Why Zoos & Aquariums Matter:

Aligning Your Agendas With Those of Your Visitors

Webinar #2

May 2, 2019

new knowledge.org

CENTER FOR RESEARCH AND EVALUATION

Lifelong Learning Group

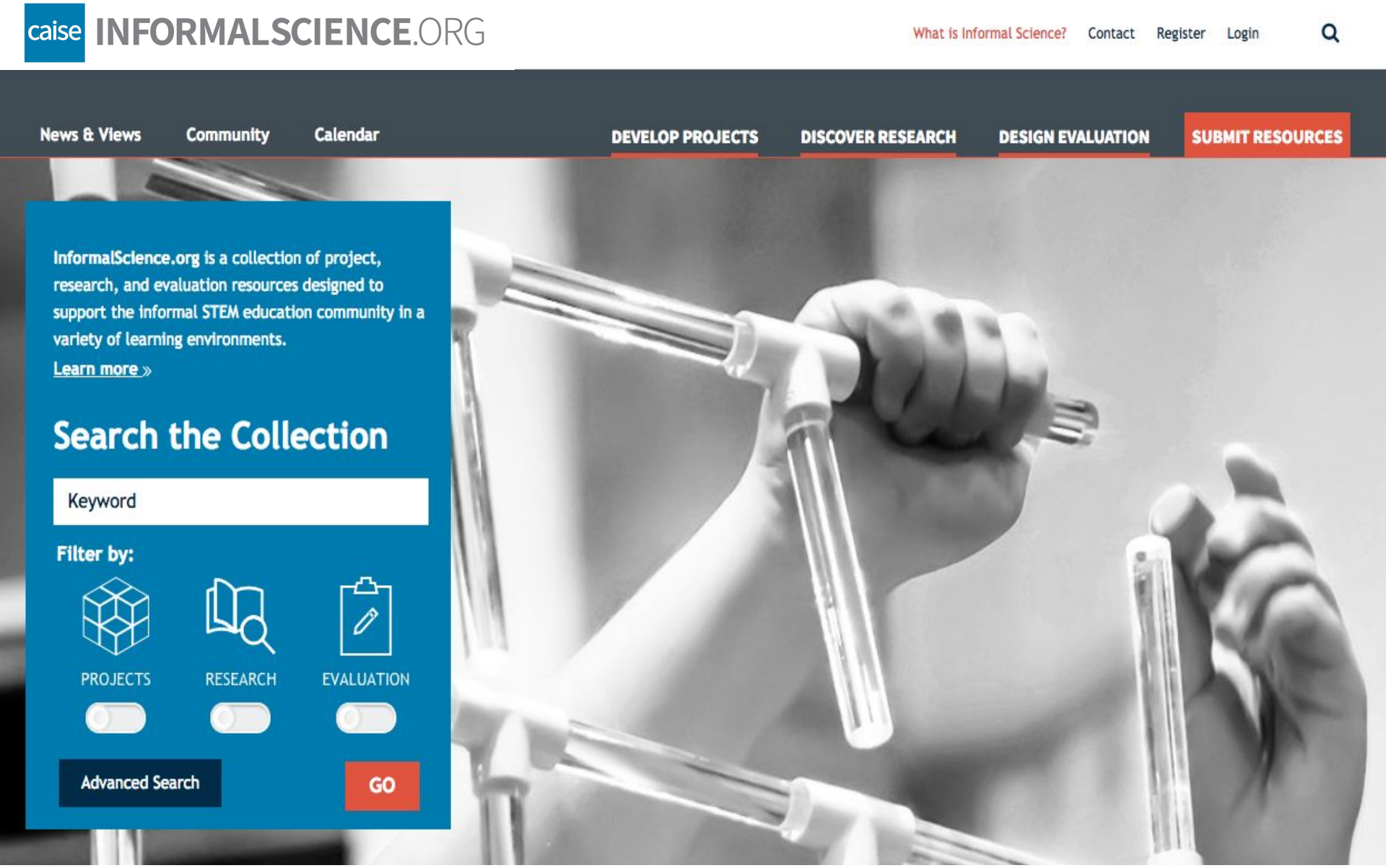
Oregon State University

ASSOCIATION OF ZOOS & AQUARIUMS

