

# NISE Network Online Workshop

Murals & Museums - the Intersection of Art, Science, and Cultural Relevance

Tuesday, July 18, 2023

## Today's Presenters:

**Nich Weller**, Arizona State University in Tempe, AZ

**Kate Semmens**, Nurture Nature Center in Easton, PA

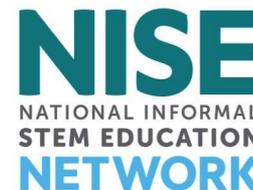
**Keri Maxfield**, Nurture Nature Center in Easton, PA

**Adrienne Testa**, Sciencenter in Ithaca, NY

**Caleb Thomas**, Ithaca Murals in Ithaca, NY

**James Owens**, Headwaters Science Center in Bemidji, MN

**Ellie Isakson**, Headwaters Science Center Artist in Residence



**Welcome!** As we wait to get started with today's discussion, please:

**Introduce yourself!** Type your name, institution, and location into the [Chat Box](#)

**Questions?** Feel free to type your questions into the [Chat Box](#) at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

**Today's discussion will be recorded and shared on nisenet.org at: [nisenet.org/events/online-workshop](https://nisenet.org/events/online-workshop)**



# Sustainability

- Hands-on activities and other public engagement resources
- Additional sustainability resources (annual events, UN Sustainable Development Goals, exhibit design, and more)
- Professional learning resources (training materials, guides, etc.)

[www.nisenet.org/sustainability-resources](http://www.nisenet.org/sustainability-resources)

*Building community resiliency to environmental risk through  
informal science education, art-centered approaches to learning,  
and community dialogue and networking.*



Featuring NOAA's Science on a Sphere™  
suspended globe and other exhibits.

*Join us!*

SCIENCE PROGRAMS • COMMUNITY DIALOGUE • ART EXHIBITS  
URBAN GARDEN • SCIENCE ON A SPHERE • FILMS • KID'S CRAFTS • ENVIRONMENTAL

Nurture Nature Center  
518 Northampton Street  
Easton, PA 18042

[www.nurturenaturecenter.org](http://www.nurturenaturecenter.org)

Home of  
BUY FRESH BUY LOCAL  
GREATER LEHIGH VALLEY



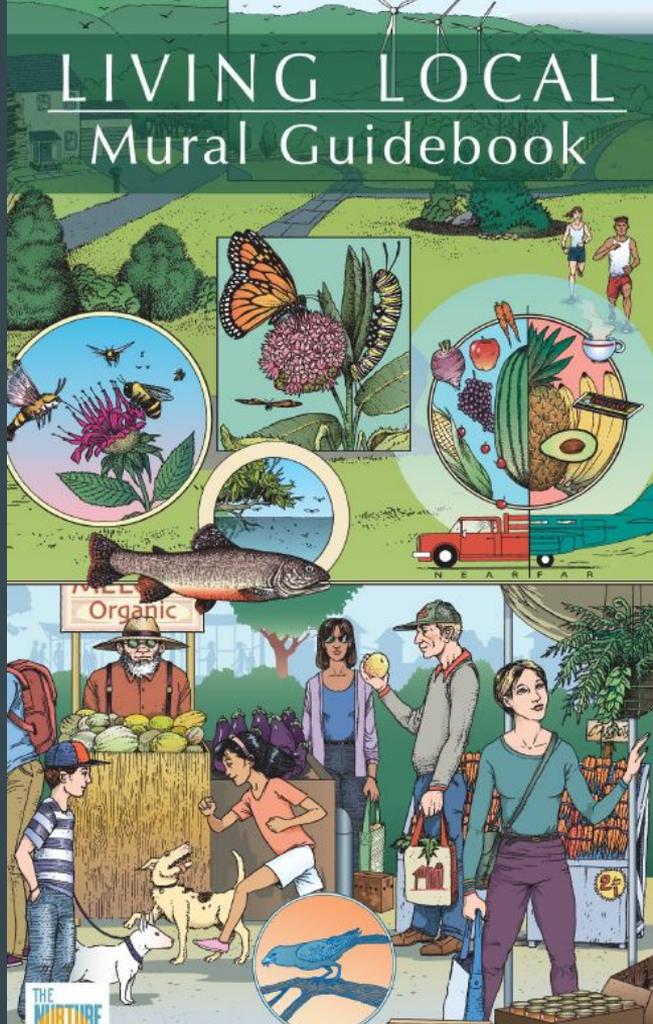


## Using Art to Highlight Local Environmental Issues and Sustainability

- Over 80 environmentally related topics
- Fosters discussions
- Shows locally relevant scenes
- Integrated in school group programming at NNC – provides opportunity for interaction
- Applicable to a wide range of ages – school age children to adults
- Represents a diversity of scenarios and types of areas (rural, suburban, urban)
- Associated guidebook, coloring sheets, and worksheets
- Cross-cutting issues and hands-on activities included in guidebook

