A NEW GUIDE TO HELP YOU ASSESS CONNECTION TO NATURE

NAAEE Webinar
September 22\textsuperscript{nd}, 2020

Martha Monroe, Gabby Salazar, and Louise Chawla
Thank you and welcome!

Happy to share our project with you

- Martha Monroe – University of Florida
- Cathy Jordan – Children & Nature Network
- Nicole Ardoin – Stanford University
- Judy Braus – NAAEE
- Jason Morris – Pisces Foundation

Image by Gabby Salazar
Many folks helped

- Martha Monroe
- Cathy Jordan
- Nicole Ardoin
- Judy Braus
- Jason Morris
- Thomas Beery
- Louise Chawla
- Judith Cheng
- Susan Clayton
- Enid Elliot
- Julie Ernst
- Joe Heimlich
- Sadie Hundemer
- Kristen Kunkle
- Anna Lee
- Peter Levin
- Chris Parsons
- Lauren Watkins
- Julie Whitburn
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- Sadie Hundemer
- Anna Lee
- Peter Levin
- Chris Parsons
- Lauren Watkins
- Julie Whitburn
- Charlotte Clark
- Rachelle Gould
- F. Stephan Mayer
- Jeffrey Perrin
- Gabby Salazar
- Yu-Chi Tseng
- Kristen Kunkle
- Mele Wheaton
- Vicki Carr
- Kayla Cranston
- Matteo Giusti
- Fredy Monge Rodriguez
- Ulrich Muller
- Sofya Nartova-Bochaver
- Laura Seger
- Jeffrey Skibins
- Julie Torquati
- Archana Kannan
- Nik Sawe
Our plan for this session

• Introductions
• What we learned about assessing connection to nature
• Early childhood assessments
• New guidebook
• Scenarios to introduce some tools
• Questions and discussion
Connection to Nature

“The study of connectedness to nature is primarily concerned with understanding how people identify themselves with the natural environment and the relationships they form with nature.”

- Restall and Conrad, 2015
What are we really looking at?

Love           Affinity           Desire
Awe            Emotion           Identity
Enjoyment      Oneness           Concern
Research suggests . . . ?

- Experiences in nature
- Education about nature
- Mentor
- Frequency
- Time
- Quality

Frequency and Time + Quality

Experiences in nature + Education about nature

Mentor + Quality

Environmental Stewardship Value

Environmental Concern

Creative and Critical Thinking

Connection to Nature

Environmental Stewardship Actions

Not the only variables that lead to environmental actions
Or, does it suggest . . . ?

Experiences in nature

Education about nature

Mentor

Frequency
Time

Quality

Connection to Nature

Environmental Stewardship Value

Environmental Concern

Creative and Critical Thinking

Environmental Stewardship Actions
Variation in people, experiences, nature, and programs makes it hard to know!
Many of us work to connect people to nature

Measuring C2N could be useful for program development, funding, marketing, and research

Image by Gabby Salazar
Two broad uses

- Exploring how a program changes participants’ connection to nature
- Pre and Post measure
- A tool that can detect differences

- Assessing a group
- Baseline measure
- Detecting differences and program needs
- Rationale for providing resources, facilities, programs

Evaluation

Planning

Image by Martha Monroe
Psychologists have lots of tools

- Connectedness to Nature
- Ecological Awareness Interview
- Nature Connection Index
- Nature Connectedness Inventory
- 2 Major Environmental Values Scale
- Inclusion of Nature in Self
- Connectivity with Nature Scale
- Emotional Affinity Toward Nature
Practitioners need tools

- Work with many audiences
- Detect change
- Easy to use
- Easy to analyze
- Valid in many contexts
Workshop

• 20+ participants
  • Tool developers and users
• 2 days in Spokane, 2018
• Identified tools the best assessed C2N
• Identified needs and gaps
• Developed and tested Guide

Image by Gabby Salazar
Most tools consider “wild” nature

... with scaled items on a paper-pencil survey
What about managed or familiar nature?
Introducing this guide

- Offers 11 tools
- How to select one
- How to use it
- How to analyze the data
Sample of Items

**Connectedness to Nature** – Mayer and Frantz
(Do you disagree or agree with the following statements?)
- I often feel a sense of oneness with the natural world around me.
- Like a tree can be part of a forest, I feel embedded within the broader natural world.