caise | center for advancement of informal science education

About CAISE

Center for Advancement of
Informal Science Education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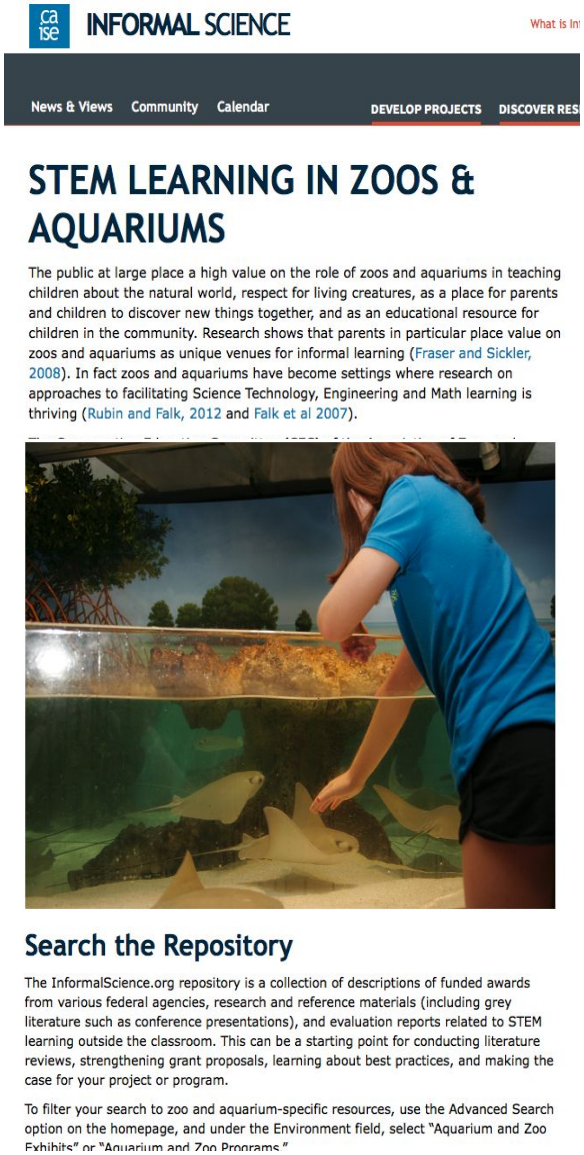
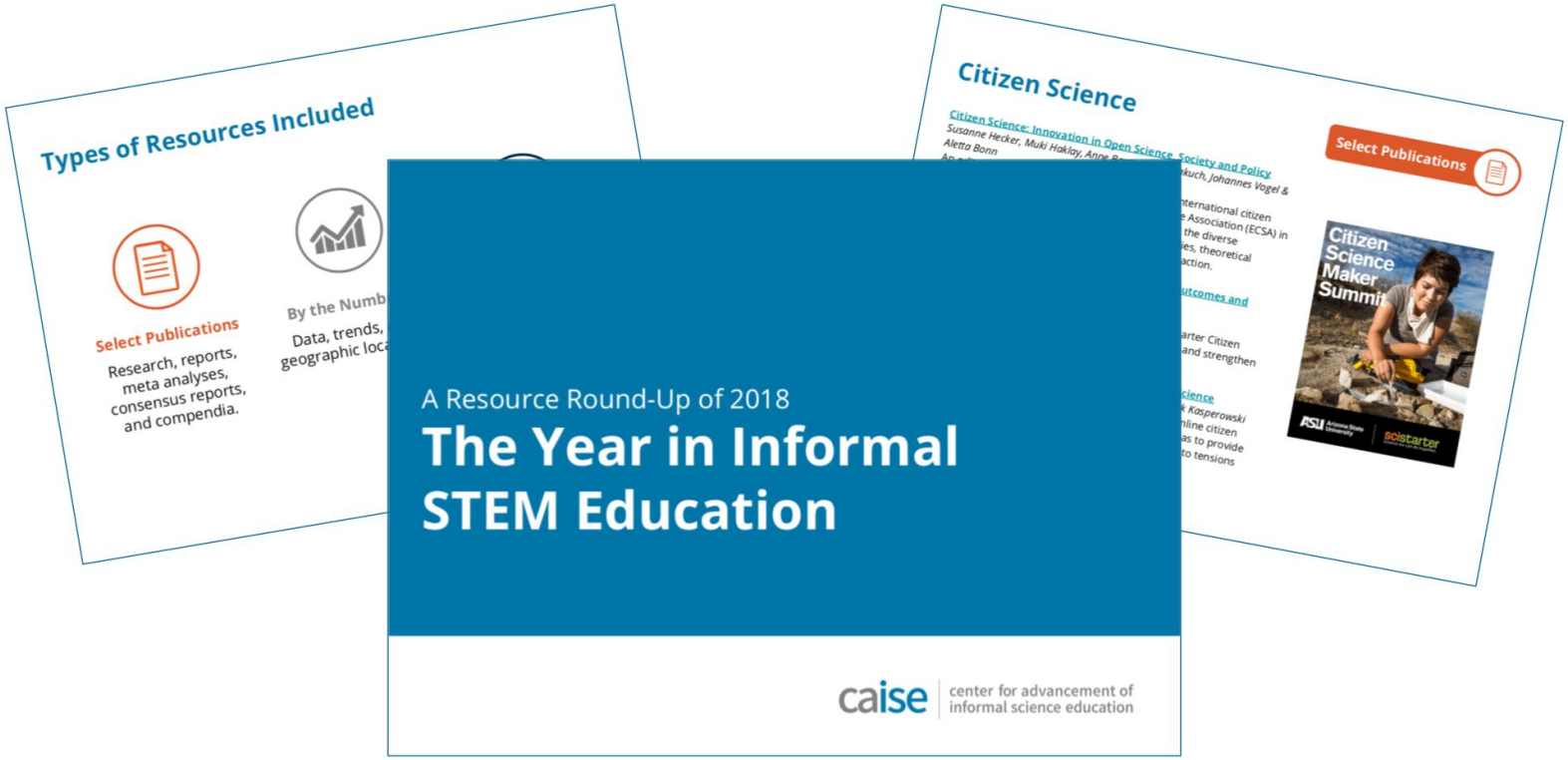