# LIVING LOCAL

## Mural Guidebook



THE NURTURE NATURE CENTER

518 Northampton Street, Easton, PA 18042  
610-253-4433 | www.nurturenaturecenter.org

**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



### Sustainability

As our lives become more complex our energy needs increase. From transportation to communication, energy powers our lives. Researchers have expressed the need for renewable, sustainable energy. The concept of "sustainability" means that an activity can be indefinitely continued without harmful or lasting impacts. Wind and solar are renewable, sustainable forms of energy that are currently being used to power our supplement our daily needs.

**Windmills (53)** are becoming common sights in Pennsylvania where they are installed along ridges to capture the optimum air flow. However, windmills have been identified as dangerous to some wildlife, especially birds and bats (51, 52). These creatures fly into the blades and are injured or killed.

Recently, slower blades and alternate windmill designs (50) have been utilized to reduce or eliminate impacts.

Sometimes distant weather events (54) can trigger local impacts. Here, a distant thunderstorm is seen, far away on the upper portions of a river. Even though the rain may never fall locally, an upstream event can cause flooding as local waterways attempt to deal with excess flow. Paying attention to weather alerts can help people prepare for these impacts.

Local areas are underlain by fragile and sensitive geology. In prehistoric times Pennsylvania was a shallow sea, and as a result there are large, low lying areas of limestone under current residential and industrial land. Limestone is formed by the laying down of countless layers of shelled sea life, like clams, crabs, mollusks and coral. This limestone is known as carbonate or "karst" geology. It is easily dissolvable and is prone to sinkholes (55), caverns (59), fissures and collapses that are often triggered by varying levels of groundwater. Drilling a well creates a cone of depression (60) in groundwater level. Sometimes this may lead to sinkholes and collapses due to the loss of support as the water is pumped out.

By using pervious materials or green infrastructure people can help to mitigate impacts to groundwater and sensitive areas. Pervious pavers (57) have been used for walkways, driveways, parking lots, patios and trails. These pre-cast blocks infiltrate rain water, allow water to pass through and help to replenish groundwater supplies.

Pennsylvania communities have constructed trail systems (56) to facilitate enjoyment of rural environments. Walking, biking and running (58) are popular activities that benefit from these connecting systems.

### Water, Water Everywhere...

Water is crucial to live on Earth and it is what makes Earth so unique among the planets in our solar system. Water covers 70.9% of Earth's surface but 97% of that is salt water in the ocean. Only 0.3% is fresh water and most of that is trapped in soil, glaciers, or plants and animals, so there is really only a very small amount available and clean enough for us to use.

The water cycle is the movement of water driven by the sun which heats water in the oceans causing evaporation. This vapor, combined with water transported from plants and evaporated from soil, condenses into clouds in the atmosphere and is moved around by wind. Precipitation can fall as snow or rain and gravity turns the runoff into rivers leading to bays and lakes and ultimately the ocean. Some runoff is infiltrated into the ground to be used by plants or stored in aquifers which we use for our drinking water.

Water impacts our landscape, carving paths with rivers, eroding soil and transporting it to the oceans. Too much water can create flooding, especially in highly developed areas where paved, impermeable surfaces lead to surface runoff that would normally infiltrate slowly into soil and be drawn up by plants and trees. The risk of flooding can be reduced by maintaining natural riparian ecosystems in the floodplains and keeping buildings and homes out of the floodplain.

#### Illustrations - Panel 2

17. Sunlight - UV radiation, haze, & solar energy
18. Nocturnal species - natural pest control - night hawks & big brown bat
19. Native species - blue heron
20. Pollution - particulates, compounds, air temperature
21. Suburban building - land use
22. Stormwater detention - traditional basins
23. Stormwater detention - naturalized basins
24. Water quality - rain garden - native plant species
25. Floodplain management - raised structure
26. Health risk: West Nile disease & pest management - mosquitoes
27. Floodplain structures & impediments
28. Nuisance species: unbalanced growth - predator loss - Canada goose

Some trails are built on old railway routes, and often, trails provide links to other communities, extending the available recreational facilities.

