How Can Church Members Increase Their Environmental Awareness?

Danielle Montague-Judd

Danielle Montague-Judd has a doctorate in geosciences from the University of Arizona and is interested in paleoecology and the interconnections between organisms, climate, and the geologic record.

"Consider the Wondrous Works of God" (Job 37:14)

Inspiring—and vital. Earth and life have inspired humans over the ages as they have discovered its beauty, intricacy, and economy. The natural world, from tiny backyard plants to sweeping canyon vistas, provides unlimited opportunities for meditation, reflection, and inspiration to anyone who takes the time to observe them.

But the natural world provides much more than an inspirational backdrop. Natural processes control the well-being of the earth and its inhabitants. Without clean and plentiful forests, ranges, oceans, arable lands, and their biota, earth would be uninhabitable to humans. Coccolithophores, phytoplankton that live in the ocean, provide an example of a tiny organism that has a big influence on global-level processes. These organisms use carbon dioxide both for photosynthesis and for building carbonate shells. When the organisms die, the shells fall to the seafloor and become buried, with the net effect of removing carbon dioxide from the atmosphere. Under the right conditions, huge numbers of coccolithophores can bloom in the oceans. By removing carbon dioxide from the atmosphere, coccolithophores thus help regulate global temperatures.[1]

If one considers the effects of tiny coccolithophores on the global climate system, it comes as little surprise that large, carbon-dioxide-emitting humans also have large impacts on the earth. Two important ways that we impact the earth today are by living beyond the earth's means and by altering the balance among global systems. These impacts are explained below.

Most humans live beyond the earth's means. Human demands exceed earth's biological capacity as measured by the ecological footprint. Ecological footprint analysis measures the capacity of an area for growing crops, grazing animals, harvesting timber, fishing, building infrastructure, and burning fossil fuel. Of the twenty-four acres of land per capita needed to sustain the typical American lifestyle, only thirteen acres are supplied domestically. Other countries supply nearly half of America's natural resources, at a high price to both present and future populations.[2] Sadly, today's highly materialistic society typical of America and other Westernized countries largely ignores the need to tend and keep the earth.

Human activities alter the balance among earth systems. The reliance of materialistic societies on fossil fuels has even further consequences, to the point of altering the balance among global systems. Earth can be viewed as a complex of systems, including the atmosphere, hydrosphere (oceans, rivers, lakes, groundwater), biosphere, and geosphere (the solid earth, rocks). Energy and materials are stored in these systems and flow between them. When the flow rates between systems are altered drastically enough, the systems are destabilized. Humans today are altering the composition of earth's atmosphere by releasing carbon dioxide to the atmosphere at unprecedented rates. Carbon that was locked up in rocks as fossil fuels for thousands and millions of years is being released over a period of only a few hundred years. Additional carbon is being released with the clearing and burning of forests. The net effect of the carbon release is to enhance the natural greenhouse effect, which warms earth's surface. The consequences of greenhouse enhancement will likely include destabilizing change in earth's systems, such as sea-level rise, change in climatic and vegetation belts, positive reinforcement of the warming by release of additional greenhouse gases locked in permafrost, and so on.[3]

What can we do to mitigate the effects of these impacts? We must understand natural processes and our impact on them in order to care for and respect our surroundings. Then we must learn about our responsibility, both spiritual and physical, to care for the earth. Finally, we must follow through with what we have learned and make it a part of our lives. The remainder of this paper discusses ways to learn about and practice our stewardship of the earth.

The doctrinal charge to Latter-day Saints that they care for and respect all that they have been given (see D&C 59:18–21) deals not only with their spiritual well-being, but also with the well-being of the earth. Study of Church doctrine and of earth processes and participation in outdoor activities (including gardening and nature appreciation) provide the knowledge and experience necessary to make informed, conservation-minded lifestyle, social, and political decisions. Conservation-minded choices, in turn, allow people to care for and live peaceably with their natural surroundings.

"To Dress It and to Keep It" (Genesis 2:15)

A sacred stewardship. The Church teaches that human exaltation is God's work and glory (Moses 1:39). Exaltation ultimately comes by making correct choices, serving others, and being wise stewards (see D&C 104:13, 17; 72:3–4; 59:23). God provided the earth for humans to dwell upon and enjoy, under the condition that they partake of the blessings of the earth with care and gratitude (see D&C 49:19–20; 59:18–21). Genesis 2:15 states that God placed man in the Garden of Eden "to dress it and to keep it," implying a sacred stewardship to care for the land. The heavens, the earth, and all things therein are the Lord's (see Deuteronomy 10:14). Humans owe their existence and all their blessings to the Lord (see Mosiah 2:21), and they show reverence and respect to Him as they care for His creations.

