

FOUNTAINGROVE II

The OSMA Newsletter is published quarterly by the Fountaingrove II Open Space Maintenance Association.



Springtime and sunshine, an azure blue sky, the plants all resuming their blooming, Oh my!



It's Spring! Time to renew you!

With Spring comes renewal! Life is regaining its enthusiasm and with it comes a new cycle of growth. The return of flowers, blossoms and new leaves on awakening shrubs and trees. Birds return from their migratory trip south while those who came to winter with us head north to their breeding grounds. As we, swept up by it all, are renewed as well. *Page 4.*



Are we as smart as our plants?

Are you ready to expand your awareness of plants and their intelligence? Could you accept that your backyard plants and the wild plants in our open space are neurologically your equal? That they are fully aware of their surroundings and modify themselves accordingly? That they rely on equally intelligent mycorrhiza fungi and bacteria to thrive? *More on page 5.*



Pollinators are ready, are you?

We all know flowering plants require *pollination* and we all know that bees, honey bees and bumble bees are easily the champs. But among our local pollinators are others that don't readily come to mind: butterflies, ladybugs (really), moths, humming birds, wasps, even bats (bats?). Pollinators, without question, perform the most important job in the world. *Learn more on page 7.*

Rock of ages – the geological history of our hills, ridges and boulders.

Ever wonder where all our massive boulders came from? Did they fall from the sky? Not something you'd want to witness if they did. So where *did* they come from? And what sort of rock *are* they? And what about these hills and the nearby Mayacamas Mountains? So much to know. If you're curious, *see page 9.*



The Grass is Back!

If you've been waiting for the city to reinstall the lawn at Rincon Ridge Park, your patience has been rewarded. Give it a little time to get used to its new home, and enjoy!

Being a Fire Wise community involves every one of us.

The OSMA exists to assure that all necessary steps are taken to preserve the health and integrity of our Open Space as viable habitat *and* protect our community from the threat of uncontrollable wild fire.

This involves all of us. More on page 3.





FIELD WORK

The health and viability of our Open Space as wild habitat is always a concern as is the interface of our wild areas with the residential. This year's excessive rainfall and resulting run off from large, saturated watershed areas brought an unexpected challenge. Swales can be overwhelmed and ineffective residential grading can negate our best efforts to effectively channel water away from homes during extreme storms.

From the OSMA Board

Be aware of these colorful but highly invasive plants that can quickly spread throughout our Open Space.

They flourish here, spread rapidly and new plants seem to spring up overnight. None are native species and they are all among the most invasive plants in our area. They crowd out natives and their oily nature makes them a fire hazard.

Scotch Broom, French Broom, Spanish Broom and Sweet Broom

are the *Broom* family of invasive shrubs and the focus of eradication efforts from here to British Columbia.

Please be on the lookout for these potential invaders. If spotted on your property, remove them roots and all. They spread by seeds and if cut, they regrow from stumps easily. If spotted in our Open Space, please contact Leslie Cohen at Focus Real Estate & Investments, leslie@focus-re.com, so we can remove them quickly before they becomes established.



The OSMA Newsletter is a quarterly publication of the Fountaingrove II Open Space Maintenance Association as a service to our members.

Be sure to visit Fountaingroveii.com

THE PRESIDENT'S CORNER

A Busy Spring and Summer Ahead

Ah - Spring is upon us, FINALLY. The surplus of rain this year was much needed, but will undoubtedly bring an abundance of Spring flowers and WEEDS.

The annual weed abatement of our Landscaped areas has already begun. Valley Oak Landscaping started weed whacking areas early in an attempt to control aggressive weed growth thereby keeping the Landscape areas maintained and looking good. We also will weed abate approximately 204 acres of Wildland areas. This activity will begin in early May and take about 10 days.

Graffiti

We had some Graffiti tags on a retaining wall along Parker Hill Rd. The Graffiti was painted over as an immediate step and a finish coat of paint will soon be applied, hopefully by the time this newsletter goes to press. If you spot any Graffiti in the Fountaingrove II area, contact Leslie Cohen at Focus Real Estate & Investments, Inc., leslie@focus-re.com. The OSMA will take care of the removal.