Sustainability, when relating to food, is about local and remote sources. It can also include organic and nonorganic considerations. Foods that we consume every day may have various origins, both near and far. However, the farther away a food source the more expensive it is to transport and the more there may be for preservatives and protective packaging. Pictured is a graphic image (61) that represents these ideas, showing "near" foods that can be transported simply and more cheaply, and "far" foods that require shipping and treatments for preservation and marketing. Energy costs to ship and fly far foods from places like South America, Central America, and Asia can dwarf the rest of energy spent near foods.

One recent trend has been a move toward the establishment of farmer's markets (62). These small markets specialize in locally grown foods and products, and provide a source for communities to purchase fresh, healthy produce from known growers and suppliers. Local foods are responsive to seasonal conditions, local weather and regional economies, not to mention they taste fresh and are packed with flavor and antioxidants. These characteristics, along with meeting their local farmers, give people who shop locally a sense of connection with what they put in their bodies and feed their families. Farmer's markets also support local economies and help to sustain local farmers.



#### Questions:

- What did you eat for breakfast? How far did the food you ate have to travel to get to your plate?
- Do you know any local farmers?
- Do you know how many species of bats there are in our area?
- How large is your energy and water footprint? Think about all of the devices you use on a daily basis. What is your family's footprint? How does this change and impact your local environment? What behaviors can you change to reduce your footprint?

# Living Local worksheet

## Consumption - Energy and Material Use

Name \_\_\_\_\_

1. Think about all the devices you and your family use on a daily basis, including phones, tvs, ipads, and play stations. Don't forget all the appliances you use in your home (toaster, microwave, refrigerator). Does your family use a car or bus for transportation? Do you have a lawn that needs to be mowed? Do you have air conditioning and heating in your house? How often do you go shopping and purchase new clothes and other items? List them below.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. All this consumption has many costs beyond just what you pay – the energy and resources required to provide these goods and services have environmental impacts called externalities. Externalities are costs and benefits associated with producing a good or service that are not included in the market price. The extraction and production of certain sources of energy are processes that create many externalities including pollution, habitat loss, water contamination and more. What examples can you identify in the mural that show energy sources? Are they renewable or non-renewable?

\_\_\_\_\_

\_\_\_\_\_

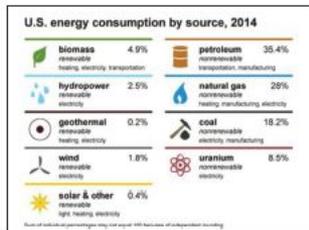
\_\_\_\_\_

3. What examples can you identify in the mural that show energy use? Are these uses essential/necessary or are they just for aesthetics and entertainment? What could be done to make these uses more sustainable?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



4. How much of the US energy use is supplied by renewable forms of energy?

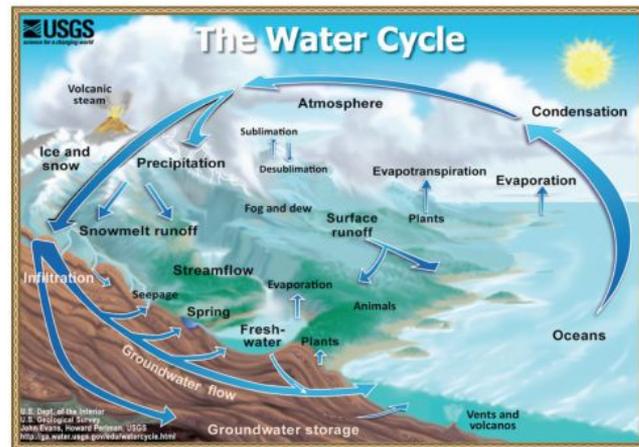
\_\_\_\_\_

\_\_\_\_\_

# Living Local worksheet

## Water

Name \_\_\_\_\_



Water we use has been on our planet for billions of years – the water continually moves through the water cycle shown above which includes processes of evaporation, condensation, transpiration, and precipitation.