Modern leaders of the Church have commented on the need to develop a caring relationship with the earth in both practical and spiritual terms. President Spencer W. Kimball urged

members to grow gardens as a means of self-reliance: "We encourage you to grow all the food that you feasibly can on your own property."[4] He also commented, "We recommend to all people that there be no undue pollution, that the land be taken care of and kept clean, productive, and beautiful."[5] Our relationship to the earth affects our relationship with Christ, as President Gordon B. Hinckley stated: "This earth is His creation. When we make it ugly, we offend Him."[6]

The role of reverence. God declared the Creation to be "very good" (see Genesis 1:31, Moses 2:31). When we care for and reverence His creations (including our fellow beings), we show love and respect for Him. Gratitude in turn brings additional blessings (see D&C 78:19). The beauty of the earth goes beyond the surface to penetrate the careful observer's soul: "That which is of God inviteth and enticeth to do good continually" (Moroni 7:13). Reverence and gratitude for the earth lead to increased faith in a Creator who provides a wonderfully beautiful and awesome place for His children to live.

Anyone who takes the time to observe carefully can experience feelings of awe and reverence for the earth. These feelings are analogous to the Light of Christ in that they are available to everyone: "And the Spirit giveth light to every man that cometh into the world; and the Spirit enlighteneth every man through the world, that hearkeneth to the voice of the Spirit" (D&C 84:46). St. Francis of Assisi, founder of the Franciscan Order, penned the text that was later translated and modified by William H. Draper into the hymn "All Creatures of Our God and King." The words reflect respect, love, and joy for the earth:

Dear Mother Earth, who day by day
Unfoldest blessings on our way,
Alleluia! Alleluia!
The flow'rs and fruit that in thee grow,
Let them his glory also show,
Alleluia! Alleluia!
Alleluia! Oh, praise him! Alleluia![7]

The sort of love and joy described by St. Francis of Assisi does not require travel to exotic or breathtaking locations. It only requires a desire to see and know (not necessarily knowing by breaking the whole into parts, but by taking in the whole as it is). Elder M. Russell Ballard described in a general conference address how his reverence for God's creations deepened as he watched roses bloom. First, he observed the rosebuds unfolding. Watching this process stirred his interest, so he learned more about the biology of roses and the importance of vegetation, photosynthesis, and the sun to all life. Finally, as he contemplated this knowledge, "my esteem for our little roses took on an element of wonder and reverence."[8]

Elder Ballard's experience shows that both faith and understanding increase as one personally discovers God's creations. Discovery increases the desire to learn and study the workings of the earth and leads to increased appreciation and love for God.

"Seek Learning, Even by Study and also by Faith" (D&C 88:118)

Learning by study. President Brigham Young said, "Not only does the religion of Jesus Christ make the people acquainted with the things of God, . . . but it holds out every encouragement and inducement possible, for them to increase in knowledge and intelligence, in every branch of mechanism, or in the arts and sciences, for all wisdom, and all the arts and sciences in the world are from God, and are designed for the good of his people."[9] As we discover and learn about the earth, our ability to care for and respect our surroundings—to tread lightly—increases.

The scriptures teach that "man was created of the dust of the earth" (Mormon 9:17). There is physical truth as well as spiritual truth in the phrase "dust of the earth." If one considers what the "dust of the earth" is, a whole new perspective is gained on our shared existence with the earth from which we were created. Matter on earth is conserved according to the first law of

thermodynamics (energy and matter are neither created nor destroyed, but rather change form) and the law of conservation of matter (the amount of matter on the earth is essentially constant).[10] This means that practically all of the matter on earth today has existed there since the earth's formation and that the atoms that make up our cells have resided in many other creatures, plants, soils, and sediments before they became part of our bodies. We *are* the environment.[11]

If we take the phrase "dust of the earth" more literally and simply consider soil, we can again broaden our perspective concerning processes vital to life that operate unseen by most human eyes. Soil is a major environmental feature formed from the interplay among geography, parent material, and prior environmental history,[12] and countless forms of life depend on it for nourishment either directly or indirectly. Very few plants grow without soil. And without plants, the atmosphere would not contain the oxygen necessary for air-breathing animals to survive. Soil is not simply a resource to be used up. Rather, soil is an integral part of the environment and a kindred material. Many other ecological processes perform critical functions unnoticed by most humans, from the filtering of part of the ultraviolet spectrum by stratospheric ozone, to the pollination of flowering plants by wind, insects, and other animals, to the regulation of planetary temperatures and atmospheric composition by rock weathering and plate tectonics.[13]

During my college years, I studied earth processes (geology) and organisms (biology). Lectures introduced me to new concepts and field classes helped me apply those concepts to the real world. Field experience in particular puts concepts into context and demonstrates how much more exists to discover and contemplate. These experiences brought inspiration and meaning to my view of the earth and life upon it. Two examples follow of how fieldwork has increased my awareness of the earth around me.

My first major field experience took place between my sophomore and junior years of college and involved two weeks of geology studies throughout Utah and Arizona. During this time, many of the principles that we had discussed in geology courses came together and I understood more clearly how physical processes shape and change the earth. My humility increased as I grappled to synthesize all that we had seen into a geologic history of the region. New perspectives came into view as we observed an area at both large and small scales (for example, the broad structure of a mountain range versus details about its rock composition). We studied an outcrop from a distance as well as close up and then synthesized all that we had seen into possible explanations for how that particular outcrop or feature formed. I felt a certain exhilaration as I stood on a ledge overlooking the Grand Canyon and tried to comprehend the millions of years of history before my eyes, millions of years that were carved out by river power.

