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CSU EXTENSION

Nature and Health Toolkit for Extension Professionals



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INTRODUCTION

Connections between nature and health are interwoven through the relationships that we have with ourselves, with others, and with the environment. On an individual level, research has shown consistently that both spending time in nature and feeling connected to the natural world are associated with emotional regulation, stress reduction, and sense of belonging. (Mayer et al., 2008; Capaldi et al., 2014) When we connect with others through nature or by doing group activities outdoors, shared experiences can strengthen social bonds, encourage cooperation, and create opportunities for collective reflection. Outdoor environments often reduce formal social barriers, which allows participants to interact more openly and build trust within a group setting.

When we develop care for the nature world, individuals may begin to view themselves as part of a larger ecological system. This sense of responsibility can encourage stewardship behaviors such as conservation, sustainable practices, and environmental advocacy, while also reinforcing personal meaning and connection to a place.

Connections can operate on a variety of levels:

- Connection to self. Time spent in nature has been associated with increased self-awareness, mindfulness, and emotional resilience.
- Connection to others. Outdoor settings can create opportunities for social bonds, shared experiences, and collective reflection.
- Connection to Earth. Developing care for the natural world and a stronger sense of nature connectedness has been linked to pro-environmental behavior and positive attitudes towards stewardship.

Key Definitions

Nature exposure refers to spending time in or interacting with natural environments.

Nature connectedness refers to an individual's subjective sense of emotional, cognitive, or relational connection with the natural world.

While related, these concepts are distinct; spending time in nature may support nature connectedness, but one does not automatically lead to the other.

In Extension settings, these levels of connection can be intentionally cultivated through program design and implementation. Programs that integrate reflection, observation, and shared outdoor experiences create opportunities for participants to regulate emotions, build trust, and experience a sense of place. Research on nature connectedness suggests that activities emphasizing sensory engagement, meaning-making, compassion for nature, and opportunities for reflection may be particularly effective in strengthening participants' connection to the natural world.

Research suggests that “connectedness to nature” is not just about time outdoors, but about relationships and emotional closeness to the natural world ([Mayer et al., 2008](#)). As a result, individuals can spend time outdoors without developing a strong sense of nature connection, while others may experience a strong connection through meaningful interactions with nearby nature.

Programs that invite participants to notice seasonal changes, wildlife, plants, or landscape patterns may strengthen this sense of relational belonging.

Example from Extension

The “Nature Journaling for Mindfulness” program (Rachel Juritsch, CSU Extension 4-H Health & Well-being Specialist in Adams County) integrates observation, drawing, and reflection to help youth build awareness of their surroundings while developing emotional regulation skills. Participants are encouraged to slow down, notice details in the natural environment, and document their experiences, reinforcing both cognitive engagement and a sense of connection to place. [Learn more.](#)

This distinction is important for Extension work in both rural and urban settings. Nature connection does not require wilderness access; it can occur on school playgrounds, in community gardens or agricultural fields, and by observing plants in built environments. What matters most is meaningful and intentional engagement with an environment rather than simply being present within it ([Sheffield et al., 2022](#)).

Intentional engagement may include activities such as observing seasonal changes, journaling, identifying plants or wildlife, reflecting on personal experiences in nature, or participating in stewardship activities.

Higher levels of nature connectedness have been associated with greater life satisfaction and a more positive outlook on life. These relationships suggest that fostering nature connection may contribute to psychological well-being ([Capaldi et al., 2014](#)). In community-based work, fostering connection may therefore support both individual well-being and broader community resilience.

Community resilience is strengthened when individuals feel rooted in place and responsible for their environment. This sense of belonging can increase civic engagement, volunteerism, and collective care during times of stress, such as climate emergencies or economic hardships.

For Extension professionals, nature-based programming offers a threefold benefit for participants:

- Supporting personal health outcomes
- Increasing social bonds and collective reflection
- Encouraging environmental stewardship and sustainable practices

Extension programs can increase their long-term impact by framing nature engagement as relational rather than treating nature as merely a physical setting. Supporting participants in developing meaningful relationships with nature may strengthen health and well-being outcomes, program engagement, and long-term stewardship behaviors. This aligns with CSU's land-grant mission to advance human health, environmental sustainability, and community education by fostering connection, engagement, and a sense of belonging

A Note on Dosing

While even brief nature experiences of 10 minutes have been shown to improve health outcomes, research suggests that there may be an optimal “dose” of nature exposure for health benefits. A large-scale study found that individuals who spent at least 120 minutes per week in nature were significantly more likely to report good health and well-being, with benefits leveling off after approximately 200–300 minutes per week ([White et al., 2019](#)). This time can be accumulated across the week, making nature exposure flexible and accessible. For Extension programming, this reinforces that both short and longer experiences in nature can contribute meaningfully to health outcomes, and outdoor physical activity can support both nature exposure and recommended movement guidelines.



Colorado communities are navigating increasing stressors, including mental health challenges, social isolation, climate-related events, and disparities in access to safe outdoor spaces ([Hartig et al., 2014](#); [Buckley et al., 2025](#)). Extension professionals are uniquely positioned to respond through community-based education and programming.

Nature-based interventions are low-cost, scalable, and adaptable across contexts. As public health systems increasingly recognize the role of prevention and resilience, Extension programs can serve as a bridge between human well-being and environmental stewardship.

As mental health concerns rise nationally, preventative and protective approaches are increasingly important. Nature exposure offers a non-stigmatizing entry point for conversations about well-being, stress management, and resilience. Exposure to natural environments also has a direct effect on our health. It has been shown to reduce stress, ease symptoms of anxiety and depression, and improve overall mood. Research demonstrates that contact with green spaces—such as parks, forests, or urban trees—can significantly lower challenging emotions and enhance well-being across age groups. Even brief nature experiences of 10 minutes or more can improve mental health outcomes. ([Meredith et al., 2020](#)). This makes access to nature-based programs especially valuable in communities where mental health services may be limited.

Our modern lifestyles are contributing to rising mental health concerns, as we become increasingly sedentary and technology centered. Many Americans now spend the majority of their time indoors, often interacting with digital environments rather than natural ones. This shift has contributed to reduced physical activity, decreased outdoor play among youth, and increased stress and attention fatigue. ([Chawla, 2020](#); [Kaplan & Kaplan, 1989](#)). Nature-based programming offers an accessible and preventative response to these trends by creating opportunities for people to reconnect with outdoor environments in ways that support health, learning, and community connection.

As awareness of environmental challenges increases, many individuals, especially youth, are experiencing eco-anxiety or eco-grief ([Chawla, 2020](#)). Nature-based programming can play an important role in addressing these emotions by offering opportunities for connection, reflection, and direct action. By engaging participants in stewardship and hands-on environmental activities, Extension programs can help foster a sense of agency and “active hope,” ([Macy & Johnstone, 2012](#)) supporting both mental health and environmental outcomes.

