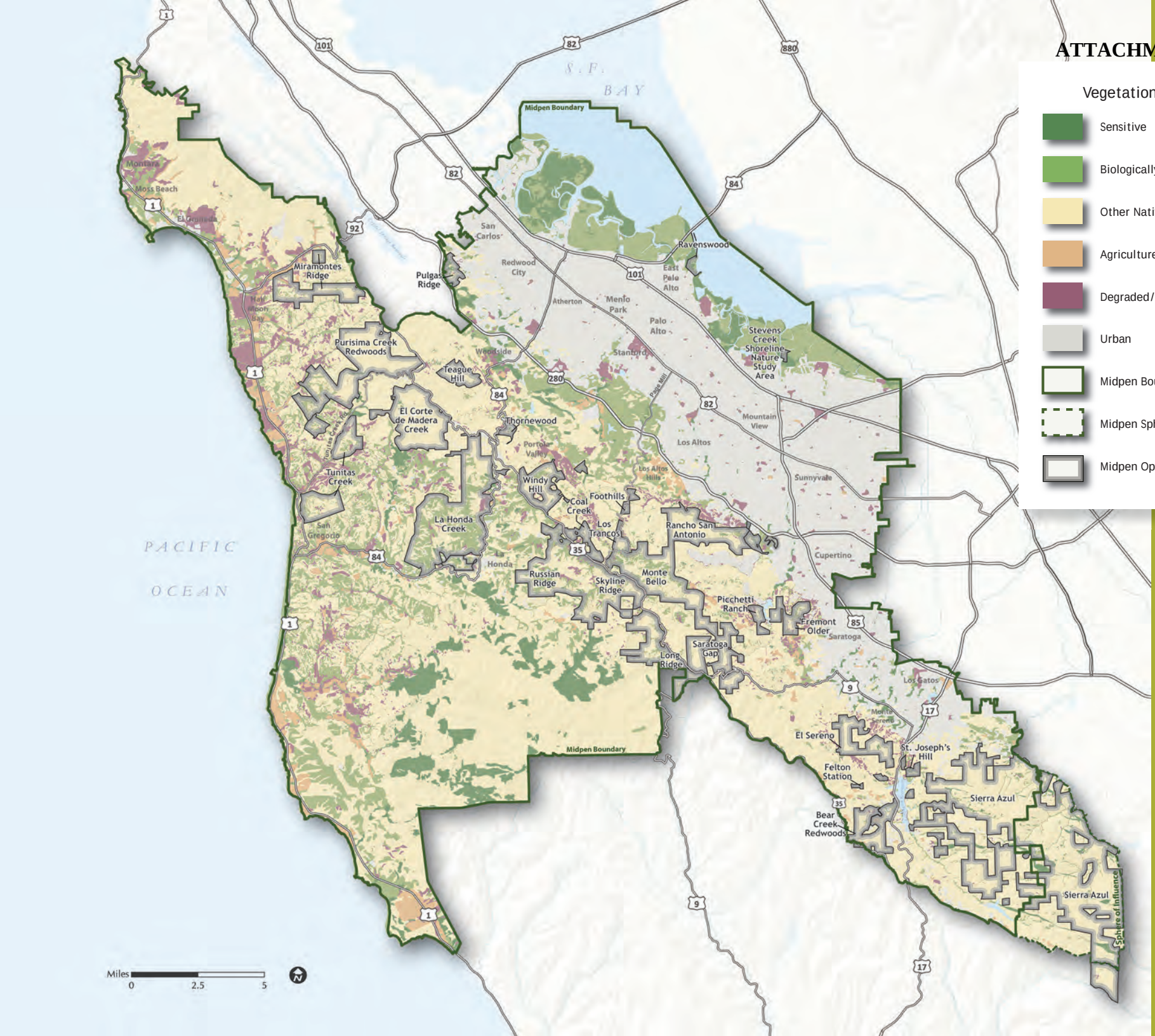

MIDPENINSULA REGIONAL OPEN SPACE

Streams

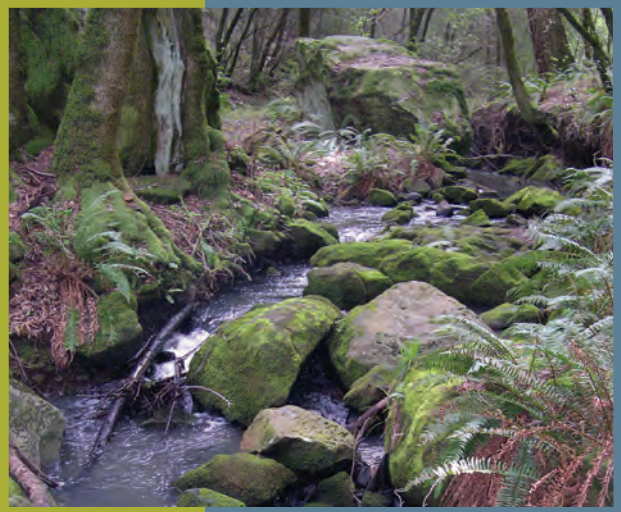

Photo above: Long Ridge Open Space Preserve; by Carolyn Genirberg Photo below: Purisima Creek Redwoods Open Space Preserve by Randy Weber

This map shows streams within the Vision Plan Area, which were rated according to their conservation value for coho salmon and steelhead, and their hydrology; specifically, whether they flow year round (perennial) or flow seasonally in typical rainfall years (intermittent). The layer was developed by integrating stream courses from the National Hydrography Database (USGS 2012), with information about the range of coho salmon and winter run steelhead from the California Department of Fish and Wildlife (2012).

San Gregorio Creek, Pescadero Creek and Gazos Creek are Tier 1a streams that support both Coho salmon and steelhead. El Corte de Madera Creek, La Honda Creek, Russian Ridge, Skyline Ridge and Long Ridge open space preserves protect land that connects to these important streams.

Coho salmon and steelhead are anadromous fish that breed in coastal streams but live their adult lives in the Pacific Ocean. Steps to conserve these imperiled salmonids can help conserve a wide range of resident fish species and other riverine species, including foothill yellow-legged frog, California red-legged frog, western pond turtle, and San Francisco garter snake. Protection, restoration, and management of the more than 1,100 miles of streams in the Vision Plan Area can help safeguard their many other conservation values. Streams support freshwater wetlands and riparian forests, which provide important nesting habitat for many neotropical migratory birds. They provide water for animals and the riparian corridors can facilitate wildlife movement through urbanized or cultivated areas, enhancing landscape connectivity. The quality of water in these streams also influences habitat in the San Francisco Bay and Pacific Ocean, while simultaneously providing important sources of water for people.