OSMA Landscape Areas

Time to start the planning and evaluation for refurbishing our **OSMA landscape areas**. The OSMA Board of Directors will appoint two Board Members to the Landscape Com-

mittee in the near future. The Committee will develop refurbishing plans for specific landscape areas and oversee implementation of the improvements. OSMA Members interested in participating as a member of the landscape committee, contact Leslie Cohen, at Focus Real Estate & Investments, Inc., leslie@focus-re.com. **We need your help.**

Home Fire Safety

Home fire safety in your yard can start with a landscape spring cleaning of vegetation. This could save your home. Many homes lost during the TUBBS fire disaster were ignited by airborne embers landing in trees and shrubs in the close proximity of a structure then the vegetation fire transferred to the home. It is all about DEFENSIBLE SPACE and now is a great time to increase the defensible space around your home by clearing last year's plant growth away. Establish or reestablish the hardscape area around the base of your home.

There are plenty of fire safe landscape examples at your fingertips via the technology research tools of your choice.

Bruce McConnell,
OSMA Board President



Weed abatement is underway early along landscape areas so as to keep a maintained appearance and get ahead of aggressive weed growth expected due to the heavy rains this past winter.

Right: An informative graphic on maintaining a fire safe home.



Ready, Set, Be Happy!

There's nothing more exciting than watching spring do its thing — and knowing you're included!

Of all the seasonal changes, none rival the arrival of spring for lifting you out of your doldrums and putting that energy you're known for back in your step.

We always look forward to spring, days getting longer, waking up refreshed, ready to take on the day's to-do list. Even our Open Space is dressing up for spring with new



blossoms and wildflowers, not to mention the ever romantic melodies of returning song-birds. In a word, spring is **joyous**. But have you ever wondered what it *truly* is you're feeling?

A poet will profess, *it's the newness everywhere and that subtle sweetness in the air*. To which a scientist agrees, then offers yes, but while we're on the subject please, let's be fair to serotonin and the role of **melatonin**.

If you've not kept up with such things as busy neurotransmitters, serotonin is your feel good hormone responsible for happiness, self esteem, etc. Melatonin is your relax and sleep hormone synthesized from serotonin in your brain's pineal gland as it responds to fluctuating light levels.

But wait you ask, how does my pineal gland, tucked away in the middle of my brain, know how light or dark it is?

Good question. Light that passes through your eye's retina activates specific receptors called *intrinsically photosensitive retinal ganglion cells* (but you knew that). From

there, the current light level is relayed from the eyes directly to the pineal gland. Brighter light, an increase in serotonin, or rather a decrease in melatonin allowing the serotonin to dominate. Dimmer light to darkness, brings increased melatonin with its calming influence purposely designed to bring about sleep. Nature's plan.

Because of its direct sensory feed from the retina, the pineal gland is sometimes referred to as your third eye. Interestingly, for the immense role it plays in regulating your sleep cycles, your moods, your seasonal biological adjustments and much much more, your pineal gland is smaller than a grain of rice.

As critical as is the level of light in your everyday environment, so is the length of daylight as the seasons transition, especially from winter to spring. Shorter periods of daylight during the winter months with their subsequent increase in melatonin levels, keep us in a somewhat muted state. Conversely, as spring approaches and days grow longer and brighter, melatonin production is reduced, serotonin steps up and that long awaited unbridled mind of yours is free again! It's the annual renewal of trees, plants, animals, birds, all things natural fresh and new — *even you*.

Clearly nature's mission is keeping all things great and small, animals and plants and all (including us) in sync through this winter/spring transition.

Here comes the sun!

So get out there and marvel at the miracle of renewal — but no longer as a mere spectator. Know now, as you always have deep down, *that you are included!*



Acknowledging Plants...

Imagine a vast, planet-wide awareness that far exceeds our own — that we've been virtually *unaware of*.

While opinions may differ as to the degree, science has confirmed that plants possess a highly developed intelligence predating our own by hundreds of millions of years.