For Extension professionals, addressing these alarming trends represents an important opportunity. Because Extension offers community-based and locally responsive solutions, these statewide networks are well positioned to introduce nature-based wellness strategies that are practical, low cost, and adaptable across diverse communities.

An Interdisciplinary Approach

The growing field of nature and health integrates various disciplines. Because Extension professionals work within the fields of horticulture, natural resources, family and consumer sciences, youth development, and community development, this topic offers natural integration opportunities for interdisciplinary perspectives including:

- **Public Health:** Prevention of chronic disease, health promotion, and community education with the goal of improving population-level health
- **Natural Resources:** Conservation, stewardship, and environmental literacy with the goal of creating sustainable, resilient, and thriving natural and human systems
- **Horticulture:** Gardening, food systems, and sustainable cultivation practices. Extension practitioners also offer therapeutic horticulture which involves the use of plant-based and gardening activities to support a person's health and well-being.
- **Emergency Management:** Climate resilience, disaster recovery, and trauma-informed outdoor spaces.



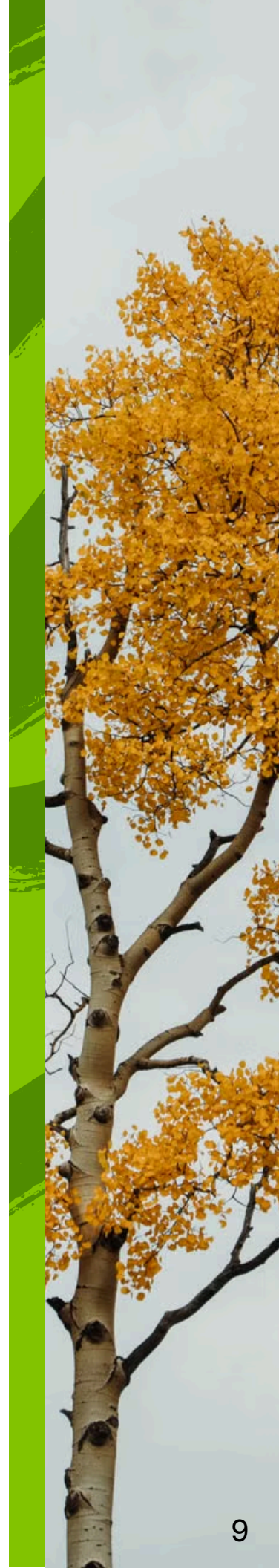
Nature-based programming can incorporate different frameworks and goals depending on the target audience and disciplinary lens. For example:

- A **horticulture professional** may focus on food production and the mental health benefits of gardening. Programs might include ergonomic gardening for older adults, therapeutic horticulture for stress reduction, or mindful gardening practices that encourage participants to slow down and engage with plants through observation and sensory awareness.
- A **4-H youth development professional** may emphasize outdoor skill-building and resilience. Activities may contribute to outdoor leadership development, environmental stewardship projects, wildlife observation, or experiential learning activities that build confidence and problem-solving skills.
- A **family and consumer sciences professional** may integrate physical movement or stress reduction practices into outdoor community wellness workshops. Activities could include guided outdoor walks, mindfulness exercises in natural environments, or other nature-based strategies that help individuals manage stress and improve emotional well-being.
- A **community development professional** may engage outdoor spaces as platforms for strengthening community relationships and civic engagement. Community gardens, neighborhood nature walks, and outdoor gathering spaces can promote collaboration, increase social cohesion, and encourage shared responsibility for local environments.

This interdisciplinary approach aligns with whole-person wellness models and population-level public health goals, while allowing programs to meet diverse community needs.

By recognizing that nature and health intersect across multiple Extension disciplines, professionals can design programs that address both individual well-being and community resilience.

Importantly, Extension can position itself as a bridge between community well-being and environmental sustainability, connecting educational programming with broader public health and stewardship goals.



Research on the benefits of nature exposure includes experimental studies, systematic reviews, and meta-analyses, with the strongest evidence supporting associations with stress reduction, improved mood, and decreased anxiety. This research spans the fields of environmental psychology, public health, and neuroscience.

Emotional/Mental Health

Spending time in natural environments is associated with:

- Reduced stress and anxiety
- Lower cortisol levels (the stress hormone)
- Decreased rumination (negative and repetitive self-talk)
- Potential improvements in mood and emotional regulation through neurobiological pathways associated with nature exposure
- Improved self-efficacy and empowerment (especially with youth)

A key study found that participants who walked in nature showed reduced neural activity in areas associated with rumination compared to those who walked in urban settings ([Bratman et al., 2015](#)). This suggests measurable neurological shifts associated with exposure to nature.

Systematic reviews also show that green space exposure is associated with lower levels of depression and improved psychological well-being ([Twohig-Bennett & Jones, 2018](#)).

Even small doses of nature can help to improve our mood. Research from the University of Melbourne has shown that a ‘green micro-break’ – or as little as forty seconds of looking out the window at a natural scene – can help restore us when we are mentally fatigued ([Li, 2018](#)).

For Extension professionals, this evidence supports integrating simple outdoor components into existing programming. Even brief outdoor sessions may provide emotional regulation benefits.

Example from Extension

The “Mindfulness in Nature and Gardens” program (Jennifer Cook, CSU Extension Director and Educator, Gilpin County) combines guided mindfulness practices with gardening and outdoor experiences. Participants engage in activities such as mindful walking, breathwork, and reflective journaling. Reported outcomes include reduced stress, improved emotional regulation, and increased confidence in using mindfulness tools in daily life. This program demonstrates how structured nature-based practices can support mental health in community settings. [Learn more.](#)

Physical Health

Evidence for physical health outcomes comes primarily from observational and epidemiological studies, although some experimental research has demonstrated short-term physiological benefits of nature exposure.

Nature exposure has been linked to:

- Increased physical activity '
- Lower blood pressure
- Improved cardiovascular health
- Reduced risk of chronic disease
- Improved immune function
- Increased respiratory function



Research suggests that significant health benefits can come from access to green spaces. For example, nature exposure is associated with lower rates of cardiovascular disease, obesity, and type 2 diabetes as well as a reduced total number of deaths from any cause (disease, accident, or aging) (Twohig-Bennett & Jones, 2018). Exposure to natural environments may encourage incidental movement such as walking, gardening, and outdoor recreation, all of which support long-term physical health outcomes. Access to safe, walkable outdoor areas increases physical activity rates, which in turn supports metabolic health.

In addition, studies have shown that individuals who live in greener neighborhoods often demonstrate lower blood pressure and reduced physiological stress markers compared to those in highly urbanized areas (Hartig et al., 2014).

