# Informing the Development of a Regional Outdoor Learning Network

## *LANDSCAPE ASSESSMENT*

Produced by Local Concepts, LLC
for the Chesapeake Bay Program Education Workgroup
*February 2021*

**Chesapeake Bay Program**

***Science. Restoration. Partnership.***

LOCAL CONCEPTS

info@LocalConceptsLLC.com

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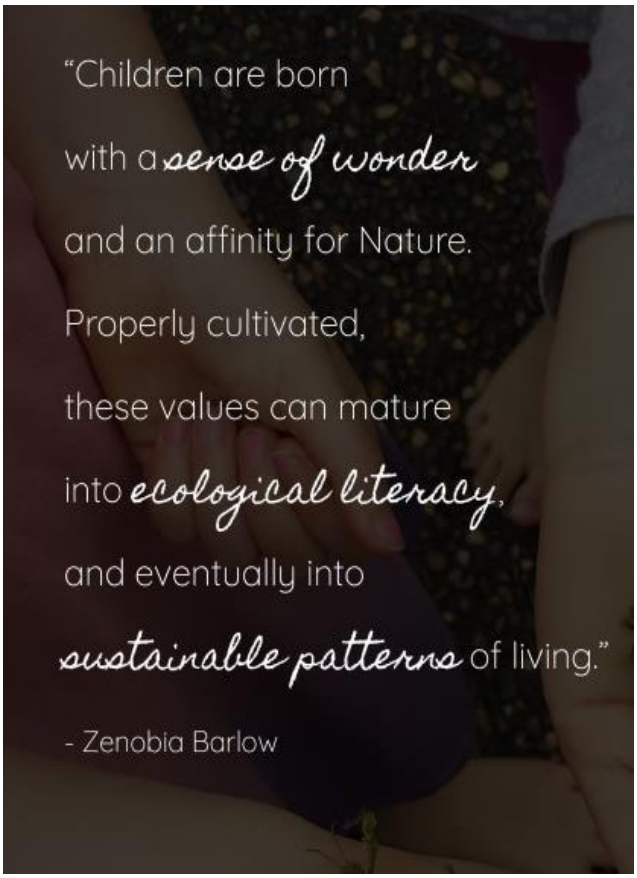
## Thank You

Local Concepts, LLC extends our deepest gratitude to everyone who supported this assessment process throughout 2020. The Regional Outdoor Learning Network Advisory Team, a subset of committed environmental education champions from the Chesapeake Bay Program Education Workgroup, met with us twice a month, gave feedback, iterated with us, and patiently guided us through the complex territory of environmental education. We are honored to have had this opportunity to work with them over the past year.

We also give thanks to everyone from across the region who took the time to answer our many questions. It was an even more difficult year for educators and administrators to carve time out of their busy schedules and we were continually wowed by the passion and commitment of everyone who showed up. Thank you.

Thank you to the Chesapeake Bay Trust for funding this critical work. There is no greater charge than to connect people who care about the same things and to advance systems that will help future generations and our lands and waters heal and thrive.



## Executive Summary

The Chesapeake Bay Program Education Workgroup has a vision where all students in the region graduate environmentally literate. They are assessing whether a regional outdoor learning network could 1.) increase communication across partners and networks to support environmental literacy, and 2.) increase the number of teacher-supported systemic environmental literacy programs. To inform their assessment, the Education Workgroup hired Local Concepts LLC[1], a social enterprise consulting firm, to conduct a landscape assessment informed by a set of interviews, focus groups, and a network map. This Landscape Assessment documents the processes used to engage stakeholders, the detailed findings, and offers recommendations for advancing environmental literacy across the watershed.

Many environmental education stakeholders, regardless of the state they work in, share similar challenges: the lack of systemic integration in school policies, curricula, and standards of learning; lack of prioritization among school districts and state leadership; the need for capacity building and professional development for both non-formal and formal educators; ensuring relevance for students, educators and administrators; establishing retention and succession strategies for environmental education staff and ambassadors; and the need for funding and other resources.

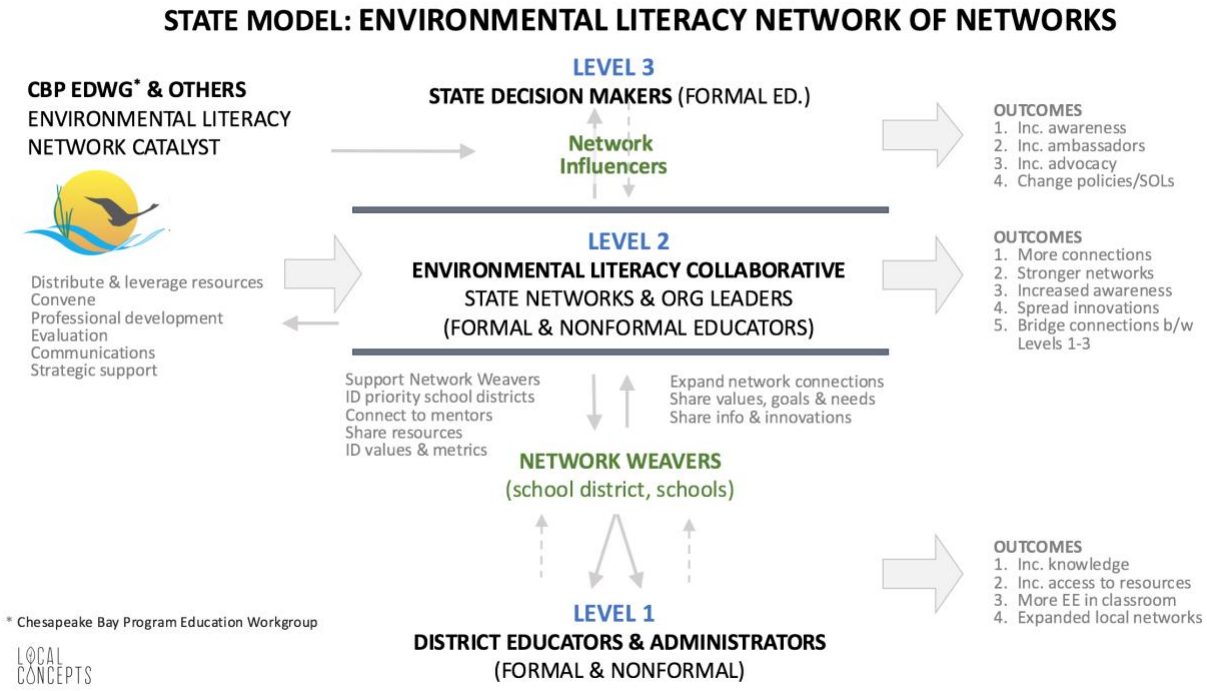
The overwhelming majority of stakeholders in the assessment process agreed a network (or strengthening of existing networks) would likely address some of these challenges while facilitating more connectivity and eventually collective action. Stakeholders recommended two types of networks that include different audiences and different geographic scopes: 1.) a statewide or more local network for formal and non-formal educators to advance professional development and build connections and collaborations, and, 2.) a regional (multi-state) network for decision-makers (superintendents, school board representatives, policymakers and other influencers) to share approaches and develop recommendations to set policies and standards of learning.

To avoid duplicating efforts, assessment participants stressed the importance of reinforcing the existing environmental education ecosystem by resourcing, empowering and aligning people, organizations, and networks already engaged in this work. Currently, a network of networks exists within environmental literacy movements across the Chesapeake Bay watershed. Stakeholders affirmed that gaps exist both within and across networks (from educator to decision maker), effectively slowing the expansion and systemic integration of environmental education initiatives to date.

State-level networks emerged as an important scale to focus on. This is where the standards of learning, graduation requirements and other educational priorities are most often set. Without buy-

[1] Local Concepts LLC is a social enterprise consulting firm that specializes in network design and management. For more information about the Landscape Assessment process and recommendations, please contact Local Concepts LLC at info@localconceptsllc.com.

in at the state level, implementation by educators will be scattershot at best. The figure below illustrates our vision for connecting and aligning the environmental literacy network of networks by state.




Specifically, to advance systemic environmental literacy, Local Concepts offers the following recommendations:

- Strengthen connections and increase information sharing among formal and non-formal educators (Level 1).
- Connect and resource collaborations between existing statewide formal and non-formal education networks (Level 2).
- Bridge and align school districts, state networks, and decision makers (Level 1-3).
- Engage, inform, and influence decision makers in the formal education system (Level 3).
- Create feedback loops to the Chesapeake Bay Program Education Workgroup to inform regional and national work.

## Landscape Assessment Background

By 2040, the population of the Chesapeake Bay watershed will exceed 20 million people. In the face of soil degradation, development, climate change, critical species die off, shifting energy needs and sources, water and food-related issues, and intersecting issues including healthcare and environmental justice, we must make substantial strides at a systems level to confront these "wicked" problems.

Formal and non-formal education systems are uniquely positioned to prepare students, the next generation of leaders, to address the environmental, social, and economic challenges and opportunities of the 21st century. These future leaders will also play a critical role restoring and protecting the beloved Chesapeake Bay and its tributaries. Studies demonstrate that environmental education can improve academic performance, enhance critical thinking skills, and increase personal growth and life-building skills. In addition, a number of studies show that environmental education can increase civic engagement and positive environmental behaviors.[2] Not to mention the mental and physical health benefits students receive when immersed in the outdoors. The Chesapeake Bay Program Education Workgroup has a vision where all students graduate environmentally literate. Achieving that vision will require systemic change efforts to advance environmental literacy[3].

The Chesapeake Bay Education Workgroup is assessing if a regional outdoor learning network could 1.) increase communication across partners and local implementation networks to support environmental literacy, including more and better designed Meaningful Watershed Educational Experiences (MWEEs), and 2.) increase the number of teacher-supported systemic environmental literacy programs occurring in priority school districts. To inform their assessment, in April 2020, the Education Workgroup hired Local Concepts LLC, a social enterprise consulting firm, to work with a subset of the Chesapeake Bay Education Workgroup, the Regional Outdoor Learning Network (ROLN) Advisory Team[4], to conduct a landscape assessment informed by a set of interviews, focus groups, and a network map of various organizational stakeholders. Stakeholders engaged in the landscape assessment process are leaders of existing organizations, government agencies, and networks (multi-stakeholder initiatives) in the Chesapeake Bay watershed states including Delaware, Maryland, Pennsylvania, Virginia, Washington DC, and West Virginia.

[2] Stanford University & NAAEE. (2017). *Stanford analysis reveals a wide array of benefits from environmental education*. eeWorks. https://cdn.naaee.org/sites/default/files/eeworks/files/k-12_student_key_findings.pdf

[3] For the purposes of this assessment, systemic environmental literacy means that environmental literacy is a priority for each school district such that environmental education is incorporated into each school district's education plan, and, ideally, embedded into the curriculum so that every student in that district has access to environmental education experiences.

[4] See Appendix I: Members of the Regional Outdoor Learning Network Advisory Team

***Interviews***

In July 2020, twenty-one environmental literacy stakeholders from across the Chesapeake Bay watershed were interviewed using videoconferencing to assess if a network could help support systemic environmental literacy and MWEE implementation. They shared their perspectives on the existing conditions that support environmental literacy and their recommendations for advancing environmental literacy moving forward. During the interviews, many useful resources, stakeholder names, and organizations were provided. Complete details can be found in Appendix II: *Summary of Interviews*: *Informing the Development of a Regional Outdoor Learning Network.*

***Focus groups***

From September - December of 2020, Local Concepts held five focus groups and one interview using videoconferencing to ground truth and expand on what was revealed during the interviews. Two *non-formal* educator focus groups, two *formal*[5] educator focus groups, and one interview of a formal educator were held to better understand 1.) the challenges and opportunities participants have experienced with environmental education in their work; and 2.) their assessment of the need for and structure of an environmental educator network.

Local Concepts also hosted one focus group of decision makers; that is, people that have influence over policies and priorities in school systems. The purpose of this focus group was to better understand 1.) how to build capacity for influencing and changing policies and standards to advance environmental literacy, and 2.) whether a network focused on decision making could help advance systemic environmental literacy. Complete details can be found in Appendix III: *Summary of the Focus Groups*: *Informing the Development of a Regional Outdoor Learning Network: Summary of Focus Groups*.

***Network Map***

A network map is a snapshot in time, a tool that requires regular sense making and continued attention to make it useful. It can be adapted and developed overtime to address changing needs and questions. The purpose and users of a map can change as it evolves and a strong mapping practice should involve an *Adaptive Action*[6] process (what, so what, now what?) and a reflective feedback loop. These processes can help users find actionable ways to strengthen a network(s) and build system-thinking among practitioners so that they can become better able to manage complexity. Network experts and designers have found that a network map can increase awareness of existing connections and give people concrete ideas of what they can do to strengthen their network.

[5] Throughout this document we use the words "formal" or "non-formal" educator to respectively refer to teachers in PreK-12 or environmental educators that often work for non-profits or government agencies.
[6] *Definition of Adaptive Action Process*

Throughout the assessment process, we heard ideas and strategies from stakeholders at every level (educator to decision-maker) in both formal and non-formal education settings that systemic transformation happens from the grass tops down and the grassroots up and requires advocacy, organizing, and capacity-building strategies at each level that is specific for each state. Building a pilot map of the current regional inter-state organizational ecosystem for environmental literacy is a good starting place to see large variance in each states' existing network structures.

The data generated for the pilot map were collected from the ROLN Advisory Team and from the interviews and focus groups conducted with 42 stakeholders from across the region. Through an iterative process, we created a phased development approach for the map. The first phase of the ROLN Organization Map is intended for network planners and weavers to visualize the 200+ organizations and their key attributes revealed through the landscape assessment process. It provides leaders, organizers, and future network implementation specialists a snapshot of the current system to begin to uncover what exists and what is needed to enhance fertility in each state. It can be used to inform next steps for building or bolstering existing environmental education networks. In the following phases of the map, survey data can be used to create a social network map for each state that captures the structure of personal networks, reveals central practitioners and their skills and assets, and relational data (e.g the strength of member connections).

The following purpose statements serve as a framework for the ROLN Organization Map.

1. Visualize the existing ecosystem of the environmental education movement in Maryland, Virginia, West Virginia, Pennsylvania, Delaware and DC;
2. Build capacity for the movement, including building a network mindset, bolstering existing networks, encouraging new localized networks, and supporting strategic planning;
3. Provide a directory of support providers with specific searchable tags, contact information, and other valuable information; and
4. Assess network growth and health, serving as a benchmark over time.

The current ROLN Organization Map should be used to implement recommendations offered in this assessment. For more detailed information about the ROLN Organization Map purpose, phased development approach, and datasets, see Appendix IV: Regional Outdoor Learning Network Organizational Stakeholder Map Overview, Access, Purpose, Phased Approach, and Data.

## Summary of Feedback from Environmental Education Stakeholders

### Current Capacities for Environmental Education: Challenges & Recommendations

Most people involved in the Landscape Assessment process felt that the existing capacity for environmental education is insufficient to ensure that all students graduate environmentally literate by 2025. Even though there is significant work being done to advance environmental education

in schools across the region, that work is happening in pockets and is not evenly distributed within or across states. The motivation for doing the work also differs widely from trying to address broad topics like climate change to meeting milestones laid out in the Chesapeake Bay Watershed Agreement, to a more local emphasis on increasing civic engagement. Even though environmental education implementation looks different within and across states in the region, many of the landscape assessment participants, regardless of the state they work in, shared similar challenges including:

1. Lack of *prioritization* for administration and lack of existing *policies* that support environmental literacy;
2. Limited *capacity and capacity building* opportunities for both non-formal and formal educators;
3. Lack of perceived *relevance* to students, formal educators, and administrators;
4. *Retention* of environmental education staff and ambassadors and lack of *succession planning* for new ambassadors;
5. Lack of consistent *funding* to support teacher training and environmental education implementation.

***Prioritization & Policies***

While each state appears to be in different places with regards to prioritization of environmental literacy, stakeholders from each state similarly shared there is often local support for environmental literacy, but broad-based statewide support and implementation is limited. Without statewide prioritization and policies that support environmental literacy, implementation is going to be scattershot, dependent on local organizations and individual champions, and far from systemic.

Recommendations: Systemic change requires environmental literacy is supported by decision makers at the school district and state level, including, but not limited to, state education agencies, boards of education, and superintendents, so that it is prioritized and embedded in the standards of learning and in curriculum. Educating decision makers about the vast benefits of environmental education which include improved academic achievement and increased civic engagement is needed. Where possible, tying environmental education to green building programs is another compelling strategy. Oftentimes if you can support one decision maker in becoming a champion for environmental literacy, that support can snowball among their peers.

***Capacity***

Where environmental education has been successfully integrated into the classroom is where there are strong partnerships between formal and non-formal educators (e.g. Chesapeake Bay Foundation and Virginia Beach City Public Schools have partnered with great success), but even this model is limited by capacity and turnover issues. All of the non-formal focus group

participants shared that environmental education is a priority, with many offering curriculum-based programs as well as continuing education credits or other types of professional development for teachers, but most also shared they are stretched thin and not able to reach all of the school districts in need of support. Formal educators need more training and professional development support, especially professional development that supports teams of educators across learning disciplines.

Recommendations: For broader implementation, more needs to be done to increase capacity of formal educators so they are less reliant on support from the non-formal educators. More investment is needed in professional development for non-formal and formal educators and during pre-service training at higher education institutions. Since one of the most limiting variables for formal educators is time, any professional development or training needs to be seen as a value-add or they are going to be unlikely to participate. Professional development needs to be designed for all educators, and where appropriate, for *teams* of cross disciplinary educators, and in such a way that it helps them with their performance based assessments. Formal teachers should not feel forced into this work and it should be framed as being "instead of" their current tasks rather than "in addition to," their current tasks.

***Relevance***

Oftentimes formal educators and students do not readily connect to the language and approaches used by those outside the formal education system, which limits participation. Emphasis needs to be placed on making environmental education training relevant and valuable to teachers and their current goals.

Recommendations: To help with this, environmental education proponents should use everyday language and avoid jargon, suggest activities that are place-based and easily accessible, and, most importantly, tie environmental education to existing standards of learning and other teacher priorities. The bonus is that by incorporating environmental education into the standards, it then becomes connected to testing and performance based assessments so systemic change can then be measured.

***Ambassador Retention/Succession***

Incorporating environmental literacy into the classroom often requires environmental literacy champions constantly engage with principals, teachers, curriculum coordinators, and other school administrators, and the way this is done looks different depending on the school district. As such, ambassadors for environmental literacy are a driving force, holding important know-how and connective tissue. Once you lose an environmental education ambassador there is a large gap in knowledge and relationships, which are key to this work and take time to establish.

Recommendations: A few strategies were recommended to retain and support new ambassadors, including: 1.) Develop and support multiple ambassadors so that when you lose one person the impact is not as great. One strategy for successfully doing this is by working with teams of teachers across a grade level. This not only helps to build and distribute partnerships across multiple people, it also integrates environmental education programs into curriculum across disciplines. 2.) Spend more time on succession planning so that new staff are brought into existing relationships. 3.) Incentivize and recruit retired champions, such as teachers, non-formal educators and other volunteer educators, to maintain critical links between formal and non-formal educators.

***Funding***

Funding is a perennial problem and essential for ensuring all students graduate environmentally literate. Funding is needed for capacity building and training, staffing of environmental educators, and for the actual cost of transportation and other outdoor learning expenses. If the goal is to advance systemic environmental literacy, then funding needs to be baked into the system and cannot fall to the schools, organizations, educators, or families to fund.

## Additional Network Support is Needed

The majority of those participating in the Landscape Assessment process agreed a network (or networks) could integrate the recommendations above while facilitating more connectivity and possibly collective action. Two types of networks were recommended to include different audiences and geographic scope: 1.) A statewide or more local network for formal and non-formal educators for advancing professional development and to build connections and collaborations. 2.) A regional (multi-state) network for decision-makers (superintendents, school board representatives, policymakers and other influencers) to share approaches and develop recommendations to set policies and standards of learning. Following are some commonly mentioned areas where a network(s) could provide much needed support:

- Champions for environmental literacy need more advocacy support to help change policies and practices that influence standards of learning and resource allocation.
- Environmental literacy needs to be prioritized by those that create policy at local, state, and national levels so that it is better funded and more integrated into the education system.
- Communication(s) and connections need to increase among formal and non-formal educators.
- Formal educators need more professional development support in place to become more environmentally literate, and the support must align with their performance measurements.
- The environmental education community needs to increase resource and information sharing and resources need to be easier to access.

Offering these supports may not require starting a new network, rather investing in existing infrastructure may be sufficient. More specific details describing feedback on the need for, structure, and functions of an environmental educator network and decision maker network are provided below.