**Connection to Nature** – Cheng, Monroe, Whitburn
(How much do you like to see or do the following things?)
- See plants and flowers in nature
- Take care of animals and plants
What about other ways of assessment?

Interviews, writing, drawing, photographs, and observations

From Kalvaitis and Monhardt, 2012
What does C2N mean to very young children?

What is the most effective way to assess it, when children are not old enough to answer written surveys?
Coordinating Team

Thomas Beery
Kristianstad University

Louise Chawla
University of Colorado Boulder

Peter Levin
University of Minnesota

(Beery, Chawla & Levin, 2020)

Expert Advisory Panel

9 early childhood experts with collective experience
- designing measures of C2N or empathy with children
- working in a nature preschool or lab preschool with nature settings
- working with racially, ethnically, and economically diverse children.
How are young children’s relationships to nature special?

• Everything in the world can be alive
• They engage with nature through interest and curiosity, emotions, agency, full bodied free movement, multisensory immersion
• C2N is closely related to empathy for other living things
Quantitative assessments with young children involve interviews with games, puppets, and picture choices.
Why is it important to evaluate C2N in early childhood?

Nature preschools and kindergartens are spreading rapidly, and they have the mission of connecting children to nature.
It is a formative period of socialization, of learning to feel comfortable in nature, value, and care for nature.
Practitioner Guide to Assessing Connection to Nature

https://naaee.org/eeapro/publication/practitioner-guide-assessing-connection
Eight tools are surveys

### Tool #3: Connectedness to Nature Scale (Children’s Version)

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often feel a strong connection to nature.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I think of nature as a family that I belong in.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I see myself as a part of the greater circle of life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

### Tool #4: Revised Connection to Nature Index

> How much do you like to see or do the following things? Please mark one circle for each line.

<table>
<thead>
<tr>
<th>Experiences</th>
<th>Do not like at all</th>
<th>Like very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>See plants and flowers in nature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>See wild animals living in a clean environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take care of animals and plants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Three tools collect qualitative data

**Tool #11**  
**Nature Relatedness Observations**  
Developed by Enid Elliot

**Tool #8**  
**Journaling**  
Summarized by Anna Lee and Nicole Ardoin

**Tool #7**  
**Interpretation of Drawings**  
Summarized by Joe Heimlich, Chris Parsons, and Gabby Salazar

*Image by Martha Monroe*
Decision Tree: Finding the right tool

Quick Tip:
You may want to use a survey if there are a lot of individuals involved, if you need to report numerical data, or if you have limited time to administer or analyze responses. Other approaches, like journals and photos, can provide rich detail and insights, but will likely involve fewer respondents.

**Early Childhood (2-5 years old)**

*Biophilia Interview*
11-item scale conducted as an interview with young children. Measures attraction to nature, including curiosity and interest. Go to page 13.

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**Children and Young Adolescents (6-13 years old)**

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**Adolescents and Adults (14 years +)**

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**Is your program low, medium, or high intensity?**

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**Low intensity** (Example: a one-day field trip or a short nature program)
Your program may be very useful and impactful, but a short exposure is unlikely to influence connection to nature in a way that can be measured with these tools. Try measuring knowledge or attitudes. (See Appendix B.)

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**Medium intensity** (Example: a weeklong day camp or an ongoing after-school program)
Children's Environmental Perceptions Scale (6-15 years) 16-item scale that measures appreciation for nature and concern about nature. Go to page 20.

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**High intensity** (Example: an immersive 10-day backpacking trip or a yearlong after-school program)
Children's Environmental Perceptions Scale (6-13 years) 16-item scale that measures appreciation for nature and concern about nature. Go to page 20.

---

**Inclusion of Nature in Self Scale (7+ years)** 1-item pictorial scale that measures how an individual thinks about their relationship with nature. Go to page 34.

---

**Nature Relatedness Scale**
6-item scale that measures how people relate to the natural world through their beliefs, attitudes, and physical connections. Go to page 46.

