SOIL AND WATER CONSERVATION SOCIETY

RUNOFF

CALIFORNIA-NEVADA CHAPTER SWCS –FALL 2016

PRESIDENT'S CORNER – JOE WILLIAMS

Wikipedia defines **partnership** as "an arrangement where parties, known as partners, agree to cooperate to advance their mutual interests. Organizations may partner together to increase the likelihood of each achieving their mission and to amplify their reach."

Such was the case for our annual meeting and conference held in Jackson, CA at the end of September. This meeting brought together many partners such as the NRCS, USFS, BLM, Sierra Resource Management, Great Basin Coordination Center, Filtrexx Technologies, Lassen County Fire Safe Council, California Biomass Alliance and private forest landowners.

The theme of the conference was:

"**Building Healthy and Resilient Ecosystems in the Sierra Nevada Watershed**"

The Chapter had several goals putting together the conference:

1) bring awareness of the many issues facing the Sierra Nevada ecosystem and in particular tree mortality and 2) bring together interested parties to further outline the issues facing tree mortality, identify partner roles and develop goals going forward.

To this end, I believe we succeeded in meeting the goals of the conference and the attendees.

I would like to thank Executive Council members ***Ladi Asgill, John McCann, Tom Esgate*** and ***Erika Boyland*** for their help putting together the talented list of topics and speakers. I would especially like to thank member ***Amy Rocha*** for her tireless assistance with topics of interest, speakers, field sites and meeting location.

To build on the success of the 2016 Annual Meeting and Conference, your Executive Council is already in the planning stages for next year's meeting. A survey was mailed out from our new Gmail account mca.nv.swcs@gmail.com early this month. Please take the time to fill out the survey.

We would like to hear from you, our members, on topics and locations that interest you. I would also like to encourage anyone interested on working on our planning committee to give me a call at 559-734-8732 Ext. 135

Through hard work and continuing to build our many partnership opportunities, 2017 will be a great year for the Chapter!

NEW CHAPTER MEMBERS

We extend a **GREAT BIG WELCOME** to three new members who recently joined our California-Nevada Chapter SWCS. We had **90 members** as of November 16, 2016.

Julie Etra - Reno

Amy Rocha - Bakersfield

Diana Ruiz - Riverside

72ND SWCS INTERNATIONAL ANNUAL CONFERENCE

The Conference will start on July 30 in Madison, Wisconsin with workshops and society meetings. July 31 – August 2 will feature oral presentations, posters, and symposia. Conservation tours are offered on August 2, 2017. The Conference Theme is **Conservation Connections: Creating Pathways to Sustainability**, It focuses on an important trait that sets the SWCS annual conference apart from others: the number of disciplines who come together to share information, network, and form connections to forge best practices in soil and water conservation. The conference provides a forum for interdisciplinary discussions that are essential to the success of conservation, a field that depends upon understanding relationships and interconnectedness.

Submissions deadline is January 9 for abstracts of oral presentations, posters, symposia, and workshops. The conference will feature three special interest areas of focus as well as the eight traditional/general topic areas. Special consideration will be given to presentations that cater to the conference theme. • Benefits and Challenges of Public and Private Conservation Partnerships • Extreme Weather and Its Impact on Conservation • Field to Watershed: Connecting Local Scale Influence to Larger Scale Significance • plus General Conference Submissions – Conservation Connections • Adaptive Management of Conservation Efforts • Conservation Economics and Policy • Conservation Models, Tools, and Technologies • Conservation in Organic, Specialty, and Small Scale Agriculture • Conservation Policy and Program Design • Outreach, Education, and Community Engagement • Social Sciences Informing Conservation • Soil Health Resources, Indicators, Assessment, and Management • Water Resource Assessment and Management. Detailed information regarding the Call for Presentations may be found at www.swcs.org/17ac

UC RESEARCHER JEFF MITCHELL ADVOCATES FOR CONSERVATION AGRICULTURE

Excerpts from an article by **Rose Hayden-Smith**

Across dusty roads and the course of two decades, a University of California researcher named **Jeff Mitchell** has encouraged an increasing number of producers to develop farm systems that are closer to the kinds of systems found in nature. Conservation agriculture, also known as no-till/minimum-till farming, is his passion.

Jeff works for UC ANR Cooperative Extension (UC ANR) as a Cropping Systems Specialist. He earned his PhD from UC Davis. When he's not on the road traveling around the state to work with farmers, he's based at UC ANR's Kearney Agricultural Research and Extension Center in Parlier, California.

