In the desert southwest we have been facing a boom in mine projects. The boom is supported by mining industry rhetoric that we can “mine our way out of the climate change crisis.” This new mining industry spin boils down to sacrificing wildlands, wildlife, communities, and special places to vast amounts of disruption and pollution, all on the altar of protecting us from climate change.

This spin resonates well in Washington, DC, and has led to further weakening of lax federal mining regulations.

Several new bills have been introduced in the US Congress that would fast track mine proposals for minerals deemed as “critical,” and overturn a recent court victory for environmentalists. That legal decision, involving the proposed Rosemont mine in Arizona, found that in order for mining facilities to be permitted under regulations spawned by the 1872 Mining Law, a mining company must have a valid mining claim. Without valid mining claims, mines can still be permitted on public land, but different regulations (offering more options – including the right to say “no”) must be used. The Mining Regulatory Clarity Act, introduced in the US Senate by Senators Cortez-Masto (D-Nev.) and Risch (R-Idaho), would overturn 151 years of history. If this bill were passed, anyone could stake a mining claim on public land, pay a modest annual fee, and be gifted the right to do anything “reasonably incident” to mining.

The Oak Flat proposal

A prime example of this push to mine special places under the guise of “for the good of humanity” is the 19-year long struggle by Resolution Copper to mine at Oak Flat.

The site is an hour east of Phoenix, Arizona (on public land), and is a sacred recreational and ecological haven in the Tonto National Forest. Oak Flat is traditionally called Chich’il Bikʼitneel, and is sacred to Native Americans. It is listed as a Traditional Cultural Property by the US government. It is also a popular rock climbing and bouldering destination, with more that 2,500 published climbing problems. It rivals Joshua Tree National Park as a destination for the climbing community. And Oak Flat is desert riparian habitat. Only 10% of Arizona’s
Revised General Plan For Red Rock Canyon State Park

Does it adequately protect park resources?

The California Department of Parks and Recreation completed the revised General Plan for Red Rock Canyon State Park and Environmental Impact Report (EIR). Both were approved by the California State Park and Recreation Planning Commission at a public meeting on March 3, 2023 in Lancaster, California. According to the State Park planning team, a General Plan is a framework for future decisions about land use, facilities, recreation opportunities, and management of natural, cultural, and physical resources. The EIR is supposed to analyze and disclose impacts and identify any measures necessary to avoid and minimize damage. Unfortunately neither were included in the EIR. The revised General Plan must be consistent with and support the purpose of Red Rock Canyon State Park, which is to “protect and perpetuate the spectacular high desert landscape, associated natural ecosystems, and important archeological values for public enjoyment and inspiration, and for scientific study” (Red Rock Canyon State Park General Plan, 1982). Being merely a “framework” the General Plan fails to ‘protect and perpetuate’ the features and resources of Red Rock Canyon State Park.

The first General Plan for the park was approved in 1982 when the unit was comprised of about 4,000 acres of state land. The park subsequently expanded to approximately 8,100 acres by 1993, and to approximately 25,400 acres in 1994 when 16,700 acres of public land managed by the Bureau of Land Management were added to the park under Section 701 of the California Desert Protection Act of 1994. The purpose of the land transfer was to provide maximum protection of the region’s outstanding scenic and scientific values. Revision of the 1982 plan began in 2002 but was halted several times until in 2018 a full revision of the plan for the expanded park began with formal public scoping to identify management opportunities and issues.

Numerous special status species occur within Red Rock Canyon State Park, including the threatened desert tortoise and Mohave ground squirrel. Berry and Keith studied desert tortoise populations within the park in 2002-2004 and reported they occurred throughout the western portion of the park, but densities were low in 2004 at 9.2/mi² compared to those that were nearly three times higher in 2000 based on analysis of shell remains. The authors attributed the low desert tortoise population...
The Lithium Industry In Imperial County

The importance of Health Impact Assessments

In October 2022, Comite Civico Del Valle held its 11th Environmental Health Leadership Summit at Imperial Valley College – the first in three years since the COVID-19 pandemic. Over 300 government leaders, academics, advocates, and supporters came together to discuss questions on equity in minerals extraction, recovery of the Salton Sea, and the future of “Lithium Valley.” In his opening remarks to the Summit, Comite’s Executive Director Luis Olmedo said, “This is a historic time... Lithium Valley, if it comes to pass, will mean our long-underrepresented home will have a real role in the fight against climate change by being the source of a safe and sustainable supply of a mineral critical to this nation’s future.”

Luis Olmedo – who sat on the Blue Ribbon Commission on Lithium Extraction in California – was not exaggerating. Lithium plays an important role in producing electric vehicles, portable consoles, and battery storage. Currently, only 1 percent of lithium is mined and processed in the United States, and the Imperial Valley’s abundance of geothermal brine at the Salton Sea has the potential to meet 40 percent of the world’s lithium demand. The Imperial Valley therefore has an opportunity to “become a global lithium producer and exporter and support Imperial Valley residents by creating new green jobs as well as clean economic development for the region.” Last year’s passage of Senate Bill 125 – which authorized the state to assist in developing Lithium Valley – makes this a truly historic time for their community.

I was invited to the 2022 Summit to provide legal context on the California Environmental Quality Act as a speaker on the panel “Importance of Health Impact Assessments in Environmental and Land Use Decisions.” The ongoing opportunities for the public to participate in the Lithium Valley Specific Plan and Programmatic Environmental Impact Report and the Salton Sea Renewable Resource Health Impact Assessment processes made this conversation timely. It is my hope that attendees left that conversation feeling better equipped to wield the environmental laws at their disposal and make their voices heard in the future of “Lithium Valley.”

Health Impact Assessments

Health Impact Assessments (HIA) initially arose overseas in the early 2000s and have since become more popular in the United States as agencies and organizations seek to incorporate perspectives and expertise of community stakeholders in their health decision-making. The United States Environmental Protection Agency (EPA) defines a Health Impact Assessment as “a tool designed to investigate how a proposed program, project, policy, or plan may impact health and well-being and inform decision-makers of these potential outcomes before the decision is made.” Health Impact Assessments include both quantitative and qualitative analysis that aim to predict potentially significant health effects resulting from changes in the physical, social, and economic environment. They also include health-promoting recommendations.

A Health Impact Assessment typically comprises six steps:

1. Screening: The HIA team and stakeholders determine whether an HIA is needed, can be accomplished in a timely manner, and would add value to the decision-making process.
2. Scoping: The HIA team and stakeholders identify the potential health effects that will be considered and develop a plan for completing the assessment, including specifying their respective roles and responsibilities.
3. Assessment: The HIA team evaluates the proposed project, program, policy, or plan and identifies its most likely health effects using a range of data sources, analytic methods, and stakeholder input to answer the research questions developed during scoping.
4. Recommendations: The HIA team and stakeholders develop practical solutions that can be implemented within the political, economic, or technical limitations of the project or policy to minimize identified health risks and to maximize potential health benefits.
5. Reporting: The HIA team disseminates information – including the HIA’s purpose, process, findings, and recommendations – to a wide range of stakeholders.
6. Monitoring and evaluation: The HIA team and stakeholders evaluate the HIA according to accepted standards of practice. They also monitor and measure its impact on decision-making and health.