- **Accumulation:** the process in which water collects in large, low-lying bodies (oceans, lakes)

- **Condensation:** the transformation of water vapor into liquid water by cooling

- **Evaporation:** the transformation of liquid water into water vapor by heating from the sun – the water vapor becomes a cloud in the air

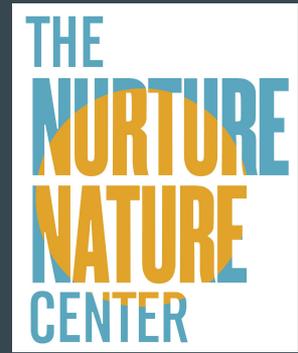
- **Infiltration:** the process in which liquid water passes into, or through land by filtering

- **Precipitation:** rain, hail, or snow falling from the clouds due to the condensation of water

- **Runoff:** liquid water from rain or snow that flows over the surface of the land and into streams, rivers, lakes, ocean

- **Transpiration:** the process by which plants release water through the pores in their leaves

# THANK YOU!



Nurture Nature Center  
518 Northampton Street  
Easton, PA 18042

[ksemmens@nurturenature.org](mailto:ksemmens@nurturenature.org)

[rhogan@nurturenature.org](mailto:rhogan@nurturenature.org)

[kmaxfield@nurturenature.org](mailto:kmaxfield@nurturenature.org)

---

[www.nurturenaturecenter.org](http://www.nurturenaturecenter.org)

[www.focusonfloods.org](http://www.focusonfloods.org)



**Adrienne Testa**  
Director of Exhibits & Facilities  
Sciencenter  
Ithaca, New York



**Caleb Thomas**  
Organizer, Artist, Activist, Founder of...  
Ithaca Murals  
Ithaca, New York



# (Some of the) Murals at the Sciencenter



Ocean Gallery  
Paulina Melechkina



Farmers Market  
Audra Lisner



Airways Maze  
Molly Reagan



Initial Meeting with Ithaca Murals

## Call For Submissions 20 MiniMurals at Sciencenter

Our goal for these 20 MiniMurals at the Sciencenter is to transform our plain brown fence into a beautiful work of art that welcomes **all** people to the Sciencenter.

### Potential themes for your MiniMural proposal:

How can science bring a community together? Our mission is to cultivate a broad community of curious, confident, critical thinkers... a world where people explore, connect, and create through science.

How do you use science every day? What "everyday science" do you experience in your home, backyard, and neighborhood?

What do you love about the Sciencenter? What is your favorite Sciencenter memory? Show us what happens inside the Sciencenter (examples: exhibit experiences, animal encounters, hands-on science programs, learning through play).



### Eligibility

Open to all. Individual artists, groups, and families are welcome to apply.

**\*\*We encourage people entering proposals to visit the Sciencenter in person! Stop by and let the front desk know you're submitting.\*\***

### Location

MiniMurals will be on 4'x5' MDO (smooth plywood) panels. Artists can paint these at the Sciencenter or wherever you please.

### Compensation

Artist awarded \$400 to cover time and expenses.

### Timeline

Submissions due by May 17  
Winning proposals announced June 7  
Painting in Summer 2021

### Items to submit

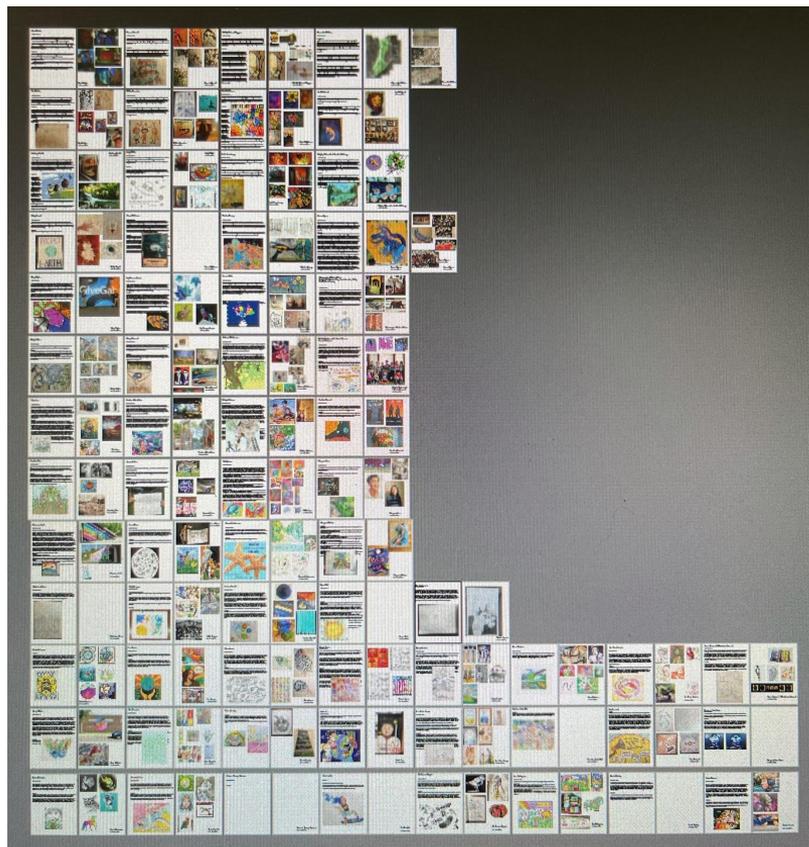
- Name & contact information
- Brief autobiographical statement
- Proposal description, image, or sketch
- Examples of artistic/painting experience