In our conversation, Jeff repeatedly emphasizes that conservation agriculture is not a single practice, but rather, a combination of "principles, practices and ideas for production agriculture" that he and others promote. While adoption practices vary by crops and across regions, the practice is gaining in popularity in the U.S.; government data suggests that nearly 40 percent "of combined acreage of corn, soybean, wheat, and cotton were in no-till/strip-till in 2010-11, with adoption rates higher for some crops (e.g., soybeans) and some regions." The same research report indicates that there is an opportunity to increase the use of cover crops, which "were in use on less than 2 percent of total cropland (for all crops) during 2010-11 (6.8 million acres)."

In collaboration with other public and private sector partners – including farmers and the USDA's Natural Resource Conservation Service – Jeff helped found California's Conservation Agriculture Systems Innovation Center (CASI) in 1998. CASI operates under the auspices of UC ANR. Jeff shares that while conservation agriculture holds great promise; its adoption has been slower in California than in other parts of the U.S., including the Midwest. CASI hopes to change that.

CASI has brought together more than 2,200 partners to help solve some of the economic and environmental quality challenges associated with farming in California's Central Valley. The organization has pioneered systems that reduce tillage, fuel use and emissions. The practices CASI promotes have helped improve soil, water and air quality and have improved the efficiency of crop production. You can learn more about conservation agriculture via CASI's six-part documentary series.

Jeff has co-authored the following peer-reviewed publication that discusses the history of conservation agriculture in California. One of the articles – "A History of Tillage in California's Central Valley" – was published in the scientific journal, *Soil and Tillage Research*. It details the evolution of conservation agriculture systems and approaches in California and the role that CASI has played.

APPLICATIONS FOR 2017 SCHOLARSHIP NOW ON WEBSITE

Chapter Scholarship Chair **Tina Vander Hoek** is pleased to announce that undergraduate college students can download the 2017 scholarship application from our website at www.caswcs.org Completed application with supporting materials must be postmarked by February 1, 2017. The $1,000 scholarship will be awarded before the Fall Semester/Quarter of the 2017-2018 school year. Tell your family and friends about this scholarship.

Our annual scholarship is provided to encourage undergraduate students interested in soil and water conservation, to obtain technical expertise, and to pursue careers in soil and water resources. Applicants must (1) have successfully completed two years of study at an accredited college, (2) be enrolled in an undergraduate curriculum related to soil and water resources, and (3) have a cumulative grade point average of 2.5 or better on a 4.0 scale.

USDA BEGINS NATIONAL PROJECT TO QUANTIFY EFFECTS OF AG CONSERVATION

BY USDA | November 3, 2016

Lincoln, NE – The U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) is contacting 16,300 farmers and ranchers now through March to take part in a national survey that will more accurately measure the environmental benefits associated with implementation and installation of conservation practices on agricultural land. The results of the National Resources Inventory Conservation Effects Assessment Project (NRI-CEAP) survey will help further develop the science-based solutions for managing the agricultural landscape to improve environmental quality.

"The survey gives farmers and ranchers the power to provide a more complete and accurate picture of the conservation practices on their operations," said NASS Administrator **Hubert Hamer**. "If contacted, I encourage farmers and ranchers to participate. Their collective responses can directly benefit themselves and all producers by helping leaders focus on what producers need to install conservation practices that are best for their operations environmentally and financially."

The results of the survey will demonstrate the work of America's farmers to conserve natural resources while producing the food, fuel and fiber the world requires. Participating farmers and ranchers support our cause for continued science-based conservation programs that protect natural resources while supporting farm-related jobs. Survey results will guide USDA conservation policy and program development and help conservationists, farmers and ranchers more efficiently and effectively conserve natural resources.

In addition to helping determine the effectiveness of existing conservation practices, NRI-CEAP analysis provides estimates of resources farmers may need to further protect the soil, water and related resources. Additional information about CEAP is available at the Conservation Effects Assessment Project survey web page.

NASS conducts the NRI-CEAP survey under a cooperative agreement with Natural Resources Conservation Service (NRCS). NRI-CEAP results help determine the effectiveness of existing programs. NASS is the federal statistical agency responsible for producing official data about U.S. agriculture and is committed to providing timely, accurate and useful statistics in service to U.S. agriculture.