Health Impact Assessments are often confused with the similarly named Health Risk Assessment (HRA). EPA defines a Health Risk Assessment as “the process to estimate the nature and probability of adverse health effects in humans who may be exposed to chemicals in con-
population to the effects of disease, human-related impacts, and deteriorated habitat. The low and declining tortoise population in 2004 indicates the species will eventually be extirpated unless immediate protective management actions are implemented by park management and staff. No similar desert tortoise surveys have been performed within the expanded portion of the park located east of Highway 14. The Mohave ground squirrel has been documented to occur in northern portions of the park in creosote bush scrub and Joshua tree woodland habitats from live-trapping surveys, which is located within the Little Dixie Wash Core Population Area.

Sampson studied off-highway vehicle (OHV) effects on prehistoric and historic cultural resources within Red Rock Canyon State Park from 2004-2006 and found that 36 out of 147 known sites within the park were directly impacted by vehicles using dirt roads and informal trails, and that 13 of 36 prehistoric occupation sites with surface and subsurface cultural deposits were impacted by vehicles using dirt roads and informal trails.

Impacts from vehicles included degradation of surface and subsurface cultural material, soil erosion, gullying, vegetation loss, and artifact collection. One road within the park that is now designated as open to motorized vehicles, including unlicensed OHVs, is Sierra View Road, which traverses KER-246, a documented prehistoric (3,000 year-old) site with both abundant surface and subsurface cultural materials. Remains of a prehistoric fire hearth were found within the footprint of Sierra View Road, where vehicle use has resulted in the loss of 1.7 feet of soil through displacement and subsequent erosion by wind and water. The entire length of Sierra View Road has never been surveyed for cultural resources.

Since the General Plan provides a framework for subsequent plans and projects within the park, the State Park planning team stated that not all issues can be resolved until such subsequent plans and projects are developed and implemented. Examples are plans for transportation, habitat and species conservation, and restoration of previously disturbed areas. Public comments on the draft plan from Defenders of Wildlife and the California Department of Fish and Wildlife Region 4 Office in Fresno recommended that an impact analysis, impact mitigation measures and conservation actions for various special status species of plants and animals be included in the plan to avoid and minimize adverse impacts to these species and their habitats. Again, the State Park planning team dismissed those recommendations by stating “The goals and guidelines in the General Plan are intended as management and protection tools, not as mitigation measures...” and “If future CEQA analysis identify specific impacts to biological resources, and these impacts cannot be avoided through implementation of goals and guidelines in the General Plan, then mitigation measures in these documents would be developed to be standard mitigation measures that are actionable and enforceable.” The State Park planning team concluded there would be no impacts because the General Plan is simply a framework and not a site-specific or species-specific plan. Thus, adverse impacts to special status species and their habitats that are occurring now will continue to occur until such a time (unspecified) that plans and projects are developed, rendering the General Plan ineffective in protecting these species and their habitats.

One significant issue raised during the public comment period on the draft General Plan and EIR was allowing unlicensed OHVs to use Sierra View Road, an unimproved dirt route in the park that connects with BLM routes entering the northern and western boundaries of the park, as shown on the map on right.

California Vehicle Code (CVC) Section 38026 would allow for the designation of connector routes within State Parks as open to the use of unlicensed OHVs provided those routes do not exceed 3-miles in length. The length of Sierra View Road, as measured on the map of park routes provided in the draft and final General Plan, is approximately 4.5 miles, 50% greater than the 3-mile limit. This issue was raised by Defenders of Wildlife, the Desert Tortoise Council, and Western Watersheds Project in a letter to the State Park planning team on December...
2, 2022: “Designation of OHV routes within the Park is a discretionary action and not a legal requirement. Since Sierra View Road, designated for OHV use in the proposed Plan, totals 4.5 miles and exceeds the three mile limit in CVC Section 38026, it needs to be eliminated as available for OHV use in the proposed Plan and Final EIR.” The State Park planning team responded, stating “State Parks measured the proposed Sierra View Road connectivity route...which measured 3.1 miles from the western edge of the Park boundary to the northern edge of Park boundary. Additionally, the Plan is providing non-street legal OHV connectivity on two existing designated street-legal vehicle roads that are continually monitored and assessed for safety and impacts to sensitive resources. Furthermore, if State Parks were to close the route to non-street legal OHVs, there would be no clear path for access between the non-street legal OHV permitted use areas that border the Park, which would increase the potential for illegal crossing of the Park through sensitive resource areas. Providing a well-marked connectivity route for non-street legal OHVs pursuant to CVC Section 38026 would allow the Park to better coexist with adjoining OHV use areas to the north and west while protect-

Jeff Aardahl from Defenders of Wildlife submitted another letter to the planning team on March 9, 2023, stating in part, “I remeasured the length of Sierra View Road on map in the General Plan and Draft Environmental Impact Report and it is 4.40 miles, not 3.1 miles, far longer than the 3.0 mile limit as per CVC Section 38026.” After recognizing the error, the State Park planning team submitted an Addendum to the Final General Plan and Final EIR to the State Clearinghouse on March 27, 2023, stating in part, “Shortly after project approval (on March 9, 2023), State Parks received correspondence from an interested party questioning the accuracy of the length of Sierra View Road through the Park [and] this Addendum provides additional information regarding Sierra View Road. CVC Section 38026 allows State Parks to designate three miles of a highway within a State Park classified unit, providing a connecting link between OHV trail segments. State Parks stated during the planning process and at the March 3 commission meeting that the segment of Sierra View Road through the Park measures 3.1 miles. Upon receiving the comment on March 9 stating that the commenter believes the segment was significantly longer than the 3.1 miles...State Parks reexamined the GIS data for Sierra View Road and park boundaries and determined that minor errors occurred during calculations...which were determined to add up to 3.86 miles.”

“In response to this re-calculation, this Addendum to the Red Rock Canyon State Park General Plan and EIR revises the length of Sierra View Road that would allow continued OHV travel through the Park from 3.1 miles to 3.86 miles. The change in length of Sierra View Road does not necessitate any changes to the EIR analysis or its impact conclusions. Vehicle travel on Sierra View Road is currently occurring and will continue to occur with General Plan implementation. The EIR did not identify any significant impacts resulting from General Plan Implementation. ...State Parks will address this inconsistency issue in the Roads and Trails Management Plan called for in General Plan Section 4.7.1 to address this code inconsistency.” Again, the EIR for the General Plan found no impacts because no impact analysis was performed.

On April 3, 2023, the Center for Biological Diversity...
Over the last year, the Conglomerate Mesa Coalition has been hard at work protecting the Mesa. In the lull between the Bureau of Land Management (BLM) decision requiring an Environmental Impact Statement (EIS) for K2 Gold’s expanded exploration project and the opening of the public comment period for the EIS (expected in the next few months), the Coalition has been focusing on permanent protection for Conglomerate Mesa and the surrounding unprotected BLM lands.

Conglomerate Mesa is located near the Lone Pine, Keeler, and Darwin communities in Inyo County, California. It’s east of the Sierra Nevada Mountains and west of Death Valley National Park. Conglomerate Mesa is surrounded by other permanently protected areas, including Inyo Mountains Wilderness, Malpais Mesa Wilderness, and Coso Mountain Wilderness. Conglomerate Mesa has been left vulnerable by previous legislation. The Conglomerate Mesa Coalition, local tribes, and surrounding communities would like to see that changed.

There’s gold in these hills

Conglomerate Mesa has a decades-long history of gold exploration companies disturbing the delicate desert landscape and leaving their scars behind. Since the mid-1980s, 11 such companies have threatened Conglomerate Mesa. Time after time, these companies have been held off by tribal nations, local communities, and a variety of conservation organizations.