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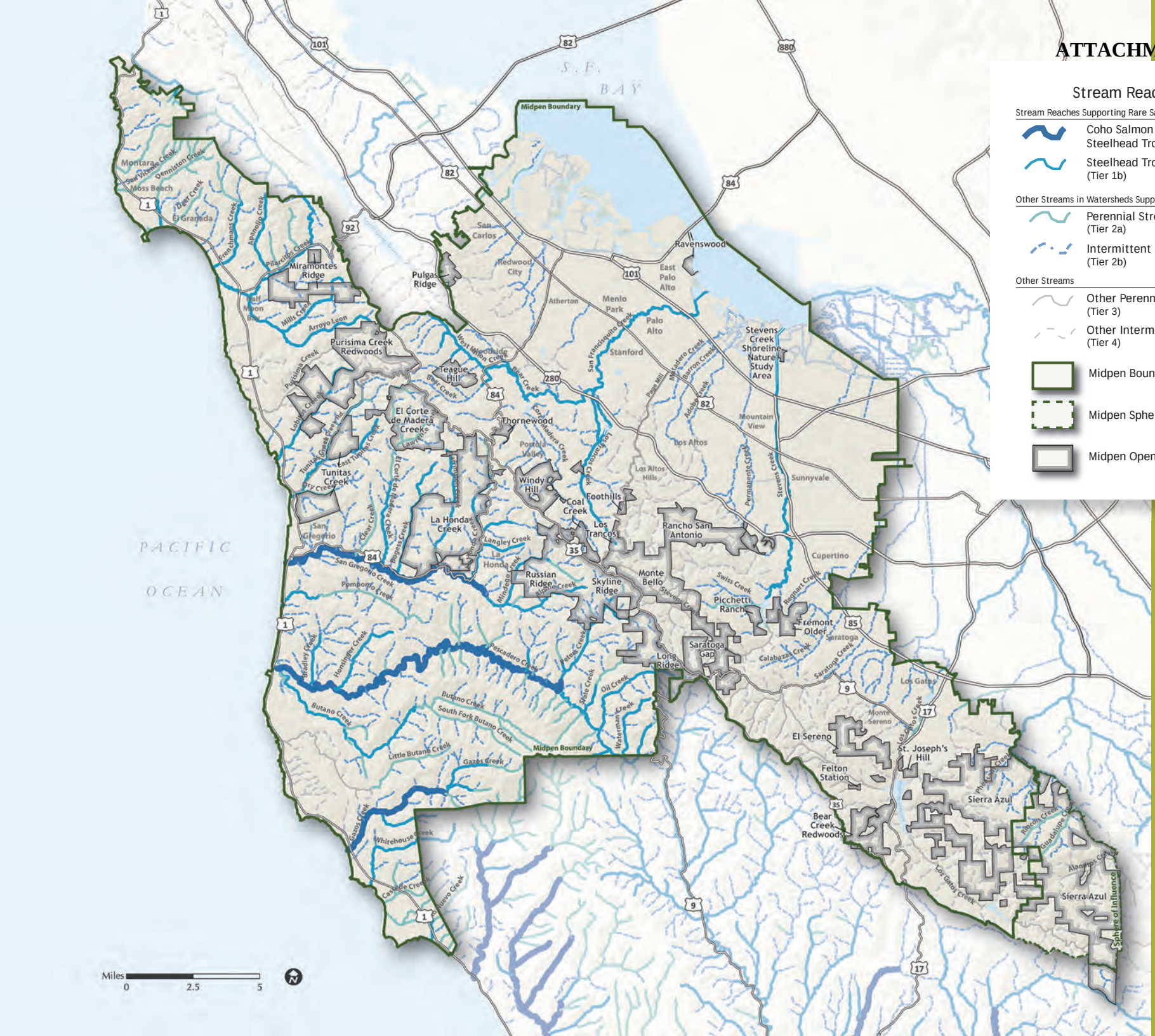

Watersheds

Photo above: Stevens Creek Shoreline Nature Study Area; Open Space Preserve; Photo below: Windy Hill Open Space Preserve by Robert Clark

This map illustrates watersheds within the Vision Plan Area according to their importance for recovery of rare salmonids, which breed in coastal streams and spend their adult lives in the ocean. Subwatersheds were attributed according to their importance for Coho recovery (NMFS 2010), the distribution of steelhead (CDFW 2012), and the watershed's general level of urban development (BAOSC 2012). Tier 1 watersheds are important for recovery of the endangered coho salmon as well as steelhead. Tier 2 watersheds are important for steelhead, but not coho. Tier 2a are a higher priority for conservation as they are relatively intact while Tier 2b are more urbanized. Tier 3 watersheds do not support the salmonids.

Midpen has protected approximately 20% of the land located within the highest priority watersheds; other conservation agencies and organizations have protected an additional 30%. Approximately 50% remain unprotected. El Corte de Madera, La Honda Creek, and Russian Ridge open space preserves protect land within the San Gregorio Creek watershed which is important for conservation of the coho salmon. Portions of Skyline Ridge and Long Ridge open space preserves protect lands that drain the headwaters of Pescadero Creek Watershed, also a Tier 1 watershed.

Midpen resource management policies for wildlife management and water resources feature numerous goals and practices to protect and enhance stream habitat for all riparian and riverine species, as well as to safeguard water quality. These policies address sedimentation, pollution, and unnatural barriers to upstream migration, and call for maintenance and restoration of stream habitat features, including pools created through large woody debris recruitment.

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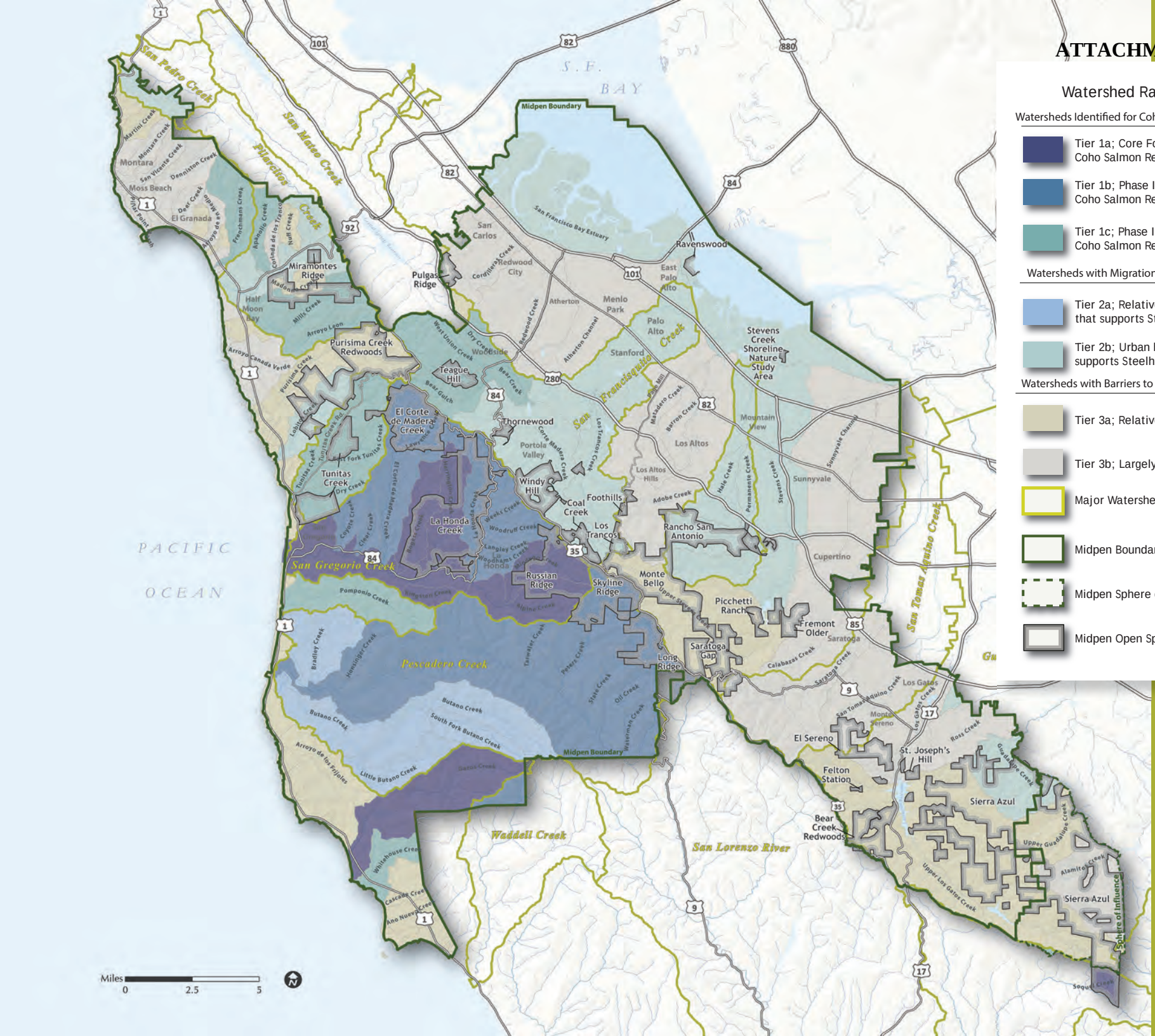

MIDPENINSULA REGIONAL OPEN SPACE

Rare Species

Photo above: San Francisco Garter Snake, Russian Ridge Open Space Preserve by Cindy Roessler; Photo below: Stevens Creek Shoreline Nature Study Area

This map illustrates occurrences of rare plants and animals, using data compiled from the California Natural Diversity Database (2013), the California Consortium of Herbaria (2013), the Museum of Vertebrate Zoology (2013), and various resource assessments of Midpen lands.