FARM CONSERVATION PROGRAMS COST BILLIONS AND HAVE MIXED RESULTS

TakePart.com•October 15, 2016

The federal government has paid farmers billions of dollars over the years to mitigate the environmental damage caused by industrial agriculture. According to new data published this week by the Environmental Working Group, $30 billion in taxpayer funds has been spent on conservation programs over the last decade—and the results are decidedly so-so.

EWG has compiled the payments in excruciating detail in a comprehensive database. As it has done with farm subsidy payments, the group tracks—on a state-by-state, county-by-county level—exactly where the nearly $30 billion the federal government has spent over the last decade on agricultural conservation programs has gone. It seems like a lot of money—until you realize that in 2014 alone, taxpayers shelled out $14 billion for farm subsidies and crop insurance programs. During the past couple decades, we've spent $265 billion on those programs, mostly to benefit industrial-scale farming operations as opposed to small family farms, as watchdog organizations such as EWG have reported.

And that's part of the point. "It's more than fair to expect farmers and landowners to do more to protect the environment in return for the generous farm and insurance subsidies they receive," **Craig Cox**, EWG senior vice president for agriculture and natural resources, said in a statement.

(Continued on next page)

That it took more than seven years and 28 Freedom of Information Act requests for the group to collect this public data no doubt says something about the transparency of these programs, not to mention their sprawling complexity. Which, in turn, reflects the myriad effects that agriculture has on the environment. It's almost impossible to adequately summarize the things that federal conservation programs, administered by the Department of Agriculture, are intended to do. There are programs for minimizing soil erosion, preventing the loss of wetlands, reducing agrochemical pollution of drinking water, conserving wildlife habitat, and the list goes on.

Yet while some conservation programs appear to be working on some level, EWG said, "too often the money is spread too thinly to counter the impacts of agriculture on our nation's water, air and land." The group notes that one program allows farmers to choose from among 350 conservation measures, while another offers 200 options—a "cafeteria-style" approach that too often gives farmers a pass to pick what they want to do rather than what might be most beneficial. "Results are hard to discern when public investment does a little for a lot of broadly defined priorities," the group said.

Oh, and did I mention? These programs are voluntary anyway; there's no requirement that farmers participate. In effect, EWG argues that certain conservation measures, such as curbing the amount of polluted agricultural runoff pouring into public waterways, should be the cost of doing business for large-scale farms—not subsidized by taxpayers. When it comes to other programs, the group advocates for a more targeted approach, in terms of focusing on conservation strategies that work as well as identifying areas or regions most in need.

While we're at it, why don't we reward farmers who make long-term commitments to sustainability? Shouldn't we incentivize switching to organic farming practices rather than continue to spend billions paying farmers to temporarily set aside land for "conservation," only to plow it under again when crop prices rise? "Americans across the country are seeing the price of farm pollution firsthand," Cox said. "It's time for Congress to deliver a return on their tax dollars by requiring farmers who take money from these programs to do more to protect the environment and public health."

16-YEAR-OLD SOUTH AFRICAN INVENTS WONDER MATERIAL TO FIGHT DROUGHT

By Kieron Monks, for CNN, Sunday August 14, 2016

South Africa is experiencing the worst droughts on record. Eight of the country's nine provinces are in a state of disaster, with thousands of communities and millions of households facing water shortages. The agricultural union Agri SA has requested over $1 billion in government subsidies to help farmers through the crisis, but a cut-price solution could soon be available -- from an unlikely source. Johannesburg schoolgirl **Kiara Nirghin**, 16, recently won the Google Science Fair's Community Impact Award for the Middle East and Africa with her submission "No More Thirsty Crops." She created a super absorbent polymer that could be used to combat the nation's crippling drought crisis. Using orange peels and avocado skins, the precocious student created a super absorbent polymer (SAP) capable of storing reserves of water hundreds of times its own weight, forming reservoirs that would allow farmers to maintain their crops at minimal cost. The polymer has the added benefit of sustainability as it uses recycled and biodegradable waste products.

"Kiara found an ideal material that won't hurt the budget in simple orange peels, and through her research, she created a way to turn it into soil-ready water storage with help from the avocado," said **Andrea Cohan**, program leader of the Google Science Fair. The inventor says she wanted to tackle the most urgent aspect of the national crisis. "I wanted to minimize the effect that drought has on the community and the main thing it affects is the crops," says Nirghin, of St. Martin's School. "That was the springboard for the idea."