We love our Open Space here in Fountaingrove. We have a unique relationship with native trees and plants given our 225 acres of wild land, home to the many species of birds and animals with whom we share these hills — all of which we recognize as self aware and intelligent.

But what if you were to discover that the plants in our open space, the myriad of trees, shrubs, vines, grasses, are also self aware and intelligent. Not at some barely discernible level but *highly* intelligent, on a level surpassing animals and — depending on perspective — quite possibly us.

Electronic monitoring of plants in all manner of environments and situations have enabled researchers to study the neurological reactions of plants to changes in their immediate, even distant, surrounding. Should a threat be detected, plants will analyze its nature and formulate a response. They will even store memory of the event so as to be prepared for a recurrence.

Science has long viewed the concept of plant intelligence as being rooted in the romantic notion that plants are human-like, feeling emotions, even pain, assisting one



another and acting in “caring” ways. While facts supporting many of these assertions have been documented with controlled studies, many scientists remain reluctant to acknowledge them as anything more than an evolved auto-response unassociated with an actual intellect.

The rationale has always been, “Plants don’t have a brain.” On that bedrock topic, the failing of science has always been an inability to look beyond ourselves, to conceive of an intelligence *unlike our own*. After all, we modern humans have been evolving on this planet for 300 thousand years. Plants however, the worldwide terrestrial community that we view as a passive backdrop for us “higher” organisms **have been evolving here for 500 million years.** *Continued...*



From powerful oaks to the most delicate of flowering plants, from the heights to the depths of every land mass the world over, plants provide the life sustaining necessities for animals and all oxygen-dependent life forms. For an estimated 500 million years, plants have been maintaining a planet surface capable of supporting more forms of life than we will ever know. Next visit to our Open Space, consider with whom you are among and share your respect.

Acknowledging Plants...

But advances in plant biology have revolutionized our understanding of what's going on inside these dynamic organisms. This has resulted in the new discipline of **plant neurobiology**. Key to this more enlightened perspective was the discovery of heretofore disputed neuronetworks within plants which use virtually the same array of neurotransmitters as do animals and humans to pass messaging signals throughout the plant body. Transmitters such as glutamate, acetacholine, dopamine, serotonin, melatonin, epinephrine, and many more, all serving the same neurotransmitter functions in plants, animals *and* humans — including **enhanced brain function**.

So what about that brain plants don't have? Researchers now admit to having been upside down in their thinking. Plants gather and process information, form conclusions, calculate options and create responses, even commit pertinent information to memory for future reference. Plants perform all manner of brain-like functions *in their roots*. *In essence, the root system of a plant is its brain.*

*In essence, the root system
of a plant is its brain.*

With humans and animals this processing center is housed in layers of protective tissues within the skull. Plants use the soil in the same way, allowing the roots to expand as the plant grows. Root tips are highly sensitive to their soil surroundings and become even more so as they develop symbiotic relationships with equally intelligent mycorrhizal fungi networks (mycelia). This ancient partnership dates back to the earth of 500 million years ago and can increase the root system's water and nutrient absorption efficiency by up to a thousand times, this while also establishing **below ground communications** via the mycelia with surrounding plants and microbial communities.

The term central nervous system remains controversial regarding plants, as still does the word brain among ardent hold-outs. But science proves daily that truth hides in plain sight waiting to be acknowledged. With most, **root brain** is now a widely acknowledged term, *central nervous system* will be next with plants as well as mycelia networks and eventually bacteria colonies.

It's now been proven that both plants and mycelia are generators and receptors of electrical signals. Mycelia fibers connect directly with root tips of plants at the cellular level. Here signals are passed between mycelia and plant or plant to plant through the fungi network, thus providing **a rapid channel of below ground communication**.

Current research into **above ground communication** is focussed on **scent language**. Through specialized pores called **stomata**, leaves of plants are able to emit as well as receive airborne alerts in the form of molecules with detailed scent profiles. The smells of our open space, as with any natural area, continuously announce the state of things underway with odors we might be aware of but have no frame of reference with which to interpret.



One such alert is the odor of freshly mown grass. While pleasant to us, it's a distress alert as if the plants are under attack by insects or grazing animals. The odor is molecules of an organic compound called Green Leaf Volatiles.

