In 2018, we identified a series of questions we wanted to address in Directions including:

- What impact should nature centers have in the communities they serve? How should this impact be measured?

Our questions came in part from an IMLS funded study done in 2016 that ANCA participated in found [here](#). This study examined the relationship between nature centers and the people living around them – including both people who visit and people who don’t visit but still perceive value in a nature center existing in their community. Thank you to all who shared their answers to these questions this year including Glenna Holstein in Cultivating Community in the Winter 2018 Issue (if you are an ANCA Member, remember you can find archived issues of Directions in the Member Portal online).

To wrap-up our 2018 focus on this question, one of the researchers from the 2016 project, Matt Browning, PhD, University of Illinois at Urbana-Champaign has provided a summary of the original findings. In addition, he wanted to share that there have been two peer-reviewed journal articles published since the original report available [here](#) and [here](#). This topic will remain relevant to the field so, if you find you have more to add, please share your thoughts with the ANCA community and us by submitting them in the Google Group or by email.

(continued on page 4)
Director’s Notes

Jen Levy, Executive Director of the Association of Nature Center Administrators, Logan, UT

The New Year is almost here - I am writing this on New Year’s Eve - and I know most of us are looking forward to a new and better year. I have mixed feelings about 2018, it was a great year for ANCA, but it was also completely overwhelming with natural disasters, gun violence, political discourse and dysfunction, and an all-out attack on the environment from our government leaders. I found myself needing to take a break from the news often and work hard to focus on the good. Which meant putting my head down, staying focused, and working.

I know others did the same, especially my friends and colleagues in the ANCA Network. The work we are doing is important, and as leaders we need to stay focused, even during challenging times! The best leaders can see past their lifetimes and stay focused on mission – and ANCA is made up of extraordinary leaders who do this every day! Thank you for the work you do, and thank you for everything you have done for ANCA.

In 2018 –

• 170 members, including 77 first-time attendees, joined us at the 2018 Dream Big Summit hosted by the Quinta Mazatlán World Birding Center in McAllen, TX.
• Over 300 nature education leaders attended seven Region Meetings throughout the United States.
• Twenty-seven ANCA Members donated their time and expertise to conduct seven Peer Consults – including our first multi-site, county-wide assessment.
• The ANCA Board approved ANCA 2025, a new Strategic Plan setting direction and action for the next seven years.
• We welcomed 186 new ANCA Members, including members of a nature center network in Shenzhen, China. See all of our new members here in our 2018 Snapshot.
• With the help of a private donor, we launched the first phase of our new website. We received additional funding from The Max and Victoria Dreyfus Foundation in late 2018 and will start work on the next phase in 2019.
• We connected dozens of members with ANCA Mentors.
• The ANCA endowment grew from a $10,000 lead gift in 1997 to $248,637 in 2018.
• The ANCA Memorial Scholarship Fund, established in 2006 with $25,000 donated by ANCA members, has grown to $64,464 in 2018.
• At the 2018 Summit, we raised over $4,000 from our members to invest in the ANCA Operational Reserve.

So tonight, I will toast all of you – the ANCA Network – and thank you for the many successes we shared. Cheers ANCA Friends and Happy New Year!
Nearly 2,000 nature centers exist in communities across the United States providing tremendous potential for community members to regularly connect with each other and the surrounding natural environment. Ongoing firsthand relationships between nature, centers, and communities have the potential to be powerful motivators for connecting people to nature in ways few other institutions can. Yet, nature centers are often asked by stakeholders to substantiate their ‘value’ by measuring their success and quantifying their progress.

We studied 16 diverse nature centers and neighboring communities across the United States to explore the ways in which community members value local centers (Table 1). Random samples of members living around each center were invited to participate in web-based surveys that asked about the perceived importance and performance of 14 items reflecting services that nature centers might provide. These items were developed off a proof-of-concept study that entailed interviewing directors and community members at six U.S. nature centers.