***Environmental Educator Network*** *(both formal and non-formal educators)*

Both formal and non-formal participants expressed that an environmental educator network, designed to connect people, broadcast resources, offer professional development, and provide advocacy support would add value to their work and would help to advance systemic environmental literacy. *"Sharing resources is a huge time saver, money saver, and frustration saver,"* said one participant. A majority of participants agreed a network could help advance environmental literacy, but it should carefully avoid duplicating current efforts, and instead focus on connecting existing networks to identify shared goals and values, strengthening the whole, and filling gaps.

"*The value proposition of change networks is that they add value to a broader landscape of activity, avoiding unnecessary and unhelpful duplication and competition."*

~ Curtis Ogden, Interaction Institute for Social Change

For example, many people recognized that there are numerous existing networks for formal and non-formal educators, but that these networks have minimal opportunities to connect and those connection points are often spurred by individuals and are reliant on known relationships. One participant said, *"We need more ways to bring us together."* As an example, at the Delaware Association for Environmental Education conference there are separate tracks for formals and non-formal educators, which pulls people apart. Similarly in Virginia, there are groups networking non-formal educators like the Virginia Resource-Use Education Council and groups networking formal educators like the Virginia Association of Science Teachers, but there is a lack of connection between these networks. Previously in Virginia there was an Office of Environmental Education that served as the bridge between formal and non-formal educators. That office held a conference that brought people together from organizations, agencies, schools, school districts, and other places. Without this group there is a vacuum.

*"If you want to make a difference in the state and want systemic change, you have to have a group that's targeting it, not an umbrella group like science teachers."*
*- Landscape Assessment Participant*

Most participants shared that JEDI (justice, equity, diversity, and inclusion) strategies need to be incorporated from the beginning of any new network development (or bolstering of an existing network). Future work should prioritize reaching entities currently not involved and establishing diverse racial representation (and other dimensions of identity and geography) among leadership, partners, and participants. Another critical step is to develop a strong JEDI public facing analysis that cements the commitment across processes, governance, programs, communications, network functions, and resource allocation. It also means that JEDI goals are set and yearly assessments are conducted to ensure the network is responsive and on target with JEDI goals.

Since each state is so different with different agencies and other environmental education groups, it might be difficult to have an environmental educator network that covers multiple states. Most felt a network primarily focused on individual states, not watershed based, would be most useful while still creating additional opportunities for people across states to connect.

Further recommended functions of a statewide environmental educator network include:

- Offer programs that build the capacity of teachers to do environmental education themselves, instead of relying on non-formal educators.
- Offer workshops with content that can be readily implemented in the classroom and incorporates cutting edge ideas and science-driven data.
- Provide technical support for incorporating environmental literacy in curricula, lesson plans, and other activities.
- Increase communication pathways across networks to leverage expertise and to share best practices, successful programs and other resources.
- Provide a way for environmental educators to review and weigh in on a state's education plan and offer ways to integrate Chesapeake Bay Program Education Workgroup goals into those education plans and their organizational work plans.
- Collectively develop evidenced-based data that demonstrates the importance of environmental education in meeting education standards and other goals.
- Help with advocacy and lobbying efforts for environmental education.

***Decision Maker Network***

Systemic implementation of environmental literacy in schools will ultimately be limited without buy-in from decision makers. As such, environmental educators felt a regional (multi-state) network designed specifically for decision makers of the formal education system is needed. A network that shares approaches, develops recommendations, sets policies and standards, and directs funding will facilitate more top-down support for environmental education within and across states. There is a desire from several states to help push their decision makers towards what

Maryland has done, with more top-down prioritization and integration into environmental literacy plans, curriculum, standards, and graduation requirements.

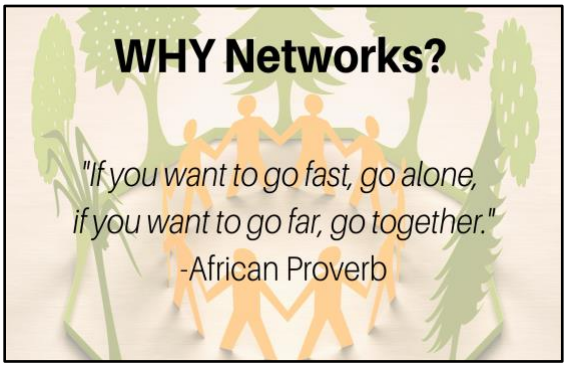
Superintendents, school board representatives, policymakers (local, state and national), state education agencies, US Department of Education, and other influencers, especially those with a background in science, were suggested as participants for a decision maker network. Because the way schools are governed is markedly different in each state, exactly who is involved will vary by state.

One decision maker offered caution against asking decision makers to participate in any new meetings or organization. Instead, he suggested focusing first on educating decision makers and then connecting champions that emerge through the process. To reach decision makers, especially those that are not already environmental literacy proponents, do so during activities or events that are already part of their work. Go to the places where board members and superintendents are likely to both be present, such as the annual statewide conferences and regional meetings within a state. Examples include: Virginia School Boards Association and the Virginia Association of School Superintendents. In Pennsylvania, the Intermediate Units are a possible way to reach decision makers and affect decision making because this is where both principals and superintendents come together. At these meetings, share information and raise awareness about the ways environmental education can advance learning outcomes and other formal education goals. Then, working closely with those decision makers that seem ready to serve as ambassadors for environmental education, support them in bridging connections to other decision makers and arming them with data and resources so they can more easily advocate for change.

## Recommendations for Pulling It All Together & Moving Forward

### Why Networks & How They Function

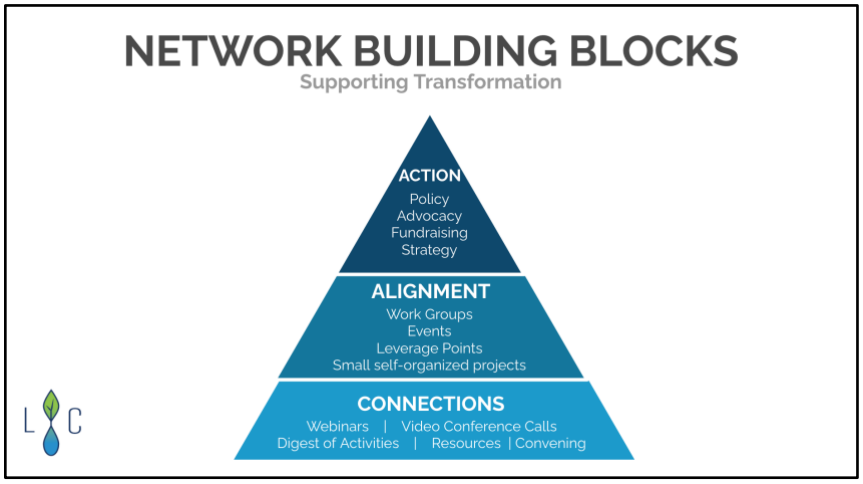
"*If you want to go fast, go alone, if you want to go far, go together.*" This proverb is often espoused in network theory and practice, and for good reason. Networks can make strong headway on systemic change efforts with the right ingredients. The ingredients may not be perfect (think ugly produce!), but the magic happens in the collaborative, creative kitchen where the cooks can share leadership and ingredients and then blend them to create, bolster, and sustain a thriving network or network of networks over time (think slow cooker!).




Networks are made up of and driven by a community of people that come together around shared values and a common vision. A well-managed network accelerates change by prioritizing its network participants and focusing on

adding value to their work by encouraging shared learning, collaboration, and innovation. To move a large group of decentralized educators and leaders towards a common set of goals and collective action requires an active support system, resources, and new ways of meeting one another and working together. It requires thoughtful and strategic network care and management.

The network building blocks pictured here illustrate the importance of strategically building towards collaborative action. Each phase in a network's evolution, from connections to alignment to action, build on each other with relationships and trust forming the foundation. Successful




networks never underestimate the stability gained from a strong foundation. Sometimes funders and other organizers want to start at the top of the pyramid; they are ready to "do something!" But, consider what happens if this graphic were flipped upside down; it becomes unstable, especially since moving toward action often means increased risk and resource needs including time and funding.

Some of the most mundane and time-consuming tasks are critical for establishing a strong network foundation. Tasks include meeting design and coordination, program and event planning, broadcasting information and resources, and archiving. These tasks require a significant amount of time and can be difficult for any single organization to carve out of its existing routine and budget. Without this type of support, often referred to as network management or backbone support, it is difficult for any network to operate or grow. But, with proper care and management, a network can have powerful impacts, strengthening existing relationships and building new relationships, leveraging and increasing resource flows, and building capacity for advocacy and policy change. Investments in networks should prioritize network management needs. Existing organizations, consultancies, or shared responsibilities among lead organizations are all known models for providing network management support. For more detailed information about supporting networks, see Appendix V: Ten Ingredients for a Thriving Network.

The assessment process revealed there is quite a lot of work happening across the watershed to

advance environmental literacy. Some states have made more progress than others and still all participants, regardless of the state they are from, shared that they would benefit from a stronger foundation of connectivity. Formal and non-formal educators want to be better connected with each other. They want easier access to resources and knowledge, especially resources that center standards of learning and other performance-based assessment goals. Investing in building stronger relationships and better access to resources sets the stage for sharing, scaling out and aligning efforts, so that it then becomes easier and more efficient to act together to scale impact that changes policies and practices.

## Conceptual View of the Regional Network of Networks

Building on the findings of Duncan Watts, a researcher of complex networks, June Holley writes about three level networks – networks that cross levels or layers – as drivers of innovation which lead to widespread systemic transformation. Below is a conceptual model of a "network of networks" adapted from June Holley. It illustrates how the different levels of networks may interact and the types of activities one may encounter at each level.

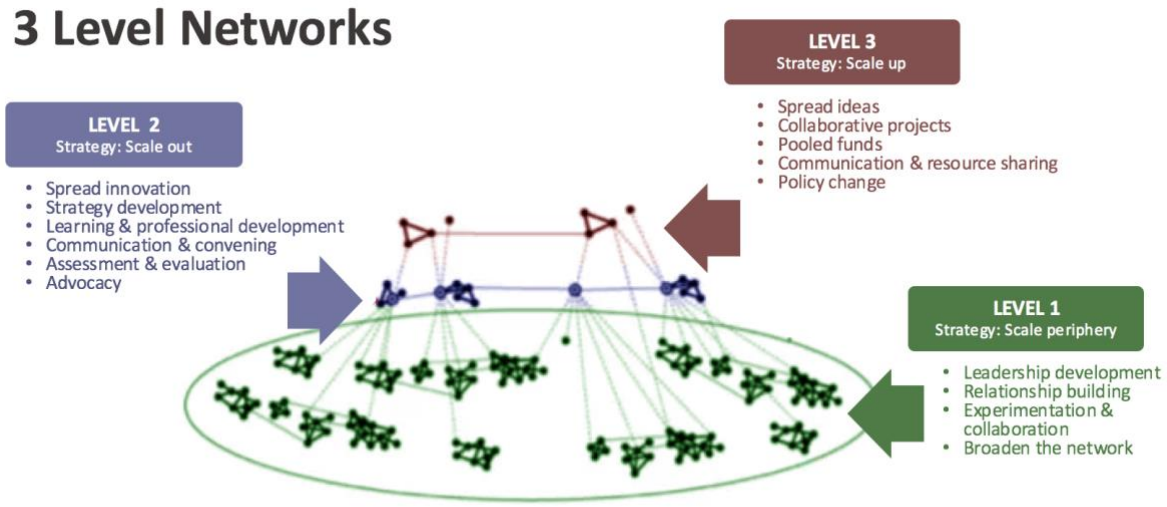



Figure adapted from "*The Transformative Power of Networks of Networks*", June Holley, May 2019.

To some degree, a network of networks exists among environmental literacy movements across the Chesapeake Bay watershed, but more intentional support is needed to grow and strengthen networks at each level to eventually influence policy. We heard from community stakeholders that gaps exist at every level and in every state, preventing the expansion and systemic integration of environmental education initiatives. Examining the conceptual framework of the network of networks, or 3 Level Networks, allows us to begin to uncover more about those chasms that exist between the grassroots (Level 1) and the grass tops (Level 3) and what types of intentional state-

specific and regional approaches and strategies network designers might use to fill gaps and bridge chasms.

*"The critical question is whether and how social networks can help facilitate innovations to bridge the seemingly insurmountable chasms that separate local solutions from broad system transformation"*
- Michele-Lee Moore & Frances Westley[7]

**Level 1: Local formal and non-formal educators**

***Scale the periphery*** *to bridge connections and increase information sharing and experimentation*

At this level, educators are ideally building connections and their professional capacity. They are meeting one another, experimenting, and sharing lessons learned back to the network. Currently, there is innovative work to showcase and environmental literacy champions to recognize in the field, but they are not evenly distributed across states, and oftentimes the work relies on a few key leaders that are not necessarily well connected. At this level, it is important to strengthen connections among educators for shared learning and to boost the number of environmental literacy ambassadors. This can happen by scaling the periphery or prioritizing areas where environmental education is not as prevalent, building capacity in those areas, and connecting those areas to mentors and to the broader environmental literacy movement (ie., Level 2).

**Level 2: Statewide formal and non-formal networks and educational entities**

*Build and bolster networks for* ***scaling out***

Scaling out requires 1.) supporting weavers and learning clusters at Level 1 to spur innovative approaches, 2.) developing systems for determining which efforts are worth scaling, and 3.) aiding the spread of innovations by supporting the research, advocacy and strategic thinking needed to scale out.

Level 2 in the adapted "3 Level Networks" graphic refers to statewide formal and non-formal networks and education entities who play an important role scaling out so that local innovations can spread, inspire, and adapt. Examples for what stakeholders at this level can do include producing webinars to share case stories across the state, sharing digital resources, strategizing about innovations worth scaling, convening stakeholders working on similar strategies and using incentives to help adapt promising strategies. Currently, there are a number of statewide formal

[7] Moore M. & Westley F. (2011). *Ecology and Society. Surmountable Chasms: Networks and Social Innovation for Resilient Systems. The Resilience Alliance.*

and non-formal environmental education network-like entities that are doing great work, but there is a need for better connectivity.

**Level 3: Formal & non-formal education decision makers**

*Build and bolster networks for **scaling up** so infrastructure and policies can be developed*

Scaling up leverages the relationships, innovation and advocacy building at Levels 1 & 2 to affect policies, funding, and practices. Level 3 in the graphic is referring to the formal and non-formal education decision-makers (e.g., agency directors, superintendents, state boards of education, etc.) largely operating within each state and across the region.

Currently at Level 3, the Chesapeake Bay Program Education Workgroup is effectively networking regional non-formal education decision makers (e.g., heads of environmental agencies and nonprofits), and there are existing associations and meta-networks of formal education decision makers. There is, however, a gap between the two types of decision makers (formal and non-formal) and their networks. This gap presents an opportunity for non-formal education decision makers to use their influence and build relationships with formal education decision makers, to lift up and broadcast success and impacts happening at Levels 1 & 2, and to relate those impacts to formal education goals.

At this level, emphasis is placed on reaching decision makers in the formal education system, and doing so one person at a time and at their existing regional or statewide formal education meetings. Once key ambassadors are developed among formal education decision makers, this effort can snowball by bridging connections to Level 2 and arming Level 3 ambassadors with information to influence and build support among peers.

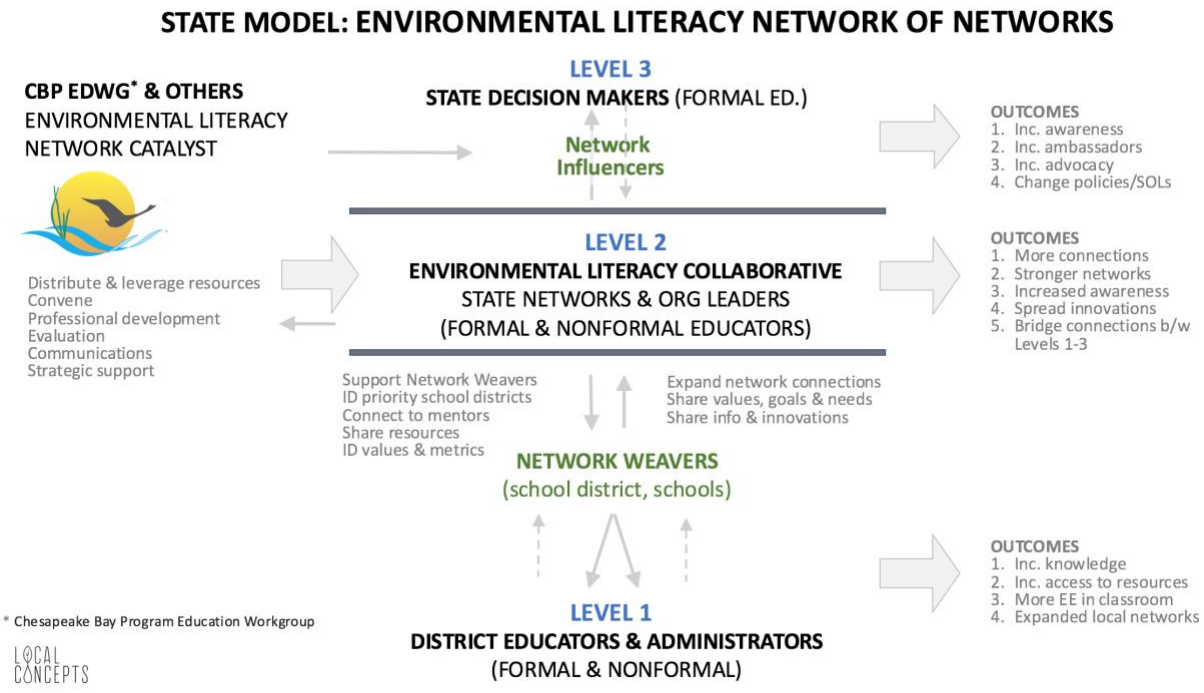
## Recommendations for Moving Forward

State-level networks emerged as an important scale to focus on because this is where the standards of learning, graduation requirements and other educational priorities are most often set. Without buy-in at the state level, local implementation will be scattershot and difficult to build out and maintain. To advance systemic environmental literacy, the following recommendations focus on scaling the periphery, scaling up and scaling out to strengthen each of the three network levels and to bridge across levels within each state. Recommendations for the next five years (2021-2026) include:

- Strengthen connections and increase information sharing among formal and non-formal educators (Level 1).
- Connect and resource collaborations between existing statewide formal and non-formal education networks (Level 2).

- Bridge and align school districts, state networks, and decision makers (Level 1-3).
- Engage and influence decision makers in the formal education system (Level 3).
- Create feedback loops to the Chesapeake Bay Program Education Workgroup to inform regional and national work (e.g. Environmental Literacy Indicator Tool, Chesapeake Bay Watershed Agreement, North American Association for Environmental Education)

The *State Model: Environmental Literacy Network of Networks* (see figure below) shows the main participants at each network level and their general activities, flow of interaction between levels, and anticipated outcomes. Participants include the ***Chesapeake Bay Program Education Workgroup*** and other partners; the ***Environmental Literacy Collaborative***, an ad hoc partnership of state networks of formal and non-formal educators; ***network weavers,*** those who engage local formal and non-formal educators and their support providers; and ***network influencers,*** those who engage, educate, and influence decision makers in the formal education system. More detailed information regarding the purpose for each group, examples of participants, and anticipated outcomes are provided below.




**Chesapeake Bay Program Education Workgroup and other partners**

Purpose: Holding the regional view and serving as a network catalyst and resource broker, the Workgroup will continue to facilitate connections and collaborations within and across states to scale innovation and advance policies and plans. To add value to the movement, the Workgroup will convene and support each state's Environmental Literacy Collaborative with strategic

resources (information & funding), expert knowledge, professional development, and provide support for establishing shared measures and assessing growth. They will work with each state's Collaborative to identify a team of Network Influencers to connect with decision makers at Level 3 to ***scale up*** policies and plans that support environmental literacy in each state. Members of the Workgroup may also be well positioned to serve on a team of Network Influencers.

Participants: Potential participants include members of the Chesapeake Bay Education Workgroup, Principal Staff Committee, other Chesapeake Bay Program Workgroups (e.g. Diversity Workgroup), funders, and other influencers.

Outcomes: Investments made by the Chesapeake Bay Program Education Workgroup will scale learning and innovative practices across states, reveal progress on reaching environmental literacy goals, aid in understanding network health and impacts, leverage resources, and better integrate Chesapeake Bay Watershed Agreement environmental literacy goals with state education plans.