2018 Year in ISE



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Today's Webinar

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CAISE is currently supported by the National Science Foundation (NSF) under award no. DRL-1612739, with previous support under DRL-0638981 and DRL-1212803.

Any opinions, findings, and conclusions or recommendations expressed are those of the authors and do not necessarily reflect the views of NSF.

Our Presenters

John Fraser
New Knowledge Organization Ltd.

Joe E. Heimlich
COSI's Center for Research and Evaluation

Martin Storksdieck
Center for Research on Lifelong STEM Learning at Oregon State University

Moderator: Melissa Ballard, CAISE

Agenda

1. **Project Introduction** (5 min)
2. **Bring & Take Findings** (10 min)
3. **Do & Take Findings** (10 min)
4. **Assign & Integrate Findings** (10 min)
5. **Q & A, Discussion** (10 min)

WZAM^3

Why Zoos & Aquariums Matter
Wave 3: STEM Matters

Our project asks:

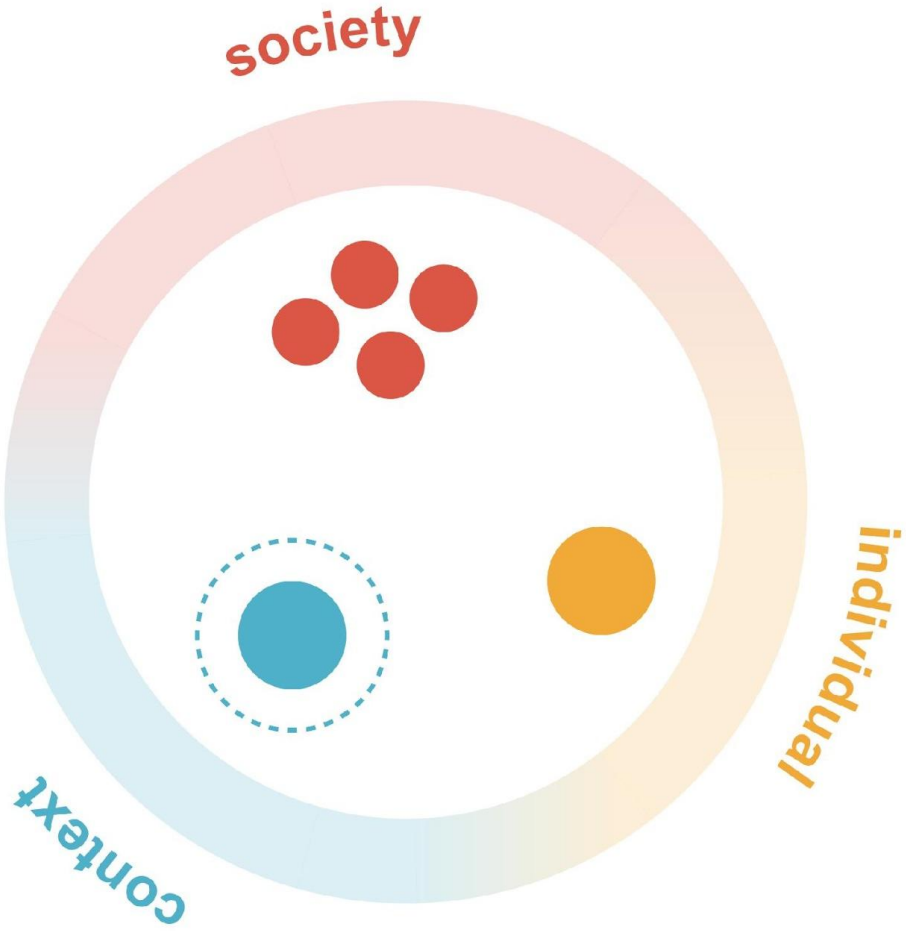
What are the real outcomes of the zoo or aquarium enterprise, both as a **visitor destination** and as a **social actor** in society?

WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

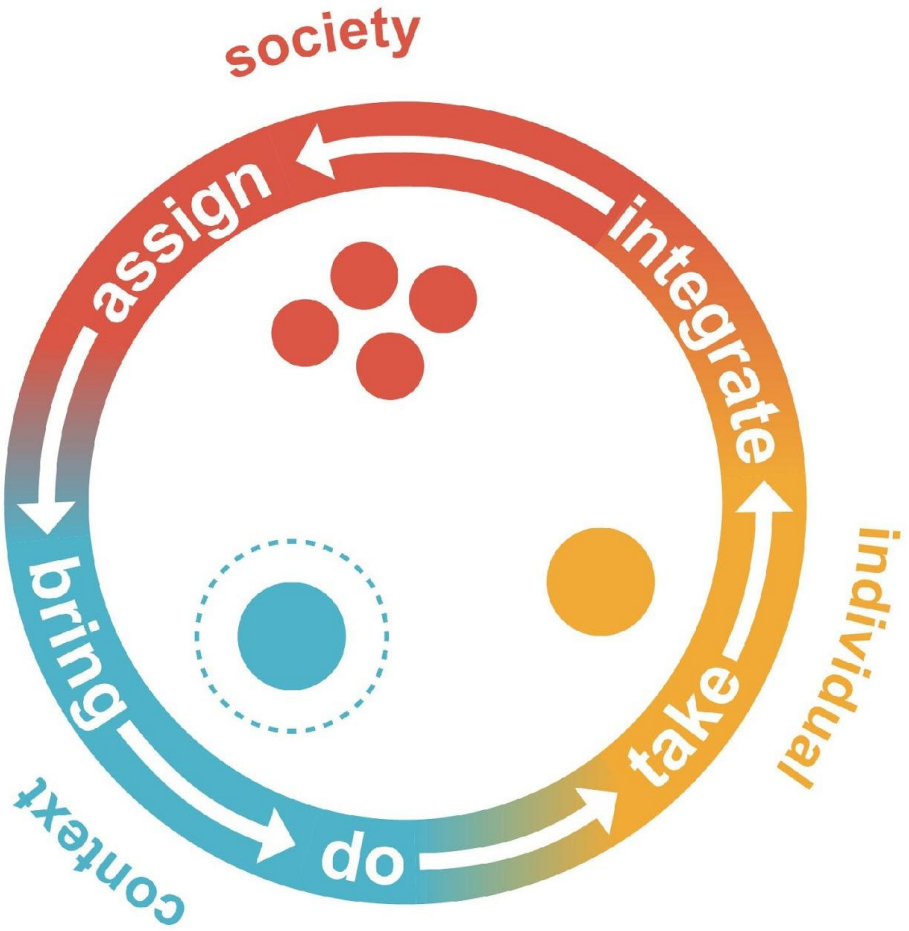
- New Knowledge Organization Ltd. (NKO)
- COSI's Center for Research and Evaluation (CRE)
- Oregon State University's (OSU)
  Center for Research on Lifelong STEM Learning
- Association of Zoos and Aquariums
- Evaluators: Garibay Group and J. Sickler Consulting

This material is based upon work supported by the National Science Foundation under Grant No. 1612729 & 1612699. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters



WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters



WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

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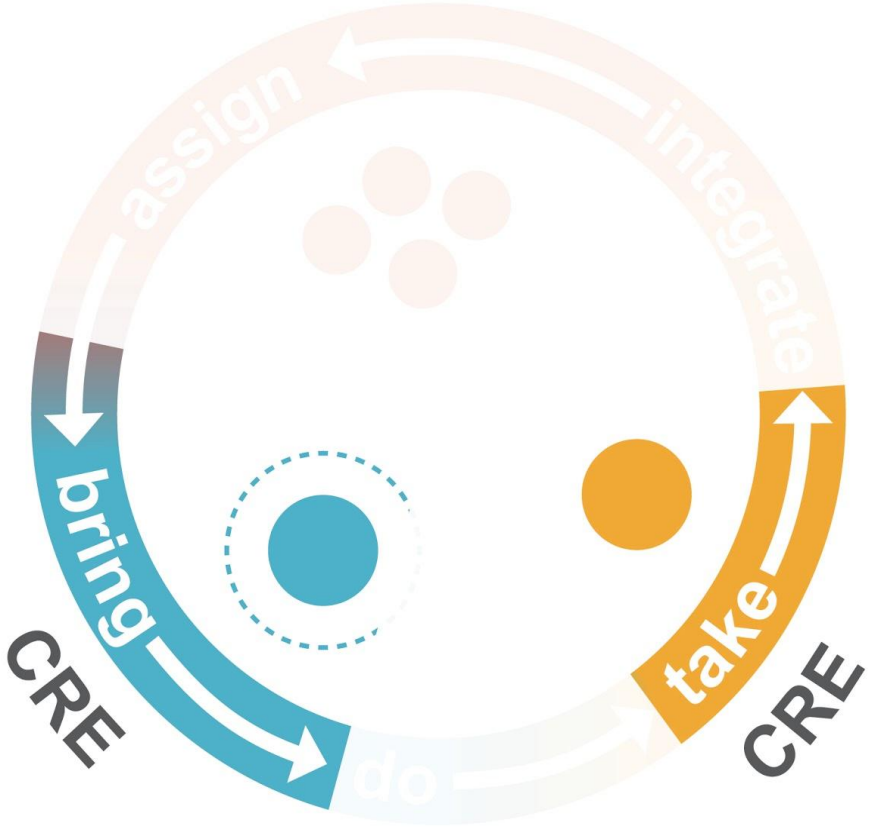
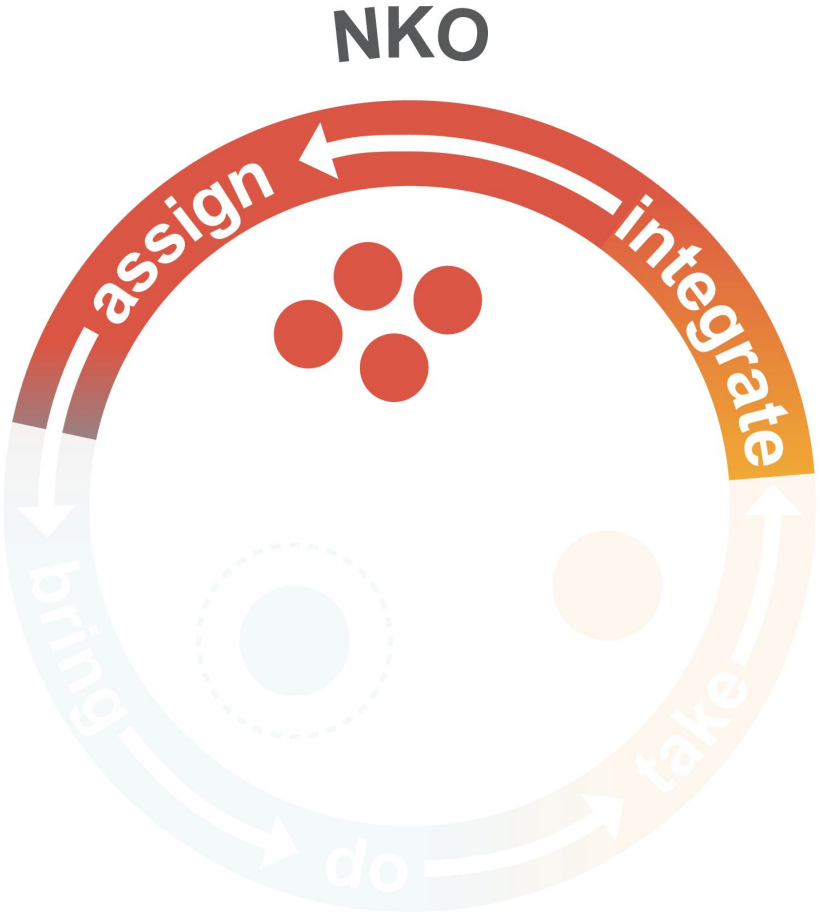
Wave 3: STEM Matters



WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters



COSI's Center for Research & Evaluation

Joe Heimlich

CENTER FOR RESEARCH AND EVALUATION

Lifelong Learning Group

Summer data collection yielded 2,005 questionnaires.

- 661 matched pre/post
- 611 unmatched pre
- 72 unmatched post

Fall data collection yielded 2,223 questionnaires.