Stomata are vital to the life of plants – and to us – in that they allow the plant to breathe. Both the upper and lower surface of **all** leaves are covered with stomata through which they absorb carbon dioxide and expel oxygen.

Another Acknowledgement

Few are aware that famed nineteenth century evolutionist **Charles Darwin**, spent the last half of his career, with son



Francis, studying plant evolution. Often ridiculed by peers for his "ludicrous" claims of plant intelligence, those claims are now the stuff of botanical headlines as plant researchers around the world are discovering the brilliant

foundation left by the Darwins. Their root brain theory, berated by all the leading plant biologists of their time (and after) has only recently been acknowledged as not only valid but a significant step forward in the total comprehension of all life on earth. The Darwins were more than a century ahead of their time.

Those in science today are at last realizing our long established subservient view of plants should instead be one of awe and respect. How can we not be humbled by a supremely conscious, self-organized system that blankets the planet with life sustaining shelter, nourishment **and oxygen** for all of us dependent organisms?

Plants are crucial to the existence of all life on Earth, yet little has been understood of their intelligence. Next visit to our open space, be generous with your new awareness.

Is your yard pollinator-friendly?

More than 80 percent of all flowering plants on Earth need pollinators to reproduce.

The nonprofit conservation organization, Earthwatch Institute, proclaims bees are the most important species on Earth.

Most recent estimates as to the Earth's first terrestrial plants date back some 500 million years. The earliest record of flowering plants is closer to 100 million years. Ancient non-flowering plants relied upon wind to disperse seed-like reproductive **spores**. Spores develop on the undersides of leaves and, unlike seeds, need no fertilization, they're fully ready to grow upon dropping off the leaf. Today, ferns, mosses and green algae are all examples of spore-bearing plants. Needing plenty of moisture to grow, they're mostly found in damp, shaded areas.

Early flowering plants also relied upon winds for dispersal of their pollen as well as their fertilized seeds. The Earth at that time was very green, covered mainly with ferns and conifers. Flowering plants with their appealing colors and aromas did not go unnoticed by the insect population which unwittingly became the first ever pollinators, aiding the rapid spread of flowering plants over the entire planet.



The Honeybee, considered the most important species on Earth.

Pollinators today provide pollination to over 180,000 different plant species and more than 1200 food crops. Pollinators come in many forms and species including birds, bats, butterflies, moths, flies, beetles, wasps, small mammals, and multitudes of species of bees. Worldwide the number of bee species is approximated at 25,000 with likely another 40,000 yet to be identified. Per the Sonoma County Beekeepers Association, here in the continental US are approximately 3,500 species of bees, though bee populations here are declining due to human activity.



Monarchs as Pollinators

Plants Compete for Pollinators

Plant survival and success as a species is dependent on the availability of pollinators and how appealingly a plant presents itself. Where numerous flowering plants are in bloom simultaneously, the numbers of available pollinators may be insufficient to service all in need triggering competition. Additionally not all pollinators are biologically appropriate for all flowers.

Plants long ago recognized the competitive challenges of survival. Clearly in a primordial setting of all green foliage, color would be an advantage, as would a dramatically different scent designed for a specific group of pollinators. Plants, with their remarkable intelligence plus their 400 million years of close-up observation, conceived of what amounted to a recruiting plan, promoting these new flowering plant species to potential pollinators.

What followed was a brightly colored array of aromatic flowers and blossoms that saw monochromatic wildlands transformed into galleries of exquisitely designed and brilliantly functional blooms. The colors succeeded in grabbing attention but pollen distribution was the goal, and that required a reward. So flowers produced "nectars." What could be more enticing to a potential pollinator than a sweet treat. And of course in accessing that treat, the body of the pollinator comes in contact with pollen, which is then carried to the next flower, and on and on, nature's training program. Some pollinators consume some of the pollen as a convenient source of protein. Call it symbiotic.

Original pollinators are believed to have been beetles and very primitive bees. Those who developed wings were especially valuable given their efficiency and wide ranging service areas. And so began the proliferation and all important diversification of plant life on Earth. *Continued...*

Is your yard pollinator-friendly?