**Environmental Literacy Collaborative** formed in each state and Washington DC

Purpose: The Collaborative is a co-led, ad hoc partnership between existing formal education statewide networks (e.g., Science Teacher Association) and statewide non-formal education networks with an eye towards ***scaling out***. The Collaborative will 1.) identify, connect, and support network weavers in order to weave connections among formal and non-formal educators in priority school districts (Level 1); 2) strengthen resource flows and strategic planning between formal and non-formal education networks within a state (Level 2); and 3.) connect lessons learned to the Chesapeake Bay Program Education Workgroup and to other Environmental Literacy Collaboratives in the region.

Specific functions of an Environmental Literacy Collaborative include:

- Offer programs that provide technical support and build capacity to incorporate environmental literacy into curricula, lesson plans, and other activities.
- Increase communication pathways across networks to leverage expertise and to share best practices, successful programs, and other resources.
- Host statewide strategy conversations between the formal and non-formal networks.
- With the Chesapeake Bay Program Education Workgroup, collectively support Network Influencers in developing evidenced-based data that demonstrates the importance of environmental education in meeting education standards and other goals.
- Help support advocacy for environmental education.

Participants: Leaders and other ambassadors of state formal and non-formal education networks and other organizations. The target size for each state Collaborative is 6-12 people.

Outcomes: Investment in Environmental Literacy Collaboratives will impact all three levels of networks in the environmental literacy movement. It will increase connections between formal and non-formal education networks at Level 1, spread learning and innovations, increase advocacy capacity at Level 2, and strengthen all the networks to set the stage for collective strategic action at Level 3.

**Network Weavers**

Purpose: Network weavers are working at the school district level with an eye towards ***scaling the periphery.*** They are working with science supervisors, curriculum developers, and other formal and non-formal educators in districts lacking strong environmental literacy programs. Network weavers are strong communicators, sharers, and network cheerleaders, helping the spread of innovations and opportunities. They are also good listeners, collecting important information about educator interests, values, challenges, and capacity building needs. Network weavers expand and strengthen Level 1 networks within a state by working to build relationships and increase knowledge sharing among school district personnel and those that offer environmental education training. Network weavers also bridge Level 1 to the Environmental Literacy Collaborative (Level 2).

*"The foundation of generative social-impact networks is the connectivity of its members to each other, which can be cultivated by network weavers."*
Connecting to Change the World

Participants: There may be multiple network weavers dispatched across a state to reach different priority school districts. These people are strong advocates for environmental literacy with solid connections to the education community and a commitment to strengthen Level 1 & Level 2 environmental literacy networks. They may be science supervisors, superstar teachers, or influencers such as board of education members, leaders of PTOs, or organizational leaders.

Outcomes: Investment in network weavers operating at Level 1 will increase the spread of environmental literacy ideas and innovation by focusing on the periphery. They will facilitate a more sophisticated understanding of the entire system educators are working in. They will increase the number of environmental literacy ambassadors operating across each state and the number of students receiving an environmental education.

**Network Influencers**

Purpose: Network influencers will connect with and educate decision makers that have the power to influence SOLs and policies (e.g., superintendents, members of boards of education, department of education directors). They will develop ambassadors among decision makers, connect like-minded decision makers, and bridge the decision makers to the Environmental Literacy

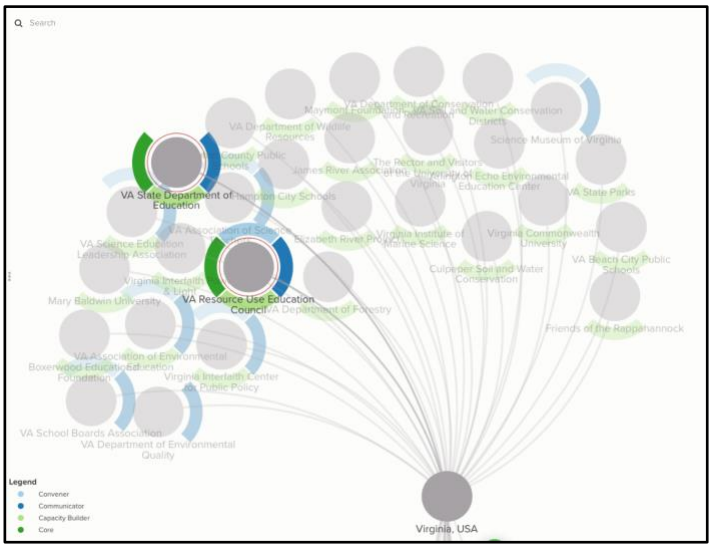
Collaborative and the Chesapeake Bay Program Education Workgroup.

Participants: A team of state-specific environmental literacy advocates and influencers, preferably a combination of people representing both formal and non-formal education systems, who come from or are identified by the Chesapeake Bay Education Workgroup and the Environmental Literacy Collaborative.

Outcomes: Investments in Network Influencers will increase awareness of the importance of environmental literacy among formal education decision makers, increase the number of Level 3 ambassadors and advocates, and set the stage for changes to policies and standards of learning that prioritize environmental literacy.

*"Information can leap from group to group even when those groups seem to have nothing in common, because all they need in common is a single individual who is a member of both groups and therefore has a bridging identity."*
- Paul Hartzog[8]

Following is a detailed account of potential activities for each of the groups mentioned above. It is recommended that each state and Washington DC roll out their own process that best suits their unique needs and existing conditions. If funding for implementation is limited, the Chesapeake Bay Program Education Workgroup should pilot the process in one state and prioritize activities.




To assist with implementation of the following recommendations, we suggest using the ROLN Organization Map which includes 211 organizations, networks, associations, and other entities from across the region. They have been coded as being either part of the formal or non-formal education system and as being currently engaged, somewhat engaged, or not engaged in environmental education. The map can be filtered on each state and can be used to identify the organizations that offer services important for network building (i.e., capacity building, communications, convening, and interest in providing core leadership to a new network). For example, to the right is a map view of organizations in Virginia that have expressed interest in serving as a core network leader. The map also tags organizations with twelve attributes including JEDI (justice, equity, diversity, and inclusion), MWEEs, advocacy, policy, etc. For more

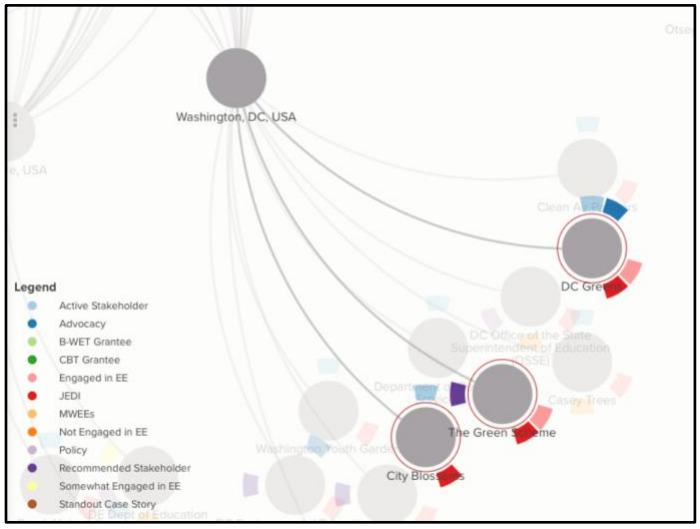
[8] Hartzog, P. (2004). *21st Century Governance as a Complex Adaptive System*. https://www.panarchy.org/hartzog/governance.html

information on the network map, how it was developed, its features, and ways to use it, please see Appendix IV.

We recommend integrating JEDI study and practices throughout the timeline and activities described below. Suggested strategies to consider:

- Prioritize reaching entities that are not already involved and prioritize diverse racial representation (and other dimensions of identity and geography) among leadership, partners, and participants;
- Develop a strong JEDI public-facing analysis that cements the commitment to JEDI across governance, programs, communications, network functions, and resource allocation; and
- Set JEDI goals and perform yearly assessments to ensure the network is responsive and on target with JEDI goals.

Professional development around JEDI issues is needed around the region. Using the ROLN Organization Map and focusing on the JEDI tag highlights the organizations who might be well suited to support JEDI training and practice. For example, in this map view of Washington D.C. on the left, you can view potential partners who might be able to provide JEDI support. Map views for each state can be similarly generated.




## YEARS 1-2: ACTIVITIES

Chesapeake Bay Program Education Workgroup

1) In each state, host a meeting of the state formal and non-formal education networks to gauge interest in participating in an ad hoc Environmental Literacy Collaborative. During the convening, uncover interest in participating in the Collaborative, value propositions, existing communication channels, resources and capacity needs.
2) Distribute financial resources to support each state's Environmental Literacy Collaborative. Include stipends for leaders, Network Weavers, convening funds, and possibly innovation support in school districts.
3) Offer Environmental Literacy Collaboratives professional development and training to possibly include: JEDI training, training to build a network mindset, training on the ROLN Organization Map, network evaluation and assessment, advocacy training, and environmental education topics. Training should be made available to the Network Weavers and others in the Collaboratives' networks. (Note: Any environmental education

professional development should center formal educators' priorities as identified through the Network Weaver's work. There is more on this below).

4) Host a regional strategy session for the Collaboratives to include state breakout sessions and regional information sharing.
5) Distribute a quarterly one-stop-shop digital digest of environmental educator resources that shares MWEE resources, current trends, funding opportunities, standout environmental education case stories, etc. Distribute the digest through communication channels of each Environmental Literacy Collaborative. The digest does not need to duplicate other work but should supplement existing resources, like the Bay Backpack, and should encourage contributions from the networks across the region.

Environmental Literacy Collaborative

1) Identify a leadership group representing both the formal and non-formal statewide education networks to receive stipends to co-lead and plan activities for the Collaborative.
2) Develop an informal partnership agreement to include a shared vision, goals, and general roles and responsibilities; ways of cross-sharing information among networks; and connecting with the Chesapeake Bay Program Education Workgroup.
3) Solidify the roles and responsibilities of each Network Weaver and work with the Chesapeake Bay Education Workgroup to provide the necessary training, supports, accountability structures, and feedback loops so they can be successful weavers.
4) Identify and support Network Weavers who will build connections among formal and non-formal educators at the district level. Network Weaver support may include stipends, convening funds, innovation support for educators, and access to environmental education resources.
5) Host monthly or quarterly gatherings for Network Weavers to gather and share progress, challenges, and get support.

Network Weaver

1) Connect and convene formal and non-formal support providers and educators with an emphasis on connecting groups of three or more people together. The goal is to engage cross-disciplinary teacher teams, highly influential teachers, and curriculum developers in high priority school districts.
2) Share environmental literacy resources and build connections to other districts that have had success implementing environmental education.
3) Distribute innovation support resources to teachers to incentivize their participation. For example, resources they might use in the classroom, support for field trips, professional development opportunities, etc.

4) Identify needs and opportunities for expanding environmental literacy at the district level, emphasizing ways to add value to the formal educators, and support the succession of new educators.
5) Encourage and support school districts to complete the Environmental Literacy Indicator Tool (ELIT) so the Chesapeake Bay Program Education Workgroup has data to support change efforts.
6) Identify and gauge local administrator interest in environmental education to find champions for environmental education. Administrators may include local members of the boards of education, principals, superintendents. (Note: Doing this while building broad-based support at the local level will help create the political cover state decision makers at Level 3 may eventually need to put their neck out in favor of policy change.)
7) Share stories, progress made, and information learned about the local districts to the Environmental Literacy Collaborative and the Chesapeake Bay Program Education Workgroup.
8) Connect the formal and non-formal educators to the Environmental Literacy Collaborative and invite them to participate in any of the Collaborative's gatherings, professional development, and communication pathways.

**YEARS 2-3: ACTIVITIES**

Chesapeake Bay Program Education Workgroup Activities:

1) Continue to offer supports described in Years One-Two.
2) Convene the Environmental Leadership Partnership to determine interest in identifying Network Influencers to engage and inform the formal education system's decision makers.
3) Help develop and distribute resources to support Network Influencers in briefing decision makers.
4) In collaboration with the Environmental Literacy Collaborative, offer a Network Weaver Award for each state's Collaborative. Present the award at a regional gathering of all of the Environmental Literacy Collaboratives (i.e., a gathering of all the states).
5) Host study sessions with the Collaboratives to identify ways to integrate environmental literacy goals with state education plans and to strategize around lessons learned.
6) Recruit funders and begin planning for a shared gifting event described in Years Three-Five.

Environmental Literacy Collaboratives

1) Continue to provide shared leadership and offer the services and supports described under Years One-Two.
2) Gauge interest in formalizing the Collaborative and developing governance structures to support.

3) Help develop and distribute communication tools and additional resources to Network Influencers to share with decision makers in the formal education system. (More on Network Influencers below.)
4) Host a meeting of weavers and influencers to share stories and lessons learned.

Network Weavers

1) Continue to perform the tasks outlined in Years One-Two.
2) Continue to reach more local formal and non-formal support providers and educators and bridge them to mentors and to the Environmental Literacy Collaborative.
3) Connect with local administrators to identify local decision makers who support environmental education.

Network Influencers

1) Identify key conferences, events, and other gathering places of decision makers in the formal education system.
2) Connect with Network Weavers to identify any environmental literacy advocates from Level 1 that should be introduced to decision makers.
3) Engage and share information with decision makers at meetings identified in #1.

**YEARS 3-5: ACTIVITIES**

Chesapeake Bay Program Education Workgroup

Support collaborative action through Shared Gifting:

After a few years of building connections and relationships, sharing resources, and facilitating alignment, it may be time to support action on the ground in the areas cultivated by the Network Weavers.

To do this, we recommend the Education Workgroup host a shared gifting event funded through a collaborative effort of foundations, corporations, and other funders. Shared gifting is a type of participatory grantmaking with a plethora of benefits.

- It is a creative way to operationalize action;
- It offers a process that engages those with the most experience and gives them the authority to make decisions about how funding gets distributed;
- It is a way to advance and operationalize equity;
- It builds knowledge-sharing and creates awareness of others' work in the region, increasing solidarity and a feeling of collective ownership;
- It provides partnering opportunities;

- It is a great way to get support from multiple funders and at a funding level where some program managers have the autonomy to support without board approval; and
- It is an easy way to distribute the funding load across many contributors and is a great way to bring new funders to the table to raise awareness of the work.

Following is an example scenario for the process of shared gifting. Networks Weavers and the Environmental Literacy Collaborative invite ten environmental literacy teams to develop a project idea and participate in the shared gifting event. The team make-up may include formal and non-formal educators, curriculum developers, administrators, community members, students, etc. The Chesapeake Bay Program Education Workgroup helps recruit funders/sponsors to provide $10,000-$20,000 to support "a seat at the shared gifting table" for each environmental literacy team. Each team presents their project idea to the other teams at the event. Time is allocated for teams to ask questions and give feedback, adapt project concepts, and, where possible, form partnerships to strengthen project concepts. After this, the teams distribute the funds to support the most compelling projects. The funding distribution looks like this: Each team "receives" $20,000 at the event's start. All teams are guaranteed to leave the event with at least $5,000 to support their project idea. Before leaving the event, they must "gift" the remaining $15,000 to support one or more of the other project ideas.

(Note: The shared gifting event could be rolled out earlier, in areas where relationships are currently well established.)

<u>Environmental Literacy Collaborative</u>

1) The activities described above for the Partnership should continue into Years Three-Five.
2) If interest is there, formalize and promote the Environmental Literacy Collaborative.
3) Develop advocacy materials such as petitions that can be distributed by the Network Weavers and Influencers to the decision makers.
4) Raise awareness and generate interest in the Shared Gifting event.

<u>Network Weavers</u>

1) Continue to engage in the district level activities described above, such as identifying opportunities to support and build connections with new educators, sharing lessons learned, and facilitating mentor-like relationships among educators to advance learning.
2) Raise awareness and generate interest in the Shared Gifting event.

Network Influencers

1) Continue to engage decision makers, identify those most receptive to addressing changes to the standards of learning and policies, and arm them with targeted information and resources, including advocacy materials, so they can easily be champions for change.
2) Connect like-minded decision makers at Level 3 and build connections with Levels 2 & 1.

## Appendix I: Members of the Regional Outdoor Learning Network Advisory Team

In April 2020, the Education Workgroup hired Local Concepts LLC, a social enterprise consulting firm, to work with a subset of the Chesapeake Bay Education Workgroup called the Regional Outdoor Learning Network (ROLN) Advisory Team. Following are the members of the Advisory Team and their organization.

| | |
|---|---|
| Tom Ackerman | Chesapeake Bay Foundation |
| Tara Drennan | Chesapeake Bay Trust |
| Shannon Sprague | National Oceanic & Atmospheric Administration |
| Elise Trelegan | National Oceanic & Atmospheric Administration |
| Kacey Wetzel | Chesapeake Bay Trust |
| Olivia Wisner | Chesapeake Research Consortium |

## Appendix II: Summary of Interviews

**Informing the Development of a Regional Outdoor Learning Network**
**Summary of Interviews**
Produced by Local Concepts, LLC
for the Chesapeake Bay Program Education Workgroup
Submitted October 2020

**(complete document follows)**

# Informing the Development of a Regional Outdoor Learning Network

## *Summary of Interviews*

Produced by Local Concepts, LLC
for the Chesapeake Bay Program Education Workgroup
*Submitted October 2020*

**Chesapeake Bay Program**

***Science. Restoration. Partnership.***

LOCAL CONCEPTS

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## Project Background

Leadership of the Chesapeake Bay Program Education Workgroup is assessing if a regional outdoor learning network would 1.) increase communication across partners and local implementation networks to support environmental literacy, including more and better designed MWEEs, and 2.) increase the number of teacher-supported systemic environmental literacy programs occurring in priority school districts.

In April 2020, the Education Workgroup hired Local Concepts LLC, a social enterprise consulting firm, to conduct a landscape assessment informed by a set of interviews, focus groups, and surveys of various stakeholders. This report summarizes the interview findings and lays out next steps for completion of the landscape assessment process.

Starting in April 2020, Local Concepts convened a leadership group of the Chesapeake Bay Program Education Workgroup to clarify the purpose of the interviews, identify the people to be interviewed, and to develop interview questions. Interviews were designed to uncover each interviewee's perspective about the Education Workgroup as well as the interviewee's organizational goals and value propositions; capacity, skills, and assets; audience, partners, and communication pathways; and their ideas on functions for a new or adapted network. Interviews also informed the design of the focus group sessions.

Interviewees were selected to gain perspectives from leaders of existing networks or multi-stakeholder initiatives in the Chesapeake Bay watershed states including Delaware, Maryland, Pennsylvania, Virginia, Washington DC, and West Virginia. Other criteria included people with 1.) varying degrees of involvement in the Education Workgroup, 2.) varying levels of Meaningful Watershed Educational Experiences (MWEEs), and 3.) different geographic perspectives (local, state, multi-state/regional, and national). Between June and July 2020, Local Concepts conducted 21 interviews using Zoom or Google Meet. Appendix A lists the key informants and the dates they were interviewed and Appendix B lists the key informant interview questions.

This document summarizes the interviewees' perspectives on the existing conditions that support environmental literacy and, looking ahead, their recommendations for advancing environmental literacy. During the interviews, many useful resources, stakeholder names, and organizations were shared. These have been captured in Appendix C-E.

## Current Conditions Supporting Environmental Literacy

### Organizational geographic reach, audience, skills, and assets

The people interviewed represent organizations that span different geographic scales from local to multi-state to national. Most provide some support services to formal educators, which include PreK-12 teachers, and/or non-formal environmental educators,[9] and most see their organization as some type of network builder. The exact purpose of the networks vary, but many offer professional development, resources, and communication pathways. Some host annual conferences or other regular gatherings for their stakeholders.

The MD State Department of Education, VA Resource-Use Education Council, and MD Sea Grant all noted having a deep understanding of science, pedagogy and education standards and how to incorporate environmental education across disciplines. The Maryland Association for Environmental & Outdoor Education (MAEOE) and the Pennsylvania Association of Environmental Educators (North American Association for Environmental Education affiliates) offer environmental education certificates. Some groups seemed particularly invested in resources provided by the Chesapeake Bay Program and regularly use the Chesapeake Bay Program's MWEE-related resources for programming and the Environmental Literacy Indicator Tool (ELIT) to guide their work plan and as an assessment tool.

Some groups focus on green school-related programs. These groups include: DC Office of the State Superintendent of Education, Maryland State Department of Education, and MAEOE. Some groups provide advocacy and/or policy support such as Project Green Classrooms, Upstream Alliance, and DC Environmental Education Consortium. The state departments of education, Project Green Classrooms, and the VA Resource-Use Education Council all noted that they are connected to the decision makers such as the governors and agency leads.

A couple groups, such as the Chesapeake Bay Program Diversity Workgroup and MD Sea Grant, provide technical assistance and resources to advance diversity, equity, inclusion and justice (DEIJ) practices.

For a complete list of the organizations interviewed, their geographic reach, target audience, and skills and assets, see Appendix C.