In the late 1990s, a company called BHP executed a big exploration project on the Mesa, in which they were actually allowed to build roads. The company was supposed to reclaim those roads in 2000, but the scars are still clearly visible 23 years later. Once the living desert soil is disturbed, it takes decades or centuries for the microbiomes to re-establish.

More recently, during K2 Gold’s first phase of exploration in 2020, the BLM approved a plan for 12 drill holes with access by helicopter. In the second phase, K2 has proposed to build roads and drill 120 holes on more than 30 sites. Thanks to more than 23,000 public comments during scoping in 2021, the BLM decided the typical Environmental Analysis was insufficient to determine the plan of operation, and an EIS would be required.

Worth more than gold

To the naked eye, it’s easy to overlook the diversity of the area’s ecological values. It’s just a desert, right? But if you take the time to look around, the area is rich with more than just gold. The area has large stands of Western Joshua trees, both mature and juvenile. In fact, there are a lot of juveniles. There is even one at the summit of the Mesa at 7,700 feet in elevation! The area is also home to the rare Inyo rock daisy, whose only home is the southern Inyo Mountains. Currently, this daisy is being considered for state and federal endangered species protections. Conglomerate Mesa is also part of a Pinion and Juniper forest. Pinion is a culturally important food source for the region’s Indigenous peoples. The landscape is also an important area for hunting and traditional medicine gathering.

I have been fortunate enough to go out to the Mesa with Owens Valley indigenous community members. That trip will stick with me forever. My indigenous companions encouraged me to pay attention to the small details, like a Pinyon stump, cut down over 100 years ago for charcoal, that still had bark.
Saving the mesa means ‘working at the speed of trust’

The Conglomerate Mesa Coalition has been working with the Lone Pine Paiute Shoshone and Timbisha Shoshone Tribes to protect Conglomerate Mesa from K2 Gold and to stop the endless cycle of mining companies coming to this area.

We are working at the speed at which trust is built. The Coalition is committed to working with both tribes, on their timeline, to ensure that the path to permanent protection meets their needs. We will collaborate during conception, protection designation, management planning, and implementation. We will continually amplify their voices and support those whose ancestors were the original stewards of this landscape.

Through its connection with the Friends of the Inyo grassroots conservation organization, the Conglomerate Mesa Coalition maintains regular, transparent communication with Tribal Historic Preservation Officers of both tribes. We also appear before tribal and general councils, as well as cultural preservation committees and environmental committees. The Coalition has invited tribal members to be part of the coalition and attend calls and meetings. We have sought feedback on potential proposal boundaries.

Historically, permanent protection designations have not taken into account cultural resources, tribal access, indigenous rights, or traditional ecological knowledge as important land management considerations. The US federal land management agencies are slowly realizing the value and importance of including and respecting indigenous perspectives. The Conglomerate Mesa Coalition will do everything possible to ensure that the Timbisha Shoshone and Lone Pine Paiute Shoshone tribes obtain permanent protection designation for Conglomerate Mesa, and that they will always have a “hand on the wheel.”

K2 go home!

For the upcoming opening of public comments for the Environmental Impact Statement, the Conglomerate Mesa Coalition will be hosting several events. There will be “Mining 101” seminars in Lone Pine and Bishop, California, where the local community will have the opportunity to learn about all things related to gold mining and its harmful effects on the environment. We will also hold a peaceful demonstration along US 395 in Lone Pine. Friends of the Inyo will be releasing our Patagonia film “Island in the Sky.” Coalition members and community partners will also be hosting letter-writing parties.

What is important to know about the upcoming EIS comment period is that comments previously submitted for the Environmental Assessment in 2021 will need to be resubmitted for the EIS. The BLM considers this a new analysis; therefore, no documents carry over. So get your comments in!2

Other ways to help are to contact your local, state, and federal elected officials. Let them know that you want to see Conglomerate Mesa protected from gold mining and preserved for future generations. You can also subscribe to the Conglomerate Mesa Coalition’s Newsletter3 (to stay up to date with the latest happenings. You can also follow us on Instagram @ProtectConglomerateMesa).

Kayla Browne is a Policy Associate and Desert Lands Campaign Manager with Friends of the Inyo based in Payahuunadü / Eastern Sierra and serves as the Campaign Manager for the Conglomerate Mesa Coalition. She has been living in Lone Pine, CA, since 2017, enjoying mountain biking, trail running, climbing, hiking, and learning about the biology of these landscapes.

1) www.protectconglomeratemesa.com
2) https://eplanning.blm.gov/eplanning-ui/project/2022050/510

Partially reclaimed mining roads high in Conglomerate Mesa. Kayla Browne

Joshua trees on Conglomerate Mesa. Ken Etzel
The Resolution Copper Mine

desert riparian habitat remains, and Oak Flat is home to the white-nosed coatimundi and the endangered Arizona Hedgehog cactus. What makes Oak Flat special is that there are perennial pools and springs where water can always be found.

The proposed project would be a large underground block cave mine 7,000 feet deep. It would stretch across 47 miles, impact 16,000 acres, and create 1.6 billion tons of toxic waste. The mine would produce copper concentrate to be refined into finished copper overseas. (One of the reasons the proposed mine would export concentrate is that there is a severe bottleneck in smelting capacity in the US with only 3 working smelters.) Currently, Arizona exports 25% of its copper as concentrate.

A block cave mine is like an upside-down open pit mine. Resolution Copper would tunnel under the orebody (7,000 feet deep) to remove ore from below. As the ore is removed, the resulting void would cause the ground surface to subside creating a crater 2 miles wide and 1,000 feet deep. The ore would then be crushed and transported to a processing facility where it would be partially refined before being transported overseas for final refining. The remaining toxic waste would be pumped in a slurry through a massive pipeline more than 20 miles across rugged mountain terrain to a waste dump.

Resolution Copper is owned by Rio Tinto (55%) and BHP (45%), the world’s largest mining companies. In 2004, rather than go through the traditional process for getting a permit, Resolution Copper induced the Arizona Congressional delegation to propose federal special interest legislation that would give Oak Flat to these two foreign mining companies. For 10 years citizens defeated 12 versions of this land giveaway until Arizona Senators John McCain and Jeff Flake placed a land exchange bill as a midnight rider onto the 2015 National Defense Authorization Act (a must-pass bill). The new law mandated that the US Government give Oak Flat to Resolution Copper within 60 days from the publication date of a Final Environmental Impact Statement (FEIS). The land exchange law sets several very troubling precedents. It would be the first time that the US Congress would give a Native American sacred site to foreign mining companies. Also, it would be the largest ever giveaway of rock climbing and recreational areas on public land. However, while the land exchange would give Oak Flat to Resolution Copper, it would not give the company any mining permits.

The US Forest Service published a Draft Environmental Impact Statement in 2019 and, under pressure from the Trump administration, released a final EIS on January 15, 2021. At the time the Forest Service acknowledged that several key steps needed to conclude the land exchange had not been completed. Three lawsuits were immediately filed, and in early March of 2021, the US Government rescinded the FEIS. This stopped the consummation of the land exchange. The judges in all three cases have ordered the federal government to give the plaintiffs notice at least 60 days before a new FEIS is released.

In June of 2022, a team of Bureau of Land Management (BLM) hydrology specialists released a technical review of the original FEIS and its supporting documents. The review was critical of the hydrology and water resources sections. Additional critical water studies have been prepared by the San Carlos Apache Tribe. It is not known how a new FEIS would respond to these critiques. The US Government has hinted that an edited version of the rescinded FEIS may be released late this spring or early summer. If this happens, the time clock for giving Oak Flat to Resolution Copper would begin again. But the Arizona Mining Reform Coalition and the San Carlos Apache Tribe lawsuits would also become active.