### Proposals will be juried on

- Sketch, concept, vision
- Quality of prior work
- Potential positive impact on our community

Send proposals or questions to Adrienne Testa, [atesta@sciencenter.org](mailto:atesta@sciencenter.org)

Presented by the Sciencenter  
in partnership with  
Ithaca Murals and TCAction

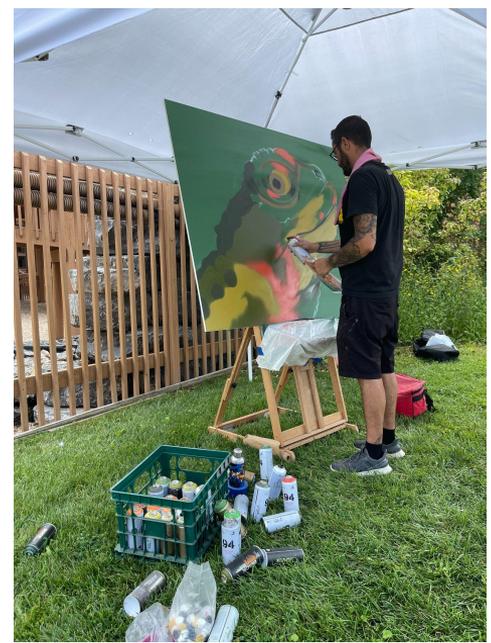
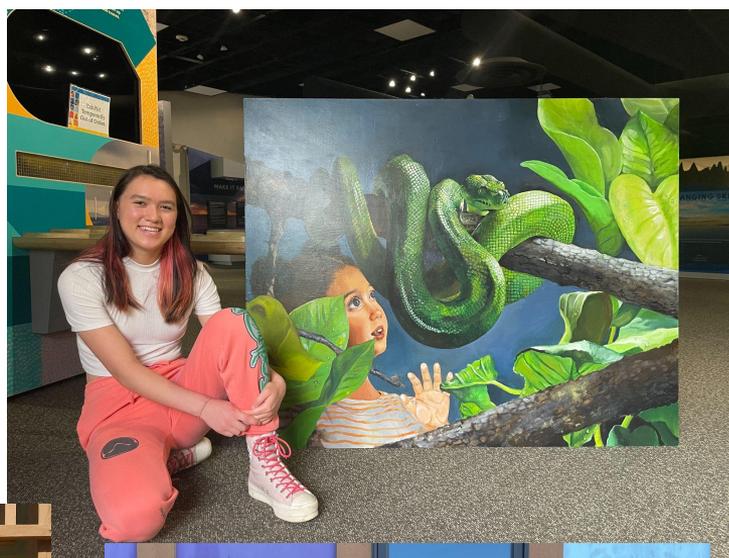


**Request for Proposals -> ~60 proposals received**



**Public jurying at the SciCenter, in our neighborhood, and online (covid times)**

**Final selection by Exhibits Department + Ithaca Murals**



**17 Muralists  
+  
3 Headstart Classes**



## Outcomes

- New partnerships
- Improved relationships with neighbors
- Many new artist friends
- Great PR!
- Beautiful, welcoming fence

## Installation & Community Celebration



# Headwaters Science Center

---

**James Owens**, Headwaters Science Center in Bemidji, MN

**Ellie Isakson**, Headwaters Science Center Artist in Residence

[www.hscbemidji.org](http://www.hscbemidji.org)