### How organizations support environmental literacy

When those interviewed were asked whether their organization supports inquiry-based learning, outdoor learning, project-based learning, place-based learning, supporting stewardship and/or

[9] Throughout this document we use the words "formal" or "non-formal" educator to respectively refer to teachers in PreK-12 or environmental educators that often work for non-profits or government agencies.

civic action, 21st-century skill-building, MWEEs, or green schools, virtually all said they are engaged in most or all of these methodologies or instructional strategies either directly or indirectly by supporting practitioners on the ground. Some methods or strategies might not necessarily be identified by name in their work, but they are implementing components or aspects of it.

The farther you get from the Chesapeake Bay, the less formal MWEEs seem to be happening. In West Virginia, one informant said MWEEs are only being pushed by the new Outdoor Learning Network while another said that two counties are participating in the MWEE program and that the Ohio River Conservation Association has long exposed students informally. The Bay is not a topic people connect to in West Virginia and in other locations as you get closer to the headwaters, especially where there are no state mandates to support the Chesapeake Bay Agreement.

In Pennsylvania, Chesapeake Bay-specific language of the MWEE creates a barrier to implementation since half the state is out of the watershed, so they adapted the language to say a "meaningful outdoor education experience". The Delaware state-level informant said there are pockets of MWEE attempts happening but they are not necessarily implementing all the MWEE criteria, although the networks in the state seem interested. Virgina is very effective in all of these spaces, with special emphasis on place-based and project-based learning. Green school initiatives are their weak spot; there is not a lot of science leader ownership since facilities are involved. Maryland stands out among the states and appears to have advanced MWEE implementation with a majority of districts incorporating a MWEE in at least one grade.

### Existing capacity for students to graduate environmentally literate by 2025

When interviewees were asked whether existing capacity is sufficient to ensure that all students graduate environmentally literate and have the opportunity to learn outdoors by 2025, some informants were hopeful and positive, but most were pessimistic. Overall there seems to be insufficient capacity at the regional level, but there are glimmers of hope at the state-level and locally where it is embedded in the curriculum and part of a school district's strategic plan. People from Pennsylvania, Delaware, and Virginia shared they are underfunded and in many places environmental literacy is not part of the conversation. COVID-19 is exacerbating the situation, although some respondents spoke of the opportunities to expand outdoor education given diminished infection rates outdoors.

Since West Virginia did not sign on to the Chesapeake Bay Agreement, no one in the state is talking about students graduating environmentally literate, but there are pockets of environmental education and many places where students are not exposed.

Respondents from Pennsylvania were only slightly more optimistic. There are tenuous circumstances around current standards and lack of understanding of the environmental literacy plan and state obligations to the Chesapeake Bay Agreement related to environmental literacy.

One person shared that "It needs to be built into the system, like it is in Maryland." There is a need for more top-down support and legislation from cabinet-level staff (beyond secretary level). One informant said she would not put her money on reaching this goal, but right now, with COVID-19, there is a great opportunity for more outdoor education. She is piloting an outdoor lab class at her university this semester where she trains pre-service teachers. Some non-formal educators in Pennsylvania reported finding their sweet spot to advance environmental literacy by aligning with Green Futures and the Green Schools Network. Another informant said schools had too much to deal with already with basic literacy, and that it comes down to funding and a huge discussion about education in general.

Folks from Maryland expressed the most cautious optimism. There is top-down support, it is stated as a priority, and it is a graduation requirement, but there is a variance in quality and it is not evenly or equitably delivered across school districts. Furthermore, not all teachers know it is a requirement or how to teach it, and there is no assessment. Informants were optimistic about the capacity to reach this goal as long as efforts are maintained and enhanced. They are making progress but acknowledged that probably not EVERY student five years from now will graduate environmentally literate. There is still a need to build capacity, especially at the district and school level since schools have such drastically different needs and resources.

At the state level in Maryland, they are creating a template for what districts could put in their environmental literacy plans to provide some continuity and to encourage school districts to write environmental literacy plans. MWEEs are ramping up and more people are trying to get teachers trained. One informant mentioned the need for more virtual work and more youth voice. MD Sea Grant and their educator network is well-resourced and positioned to do more.

There are environmental education standards embedded in the Next Generation Science Standards so the Delaware informant felt students should graduate literate. However, there is nothing in their regulations regarding outdoor learning and Delaware state education agency priorities are K-3 reading and middle school math.

In DC, environmental literacy needs to be embraced at the school level. They have one large lead education agency (DC Public Schools) educating 55% of the student population. There are 68 charter schools that educate 45% of students. Each of those school systems count as its own lead education agency. The DC Public School science director is supportive of MWEEs, but implementation is not required and is left at the discretion of the individual school, and oftentimes, at that level, it does not seem important. Getting buy-in at the individual school level is critical. The Chesapeake Bay Foundation offers a principal's course but there does not seem to be much interest. It is very difficult to get all the DC public and charter school administrators on the same calendar so there is no unifying meeting. Knocking on each individual door is the biggest challenge and there is no streamlined mechanism to communicate (e.g. you can't email all science teachers across either system).

In Virginia, environmental literacy is embedded in curriculum from kindergarten and connected to biology, so they are being exposed and it is part of state standards. Outdoor experiences

(lessons and support) are provided but it is up to teachers to implement. At times environmental literacy is part of the conversation, but often not a priority.

### School district focus on environmental literacy

Environmental literacy is often not a focus for school districts. There is a need to build the capacity of teachers to be environmentally literate, but this needs to be prioritized by those that create the policies at the local, state, and national levels. Communication and resource sharing among science teachers is very disconnected within districts, states, and across the region. Even within science-based coalitions and education associations, environmental literacy is often not a focus. Recommendations are for the ELIT to better sync its reporting with the school district's Environmental Literacy Plans and for the ELIT Summit to occur every year where one year it focuses on schools and the next on leadership.

### Chesapeake Bay Program Education Workgroup assets and constructive critique

Of those interviewed, 67% said they are active in the Chesapeake Bay Program Education Workgroup, 11% said that they are involved somewhat or are not sure, and 22% are not active. Many strongly value the Education Workgroup, especially its efforts to align the broader community, share strategies and resources, foster new learning and connections, and drive action. We heard from several folks that they value the bridges the Workgroup has built between formal and non-formal education communities, the prioritization of the next generation of stewards, and their role onboarding new stewards into the environmental education community.

Many shared that connection to the Workgroup provides validity to their work because the Workgroup is connected to a larger effort working on regulatory issues at state and federal levels, and it enhances understanding of the Chesapeake Bay Agreement and how that plays out in state education agencies and environmental literacy plans across the region. The Workgroup's regional goals and strategies also help states, organizations, and school systems move their own goals, programs, priorities, and plans forward, thus increasing efficiency, effectiveness and impact.

Some constructive critique put forth was that working at a regional scale can be difficult since some portions of states fall outside of the Chesapeake Bay watershed. A couple people suggested more follow through between meetings and found last year's state-by-state phone calls very helpful. Some folks find the Workgroup essential but lament that it's not mandated for them so they can only attend as their schedule allows. One person requested they could use more turn-around time for deliverables requested by the Workgroup. Some people shared that the Chesapeake Bay Program processes are cumbersome, but they appreciated the Education Workgroup's effort to mitigate that. There was a suggestion to further focus and reduce the length of meetings and to increase communication about the background reason for the activities

and tasks assigned to members. One person was concerned that the Workgroup seems to be driven more by a process from the outside (e.g., grant reporting) or administrative requirements rather than collective goals. Another informant thought all Bay Program Workgroups could share and integrate goals more, increase cross-pollination, and leverage areas where there is synergy.

Specifically for DC, one interviewee offered that it would be helpful to have the Workgroup more involved as a voice advocating to restore the budget that provides funding for environmental education, and to remind DC decision makers about the Chesapeake Bay Agreement.

## Moving Forward - Summary of Network Recommendations to Advance Environmental Literacy

### Network focus, geographic scope, & services

During the interviews people were asked if a network was needed to advance environmental literacy and what services or functions it might offer. The majority of those interviewed (90%) agreed a network could help advance environmental literacy, but its goals need to be laser-focused, avoid duplicating current efforts, and instead focus on strengthening the whole and filling gaps. Many people recognized that there are numerous existing networks but that these networks do not currently collectively communicate and they could be better aligned.

The majority of those interviewed recommended that any network should focus more broadly on environmental literacy and that more narrowly defined focus areas (e.g. MWEEs) could be defined over time. In addition, particularly for states other than Maryland, one should avoid using terms like the Chesapeake Bay or "the watershed" when identifying a geographic scope as many states do not fall within the watershed or readily connect with the Chesapeake Bay, nor do they receive support from Chesapeake Bay-related programs. Some interviewees suggested it would be helpful to collaborate more with green school programs and initiatives because they have the added benefit of coupling environmental literacy with economic outcomes, which decision makers may find particularly appealing. Specifically in Pennsylvania, one person suggested aligning with initiatives like Eco Schools, GreenFutures sustainability plan, and the Green Schools National Network.

Many interviewees shared that DEIJ needs to be prioritized in the work of advancing environmental literacy, and any network that is created should prioritize reaching entities that are not already involved. Groups like MD Sea Grant and the Chesapeake Bay Program Equity Workgroup may be well-positioned to advise on this process.

No matter which type of network(s) is ultimately developed, many underscore the importance of providing funding to staff the network and guidance on ways to build a network. A synthesis of the interviews revealed the need for two types of networks: 1) a multi-state network for decision makers, and 2) a state or district-wide network for educators. Following are more specific recommendations for each type of network.

## *Decision Maker Network*

Systemic implementation of environmental literacy in schools will ultimately be limited without buy-in from decision makers. A regional (multi-state) network designed specifically for decision makers to share approaches, develop recommendations, set policies and standards, and to direct funding would help to facilitate more peer-to-peer influence, top-down support, and continuity within and across states. One person interviewed stressed that a decision maker network needs to be regional in scope to lend the authority needed to bring in the higher ups (e.g., the governor's cabinet leaders). Participation across states could lead to a mandated Environmental Literacy Plan for all school districts and/or legislative action that could make more funding available to get kids outside and learning about the environment.

Superintendents, school board representatives, policymakers (local, state and national), state education agencies, US Department of Education, and other influencers, especially those with a background in science, were suggested as participants for a decision maker network. But because the way schools are governed is markedly different in each state, exactly who is invited will vary by state. For example, in West Virginia, the WV School Board Authority drives the work of the County Board of Educators. If environmental literacy is a priority for the WV School Board Authority then it will trickle down to the County Board of Educators. The County Board of Educators also have a lot of power in West Virginia as they hire the superintendents and make sure policies are implemented at the local level. Whereas, in Pennsylvania there are over 500 independently run school districts, and in Virginia, where each locality has authority over their schools.

## *Educator Network*

Strong connections and partnerships between formal and non-formal educators was repeatedly emphasized as critical for advancing environmental literacy. Many shared that formal educators are often not environmentally literate so environmental education often comes from the non-formal educators. Currently, though, non-formal educators are spread thin and have limited capacity, so it is important to not only support non-formal educators, but it is also important to build the capacity of formal educators so that schools are less dependent on non-formal educators. A network(s) designed for formal and non-formal educators that offers professional development, communication pathways and ways to connect, and facilitates collaborations was frequently suggested. This type of network(s) should include formal and non-formal educators, administrators, and those delivering pre/in-service education and professional development, among others.

Many of those interviewed shared that it is important that any network should prioritize helping schools reach their goals rather than ask them to adapt their goals to reach the Chesapeake Bay Program goals or other environmental literacy goals. One successful example of this is led by the National Aquarium. The Aquarium created a program called "What Lives in the Harbor?" and

because this program aligns with the Baltimore City School System curriculum and standards, every 6th grader in Baltimore participates.

An educator network(s) should be careful not to recreate existing models, but should instead strengthen and expand existing successful models. For example, the Virginia Resource-Use Education Council (VRUEC) has been gaining recognition within schools and is being asked to develop MWEEs and provide teachers with training, but VRUEC could use more professional development support for their teacher trainers. Or in West Virginia where MWEEs are being adopted but, at this point, only on a teacher-by-teacher basis. Strategic and expanded support from an educator network(s) would lead to more success stories like what is happening in Maryland where environmental literacy is a graduation requirement and there are strong environmental literacy partnerships.

*Recommended Network Functions*

Some specific ways interviewees shared that an educator network(s) could add value are by offering professional development across the board; pre-service teachers, educators and those facilitating professional development opportunities are all in need of staying up to date on current trends in environmental education. It will be important to create programs that raise awareness of environmental literacy standards for all teachers across sciences and other disciplines and build the capacity of teachers to do environmental education themselves instead of always having to rely on non-formal educators. Developing workshops with content that can be readily implemented in the classroom and including ways to incorporate cutting edge ideas and science-driven data were also suggestions made by interviewees.

An educator network(s) could provide technical support for incorporating environmental literacy in curricula, lesson plans, and other activities. Some people shared that their organizations do this type of work and may be able to provide some expertise. These include the DE Science Coalition, VA Department of Education, and the VA Resource-Use Education Council.

An educator network(s) could increase communication pathways across schools, districts, and networks to ground truth ideas, leverage expertise, and to share best practices, successful programs and other resources. Sharing resources like the online Chesapeake Bay Program MWEE course and the NOAA-led Ambassador's Course. A complete list of where the interviewees mentioned they go for resources, research, and trainings are provided in Appendix D.

A network(s) could host or co-host gatherings to bring people together to build stronger connections among districts, schools, and their environmental education partners. MD Sea Grant offers a good example of some best practices this type of network could emulate. They have created a virtual network for schools involved with aquaculture so they can communicate across schools and share ideas and best practices. Another example that could be further studied as a strong model for effective network development around environmental and watershed education is The Alliance for Watershed Education of the Delaware River. This is a regional initiative of twenty-three partnering environmental education centers in Delaware,

Pennsylvania, and New Jersey that is funded and supported by a multi-million dollar grant from the William Penn Foundation. Partners share best practices, conduct joint programming, and work to increase collective impact within the watershed and its communities. Other skills and assets offered by the organizations interviewed are listed in Appendix C and could benefit any forthcoming network.

An educator network could also provide a way for environmental educators to review and weigh in on a state's education plan and ways to integrate Chesapeake Bay Program Education Workgroup goals into those education plans and their organizational work plans.

Access to funding was mentioned as a high priority need by most of those interviewed. Funding (including Title II funding) is critical to support teacher training, professional development, and for things like childcare and transportation. An educator network(s) could create space to leverage existing know-how and to share creative funding ideas to help reduce costs for environmental education programming. Sharing example programs like the grocery bag program in DC where grocery store customers are charged $0.05 for each plastic grocery bag they use. That fee then helps to fund the 5th grade MWEE.

A statewide or local educator network could also work with a regional decision maker network to help ensure funding is appropriately allocated at the district or community level while still staying connected to regional goals. This might include allocating more capacity building grants, like those provided in Lancaster County, PA, which include community in environmental education and support teacher education at the universities and colleges.

Since environmental literacy is often not the focus for the decision makers, who are often more focused on SOLs or the nuts and bolts of running a district, environmental literacy is often perceived as "an extra ask". Critical for swaying decision makers, interviewees identified a need for more evidenced-based data and evaluation processes to demonstrate to decision makers the importance of environmental education in meeting education standard goals. An educator network(s) could compile the needed research and data and share it with the decision makers across the region, perhaps through a decision maker network.

### *Recommended Geographic Scope*

Many noted that the level of environmental literacy awareness, engagement, and connectivity among schools varies greatly both within and across states. For example, in Virginia, some districts are well connected and others are not, some have active superintendent meetings and others do not. Some areas, particularly as you get closer to the City of Richmond, may discuss environmental literacy but it is often not a priority for those schools located in the headwaters or outside of the watershed. This lack of connectivity is common in other states as well. A local or statewide network(s) for educators could help bridge these gaps that are commonly experienced.

Specific recommendations for a geographic scope for an educator network were mixed between statewide and local or school district-level. A statewide network of educators should ideally include all school districts as a way to share best practices and build state-level support, but this will not be a one size fits all model. Many noted that this will be easier in states with fewer school districts, like Maryland, than in states with hundreds of school districts, like Pennsylvania.

More locally driven networks at the superintendent's school district level could focus on connecting formal and non-formal educators so they can work closely together to identify place-based strategies for getting students outside and better connected to their communities. Environmental literacy that focuses on a community has the benefit of reduced transportation costs and it empowers students to build civic awareness by addressing issues in their own communities, backyard, and schoolyard. This tactic could be especially useful now during COVID when kids are at home and outdoor activities are encouraged. It can also be a way to generate community sponsorships for environmental education.

Interviewees shared that there is also value in creating periodic opportunities to engage across states. It was specifically noted that urban-based environmental educators could benefit from connecting with one another since teaching environmental education in urban areas often takes a unique approach and that sharing approaches like that of the Nature Near School project that connects students to a green space within a five minute walk from school, could be beneficial.

Interviewees were also asked about the people and organizations they know that are active in their current networks, missing from their current networks, or are recommended for any future network. These names and organizations are listed in Appendix E. This list will serve as an important reference for any future effort to create a network(s) or enhance an existing network.

### Diversity, equity, inclusion, and justice considerations

Many interviewees brought up the importance of DEIJ issues as they pertain to advancing environmental literacy on a number of fronts. The lack of racial diversity is problematic for many. It will be important as a network develops that there is diverse racial (and other dimensions of identity and geography) representation among leadership, partners, and participants. Another critical step is to collectively define a DEIJ analysis as it relates to environmental literacy and how that analysis translates into action across processes, governance, programs, communications, network functions, resource allocation, etc.

The Chesapeake Bay Program Diversity Workgroup could do more cross pollination with the Education Workgroup to increase conversation, become more accessible as a resource, and build supports and strategies. There is also a desire from many to think outside the box about who to connect with and bring into the network. An expansion of the definition of environmental education and systems analysis of other sectors including transportation, healthcare, and housing could expand partners and audiences. "Where there is inequity it's not in silos," one respondent offered. One organization expressed a desire to become more meaningful and

relevant to more diverse groups, but they are not quite sure how to do this outside of trying to increase diverse representation. Professional development in this realm could help to educate, align, build trust and relationships, and leverage resources. Some people expressed interest in increasing Latinx, migrant, and refugee involvement. We also heard that low income students often do not get access to science and they need to be prioritized. Interviewee's shared ideas on people and organizations that are missing from their current networks and should be considered for any future network. These names are listed in Appendix E.

One promising practice shared is that departments of natural resources and state parks are at times offering multi-lingual presentations, tours and programs.

### Existing school networks to consider moving forward

Formal education systems maintain network-like structures at multiple levels: state education agencies, Boards of Education, state superintendents, district superintendents, district environmental education coordinators, school principals, educators, support staff and interest groups. Each of which have their own charges and are supported by different organizations and agencies for communicating and meeting regularly, sharing best practices, and professional development. Some examples shared include the Public School Superintendents' Association of Maryland, WV Association of School Administrators, National Association of Secondary Principals, the VA Science Education Leadership Association, and meetings of science supervisors. These groups cover different geographic areas, from local to national, and many host a conference, website, and an email distribution for members. Many of these groups do not explicitly focus on environmental literacy but some of those interviewed suggested they may be appropriate for hosting workshops, conference sessions, or forming committees focused on environmental literacy. Some of the networks and initiatives mentioned that support school educators and staff and are also focused on environmental literacy, include North American Association of Environmental Educators (NAAEE), the Superintendents' Environmental Education Collaborative, MAEOE, and the Green Schools Conference & Expo.

Each state is unique in their network structures and what might have worked to advance the structures needed to implement systemic environmental literacy in Maryland will not track to Pennsyvalnia, which has minimal networks and 501 districts with total local control. In Pennsylvania the Intermediate Units, regional educational service agencies that contract with school systems to provide professional development, bind the districts so they can work together. Both Pennsylvania informants suggested the need to involve them. Environmental literacy is an "extra ask" in many school systems and multiple informants spoke of the need to provide concrete evidence and data to make the case for more environmental education. In VA, the VA Resource Use Education Council is working to do more networking with non-formal and formal educators, but the non-formal educators are spread so thin that it can be difficult. Some regions of Virginia have interactions between divisions, but it's not consistent because each locality has local ownership.

## Potential Interest in providing network leadership, skills and organizational assets

The majority of those interviewed expressed interest in providing leadership to some type of network although many mentioned hurdles such as capacity, time availability, and funding. Appendix C lists each organization, their skills and assets, and whether they specifically expressed interest in providing leadership to a new network. Those organizations denoted in Appendix C with an asterisk (*) expressed an interest in providing leadership. A number of people suggested that it would be helpful if the leadership position were funded (not a volunteer position) and filled by appointment or invitation and that the leadership role should tie back to current job descriptions or existing organizational priorities. For some, there was concern that the same people are often called on to provide leadership so reaching beyond that typical audience could be helpful. Keep in mind, whomever does serve in a position of leadership, it needs to be someone with strong facilitation skills to ensure all voices are heard. And since many educators and administrators are especially busy during the school year, it would be best to time network activities in the winter and summer when demands are lower. One informant thought ideally a superintendent and environmental educator should serve as co-chairs.