For Extension professionals, integrating outdoor activities into programming focused on nutrition, horticulture, or community health, can reinforce physical health promotion strategies and complement chronic disease prevention initiatives while also encouraging environmental engagement.

Social Well-Being

Research suggests that natural spaces may support:

- Stronger community cohesion
- Increased prosocial behavior
- Reduced social isolation

Green spaces also function as important social gathering areas within communities. Parks, gardens, and other shared outdoor environments can support informal interactions, community events, and intergenerational learning opportunities. These environments often reduce perceived social barriers and create opportunities for relationship building among participants.

Research has found that communities with greater access to green spaces often report higher levels of neighborhood trust and social cohesion ([Jennings & Bamkole, 2019](#)). For Extension professionals facilitating community-based programs, utilizing outdoor settings may strengthen group engagement and collaborative learning outcomes.

Integrating outdoor elements into community development work can create more relaxed, open environments that help people connect more naturally. Drawing from both community development literature and Extension practice, natural settings often lower social barriers, encourage casual conversation, and help groups build trust more quickly than traditional indoor meeting spaces. As a result, Extension professionals may find that outdoor-based activities strengthen relationship-building outcomes and support deeper community engagement.



Spiritual Health

For many people, nature provides:

- A sense of meaning and perspective
- Feelings of awe and gratitude
- Opportunities for reflection

Nature encourages self-reflection and awareness, helping individuals slow down, disengage from external pressures, and reconnect with their internal world. Studies indicate that nature facilitates feelings of awe and gratitude which are linked to greater life satisfaction and prosocial values ([Anderson et al., 2018](#)).

Nature experiences also strengthen one's connection to self, others, and the natural world. Additionally, nature-based contemplative practices have been shown to improve spiritual well-being in the short term by enhancing calm, deepening awareness, and strengthening one's sense of connection with the environment.

While not all programming will explicitly address spiritual health, creating space for silence and reflection can support participants' sense of purpose, connection, awe and gratitude.

Cognitive Health

Research Shows:

- Improved attention restoration ([Kaplan & Kaplan 1989](#)).
- Enhanced working memory
- Reduced mental fatigue

Attention Restoration Theory suggests that natural environments replenish cognitive capacity. Empirical studies have found improvements in attention and cognitive performance following nature exposure, particularly among children and students experiencing cognitive fatigue.

Nature exposure may also improve executive functioning and concentration. Studies with children have found that time spent in natural environments can improve working memory and attention span following periods of mental fatigue. ([Berman et al., 2008](#)).

These findings are particularly relevant for educational programming, youth development programs, and community workshops where maintaining engagement and learning retention are key goals. Outdoor breaks, nature observation activities, and experiential learning can help restore attention and support cognitive processing.

Integrating outdoor breaks or experiential components into learning programs may support focus and retention and be particularly beneficial for youth.

Environmental Health

When individuals develop a connection with nature, research suggests:

- Greater participation in stewardship behaviors
- Stronger conservation attitudes
- Increased support for sustainable practices

When individuals develop personal relationships with the natural environment, research suggests they may be more likely to engage in conservation-related behaviors such as recycling, habitat protection, environmental volunteering, and community stewardship initiatives. Programs that promote environmental awareness may therefore influence both individual well-being and ecological outcomes. In this way, nature-based programming can also support emotional resilience by helping participants respond to environmental concerns with action, which may reduce feelings of eco-anxiety and promote a sense of active hope.

This reinforces Extension's mission to promote responsible land use and environmental sustainability. Nature-based programming can therefore contribute to both personal and ecological health outcomes.

Key Takeaways

- Nature-based programming can be integrated into many existing Extension programs
- Outdoor environments can strengthen emotional regulation, learning, and community connection
- Accessible natural spaces can support effective programming
- Programs that intentionally cultivate connection to nature may increase both personal well-being, social connection, and environmental stewardship
- Even brief interactions with nature can produce measurable health benefits





4 Managing Barriers and Risks

While nature-based programming offers many benefits, Extension professionals should also consider potential barriers and safety concerns that may arise when working outdoors. These considerations are not intended to discourage nature engagement but rather to help facilitators design programs that are inclusive, safe, and responsive to participant needs. By anticipating barriers and addressing them proactively, Extension educators can create welcoming experiences for a wider range of participants.

Barriers to accessing nature generally fall into three broad categories: personal, social, and environmental. The following sections outline each of these barrier types and highlights potential strategies for addressing them.

Personal Barriers Impacting Nature Access

Personal Barriers often relate to individual's perceptions, experiences, and comfort levels in outdoor environments. These barriers can strongly influence whether someone chooses to participate in nature-based programming.

Employee at Rocky Mountain National Arsenal (North Carolina State University Extension, n.d.)

"We've had busloads of kids come out from inner city Denver. Some of the kids refuse to get off the bus because they're actually scared they're going to be eaten by something. A lot of the folks, regardless of what race they're from, who have never been exposed to natural resources, fear it".

One of the most significant personal barriers to accessing nature is fear. This fear can take many forms and often overlaps with other barriers, increasing its overall impact. When people feel unsafe or uncomfortable outdoors, they are less likely to seek out or return to natural spaces.

Common personal barriers include:

- Fear of wild animals
- Fear of insects
- Fear of getting lost
- Lack of affinity for or prior exposure to nature

These fears are often influenced by media, lack of knowledge, or limited previous experience in outdoor settings.

Strategies for Addressing Personal Barriers

Extension professionals can help reduce fear and build confidence through the following approaches:

Introduce youth to nature early and often. Providing youth with opportunities to engage in nature programming at a young age helps normalize outdoor experiences and builds familiarity over time. Repeated exposure in a structured, supportive setting can reduce fear and foster lifelong nature engagement.

Educate yourself and participants on outdoor and wildlife safety. Knowledge is a powerful tool for reducing fear. Extension professionals should be well-informed about safety best practices and share this information clearly with participants. Utilizing trusted resources from [Colorado Parks and Wildlife](#) can provide accurate guidance on wildlife behavior, how to prevent negative encounters, and how to respond safely if wildlife is encountered.

Provide education on insect safety and prevention. Concerns about insects can discourage participation in outdoor activities. Educating participants about [common insects](#), bite prevention strategies, and appropriate responses to bites or stings can alleviate anxiety and increase confidence. Practical tips such as using insect repellent, wearing protective clothing, and performing tick checks help participants feel prepared and reduce perceived risk.





"Extreme heat is no longer just uncomfortable—in many parts of the world, it is increasingly making everyday life physically unsafe."

The Nature Conservancy

Environmental Barriers Impacting Nature Access

Environmental barriers refer to external conditions that may limit safe or comfortable access to outdoor spaces. These barriers are often influenced by climate change and environmental hazards.