She describes the process as "trial and error," with a lot of experimentation before alighting on the perfect formula. "I started researching what an SAP was, and what they all had in common was a chain molecule polysaccharide," Nirghin recalls. "I found that orange peel has 64% polysaccharide and also the gelling agent pectin, so I saw it as a good (option). I used avocado skin due to the oil." The teenager combined the skin and peel and left the mixture in the sun, where they reacted together to form the powerfully absorbent polymer. As a regional winner, Nirghin has been assigned a mentor from Google to work with her on developing the polymer, and hopes it could be tested in the field. She will soon discover if she is one of the tech giant's sixteen global finalists.

"If the idea was commercialized and applied to real farms and real crops I definitely think the impact that drought has on crops would be reduced," she says. "I think it works," says **Dr. Jinwen Zhang**, a professor of materials engineering at Washington State University, who is developing absorbent hydrogels to address drought. "Using waste products for low-cost feedstock for large volume is definitely worth further investigation."

The teenager, whose hero is the Indian agricultural scientist **M. S. Swaminathan**, has many more ideas, including a proposal to dye the skins of endangered animals to discourage poaching. "I might look into health sciences or engineering," she says of her future plans, "Something so I can improve the world."

GRASSED WATERWAYS ARE AN EFFECTIVE WATER-QUALITY STRATEGY

Jeffrey Sanders, Agronomy Specialist, University of Vermont Extension, published Nov 14, 2016 in the Lancaster Farming newsletter

While grassed waterways are nothing new in the world of soil erosion and water quality, there adaptation in the Northeast U.S. lags far behind other parts of the country. In the Midwest, where the Dust Bowl and severe erosion problems of the past are still part of memories and family histories, a plane ride over any Corn Belt state will provide ample evidence of the efforts to mitigate soil leaving fields through the implementation of different practices.

One that is highly visible is grassed waterways. These have been found to be effective at reducing erosion in high-risk locations on crop fields. A grassed waterway is a simple structure designed to keep water from moving downslope without concentrating the flow into a stream. It will move the water off the field without allowing it to pick up enough energy to move soil, thus minimizing erosion. The idea is to fill gullies and flatten out slopes to slow water as it moves across the field. This area is then seeded and left in a permanent state of vegetation, which prevents soil particles from being mechanically lifted and moved off fields while also helping reduce the speed of the water so it has less ability to cause erosion.

While the idea of "giving up" productive ground to install a conservation measure seems foreign to many farmers in the Northeast, it shouldn't be. Most easily can tell where grassed waterways would be an effective tool in their toolbox for keeping soil on fields.

Wherever there is gully erosion, not much is growing, and it is wet and rough from eroding topsoil — a grassed waterway may be the answer. The productive ground, in many cases, is not all that productive because soils tend to be saturated with frequent water inundation, which can prohibit quality crop growth.

In many cases, grassed waterways do not need to be much wider than 20 feet depending on the situation. The benefit to the field, equipment and the environment will offset any yield loss from not cropping that area. In some areas, grassed waterways can be installed wide enough to crop.

For example, perennial forage could be seeded using a design that would allow for turning equipment within the boundaries of a grassed waterway. Tall vegetation is not needed, only a sod base or other vegetation with a good root system to help hold the soil.

The top 6 inches of top soil is your most important asset, so why let it leave your farm? You have fertilized and cultivated the soil to grow your crop for your business. Letting it go down the ditch is just bad business. Furthermore, soil erosion creates sedimentation problems in ditches and creates additional work in the field to fill in gullies with more topsoil in an effort to prepare the field for planting.

If you think about the zone of influence, where the concentrated flow of water is causing problems on your field, it is probably larger than the entire grassed waterway would be. The amount of area you need to cover with soil "pulled" back into the gully to repair it, just to have it wash out again, is no doubt larger than the area of a grassed waterway, which would cure the problem.

Installation of grassed waterways is a very cost-effective method of addressing soil erosion on crop fields. Many farmers already have the necessary equipment to move and shape the soil so that the grassed waterway will perform adequately. In many cases, a box blade and a seeder will make short work of a grassed waterway project depending on scale. For larger gully erosion control, bulldozers are effective tools to move, shape and level the contour.

Typical construction of a grassed waterway takes between one to two days. The Natural Resources Conservation Service has sample designs and job sheets that can guide you through the installation of a grassed waterway without government assistance.