What’s wrong with the Resolution Copper Mine

The proposed mine has been opposed since it was first announced for three key reasons:

Water: With Arizona in the 23rd year of the worst drought in 1,200 years, and with restrictions on the use of water from Lake Mead, Arizona simply does not have water for both this destructive mine and for the communities and the environment. The mine would use as much water as a city of 180,000 people for at least 40 years. Because most of the water for the project would be pumped from a large well field, the aquifer would be drawn down and effect other users’ wells. Because of the nature of the underground mine, water would need to be drained from the orebody to a depth of at least 7,000 ft below ground. This would drain all groundwater from under Oak Flat and would affect water supplies to nearby towns. Lastly, 1.6 billion tons of toxic waste would be slurried to an unlined tailings dump. The dump would cover 5,000 acres and would be contained by a 500 foot tailings dam constructed from the toxic tailings themselves. This unlined dump would be in the Gila River watershed and would undoubtedly leak and pollute ground and surface water all the way to the Gila River.

Destruction of a sacred site: Oak Flat has been used for centuries by Native Americans, and is sacred to western Apache people. For this and many other reasons, all Arizona Tribes oppose the project, as do other Tribes and native communities throughout the United States. In May of 2021, Rio Tinto (the majority owner of Resolution Copper) knowingly blew up sacred rock shelters in the Juukan Gorge in western Australia that have been used for religious purposes for 46,000 years. Criticized for this wanton act, Rio Tinto’s CEO promised that Rio Tinto would “never again” destroy a sacred site anywhere in the world. Resolution Copper’s mining plan would violate that promise.

Failed experiment: Many mining experts tell us that the Resolution Copper mine proposal just will not work.
Rio Tinto has not finished building the only similar mine (but 2,000 feet shallower) in Mongolia. The toxic tailings dump for that mine, which is the same design as proposed for Oak Flat, began to leak only 3 years after its completion. A test shaft dug at Oak Flat encountered a river of 185-degree hot water at 6,300 feet below ground. (Resolution Copper’s hydrologists had claimed that no water would be encountered below 4,500 feet.) This river of hot water has already led to an enormous increase in projected operating costs for treating this polluted water and cooling the shaft. No one has constructed a mine as large or as deep as the Resolution Copper proposal.

**Time to nix a bad idea**

If Resolution Copper is sincere that this project is about combating climate change, there are plenty of existing and closed mines that could provide copper without destroying Oak Flat and other precious places. For all the reasons mentioned above, it should be impossible for Resolution Copper to obtain the critical permits to mine at Oak Flat. Rio Tinto and BHP have both promised to adhere to the international standards for Free, Prior, and Informed Consent (FPIC) from Native Americans and nearby residents. As both stakeholders have clearly said “NO”, that should end the project.

More detail about the project is available at www.azminingreform.org.

Roger Featherstone is Director of the Arizona Mining Reform Coalition and an avid hiker and boater in the desert southwest.

1) https://apnews.com/article/mining-law-waste-lithium-energy-nevada-idaho-93d9b855d036ae00a294150f021744a6
Let’s discuss groundwater!

You can find many definitions of groundwater – it is basically water stored underground through millennia via the process of snowmelt and rain seeping through the porous earth to an aquifer. Groundwater fills the spaces between rocks, gravel, and soil beneath the earth’s surface. Groundwater is normally fairly pristine because of the filtering it undergoes in reaching the aquifer. However, with industrialization we have contaminated many of our groundwater sources.

Some of those contaminants occur naturally but most are man-made. e.g., pharmaceuticals and beauty products, industrial solvents, toxic chemicals, motor oils, nitrates (fertilizers & pesticides), PFAS/PFOA/PFOS compounds used in fire-proofing products, human waste, other hazardous waste (many in storage tanks), fracking fluids, micro-plastics, tire dust, road salts, and intruding seawater caused by over-drafting (salt water intrusion).

Groundwater depletion is primarily caused by the over-pumping from the aquifer. This leads to land subsidence (surface land falls/drops), lowering of the water table, increased costs as you have to drill further and further underground to reach water and then pump it back up to the surface. This also reduces water surface supplies – groundwater and surface water are connected, you reduce one, then you reduce the other. Last but not least salt-water intrusion will occur in coastal areas when salt water moves into the space left behind by the overdraft of the aquifer.

What is the California Sustainable Groundwater Management Act (SGMA)?

California was one of the last states in the nation to regulate groundwater. In September 2014, Governor Jerry Brown stewarded in a new era by signing major groundwater management legislation, the Sustainable Groundwater Management Act (SGMA). For the first time in its history, California had a framework for sustainable, groundwater management - “management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.” SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably, and requires those GSAs to adopt Groundwater Sustainability Plans (GSPs) for crucial groundwater basins in California. Groundwater is a critical part of California’s water storage. Basins are grouped high, medium, low, and very low priority.

Why was SGMA passed?

More than 40% of Californians rely on groundwater for part of their water supply, and many small to moderate-size towns and cities are entirely dependent on groundwater for their drinking water systems. According to the Department of Water Resources (DWR), California’s groundwater basins have the capacity to hold somewhere between 850 million and 1.3 billion acre-feet. In comparison, surface storage from all the major reservoirs in California is less than 50 million acre-feet.

Because of historical groundwater overdraft and the resulting land subsidence, water users switched to using surface water when the Central Valley Project and the State Water Project were completed in the late 1960s. However, groundwater pumping and overdraft became more severe as water demand exceeded the available supply. Satellite imaging published by Jay Famiglietti, of the University of California Center for Hydrologic Modeling and by others, reveals that the Central Valley lost approximately 25 million acre-feet of stored groundwater during the period of October 2003 to March 2010.

The state’s most significant groundwater use occurs in the San Joaquin Valley, Tulare Lake, Sacramento Valley, Central Coast, and South Coast. The Tulare Lake region alone, in the southern San Joaquin Valley, accounts for more than one-third of the state’s total groundwater use. Basins are grouped high, medium, low, and very low priority.
pumping, according to the Department of Water Resources (DWR). Although desert communities may use smaller quantities of groundwater, many are entirely dependent on these sources.

Groundwater reserves that could be a critically needed resource in times of drought for farms, urban customers, and ecosystems are being depleted at a rate of 2-to-2.5-million-acre feet per year (AFY), though some estimates taking a shorter time period put the depletion rate much higher, as high as 4.4 million AFY. The problem is especially critical in the San Joaquin Valley. It is estimated that groundwater reserves are shrinking by 2.5 million AFY in the Central Valley. An acre-foot is a football field with approximately one foot of water.

The State Water Board estimates that more than 30% of California’s water for agriculture and urban use is pulled from the ground and reliance on groundwater increases to 60% during dry years when surface water supplies shrink. Agriculture uses 80% of our water supply.

**How does SGMA work?**

The foundation of the Sustainable Groundwater Management Act (SGMA) is that groundwater is best managed at the local level, and the State’s primary role is to provide guidance and support through the DWR. SGMA defines a “local agency” to mean a local public agency that has water supply, water management, or land use responsibilities within a groundwater basin (see Wat. Code, § 10721(n)). Any local agency or combination of local agencies overlying a groundwater basin is eligible to become a GSA for that basin. The State Water Board addresses GSA eligibility questions on its Groundwater Management Program website.