- 693 matched pre/post
- 758 unmatched pre
- 79 unmatched post

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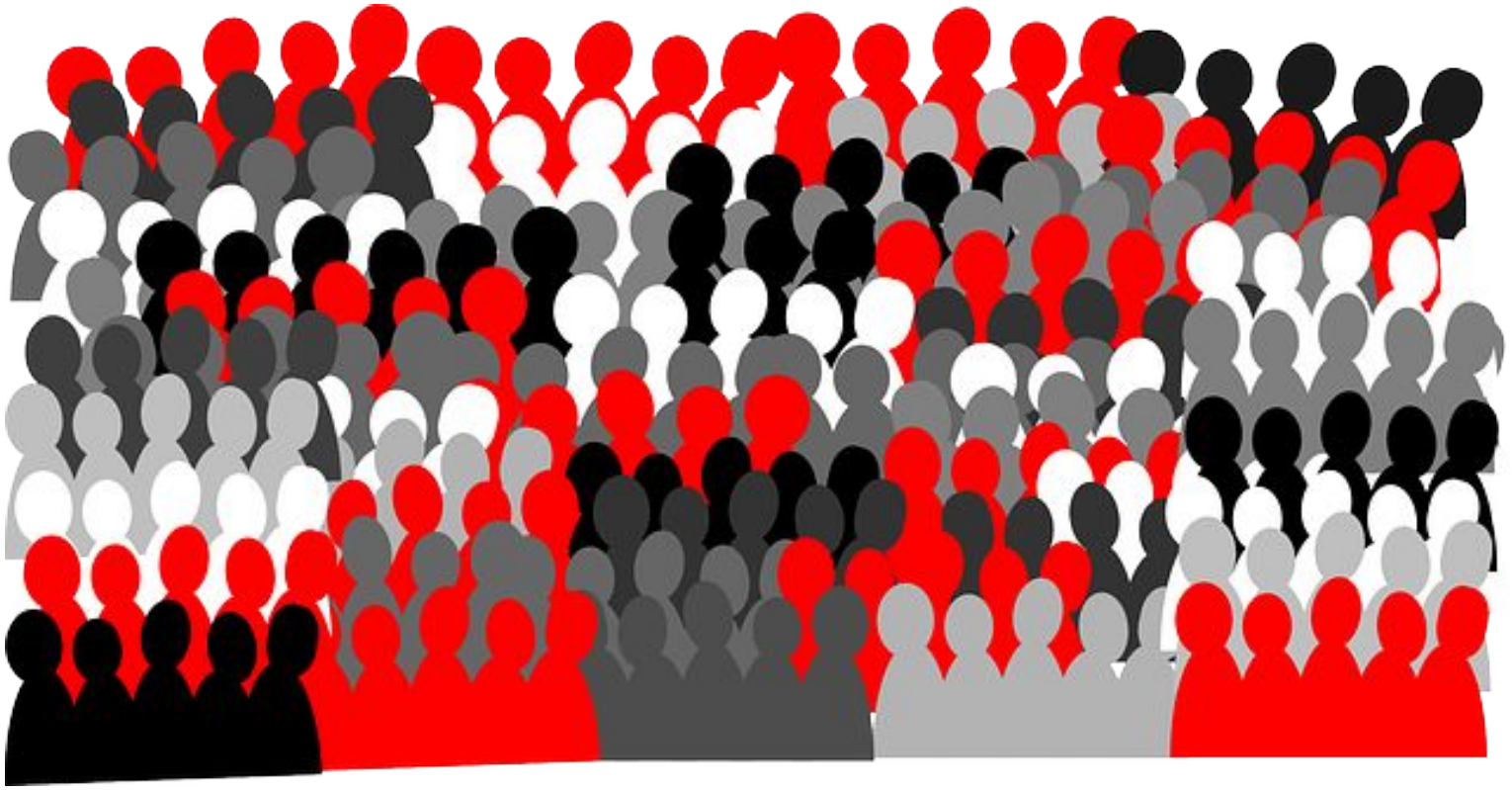
Wave 3: STEM Matters