Go to www.nrcs.usda.gov and search for "Engineering Field Tools." Grassed waterways following NRCS design are built to have an average lifespan of 10 years and require little annual maintenance.

WHY GENERAL MILLS, THE NATURE CONSERVANCY SAY SOIL IS SEXY. DID WE MENTION $50 BILLION IN BENEFITS?

By: **Jessica Lyons Hardcastle** November 21, 2016

General Mills has been busy these past few months, pledging to halve its food waste by 2030, urging president-elect Donald Trump not to cancel the Paris climate agreement, and collaborating with other food giants to reduce suppliers' water use and improve sustainable agriculture practices. The food company has also set its sights on something really sexy: improving soil health.

OK, maybe it's not as sexy as food waste or Donald Trump. But healthy soils could deliver nearly $50 billion in annual economic benefits, according to General Mills and The Nature Conservancy, which have launched a 10-point roadmap to achieve this goal. **Michael Doane**, director of transforming working lands for The Nature Conservancy, says less than 10 percent of US soils managed optimally today. "It's not as sexy as saying, 'hey let's go save that mountaintop," Doane admitted in an interview. "But if we don't get soil management right, it's hard to imagine that other things that we care about will happen."

Healthy soils can also yield economic benefits for farmers and food companies, said **Jerry Lynch**, chief sustainability officer at General Mills. If the Soil Health Roadmap's 10 steps were adopted on 50 percent of US cropland by 2025, farmers would see a $1.2 billion annual net economic gain in addition to $7.4 billion in water and climate benefits. "Our total business model is highly dependent on mother nature's systems continuing to work well," Lynch said in an interview.

On the environmental side, [the Soil Health Roadmap] has the ability to improve water quality, improve water retention on farms, improve nutrient retention and to actually sequester carbon in the soil. At the same time the farmer benefits from a more resilient farm. A farm that has really good soil quality is more resilient in dry years and also more resilient in wet years. "And beyond resilience, when the farm is eventually sold or passed on, it will have a better underlying asset value," Lynch continued. "It's absolutely financial math at the end of the day."

A team of The Nature Conservancy scientists, economists and agriculture experts developed the Soil Health Roadmap, funded by General Mills. Its 10 steps to healthy soils include science (such as create cost-effective soil health measurement standards and tools), economic (like aligning incentives between landowners and farmers) and policy (rewarding farmers who optimize long-term soil health with lower crop insurance premiums) priorities.

At full adoption, Conservancy scientists estimate nearly $50 billion in societal benefits could be realized annually. At 50 percent adoption, improved soil health would provide $7.4 billion in water and climate benefits. These benefits include:

- Mitigating 25 million metric tons of greenhouse gas emissions.
- Reducing 344 million pounds of nutrient loss to the environment.
- Eliminating 116 million metric tons of soil erosion.
- Creating 3.6 million acre-feet of available water capacity in cropland soils.

The Roadmap also makes the business case for investing in sustainable soil health practices.

"It's really anchored in the idea that nothing is going to scale out around conservation priorities if there aren't specific economic or other benefits that landowners and farmers would value — that's what makes it so compelling," Doane said. "We worked hard to understand if the conservation gains would be sizeable enough and we were very happy to see that the size of those conservation gains are compelling: clean water, sequestering carbon, soil retention, improving productivity, conserving water. But you don't get to scale unless there are net economic benefits for the principle actors in the system, in this case mainly landowners and farmers."

(Continued on next page.)

In the area of economics, for example, current business models between landowners, farmers and agricultural retailers do not incentivize soil health management. "Our analysis shows that up to 60 percent of the land farmers are managing is owned by someone other than the farmer," Doane said. "Landowners are often absentee — living in urban areas, or institutions that do not have the day-to-day operating framework for the farm."

Conservation practices to restore soil health may require high capital costs for farmers, who are only leasing the land and unlikely to see a return on their investment for several years. "If we are going to get to scale to 50 percent or 60 percent or greater adoption of these practices, that issue will have to be resolved — a new economic enlightenment between farmers and landowners around soil health," Doane said.

General Mills has already begun incorporating some of these things into its work with suppliers, such as encouraging them to measure soil loss, availability and carbon, Lynch said.