My second major field experience occurred at the Hopkins Marine Station at Monterey Bay, California. During a month of intensive study involving lecture, labwork, and fieldwork, I discovered the incredible diversity and beauty of marine invertebrates. Here is an entry from my class journal dated May 16, 1991:

> Today we visited Pescadero Point on 17-Mile Drive, 6:30–10:30 a.m. It was another beautiful day. It is interesting how the environments are different on each field trip, even though all are intertidal. Today the tidepools were very deep, and the terrain consisted of large granite boulders. We looked down in the pools and on rock overhangs. While I was out on the low-intertidal-zone rocks, I noticed one area where sea urchins had drilled out holes in the rock to fit them, for protection. The rock looked like a sea-urchin condominium! It was a good thing the urchins did that, as much as the waves pounded them. We got to see the "invertebrate shrine," as Dr. Braithwaite called it, which was in a little underwater cave under a huge rock. There were all kinds of sponges, hydrozoans, molluscs, and echinoderms, in all different colors. It was beautiful.

These words don't adequately describe the beauty of the tide pools, but they are an inspiring reminder to me of these fragile but persistent marine communities. Once again, observation in the natural world helped me assimilate and appreciate what I learned in class. And once again, I felt a deep reverence for earth and life and a desire to preserve as much of its diversity and complexity as I can.

These experiences opened my eyes to new perspectives on the world, and I feel indebted to those who offered the classes and took the time to give a new generation of students the gifts of wonder and a desire to learn. My feelings parallel those of Henry Beston, who, after living for a year on a beach in Cape Cod, wrote, "To be able to see and study undisturbed the processes of nature—I like better the old Biblical phrase 'mighty works'—is an opportunity for which any man might well feel reverent gratitude."[14] All have the privilege of studying the natural world, and the Lord charged the Latter-day Saints to learn "of things both in heaven and in the earth, and under the earth" (D&C 88:79). Study of the natural world leads to increased understanding of the principles upon which the earth operates as well as an understanding of our kinship with the earth through the recycling of matter. Additionally, study in the outdoors allows one to live, however briefly, away from the busyness of the everyday world and contemplate the human role in earthly existence.

Learning by faith. Getting outside and being in a place for a time allows us to meditate and evaluate our dreams and goals. Being outside is often a recharging experience. Elder Ballard commented on the need to observe nature: "Men and women in all parts of the world have a desperate need to take time from their demanding routines of everyday life and to quietly observe God's miracles taking place all around them. Think of what would happen if all of us took time to look carefully at the wonders of nature that surround us and devoted ourselves to learning more about this world that God created for us!"[15]

From the beginning of history, men and women have sought spiritual nourishment out-of-doors, from mountaintops to deserts to wooded groves. Following are just a few scriptural examples of prophets receiving inspiration and guidance in wilderness places.

After he formed clear stones to light the Jaredites' ships, the brother of Jared "did carry them in his hands upon the top of the mount, and cried again unto the Lord" (Ether 3:1). Then an intensely spiritual experience followed as the brother of Jared saw the spirit body of Jesus Christ (see Ether 3:4–16). Moses was on a high mountain when he "saw God face to face, and he talked with him" (Moses 1:2). Moses was transfigured as he beheld all that the Lord had created (see Moses 1:2–11). John the Baptist grew up in the desert (see Luke 1:80) and preached in the wilderness (see Matthew 3:1), fulfilling in part Isaiah's prophecy of "the voice of him that crieth in the wilderness, Prepare ye the way of the Lord" (Isaiah 40:3). As Enos was hunting in the forest, he pondered his father's teachings about eternal life. He records, "my soul hungered; and I kneeled down before my Maker, and I cried unto him in mighty prayer" (Enos 1:4). The Holy Ghost led Jesus into the wilderness, where He spent forty days fasting and communing with God the Father (see Luke 4:1; Joseph Smith Translation, Matthew 4:1). Jesus performed the Atonement in Gethsemane (see Matthew 26:36), a garden near the Mount of Olives (see Luke 22:39). And finally, fourteen-year-old Joseph Smith "retired to the woods" (Joseph Smith—History 1:14) to pray to God for understanding and went on to establish The Church of Jesus Christ of Latter-day Saints. Outdoor places of solitude have played important roles in the lives of spiritual leaders.

Places of solitude are not reserved for spiritual leaders, though. We all have access to our own special places of meditation and escape from the material world. These places can be outside our back doors or far into the wilderness. Sometimes certain moments, as well as certain

places, contain deep spiritual impact. One such moment occurred for me on a geology field trip in the heart of Utah canyon country. We had just reached Bull Creek Pass on Mount Ellen in the Henry Mountains. As I surveyed the landscape from the pass at 10,480 feet, a fantastic maze of canyons stretched beyond the horizon to the east. Something changed in me at that moment, perhaps triggered by awe of the sheer vastness of the sight and how such a wonderland might have formed. But after that moment, just knowing that such a place existed changed my life. "Great and marvelous are the works of the Lord" (D&C 76:114).