Climate change has wide-ranging impacts on both human safety and the natural landscape. As climate conditions shift, outdoor environments are becoming less predictable and, at times, more hazardous, which can discourage individuals from engaging with nature.

In Colorado, key environmental barriers include:

- Extreme heat
- Wildfires
- Poor air quality
- Increased human-wildlife interactions

These conditions can make outdoor programming unsafe or unpredictable, requiring careful planning and flexibility.

Strategies for Addressing Environmental Barriers

Extension professionals can reduce risk and support participant safety through proactive planning and clear communication:

Monitor environmental conditions before and during programs. Before beginning an outdoor program, check current and forecasted temperature, air quality, and wildfire risk. If temperatures exceed 90°F or air quality is poor, consider shortening outdoor activities, moving programming to cooler times of day, or relocating activities indoors.

Consider participant health and vulnerability. Be aware of program participants' health conditions that may increase susceptibility to environmental risks. For example, individuals with asthma, cardiovascular conditions, or heat sensitivity may be more vulnerable to poor air quality or high temperatures. When possible, provide accommodations and communicate potential risks in advance so participants can make informed decisions.

Ensure access to hydration and sun protection. Provide or encourage participants to bring adequate water, sunscreen, hats, and protective clothing. Consistent hydration and sun protection are essential for preventing heat-related illness and promoting comfort during outdoor activities.

Recognize and respond to heat-related illness. Learn to identify the signs and symptoms of heat-related illnesses, such as heat exhaustion and heat stroke. Educating participants on early warning signs helps prevent serious medical emergencies.

Educate participants about wildlife safety. Incorporate wildlife safety education into programming to reduce fear and prevent dangerous encounters. Teaching participants how to behave responsibly around wildlife and understand appropriate responses can increase confidence and safety in outdoor environments.

Incorporate wildlife safety education into programming to reduce fear and prevent dangerous encounters. Teaching participants how to behave responsibly around wildlife and understand appropriate responses can increase confidence and safety in outdoor environments.

Structural and Cultural Barriers Impacting Nature Access

Structural and cultural barriers are systemic and often reflect inequities in access, inclusion, and resources. These barriers can significantly limit participation, even when interest in nature exists.

It is important to recognize that while Colorado is rich in outdoor opportunities, access is not equitable, and systemic issues—not motivation alone—often limit people’s ability to immerse themselves in nature. Certain populations including low-income communities, racial and ethnic minorities, rural residents, and individuals with disabilities may face disproportionate barriers to accessing nature.

Common structural and cultural barriers include:

- Financial limitations
- Transportation challenges
- Lack of inclusion or representation
- Safety concerns in outdoor spaces
- Limited funding for parks and programming

These barriers are often interconnected and require intentional, equity focused approaches to address.

Potomac River Workshop Participant

“There is more concern about crime on the trail than being attacked by wildlife.”

Strategies for Addressing Structural and Cultural Barriers

Extension professionals can improve access and inclusion through the following strategies:

Reduce Financial Barriers Through Program Design:

Consider offering free or low-cost programs, including waiving registration or entrance fees whenever possible and providing essential items (e.g., transportation passes, meals, sunscreen, water bottles) as part of programming. Securing grants or partnerships to support scholarships, stipends, or equipment lending programs can signal that programs are designed with community needs in mind, not just offered to those who can afford them.

Address Transportation and Geographic Barriers:

Extension professionals can reduce transportation and geographic barriers by partnering with schools, community centers, housing authorities, and faith-based organizations to bring nature programming directly into neighborhoods. Hosting programs near public transit routes and offering shared pickup locations further improves access.

Improve Physical Accessibility and Disability Inclusion:

Nature programs can better support disabled participants by ensuring activities are held at ADA-accessible sites and clearly communicating available accommodations in advance. Providing adaptive equipment and offering modified activities helps ensure participants of varying abilities can fully engage. Training staff on disability inclusion, respectful language, and universal design principles further creates a welcoming environment.



Research Insight

"Several studies have shown that, when we connect with nature, we are reminded that we are part of something larger than ourselves" (Li, 2018, p. 108).

Foster Cultural Relevance and a Sense of Belonging. Extension programs can be designed in collaboration with community members and cultural leaders, rather than assuming participant needs or interests. Hiring or partnering with staff who reflect participants' racial, cultural, and linguistic backgrounds helps build trust and relatability, while offering programming in multiple languages and culturally meaningful formats increases accessibility. Additionally, acknowledging diverse relationships with land, history, and nature can foster a sense of belonging.

Address Safety Concerns. Extension professionals can help address safety concerns by hosting programs in well-maintained, familiar locations that participants perceive as safe. Clearly communicating safety expectations and emergency protocols helps build confidence and transparency.

Additional Training for Extension Professionals

Extension professionals can benefit from targeted training that builds confidence, safety skills, and cultural competence for nature-based programming. Consider these options:

- The Colorado Alliance for Environmental Education provides environmental education (ee) Courses and eeCredentials on topics including Diversity, Equity, and Inclusion in Outdoor Spaces and Teaching Science Outdoors.
- Colorado Parks and Wildlife offers Outdoor Understanding for Teachers (OUT) educator workshops on outdoor skills and safety.
- CSU provides trainings in first aid, CPR, and wilderness first aid through campus recreation. The Colorado Mountain Club also offers wilderness first aid



Strategies for Managing Outdoor Risks

In addition to addressing barriers, the following strategies support overall program safety:

- Conduct basic site assessments before programming begins
- Provide clear safety instructions for outdoor activities
- Encourage participants to bring appropriate clothing and water
- Have contingency plans for inclement weather or extreme temperatures
- Be aware of participant health conditions such as allergies or asthma
- Offer indoor or modified activities when outdoor conditions are not safe
- Be trained in CPR/Basic First Aid, Wilderness First Responder, Question Persuade Refer/or Mental Health First Aid
- Have a plan for emergency situations
- Adhere to student teacher ratios
- Ask for emergency contact information and relevant medical issues

5

Guide to Implementing Nature & Health Programs in Your Community

Extension professionals are uniquely positioned to design and deliver nature-based health programs that are responsive to community needs, grounded in research, and adaptable across contexts. While there is no single “correct” model for nature and health programming, Extension commonly draws on a combination of program planning frameworks, behavior-change theories, and community-based approaches.

The following framework provides a simple, practical approach to developing nature and health programs within Extension settings.