Fossilized evidence of early pollinators indicate beetles may have preceded primitive winged insects but flight proved to be the preferred means of visitation for obvi-



Ladybug

ous reasons. Insects were analyzed and plants made adjustments so as to be more attractive to those most compatible – adjustments to flower color, scent profile, flower construction, etc. Insects also made adjustments to better their chances with flowers they found interesting and beneficial to their own survival. **Ladybugs** have now survived for over 50 million years.

Dusk till Dawn

When daylight (diurnal) pollinators turn in for the evening, the nocturnal shift of moths, bats, beetles, and even some species of bees assume the duty. Science is just beginning to understand the importance of these nocturnal visitors



Hummingbird Moth

for pollination of wild and even some cultivated plants. Moths are exceptionally efficient in this capacity. Moths as a species tend to

be woolier and collect pollen easily. Moths also have co-evolved with evening plants and both exhibit cooperative tendencies. Plants will open their flowers at night and become more fragrant so as to be more easily located



Anna's Hummingbird

Who doesn't love to watch humming birds darting flower to flower sipping nectar, replenishing their energy stores. Often they may be spotted hanging upside down from a branch or

feeder in a state of torpor (involuntary sleep) because they ran out of gas and need to recoup. American humming birds first appeared in South America where they split into many species and began migrating north about 22 million years ago. Here in Sonoma County, **Anna's Hummingbird** is the most common and also winters here without migrating.

As crucial as is the need for pollinators and as efficient as the pollination system has proven to be over a hundred plus million years, it is not without its current challenges. Nature has proven to be a wise and effective steward of our planet's resources, slowly and methodically establishing living systems **inclusive of and benefitting all**.

The Take-away

The challenges that threaten the stability of these systems and the very survival of the pollinators themselves can be directly attributed to human impact on the natural environment. Habitat decline due to urbanization, increased pesticide use, invasive species, monoculture farming, climate change and numerous other human "improvements" set in motion with little or no regard for the overall health of the planet. If that's not reason enough to protect pollinator friendly environments, consider this — we can't survive without them.



Big Brown Bat

Night Duty

A surprise to many pollinator fans is one of the most important and overlooked. Sonoma County is home to a number of species of **bats** including the Mexican free-tailed bats, the Townsend big-eared bats, and Big Brown Bats. Pollinators of night blooming flowers, bats are also voracious insectivores consuming moths, beetles, termites, flies, mosquitoes and anything in their flight path.

Our Hills and Rocks

More than just a place to live, one to study and explore, 100 million years ago these hills were on the ocean floor.

Our coastal geology is unique in its composition having originated as sediment on the ocean floor. The unlikely story of its journey here reads like an adventure.

Geology, like evolution, operates on a time frame difficult for impatient humans to comprehend. Our miniscule piece of the planet here in Sonoma County, even more so here in our Fountaingrove hills, has a hard-to-imagine history. To begin to understand it, requires a wider view.

But first, a little remedial Geology 101: The outer shell of the Earth is made up of tectonic (structural) plates that continually shift their positions over long (to us) periods of time. We live on the North American plate. Or do we? That question has to do with what follows.

In early Jurassic Time the Pacific ocean was underlain by three tectonic plates that met at a point near the overall center. The plate we're concerned with was the easternmost, the Farallon plate, that stretched from that common center to the North American continental plate. About 190 million years ago, a new undersea plate began to form at that three-way juncture pushing the existing plates outward. This eastward pressure on the Farallon plate began forcing it under the west coast of the North American plate, a process called **subduction**.

During its near 200 hundred million years, the Farallon plate accumulated massive amounts of sedimentary deposits, from undersea eruptions, sinking surface matter, decaying sea life, endless sources. This added thickness, or crust, created an interesting phenomenon as the plate began its dive beneath the North American continent.

Basically, the plate with its sedimentary layer was not about to fit, so with nowhere else to go, as the subducting plate scraped its way under the continent, down into the Earth's subsurface or **mantle**, this accumulation was stripped away and forced upward onto the continent's surface creating new land forms and geological profiles.