Quiet observation is often the key to a greater awareness of phenomena or objects that seem hidden until we look for them. They are really there all the time, but we must make the effort to see them. I recall a late summer evening in Indiana when I was about fourteen years old. My parents and I walked through the woods behind our house to the log cabin in the clearing. We scaled the sidewall logs, perched ourselves on the roof, and waited. Birds and insects sang their twilight songs; the moon began its nightly trek. The stage was prepared and ready for the players. Then, from nowhere, it seemed, a "bullet" shot straight up from the ground, circled several times high in the air, and just as quickly plummeted down at the exact same spot. A curious, raspy chirping accompanied the abrupt flights. We were witnessing the courtship dance of a male woodcock. We climbed down from the cabin roof and walked back to the house at a very late hour. But the evening had been well worth the effort. Our awareness had been expanded through patient observation. I agree with Aldo Leopold, one of America's founding conservationists, when he explained that observation of nature yields entertainment far more valuable than the kind offered by popular media.[16]

At times encounters with nature prove dangerous, and we gain humility and respect for the awesome power residing in earth processes. We gain a deeper reverence for God's omnipotence. Elder Ballard described reverence as "a profound respect mingled with love and awe. . . . Reverence might be understood to mean an attitude of profound respect and love with a desire to honor and show gratitude, with a fear of breaking faith or offending."[17] I came face-to-face with the power of nature several years ago when my husband and I hiked to lower Calf Creek Falls in southern Utah. As we arrived at the 126-foot waterfall, we heard rumbling over the sound of the waterfall and noticed clouds building up. We quickly started back down the trail but not soon enough to beat the storm. It started raining, and we loped faster down the trail. It started hailing. Then the hailstones got bigger. We sought shelter under a rock overhang, but the downpour didn't let up and I noticed sheet wash coming down the canyon walls opposite us. Flash floods would come soon. We headed out again into the rain and were soon gratefully back at the trailhead and into dry clothes. In the midst of a powerful storm, I felt small and insignificant, like a small animal seeking shelter for survival.

The awesome power of nature can strip away surficial thoughts to expose our core being. One summer during my teenage years, my dad and I drove from Denver, Colorado, to our home in Indiana. About one-third of the way into the drive, we realized that we were chasing a system of powerful thunderstorms. At one point during the drive across Kansas, the interstate was covered with shredded corn leaves that had been ripped from their stalks by wind and hail. The storms were just ahead, because the leaves on the highway smelled like freshly mown grass. We joined up with the brunt of the storms just as we reached Indiana, and a drive that should have taken a couple of hours ended up taking much longer. Many of the roads were impassable. I remember seeing the aftermath of a tornado that had swept through an area just a short time before we arrived. The tornado blew out windows in homes, ripped the roof off of an airplane hangar and scattered airplanes topsy-turvy on the ground, and blew a tree over onto the road,

requiring yet another detour. Amazingly, a herd of cows grazed in a pasture as if nothing was out of the ordinary, despite the driving rain. They seemed much calmer than I felt. I was relieved when we finally arrived home safely. Although moments existed on that drive when I longed for someplace sheltered, in retrospect my reverence deepened for the awesome power of a storm that could destroy a person's material possessions instantly. That storm helped me see that love endures, whereas possessions do not. Encounters with the raw powers of earth processes clear the sociocultural fog in our minds so that we see what counts: loving relationships, caring stewardships, and self-improvement. "For where your treasure is, there will your heart be also" (Matthew 6:21).

Nature also speaks to us about the power of God in gentler ways than the unleashing of a furious storm. Observing a place over a period of time often reveals quiet moments that spark one's soul. One summer I spent a month camping at a field site in central Nevada. The changes in light and shadows at sunrise made an impression on me that I recorded in my journal:

> Mornings in the park are still. It might be warm, cool, or cold, but it's still if you get up early enough, within half an hour or so of dawn. Ione Valley and the Paradise Range, to the West, glow a soft, gentle goldish-green. The hills on the north side of Union Canyon light up, pale at first but becoming greener as the sun climbs the eastern horizon and rises above Brachiopod Ridge and Richmond Hill. These moments are silent and fleeting. Soon the whole valley and canyon are fully lit, and the gnats announce that morning is here.

Light and shadows played out a sunrise dance that rewarded the early morning observer.

Learning by doing. We can carry out our earth stewardship in many ways. Two things that help us learn about and appreciate the earth and that are easily done by most people are organic gardening and creation of a backyard wildlife habitat.

Growing a garden is an excellent way to observe, work in, and come to know an outdoor space. Each year brings different conditions and circumstances, and our humility and ability to work with the land increase as we adapt to and overcome challenges such as predator damage and bad weather. We come to understand just how much we depend on the earth and God for sustenance as we raise our own food.