1. Understand Community Context

- Identify community needs, strengths, and priorities
- Consider barriers to participation (e.g., access to nature spaces, transportation, cultural relevance, physical abilities and safety)
- Engage community partners and stakeholders early in the process to guide your approach

2. Define Desired Outcomes

- Clarify what health or well-being outcomes the program aims to support
- Examples: stress reduction, increased physical activity, social connection, or environmental stewardship
- Consider both short-term and long-term impacts

3. Design the Program

- Select nature-based activities that align with goals and audience needs
- Examples: nature journaling, guided walks, mindfulness practices
- Determine format and structure (e.g., single event, multi-week series, drop-in program)
- Choose accessible and appropriate settings (outdoor, indoor, or hybrid)



4. Facilitate Engagement and Connection

- Encourage social interaction and relationship-building
- Use hands-on, experiential learning approaches
- Incorporate opportunities for reflection, observation, and shared experience

5. Evaluate and Adapt

- Collect feedback through surveys, facilitator observations, interviews, or group discussion
- Reflect on what worked well and what could be improved
- Adapt programming based on participant needs and outcomes

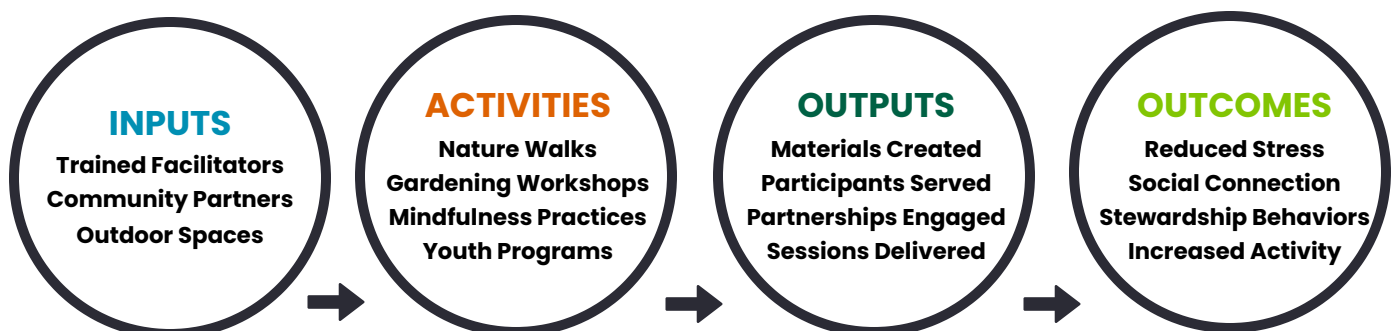
This approach aligns with established Extension program planning tools such as logic models and public health evaluation frameworks, while also reflecting research on nature-based health interventions. Together, these approaches support programs that are community-driven and adaptable across diverse Extension contexts.

6 Program Planning Tools

The Logic Model

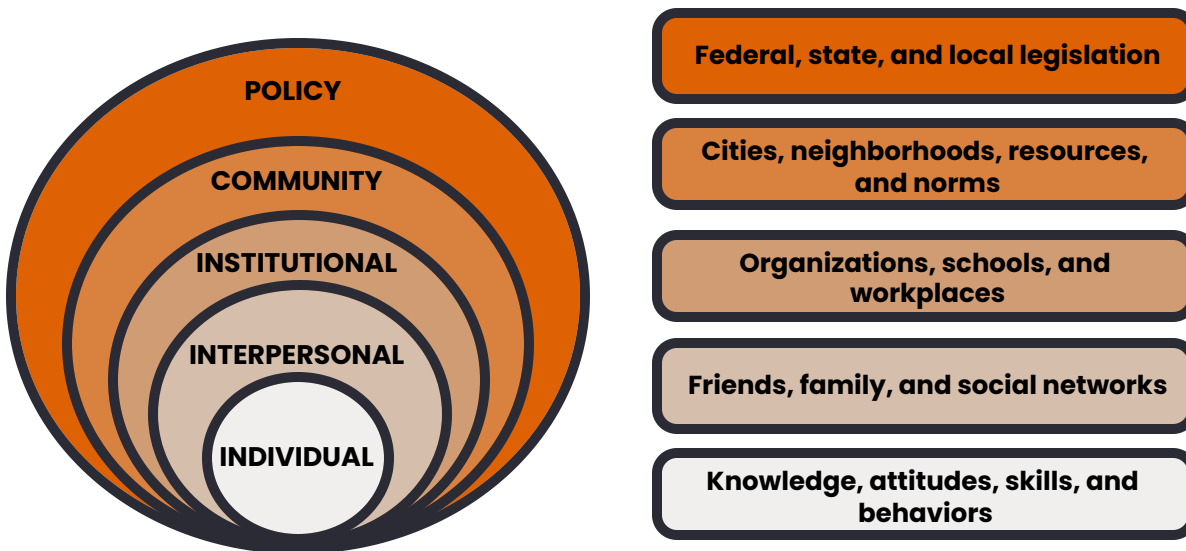
The logic model is a commonly used planning approach within Extension systems, which helps program developers identify inputs, activities, outputs, and intended outcomes. When applied to nature and health programming, this model can help practitioners connect nature-based experiences to measurable health and wellness goals. For example:

- Program inputs might include trained facilitators, access to outdoor spaces, and partnerships with community organizations.
- Activities may involve guided nature walks, gardening workshops, outdoor youth development programs, or mindfulness practices in natural settings.
- Outputs might include the number of program sessions delivered, participants served, and community partners engaged.
- Desired outcomes could include reduced stress, increased physical activity, improved social connection, or strengthened environmental stewardship behaviors.



The Social Ecological Model

A helpful framework for designing your program is the social ecological model, which recognizes that health behaviors are influenced by multiple interacting levels, including individual, interpersonal, community, and environmental factors. Nature-based programming aligns well with this model because outdoor activities often support health across several levels simultaneously. For example, participating in a community garden may improve individual well-being, strengthen social relationships, and increase access to healthy food within a neighborhood ([McLeroy, 1988](#)).



The Theoretical Framework

A clear understanding of the theories guiding your program can inform how you design and organize its components. While there is ample literature around the benefits of spending time in nature for health and well-being, a theory can help us understand why the benefits are accruing and what the pathways are through which nature benefits humans. For example:

- The Biophilia hypothesis suggests that humans have a biological and evolutionary affinity for nature and that contact with natural environments supports physical, mental, and emotional health ([Kellert & Wilson, 1993](#)).
- The Attention Restoration Theory suggests that natural environments can help restore cognitive functioning and reduce mental fatigue by allowing individuals to shift attention away from demanding tasks ([Kaplan & Kaplan, 1989](#)).
- The Stress Reduction Theory proposes that exposure to natural settings may reduce physiological stress responses and promote emotional recovery ([Ulrich et al., 1991](#)).

These theories provide a foundation for understanding how and why nature-based programming supports behavior change, well-being, and community engagement. Integrating theory with structured planning approaches can help ensure that nature-based programs are evidence-informed, and aligned with community needs, and supportive of community well-being.