SGMA requires groundwater sustainability agencies (GSAs), to develop groundwater sustainability plans (GSPs), and to manage groundwater for long-term sustainability of medium- and high-priority basins. Low and very low priority basins do not take precedence, though it is encouraged that local municipalities also manage these basins with a GSA.

The California Department of Water Resources (DWR) has two roles in implementing SGMA:

- Regulatory oversight through the evaluation and assessment of GSPs
- Providing ongoing assistance to locals through the development of:
  - Best management practices and guidance
  - Planning assistance
  - Technical assistance
  - Financial assistance

The Department of Water Resources (DWR) evaluates GSPs to determine if they comply with SGMA, substantially comply with the GSP regulations, and whether implementation of the GSP is likely to achieve the sustainability goal for the basin. DWR’s evaluation and assessment is based on criteria outlined in the GSP Regulations. DWR evaluates GSPs within two years of their submittal and issues a written assessment.

The Groundwater Sustainability Plan (GSP) will determine how much groundwater will be used, monitor water quality, land subsidence, storage capability, seawater intrusion, interconnected surface water, and establish limitations of use to maintain a viable aquifer within a 20-year period. Each GSA will determine their course of corrective action based on the minimum requirement set for each basin. Outside influences are dry/wet years, supply and demand, condition of basin, and groundwater replenishment projects.

**What has been accomplished so far under SGMA?**

As stated by DWR in March 2022: “January 2022 marked two major SGMA milestones. First, DWR completed 20 basin-wide assessments, predominantly from the most critically overdrafted basins in the San Joaquin Valley, which included reviewing a total of 42 plans that were submitted to the state in 2020. And second, all of the remaining medium- and high-priority groundwater basins responsible for submitting plans by January 31, 2022, meet the statutory deadline.” Currently, DWR’s SGMA Portal site shows that there are 142 groundwater basins for which GSAs have been formed, comprising 351 unique local agencies.

In March 2023, DWR announced decisions for 12 GSPs that are deemed critically overdrafted. Six were approved and the other six deemed inadequate and referred to the State Water Board. Inadequately managed GSAs are referred to the State Water Board for intervention and correction, until the local GSA can do so adequately. It’s important to say so, because this makes SGMA different from other groundwater law.

Under SGMA once a GSA has been approved locally, they must enact their plans immediately, regardless of State intervention. Overdrafted basins do receive funding to enact their plans, including technical help from DWR.

**Challenges to implementation of SGMA**

From the beginning there were some challenges for Tribal and under-resourced communities to actively participate in the planning process. The UC Davis Report, *Implementing SGMA: Results From Stakeholder Survey*, reports: “SGMA participants have little trust in SGMA’s capacity to achieve environmental and social outcomes, which is key for its success.” The report continues: “Perceptions of adequate representation for agricultural interests, disadvantaged communities, and tribal groups were 65%, less than 50% and about 30% respectively. This is predictably supported by GSA data which shows..."
taminated environmental media, now or in the future.″\(^{11}\) Health Impact Assessments and Health Risk Assessments are different in important ways. First, Health Impact Assessments make evidence-based judgments on the health impacts of a decision and make health-promoting recommendations, while Health Risk Assessments only quantify the health risk from a change in exposure to a particular hazard. For example, a Health Risk Assessment may analyze the relationship between the pollutant diesel and the health outcome lung cancer. Second, Health Impact Assessments use a broad framework to predict all the potentially significant health effects that could result from changes in the physical, social, and economic environment. This can include analysis of many different impacts on the determinants of health, such as housing, transportation, employment and income, noise, air quality, access to goods and services, access to parks, and social networks. In contrast, a Health Risk Assessment typically does not consider existing health conditions or disparities in a community. In sum, a Health Impact Assessment is much broader than a Health Risk Assessment.

Using Health Impact Assessments in environmental and land use decisions

A Health Impact Assessment can be helpful for environmental and land use decisions, and they dovetail nicely with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). NEPA and CEQA are two of the most powerful legal tools that frontline communities can use to find out what projects are happening in their neighborhoods, what the impacts of those projects will be, and what the government plans to do to minimize the harm those projects will have on them.

NEPA – popularly known as “The People’s Environmental Law” – requires federal agencies to prepare an environmental impact statement (EIS) for major federal actions significantly affecting the quality of the human environment. An EIS must analyze direct, indirect, and cumulative health effects of a project. While this environmental review is most often done on an individual project level, an agency will sometimes prepare a programmatic EIS to evaluate the effects of broad proposals or planning-level decisions, which may include several individual projects, decisions implemented over a long timeframe, or decisions implemented across a large geographic area.

After NEPA was enacted in 1965, California enacted its own state version in 1970. CEQA requires state agencies to similarly prepare an environmental impact report (EIR) for state agency actions. While there are some key distinctions between the statutes – including that some argue CEQA has “more teeth” than NEPA – the important distinction is that NEPA applies to federally funded projects and CEQA applies to state-funded projects. Both statutes are designed to involve the public in the agency’s decision making at multiple steps. The public is invited to participate when the agency issues a notice of intent to prepare its EIS/EIR, during EIS/EIR scoping, when a Draft EIS/EIR is published for public review and comment, when a Final EIS/EIR is made publicly available, and when monitoring the implementation of the proposed action and the effectiveness of any associated mitigation.

While Health Risk Assessments are sometimes conducted as part of an EIS/EIR, Health Impact Assessments can be more powerful in many ways. When the agency is scoping potential direct, indirect, and cumulative health concerns during the EIS/EIR scoping stage, the stakeholder meetings that are inherent in Health Impact Assessment scoping can ensure thoroughness and tap into community knowledge and experience. After health concerns are identified during scoping, a Health Impact Assessment can decide which concerns should be prioritized. This could entail producing new analyses, such as analyzing impacts not previously analyzed because of the expanded scope; extensions of existing analyses; and developing potential mitigation measures to address significant health impacts. Finally, a Health Impact Assessment can be useful for reporting, receiving, and responding to public comment on (1) baseline health conditions and determinants of health, (2) the analysis of health impacts, and (3) potential mitigation measures proposed in the Draft EIR/EIS.\(^{12}\)

The Salton Sea Renewable Resource Health Impact Assessment

Among other things, SB 125 provides funding for developing a Lithium Valley Specific Plan and Programmatic Environmental Impact Report (PEIR). The Lithium Valley Specific Plan and PEIR are intended to map out and expedite the development and permitting of additional power plants, mineral recovery, lithium battery manufacturing, and other renewable industries within an approximately 51,786-acre area adjacent to the Salton Sea.\(^{13}\)

The goal of expediting development and permitting is achieved by producing a programmatic EIR instead of project-level EIRs. “In the absence of an exhaustive California Environmental Quality Act process for every proposed project planned for the Salton Sea, the agreement was that a detailed health impact assessment was to be the trade-off. It’s not a perfect arrangement, but it’s the devil you know,” says Luis Olmedo.\(^{14}\) “With the health impact assessment, potential effects on people will be studied that could potentially result in policy and programs to remediate concerns.”\(^{15}\)

The Imperial County Public Health Department is leading the Health Impact Assessment process, which was projected to begin in April 2023 and run for twelve to fifteen months. According to its latest Request for Proposals,\(^{16}\) the Salton Sea Renewable Resource Health Impact Assessment’s stated goals are to

a) provide an in-depth, comprehensive analysis of the potential health impacts of lithium extraction for all
projects being evaluated under the Imperial County Lithium Valley Specific Plan and Programmatic Environmental Impact Report;

b) address social determinants of health;

c) explore, collect, and analyze baseline data and conditions; and

d) identify findings that will be used to inform decisions, influence policy development, support decision-making, as well as offer practical and evidence-based recommendations for ways to minimize risks and support opportunities to maintain and/or improve health in all Lithium-focused plans and programmatic Environmental Impact Reports (EIRs).17

Throughout this process, it will be critical to make sure impacted community members are fully engaged to understand all aspects of the “Lithium Valley” effort. Stakeholders who are interested in learning more and participating in the HIA process should follow Comite Civico Del Valle – which facilitates the Lithium Valley Community Coalition, a group of local stakeholders18 – and the Imperial County Public Health Department on social media for updates.