Organic gardening methods, in which no synthetically derived biocides (that is, pesticides, fungicides, and herbicides) or fertilizers are used, best preserve the land and the organisms residing there and ensure nutritious food free of synthetic chemical residues. Organic gardening is rooted in the principles of ecology and enables the gardener to grow healthy food, enhance fertility of the soil, save seeds for next year's crops, encourage plant and animal diversity (including beneficial insects), and preserve wilderness by reducing the amount of land needed for industrialized agriculture. Nearly all industrialized agriculture, by contrast, uses chemical biocides and fertilizers in huge amounts, hybrid and genetically engineered seeds, large single-crop fields that decimate beneficial insects and other animals (and in turn require more synthetic chemicals to control pests), and large amounts of land.[18] Organic gardening operates on smaller scales but is much more sustainable and conserving of the earth.

Gardening provides an opportunity to learn about the biology and ecology of the patch of land that one cares for. What animal and plant species naturally occur in the area? What beneficial insects can be attracted to the garden patch? What are the plant-pollinator relationships, and how can pollinators be attracted to the garden? What are the characteristics of the soil? How can it be enriched? As one asks questions and works with the land, learning its strengths and augmenting them, one learns the value of observation, experimentation, and work. When families garden, they learn the value of work, gain valuable life skills (growing and preserving food),

and become unified as they work together to provide food for each other.

Gardening is an excellent way to teach children work, responsibility, love of nature, and ecology. For example, by understanding the importance of earthworms to soil fertility or ladybugs to predator control, children learn that many insects and other animals are beneficial rather than things to be feared (in the negative sense) and destroyed. Fear of insects or other organisms often results from ignorance or misunderstanding about their natural history and ecological roles, and can lead to ecological damage such as the overuse of biocides that accumulate in land, water, and organisms.

A natural extension of gardening is creating a nature preserve, no matter how small, in one's own yard. A small patch of wildlife-friendly, biocide-free plants or a small pond can attract and sustain a variety of creatures, from insects to amphibians to birds. Migrating creatures in particular need areas in which to rest and gather food, especially as habitat losses increase with human development of the land. Several large-scale wildlife census projects provide the opportunity for amateur naturalists to contribute observational data from their own backyards.[19]

Whether by study or by meditation or by action, there is so much to learn about the earth! We must learn much in order to care for it with reverence and kinship. As we learn and act on what we know, we show love to God. Elder Ballard explained, "To truly reverence the Creator, we must appreciate His creations. We need to plan to take time to observe the marvels of nature. Today, we can easily become surrounded by brick buildings and asphalt surfaces that shelter us from real life around us. Plan to share with your family the miracle of buds changing to fragrant blossoms."[20]

"Men Should Be Anxiously Engaged in a Good Cause" (D&C 58:27)

Where do we stand? As we form a relationship with the natural world through study, faith, and action, we have the desire to care for it, which in turn increases our reverence for God. Caring for the earth means that our lifestyles do not exceed the capacity of our surroundings to provide for us and that we use technology thoughtfully rather than recklessly. It means that we continue to learn even as we acknowledge that there is much that we don't know about how the earth works.[21] It means that we exercise our right to vote and influence policy so that caring policies (or less hurtful policies) can be put into place. It means that we teach, serve, and encourage others to learn about their relationship with the earth, a relationship in which humans are part of the environment.

How are individuals within the Church doing in terms of learning about the earth and acting on that knowledge? Some Church members get involved in gardening or recycling projects, which is a start. In a notable example of how one person can work for good, botanist Paul Cox raised funds to preserve a Samoan rain forest in danger of being logged.[22] But, within my limited realm of experience in Church wards, it seems that relatively few people understand their role as stewards of the earth or the importance of understanding basic ecological principles in order to fulfill that stewardship. There seems to be much room for improvement and much potential to work with the earth for good.

The role of the worldwide Church. One way that the Church disseminates information is through periodicals. The *Ensign*, an official magazine of the Church,[23] has contained only a few articles about nature, ecology, and gardening over the last thirty-three years. Keyword and topic searches of the *Ensign* magazine were conducted using the "magazine search" feature in the "Gospel Library" section of the Church's Web site (www.lds.org). Keywords used included *ecology*, *environment*, *nature*, *resources*, *recycle*, *recycling*, and *garden*. Thirteen articles resulted that directly dealt with these topics (see Article Search Results at the end of this article).

Of the thirteen articles published over this time period (January 1971–March 2004), two

address issues more at the root of environmental problems, such as humans' relationship with the environment, materialism, and misuse and abuse of technology. Three articles discuss observing and reverencing nature (one of which is the general conference talk by Elder Ballard quoted previously). Four articles, all one page or less, discuss recycling and other actions that are helpful in minor ways but do not address the root problem of human-caused environmental degradation.[24] And four more articles, three of which are one page or less, offer practical gardening tips. One offers a little information on soil fertility but no further discussion on the ecological principles behind gardening.

Four articles were published in the 1970s, three in the 1980s, four in the 1990s, and two in the 2000s. The most recent article, from March 2004, was a personal essay in which the author explained the religious qualities of nature observation and the human responsibilities to tend and show gratitude for the earth. Ecological principles were not discussed. The last article to discuss ecological principles and the consequences of human actions on the earth was published in 1991, thirteen years ago. If Latter-day Saints are to develop environmental awareness and a sense of kinship with the earth, then more articles dealing with those subjects are needed.