**Table 1.** Nature centers included in study

<table>
<thead>
<tr>
<th>Nature Center</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audubon Center at Debs Park</td>
<td>Los Angeles CA</td>
</tr>
<tr>
<td>Audubon Greenwich Kimberlin Nature Education Center and Sanctuary</td>
<td>Greenwich CT</td>
</tr>
<tr>
<td>Audubon Society of Portland Nature Sanctuary and Facilities</td>
<td>Portland OR</td>
</tr>
<tr>
<td>Corkscrew Swamp Sanctuary and Blair Audubon Center</td>
<td>Naples FL</td>
</tr>
<tr>
<td>Grange Insurance Audubon Center and Scioto Audubon Metro Park</td>
<td>Columbus OH</td>
</tr>
<tr>
<td>Mitchell Lake Audubon Center</td>
<td>San Antonio TX</td>
</tr>
<tr>
<td>Richardson Bay Audubon Center &amp; Sanctuary</td>
<td>Tiburon CA</td>
</tr>
<tr>
<td>Seward Park Audubon Center</td>
<td>Seattle WA</td>
</tr>
<tr>
<td>Elachee Nature Science Center</td>
<td>Gainesville GA</td>
</tr>
<tr>
<td>Environmental Learning Center</td>
<td>Vero Beach FL</td>
</tr>
<tr>
<td>Hitchcock Nature Center</td>
<td>Honey Creek IA</td>
</tr>
<tr>
<td>Plains Conservation Center</td>
<td>Aurora CO</td>
</tr>
<tr>
<td>Seven Ponds Nature Center</td>
<td>Dryden MI</td>
</tr>
<tr>
<td>Silver Lake Nature Center</td>
<td>Bristol PA</td>
</tr>
<tr>
<td>Urban Ecology Center</td>
<td>Milwaukee WI</td>
</tr>
<tr>
<td>Wilderness Center</td>
<td>Wilmot OH</td>
</tr>
</tbody>
</table>

In the current study with 16 nature centers, we hired a marketing firm (DirectMail, Frederick, MD) to develop the sampling frame and deliver the online survey invitations to community members. Two waves of survey invitations were sent to 12,000 randomly selected people per center (192,000 in total across the U.S.) through postal letters or email invitations plus two email reminders between July and November 2014. Half of the invitees received a $2 bill with their letter as a pre-paid incentive to take the survey. These incentives were included to boost response rate and to test non-response bias by splitting sample into respondents who were more likely to complete survey primarily because nature centers were salient to them and incentives elicited reciprocity and feelings to give back after receiving a $2 gift.

The community members invited to the study were geographically limited to a circular area surrounding each center (urban = 3 miles, suburban = 6 miles, and rural = 20 miles). These radii were determined by averaging community directors’ estimations of what geographic areas encompassed their center’s “local community” and by calculating the smallest radii that included adequate numbers of people from the marketing firm’s mailing list. The marketing firm provided some socio-demographic data about respondents (sex, age, level of education, and presence/absence of children in home), and we asked additional data (racial/ethnic self-identification) in the survey.

We received 2,402 completed responses with an overall response rate of 1.7%. Of these respondents, 62% reported being aware of their local nature center; of these, 60% had visited that center. Respondents’ ages ranged from 19 to 97, with a mean age of 54. The majority of the sample was non-Hispanic White (79%) and male (71%). Twenty-six percent had children 18 years or younger living with them in their home. Five percent had less than a high school diploma while 19% had earned their diploma, 23% had attended some college, 25% had completed a bachelor’s degree, and 21% had completed a graduate degree. In comparison to U.S. Census data, our sample over-represented males, non-Hispanic Whites, people without children in their home, older people, and people with higher levels of education.

Exploratory factor analysis (EFA) between the 14 survey items suggested four underlying values held by community respondents toward nature centers: environmental connection, leisure provision, community resilience, and civic engagement (Table 2). EFA is a statistical technique that is used to reduce data to a smaller set of summary variables and to explore the underlying theoretical structure of the phenomena. The majority of respondents believed it was important for nature centers to provide all 14 specific nature center services and associated value sets in the survey battery. However, environmental connection was rated the most important; leisure provision and community resilience were slightly less important; and civic engagement was the least important factor, although it was still rated near ‘somewhat important’ on average.
Table 2. Survey items associated with value sets held by communities toward nature centers

<table>
<thead>
<tr>
<th>Civic engagement*</th>
<th>Links people to political action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helps bring together people from different races/ethnicities</td>
</tr>
<tr>
<td></td>
<td>Provides a place for people in the local community to gather</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community resilience</th>
<th>Contributes to the local economy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Develops a sense of pride in the local community</td>
</tr>
<tr>
<td></td>
<td>Makes the community a more beautiful place</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leisure provision</th>
<th>Provides a place for physical exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provides a place for retreat, restoration, or relaxation</td>
</tr>
<tr>
<td></td>
<td>Provides a safe place for outdoor recreation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental connection</th>
<th>Encourages environmental behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provides wildlife habitat or ecosystem services</td>
</tr>
<tr>
<td></td>
<td>Increases environmental awareness</td>
</tr>
<tr>
<td></td>
<td>Provides a place for children to learn</td>
</tr>
<tr>
<td></td>
<td>Provides access to nature</td>
</tr>
</tbody>
</table>