The Vision Plan Area is home to more than 160 special-status species, which Midpen defines as species that are state or federally listed as threatened, rare, endangered, fully protected, species of special concern, candidate species, watch list species, California Native Plant Society listed (List 1-4), US Fish and Wildlife Service Birds of Management or Conservation Concern, or locally rare species. Included in this are 11 plant and 16 animal species that are state and/or federally listed as threatened or endangered.

Many of these species co-occur in hot-spots, or areas that feature multiple sensitive species. Aquatic hot spots include coastal streams, ponds and freshwater wetlands, and wetlands fringing the San Francisco Bay; terrestrial hot spots include coastal bluffs and dunes, grasslands, serpentine communities, riparian woodlands, sandstone outcroppings, and coast redwood forests.

Midpen open space preserves contain many such hot spots, and support populations of numerous special status species, for which Midpen resource management polices incorporate numerous goals and implementation measures designed to protect and enhance their habitat. Coordinated measures by Midpen and other conservation agencies and organizations working within the region will be essential to the recovery and long-term persistence of these and other species.

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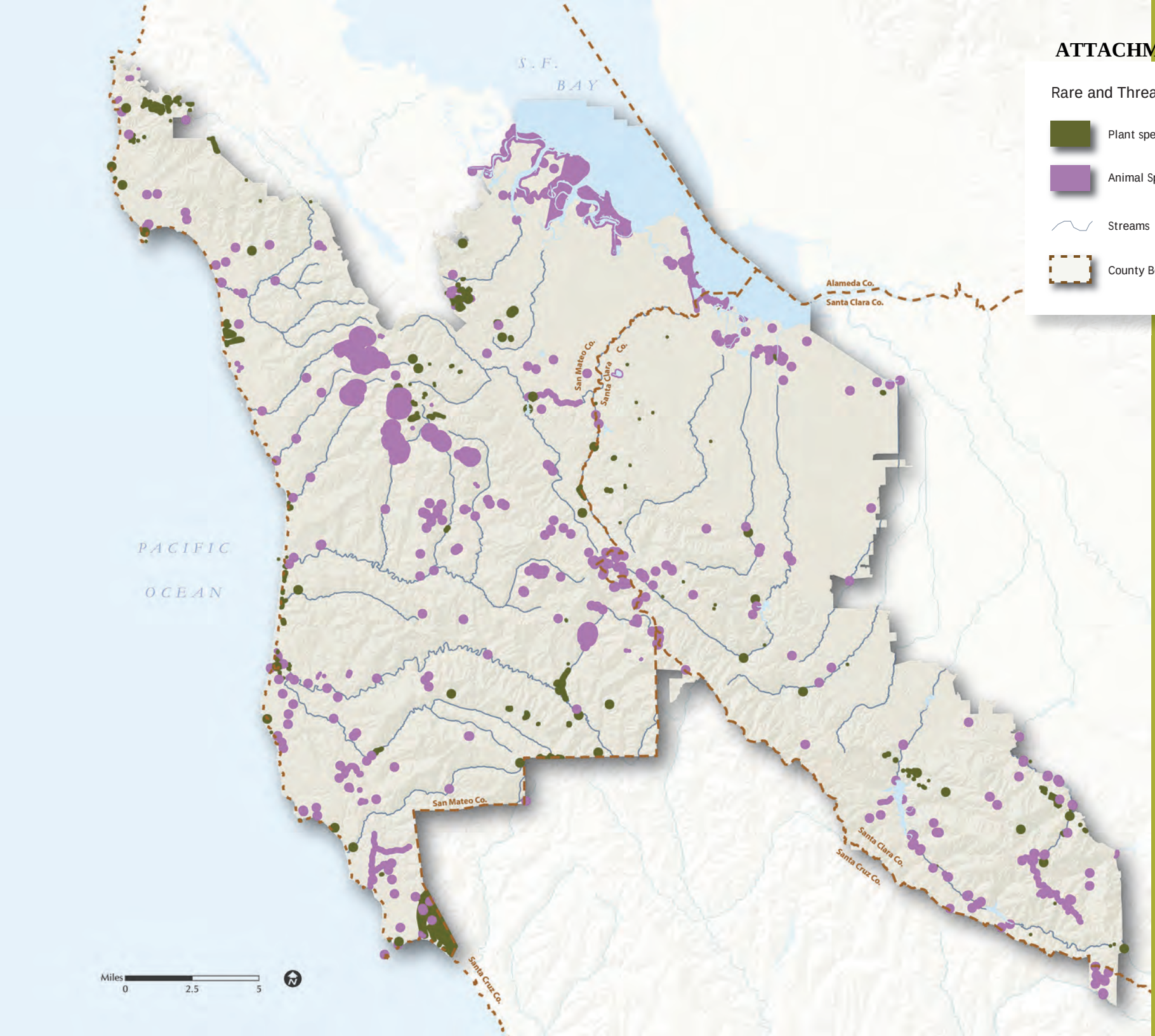

MIDPENINSULA REGIONAL OPEN SPACE

Habitat Connectivity

Photo above: Bobcat by Yamil Saenz;
Photo below: Purisima Creek Redwoods Open Space Preserve by Randy Weber

This map illustrates areas important for maintaining habitat connectivity within the Vision Plan Area. It was developed by integrating habitat patches within the Santa Cruz Mountains identified by the Land Trust of Santa Cruz County (Mackenzie et al. 2011), with the landscape linkage mapped as part of the Bay Area Critical Linkages project (BAOSC 2013).

The western portion of the Vision Plan Area contains some of the largest patches of intact habitat within the Santa Cruz Mountains. In addition, the series of 'stepping stone' patches located in the southeastern portion of the Vision Plan Area are part of the critical habitat linkage that connects the Santa Cruz Mountains to the Diablo and Gabilan ranges (see inset map).

Large, interconnected patches of intact habitat can:

- support species with large home ranges such as mountain lions, for which individual habitat patches are insufficient to support persisting populations;
- facilitate species movement in response to changes in habitat suitability, to disperse to establish a new territory, and as part of seasonal or other migration;
- facilitate recolonization of habitat patches after a disturbance (e.g. fire);
- promote exchange of genetic material to facilitate population viability; and
- enable species range shifts in response to climate change.

Midpen resource management policies include numerous implementation measures designed to achieve the goal of protecting ecosystem integrity by maximizing habitat connectivity (MROSD 2011). Importantly, the Vision Plan Area features open space preserves on either side of Highway 17, which is a barrier to movement of large mammals. Midpen is actively working with its partners to promote connectivity through the region by improving opportunities for wildlife to safely cross this movement barrier.