The Church also disseminates information through the standardized Sunday-lesson curriculum for children and adults. Several of the Primary manuals contain lessons on feeling and showing gratitude for Heavenly Father's creations.[25] Few Sunday lessons for adults, however, focus on environmental stewardship. Lessons about gratitude sometimes touch on showing appreciation for the Creation but often do not discuss the connection between gratitude for the Creation, reverence for God, and environmental stewardship. It is interesting that so many of the lessons for the youngest children (eighteen to thirty-six months) focus on developing gratitude for the Creation.[26] Perhaps we adults need a reminder. Adult lives are busy and complex, but sometimes a reminder of the simple (and glorious!) things can restore our perspective. As Elder Ballard noted: "God created the earth in all its magnificent glory, not as an end in itself, but for us, His children. . . . Those who feel no reverence for the creations and the divine attributes of God likely will have little appreciation for other sacred things."[27] The Church provides contact information for the curriculum planning committee in each teaching manual.[28] Church members could contact the committee with suggestions for lessons on environmental stewardship. It would be especially interesting to learn about the teachings of past Church Presidents on environmental stewardship, perhaps as a chapter in the *Teachings of Presidents of the Church* manuals.

In addition to providing more information on the need to care for and feel a part of the earth, the Church can put those principles into practice by making conservation-minded choices in constructing and maintaining church buildings and grounds. Such choices include choosing building materials and facilities management practices that reduce indoor air pollution, using water-saving landscape designs, reducing or eliminating biocide use inside and outside of facilities, and recycling and reducing the use of paper and other materials.

Indoor air quality warrants special concern because of the amount of time attendees spend in Church buildings (at least three hours per week, and usually more). Poor indoor air quality can result from both indoor and outdoor pollution sources and can have serious health effects, such as nervous system problems, cardiovascular problems,[29] and asthma.[30] Chemical exposure, both acute and chronic, can affect children from preconception (affecting fertility of the parents) through adolescence.[31] Because children weigh less and have relatively more surface area through which chemicals can be absorbed, their threshold for chemical exposure is lower than that for adults. Common indoor air pollutants include gas furnaces, molds, biocides, air fresheners, cleaning products, personal products such as perfumes,

and building materials such as particle board, paint, carpet, glues, and finishes.[32] Ventilation should take into account both the number of occupants and indoor and outdoor air quality.[33]

Good indoor air quality allows members to have a better experience at meetings, particularly if they are chemically sensitive and especially if the chemically sensitive people could not attend previously because of poor indoor air quality. Some well-known religious groups are addressing the issue of indoor air quality. A United Methodist Church brochure about indoor air quality describes why their organization is concerned with the issue:

> It is part of church responsibility to care for the environment, which includes the environments we create as well as those created by nature. And since churches have a fundamental concern for people, they can be expected to show concern for the health and well-being of those who use church buildings. Air pollutants in church buildings can be serious deterrents to attendance at worship and other church activities. Churches need to be aware of these problems and take them into account in their mission and ministry.[34]

The role of Church members at the ward level. At the ward level, many opportunities exist for teaching about Latter-day Saint environmental stewardship. Some teaching opportunities are already in place, particularly for children and youth, as described above. Adult lessons on environmental stewardship can be implemented on Sundays when ward leaders choose topics and teach the lessons (generally the first and fifth Sundays).

Beyond Sunday lessons, Young Women's and Scout camps allow youth to develop outdoor skills. With caring and involved leadership, boys that participate in Scouting can learn about environmental stewardship by developing skills such as those required for the Environmental Science merit badge and other awards. The Achievement Days program contains "Outdoor Fun and Skills" and "Personal Preparedness" areas of achievement, which provide options to teach children about the outdoors, conservation, and gardening.[35] Parents' support and involvement makes these activities more meaningful for the youth. Parental involvement not only supports and helps children but also provides ways for adults to stay involved in activities relating to environmental stewardship.

Ward activities and Home, Family, and Personal Enrichment meetings provide adults with avenues for teaching and practicing the principles of environmental stewardship. These principles are appropriate within several of the topical areas suggested for Home, Family, and Personal Enrichment meetings (homemaking skills, self-reliance, and physical and emotional health).[36] An interesting and informative Home, Family, and Personal Enrichment meeting or ward activity might include a presentation on landscaping and gardening with plants appropriate to the local landscape. In this case, we can heighten environmental awareness with a fresh look at how we view and do everyday activities. For example, many families have yards, gardens, or porches to maintain and beautify. But how many of us understand the local ecosystem—plants, animals, and substrate—and how to live harmoniously within it? In the Sonoran Desert, where I live, the natural vegetation includes many interesting and colorful plants that require very little water to grow. However, the landscape appears very different from a bright-green, humid area, and the difference is shocking to some, particularly when they try to grow plants that cannot tolerate dry, hot conditions. Many resources exist for learning about low-water-use landscaping, including books, brochures, botanical gardens, and university extension services. The numerous benefits ward members could gain from such a presentation range from the fiscally practical to the sublimely spiritual: reducing one's water bill, helping to conserve water for the region, preserving native plant stocks, providing habitat for wildlife, spending time outside (for work and meditation), and beautifying one's living space (which, along with

gardening, have been urged by Church Presidents, notably President Kimball[37]).