## Perceptions of the Education Workgroup providing leadership for a network

Forty-two percent of interviewees thought it appropriate for the Education Workgroup to provide leadership for a network while 58% thought some other arrangement could be more beneficial. Depending on the goals of the network, many thought the Workgroup could do a good job given their connections to the greater watershed and the Chesapeake Bay Agreement, their history, capacity, expertise, and strong reputation, especially with regards to their policy work and ability to take action. However, the Workgroup would need to get more representation from state-level environmental education agencies, depending on the goals of the network. Some folks felt that since there is already existing infrastructure and since the Workgroup has to exist under the Chesapeake Bay Agreement, why not build out and strengthen pieces of it?

There is a desire from several states to help push their decision makers towards what Maryland has done, with more top-down prioritization and integration into environmental literacy plans, curriculum, standards, and graduation requirements. Clearly this is in line with the Workgroup's mission and further analysis can help reveal gaps in perception of workgroup work plans, communication(s) structures and strategies, change theories, assets, and needs and progress assessments. One representative from the state education agency in Pennsylvania suggested leadership come from cabinet-level policy offices or from a legislative committee and liaison's involved with the Workgroup could help build broad-based support and collective muscle.

Many also felt that it would be valuable for a network to operate independently of the Workgroup but to involve and integrate the Workgroup. It is important to have other and new perspectives and some autonomy. This would help increase inclusion of regions in states not in the watershed to advance environmental literacy across the states. One suggestion was that groups that are more generally nature-based (e.g. The Audubon Network) could promote

environmental literacy for all students. It could also be powerful to encourage leadership at the local level and the Education Workgroup could bring in the Bay Program perspective and their regional goals could serve as a guide. It is also important to recruit more diverse leadership and voices than what is currently provided by the Workgroup.

There have already been some initial conversations around reconvening Mid-Atlantic NAAEE affiliates who could provide a backbone for a learning network. A couple informants spoke of engaging organizations that already have success, attention, funding, infrastructure, leverage, and communication(s) structures in place (e.g. NOAA, MAEOE, University of Maryland Sea Grant).

## Next Steps

In October and November 2020, Local Concepts will host up to six focus groups to inform the development of a decision maker network and an educator network. The current goal is to complete a summary of the focus group sessions by November 30, 2020. In addition, Local Concepts will work with the Education Workgroup leadership to develop and deliver surveys to school district personnel and environmental education partners. All the above will inform the landscape assessment which will be delivered by December 31, 2020.

# Appendix A

## Key Informant Interview Questions

The following document lists the interview questions that were presented to 21 environmental educators and other stakeholders in June and July of 2020. The questions, developed by some leaders of the Chesapeake Bay Program Education Workgroup and Local Concepts LLC (a consulting firm), were designed to better understand the interviewee's perspective of the Chesapeake Bay Program Education Workgroup as well as their organizational goals and value propositions; capacity, skills, and assets; audience, partners, and communication pathways; and their ideas for network services and functions.

**INTERVIEW QUESTIONS**

**Education Work Group**
Before digging into questions about your network and organization, we have a couple of questions to help us get a better understanding of your experience with the Education Work Group.

- Are you active in the Chesapeake Bay Program Education Workgroup? (If they are not connected to the Education WG then skip the next question.)

- If yes, why? (e.g. Is it part of your organization's strategic plan?) What value does the Education WG bring to you and your organization? What would improve your participation and/or leadership in the Education WG?

**Goals & Value Propositions**
From the interview we want to better understand the network's mission, goals, and values, and where there are shared values with the Education Workgroup.

- Tell me a little bit about your NETWORK. What is your NETWORk's mission/goals/values?

**The Audience, Partners & Communications**
From the interview, we want to understand existing learning communities, networks, communication pathways, and partners. We want to uncover who is and who is not being reached and how to enhance communication among groups and across geographic scales.

- Who is your NETWORK'S target audience? What services do you provide for them?

- Does your NETWORK work in any of the following spaces and if so describe (inquiry-based learning, outdoor learning, project-based learning, place-based learning, supporting stewardship and/or civic action, 21st-century skill-building, MWEEs, green schools)

**Organizational Skills, Assets, & Capacity**
From the interview, we want to better understand organizational capacity and interest in participating or providing leadership in the ROLN. We also want to understand the skills and assets of each organization.

- What does your NETWORK (insert name of the network listed in column C) do really well? What are you most proud of?

- Where do you or your colleagues go for information, resources, and training?

- What does your organization need to support and/or build capacity to advance environmental literacy and/or MWEEs?

- What elements of your environmental literacy and/or MWEE programming is gaining traction/progressing with your communities?

**Network Oriented Questions**
The next series of questions is focused on understanding how people connect, what networks currently exist, and whether there might be value in creating a network that supports the practitioners by advancing learning and implementation (e.g. sharing best practices, increasing professional development). This approach would be different from the EDWG because the WG is more focused on policy and government-related.

- Who are the environmental educators, practitioner state leads, or networks that are advancing environmental literacy? Who is missing?

- Are you active in environmental education networks? If so, which groups (e.g. Project Green Classrooms, state affiliates of the North American Association for Environmental Education)?

- How are school districts currently networked together (e.g., DE Science Coalition, content supervisor meetings, Superintendent meetings, etc.)? Is environmental literacy a part of the dialogue in any of these existing networks? If not, do you think a network focused on environmental literacy is needed for local school districts?

- Is this existing capacity sufficient to ensure that all students graduate environmentally literate and have the opportunity to learn outdoors by 2025? If yes, what are the most important elements that are going to get us there?

- Would a network that was developed to bring stakeholders together around environmental literacy and outdoor learning be useful?

- If yes:

a) Should this network be developed at the Mid-Atlantic region, state, or inter-district/intra-state scale? What might this look like in practice?

b) Should it focus broadly on environmental literacy? Or should it be more focused (e.g. one of the outcomes of the Chesapeake Bay Watershed Agreement's Environmental Literacy Goal which are student MWEEs, environmental literacy planning, and sustainable schools)? Why?

c) What services or functions should a state or regional network provide to add value and advance environmental literacy? (e.g. advance best practices, professional development, …. )

d) If this network was developed, do you see more value in it being run through the Education Workgroup, or as something independent of the Workgroup? Why?

- If no:
  What do you think would be more effective?

**Thinking ahead**

- What type of skill or asset might your NETWORK (insert name of the network listed in column C) offer to a state or regional network of practitioners and educators?

- Would you be interested in providing leadership to a state or regional network?

- Can you think of any hurdles that would deter your leadership or participation?

- Is there anything that would better enable you to participate?

- Are there any local groups and nontraditional partners that you know of that might be interested in being part of a regional or state network? Can you name 1-3 groups that we should connect with?

**Closing**

- Do you have any final comments/thoughts to share?

# Appendix B

## Key Informant Interviews

Leaders from the Chesapeake Bay Program Education Workgroup selected a group of people to be interviewed that would offer perspectives from the different states in the Chesapeake Bay watershed including Virginia, West Virginia, Pennsylvania, Delaware, Maryland, and Washington DC. Other criteria included 1) people with varying degrees of involvement in the Chesapeake Bay Program Education Workgroup, 2) those that represented other networks or multi-stakeholder initiatives, 3) people with varying levels of Meaningful Watershed Educational Experiences (MWEEs), and 4) those that could provide different geographic perspectives (local, state, multistate/regional, and national). The following table lists the interviewee's name, state, organization, and the date they were interviewed.

| Last Name | First Name | State | Organization | Scheduled |
|---|---|---|---|---|
| | | | | |
| Ackerman | Tom | Regional | Chesapeake Bay Program Education Workgroup | 6/25/2020 |
| Baugh | Don | MD | Alliance for Watershed Education of the Delaware River | 7/2/2020 |
| Bennett | Curtis | Regional | Chesapeake Bay Program Diversity Workgroup; National Aquarium | 7/2/2020 |
| Collard | Laura | MD | Maryland Association of Environmental and Outdoor Education | 7/9/2020 |
| Davis | Rebecca | DC | DC Environmental Education Consortium | 7/20/2020 |
| Fenwick-Judy | Vicki | WV | West Virginia Outdoor Learning Network Initiative | 6/29/2020 |
| Frederick | J. Adam | MD | Maryland Sea Grant College Program University System of Maryland | 7/10/2020 |
| Hammond | Teresa | WV | West Virginia Department of Education | 7/9/2020 |
| Jackson | Kirsten | MD | Maryland State Department of Education | 7/8/2020 |
| Kane | Andrea | MD | Queen Anne's County Public Schools Maryland | 7/7/2020 |
| Lutzow-Felling | Candace | VA | Virginia Resource Use Education Council | 7/15/2020 |

| | | | | |
|---|---|---|---|---|
| Manubay | Grace | DC | DC Office of the State Superintendent of Education | 7/13/2020 |
| Marcum-Dietrich | Nanette | PA | Pennsylvania Task Force | 7/27/2020 |
| Marsden | Matt | PA | Penn State University | 7/14/2020 |
| Maxwell | Kevin | PA | Anne Arundel County Public Schools Maryland (retired) | 7/6/2020 |
| Mead | Tonyea | DE | Delaware Department of Education | 7/8/2020 |
| Peffer | Tammie | PA | Pennsylvania State Dept of Education | 7/7/2020 |
| Petersen | Anne | VA | Virginia Department ofEducation | 7/10/2020 |
| Schultz | Ellen | PA | The Alliance for Watershed Education/Fairmount Water Works | 7/24/2020 |
| Slattery | Britt | MD | Project Green Classrooms | 7/29/20 |
| Sprague | Shannon | Regional | Chesapeake Bay Program Education Workgroup | 6/25/2020 |

# Appendix C

## Target Audiences, Skills and Assets

Following is a table listing the organizations or networks interviewed, their geographic reach, their target audience, and skills and assets they provide. If an interviewee expressed interest in providing leadership to a new network an asterisk (*) was placed after their organization's name.

| Organization/ Network | State | Target Audience | Skills/Assets |
|---|---|---|---|
| Chesapeake Bay Program Education Workgroup* | regional | Environmental educators: state and local | Professional development models<br><br>Partnerships with schools & student leadership<br><br>Resources: environmental education resources; MWEE training, facilitator's guide, & support with implementation<br><br>Network building |
| Experience Learning* | WV | Youth & teachers | Programs: outdoor education |
| Upstream Alliance | regional | Environmental education partners, youth & adults | Network building<br><br>Support partners and their campaigns<br><br>Build youth leaders<br><br>Programs: outdoor education |
| Chesapeake Bay Program Diversity Workgroup* | regional | Chesapeake Bay Program Workgroups and stakeholders | Technical assistance: integrating Diversity, Equity, Inclusion, & Justice (DEIJ)<br><br>Network building: Chesapeake Bay Program stakeholders<br><br>Internships |
| PA Department of Education* | PA | K-12 formal & non-formal educators, conservation districts, planning offices, migrant educators, and higher education | Professional development: teachers<br><br>Understand pedagogy, methodology and science<br><br>Network building: community, economic development & higher education |
| MD State Department of Education* | MD | Teachers, supervisors, district leaders, Chesapeake Bay | Professional development: teachers & supervisors |

| | | | |
|---|---|---|---|
| | | Program, Project Green Classroom, other environmental educators | Understand pedagogy and education standards and how to incorporate across disciplines |
| DE Science Coalition* | DE | Pre K-12 teachers | Professional development: teachers<br><br>Resources: curriculum<br><br>Assessment<br><br>Network building |
| WV Department of Education* | WV | Teachers, businesses, WV Chambers of Commerce, WV legislature | Relationship with decision makers (state superintendent of schools, governor)<br><br>Professional development: teachers (pre K-12) and preservice |
| Maryland Association for Environmental & Outdoor Education | MD | K-12, E-LIT coordinators, MD Department. of Education in support of Green School Program, Project Learning Tree state coordinators | Professional development: formal and non-formal educators<br><br>Resources: environmental literacy, green schools, environmental education certificate<br><br>Programs: outdoor education<br><br>Conference<br><br>Network building: formal and non-formal educators |
| VA Department of Education* | VA | Agency science leads & teachers | Professional development: teachers<br><br>Resources: standards, curriculum, and advice<br><br>Network building |
| Sea Grant* | MD | School districts, K-12 Teachers, higher education, and agricultural organizations | Professional development: teachers<br><br>Connection to research/science<br><br>Facilitation and organizing support<br><br>Programs: K-12<br><br>Plans: E-LIT, DEIJ |
| DC Office of the State Superintendent of Education* | DC | Teachers and non-profit education partners | Community of Practice: teachers, environmental educators<br><br>Professional development: teachers<br><br>Assessment: use state science |

| | | | |
|---|---|---|---|
| | | | assessment to serve as an indicator of environmental literacy.<br><br>Resources: green school (coming fall 2020) |
| Pennsylvania Association of Environmental Educators* | PA | PA state educators (several hundred members) | Professional development: educators (trainings, workshops, webinars), environmental education certificate<br><br>Network building: regional communications through monthly e-newsletters<br><br>Annual conference<br><br>State affiliate of the North American Association for Environmental Education |
| VA Resource-Use Education Council* | VA | Natural resource agencies with environmental education programs, nonprofit education providers, science specialists through the VA Department of Education (serve as conduit to divisions and schools), higher education - preservice training | Network building: environmental educators<br><br>Programs: environmental literacy programs<br><br>Professional development: instruction, curriculum, lesson plans<br><br>Resources: see website<br><br>Deep science knowledge and interdisciplinary integration<br><br>Strategic planning: using E-LIT tool<br><br>Strong connection to Governor & Secretary of Natural Resources |
| DC Environmental Education Consortium* | DC | Environmental educators & teachers | Programs: environmental education, DC Teacher's Night - showcase programming available<br><br>Advocacy support |
| Fairmont Waterworks* | PA | Environmental educators: leadership and frontline educators | Programs: environmental education<br><br>Network building |
| Project Green Classrooms* | MD | Educators: administrators, teachers, facilitators of professional development | Network building: environmental education partners<br><br>Resources |

| | | | |
|---|---|---|---|
| | | Decision-makers including those that set standards | Advocacy & policy recommendations |
| PA Task Force | PA | Educators: formal & non-formal | Network building: local partners, formal and non-formal educators<br><br>Professional development: educators<br><br>MWEE communication |
| ** Indicates interest in providing leadership for a future network.* | | | |

# Appendix D

## Resource Recommendations

Key informants were asked where they go for their research, training, and information. They provided specific resources organized below, but also spoke generally of their partners in State Education Agencies, in higher education doing cutting edge academic research, and scientists and science agencies who inform their work and support their professional development. Peer-to-peer connections and sharing were also viewed as critical, both with partners in formal and non-formal education. In addition, attending conferences and webinars, connecting to scientific literature, and engaging with other experts across a number of fields, were all deemed important pathways for keeping their knowledge base current.

**National**

- National Oceanic and Atmospheric Administration - Education Webpage
- North American Association for Environmental Education (NAAEE)
- U.S. Department of Education Green Ribbon Schools
- National Science Teachers Association
- Council of State Science Supervisors
- National Science Education Leadership Association
- National Academy of Sciences
- Council of Chief State Officers
- National Institute for Early Education Research (pre-5)
- Association of State Supervisors of Mathematics
- National Science Foundation
- Association of Fish and Wildlife Agencies
    - Project WILD
- Project WET
    - Educator guides
- National Association for Interpretation
- American Camp Association
- American Association for the Advancement of Science
- Association for Supervision and Curriculum Development
- Environmental Protection Agency
- Children and Nature Network
- American Educational Research Association Environmental Education SIG
- The National Association for Research in Science Teaching

**Regional**

- Chesapeake Bay Foundation

    - Education webpage
    - Meaningful watershed educational experiences definition
    - An educator's guide to the MWEE
    - Environmental literacy model
- Chesapeake Bay Program Education Workgroup
    - Bay Backpack
    - Other CBP workgroups and institutions involved in the workgroups
    - Training opportunities
- Choose Clean Water Coalition
    - Equity workgroup
- Southern Regional Education Board
- The Mid-Atlantic Center for Herpetology and Conservation

**Maryland**

- State Department of Education
    - Environmental Education
- MD Department of Natural Resources
    - Project Green Classrooms
- University of MD Center for Environmental Science
- MD Association for Outdoor and Environmental Education (MAOEO) (NAAEE affiliate)
- MD Association of Science Teachers
  Annual Conference
- University of MD Sea Grant
- Anacostia Watershed Society

**Pennsylvania**

- PA Fish and Boat Commission
- PA Game Commission
- PA Department of Conservation and Natural Resources
- Penn State University
- PA Amphibian and Reptile Survey
- PA Association of Environmental Educators (NAAEE Affiliate)
- The Watershed Institute

**Virginia**

- VA Institute of Marine Science
- VA Department of Forestry
- VA Department of Wildlife Resources
- VA Resource-Use Education Council

**Online Resources**

- Next Generation Science Standards
- United Nations 17 Sustainable Development Goals
- Buck Institute for Education
    - Project-based learning works (PBLworks)
- STEM Teaching Tools
- OpenSciEd
- Beetles - Science and Teaching for Field Instructors
- The Lawrence Hall of Science
- Nature Near My School Project

**Conferences**

- The Green Schools Conference & Expo
- Chesapeake Bay Program Education Workgroup's Environmental Literacy Summit (biennial)

# Appendix E

## Environmental Literacy Stakeholders

Key informants were asked 1.) who the important active stakeholders are, 2.) who might be missing, and 3.) who should be included in a network. Stakeholders are organized under these three headings by organization and individual.