Extension serves diverse populations across Colorado, and nature-based programming should be adapted to meet the unique needs, experiences, and contexts of these populations. The following considerations are intended to provide practical guidance for designing inclusive and accessible programs. These considerations are not exhaustive but rather highlight key factors that may influence participation and outcomes.

Note on Intersectionality

It is important to remember that we all hold multiple identities that impact all aspects of our lives. This concept is called “intersectionality”. When considering the specific needs of each audience, keep in mind that no community is a monolith. For example, programming designed with the Latinx community may require different strategies when working with rural versus urban communities. Youth may have unique needs based on their gender, ethnic and cultural identities. An approach that was been effective with immigrant communities in one region may be ineffective in others. The strategies presented below are generalized from research and the experiences of other Extension specialists. It is always vital to connect and communicate with your local communities to best understand their needs and potential barriers to programming.

Working with Older Adults

Older adults may benefit significantly from nature-based programming, particularly in reducing loneliness and supporting cognitive health. Mobility issues may vary among this population, so it is important to plan your programming with the diversity of the population in mind.

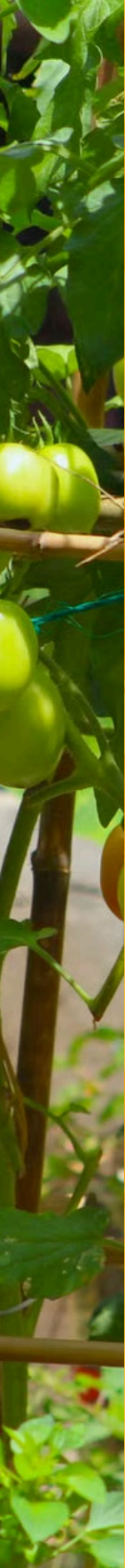
It is important that a facilitator recognize that participants may have a variety of needs and that you should not assume what a person may need, including older adults. Best practice is to ask about necessary accommodations ahead of time for all participants with sufficient time to make arrangements/modifications.

Considerations

- Mobility limitations
- Temperature sensitivity
- Chronic health conditions
- Cognitive and memory difficulties (such as Alzheimer's or dementia)

Strategies

- For active older adults, guided walks, hiking groups, forest or park recreation programs, gardening, conservation, or stewardship activities are appropriate. These options work best when the participants are comfortable with moderate physical activity and can safely navigate outdoor environments.
- For older adults with mobility limitations or chronic conditions, indoor or low-exertion nature programs (i.e., nature journaling, birding, and sensory walks) can still offer psychological benefits. In these cases, therapeutic horticulture, seated or gently assisted outdoor experiences, or nature-themed creative sessions (i.e., art, photography, sensory activities) may be most appropriate. These programs can also integrate fall prevention considerations.



- Across all mobility levels, older adults benefit most from nature-based programs when accessibility and comfort are prioritized. Some key features reduce barriers and support equitable access, enabling both active and limited-mobility older adults to participate safely and comfortably:
 - Shaded seating areas
 - Cooling items (personal fans, cooling towels, extra water, etc.)
 - Encourage extra clothing layers
 - Clear signage and maps
 - Accessible restrooms
 - Even surfaces and good pathways; encourage use of walking sticks or hiking poles
- Social connection and storytelling fit naturally into nature-based programs for older adults and can dramatically enhance emotional well-being, meaning-making, and group cohesion.
- For older adults with dementia, their brains may not recognize temperature extremes correctly. They state they feel “fine” even if they are overheating or are very cold, their brain is not registering this input correctly. Take frequent breaks and check in on your own temperature level. If you are getting too hot or cold, they are as well but may not realize it.

Example from Extension

The “Evergreen Elders” program (Alison O’Connor, Extension Professor of Horticulture, CSU Extension in Larimer County) provides therapeutic horticulture programming for older adults, including those experiencing dementia or memory-related conditions. Activities are designed to support motor skills, social engagement, and emotional well-being. Observations from the program show that participants often leave sessions feeling more positive, engaged, and socially connected, highlighting the role of nature-based activities in improving quality of life for older adults. [Learn more.](#)

Working with Caregivers

Nature activities designed for caregivers should prioritize restoration and simplicity. Examples may include guided breathing exercises, quiet nature observation, short reflective walks, or sensory awareness practices. Caregivers may benefit from micro-interventions (5–10-minute outdoor pauses). Even brief experiences such as noticing bird sounds, touching plants, or sitting near a water feature can support emotional regulation and stress reduction.

Considerations

- Burnout
- Chronic Stress
- Limited Free Time

Strategies

- Offer brief, low-barrier practices
- Provide parallel programming for caregivers and care recipient
- Emphasize restorative micro-moments in nature
- Provide take-home practices to extend benefits beyond the program session and into daily routines
- Acknowledge that caregiver duties may arise and they are able to step away for a call or respond to a need without feeling guilt

Working with Youth

Youth benefit from hands-on and experiential outdoor learning. When youth actively engage with the natural world, the combination of physical activity, real-world exploration, sensory stimulation, and social interaction creates a powerful learning environment that supports the whole child. Furthermore, research suggests that early nature exposure is associated with lifelong environmental engagement and hope ([Chawla, 2020](#)).

Considerations

- Developmental Stage
- Need for Engagement and Movement
- Attention Span Variability
- Student to Instructor Ratios



Strategies

- Hands-on experiential learning
- Structured reflection activities
- Incorporate art, play, and stewardship
- Follow **Protection of Minors Policy at CSU**
- Educate parents on potential dangers if necessary (i.e., info night before camping or climbing program)

Because youth development occurs across multiple stages, programming strategies will vary depending on the age group:

- **Early Childhood (ages 3–7):** Sensory exploration, unstructured play, and curiosity driven discovery are especially effective.
- **Middle Childhood (ages 8–12):** Structured activities such as nature journaling, scavenger hunts/games, and stewardship projects can strengthen learning and engagement.
- **Adolescence (ages 13–18):** Programs that emphasize leadership, environmental responsibility, and identity development may support long-term connections to nature.

These developmental considerations can help Extension staff create experiences that match cognitive and emotional readiness while fostering meaningful connections with the natural world.



Working with People with Disabilities

Designing nature-based programming and spaces for people with visible and invisible disabilities requires intentional planning that goes beyond basic accessibility and focuses on creating meaningful, inclusive, and empowering outdoor experiences that meet all individuals where they are.