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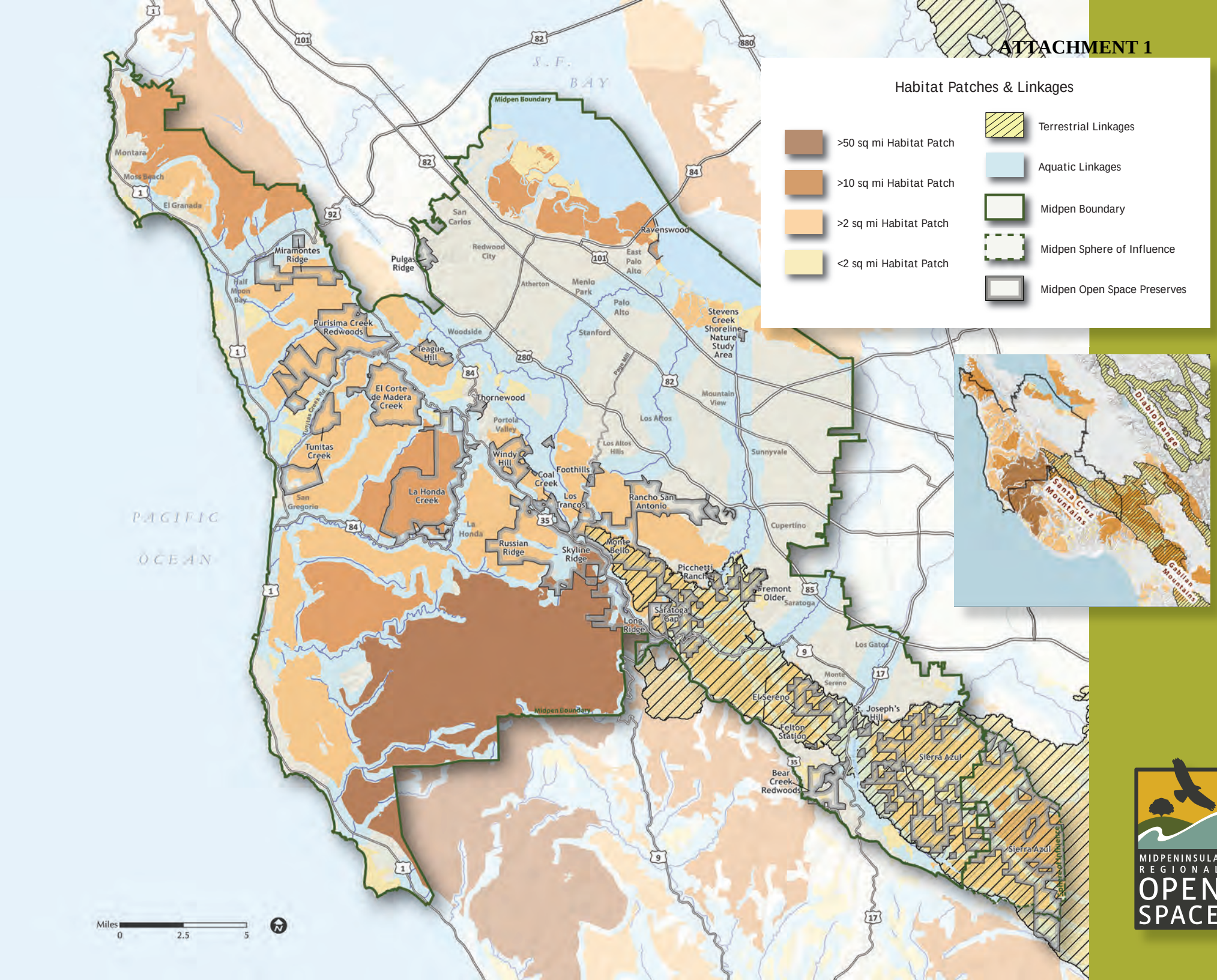
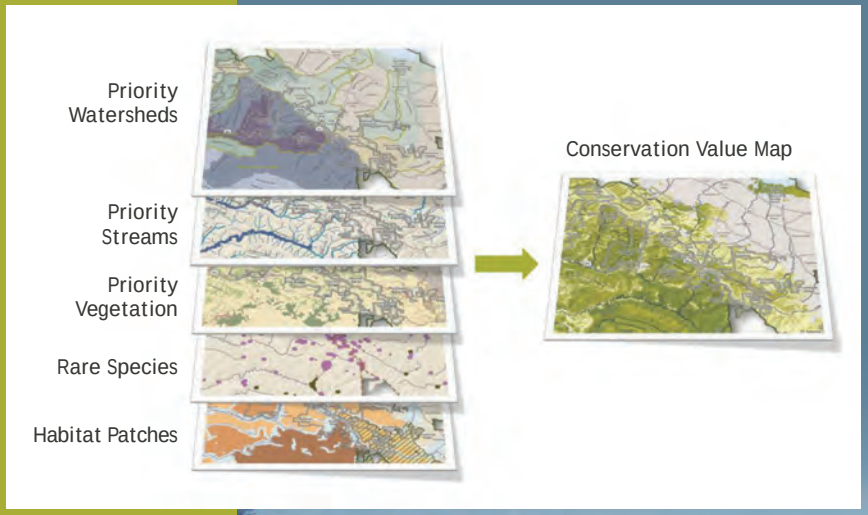


MIDPENINSULA REGIONAL OPEN SPACE

Conservation Value

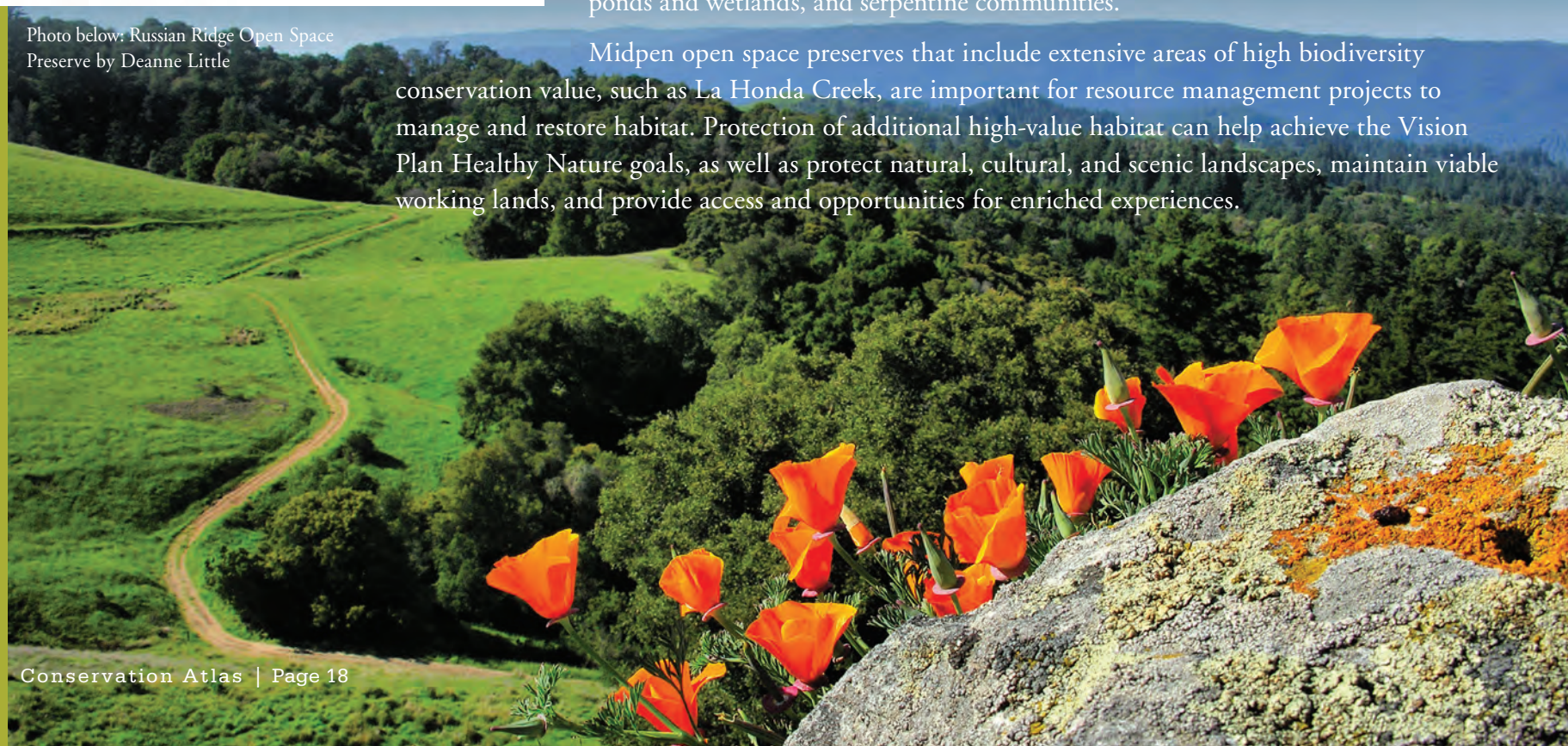


This map depicts the overall value of land within the Vision Plan Area for the conservation of biodiversity. It was developed as part of the Healthy Nature Theme of the Vision Plan, by overlaying the results of analyses used to identify sensitive and biologically highly significant vegetation (page 8), priority streams (page 10), priority watersheds (page 12), rare species (page 14), and habitat connectivity (page 16).