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**Connection to Nature Index (10-16 years)** 14-item scale that measures a child's feelings about nature connection. Go to page 27.

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**Connectedness to Nature Scale (Children's Version) (10+ years)** 10-item scale that measures a child's feelings about nature connection. Go to page 23.

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**Inclusion of Nature in Self Scale (11+ years)** 1-item pictorial scale that measures how an individual thinks about their relationship with nature. Go to page 34.

---

**Love and Care for Nature Scale**
10-item scale that measures emotional connection to nature. Go to page 45.

---

**Environmental Identity Scale**
10-item scale that measures how an individual's connection to nature relates to their personal identity. Go to page 30.

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**Nature Relatedness Scale**
21-item scale that measures how people relate to the natural world through their beliefs, attitudes, and physical connections (there is also a shorter, 6-item version). Go to page 46.

---

**Connectedness to Nature Scale**
14-item scale that measures emotional connection to nature. Go to page 23.
QUESTION 1: Do you want to use a survey?
QUESTION 2: What is your target age group?

Begin here

Do you want to use a survey to measure connection to nature?

No

I'm interested in using drawings, journals, or another non-survey approach to measure connection to nature.

Early Childhood (2-5 years old)

Nature Relatedness Observations
Approach that uses open-ended observations to understand children's connection to nature. Go to page 49.

Children, Adolescents, and Adults (6+ years)

Journaling
Approach that uses journal entries to assess connection to nature. Go to page 39.

Interpretation of Drawings
Approach that uses children's drawings to understand connection to nature. Go to page 37.
Begin here

What age is your target audience?

Yes

Early Childhood (2–5 years old)

Biophilia Interview
11-item scale conducted as an interview with young children. Measures attraction to nature, including curiosity and interest. Go to page 13.

Children and Young Adolescents (6–13 years old)

Adolescents and Adults (14 years+)
QUESTION 3: Are you conducting a one-time assessment?

Begin here

What age is your target audience?

Yes

Do you want to use a survey to measure connection to nature?

Children and Young Adolescents (6-13 years old)

All of the tools in this guide can be used to measure a person’s baseline connection to nature. We recommend that you read about the tools identified in bold type to find one that’s right for your audience.

Yes

Are you conducting a one-time assessment?

No

I want to assess change over time.

Adolescents and Adults (14 years+)
QUESTION 4:
What is your program’s intensity?

<table>
<thead>
<tr>
<th>Intensity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low intensity</td>
<td>(Example: a one-day field trip or a short nature program)</td>
</tr>
<tr>
<td>Medium intensity</td>
<td>(Example: a weeklong day camp or an ongoing after-school program)</td>
</tr>
<tr>
<td>High intensity</td>
<td>(Example: an immersive 10-day backpacking trip or a yearlong after-school program)</td>
</tr>
</tbody>
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*Intensity* is a function of time (duration and frequency) and engagement. Engagement can vary with novelty and attention.

**Is your program low, medium, or high intensity?**

**Children and Young Adolescents** (6–13 years old)

- **Low intensity**
  - Your program may be very useful and impactful, but a short exposure is unlikely to influence connection to nature in a way that can be measured with these tools. Try measuring knowledge or attitudes. (See Appendix B.)

- **Medium intensity**
  - Children’s Environmental Perceptions Scale (6–13 years)
    - 16-item scale that measures appreciation for nature and concern about nature. Go to page 20.
  - Inclusion of Nature in Self Scale (7+ years)
    - 1-item pictorial scale that measures how an individual thinks about their relationship with nature. Go to page 34.

- **High intensity**
  - Children’s Environmental Perceptions Scale (6–13 years)
    - 16-item scale that measures appreciation for nature and concern about nature. Go to page 20.
  - Inclusion of Nature in Self Scale (7+ years)
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  - Nature Relatedness Scale
    - 6-item scale that measures how people relate to the natural world through their beliefs, attitudes, and physical connections. Go to page 46.
  - Connection to Nature Index (8–10 years)
    - 14-item scale that measures a child’s feelings about nature connection. Go to page 27.
  - Connectedness to Nature Scale (Children’s Version) (10+ years)
    - 10-item scale that measures a child’s feelings about nature connection. Go to page 23.
Is your program low, medium, or high intensity?