* denotes multiple mentions from informants

### 1.) Active stakeholders

**National**

- NAAEE*
- NOAA*
    - Shannon Sprague, Bart Merrick, Elise Trelegan, and others working in the Chesapeake Bay Program Education Workgroup
    - NOAA Education Council
    - B-WET
- Project Wet
    - Jesse Kester, VP of Education
- National Estuarine Research Reserve System
- National Association Of Interpreters
- National Wildlife Federation
- Association of Zoos and Aquariums
- Association for Science Teacher Education
- National Association for Research in Science Teaching (NARST)
- Council of State Science Supervisors
- National Science Leadership Association
- Green Schools National Network
- Project Learning Tree Network
- American Camp Association
- National Science Teacher Association
- National Recreation and Park Association
- Leave No Trace Center for Outdoor Ethics
- Boy Scouts of America

**Regional**

- NAAEE regional affiliates*
- Chesapeake Bay Foundation*

- Mid Atlantic Marine Educators Association
- Chesapeake Bay Program
    - Chesapeake Bay Program Education Workgroup
- Sea Grant Marine Educators
- Chesapeake Bay Trust
- Chesapeake Bay Funders Network
- Active climate education regional community
- State education leaders
- State natural resources leaders
- Higher education leaders
- School district leaders
- Don Baugh, Upstream Alliance

**Delaware**

- DE Science Coalition
- Watershed Task Group
- DE Foundation Of Science and Math Education
- DE Teachers of Science
- Delaware Association for Environmental Education (NAAEE affiliate)
- DE Nature Society
    - David Pragroff
- University of DE Sea Grant
    - David Christopher

**Maryland**

- Project Green Classrooms and partners*
- MD Association for Environmental and Outdoor Education (NAAEE Affiliate)*
- MD State Department of Education
    - Kirsten Jackson
- National Aquarium
- Non-formal education groups that work with systems/districts - e.g. Shorerivers, Audubon Natural Society
- University of Maryland Center for Environmental Studies
- Washington College
- Individuals
    - Kevin Maxwell, Former County Superintendent
    - Melanie Parker, Anne Arundul Public Schools Coordinator of Environmental Literacy and Outdoor Education

**Pennsylvania**

- Stroud Water Research Center*

    - Steve Kerlin
- PA Department of Education*
    - Tammie Peffer
- PA Association for Environmental Education (NAAEE Affiliate)*
- Advisory Council on Environmental Education
- Agriculture Education
- Career and Technical Education
- State leaders including Office of Environmental Justice
- Children in Nature
- Building United (Philadelphia)
- Fish and Boat Commission
- Game commission
- Recreation and Park Society
- Pathways to Green Schools (Green Ribbon school program)
- Outdoor Afro
- Latino Outdoors
- County Conservation Districts
- Recreational providers and outfitters
- Friends of Groups including state forests
- Council of State Science Supervisors
- PA Department of Environmental Protection
    - Bert Meyers

**Virginia**

- VA Resource Use Education Council*
- VA Association for Environmental Education (NAAEE affiliate)*
- VA Association of Science Teachers*
- VA Science Education Leadership Association*
- VA Department of Education
    - Anne Peterson
- State resource agencies (Department of Wildlife Resources, DCR, Department of Forestry)
- Soil Water Conservation District

**Washington DC**

- DC Environmental Education Consortium (NAAEE affiliate)
    - Rebecca Davis
- Department of Energy and Environment
    - Watershed protection division
- Department of General Services (Recycling)
- Anacostia Watershed Society
- Food justice organizations and gardens (e.g. City Blossoms, DC Greens, US Botanic Garden, Washington Youth Garden)

- Clean Air Partners
- Casey Trees
- Office of State Superintendent of Education (OSSE)
    - Grace Manabay
- MWEE space: Nature Bridge, Alice Fergusson, Living Classroom
- Audubon Naturalist Society

**West Virginia**

- WV Department of Environmental Protection*
- Backbone partners of the Outdoor Learning Network
- Experience Learning
- WV Association of School Administrators
- WV School Board Authority
- Cacapon Institute
    - Frank Rodgers
- Potomac Valley Audubon Society
- WV Environmental Educators Society
- Math Science Partnership
    - Dr. Deb Hemler, Professor of Geoscience Education, Fairmont State University
- Trout in the Classroom
    - Brent Best
- Appalachian Power
- WV Department of Education
    - Science Coordinators
- State policy-makers
- Coal Industry
- The Ohio River Conservation Association
- Greenbrier River Watershed Association
- WV Land Trust
- State parks
- Appalachian Beekeeping Collective
    - Terry Giles
- Greenbriar Conservancy
    - Jeannie Porterfield

## 2.) Missing stakeholders

**Regional Perspective**

- Smaller nonprofits doing projects with specific schools
- Headwater states natural resources and State Education Agencies

- School system contacts for science and environmental literacy, social studies, career and technical education
- Marine educators
- Museums and other cultural institutions and the roles they play in Environmental Education to engage
- Decision-makers (county, district, school board, local government, state government, SEA's, etc.)
- Upper leadership for example the Superintendents Environmental Education Collaborative
- Eastern Regional Forest and Nature Schools (ERFANS)

**Delaware**

- Department of Natural Resources
- Mental health and professional health

**Maryland**

- National Park Service
- Local decision-makers

**Pennsylvania**

- Limited work with migrant and refugee children
- The way we organize resources within districts
- Central hubs (intermediate units (IU's) - hubs that provide professional development where school districts contract with them
- Scouting organizations

**Virginia**

- State Agencies
    - Some state agencies do not send representatives (VDH, VDOT)
- University preservice training for teachers
- Soil Water Conservation District

**Washington DC**

- Energy, Climate Change, Green Scheme

**West Virginia**

- WV Conservation and State Education Agency
- Access to teachers
- Coal companies
- The Hatfield and McCoy Trail

## 3.) Recommendations for who should be included in a network

**National**

- Outdoor Afro*
- Superintendents Environmental Education Collaborative*
- NAAEE*
    - Bruce Young
    - Sarah Boder
- ECO Schools USA
- Green Schools National Network

**Regional**

- Audubon Naturalist Society
    - Taking Nature Black Conference
    - Naturally Latinos Conference
- Chesapeake Bay Program Workgroups
- Interfaith Partners for the Chesapeake
- NAAEE State Affiliates

**General**

- Higher Education Research
    - Example Provided
- School system contacts/ teachers (including pre-service)/principals
- Superintendents
- Small business owners
- Soil & Water Conservation
- Extension offices
- Government Partners/Elected Officials
- State Education Agencies

**Delaware**

- Alliance for Watershed Education
- Partnership for the Delaware Estuary
- Advocacy Groups
    - Schuylkill Action Network
    - Coalition for the DE Watershed

**Maryland**

- MAEOE*
- Choose Clean Water Coalition
- Project Green Classrooms
- Baltimore Cities Connecting Children to Nature (BCCCN)

- Greater Baltimore Wilderness Coalition (GBWC)
- Bliss Meadows (Atiya Wells) - Urban agriculture In Baltimore and other Urban Farming/Ag Groups
- County level government leadership
- Sultana Education Foundation
- Chesapeake Bay Environmental Center
- ShoreRivers
- University of Maryland Extension
- Don Baugh
- Public School Superintendents' Association of Maryland

**Pennsylvania**

- PA Outdoor Network
- County Intermediate Units (IU's)
- Shaver's Creek Environmental Center partners
- PA Association of Environmental Educators (NAAEE affiliate)
- GreenFutures
- Intermediate Units (IUs)

**Virginia**

- Chuck English, STEM Director
- VA Science Education Leadership Association

**Washington DC**

- Rebecca Davis, DC Environmental Education Consortium (DCEEC)
- Cara Panino, Department of Energy and Environment

**West Virginia**

- Appalachian Beekeeping Collective
- Communities in Schools

## Appendix III: Summary of the Focus Groups

Informing the Development of a Regional Outdoor Learning Network:
Summary of the Focus Groups

Produced by Local Concepts, LLC for the

Chesapeake Bay Program Education Workgroup

*Submitted December 2020*

*(*complete report follows)

# Informing the Development of a Regional Outdoor Learning Network

## *Summary of the Focus Groups*

Produced by Local Concepts, LLC for the
Chesapeake Bay Program Education Workgroup

*Submitted December 2020*

Chesapeake Bay Program

*Science. Restoration. Partnership.*

LOCAL CONCEPTS

www.LocalConceptsLLC.com
info@LocalConceptsLLC.com

# Table of Contents

## Project Background

Leadership of the Chesapeake Bay Program Education Workgroup is assessing if a regional outdoor learning network could 1.) increase communication across partners and local implementation networks to support environmental literacy, including more and better designed MWEEs, and 2.) increase the number of teacher-supported systemic environmental literacy programs occurring in priority school districts. To inform their assessment, in April 2020, the Education Workgroup hired Local Concepts LLC, a social enterprise consulting firm, to conduct a landscape assessment, informed by a set of interviews and focus groups of various stakeholders.

In July 2020, twenty-one environmental literacy stakeholders from across the Chesapeake Bay watershed were interviewed to understand the need for and function of a network to advance environmental literacy. The majority of those interviewed agreed a network could help advance environmental literacy. Two types of networks were recommended to include different audiences and geographic scope:

1. A statewide or more local network for **formal and non-formal educators** for advancing professional development and to build connections and collaborations.

2. A regional (multi-state) network for **decision-makers** (superintendents, school board representatives, policymakers and other influencers) to share approaches and develop recommendations to set policies and standards of learning.

From September - December of 2020, Local Concepts held five focus groups and one interview to ground truth what was revealed during the first round of interviews and to further inform the development of the proposed networks. This report summarizes the focus group findings.

## Focus Group Process

The format for the focus groups was a 1.5 hour video Zoom meeting with the goal of 6-10 participants for each group. We ended up with anywhere from two to eight people for each focus group. Under the best circumstances it can be difficult to get formal educators involved in data collection during their work days, but add the difficulties of adapting to distance teaching under COVID-19 restrictions, and low turnout was to be expected. All focus group participants were identified by the Chesapeake Bay Program Education Workgroup leadership, and were selected based on their knowledge of decision making processes in school districts or their knowledge of incorporating environmental education in the classroom.

Four environmental educator focus groups were held to 1.) better understand the challenges and opportunities participants have experienced with environmental education in their work; and 2.) uncover their assessment of need and structure for an environmental educator network. The four environmental educator focus groups were further separated into two non-formal educator focus groups and two formal educator focus groups.

The non-formal educator participants included eight people representing federal parks and state parks located in Maryland, Pennsylvania, Virginia, and Delaware; and another group of four people that represented the soil and water conservation districts or the agriculture community from Maryland, Virginia, and Pennsylvania. The two formal educator focus groups included one group of two people representing Science Teachers Associations from West Virginia and Virginia; and the other group of two people representing school districts who were also from West Virginia and Virginia. A separate interview was conducted with a Pennsylvania Science Teachers Association representative who is also a formal general science and environmental science teacher.

Local Concepts also hosted one focus group of decision makers; that is, people that have influence over policies and priorities in school systems. The purpose of this focus group was to better understand 1.) how to build capacity for influencing and changing policies and standards to advance environmental literacy, and 2.) whether a network focused on decision making could help advance systemic environmental literacy. There were three people in that focus group. One was a superintendent from Virginia, the other a head of State College Friends School and previous principal of a public school in Pennsylvania, and the third person represented the North American Association for Environmental Educators.

See Appendix A for a complete list of people who attended each focus group.

In general, focus group questions used the following format: engagement questions about environmental literacy to introduce participants to one another and to make them comfortable with the topic of discussion; exploration questions to dig into challenges and opportunities with environmental education and how a network could advance environmental literacy; and exit questions to give people an opportunity to add in anything missed in the discussion. The questions were developed with guidance from the Chesapeake Bay Program Education Workgroup leadership team.

Each focus group session was recorded. Local Concepts provided a notetaker and a facilitator. The notes were summarized by the same people and themes were identified within and across the environmental educator focus groups. The same process was used for the decision maker focus group.

The following report is divided into a summary of the environmental educator focus groups followed by a summary of the decision maker focus group. These findings will inform a landscape assessment which will be completed by Local Concepts in the first quarter of 2021.

# Environmental Educator Focus Groups

## Overview

The purpose of the environmental educator focus groups was to 1.) better understand the challenges and opportunities participants have experienced with environmental education in their work; and 2.) uncover their assessment of need and structure for an environmental educator network.

In general we learned that while all the focus group participants personally prioritize environmental literacy they also share similar challenges implementing environmental education. The challenges expressed were sorted into the following recurring themes: 1.) lack of existing policies & prioritization with administration and in the standards of learning; 2.) the need for capacity building for both non-formal and formal educators; 3.) ensuring environmental education is framed in such a way that it is relevant to students, educators and administrators; 4.) retaining environmental education staff and ambassadors and preparing for succession of new ambassadors, and 5.) funding.

The idea for an environmental educator network designed to connect formal and non-formal educators and established shared goals resonated with both the formal and non-formal focus groups. Many expressed that a network designed to connect people, broadcast resources, offer professional development, and provide advocacy support would add value to their work and would help to advance systemic environmental literacy.

## Environmental Education: Challenges and Opportunities

### *Policies and priorities*

Systemic change requires environmental literacy be supported by state education agencies, boards of education, and superintendents; and then prioritized in the standards of learning and embedded into the curriculum. Without statewide prioritization and policies that support environmental literacy, implementation is going to be scatter shot, dependent on local organizations and individual champions (both formal and non-formal), and far from systemic. It was clear in the focus group discussions that there is often local support for environmental literacy, but broad statewide support and implementation is limited. Each state appears to be in

varying places in the prioritization spectrum. It was common to hear that some states are only prioritizing math and reading and science is not even seen as important.

In West Virginia environmental education is not prioritized at the state level and that lack of prioritization trickles down to local districts. West Virginia's legislature, their belief systems and mental models, and the state's focus on coal and natural gas industries, present myriad challenges for advancing environmental literacy in the state. One West Virginia participant noted that when policy makers don't believe in science (e.g. climate change), "*It's a tough road for us to forge*."

Compared to Virginia's system, which prioritizes environmental education at the state-level, implementation is still inconsistent depending on which region of Virginia you are in. For example, Virginia Beach City Public Schools prioritizes environmental education at every level, but there is much less prioritization as you enter the headwaters or leave the Chesapeake Bay watershed.

In Pennsylvania the president of their Science Teachers Association (and a science teacher) talked about how the new Pennsylvania standards of learning are folding in technology education and environmental education. If the new standards are passed, he thought that could be helpful for advancing environmental education. The representative from the Pennsylvania Association of Environmental Educators (PAEE) cautioned that the proposed standards are losing traction and may not be accepted.

Conservation district focus group participants also suggested more emphasis should be placed on building environmental literacy in the Chesapeake Bay Agreement. It would be helpful if environmental literacy were prioritized, measured, and rewarded to the same degree as Best Management Practices are to meet Chesapeake Bay Agreement goals.

No matter where the focus group participants were from, it was clear that statewide policies are critical, and, even then, those policies need to be further reinforced at the local level in order to see systemic integration of environmental literacy.

### *Capacity Building*

Many focus group participants could envision more success if they had one person in the school system solely dedicated to sustainability and/or environmental education, but this sort of capacity is not prevalent. Instead, where environmental education has been successfully integrated into the classroom is where there are strong partnerships between formal and non-

formal educators (e.g. Chesapeake Bay Foundation and Virginia Beach City Public Schools), but even this model is limited by capacity issues.

All of the non-formal focus group participants shared that environmental education is a priority, with many offering curriculum-based programs as well as continuing education credits or other types of professional development for teachers. But most of the non-formal educators shared they are stretched thin and are not able to reach all of the school districts in need of support. For example, a Pennsylvania state park representative noted that reaching all the school districts is especially challenging in his state given that there are only 100 parks with over 500 school districts. Even still, this partnership is critical as many formal educators need support integrating environmental education into their lesson plans and some are not even comfortable being immersed in the outdoors. More investments in professional development for formal educators and during pre-service training at higher education institutions are needed. Supporting all teachers, including those in disciplines other than science, is especially important because science is often not a priority and for some states primary grades do not even offer separate science classes.

In Virginia, they are finding success incorporating environmental education across disciplines through Bay Watershed Education and Training (B-WET) grant funding. Health/PE, art, english, and math teachers are gaining more exposure and creatively exploring their own ideas for how to integrate environmental education and corresponding science standards into their curriculum. For example, an english teacher has students reading the novel, *A Long Walk to Water,* and is adding science investigations.

Chesapeake Bay Foundation's partnership and their high quality professional development opportunities were noted as a huge value add for some. Others lamented that even with money and resources from the Chesapeake Bay Foundation, it is still a major challenge for teachers to find the time to participate, and even if they do participate, there is no mechanism for holding teachers accountable for implementation in the classroom. Things may be changing though because it was noted numerous times that teacher interest in outdoor education is noticeably shifting because of Covid-19, with many wanting to keep staff and students as safe as possible. Manifestations of those desires are coming through both in virtual professional development and the campus built environment. We heard multiple times that virtual programming is actually increasing teacher participation in professional development and has organizers rethinking their long-term professional development strategies. Furthermore, some schools have the resources to build out their outdoor infrastructure to help reduce the threat of infection.

*New Outdoor Classrooms at State College Friends Schools, State College, PA*

### *Relevance: Language, Location, and Standards of Learning*

We know one of the most limiting variables for teachers is time and unless training is seen as a huge value add teachers are going to be unlikely to participate. Emphasis needs to be placed on making environmental education training relevant, valuable, and easily understood. To help with this, environmental education proponents should use everyday language and avoid jargon, suggest activities that are place-based and easily accessible, and, most importantly, tie environmental education to existing standards of learning and other teacher priorities.

Consistent with what we found in the interviews, practitioners who are closer to the Chesapeake Bay and its major tributaries, and who are grantees of programs like B-WET, are more comfortable with terms like Meaningful Watershed Educational Experiences (MWEEs) than practitioners closer to the headwaters who are not as connected to the Chesapeake Bay. If environmental education is going to be systemic and embraced more widely, it is important to recognize that sometimes the language used to describe environmental education creates unnecessary boundaries. Christen Miller with Virginia State Parks noted, *"We have a tendency to talk to ourselves and not to our audience."* Many of the participants noted this as well and recommended that environmental educators shy away from terms that are often not readily relevant to teachers and students and instead focus more on framing things around getting kids outside, climate change, and caring for our community and planet.

In order to advance systemic environmental literacy, it will need to be relevant and prioritized at the state level, so many focus group participants recommended that an effort needs to be made to ensure environmental literacy is relevant to the entire state, not just the portions that are part

of the Chesapeake Bay watershed. They also recommended that environmental educators offer learning opportunities within a school's community or even the schoolyard. Connecting environmental education concepts locally to a students schoolyard or community, and engaging them in civic stewardship, builds relevancy and ownership and has proven to be very effective. A good example of this is the Citizen Science 2.0, an environmental education program funded by the National Park Foundation, which has excelled at teaching chemistry concepts through water quality testing.

Teachers are pulled in so many directions and need to be so focused on standards of learning, that environmental education cannot be perceived as an add on or implementation will be very limited. In both the National Parks and in Pennsylvania State Parks, effort is made to tie environmental education field experiences to the standards of learning and the curricula. At the Brock Environmental Center in Virginia Beach they offer teachers environmental literacy professional development that is tied to the standards of learning. Even still, many have found teachers can get overwhelmed if they are integrating environmental education "*in addition"* to rather than *"instead of"*. With so much emphasis on testing, these outdoor learning experiences need to easily demonstrate to teachers how their students can learn from the experience instead of the worksheet that they know covers the topics they are accountable to teach. The bonus is that by incorporating environmental education into the standards it then becomes connected to testing and performance based assessments so systemic change can then be measured. This is currently playing out in Virginia. They just got a new set of state standards with more focus on environmental education than in the past, which means environmental literacy now fits in better with new standards and the curriculum and can now be included in performance based assessments.

### *Building & Retaining Ambassadors*

Incorporating environmental literacy into the classroom often requires constant engagement with principals, teachers, curriculum coordinators, and other school administrators. And the way this is done can look different depending on the school district, park, state, etc. that the practitioner is operating in. As such, champions for environmental literacy are the driving force holding important know-how and providing the connective tissue. In Pennsylvania, they found teacher ambassadors are especially critical because these teachers are trusted by their colleagues so they are able to effectively share the benefits of teaching environmental education and then draw their colleagues into the formal/non-formal partnership.

But staff turnover is a constant hurdle for both non-formal and formal educators. This can be especially challenging in Title 1 schools where staff turnover can be high and non-formal

environmental educators are continually having to build new relationships with teachers and administrators. This can lead to greater disparities in schools that are already challenged. Even in places like Virginia Beach City Public Schools, where they are seeing great success developing their teachers and embedding environmental education and MWEEs into curricula, their biggest challenge is onboarding new teachers and getting them trained up and then retaining them. Once you lose an environmental education ambassador there is a large gap in knowledge and relationships, which are key to this work and takes time to establish. To help build and retain ambassadors, focus group participants recommended three strategies:

1. Develop and support multiple champions so that when you lose one person the impact is not as great. One strategy for successfully doing this is by working with teams of teachers across a grade level. This not only helps to build and distribute the partnership across multiple people and it also integrates environmental education programs into curriculum across disciplines.

2. Spend more time on succession planning so that new staff are brought into the existing relationships.

3. Incentivize and recruit retired champions, such as teachers, non-formal educators and other volunteer educators, to maintain critical links between formal and non-formal educators.

### *Funding*

Funding is a perennial problem and essential for capacity building and staffing. We know environmental education is often reliant on local champions to integrate, implement and support, but those local champions are pulled in many directions and cannot be as productive and effective as they would like to be, especially with little funding, so their impact is far from systemic. In addition, funding is needed for the actual cost for transportation and other outdoor learning expenses. If the goal is to advance systemic environmental literacy, then funding needs to be baked into the system and cannot fall to the schools or families to fund.

In West Virginia, funding is always an issue and travel is expensive. *"Working in their own schoolyards is a good option, but kids are inspired and open to learning when they can get off campus."* Transportation and lunches are not as simple as they should be. One person shared that in Virginia, every school is supposed to have a MWEE but there is little to no funding to support implementation.

Many participants share success stories where proper funding was available. A couple examples were those programs supported by B-WET grant funds, which help support interdisciplinary training and embed MWEEs in the elementary, middle, and high school curriculum.

## Environmental Education Network: Ideas on Structure, Function, and Funding

Environmental education work can feel very siloed. You have formal educators and non-formal educators that have minimal opportunities to connect and those connection points are often reliant on known relationships and historical connections. It is often very difficult to know where to go to gain advocacy support or to turn to for resources and professional development. Angel Burns with Delaware State Parks said, *" We need more ways to bring us together."* She mentioned that even at the Delaware Association for Environmental Education conference there are separate tracks for formals and non-formal educators, which pulls people apart.

The idea of an environmental educator network designed to connect formal and non-formal educators and to establish shared goals, resonated with participants from both the formal and non-formal focus groups. They all felt such a network could add value to their work and could help to advance systemic environmental literacy if the networked helped to connect people, showcased resources and offered professional development, had buy-in from administration and curriculum developers, and provided advocacy support. Following is detailed feedback on the network structure and functions as well as comments about funding.