Areas of high overall conservation values feature multiple, co-occurring biodiversity elements and therefore are important targets for conservation efforts, including habitat protection, restoration, and management. High values are concentrated along the San Francisco Bay and in the redwood forests of the Pescadero and San Gregorio creek watersheds; however, they also occur in smaller pockets scattered throughout the Vision Plan Area, in association with streams and riparian areas, ponds and wetlands, and serpentine communities.

Midpen open space preserves that include extensive areas of high biodiversity conservation value, such as La Honda Creek, are important for resource management projects to manage and restore habitat. Protection of additional high-value habitat can help achieve the Vision Plan Healthy Nature goals, as well as protect natural, cultural, and scenic landscapes, maintain viable working lands, and provide access and opportunities for enriched experiences.

Photo below: Russian Ridge Open Space Preserve by Deanne Little



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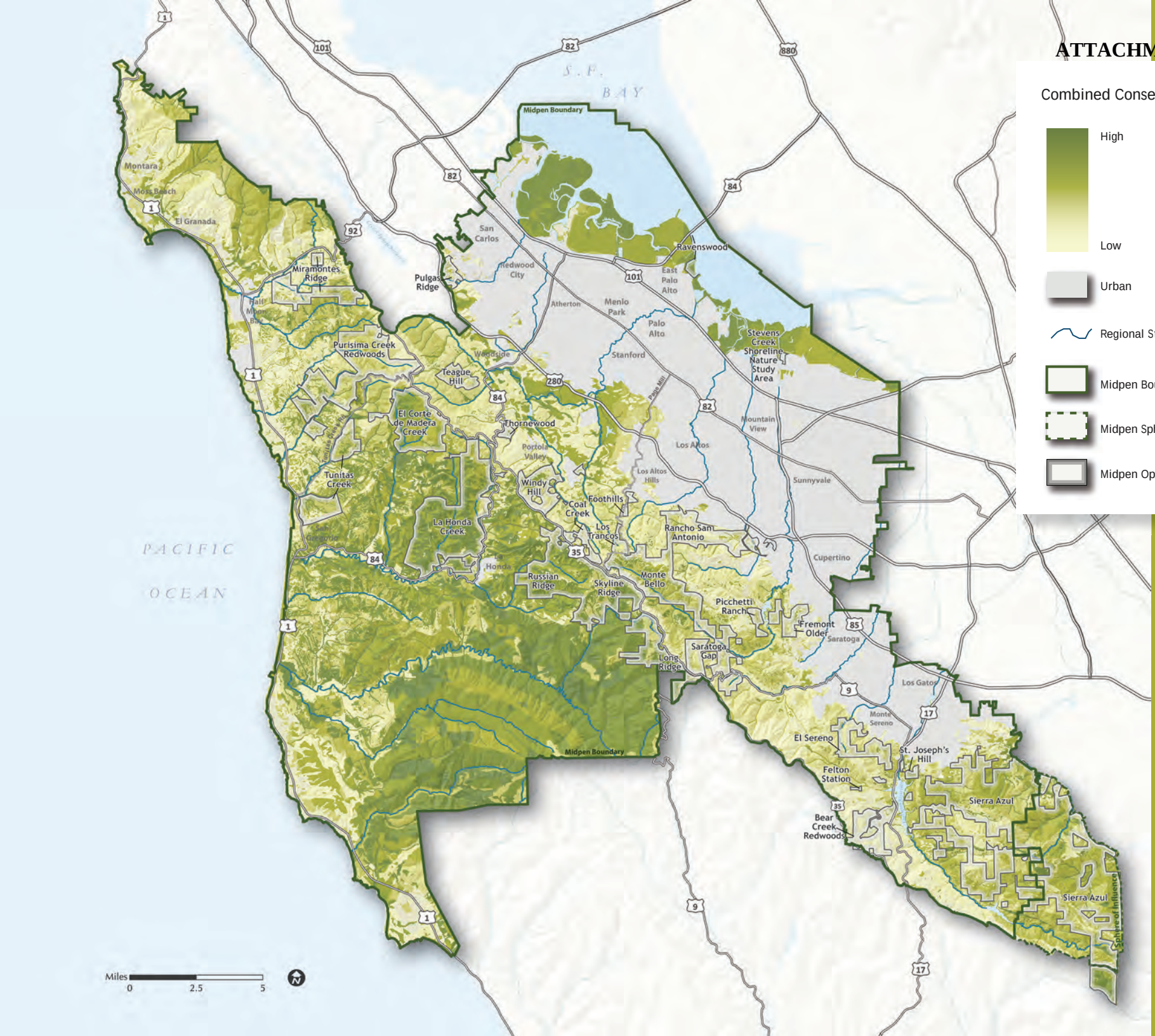

Forest Management

Photo above: Purisima Creek Redwoods Open Space Preserve by Karl Gohl; Photo below: Purisima Creek Redwoods Open Space Preserve by Karl Gohl

Forests can provide clean air and water, important wildlife habitat, beautiful scenery, and recreation opportunities. Many forests and woodlands within the Vision Plan Area have been subject to significant historic modifications including urbanization, and intense commercial logging. Such degradation can cause forest structure and species composition changes which may cause forests to be susceptible to overcrowding, disease, insects, and competition for light, water and nutrients, and increased risk of wildfire. The goal of Midpen's Forest Management Policies is to retain and promote biologically diverse, dynamic forest conditions; maintain and enhance high quality forest and aquatic habitat; encourage and enhance the development of late-seral conifer forest; provide for visitor experiences within diverse forest habitat; and promote regional fire management objectives.

Within the Vision Plan Area there is over 130,000 acres of forest and woodland habitat, and over 32,000 acres are protected within Midpen's open space preserves. This map depicts the assemblage of various forest types across the Santa Cruz Mountains. Located primarily on the western slopes, nearly 78,000 acres of forest are dominated by coast redwood and Douglas fir species, 5% of these remain in old growth condition. These forests support numerous sensitive species that require late-seral forest conditions, which are also more fire-resistant, promoting Midpen's regional fire management objectives. In addition to these conifers, closed-cone conifers are sparingly distributed throughout the Vision Plan Area. These unique species rely on fire to regenerate.

The eastern slopes of the Santa Cruz Mountains are dominated by hardwood forest and oak woodland. These are comprised of numerous oak species, madrone, tanoak, California bay, California buckeye, and riparian species. These forest communities provide habitat to numerous bird, mammal and insect species. Acorns from oak trees provide an important calorie-rich food source for many species. Slow regeneration of many oak species is a concern for restoration.