*perceived importance of each of the 14 non-bolded items could be elicited with the statement, “how important is it to you that the [nature center name] do each of the following?” with not at all important, slightly important, somewhat important, very important, and extremely important as potential responses; perceived performance could be measured with the statement, “to the best of your knowledge, how well does the [nature center name] actually accomplish each of the following?” and not well, slightly well, somewhat well, extremely well, and I don’t know as potential responses; we do not recommend including the factor titles (i.e., civic engagement, community resilience) in the questionnaire.

Average levels of importance for each factor differed along several socio-demographic lines. Leisure provision was less important for graduate degree holders than for those with lower levels of education. Civic engagement and community resilience were less important for respondents 60 years and older than for respondents 18–35 years old. Civic engagement and community resilience were rated more important by respondents living in urban areas than respondents living in rural and suburban areas. Civic engagement and community resilience were more important for non-Whites than Whites. Leisure provision was more important for visitors than non-visitors. Females indicated all four factors were more important than did males.

In regard to how well nature centers performed each value set, the environmental connection factor was rated the highest, while leisure provision, community resilience, and civic engagement factors were rated somewhat lower. The environmental connection factor was perceived as being performed better in rural and suburban areas than in urban areas. Visitors believed leisure provision was performed better than non-visitors. Females believed civic engagement and community resilience were performed better than did males.

In summary, we discovered that the importance assigned to different underlying values varied by community subgroup. Some of these differences may exist in other nature center populations and may be important for centers to consider as they try to build relevancy among diverse communities. We recommend the proposed nature center value framework (Table 2) be used in future research by other nature centers to further understand how their local communities value them, and to what extent their communities believe they are performing these values well. Such investigations could use online survey invitations with past visitors and membership lists for non-representative samples. If centers are wanting to expand their reach to underserved populations, we recommend different methods, such as door-to-door sampling of representative addresses, to capture more representative samples of local populations and to bolster response rate.

We greatly appreciate all the nature center directors, staff, and community members who gave generously of their time to participate in the interviews and surveys required for this study. We are also grateful to our National Audubon Society and Association of Nature Center Administrators colleagues who assisted with this work. This work was supported by an Institute of Museum and Library Services award.
“ANCA saved my life!” That is how Kay Carlson, the President and CEO of the Nature Center at Shaker Lakes in Cleveland, Ohio, feels. When she was hired ten years ago to run Shaker Lakes, there was no leadership transition training. She was overwhelmed with many issues that needed to be addressed, but her predecessor did give her two pieces of advice she is thankful she followed: join ANCA and go to the Summits.

She did join and attended her first Summit in 2008 at Teton Science Schools in Jackson Hole, Wyoming. “I could not believe all the knowledgeable people who were willing to take time to listen to me and give advice. It was a huge relief to find people who understood what I was going through.”

Ten years later she still raves about ANCA. “Because I took advantage of ANCA’s professional development and management resources, I know I am a better leader and Shaker Lakes is a thriving nature center that is working towards the future with a large capital campaign.”

Kay can’t say enough about ANCA’s Mentor Program. “Before my first summit, I was paired with a mentor whose knowledge and skills helped me through some difficult situations. It was good to know that he was just a call away. He also made a point of connecting with me that first day of the Summit. He made sure I felt at ease and that I met others who could help answer questions and concerns I had.”

Kay believes it is essential to attend Summits and region meetings. “These conferences are not only good for professional development, they are places to rejuvenate and reconnect with other nature center professionals. The people that I’ve met over the years of attending conferences have become some of my best friends.”

At her first Summit, Kay purchased the Director’s Guide to Best Practices and liked it so much that she bought all of ANCA’s books and monographs for the center’s library. “These publications are wonderful
Kay Carlson’s ANCA Success Story

resources not only for me, but for my staff.”

ANCA’s listserv is another of Kay’s go-to resources. “Sometimes you just need to pick people’s brains for some idea starters or confirm your thoughts. The online community is always quick to respond.”