I am grateful to have been in community with Comite at the 2022 Environmental Health Leadership Summit, to point attendees to some legal tools in their toolbox, and to learn from the leadership of the Imperial Valley’s environmental justice community. Comite’s founding principle is an important reminder of this conversation’s significance: “Informed People Build Healthy Communities.” It will be exciting to see Imperial Valley’s residents leverage opportunities like the Health Impact Assessment process to shape this rising lithium industry and ensure it serves their health and economic interests.

Based in Los Angeles, Candice Youngblood is an attorney at Earthjustice. Her experience working with environmental justice communities on NEPA and CEQA advocacy includes supporting their written and oral public comments and representing them in federal and state court.

References for this article are available on the website www.desertreport.org. On the home page, go to the right sidebar and select “All Posts.” Then scroll down to the article that you wish to see, and the references will be at the end.
Desert Report | June 2023

Local solar is the key to a clean, safe, and reliable energy future, as the August 2022 issue of Desert Report makes abundantly clear. In my vision of that future, solar panels on every rooftop go hand in hand with solar cookers in every backyard. Cooking meals outdoors using only sunshine cuts out the middleman and sidesteps public utilities that are gutting local solar programs. Solar cooking is something regular people can do today to reduce their use of fossil fuels, without waiting for new technology or government policy to catch up to our urgent need to decarbonize our lifestyles.

With gas stoves on the way out and the 1.5-degree lifestyle on the way in, and with efficient and affordable solar cookers becoming more and more available, solar cooking is ready to take its place in the sun. It’s easy, safe, and delicious, and it solves the problem of how to avoid turning on your oven when it’s hot outside. Solar cooking outdoors keeps your kitchen (and the planet) cool. It’s very similar to cooking indoors with a slow cooker, only the energy is free and there are no emissions.

Most Americans, including those who live in Seattle, Minneapolis, Boston, and New York City, can cook with sunshine all summer long. You can do it if you live anywhere between the 60th parallels of latitude on Planet Earth; the closer you are to the equator, the more solar cooking days you’ll have. Those who live in the desert regions of the American West have an abundant solar resource for a long cooking season.

How solar cooking works

Solar cooking, a proven technology that has long been employed around the world and uses only the radiant energy of sunshine to cook food. A reflector pointed toward the sun focuses the rays on a dark vessel, which absorbs those rays and turns them into heat. The heat is trapped and held around the vessel by a glass or plastic cover. You’re familiar with this phenomenon from getting into your car when it’s been parked in a sunny spot.

Solar cookers come in a variety of shapes and sizes, but the simplest are panel and box cookers. These cookers are safe and easy to use, relatively inexpensive, and readily available. They can be made of cardboard or more durable materials. Panel cookers have reflective surfaces that direct sunshine onto dark-colored lidded cookware enclosed in a clear insulating shell like a plastic oven bag or an inverted glass bowl. This insulating shell lets in the sunlight and then holds in the heat that’s generated when the sunlight reaches the dark pot. Box cookers have hinged reflector tops that direct sunshine onto dark-colored lidded cookware. A transparent window of glass or plastic on the box keeps the heat in.

The simplest panel cookers heat food to between 200 and 250 degrees F. (Food cooks at 180 degrees F, and water boils at 212 degrees F.) More elaborate panel and box cookers cause food to reach higher temperatures. By way of comparison, food in a Crock-Pot reaches a maximum temperature at or just below the boiling point, sooner if set on high, later if set on low. You can cook just about anything with sunshine that you can cook in a slow cooker, and more – including fruits, vegetables, grains and pasta, legumes, egg-and-cheese dishes, poultry, meat, seafood, nuts and seeds, and bread.

Why it’s good for people and planet

Solar cooking happens at the intersection of the food system and the energy system, the two systems that most need to change if we’re to have a livable future. It’s an efficient and environmentally friendly way to prepare seasonal, local, organic, whole (SLOW) foods. A diet of such foods, particularly if it’s rich in plants, can reduce CO₂ emissions as well as support the health of

BY LORRAINE ANDERSON

Cooking With Sunshine
A zero emission alternative

Cooking with sunshine on three burners: panel cookers rear and front left, and a box cooker on the right.

Philip Lew
our soil, our communities, and ourselves. If you occasionally eat meat as part of a plant-rich diet, cooking it with sunshine is healthier than grilling, which can produce cancer-causing chemicals.

Solar cooking is also good for your pocketbook. Your initial investment in a solar box or panel cooker can be less than $100, or you can make it yourself for the cost of materials. There are no moving parts that might break and require costly repairs. The energy is 100 percent free, so you save on your gas or electricity bill. And because it doesn’t heat up your kitchen on a hot day, you save on air-conditioning costs.

**Getting started with solar cooking**

To get started, you’ll need a solar cooker that you purchase or make, along with one or more thin-walled, dark-colored pots with lids. You’ll also need a few square feet in your yard, on your driveway, on a balcony or deck, or on your rooftop where you get full sunshine in the summer for most of the day, particularly in the hours around noon when the sun is highest in the sky.

You can begin with an inexpensive panel cooker and then upgrade once you’ve gotten into the habit of using it. Solar cookers are available for purchase in most areas of the world and online (check out Amazon for starters). More solar cooker models are available every year, and we can expect that trend to continue.

The ideal solar cookware is dark to absorb and hold heat, and thin to heat up quickly. It’s short and wide rather than tall and deep, to ensure the contents cook all the way through. Nontoxic surfaces such as glass, porcelain enamel, ceramic, and stainless steel are preferable to safeguard your health. Well-fitting lids, either dark or clear, keep steam from escaping that might cloud the insulating shell or box window and cut down on the sunshine coming in.

For recipes, adapt your own favorites. Solar cooking in a simple box or panel cooker takes about twice as long as conventional cooking, so plan accordingly. Several solar oven cookbooks are available, and recipes can be found online as well. The Solar Cookers International (SCI) Solar Cooking Wiki is the most comprehensive and up-to-date online source of cooker information, plans, and links to models for sale. Solar Cookers: How to Make, Use, and Enjoy, 10th ed. (58 pages, 2004), available free from SCI, shows how to make panel and box cookers and also gives recipes, tips, and a brief history of solar cooking.

Harnessing the energy of the sun to cook plant-forward summer meals outdoors is an idea whose time has come. Cooking with sunshine, just like driving an electric vehicle, could soon become normal. All that’s needed is widespread public education and awareness. So try it out yourself and pass the word along. Bon appetit!

Lorraine Anderson has edited dozens of books encouraging Earth consciousness, including the compilations Sisters of the Earth and Earth & Eros, and has authored a new solar oven cookbook, Slow Cook Solar. She lives in Corvallis, Oregon, and for thirty years has prepared summer meals without turning on the indoor oven.