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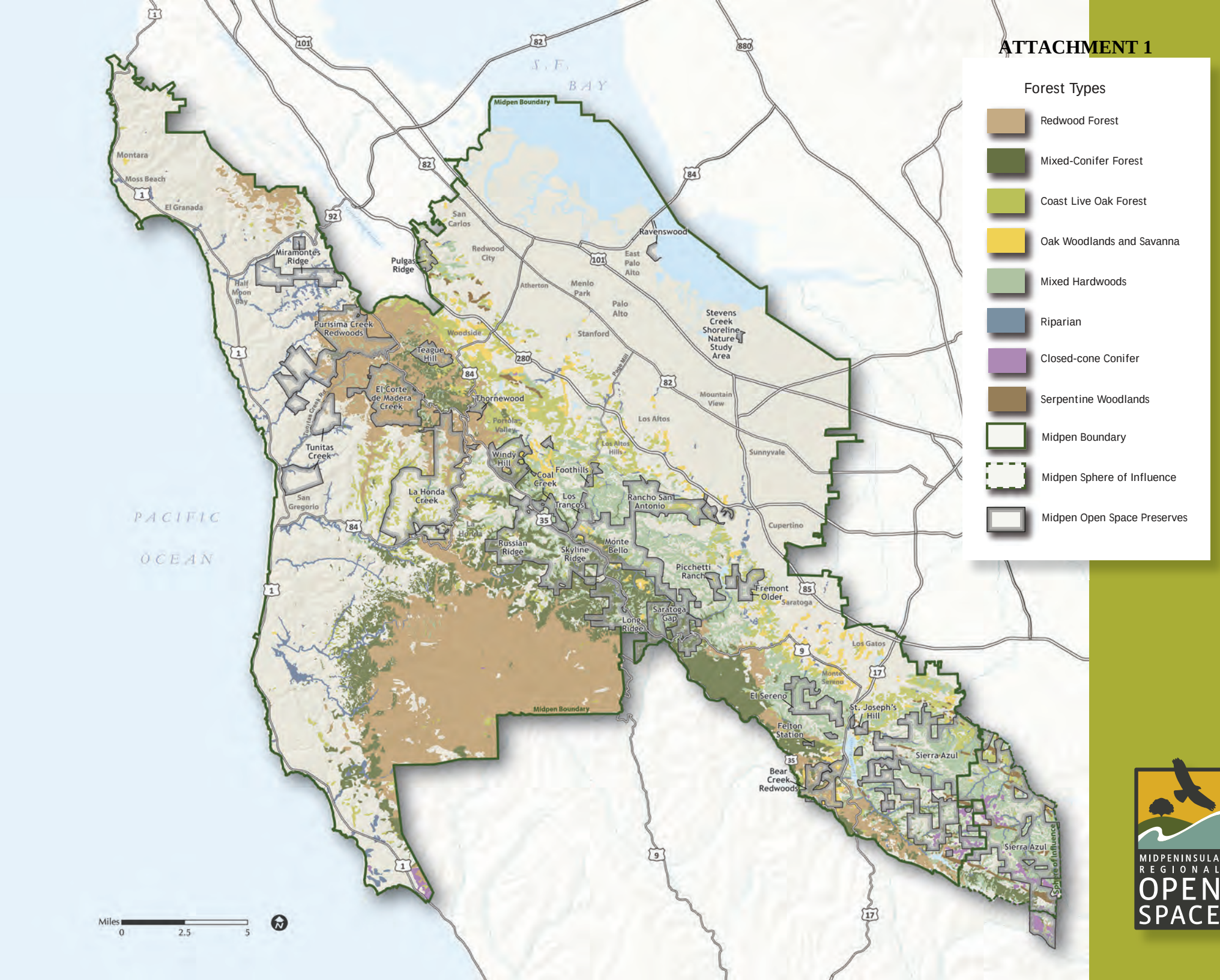

Sudden Oak Death

Photo above: Monte Bello Open Space Preserve by Vaibhav Tripathi; Photo below: Russian Ridge Open Space Preserve by Karl Gohl

This map illustrates observed locations of Sudden Oak Death (SOD) and the hardwood forests within the Vision Plan Area. SOD observations were synthesized from two databases: SODMap (UCB 2013) and OakMapper (Kelly et al. 2004). The vegetation map was compiled based on Midpen's vegetation map (MROSD 2013), the Conservation Lands Network (BAOSC 2012), and the National Wetland Inventory (USFWS 2011).

Sudden Oak Death is an emerging disease that has caused extensive mortality of oaks and tanoaks in coastal California. The disease can cause shifts in plant species composition and declines in populations of animals that rely on oaks, such as black-tailed deer and acorn woodpecker; it can also increase fuel and promote fire.

The Vision Plan area features the highest concentration of SOD detections in the Santa Cruz Mountains. The disease threatens to degrade the more than 47,000 acres of hardwood forest, of which 18,000 acres occur in Midpen open space preserves.

Midpen staff conduct research, monitor and manage SOD in accordance with the newly adopted Integrated Pest Management Program. This work occurs on Rancho San Antonio, Monte Bello, El Corte de Madera Creek, Los Trancos, Russian Ridge, Skyline Ridge, Long Ridge and Saratoga Gap open space preserves. Because the long-term effects of the disease on California's forests are unknown, Midpen is working with the California Oak Mortality Task Force to further study and monitor the impacts of the disease. In 2006, Midpen adopted a ten-year Sudden Oak Death plan to map oak trees on Midpen preserves that are potentially resistant to the SOD pathogen, treat a selected number of specimen oak trees, and establish collaborative funding for SOD research to help guide land management decisions.

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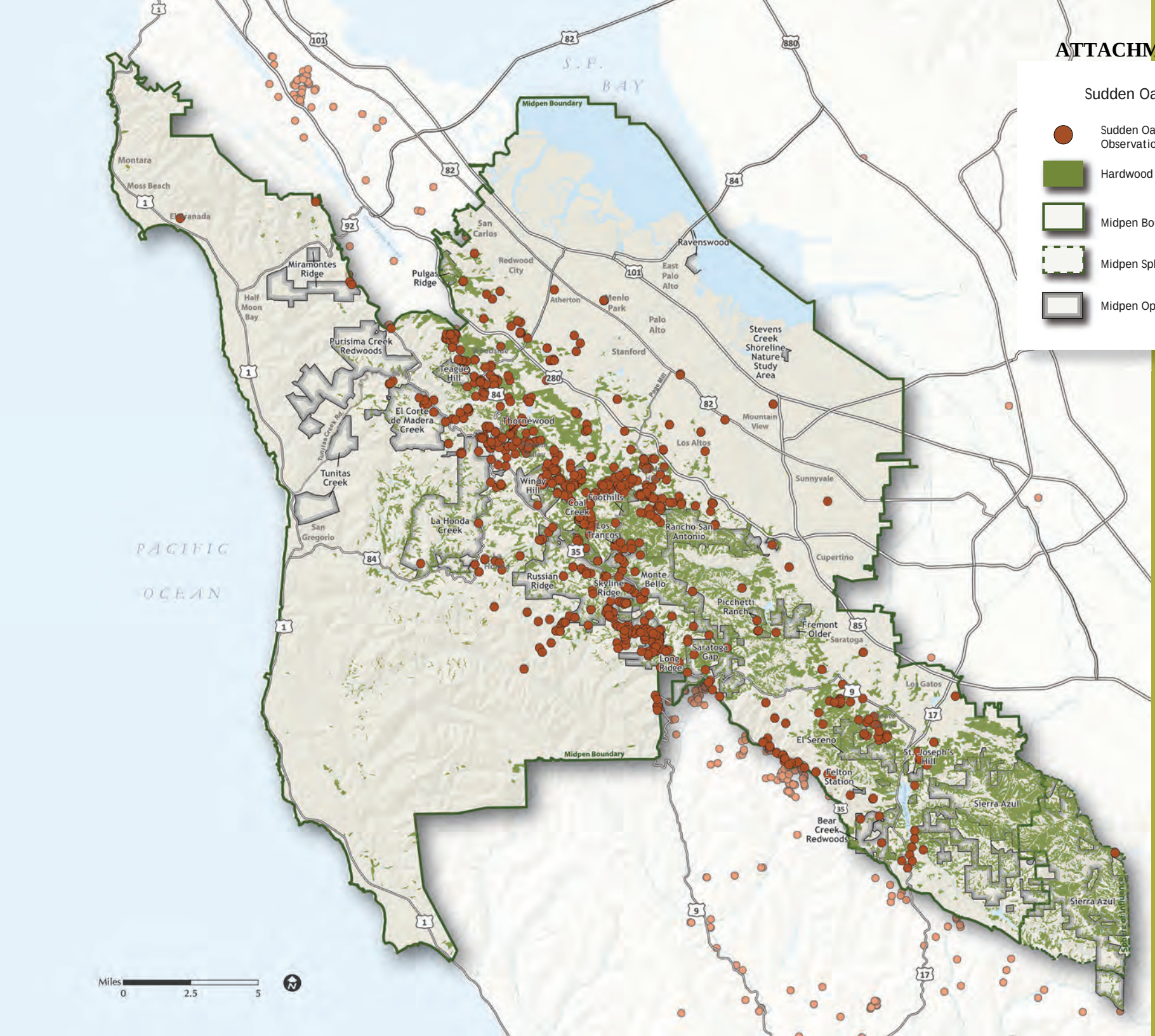