Kay thinks so highly of ANCA that when she was asked to join the Board of Directors several years back, she couldn’t say no. “It is one way I can give back to an organization that has done so much for me. I have the opportunity to serve alongside intelligent, caring people who are working to ensure ANCA stays relevant for today’s directors as well as for future leaders. I want to make sure they have the opportunities I have been afforded by being a part of the ANCA family.”
We’ve all seen it. A dead bird laying on the sidewalk next to a building. Or, maybe we’ve heard it. The loud bang of a bird flying into your window. Between 100 million to 1 billion birds are estimated to die each year in the United States due to collision with glass according to the American Bird Conservatory. One third of all the bird species found in the United States have been documented as victims of these collisions.

Why do we care? Aside from the obvious—our ongoing struggle to live in harmony with nature—birds provide critical ecological functions. By consuming insects and controlling rodent populations, they reduce damage to crops and forests and help limit the transmission of diseases such as West Nile and Malaria. Birds also play an important role in regenerating habitats by pollinating plants and dispersing seeds as discussed in the American Bird Conservancy’s publication, *Bird Friendly Building Design*.

In the construction industry today, large expanses of glass have become commonplace. There’s a push for more natural daylight for occupants of buildings. The corporate sector has seen a shift to naturally lit, open workspaces with low partitions and large expanses of glass are no longer reserved for the prestigious corner office. The education sector has also acknowledged the benefits of natural daylight on our ability to learn. Even large retail environments are incorporating skylights to allow natural light into their deep dark spaces to encourage spending. The benefits of natural daylight are obvious and undisputed.

This presents an interesting architectural design challenge. How do we protect birds and limit collisions while also providing well-lit spaces and outdoor views to building occupants?

Glass can be invisible to both birds and humans; however, humans learn to see glass through experiences and visual cues (mullions, doors) but birds do not pick up on these experiences. Birds do not perceive right angles or other architectural signals as indicators of obstacles or artificial environments. According to the US Fish & Wildlife Service, birds collide with windows because they see reflections of the landscape in the glass or they see through glass to a perceived habitat beyond.

The Acopian Center for Ornithology at Muhlenberg College and The American Bird Conservatory are leading the research and testing of bird friendly glazing. Their testing has shown that most birds will not attempt to fly through horizontal spaces less than 2” high nor through vertical spaces 4” wide or less. This is widely referred to as the ‘2x4 rule.’ Research has found that patterns covering as little as 5% of
From The Field: Designing for Birds is not just for the Birds

the total glass surface can deter 90% of bird strikes. Stripe patterns are most common, however other patterns can be utilized if spacing is analyzed. There are several commercially available glazing products on the market that attempt to create a visible barrier to birds utilizing acid etching, ceramic frit, or UV. Patterns can be applied to glass surfaces to satisfy the 2x4 rule and create a visible barrier to birds. Research has shown that locating the pattern on the outer most surface of glass is most effective as documented by Daniel Klem in Landscape, Legal, and Biodiversity Threats that Windows Pose to Birds. This also allows for the inclusion of energy-efficient coatings to be incorporated on other glass surfaces.

In addition to specialty glass, netting, screens, grilles, louvers, or exterior shades can also be used to make glass more visible and reduce bird mortality. These solutions may offer the additional benefit of minimizing solar heat gain in a building. Overhangs, balconies, and angled glass have also been shown to minimize collisions as noted by the American Bird Conservancy.

Beyond glazing, artificial light escaping from building interiors and exterior light fixtures can attract birds. Likewise, light pollution has been known to confuse and disorient migratory birds. Using automatic lighting controls to dim or turn off lights at night can help limit light pollution, as well as save energy. Selecting exterior luminaries with low up-light ratings can minimize the amount of light pollution while also protecting migratory birds.

In particular, nature center projects often present a high risk for collisions due to building locations—typically nature preserves or parks which are home to bird populations—and the desire for glazing to connect visitors with the unique landscape and views. Responsible design of glazing can limit bird collisions and support each center’s mission.

Patterning confirming to the ‘2x4’ rule helps to defer bird strikes. Credit: GWWO Architects.

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2019 ANCA Leadership Awards
Application Deadline, April 1st, 2019!
At The Nature Place in Reading, PA, an acid-etched glazing with a horizontal stripe pattern spaced 2” apart along with sunshades was utilized to make the entire façade a visible barrier to birds. While noticeable to the human eye the pattern is minimal, thus maintaining the sweeping wetland views. Patterned glass is a premium over typical transparent glazing, however, for Berks Nature, protecting nature is part of their mission and therefore the decision to include etched glazing was easy. Bird collisions were a regular occurrence at their previous facility, but since moving into the new building one year ago, Berks Nature has not witnessed a single collision. These bird friendly design features not only support their mission, but also provide a teaching tool for visitors.