Other topics for ward activities and enrichment meetings might include water and energy conservation (most cities have conservation programs and plenty of materials and educational tools), gardening, and harvesting and using native plants (in my ward I presented a demonstration on using prickly-pear cactus fruit, which is ubiquitous in Tucson). Service projects could include picking up trash and litter along roads, washes, or other public areas, preparing and tending a native landscape or garden for shut-ins, and implementing a ward or stake recycling program in areas without community recycling. A gardening fair at the ward or stake level, perhaps as part of a preparedness fair, could provide Church members with gardening information appropriate to their area. An evening or Saturday morning ward or family activity devoted to outdoor observation or meditation could provide a welcome break from daily routine as well as an opportunity to learn about the area and its fauna and flora. An excellent pre-summer-vacation ward activity could focus on ways to appreciate and respect nature in national parks and other protected places, including how to adventure safely, leave no trace, and show respect for animal and plant life (such as not feeding wildlife and not picking wildflowers).

Environmental stewardship is taught most effectively in the home. Children notice and follow parents' examples in appreciating, respecting, and learning about nature. The *Family Home Evening Resource Book* contains lessons and nature activities that can increase a family's environmental awareness.[38] Families can also include seasonal activities, nature crafts, and local animal and plant identification as part of their family home evenings. Sharon Dequer's June 1977 *Ensign* article, "Discovering Nature," contains excellent ideas on sharing nature with children. Public libraries contain many books on sharing nature with children and especially on local natural features and biota.[39] An understanding of one's local surroundings and fellow beings increases one's ability to appreciate the Creation.

These suggestions are just a start. With some thought, one could come up with many other activities that promote environmental awareness in a spiritual context. All of these activities provide Church members the means to continue learning, teaching, and growing in their awareness of God's creations and realization of God's love for them.

"Live in Thanksgiving Daily" (Alma 34:38)

By reverence, study, meditation, observation, action, teaching, and service, Latter-day Saints can increase their environmental awareness and fulfill their responsibility to care for all that is around them. Cultivating reverence for the earth increases our reverence for God and brings us closer to our divine potential, as described by Henry Beston:

> Nature is a part of our humanity, and without some awareness and experience of that divine mystery man ceases to be man. When the Pleiades and the wind in the grass are no longer a part of the human spirit, a part of very flesh and bone, man becomes, as it were, a kind of cosmic outlaw, having neither the completeness and integrity of the animal nor the birthright of a true humanity.[40]

Giving thanks allows a person to live a more spiritual and full life. Doctrine and Covenants 78:19 states that a person "who receiveth all things with thankfulness shall be made glorious; and the things of this earth shall be added unto him." With gratitude comes an increased ability to see and work for the good and beautiful in this life and an increased capacity for joy in the life to come (see D&C 130:18–19). Gratitude, humility, love, and learning are the steps to environmental awareness. These steps form the pathway to fulfilling our earthly stewardship—the way in which we can truly understand our role in the Creation.

Notes

1. Peter Westbroek, *Life as a Geological Force* (New York: W. W. Norton, 1991), 136–46; see the *Emiliana huxleyi* homepage, http://www.soes.soton.ac.uk/staff/tt/, for coccolithophore information and statistics.

2. Mathis Wackernagel, Chad Monfreda, and Diana Deumling, "Ecological Footprint of Nations November 2002 Update," *Sustainability Issue Brief*, 2002, 11.

3. See, for example, http://www.ncdc.noaa.gov/oa/climate/globalwarming.html, or any introductory textbook on earth systems such as *The Blue Planet* by Brian J. Skinner, Stephen C. Porter, and Daniel B. Botkin, 2nd ed. (John Wiley & Sons, 1999).

4. Spencer W. Kimball, "Family Preparedness," *Ensign*, May 1976, 124.

5. Spencer W. Kimball, "'Why Call Me Lord, Lord, and Do Not the Things Which I Say?'" *Ensign*, May 1975, 5.

6. Gordon B. Hinckley, "What Shall I Do Then with Jesus Which Is Called Christ?" *Ensign*, December 1983, 4.

7. "All Creatures of Our God and King," *Hymns* (Salt Lake City: The Church of Jesus Christ of Latter-day Saints, 1985), no. 62.

8. M. Russell Ballard, "God's Love for His Children," *Ensign*, May 1988, 57.

9. Brigham Young, *Discourses of Brigham Young*, sel. John A. Widtsoe (Salt Lake City: Deseret Book, 1954), 247.

10. See any introductory science text, for example, G.T. Miller, Jr., *Living in the Environment: Principles, Connections, and Solutions*, 9th ed. (Belmont, CA: Wadsworth Publishing Company, 1996), 78–79, 82–83.

11. Fred Montague, *Environment Notebook* (Wanship, UT: Mountain Bear Ink, 2003), 40.

12. Fred Montague, *Wa•Maka•Skan: Fundamentals of Wildlife Ecology and Conservation* (Wanship, UT: Mountain Bear Ink, 2002), 54.