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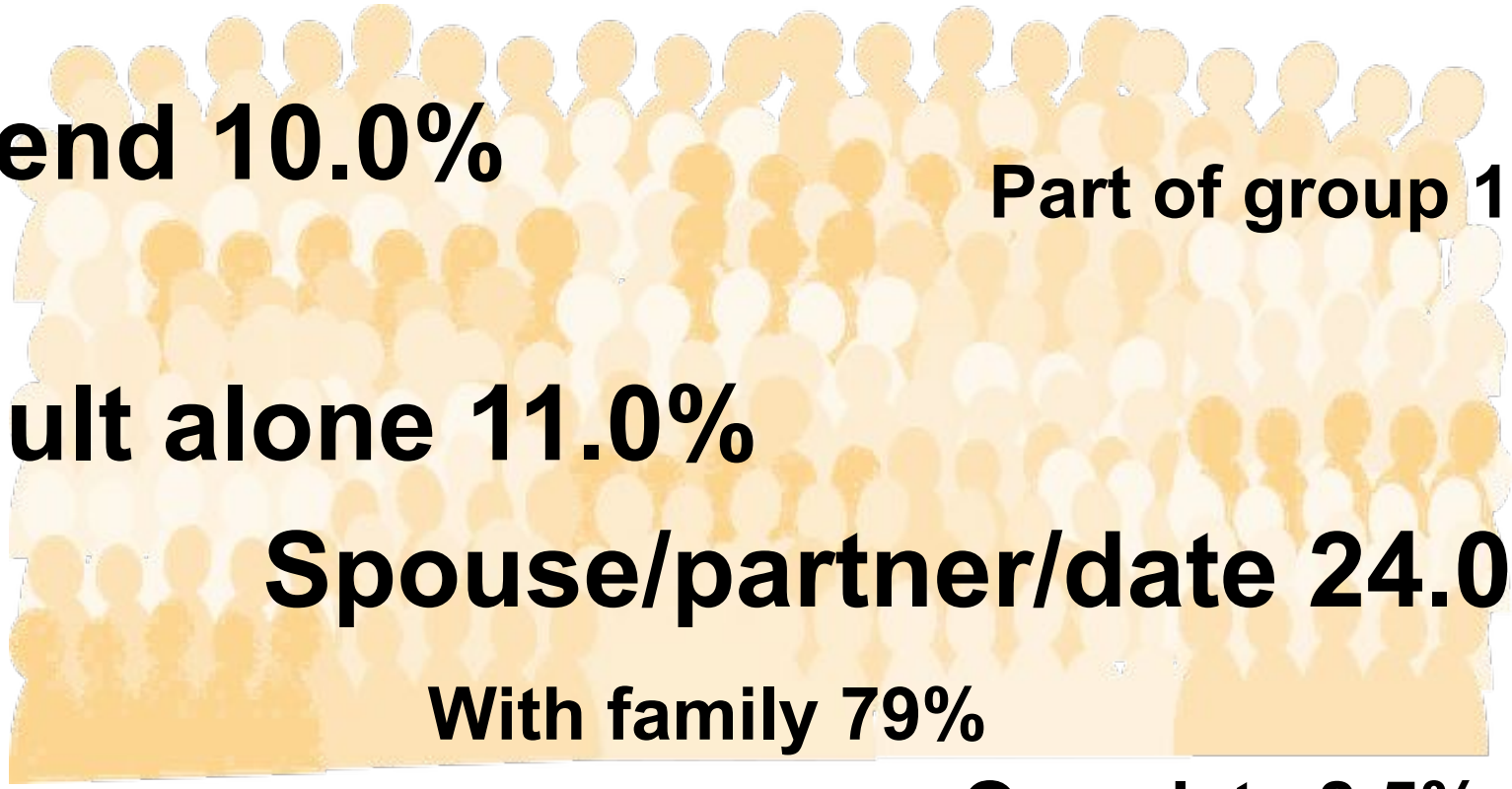
Wave 3: STEM Matters