Adolescents and Adults (14 years+)

Low intensity (Example: a one-day field trip or a short workshop)

Your program may be very useful and impactful, but a short exposure is unlikely to influence connection to nature in a way that can be measured with these tools. Try measuring knowledge or attitudes. (See Appendix B.)

Medium intensity (Example: a weeklong nature retreat or an ongoing after-school program)

Inclusion of Nature in Self Scale
1-item pictorial scale that measures how an individual thinks about their relationship with nature. Go to page 34.

Love and Care for Nature Scale
10-item scale that measures emotional connection to nature. Go to page 43.

High intensity (Example: an immersive 10-day backpacking trip or a yearlong training program)

Inclusion of Nature in Self Scale
1-item pictorial scale that measures how an individual thinks about their relationship with nature. Go to page 34.

Love and Care for Nature Scale
10-item scale that measures emotional connection to nature. Go to page 43.

Environmental Identity Scale
11-item scale that measures how an individual’s connection to nature relates to their personal identity. Go to page 30.

Nature Relatedness Scale
21-item scale that measures how people relate to the natural world through their beliefs, attitudes, and physical connections (there is also a shorter, 6-item version). Go to page 46.

Connectedness to Nature Scale
14-item scale that measures feelings about nature connection. Go to page 23.
1. An organization wants to learn how its members feel about their relationship with nature.

Image by Gabby Salazar
**Strategy: One-time Assessment for Adults or Children**

- **Love and Care for Nature Scale**
  15 item scale that measures emotional connection to nature.
  
  *Perkins, 2010*

- **Environmental Identity Scale**
  11 item scale that measures how an individual’s connection to nature relates to their personal identity.
  
  *Clayton, 2003*

- **Inclusion of Nature in Self**
  1 item pictorial scale that measures how an individual thinks about their relationship with nature.
  
  *Schultz, 2002*
2: An organization wants to know whether participating in a 10-day backpacking trip influences connection to nature for 2,000+ participants.
Strategy: Scale as a Pre-test/Post-test

Connectedness to Nature Scale
14-item scale that measures feelings about nature connection.

Mayer & Frantz, 2004

Environmental Identity Scale
11 item scale that measures how an individual’s connection to nature relates to their personal identity.

Clayton, 2003

Nature Relatedness Scale
21-item scale that measures how people relate to the natural world through their beliefs, attitudes, and physical connections.

Nisbet, Zelenski, & Murphy, 2009
3: How does a 10-day backpacking trip influence connection to nature among the ten participants?
Strategy: Qualitative Data

Journaling

Approach that uses journal entries to measure connection to nature.

Interpretation of Drawings

Approach that uses children’s drawings to understand connection to nature.
4: An early childhood education center creates a 4-week curriculum of nature activities. It wants to know if these activities influence C2N in 40 children in a preschool.
Strategy:
Pre-test/Post-test Interviews

Biophilia Interview

11-item interview that measures young children’s affinity to nature
(Rice & Torquati, 2013)

Picture choice variation
(Yilmaz, Çiğ & Yilmaz-Bolat, 2020)
5: A nature preschool wants to know if its activities support change in young children’s connection to nature and selects 4 children for case studies.
Strategy: Qualitative Data

Observations
A classroom volunteer records 4 children’s actions through field notes, photographs and video during a 15-week semester.

Informal Conversations
During observations, the volunteer has informal conversations with children about their nature experiences.

Elliot et al., 2014; Kharod & Arreguín-Anderson, 2018
Gaps in the Toolbox

Settings:
• urban vs. rural; indoor nature; views of nature

Audiences:
• beyond English-speaking visitors to a natural area
• different relationships to nature: farmers, hunters, Native nations
• beyond the US

New approaches:
• particularly qualitative to serve a range of audiences and settings

Individual differences:
• variation from one place to another, from one way of knowing to another, and from one experience to another
Other Resources and Opportunities

- eePRO at NAAEE.org
- Collaborations between practitioners and researchers
- NAAEE Evaluation Portal (coming soon!)
References