13. Montague, *Environment Notebook*, 76.

14. Henry Beston, *The Outermost House: A Year of Life on the Great Beach of Cape Cod* (New York: Ballantine Books, 1971), 72.

15. Ballard, *Ensign*, May 1988, 57.

16. Aldo Leopold, *A Sand County Almanac with Essays on Conservation from Round River* (New York: Ballantine Books, 1966), 32–36.

17. Ballard, *Ensign*, May 1988, 57.

18. Fred Montague, *Garden Notebook* (forthcoming).

19. For information on creating your own nature preserve (backyard conservation), see the USDA's Natural Resource Conservation Service (www.nrcs.usda.gov/feature/backyard), the Audubon Society's Audubon at Home resource (www.audubon.org/bird/at_home/index.html), or the National Wildlife Federation's Backyard Wildlife Habitatä project (www.nwf.org/backyardwildlifehabitat/). Citizen-science research projects can be found at Birdsouce (www.birdsource.org), Monarch Larva Monitoring Project (www.mlmp.org), and Frogwatch USA (www.nwf.org/frogwatchUSA/).

20. Ballard, "God's Love for His Children," 59.

21. Montague, *Wa•Maka•Skan: Fundamentals of Wildlife Ecology and Conservation*, 5.

22. "Newsmaker: BYU Professor Receives Award," *Ensign*, August 1997, 70.

23. For example, see the publishing information on the table of contents page of the June 2003 *Ensign*.

24. Montague, *Environment Notebook*, 14.

25. For example, see *Primary 1: I am a Child of God*, 2000, Lessons 8–13, *Primary 2: Choose the Right A*, Lesson 44, and *Primary 6: Old Testament*, Lesson 3.

26. See *Primary 1: I am a Child of God*, 2000, Lessons 8–13.

27. Ballard, "God's Love for His Children," 58.

28. For example, see the copyright information page in *Teachings of Presidents of the Church: Heber J. Grant* (Melchizedek Priesthood and Relief Society course of study, 2002). The address for Curriculum Planning is 50 East North Temple Street, Floor 24, Salt Lake City, UT 84150-3200, USA; email: cur-development@ldschurch.org.

29. William J. Rea, *Chemical Sensitivity Volume 2: Sources of Total Body Load* (Boca Raton, FL: Lewis Publishers, 1994), 686.

30. Maribeth C. Clarke and Carolyn L. Garrison, "Help for the Unhealthy House," *BYU Magazine* (Winter 2002), 60.

31. William J. Rea, *Chemical Sensitivity Volume 3: Clinical Manifestations of Pollutant Load* (Boca Raton, FL: Lewis Publishers, 1996), 1935–37.

32. Rea, *Chemical Sensitivity Volume 2*, 687, 706.

33. Rea, *Chemical Sensitivity Volume 2*, 704–5.

34. Health and Welfare Ministries Program Department, General Board of Global Ministries, The

United Methodist Church, *Indoor Air Quality: A Guide for Local Churches*, 1992, 1.

35. *My Achievement Days*, 1996, 8–9. The Achievement Days program was replaced in 2003 by the Activity Days program, which no longer contains the areas of achievement mentioned in the text.

36. *Guidelines for Home, Family, and Personal Enrichment Meetings Effective 1 January 2000*.

37. For example, see Kimball, "Family Preparedness," 124.

38. See *Family Home Evening Resource Book* (Salt Lake City: The Church of Jesus Christ of Latter-day Saints, 1983), 23, 306.

39. For example, see Rachel Carson, *The Sense of Wonder* (New York: HarperCollins Publishers, 1998); and Joseph B. Cornell, *Sharing Nature with Children*, 2nd ed. (Nevada City, CA: Dawn Publications, 1998). See also the U.S. Environmental Protection Agency's Environmental Science Center Library at http://www.epa.gov/region3/esc/library/curriculum1.htm.

40. Beston, *The Outermost House: A Year of Life on the Great Beach of Cape Cod*, x.

Article Search Results

Results of searches for Ensign *articles dealing with environmental awareness:*

Ecological Principles

A. B. Morrison, "Our Deteriorating Environment," August 1971.

G. M. Alder, "Earth—A Gift of Gladness," July 1991.

Observing Nature

S. Dequer, "Discovering Nature," June 1977.

M. R. Ballard, "God's Love for His Children," May 1988.

M. J. Nielsen, "The Wonder of the Creation," March 2004.

Recycling

C. L. Smith, "Renew, Redo," October 1983.

Visiting Teaching Message, "Using Earth's Resources Well," September 1993.

L. Y. Nay, "Use and Reuse," October 1993.

A. F. Larsen, "Helping the Earth—a Little at a Time," February 1994.

Gardening

L. E. Cummins, "Thanks for the Zucchini," May 1973.

Lisa M. Grover, "How Does Your Garden Grow?" *New Era*, May 1997.

G. C. Young, "Building a Compost Pile," April 1985.

H. Furgason, "A Garden for All Seasons," June 2002.