1. Cooking with Sunshine by Lorraine Anderson and Rick Palkovic (2006, Da Capo Press) and Slow Cook Solar: Sun-Baked Summer Meals Good for People and Planet by Lorraine Anderson (2023, Green Heron Press) are two examples.
3. www.solarcooking.org or www.solarcooking.fandom.com
The writer, Christiana Saldana, spent childhood summers with her family along the Colorado River near Needles, California.

This water has magic,
The ability to redirect thought,
The sweetest of memories or the most debilitating of thoughts, disperse, surrender, as cool rushes over every inch.
The kind of embrace only water gives.
A brief reprieve reinforcing a desire to live.
Playing in the current, until sudden disorientation, necessitates a return to the surface.
Human seeks air, necessities laid bare.
Pores once saturated by the heat of the desert, now welcome slightly saline water molecules, rendering AC obsolete.
Perplexed at the ability to amass here, where you can watch water dry, disappear from the skin.
Dive back in.
Attraction with potential for danger, drowning one who falls victim to ignorance,
Body exhausted, brain screaming at such a miscalculation, frustration, desperation, please don’t take me yet.
A faint whisper from the past, don’t panic.
Navigate the river’s terms,
Grasp for shore, the welcoming party shuts the door, for now.
Somewhat of an oddity, relegation to a commodity.
May the war for the Colorado’s soul cease, extractive mindsets decrease.
This water has magic, the ability to redirect thought, among the greatest gifts I never sought.
that only 12% of all GSAs have included non-agency groups such as private pumpers, disadvantaged communities, and tribal members in their decision-making boards."

The Journal of the American Water Resources Association\(^{6}\) (2021) mirrored the 2019 report and found the two most common obstacles to organizing GSAs were a lack of trust and too many diverse interests among stakeholders. Once formed GSAs also sometimes struggle to come up with a plan to achieve groundwater sustainability within the two-decade timeframe. The most significant barriers to producing an attainable plan, according to the research, were the lack of financial resources and the state’s requirement to coordinate plans among GSAs in the same region.

The SGMA is an extraordinarily important beginning for ground water management in California. Still, a number of improvements would be desirable. Amendments should guarantee equitable representation on GSA boards, shorter timelines for compliance are needed, and opportunities for the state to intervene in certain circumstances must be set. There might be new legislation that creates an improved framework for aquifer recharge, and finally, new regulations are needed to prioritize management on behalf of domestic well users, small farmers, and groundwater dependent ecosystems.

All of California depends, directly or indirectly on groundwater: urban dwellers, farmers, small communities, and the ecosystems that support wildlife. The time for proactive management is here.

Charming Evelyn has been working on water issues for the last 15 years through the Sierra Club and serves as officer or member on a number of their committees. She also serves as an appointee of the CA Coastal Commission Advisory Group on Sea Level Rise and Environmental Justice, on the board of the CA Conservation Foundation, and on the Steering Committee of Southern California Water Dialogue.

William (Bill) L. Martin joined the Sierra Club San Francisco Bay Chapter Water Committee in 2015, after retiring in 2014. He serves as officer or member on a number of Sierra Club committees, and is also the Sierra Club volunteer member of a coalition of groups fighting to save California’s rivers and the species dependent on them.

References for this article are available on the website www.desertreport.org. On the home page, go to the right sidebar and select “All Posts.” Then scroll down to the article that you wish to see, and the references will be at the end.
Endangered species conservation remains controversial in the realm of environmental management. The case of the western Joshua tree in California’s Morongo Basin provides an example. This issue has been framed as a winner-take-all scenario wherein conservation interests or development proponents garner either complete victory or defeat in pursuit of their objectives. Each group of stakeholders has their own interest that will be affected by a permanent, state “threatened” designation for the western Joshua tree. It is worth exploring the complications and opportunities present in managing this species in light of a possible California Endangered Species Act (CESA) listing.

Complications in the management of threatened species range from social inequalities and community-based ties to local ecology, to techno-rational matters of policy discrepancies and evidence-based decision making processes. It depends upon never losing sight of community-centered values, sound sustainability-oriented actions, and collaborative proposals for moving forward in a way that is creative, flexible, and inclusive to as many stakeholders as possible. The saga of the western Joshua tree has come to a roaring head at a time when notable shifts are occurring within the locality well known for its famous flora, the Morongo Basin adjacent to Joshua Tree National Park (JTNP).

This area is situated at a socioecological inflection point. Rapid and significant changes in the social, economic, and ecological fabric of this corner of the high desert has necessitated concomitant and unequally distributed alterations in how residents live, work, and interact with their local communities. Trends include an influx of short-term vacation rentals and home buying, ever-growing masses of tourists, and increased developmental pressures, all of which have and will continue to present impacts among stakeholder groups. However, the specter of adapting while leaving some people behind inevitably leads to change without progress.

Issues like the western Joshua tree listing proposition have become a lightning rod for controversy with changes in the Morongo Basin that do not benefit everyone in the same manner. This is not to say that any or all the changes are inherently negative, but when people are differentially affected by change without recourse, resistance is bound to arise. Resistance, coupled with the emergence of a major environmental debate, has risen to the forefront of collective consideration.

The western Joshua tree, acting as a symbol of the Mojave, has very real impacts on one’s nature and community-based ties. When interviewed, some stakeholders made direct comparisons of Joshua trees to neighbors and friends. Others described feelings of sadness and disorientation at the prospect of losing a key member of the Morongo Basin community, reflecting the Joshua tree’s central role in fostering an enduring connection between people and their neighbors. Furthermore, Joshua trees are tied to the economic prosperity of the Morongo Basin as a tourist destination. Guests purposefully seek them out. The presence of the western Joshua tree is what sets the basin apart and fashions it into a legitimate destination. The western Joshua tree is intentionally embedded in the socio-economic fabric of the high desert. So much so in fact that the value of the land cannot be easily separated from it.

The western Joshua tree therefore carries as much weight in our minds as any other iconic species. It is to be expected to find staunch, logically-based, defenses against what some stakeholders believe is excessive overreach in terms of CESA restrictions.

Joshua Tree National Park is often cited to make the point that the western Joshua tree is already well-protected. The western Joshua tree is found in a high elevation refugium within the northwest portion of the park, a fraction of the total acreage. In addition to what is within the park, approximately forty percent of western Joshua tree habitat is found on private land. Climate change aside, the conservation of the species on private lands facing development pressures is complicated. The idea that the western Joshua tree is already protected at the local level relies upon conservation on public lands, anecdotal evidence of species health, and the prospect of hardships faced by the everyday Morongo Basin resident in the event of a permanent listing. The prospect of hardships boils down to a defense of property rights, a
principle core to the notion of American individuality and associated freedom.

The previously stated defenses suggest that the state officials are not the best stewards of faraway species. To some extent, the discussion is not about what additional protections are appropriate, but revolve about who regulates them. There is a legacy of political conservat-ism in the Morongo Basin which translates into distrust of state and federal government coupled with a desire to handle matters locally. Other stakeholders mistrust local discretion on the grounds that local statutes are merely a facade for overt self-interest.

The back-and-forth over species stewardship is further sustained in part by debate on whether the best available science supports a threatened designation. In this light, it is unclear whether listing the species under CESA will be effective in combating the looming issue of climate change. However, it is argued that a listing will shed greater public awareness on the western Joshua tree’s plight, allow for direct funding and the purchase of conservation lands, and of foremost importance, greater restrictions on species taking. Environmental decision making is also hampered by a lack of range-wide population data on the western Joshua tree. Better data might lend clarity towards the status of the species and improve decision making.