Fire Ecology

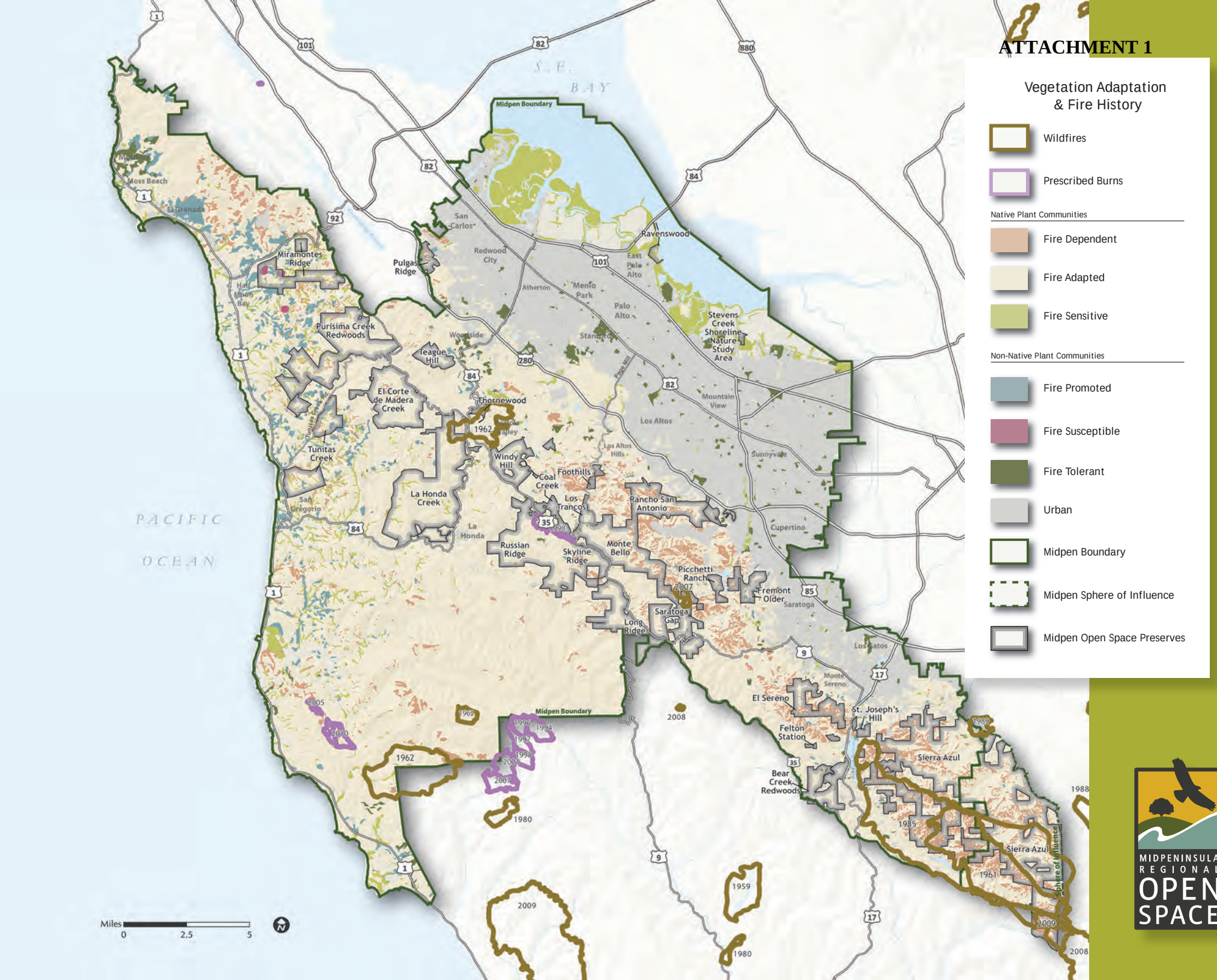
Photo above: Closed-cone pine cones, Sierra Azul Open Space Preserve by staff; Photo below: Sierra Azul Open Space Preserve by staff

This map illustrates the fire ecology of vegetation and recorded fire history of the Vision Plan Area. The vegetation layer was synthesized using the vegetation layer developed for Midpen lands (MROSD 2013) with regional data from the Conservation Lands Network (BAOSC 2012) and the National Wetland Inventory (USFWS 2011) to create a composite vegetation map. This recorded history of wildfires as well as prescribed burns was compiled by the California Department of Forestry and Fire Protection (Cal Fire 2012).

Fire plays an important role in the native plant communities within the Vision Plan Area, including by promoting establishment of fire-adapted native plants, creating and maintaining early successional habitat conditions required by some animals, and cycling nutrients. To facilitate planning, the plant communities within the Vision Plan Area were generally characterized based on the response of the dominant species within each community to fire. Fire dependent communities, such as closed-cone conifer woodlands and chaparral, are dominated by native plant species that cannot persist without recurring fire. Fire sensitive communities are dominated by native plants that are killed by fire, and/or do not regenerate well following fire, such as riparian and wetland communities. Other native communities were classified as fire adapted as they feature species adapted to fire within the natural range of variation of the disturbance regime.

Fire can also promote the invasion and spread of non-native plants. Communities dominated by non-native plant species were classified as fire promoted, if fire facilitates the establishment of the dominate species, such as acacia, eucalyptus, and pampas grass. Fire susceptible non-native plant communities are those dominated by plant species that are killed by, and do not regenerate well following, fire, such as poison hemlock. Other non-native communities were classified as fire tolerant, as they feature species adapted to fire, which is unlikely to promote spread, or present an effective control technique.

ATTACHMENT 1



Fire Threat

Photo above: Russian Ridge Open Space Preserve by Jack Owicki; Photo below: Russian Ridge Open Space Preserve by Jack Owicki

Though a natural part of the Mediterranean ecosystems within the Vision Plan Area, fire poses a threat to lives and property, particularly at the Wildland-Urban Interface (WUI)—the transition zone between wildlands and developed areas. For Midpen lands, the WUI was mapped as areas of development within a half mile of Midpen open space preserves. At the statewide level, CalFire designated Communities at Risk: areas with at least one house per 20 acres that are located within 1.5 miles of areas characterized as having high, very high or extreme fire threat. To address the threat posed by wildfire in the region, fire agencies worked in partnership with landowners and the broader public to develop Community Wildfire Protection Plans (CWPPs) for the San Mateo and Santa Cruz counties, and the Lexington Hills in Santa Clara County. These plans identify Priority Areas for fuel reduction and other fire prevention practices to protect people and property from wildfires. Midpen participated in development of the CWPPs, which include Priority Areas located in Midpen open space preserves, including Pulgas Ridge, Bear Creek Redwoods, and Sierra Azul, and along Highway 35 within Saratoga Gap, Long Ridge, Skyline Ridge, Monte Bello, Russian Ridge, Coal Creek, and Windy Hill open space preserves.