As these buckled and folded under the constant on-shore pressure, they in time formed our hills, valleys, even our coastal mountain ranges. That transferred material is referred to as **terrane**, the process of attachment from one plate onto another is called **accretion**. This accretion process continued until the Farallon plate was fully subducted and the Pacific and North American plates met **and formed the San Andreas Fault**.

Here along the central California coast, this accreted terrane is referred to as the **Franciscan Assemblage** denoting its composition as being a mix of, "many things from many places." Locally our primary *visible* rock type is classified as Sonoma Volcanics with other volcanic and sedimentary rock types randomly distributed. *Continued...*



Sonoma Volcanic boulders along Fountaingrove Parkway

Takeaways:

The **Pacific** oceanic plate forced the **Farallon** plate to subduct beneath the **North American** plate until the Pacific and North American plates met, forming the San Andreas fault about 30 million years ago.

Interestingly, Los Angeles and much of the California coast below San Francisco is **actually on the Pacific plate**.

The surface upon which we live was once ocean floor formed over millions of years atop the Farallon plate and transferred to the North American plate during the subduction process.

Our Hills and Rocks *Continued*

The slow pace of geological events in human time, seems forever but movement of these gargantuan plates continues yet today. Both the North American plate and the adjacent Pacific plate are moving to the northwest. This seemingly compatible movement is along the San Andreas fault line. The Pacific plate however is moving much faster (10" per year) than the North American (1" per year). Their adjacency therefore presents a problem. The Pacific plate periodically becomes stuck until it can build sufficient pressure to break free and *catch up to itself*. We experience this sudden "adjustment" as an **earthquake**.

Here on the west coast, our North American plate has an approximate thickness of 62 miles including accreted terrane (the oceanic crust added during the subduction event). Earthquakes occur at various depths and the consistency of the sub-surface, as in the Franciscan mix can enhance the severity of the shaking or likelihood of slides.

But back to our Fountaingrove hills and boulders: as stated earlier, the accreted oceanic crust forced on shore during the subduction of the Farallon plate, formed the underlying topography of ours and surrounding counties. Our hills, valleys, coastal mountain ranges, the virtual character of our home here was created literally by forces of nature 50 -100 million years ago. Subsequent eruption activity, via local volcanic vents or fissures, further layered this area with much younger volcanic rock designated geologically as **Sonoma Volcanics**.



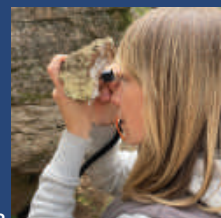
Various presentations of weathered Sonoma Volcanic rock visible on our hills. Age ranges from 2 to 8 million years.

So if you walk these hills, on your next outing pay attention if a special rock catches your eye. Or maybe a particular hill is a challenge you love. In any case, remind yourself these hills that keep you fit were once ocean floor delivered here courtesy of the Farallon plate dozens of millions of years ago. And that special rock there on the surface, most likely Sonoma Volcanic, a mere 2 to 8 million years young.



Large Sonoma Volcanic formation on Rincon Ridge

Sonoma Volcanics is a rock type erupted from volcanic vents for more than a million years, forming layers over the earlier Franciscan assemblage, layers that grew to be several thousand feet thick. Sonoma Volcanic is primarily the surface rock we see today. With most having been buried and others exposed to the elements for a million years or more, accurate identification can be difficult for all but a trained geologist's eye.



Thanks to Santa Rosa geologist, Sarah Lockwood for assistance.

OSMA Newsletter

FOUNTAINGROVE II

If you would like to sign up for email consent and receive this newsletter and other OSMA communications, contact Leslie Cohen at Focus Real Estate & Investments, Inc. 707-544-9443 x105 / leslie@focus-re.com



“The Wonder Seekers of Fountaingrove”

A reminder that Gaye LeBaron’s historical record of the mystical origins of our community is available for a \$15 donation to OSMA. Co-written with fellow historian Bart Casey, there is no more accurate accounting of our nineteenth-and early twentieth-century beginnings. Signed, hardcover copy, contact Leslie@focus-re.com.