There are several obstacles that make coherent debate difficult. Foremost is the absence of a single outlet speaking for the collective interests of the Morongo Basin, a development that could bring divergent groups to the discussion table. Efforts to reach a consensus have pitted those who view local government interests as obstacles towards collective threatened species management versus those who see external groups and environmentalists as essentially hijacking the procession of local affairs. The maintenance or disavowal of local input and decision making is the crux of the issue. The CESA process is considered by some to be faulty because it furthers a zero-sum framing of the debate in a process that creates polarization by requiring a simplistic yes or no listing decision.

Opportunities for remedying the situation and fostering collaborative species management might clarify the CESA permitting process, allow for remediation of unequal financial impacts of fines and permits, require transparency regarding mitigation funds and projects at the state level, utilize a one-to-one replacement ratio for impacted Joshua trees, and create a regional high-desert multiple species conservation plan. Furthermore, local community organizations, involved community members, and the nearby National Park might provide opportunities for collaboration at a local level that can then be scaled up to the state level.

As of this writing, it is anticipated that the newly introduced California Western Joshua Tree Conservation Act (WJTCA) presents a valuable, however less stringent, compromise. It would provide for collaborative, landscape-level conservation for the western Joshua tree while simplifying the complex permitting process for exceptional circumstances. It would require consultation with Native American Tribes, municipal and county governments, and the public in planning. Additionally a fund would be created to be employed by the California Department of Fish and Wildlife (CADFW) towards mitigation of negative species impacts and/or the purchase of conservation lands.

Where there is a convoluted environmental issue or debate, such as that involving the western Joshua tree, there is an opportunity for crafting a better solution. Any solution that moves the needle forward in this matter must have certain qualities. It must be creative and flexible. Creative to manage the wants and needs of diverse stakeholders. Flexible to account for the always changing nature of conservation in the rapidly evolving American West.

Cameron Mayer is a late-blooming desert enthusiast, having discovered the Mojave six years ago while attending CSU Long Beach. Having recently finished his Master’s thesis on the western Joshua tree conservation debate in the Morongo Basin, he now works as Project Director for Friends of the Amargosa Basin and resides in Shoshone, California.
You don’t see many rocks where I live in western Oregon. Lush forests or savannah-like areas dotted with Oak, yes, but the bedrock mostly lies beneath the vegetation and a thick mantle of soil. Just south of town though, the highway cuts through a hillside to expose rock that reminds us of our geologic setting – and taken in context, points to Earth’s incomprehensibly long history.

I’m standing in a soft rain at the foot of the road cut, looking upwards at some fifty feet of strata. The rocks are sedimentary, having been deposited in lakes and rivers, but there’s also a thin layer of light-gray ash near the top of the cut and a much thicker one near the bottom – and slashing vertically through everything are two narrow gray, almost black, bodies of igneous rock. Called dikes, they worked their way upwards as molten rock along cracks in the older sedimentary rock before cooling and crystallizing where they are now.

Evidence of ancient volcanic activity abounds: ash, dikes, even the sedimentary rocks are made mostly of volcanic particles. And on clear days, I can walk to the south side of the road cut and look eastward to forested ridges of the Western Cascades that give way in some fifty miles to the snow-capped peaks of the High Cascades. They’re all volcanic. The High Cascades volcanoes are young and active whereas those of the western Cascades are long extinct and deeply eroded. Combined, the two parts of this range formed over a period of about forty million years and produced miles and miles of lavas, ash and debris flows, and volcanic-rich sedimentary rocks.

Trying to imagine this forty million-year history is like watching the stars, filling me with wonder and leaving me humbled, subdued, and exhilarated, all at the same time. And by geologic standards, forty million years isn’t extremely long. Death Valley, California, one of my favorite haunts, showcases some 30,000 feet of sedimentary rock that was deposited over a period of 400 million years, between about 700 and 300 million years ago – and beneath them lies rock that records conditions on Earth’s surface over a billion years ago. Any-
one can see these rocks, touch them, and imagine the incomprehensible.

When I was in college, I encountered a textbook passage that helped me visualize geologic time. The author, Don Eicher of the University of Colorado, imagined Earth’s entire 4.54 billion year history compressed into a single year. He pointed out that, in this calendar, Earth’s first organisms would have lived sometime in late March, the first creatures that produced shelly fossils appeared November 17, and the first land plants around November 23. He included many noteworthy events, but they didn’t include the Cascade Range. By my calculations, the forty million years of Cascade volcanic activity existed for about the last three days of this calendar year. The first humans? They appeared about 35 minutes before midnight.

It boggles the mind to think about how much humans have done in those thirty-five minutes, so much so that we’re considering naming a geologic period of time after ourselves: the Anthropocene. It’s likely that we’d designate it an “epoch” so it would naturally come after our present epoch, the Holocene, which followed the Pleistocene (Ice Age), which followed the Pliocene, and so on. Of course, any formal designation would require people to agree on exactly when it began, and for that there is little consensus because humans caused major changes on Earth at different places during different times. The one time most researchers agree affected everywhere at once was the widespread atomic weapons testing in the late 1940s and 1950s, which spread radionuclides across the planet and are now an identifiable part of the sedimentary record.

Without question, humans are an indomitable geologic force, especially since the early 1950’s. It’s no wonder many researchers call that time “The Great Acceleration,” when our technology and energy use increased exponentially. And less than forty years later during the 1990s, we recognized that our activities moved more material each year than any other natural force such as rivers or landslides or glaciers. Since then, our “bioturbation” has only increased. We have colonized every habitable nook and cranny on this planet and are precipitating...
environmental catastrophes that we’re only beginning to comprehend.

But to call this human time period a geologic epoch seems to imply a certain longevity to both the period and to its trademark origin: Homo sapiens – and since 1950, the earth has aged barely a half second in its year-long calendar. I wonder how much longer we can last. To me, the concept of the Anthropocene as an epoch seems contingent on us surviving our environmental crises and continuing for thousands of years. After all, the Holocene Epoch, which it would replace, lasted for 10,000 years, and all the epochs before lasted millions. Instead of a new epoch, we may instead be in a transitional period from the Holocene to something that postdates Homo sapiens. If that’s the case, then we’re witnessing more of a dramatic event: mass extinctions and environmental changes that will herald an altogether different ecosystem.

I reach down at my feet and untangle a wet plastic bag from some rocks that have fallen from the road cut. So different, yet both are pieces of sediment just the same. Both may find their way into the rock record. I wonder how our part of the record will appear long after our time has passed. I imagine we’ll be a readily identifiable layer, thick in some places and thin in others, and everywhere representing the same moment in time. It won’t be an epoch, but a fleeting second or two in Earth’s year of ages.

Marli Miller, PhD, of the University of Oregon, teaches, researches, and writes about geology and contributes geology photographs to other instructors and researchers through her website geologypics.com. Among her books are Roadside Geology of Oregon (2014), Roadside Geology of Washington (2017) and Oregon Rocks (2021).

Lest We Forget

I recently visited a friend who lived near the Mexican Border on the western side of Imperial County. The friend had been walking in the desert two miles north of the border wall. Under a small bush and in the sand, she had found the discarded object shown in the picture here. The child would have been even too small to walk. Statistics and policy are only a part of our immigration story.

Craig Deutsche, editor
(The glasses were put in the photo to provide scale.)
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