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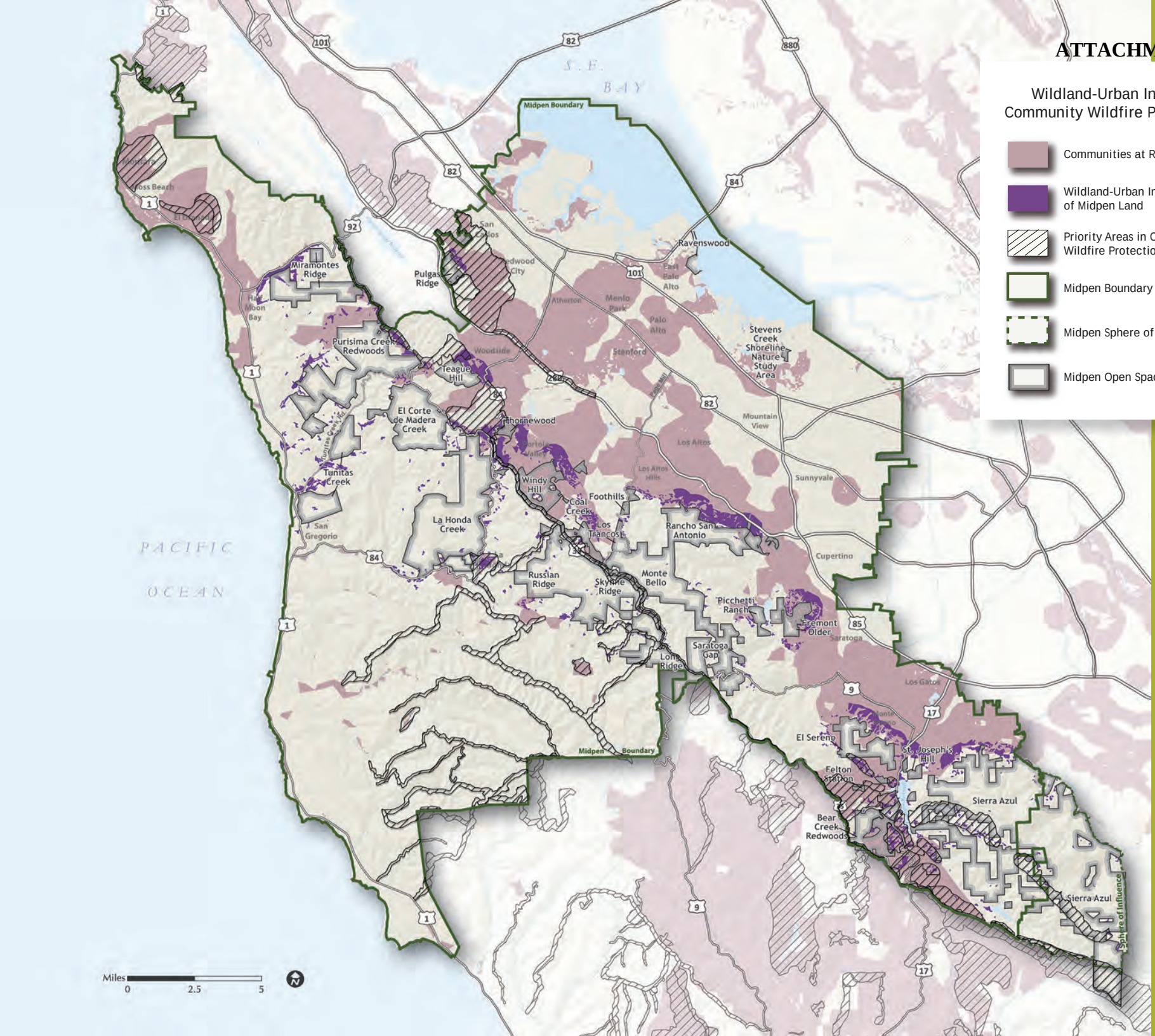

MIDPENINSULA REGIONAL OPEN SPACE

Potential Climate Change Refuges

ATTACHMENT 1

Photo above: Skyline Ridge Open Space Preserve; by Jack Gescheidt Photo below: Purisima Creek Redwoods Open Space Preserve by Randy Weber

This map illustrates areas within the Vision Plan Area that can allow ecological systems to have resiliency in the face of a future hotter and likely drier climate in the region. They include areas with cooler microclimates, which were identified by conducting an insolation analysis on the digital elevation model. This analysis identified areas that receive lower levels of solar radiation and thus generally feature cooler microclimates. They also include wet areas which were identified using the National Wetlands Inventory (USFWS 2011) and Midpen's layer for ponds and wetlands (MROSD 2013).

By the end of the century, the average annual temperature in California is predicted to increase by 8.1° F (Cayan et al. 2008); the increase in temperature will promote water loss due to evaporation and transpiration. These narrow, deep canyons and north-facing slopes feature cooler, moister areas that will provide a refuge as temperatures rise. Likewise, wet areas, such as seeps, springs, streams, ponds, marshes, lakes and reservoirs, feature cooler microclimates, provide sources of free water, and may indicate areas of greater ground water that may be resilient in the face of a future hotter and likely drier climate.

Midpen open space preserves including Purisima Creek Redwoods, Saratoga Gap, Rancho San Antonio, and Sierra Azul feature extensive areas of lower insolation; La Honda Creek Open Space Preserve and Stevens Creek Shoreline Nature Study Area, among other Midpen lands, feature important aquatic habitats. Midpen resource management policies are designed to protect and manage these and other areas to address the effects of climate change, including adaptations to rising sea levels.

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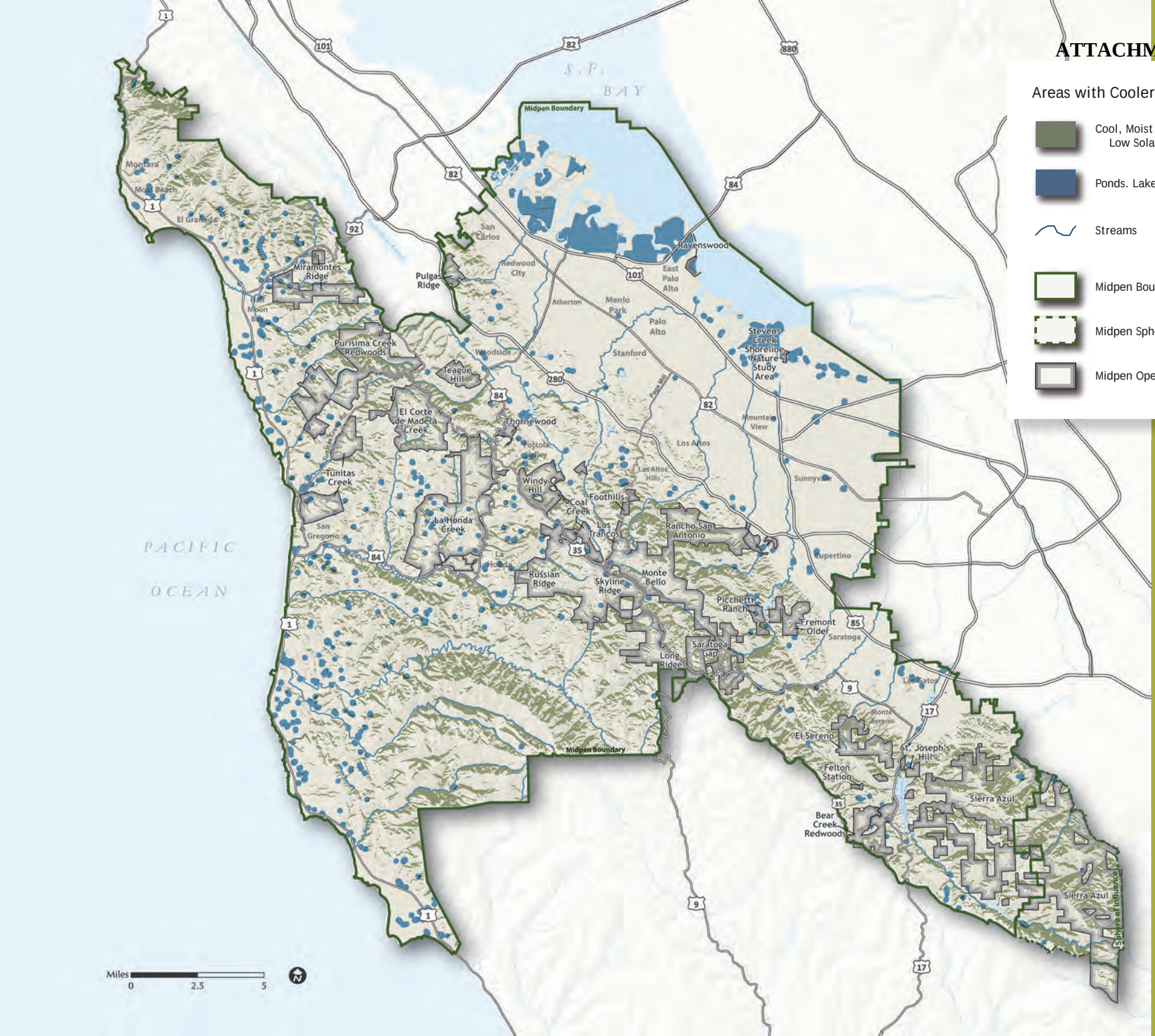

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Russian Ridge Open Space Preserve

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