### *Network Structure*

Most participants shared that diversity, equity, inclusion, and justice (DEIJ) strategies need to be incorporated from the beginning of any new network development (or bolstering of an existing network). This means developing a strong DEIJ public facing analysis that makes the connections, cements the commitment, and ensures the right people are at the table leading the network. It also means that DEIJ goals are set and yearly DEIJ-focused network health assessments are conducted to ensure the network is responsive and on target with DEIJ goals. Connecting with faith-based centers, community centers (like the Crispus Attucks Community Center in Pennsylvania), urban areas, Pennsylvania Environmental Justice Areas, and early childhood education perspectives, were some specific strategies shared for reaching underserved audiences.

Since each state is so different with different agencies and other environmental education groups, it might be difficult to have an environmental educator network that covers multiple

states. Most felt a network primarily focused on individual states, not watershed based, would be most useful while still creating additional opportunities for people across states to connect.

For some states like West Virginia and Virginia, such a network would fill a void where in the past there has been more support for environmental education. Dr. Deb Hemler, the current executive director for the West Virginia Science Teachers Association (WVSTA), had previously been involved with the West Virginia Environmental Education Association (WVEEA), which was well organized for about five years. WVEEA had their own conference which brought together government representatives, trainers, non-formal educators, and others. They also had an active listserv that shared environmental education-specific projects, programs, and grants.

Overtime, WVEEA struggled with funding so they joined with WVSTA, and Hemler organized an environmental education room at WVSTA's conference. Now even that is no longer in existence, in part because of WVSTA's specific focus on science. Hemler noted that, *"If you want to make a difference in the state and want systemic change, you have to have a group that's targeting it, not an umbrella group like science teachers."* Similarly, the Pennsylvania Science Teachers Association (PSTA) focus is general science. One PSTA representative shared, *"Anything we do for the environment is probably by chance."* In Pennsylvania, environmental education is largely seen as the purview of the North American Association for Environmental Educators (NAAEE) affiliate the PAEE.

The science coordinator from Virginia Beach City Public Schools thought it could be beneficial to build a cohort of teachers in each school district similar to the No Child Left Inside Coalition. Others pointed to the STEM coordinator position as a potential model, where each state might hire an environmental education coordinator to bring people together within a state and then state coordinators could meet quarterly. The conservation district representatives supported that type of model and also proposed another model specific for them: creating a Chesapeake Bay Conservation District Group that crosses state lines to work together to meet 2025 goals for the Chesapeake Bay.

Whatever network structure is created, rather than starting something new and risk duplicating work, it will be important to bolster, empower and align people, organizations, and networks already doing this work. More needs to be done to connect existing networks and identify shared goals and values. In West Virginia, the district-level representative spoke of an existing network (but did not name the network), that the Chesapeake Bay Foundation is supporting, likely the Outdoor Learning Network Initiative (OLNI). OLNI is working to strengthen local capacity to deliver high quality environmental educational experiences to all students in West Virginia's panhandle including Berkeley, Jefferson, and Morgan counties. Without the OLNI project it seems

there would be little networking happening outside of what the champions are doing. Even still the network struggles to reach teachers.

Previously in Virginia there was an Office of Environmental Education that served as the bridge between formal and non-formal educators. That office held a conference that brought people together from organizations, agencies, schools and other places. Without this group there is a vacuum. Even though there are currently two groups networking non-formal and formal educators: Virginia Resource-Use Education Council (VRUEC) and the Virginia Association for Environmental Education (VAEE), these groups have limited, if any, cross pollination. Focus group participants shared that VRUEC is mostly filled with state agency representatives and state agency representatives cannot be part of VAEE. In addition to having limited interaction, the ability to lobby for policy change is also limited since VRUEC is largely made up of state agency representatives and therefore unable to lobby.

Both the Science Teachers Association president and the secondary science coordinator from Virginia said there are already strong networks with top-down support to tap into. For example, there is a network of science supervisors in the state which includes community partners like the Chesapeake Bay Foundation, Lynnhaven River NOW and higher education institutions. They have good capacity to share resources, contacts, and opportunities available to teachers. #GoOpenVA is a collaborative initiative that enables educational entities throughout Virginia to create, share, and access openly-licensed educational resources. A network or some initiative is needed to work with all these groups and better connect people to other professionals and to resources. It was suggested that at a minimum there should be a full time person that can bridge the gap.

### *Network Functions*

Most focus group participants shared that a network of formal and non-formal educators that connects people, shares resources, offers high quality professional development, helps to align goals and priorities, and provides advocacy support is most needed. *"Sharing resources is a huge time saver, money saver, and frustration saver,"* said Shannon Wehinger. The Virginia Association of Science Teachers (VAST) president shared the lack of connections with VAST and other professionals, both formal and non-formal, especially Virginia Association of Soil and Water Conservation Districts, Virginia Department of Wildlife Resources, Virginia Department of Conservation and Recreation, etc. A network that focuses on transference of knowledge and building connections would help to mitigate gaps with staff turnover. It could do simple things like share places for teachers to take their students (e.g. state parks), provide a reliable newsletter, share funding opportunities, and build connections to people and resources. One person stated, *"You can't go wrong with networking."* In Pennsylvania, the Science Teachers

Association president thought a database of high quality labs and websites with lessons that are tied to the standards could be helpful for science teachers. If those already exist within the Bay Backpack and other online resources, then a network could help broadcast them. They are also seeing an increase in participation from teachers for virtual professional development (no doubt because of Covid-19 but also cheaper and easier to attend) and if a network could provide an expert and resources to virtually train Pennsylvania science teachers once or twice/year, that could be organized.

One person shared they would appreciate a network that could show the links between organizations, similar to how Amazon shows buyers similar products. This feature would allow teachers and others to see connections to other environmental educators and other resources.

A network focused on the state level could help with advocacy. Dr. Hemler from West Virginia spoke of an instance where a statewide network could have supported her advocacy work. When the Next Generation Science Standards came out the West Virginia Science Teachers Association was at the table with the West Virginia Department of Education and took an active role in rewriting the standards to get climate friendly, space science and environmental science standards. But when they went to adopt the standards, the state board, which includes coal and gas interests, changed the language so that climate change was not emphasized. At that time Dr. Hemler was writing letters to legislators and blasting emails and could have used somebody to turn to for advocacy help. Influencers to support lobbying and political work are needed to create systemic change.

When people spoke about DEIJ, we heard a lot of "*well we're mainly a white community*," and understanding of DEIJ is mainly limited to trying to get more teachers of color recruited to conferences, leadership, and training opportunities. A network could support a deeper dive for those white communities into the vast realm of DEIJ issues and strategies and could even support racial affinity groups or caucuses of practitioners to do work separately and together for myriad goals and outcomes.

### *Funding*

Some suggested in order for a network to be successful it needs to offer compensation for leadership and for participation. Too often in the past, participants noted that similar initiatives got underway, but without consistent funding they have at best merely limped along and at worst have completely disappeared. For example, in Delaware they were able to pilot MWEEs with some school districts and create an outdoor education network, which shared best practices, but once the funding was gone the work was not continued. Even in Virginia Beach City Public

Schools where they have the central support for environmental literacy, when they run into issues it is because of the funding. Some good news is that because of Covid-19 there have been a number of conferences, state-wide meetings, and other programming have gone virtual and have become more accessible to more people, especially for those that have very limited time and funding for travel.

The National Park Foundation promotes and funds networks and might be a good partner for funding support for an environmental education network or networking.

### *Overview of the Decision Maker Focus Group*

On November 25, 2020, Local Concepts hosted a focus group of decision-makers in the environmental education movement to better understand 1.) how to build capacity for influencing and changing policies and standards to advance environmental literacy, and 2.) whether a network focused on decision making could help advance systemic environmental literacy. Three people attended the focus group: Sarah Bodor with the North American Association for Environmental Educators (NAAEE); Dr. Aaron Spence the superintendent for Virginia Beach City Public Schools, and Donnan Stoicovy the head of State College Friends School (a small Quaker school in Pennsylvania), and chair of the Advisory Council on Environmental Education for Pennsylvania. During the focus group we asked questions to better understand their priorities; how and by whom decisions get made to move environmental literacy forward; what value a network of decision makers might bring to their work and for advancing environmental literacy; and where there may be existing networks to plug into.

All the participants prioritized environmental literacy and saw environmental literacy as a means for connecting students across grades and disciplines to community and global issues. For each participant, decisions that impact environmental literacy get made in a slightly different way but, in general, they agreed it best to build collaborative support rather than dictate. That is, find a champion that can serve as an ambassador and bring along other decision makers and influencers and then collectively build support. All participants saw a benefit in creating a network of decision makers that raised awareness of the benefits of environmental education, distributed best practices, and supported decision makers in advocating for change. To begin to raise awareness and to establish a network foundation, each participant recommended an intrastate regional approach that targets meetings and other events that decision makers currently attend.

Following is a more detailed summary of their input regarding priorities, how decisions get made and how to influence decisions, as well as ideas for a network designed to support decision makers.

### *Priorities*

Each decision maker provided their individual perspectives on their current priorities and, more specifically, their priorities related to environmental literacy. Aaron Spence shared that his school district's priorities are derived from their strategic plan whose goals are collaboratively established with the school board and the community. Spence pointed to the effectiveness of employing collaborative decision making processes for getting buy-in and increasing participation; a strategy and process that is critical for building effective networks. Virginia Beach City Public School's current strategic plan includes a goal of all students engaging in a MWEE every year. To move this goal forward, they have a sustainability officer that connects environmental literacy across content areas and curriculum. Spence also stressed that if we are going to teach kids that the environment and environmental literacy is important, then it is important to *"practice what we preach"* and embed green practices into how facilities are managed by doing things like LEED certification, having propane fleets, green purchasing, etc.

Donnan Stoicovy said that building student agency, service learning and civic engagement are priorities for her school and that environmental literacy is a natural conduit. She also shared that there are deep connections between environmental literacy, climate change and democracy, all of which are priority content areas.

Sarah Bodor pointed out that the NAAEE focus is different from that of a school or school system, and their current priorities are focused on getting environmental education written into federal education policy and communicating with school decision makers how federal grants can be used to support environmental education, as this is often not clear for decision makers.

### *How Decisions Get Made*

Each state operates differently when it comes to how and by whom decisions that impact standards of learning get made, and, therefore, how environmental literacy is prioritized. Evenstill, many of the ideas and strategies shared for influencing those decisions can be effective regardless of location.

In Virginia, the curriculum is driven at the state level by The Virginia Board of Education, so environmental literacy is embedded at the state level. One strategy for affecting decisions is to find a champion(s) on the board and match a superintendent with a board champion. Spence cautioned that one should not try to approach a whole board to tell a superintendent what to do because that is setting up conflict. To reach decision makers, go to the places where board

members and superintendents are likely to both be present, such as the annual conferences of the Virginia School Boards Association and the Virginia Association of School Superintendents.

In Pennsylvania, environmental literacy was built into law, but there is a current effort to update the standards and environmental education appears to just be a minor piece. The Pennsylvania Association of Environmental Educators (PAEE) advisory council feels like they are losing traction at the state level and there is real concern the existing environmental literacy standards may disappear. The PAEE advisory council is currently putting together a case to make sure environmental literacy is not just limited to science but woven throughout the academic disciplines.

In Pennsylvania, the Intermediate Units are a possible way to reach decision makers and affect decision making because both principals and superintendents come together at Intermediate Unit meetings, and as one informant added, the "*Intermediate Units have some power.*" The Intermediate Units are divided up by region across Pennsylvania and are literally the units between the states and the schools. They receive state funding to provide services to school districts and schools. For example, if a school cannot provide the support needed by a hearing-impaired child, the Intermediate Unit will step in to provide that support. Intermediate Units also provide professional development for teachers. Two examples mentioned were professional development around STEM and Next Generation Science Standards. According to one informant, Intermediate Units in wealthier school districts seem to provide more support services.

From NAAEE's perspective, it is helpful to facilitate communications and resource sharing at the national level, but emphasis needs to be at the state and local level. That is where the decisions and real impact happens. NAAEE state affiliate networks want to forge better relationships at the state level. There is also a need for states to learn from one another as well.

### *Network: Value Propositions & Development Ideas*

Focus group participants shared that a network for decision makers could add value to their work and the environmental literacy movement, but it would need to take a phased development approach. By first raising awareness of the need for convening and connecting decision makers in support of environmental literacy, followed by implementing processes for sharing best practices and resources, and finally by supporting advocacy, they felt a network could help support systemic change.

Effort to raise awareness around environmental literacy is key to establishing a strong foundation. To reach decision makers, especially those that are not already environmental

literacy proponents, it will be important to do so during activities or events that are already part of their work. Statewide conferences were suggested as well as breaking up touch points with decision makers into regions within a state. This approach was successful in Maryland when the state passed the environmental education graduation requirement. To teach the new requirement, they conducted a regional road show for school district decision makers and program providers. Spence recommended using the Superintendent's Study Group which is active across eight regions of Virginia. Stoicovy recommended the Intermediate Units as a point of entry to decision makers in Pennsylvania.

Spence mentioned that the Superintendent's Environmental Education Collaborative was a good venue for sharing best practices. They typically met at The School Superintendent's Association conference, but in recent years the Superintendent's Environmental Education Collaborative has lacked funding and therefore this resource sharing venue has not been as active. In order to support systemic transformation, Spence recommended that focus and resources need to also be dedicated to advocacy. For example, providing talking points, lists of senators most influential with the Department of Education, template letters, etc. A promising collaborative advocacy model to explore is the Council of the Great City Schools.

*Appendix A: List of Focus Groups and Participants*

Following is the list of focus group participants which includes the type of focus group and participant's name, organization, title, and state.

| Name | Organization | Title | State |
|---|---|---|---|
| **Focus Group Type: Formal Educators - School District Representatives** | | | |
| Amber Boeckmann | Berkeley County Public School District | Curriculum and Instruction | WV |
| Amanda Malbon | Virginia Beach City Public Schools | Secondary Science Coordinator | VA |
| **Focus Group Type: Formal Educators - Science Teachers Associations Representatives** | | | |
| Dr. Deb. Hemler | West Virginia Science Teachers Association | Executive Director | WV |
| Galen Kreiser | Pennsylvania Science Teachers Association | President | PA |
| Mike Pratte | Virginia Association of Science Teachers | President | VA |
| **Focus Group Type: Non-formal Educators - State & Federal Park Representatives** | | | |
| Melissa Boyle Acuti | Maryland Park Service (Maryland Department of Natural Resources) | Chief of Interpretation | MD |
| Angel Burns | Delaware State Parks | Chief of interpretation | DE |
| Bob Campbell | National Park Service, Chesapeake Bay Gateways & Water Trails Network | Chief of Planning & Development, Chief of Gateways Partnership & Grants | MD |
| Katherine Chesson | National Park Foundation | VP of Programs and Partnerships | US |
| Susan Cox | USDA Forest Service | Conservation Education Coordinator | US |
| Chris Kemmerer | Pennsylvania State Parks (PA Department of Conservation & | Section Chief for Education and Interpretation | PA |

| | | | |
|---|---|---|---|
| | Natural Resources) | | |
| Christen Miller | Virginia State Parks (VA Department of Conservation and Recreation) | Environmental Education and Interpretation | VA |
| Tim Taglauer | Shenandoah National Park (US National Park Service) | Deputy Chief, Interpretation & Education | VA |
| **Focus Group Type: Non-formal Educators - Conservation & Agriculture Representatives** | | | |
| Jim Baird | Many roles, last one was American Farmland Trust | Retired | MD |
| Sallie Gregory | Lancaster County Conservation District | Education Coordinator | PA |
| Bonnie Mahl | Virginia Association of Soil & Water Districts | Education and Training Coordinator, Virginia Envirothon Coordinator | VA |
| Shannon Wehinger | PA Association of Conservation Districts | Director, Communications and Education | PA |
| **Focus Group Type: Decision Makers** | | | |
| Sarah Bodor | North American Association for Environmental Education | Director of Policy & Affiliate Relations | US |
| Dr. Aaron Spence | Virginia Beach City Public Schools | Superintendent | VA |
| Donnan Stoicovy | State College Friends School | Head of school (former public school principal) | PA |

## Appendix IV: Regional Outdoor Learning Network Organizational Stakeholder Map Overview, Access, Purpose, Phased Approach, and Data

### Overview

A network map offers a snapshot in time and can be adapted and further developed overtime to address changing needs and questions. Described here is the ROLN Organization Map purpose, phased development approach, and data used for phase one of the ROLN Organization Map. Local Concepts, the ROLN Advisory Team, and other network map experts provided insights to define the purpose, process, users and data of the ROLN Organization Map.

### Accessing the Map and Data

The ROLN Organizational Map was created in Kumu, a mapping platform to help social sector leaders make sense of the networks in which they are working for change. This map was created as a free public project; anyone with the link can view it. Private projects start at $9/month. The ROLN Organization Map was created using Kumu's template for a stakeholder map. Kumu also provides templates to create systems, social networks, community assets, and concept maps.

Data can be updated on the front end of the platform, or through an integrated spreadsheet. In this case, an integrated spreadsheet was used to load the data. We recommend any future changes to the map are done on the backend, in the spreadsheet, rather than by working on the front end in Kumu. Links are provided below to access both the map and the spreadsheet that is used to populate the map. As data is added or edited in the spreadsheet, the kumu map will integrate new data from the spreadsheet once it is re-loaded.

**Access the Kumu Map**
**Access the Backend Data Spreadsheet**

### Map Purpose

The following purpose statements serve as a framework for the ROLN Organization Map.

1. Visualize the existing ecosystem of the environmental education movement in Maryland, Virginia, West Virginia, Pennsylvania, Delaware and DC.
2. Build capacity for the environmental education movement, including building a network mindset, bolstering existing networks and encouraging new localized networks.
3. Provide a directory of support providers with specific searchable tags, contact information, and other valuable information.
4. Assess network growth and health, serving as a benchmark over time.

### Phased Development Approach

The map purpose, users, and data were discussed and refined with the ROLN Advisory Team and network mapping experts to optimize its usefulness. We created a phased development approach where map users, data, and features evolve over time.

*Phase One: Reveal the Regional Organizational Stakeholders and Inform Network Design*

Phase one of the ROLN Organization Map offers three main functions: 1.) Reveal the regional organizations, agencies and other educational entities. 2.) Inform development and assessment of any new or existing network. 3.) Serve as a pilot map to gather user feedback for phase two of the ROLN Organization Map.

Phase one is called a stakeholder map. It does not show relationships between people or organizations, but it does show connections between organizations and locations. It also highlights organizational skills, assets and other characteristics identified as important for the environmental education movement. Both the organizations and data used in the map surfaced through the landscape assessment process. Phase one will primarily be used by environmental education network planners and designers.

*Phase Two: Weave the Social Network*

Phase two will incorporate user feedback from phase one to evolve the stakeholder map into a social network analysis map to include both people and organizations. Building on the stakeholder map, it will engage environmental education stakeholders to take a deeper dive into their relationships and skills. This will help to further visualize and weave the network, build a network mindset, and assess network development and health overtime. Phase two of the map will be used by network planners, network weavers, and other environmental education stakeholders.

*Phase Three: Adapt to State Specific Needs*

The landscape analysis process has revealed how different each state's resources, commitment, needs, and levers of change are for advancing systemic environmental literacy and MWEEs. What's worked in Maryland, for example, will not track to Pennsylvania. Future phases of the ROLN Organization Map will hone in on specific state-level network characteristics and needs.

## Data Used in Phase One of the ROLN Organization Map

From July through December 2020, Local Concepts conducted interviews and focus groups with 42 regional stakeholders and held bi-weekly meetings with the ROLN Advisory Team to define tags and labels used in the network map. Tags and labels are useful bits of filterable information about each organization and include the type of organization (formal or non-formal educators), relevant services provided, and supportive roles for network development.

Organizations included in the map are those represented by members of the Chesapeake Bay Program Education Workgroup, organizations identified by the ROLN Advisory Team, those that participated in interviews and focus groups, and grantees of the Chesapeake Bay Trust and the Bay Watershed Education and Training. Each organization on the map has been assigned as either primarily being part of the formal education system (PreK-12) or non-formal education system (those providing or supporting outdoor education that are not part of the formal system such as state agencies and non-profit organizations). Each entity is further defined as being a network, government agency, association, higher education, funder, etc.

Where the information was known, Local Concepts coded each entity for key network roles: capacity builder, communicator, convener, and core leader:

- *Capacity builders* are generally engaged in some sort of professional development and training.
- *Communicators* have channels and an audience for broadcasting information.
- *Conveners* effectively bring people together for conferences, meetings and other events.
- *Core leader* is used for any organization that expressed an interest in providing network leadership.

Organizations were also coded as either being active, recommended, or missing from the current environmental education movement.