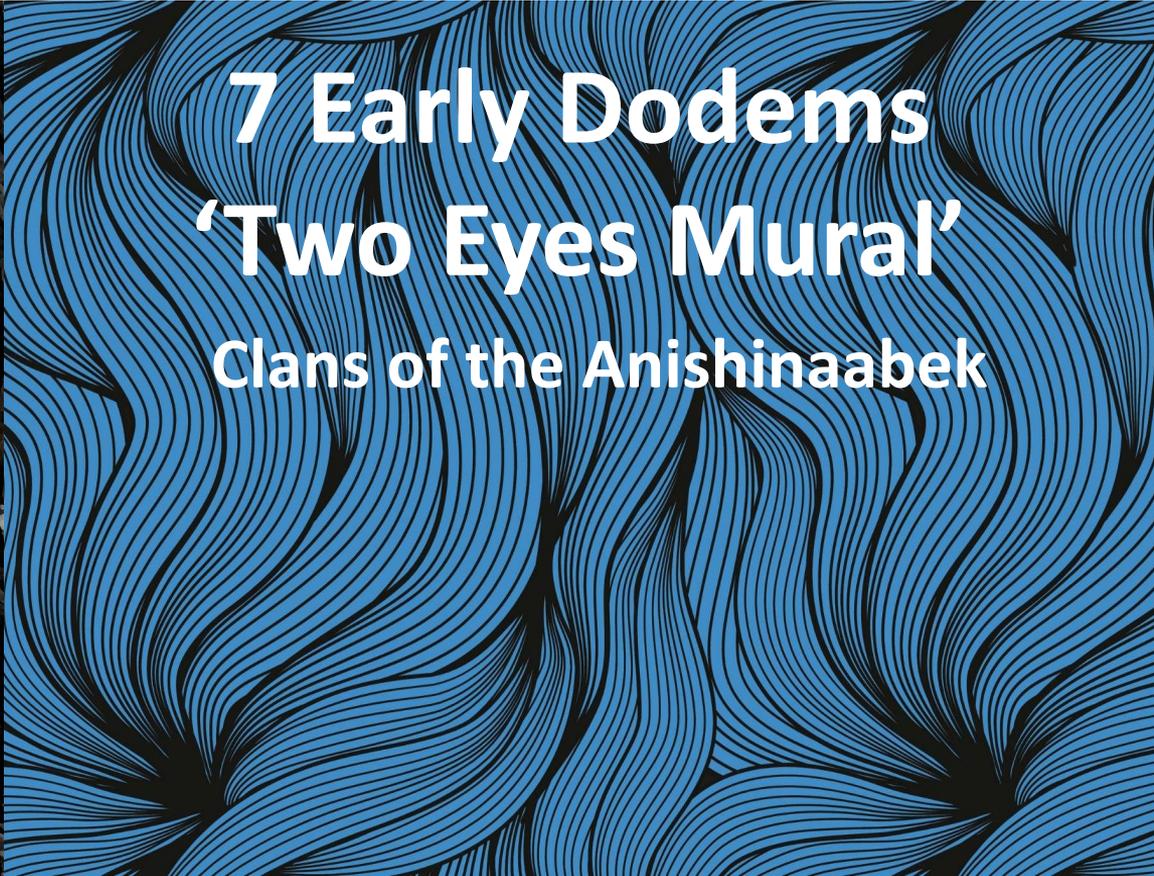
# Milky Way's Ring



Milky Way arch emerging from, Chile, on the left. The bright object in the center, above the Milky Way is Jupiter, in the constellation Sagittarius, elongated due to the five point panoramic capture & projection. Magellanic Clouds are visible on the left side, and a plane created a visible trace on the right, along the Vista enclosure. Galactic north is downward.