Considerations

- Physical Accessibility
- Sensory Processing Needs
- Cognitive Challenges
- Mental Health
- Transportation Barriers

Strategies

- Nature-based programs should ensure that all participants—regardless of mobility—can enter, navigate, and engage with outdoor environments. Design features like barrier-free, smooth and wide pathways with contrasting materiality or color edging; gentle slopes with less than a 5% grade, and frequent rest areas with shade and seating can reduce fatigue, minimize risk, and allow participants with diverse mobility, sensory, cognitive, and mental health needs to participate fully ([Winterbottom & Wagenfeld, 2026](#)).
- Embrace and welcome choice. Allow participants to decide how they choose to engage with nature-based programming ([Cazorla & Molina, 2024](#); [Winterbottom & Wagenfeld, 2026](#)).
- Plan for a variety of sensory experiences and keep the experiences separated, to the greatest extent possible. For individuals who trend towards avoiding various sensory experiences, inclusive environments like predictable and repetitive surfaces and similar plantings, clear signage, reduced visual, tactile, and auditory stimuli, and cozy and quiet spaces may help participants who are overwhelmed maintain emotional regulation. For individuals who trend towards seeking various sensory experiences, bright colors and textures, sounds, and spaces to move about in may help participants maintain emotional regulation. Recognize that people who may appear to be acting out and misbehaving may, in fact be demonstrating sensory processing issues like sensory avoiding and seeking. Including calming and activating sensory spaces and activities are essential to help participants regulate their behaviors and emotions ([Winterbottom & Wagenfeld, 2026](#)).

- Modified options like seated tai chi, yoga, birdwatching, or creative nature art support meaningful participation along with raised garden beds that allow for forward facing gardening for individuals using wheelchairs or with limited mobility or strength along with adaptive gardening tools with ergonomic handles or extended grips ([Bulbrook, 2021](#); [Chahal, 2021](#); [Lee et al, 2021](#); [Winterbottom & Wagenfeld, 2026](#)).
- Create clear and simple directions for activities. Written directions should be to the point. Include pictures and icons as some participants may not be able to read. When providing spoken instructions speak slowly, clearly, and be ready to repeat directions. Accompany spoken instructions with visual cues like pictures and if appropriate, model the steps of the activity ([Carpenter, 2026](#)).
- All signage should include simple phrases, an icon or picture, and if possible, sound and Braille ([Greyling et al. 2025](#)).
- Create safe spaces for participants to take a break and refocus as needed. These spaces should provide a sense of enclosure and be welcoming, not be a 'time out' space ([Winterbottom & Wagenfeld, 2026](#)).
- Work closely with trusted organizations and trained professionals who serve this community to help guide your approach. CSU Extension's Colorado AgrAbility Project is a great resource ([Colorado State University, 2026](#)).
- Ask participants for their accommodation needs or preferences or as needed, a close caregiver, They know themselves or the individual they care for better than anyone else. Take the opportunity to problem-solve together!

Working with Rural Communities

Infrastructure in rural communities (i.e. sidewalks, trails, park facilities, lighting) may be limited and reduce access to nature. Yet, programs may benefit from being held in familiar, trusted locations and during daylight hours. Additionally, incorporating transportation options, selecting accessible locations, and engaging community members in improving local green spaces can further reduce barriers and increase participation.

Considerations

- Strong land-based identity
- Geographic Isolation
- Lack of Public Transportation
- Limited Access to Healthcare Services and Other Resources
- May be a Greater Risk to Environmental Emergencies like Fire and Floods
- Close-knit Communities with Trusted Organizations and Leaders

Strategies

- Build on existing outdoor traditions
- Integrate agriculture and land stewardship
- Emphasize community resilience
- Leverage local assets like local schools, churches, libraries or parks for programming

Recognizing and honoring generational relationships with land can strengthen program relevance and trust in rural contexts. Partnering with trusted community organizations and leaders helps build connections with residents and ensures you meet their needs.

Working with Urban Communities

Considerations

- Limited Nature Access
- Safety Concerns
- Built in Environmental Constraints
- Lack of Transportation
- Different perceptions of nature

Strategies

- Offer programs in pocket parks, schools, gardens
- Incorporate container gardening and ways to connect with nature inside
- Address safety and accessibility directly
- Engage community in increasing nature access and infrastructure
- Consider transportation options to nature locations
- Understand different perceptions (social, cultural) of nature

Address safety and accessibility directly by considering factors such as lighting, visibility, neighborhood safety, and maintenance of green spaces. Partnerships with local municipalities, housing authorities, or community centers may increase access to safe and consistent outdoor spaces. Engaging communities in advocating for nature access and environmental justice requires building trust, fostering inclusive participation, and addressing historic inequities.

Working with Native Communities

Many Native and Indigenous communities maintain deep cultural, spiritual, and historical relationships with the land. Nature-based programming in these contexts should recognize that connections to land may already exist through traditional ecological knowledge, cultural practices, and community history.

Considerations

- Respect for cultural traditions and knowledge systems
- Historical relationships with land and natural resources
- Importance of tribal sovereignty and community leadership
- Potential sensitivities related to land use and sacred spaces

Strategies

- Partner with tribal leaders or community representatives when developing programming
- Approach programming with humility and willingness to learn
- Recognize and respect traditional ecological knowledge
- Focus on listening and collaboration rather than imposing program structures

Community Based Application for Extension

The Medicine Wheel is an indigenous framework used throughout many American Indian and Alaska Native (AIAN) nations that incorporates teachings to help the individual, family, and community achieve balance and maintain a healthy lifestyle. The versatility of the framework can be utilized in nature-based programming to support cultural/ tribal interventions that target specific domains of health. [Learn more.](#)

Working with Historically Underserved Communities

Some communities face systemic barriers to accessing outdoor spaces and programming.

Considerations

- Cultural relevance
- Language access
- Historical exclusion from outdoor spaces
- Financial and transportation barriers
- Lack of trust in land management agencies/local government
- Increased perceived risk of danger
- Potential for traumatic histories tied to outdoor spaces and names
- Loss of access to culturally significant natural spaces

Strategies

- Partner with trusted community organizations
- Offer culturally relevant programming
- Provide language-accessible materials and interpretation
- Reduce costs and transportation barriers
- Understand communication preferences, consider calling or using messaging services to contact participants over emails and flyers
- Offer multi-generational programming
- Ensure all staff have an understanding of cultural norms and common microaggressions to create a welcoming and inclusive space

Apply inclusive design principles included earlier in this toolkit such as addressing safety, cultural relevance, and access, to ensure programming is responsive to structural and community specific barriers. Collaborate with community members to co-create program priorities and incorporate cultural practices, traditions, and customs that may rely on access to open spaces. Consider how participants may be perceived by other open space users and develop plans to address potential conflicts or concerns if they arise.

Example from Extension

The “Senderos para Salud/Hikes for Health” program (Emma Dhimitri, CSU Extension Community Health Specialist in Boulder County) provides culturally relevant, community-based outdoor experiences for Spanish-speaking and Latino/a/x participants. By addressing barriers such as transportation, language access, and safety concerns, the program creates inclusive opportunities for families to engage with nature. Participants benefit from increased physical activity, reduces stress, and a stronger sense of belonging in outdoor spaces, demonstrating how culturally responsive programming can expand access to nature-based health benefits.