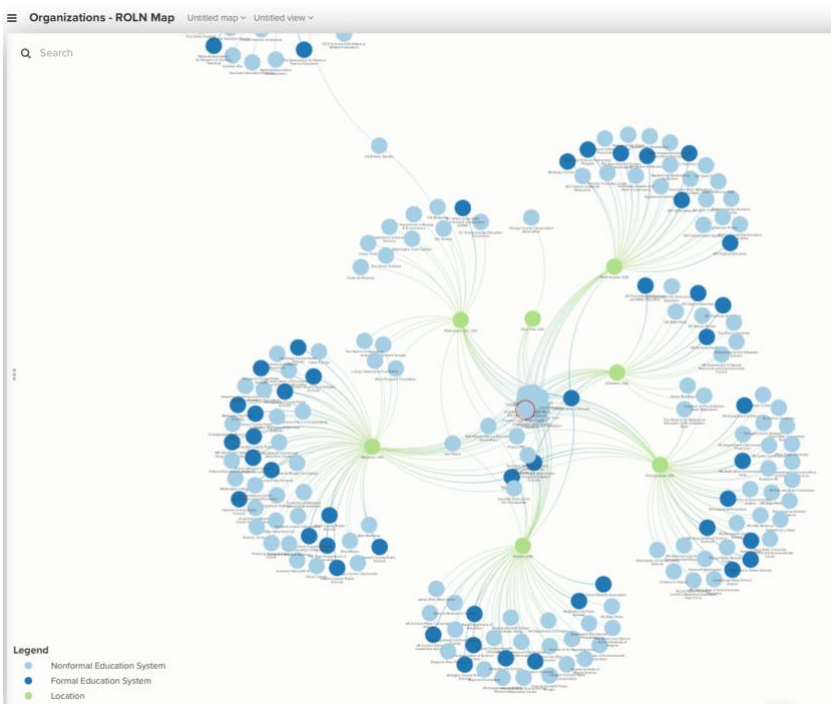
Filtering on specific tags and labels is one way for network weavers and planners to be able to quickly identify organizations that fit certain criteria. For example, those interviewed stated loud and clear that approaches to ensure justice, equity, diversity and inclusion (JEDI) must be prioritized. A map user can quickly filter on the tag "JEDI" to see the JEDI leaders in each state. Following is the list of filterable tags used in phase one of the ROLN Organization Map:

- Engaged in EE (environmental education)
- Somewhat Engaged in EE (environmental education)
- Not Engaged in EE (environmental education)
- JEDI (Justice, Equity, Diversity, Inclusion)
- MWEEs (Meaningful Watershed Education Experiences; a provider of MWEE professional development, an implementer/supporter of MWEEs, or organization that is committed to advancing the MWEE approach)
- Standout Case Story (functioning network, environmental literacy curriculum, green school program, etc.)
- Advocacy (providing advocacy support)
- Policy (developing policies that influence standards of learning and environmental education)
- Active Stakeholder
- Missing Stakeholder

- Recommended Stakeholder
- CBT Grantee (current or past Chesapeake Bay Trust grantee)
- B-WET Grantee (current or past Bay Watershed Education and Training grantee)

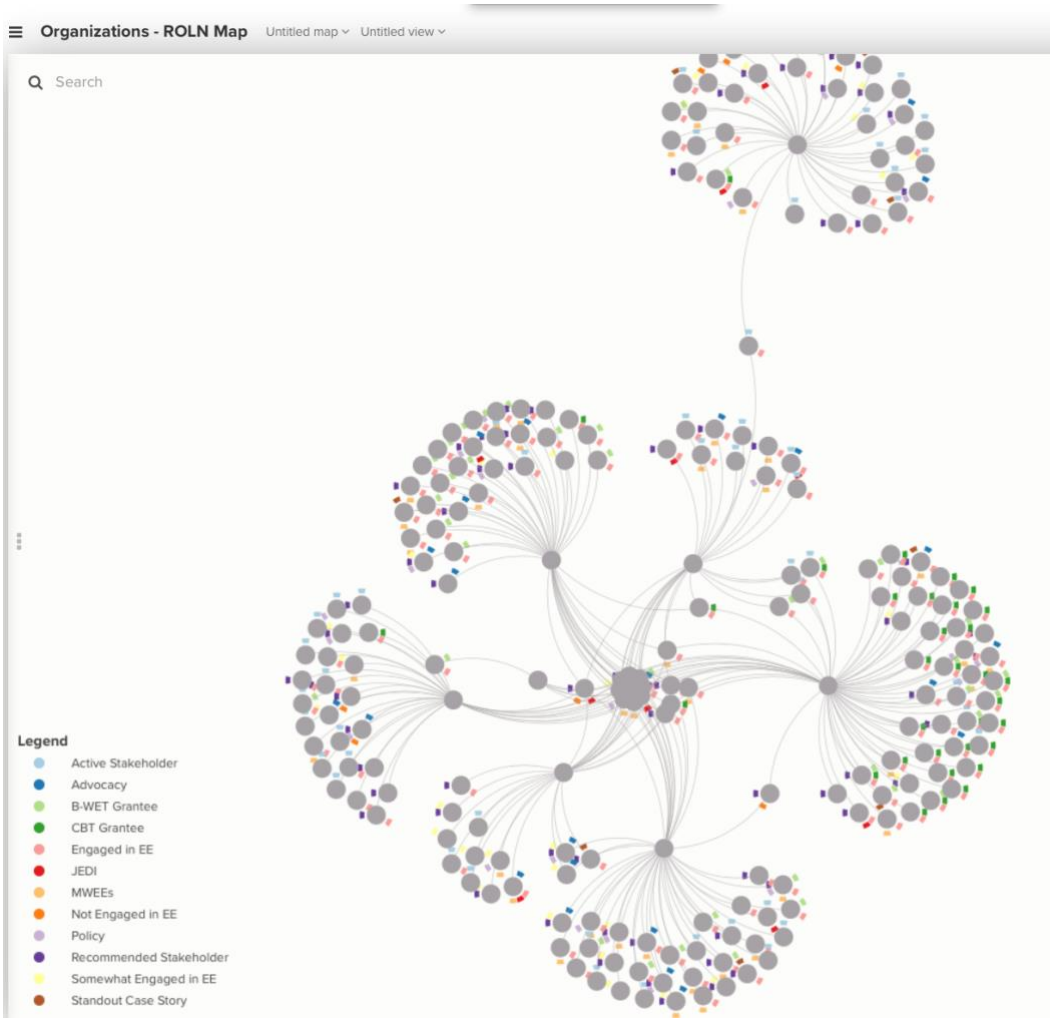
On the next few pages, find additional guidance on some map views and ways to use the maps to inform recommendations in the Landscape Assessment.

**Map Views Including Guidance on Ways to Use the Map**




*Map View of Formal and Non-formal Educators filtered by Location (National (off screen) and state)*

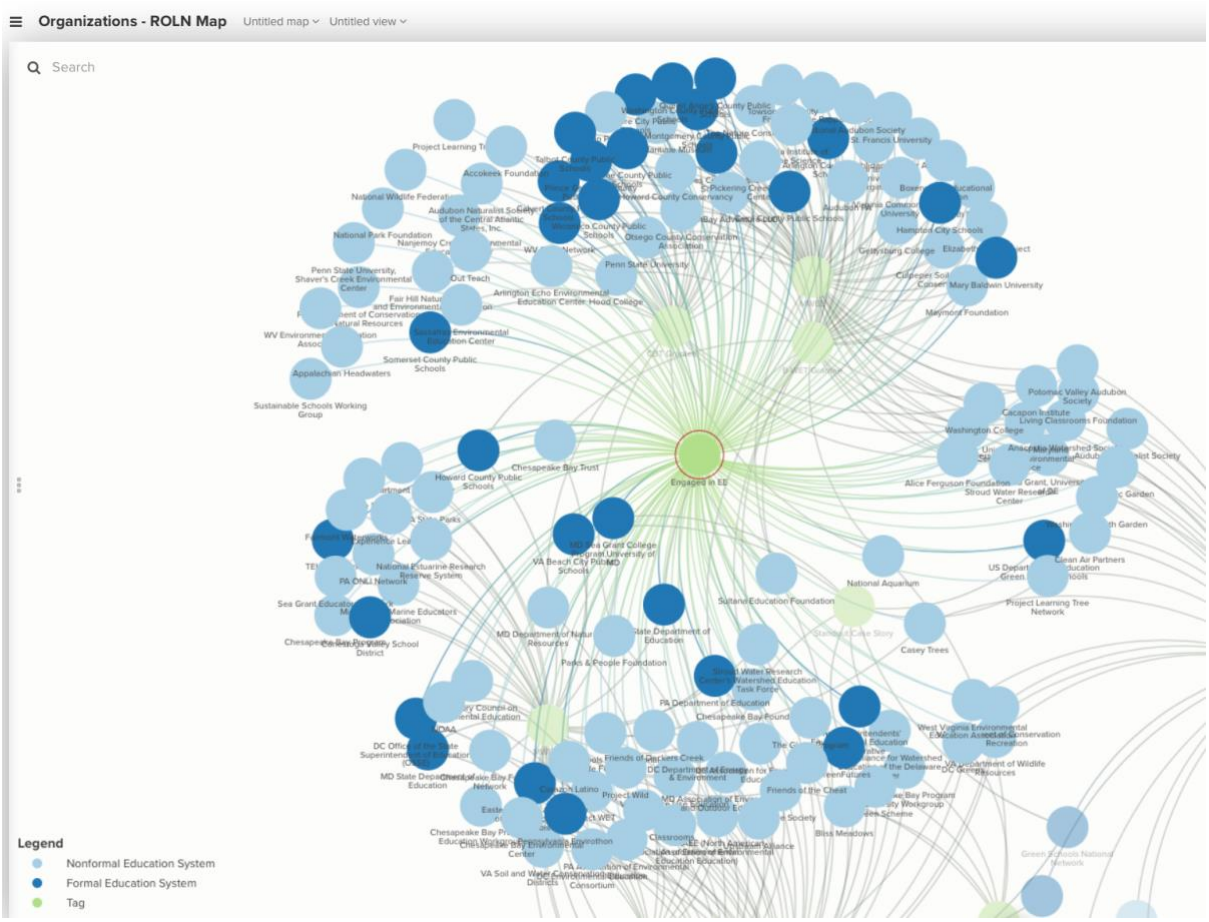
All 211 entities on the map have been coded as either part of the formal education system (dark blue) or non-formal education system (light blue). In this map view they are filtered by location (state, multiple states, or national pictured off screen) in green. It's not surprising, given what we learned during the assessment, that Maryland appears to have the most support from the formal education system as they have the most advanced policies supporting environmental literacy and MWEE curriculum integration as well as a graduation requirement. Maryland school systems (organized by county) have also received more funding support through NOAA's B-WET program and through Chesapeake Bay Trust grants (grantees are also tagged in the map). We know that connecting formal and non-formal entities and educators and capacity building are going to be important for facilitating the alignment and action needed to advance systemic transformation. This map view allows us to see the formal and non-formal landscape nationally, state by state, and inter-state, and can support strategic decision-making regarding which states could use bolstering in different areas. For example, this map view tells us that Washington DC seems to be dominated by the non-formal education system. Dovetailing what we learned from our assessment process, there is much work to be done to increase information-sharing and communication(s) in a complex system that includes a large percentage of charter schools and hyper local control. Given this view, across most of the states, more should be done to engage the formal education entities and bridge them with the non-formal educators.



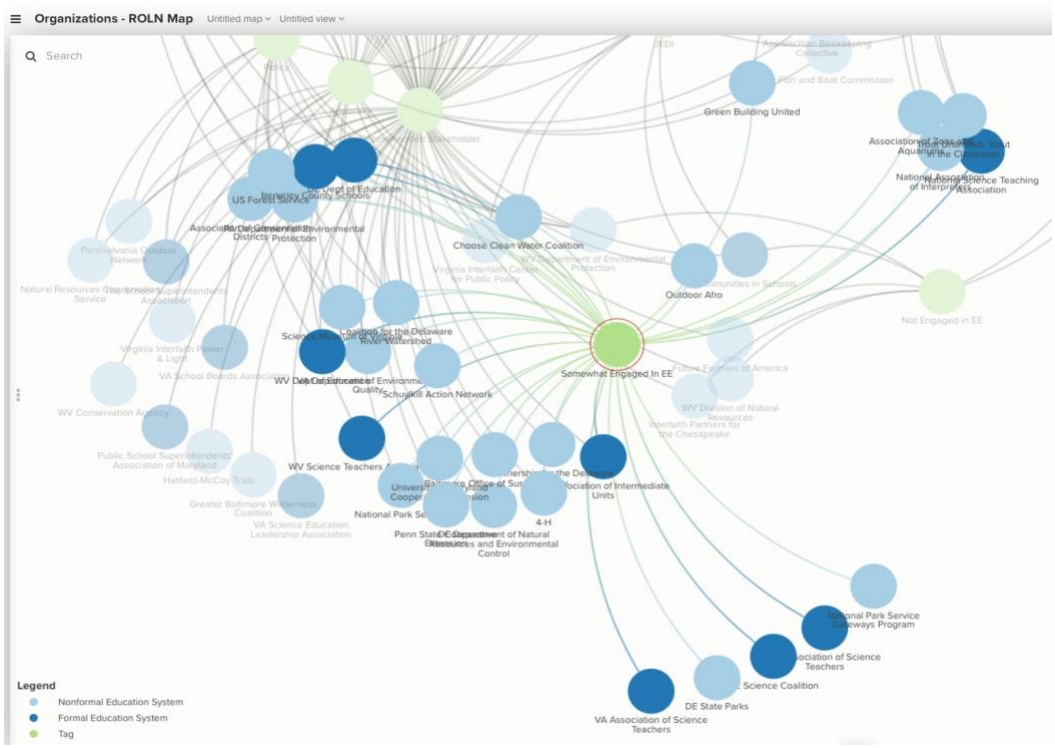

*Map view filtered by Location and Tags*

There are twelve tags we landed on that the team thought would be important for strategic planning in Phase 1. Curated tags can be viewed in the legend of this map view. For example, we know issues around JEDI (justice, equity, diversity, inclusion) are important to stakeholders in the region. It will be critical for network designers to convene the right partners early on to make sure the right people are at the table developing an analysis and operationalizing equity for network governance, functions and services. We learned during the assessment phase that professional development in this arena is much needed. Filtering on JEDI reveals all of the organizations across the region (and nationally) who could potentially provide support. We also heard there is more need for advocacy at every level of the system. Entities that are coded for advocacy can be filtered on from each state and relationships can be forged to ensure communication and capacity building channels are open and accessible so that people can connect to change campaigns throughout the year. Standout Case Stories can be filtered to see who is making traction and could potentially share their successes through virtual convenings.

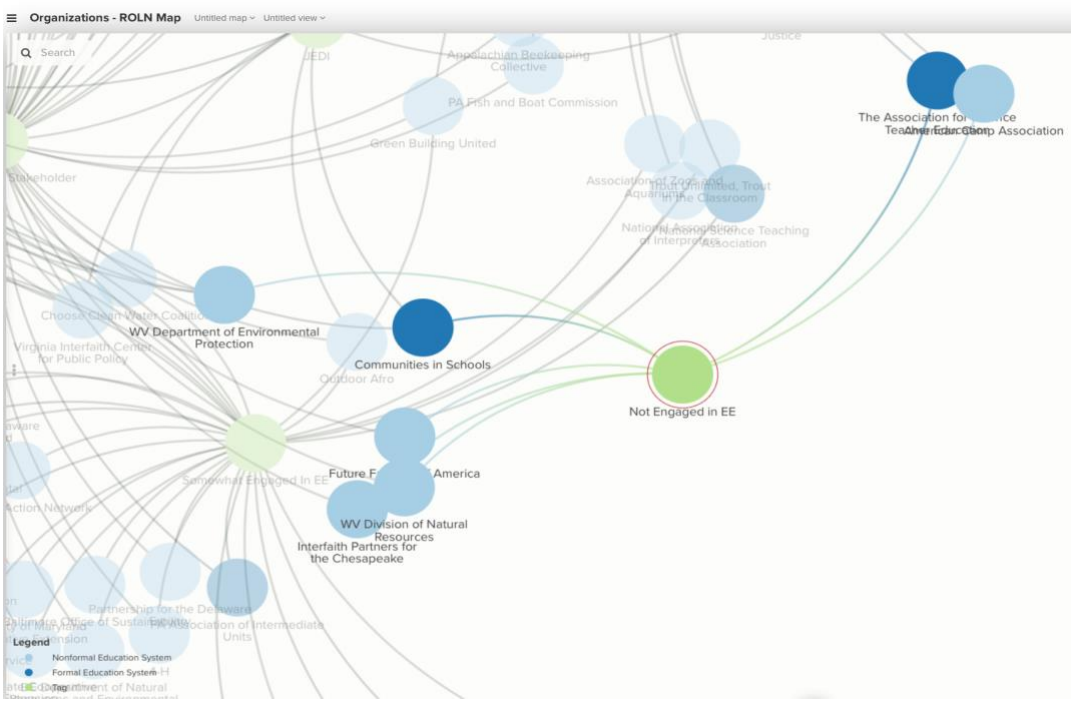
This series of three map views show all of the Formal and Non-formal education entities that are either Engaged in Environmental Education, Somewhat Engaged, or Not Engaged. We can also see views that show us entities that are not engaged but regional stakeholders recommended that they should be. These views will be helpful as we can now visualize those entities that are missing from the fold and need to be pulled in. For example, we can see a couple of dozen entities who are somewhat engaged. It might not take as much to get them to the next level of engagement than entities who are currently disengaged and might require more to get involved. As we saw with the state teachers associations (labeled as Somewhat Engaged), they are interested, engaged, have the communication channels and audience in place, but they need the content experts to provide more support as their purview is the huge umbrella of science.




*Filtered by Formal and Non-formal, Engaged in Environmental Education*




*Filtered on Formal or Non-formal and Somewhat Engaged In Environmental Education*




*Filtered on Formals and Non-formals and Not Engaged in Environmental Education*

## Appendix V: Ten Ingredients for a Thriving Network

Networks are made up of and driven by people that come together around shared values and a common vision. A well-managed network can accelerate change by encouraging collaboration, shared learning, and innovation. But to move a large group of decentralized educators and leaders towards a common set of goals requires a support system, resources, new ways of working together, innovation, and creativity. Following is advice to avoid common pitfalls to set your network up for success.

1. Convene the right people and do some strategic visioning together early where purpose, shared values, and vision are agreed upon and clear and consistently reinforced. "It is not just what we do, but how and with whom we act and interact that brings transformation." [10] Every person in a high performing network should know with crystal clarity their network's overarching, long range vision. Objectives should be kept limited and achievable. Ensure there is a value add for all audiences you seek to engage.
2. If JEDI (justice, equity, diversity, including) is part of your framework, ensure there are supportive partners at the table early on who can facilitate a process that ensures you have an analysis and a set of strategies to operationalize equity in the internal facing work of the network and the external facing change efforts. Ensure that resources you have control over (financial and other) are equitably supporting BIPOC partners and there are supports in place to advance JEDI issues in the network.
3. Establish shared and distributed leadership. This will require that some governance structures are in place and can be as minimal or as complicated as needed.
4. Support convenings. Network core leadership, network management, and other network weavers should host regular virtual and in-person convenings. Technical support is often needed for stakeholders to come together and to organize across large geographies.
5. A core network management person or team goes a long way for advancing network goals. They can often provide administrative support, organizing and convening, synthesizing, tech support and communications work that those in the network with full time jobs have difficulty providing. Resourcing network weavers is a promising practice to distribute leadership and increase collaborative ways of working together.
6. Consistent communications and capacity building are vitally important. Find out what stakeholders need and how, when, and where it is best for them to receive and share information. Ensure you are hearing from the educators you seek to serve. Support knowledge sharing and professional development (training, certifications, digital digest, etc).

[10] Holley, J. (2012). *Network Weaver Handbook: A Guide To Transformational Network*. Network Weaver Publishing.

7. Encourage network participation (1-2 surveys/year to assess network heath, network map sensemaking work for developing a network mindset, network training to build a collective network mindset).
8. Provide financial resources for network engagement, professional development, network leadership and management (e.g. stipends, travel support, childcare support, operating funds, etc.). Incentivize action with small grants or innovations funds.
9. Cultivate trust and community-building at every meeting. Make sure meetings aren't just all work. The trust and care required for relationship-building happens in those informal spaces where people are free to show their true selves and connect with people on a different level than a workplace will allow. Sponsor happy hours, meals, and other opportunities to gather. Inject fun, laughter, and music everywhere. People will continue to come back if they are connecting with others and enjoying themselves.
10. To build alignment towards strategic action, collaborate generously and encourage self-organizing and experimentation. Once members have seen success through self-organized projects, share successes and lessons learned and continue to assess where network members think coordinated and strategic action could be most useful or where there are opportunities to facilitate scale and impact. When self-organizing is encouraged and supported, many more people will initiate collaborative projects. Incentivize members with small grants.