Other examples include Robinson Nature Center in Columbia, MD where glazing with a decorative leaf pattern serves as a visible barrier while also complimenting the interior living tree exhibit. Dot pattern glazing was selected for Cahill Fitness and Wellness Center, which is nestled into Baltimore’s Gwynns Falls/Leakin Park, the second largest woodland park in the US. Even at an elevation of over 14,000 feet bird collisions are a consideration. For the new visitor center atop of Pikes Peak in Colorado, in addition to bird friendly glazing featuring vertical stripes, screening has been incorporated as an integral part of the building design to both serve as a visible barrier and protect the glazing from the extreme elements.

If you need even more of an incentive, USGBC introduced a LEED pilot credit worth one point in 2011, Pilot Credit 55: Bird Collision Deterrence. The pilot credit addresses the issue of bird collision from four aspects: the façade, interior lighting, exterior lighting, and performance monitoring. The pilot credit remains available today in LEED Version 4. Proof that bird friendly design does not have to be at the cost of natural daylight and views, The Nature Place was able to achieve this pilot credit along with the Daylighting and Views Indoor Environmental Quality credits.

While legislation that promotes bird-friendly design has been enacted in some cities across America, for the most part it remains largely unregulated. Until bird-friendly design practices are required nationwide, it’s up to designers and owners to consider the avian population. Responsible design of glazing and lighting can greatly reduce deadly bird collisions and help support biodiversity in the built environment.
Email ANCA at membership@natctr.org to set up a profile of your center on ANCA’s social media pages.
December 12th, 2018: The Minnesota Region met at Carpenter Nature Center in Hastings, MN to discuss self-care with guest Elle Skelton, CEO/Executive Director of Touchstone Mental Health as well as leadership and mentoring. See pictures here.

January 18-22nd, 2019: The Residential Environmental Learning Center (RELC) Gathering will take place at Wolf Ridge Environmental Learning Center in Finland, MN. Sixty residential environmental learning center leaders will spend five glorious days in a northern Minnesota Winter Wonderland laughing, learning, exchanging ideas, and exploring the 2000-acre campus. Keep an eye out for pictures here.

February 7th-8th, 2019: The Texas Region will meet the evening of Feb. 7th and all day Feb. 8th at the Mitchell Lake Audubon Center in San Antonio, TX. More information here.

February 15th, 2019: Attend the ANCA endorsed Michigan Department of Natural Resources, Nature Center Summit on Friday, Feb. 15, 2019 at the Ralph A. MacMullen Conference Center in Roscommon. Sessions will cover a variety of Michigan natural resource topics: DNR experts will present the latest science and management strategies for deer (chronic wasting disease) and other wildlife health issues, bear, wolf and cougar updates, forest health issues, invasive species updates, Michigan fisheries, and others. Stay overnight for a fun networking opportunity as well! More information, agenda and registration information is available here. Endorsed by the ANCA Michigan Region, Great Lakes Region 4 NAI, and MAEOE! Contact Jon Spieles at spielesj@michigan.gov for more information.

March 7th-9th, 2019: Nature-Based Preschool Business Planning Workshop put on by Rachel Larimore and David Catlin of Samara Early Learning LLC at the Chippewa Nature Center in Midland, MI. The workshop will be a mix of presentations and small-group interaction and problem solving. We will also visit Chippewa Nature Center’s Nature Preschool. All of these activities are designed to ensure you leave the workshop having made substantial progress on your business plan. More information here.

July 22nd-26th, 2019: The Urban Ecology Center in Milwaukee, WI is hosting its second training Intensive for civic and community leaders from cities around the world. Attendees will learn about the unique urban environmental education and community center model that the Urban Ecology Center has been running in Milwaukee for over 25 years. 2018’s Intensive workshop brought 23 attendees from across the globe. In 2019, we will host focus workshops including: Nature-Based Early Childhood Education, From Transactional to Transformational Fundraising, Urban Land Stewardship, and Community Science. See more here.

August 20th-24th, 2019: Save The Date for the ANCA Summit, Evolve, at the Cincinnati Nature Center in Cincinnati, OH! Check back for more information here.
“Thanks for all the input, everyone. I love knowing that you’re all out there ready to help me with answers.”
- Katie Watson, Pajarito Environmental Education Center

Join ANCA’s Google Group!

“Thanks for all the input, everyone. I love knowing that you’re all out there ready to help me with answers.”
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Directions Winter 2019
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