Lindsey Rose Sorenson  
~*Wahsotaymitatum*~

White Earth Nation Ojibwe  
*'Light of the Heart of the Horse'*



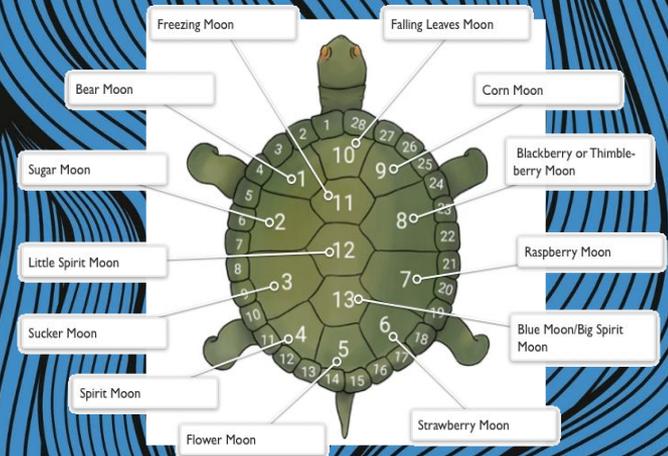
**7 Early Dodemans**  
**'Two Eyes Mural'**  
Clans of the Anishinaabek

# Ojibwe Clan System Lesson by Deanna StandingCloud

[https://indianed.mpls.k12.mn.us/uploads/clan\\_system.pdf](https://indianed.mpls.k12.mn.us/uploads/clan_system.pdf)

<https://ojibwejournal.wordpress.com/2020/01/15/the-seven-clans/>

*Anishinaabe* tribes moved along lakes and rivers into fertile hunting and fishing areas, like Northern Minnesota and Canada. The clan system grew, and many additional clans came into existence. For Anishinaabe people, the clan system kept order and justice, it provided social unity and collective wisdom. For women who are the keepers of water -with it they give life- the clan system inexorably connects Turtle Island to our star origins.





# Crane Clan

---

Crane clan are spiritual leaders & orators. When you look at Crane standing in the water you see it observing the world in the air above. Crane clan are responsible for communicating to others. Crane guides the *'Outside Chief'*.



# Bear Clan

---

Bear clan are protectors. Bear spends so much time patrolling the area, they become very knowledgeable of wild medicines & herbs. Bear clan are healers.

# Deer Clan

---



Deer clan is responsible for looking after the well-being of '*Daughters, Sisters, Mothers & Wives Community*'. Deer are gentle, kind & artistic. Ceremonies & celebrations fall, under the responsibility of Deer clan; it is their job to ensure community harmony.



# Bird Clan

---

Bird clan are teachers, spiritual advisors & masters of intuition. When you look at Bird overhead, you see them observing the world from many different angles. Birds fly, so they are closest to the Creator & can access that wisdom from the sky to the world. Bird Clan are keepers of knowledge.



# Fish Clan

---

Fish clan are people's philosophers; holding an abundance of knowledge. They are respected advisors. Fish watch the sky. They track stars & moons as they swim in the currents. Fish clan connect us to our star teachings. If ever there is conflict between chieftains, clans, or others, Fish clan mediates.



# Loon Clan

---

Loon clan are spiritual leaders & orators, skilled planners & negotiators; upholding the '*Seven Teachings*'. When you look at Loon on water, you see them riding waves & diving beneath the surface to see what is happening below. Loon clan are responsible for settling issues within the community. Loon guides the '*Inside Chief*'.



# Martin Clan

---

Marten clan are skilled warriors & peace keepers; they are quick to think, very effective strategists & excellent educators. Marten is limber & ferocious with outstanding reflexes, a fantastic hunter. Marten clan are responsible for maintaining the '*Warrior Society*'.

# Q&A

Use the raise hand feature or type your question in the chat



# Resources & Opportunities



Learn more and access the NISE Network's online digital resources:  
[nisenet.org/browse-topic](https://nisenet.org/browse-topic)



Read our monthly newsletter  
[nisenet.org/newsletter](https://nisenet.org/newsletter)

Follow NISE Net on social networking  
[nisenet.org/social](https://nisenet.org/social)



# 2023 Online Workshops

Bubbling Up later this Year... 🐱

One Year of Science and Discovery with the  
Webb Space Telescope

Tuesday, August 8, 2023

2pm-3pm Eastern / 11am-12pm Pacific

Eclipse Planning for October 14, 2023 - A  
Review of the Newest Resources for Engaging  
the Public

Tuesday, September 12, 2023

2pm-3pm Eastern / 11am-12pm Pacific



[nisenet.org/events](https://nisenet.org/events)



# Thank You



*This project is made possible in part by the Institute of Museum and Library Services, Grant Number MG-245910-OMS-20.*

*This project is a continuation of the program established through support from the Rob and Melani Walton Foundation as part of Arizona State University's Rob and Melani Walton Sustainability in Science and Technology Museums initiative.*