"For example, we have for a number of years worked with our suppliers and farmers around our commitment to sustainable source 10 priority ingredients by 2020," he explained. "As we have been working with suppliers and farmers in that process, we've been encouraging them to use the Field to Market Calculator and that has soil measurements in it. That engenders conversations about how to improve soils and environmental benefits."

Another example is General Mill's participation in the Midwest Row Crop Collaborative, launched in September, whose other founding members include Cargill, Environmental Defense Fund, Kellogg, Monsanto, PepsiCo, The Nature Conservancy, Walmart and World Wildlife Fund. The partnership aims to help farmers improve their bottom line while conserving natural resources through sustainable agriculture practices. Its initial efforts are focusing on soil health and water management.

Moving forward with the Soil Health Roadmap will require major buy-in from farmers, landowners, food companies and NGOs, and Doane said The Nature Conservancy is having conversations with all of the above.

"We are working really hard to take a topic like this that could be rather obscure and put a whole new emphasis on it," he said. "It's going to require a much more diverse set of folks who maybe haven't thought of soil as our greatest conservation." In other words: making soil sexy.

HOW TO TREAT MORE IDLE LAND IN THE WESTLANDS IRRIGATION DISTRICT

Excerpted and edited from an article by **Mark Arax** in the November 27, 2016 issue of The Sacramento Bee titled: "Desert and farm, water drainage and a new deal in the Central Valley."

The Bureau of Reclamation shut down Kesterson Reservoir and the master drain in 1986. That's when the farmers in the 600,000 acre Westlands Irrigation District began suing the federal government for breaking its promise of drainage. Without drainage, dozens of farmers had no choice but to retire their lands. **By 2005, taxpayers had spent $107 million to retire 40,000 acres of the most polluted ground.**

The new deal before Congress transfers the burden of drainage from the federal government to Westlands. The district will handle the salts and selenium within its borders in a way that does no further harm to the birds. What the system will look like - how extensive and costly it will be - is up to Westlands to decide. In return, the federal government will forgive Westlands from paying the $375 million it still owes for building the dam, reservoir and water delivery systems. **The district will have to retire another 60,000 acres that will present a new soil and water conservation challenge.**

At 500,000 irrigated acres, Westlands will remain the-largest agricultural water district in the nation. Westlands will be entitled, in perpetuity, to 75 percent of the cheap federal water it has drawn in previous years. It will keep on replacing seasonal crops such as melons and garlic with more permanent crops such as almonds and pistachios, thereby hardening demand for water. And the land will go on sinking because farmers can continue pumping vast amounts of groundwater whenever their federal supplies are restricted by drought and Delta smelt.

California finally has begun the process of regulating groundwater. Sometime in the next decade, Westlands won't be able to willy-nilly stick more 1,800-foot wells in the ground to make up for water that drought and fish take. And sometime beyond that, as the ancient Sumerians discovered, salt inexorably will have its way.

***Mark Arax**, author of "West of the West," is working on a book about California's water wars, to be published by Knopf. Contact him at mark.arax@sbcglobal.net.*

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CHAPTER EXECUTIVE COUNCIL

CHECKOUT THE CA-NV CHAPTER SWCS WEBSITE

www.caswcs.org

PLEASE SUBMIT PHOTOS, NEWS ITEMS, AND FEATURE ARTICLES TO THE EDITOR FOR THE

WINTER ISSUE OF RUNOFF

BY FEBRUARY 24

RUNOFF is the official California-Nevada Chapter SWCS newsletter.

Editor and Publisher:
Walt Bunter – wbunter@pacbell.net

RUNOFF reserves the right to edit all submissions.

ALDO LEOPOLD QUOTES

Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

Cease being intimidated by the argument that a right action is impossible because it does not yield maximum profits, or that a wrong action is to be condoned because it pays.

Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild and free. For us of the minority, the opportunity to see geese is more important than television.

We shall never achieve harmony with the land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations the important thing is not to achieve but to strive.

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land... In short, a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.

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Aldo Leopold was an American author, philosopher, scientist, ecologist, forester, conservationist, and environmentalist. He was a professor at the University of Wisconsin and is best known for his book *A Sand County Almanac*, which has sold more than two million copies.

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MISSION STATEMENT

The Chapter is a multidisciplinary scientific and educational organization dedicated to natural resource enhancement through an ethic which recognizes the interdependence of human communities and natural systems. The Chapter achieves its mission through its members using mutual cooperation and understanding to create opportunities for improving soil and water conservation in California and Nevada.