Working with Lower Socio-Economic Communities

Individuals and families with limited financial resources may face barriers such as transportation limitations, time constraints, or lack of access to nearby nature. Nature-based programming can help reduce these barriers when designed with these considerations in mind.

Considerations

- Transportation and location accessibility
- Cost of equipment or outdoor gear
- Lack of health insurance
- Limited time to spend in nature due to work or caregiving responsibilities

Strategies

- Host programs in local parks, recreation centers, schools, or community spaces
- Provide free or low-cost activities
- Offer scholarships for programs with fees
- Work with local agencies to provide free park access when necessary
- Use text messages or phone calls for reminders, as email and internet access can be less reliable.
- Supply necessary materials or equipment
- Provide free food and incentives
- Offer flexible program schedules when possible
- Get secondary insurance if you are not partnering with an organization
- Bring extra outdoor gear, especially warm layers, snacks, and water bottles
- Offer multi-generational programming, or childcare options for workshops

Incorporate approaches that reduce structural barriers such as accessibility, affordability, and proximity so that participation is realistic and sustainable for individuals and families with limited resources.

By understanding the unique needs and strengths of different populations, Extension professionals can design nature-based programs that are both accessible and meaningful to the communities they serve. Be aware of the implicit bias you may have towards communities and by continuously checking assumptions and countering stereotypes. In addition, avoid deficit-language and focus on a community's strengths, lived experience, resiliency, cultural wealth and untapped potential.



8 Nature & Health Program Examples

Nature-based programming is implemented by Extension systems, public agencies, healthcare systems, schools, and nonprofits—often through cross-sector partnerships. These programs vary widely in their design but share a common goal of promoting well-being through meaningful engagement with natural environments. Several national initiatives provide useful examples of how nature and health programming can be implemented in practice.

Park Prescription (Park Rx) Programs

Park Prescription programs encourage healthcare providers to recommend time in nature as part of preventative health strategies. Participants may receive guidance on visiting parks, participating in outdoor activities, or incorporating nature exposure into daily routines. Research suggests that spending time in green spaces is associated with improved mental health, reduced stress, and increased physical activity (Twohig-Bennett & Jones, 2018). Programs like Park Rx America and the Campus Nature Rx Network show how partnerships between healthcare providers, park systems, universities, and community organizations can help expand access to nature-based health interventions.

Community Gardening and Food-Based Nature Programs

Community gardens and food production programs represent a common form of nature-based programming within Extension systems. These initiatives often combine gardening with broader health and wellness goals, including improved nutrition, increased physical activity, and enhanced social connection. Research has found that participation in community gardening may support mental well-being, increase fruit and vegetable consumption, and strengthen community relationships (Soga et al., 2017). Extension Master Gardener programs and community garden initiatives provide important opportunities to integrate environmental education and community engagement with public health goals.

Example from Extension

The “Planting Seeds of Resiliency” activity (Kirsten Wulfsberg, CSU Extension Regional Behavioral Health Specialist, Mountain Region) uses gardening as a reflective and intentional practice. Participants write a personal intention and plant it alongside seeds, revisiting that intention as they care for the plant over time. This simple activity promotes emotional resilience, mindfulness, and a sense of personal agency while also encouraging engagement with nature through gardening.

Mindfulness and Nature-Based Wellness Programs

Some organizations incorporate mindfulness practices into outdoor settings to encourage relaxation and stress reduction. Practices such as guided nature walks, reflective journaling outdoors, or forest bathing experiences encourage participants to slow down and engage with their surroundings through sensory awareness. Forest bathing, also known as Shinrin-yoku, originated in Japan and has been associated with reductions in stress hormones, improvements in mood, and enhances immune function ([Park et al. 2010](#)). These types of programs demonstrate how intentional nature engagement can support emotional and psychological well-being.

Example from Extension

Mindfulness practices are being increasingly integrated into CSU Extension programming to complement nature, wellness, and behavioral health interventions. These practices create opportunities for reflection and self-awareness, helping participants connect their experiences to meaningful insights that support health, well-being, and sustainable behavior change. “Teaching Mindfulness in Community Settings: A Guide for Extension Professionals” (Sue Schneider, CSU Extension State Health Specialist) offers a standardized, research-backed approach for integrating mindfulness into community-based programming from a trauma-informed lens.

[Learn more.](#)

Outdoor Youth Development Programs

Youth-focused outdoor programs, including many 4-H initiatives, provide opportunities for young people to develop confidence, leadership skills, and environmental awareness through outdoor learning experiences. Activities such as camping, environmental stewardship projects, outdoor skill building can support resilience, teamwork, and positive development for youth. Research suggests that regular interaction with nature during childhood is associated with improved emotional well-being, stronger environmental attitudes, and increased physical activity ([Chawla et al., 2020](#)).

9

Implementation Considerations

When developing nature-based programming, Extension professionals may wish to consider several key factors that influence program accessibility and effectiveness.

Accessibility and Equity

Access to natural environments is not evenly distributed across communities. Barriers such as transportation, limited green space, safety concerns, or work schedules may prevent individuals from participating in outdoor programming. Designing programs that are accessible and inclusive can help make sure that nature-based health benefits reach a wider range of participants.

Cultural Relevance

Different communities may have unique cultural relationships with nature and outdoor spaces. Programs that acknowledge cultural traditions, community knowledge, and place-based histories may foster stronger engagement and create more meaningful experiences for participants.

Psychological Safety and Comfort

Some participants may have limited experience spending time in natural environments or may feel uncertain about outdoor activities. Facilitators can support positive experiences by providing clear guidance, structured activities, and welcoming environments that allow participants to engage at their own pace.

Partnerships and Community Collaboration

Nature and health programs often benefit from collaboration with local organizations such as parks departments, public health agencies, schools, healthcare providers, and community non-profits. Partnerships can expand program reach and provide access to additional expertise and resources.

Evaluation and Program Outcomes

Extension programs across Colorado demonstrate that nature and health initiatives can be adapted across diverse audiences, settings, and program goals. From youth-focused mindfulness and journaling programs to culturally responsive community hikes and therapeutic horticulture for older adults, these examples highlight the flexibility and scalability of nature-based programming within Extension systems. These models can serve as inspiration for developing locally relevant programs that align with community needs and available resources.

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Appendices

Appendix 1: Nature Journaling

Appendix 2: Mindfulness in Nature and Gardens Program

Appendix 3: Evergreen Elders

Appendix 4: Medicine Wheel

Appendix 5: Teaching Mindfulness in Community Settings