Parents 61.5%

Grands 11.0%



Friend 10.0%

Part of group 1.5%

Adult alone 11.0%

Spouse/partner/date 24.0%

With family 79%

On a date 8.5%

Trustworthiness

Aquariums	Zoos
6.42	6.29
7	7

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Wave 3: STEM Matters

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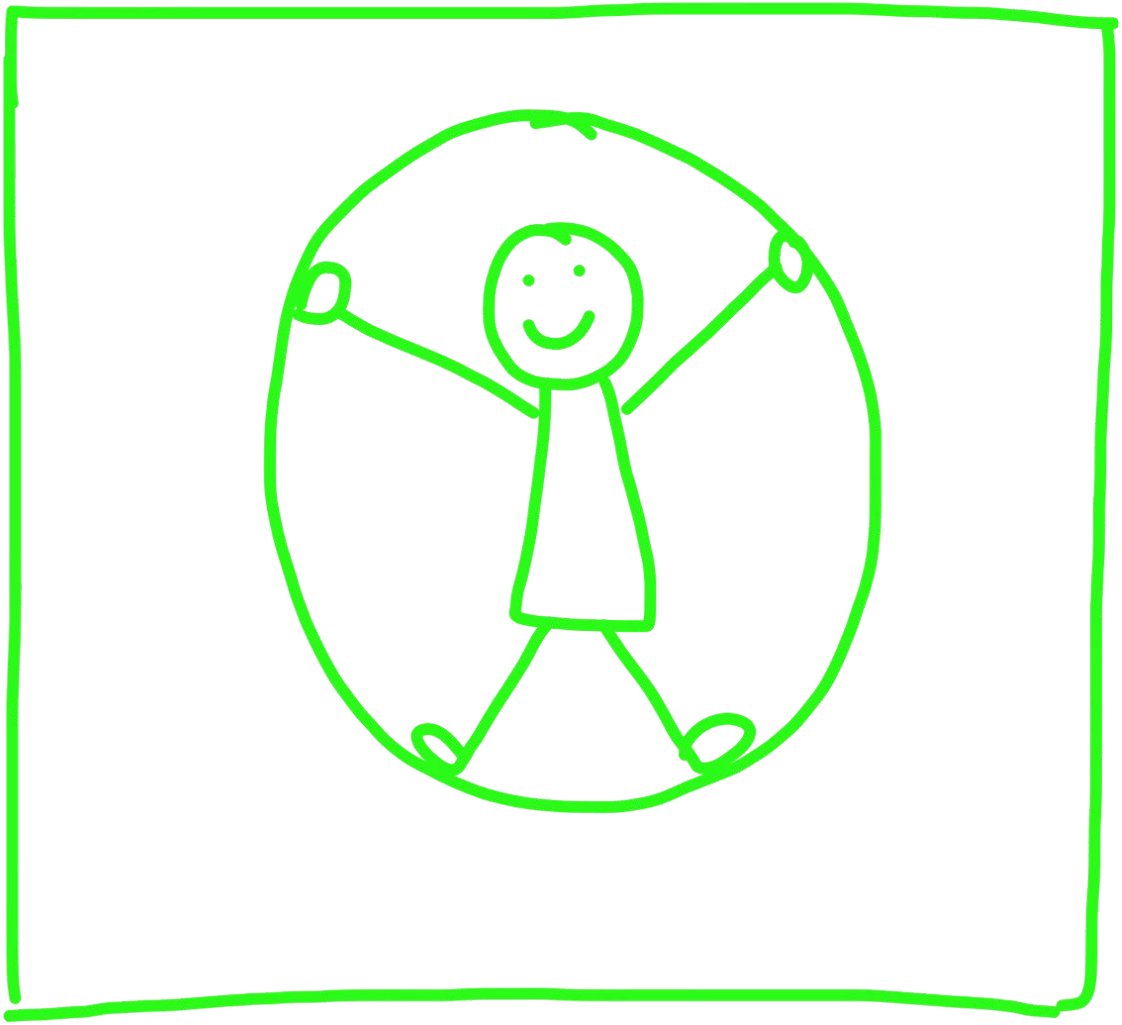


WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

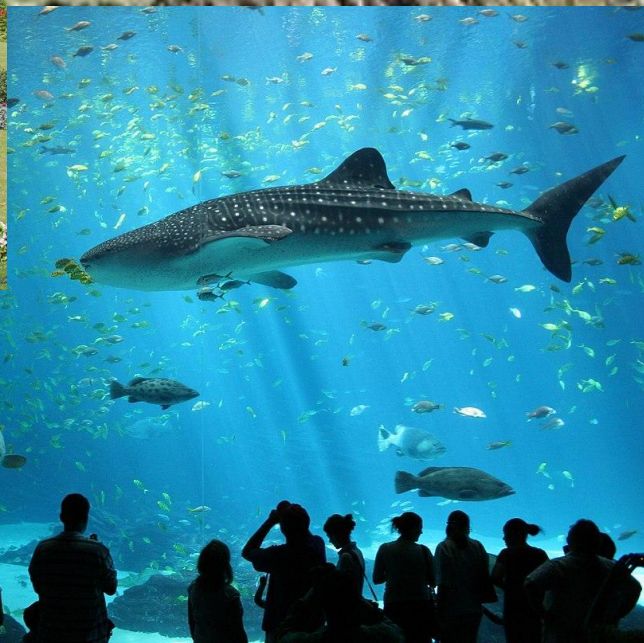
WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

Entry	Exit
Time to spend with friends and family	Saw animals / fish
Do something fun and enjoyable	Relaxed / rejuvenated
See animals / fish	Learned something new

WZAM^3 Why Zoos & Aquariums Matter
Wave 3: STEM Matters

- Animal habitats
- How institution takes care of its animals
- Conservation efforts of this Z/A
- That As/Zs give money to support and protect species conservation
- Where this Z/A's animals were born

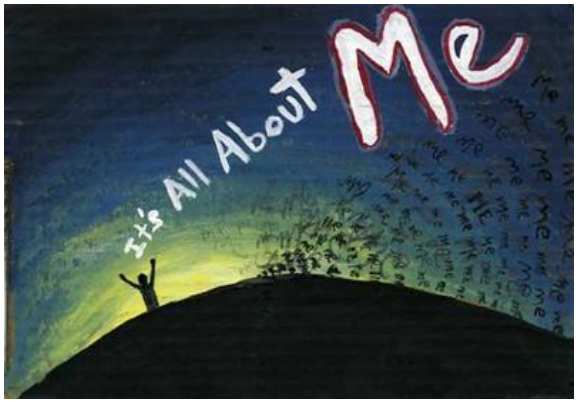
WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters



WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

WZAM^3 | Why Zoos & Aquariums Matter
Wave 3: STEM Matters

It's all about
ME



Me
myself
&I

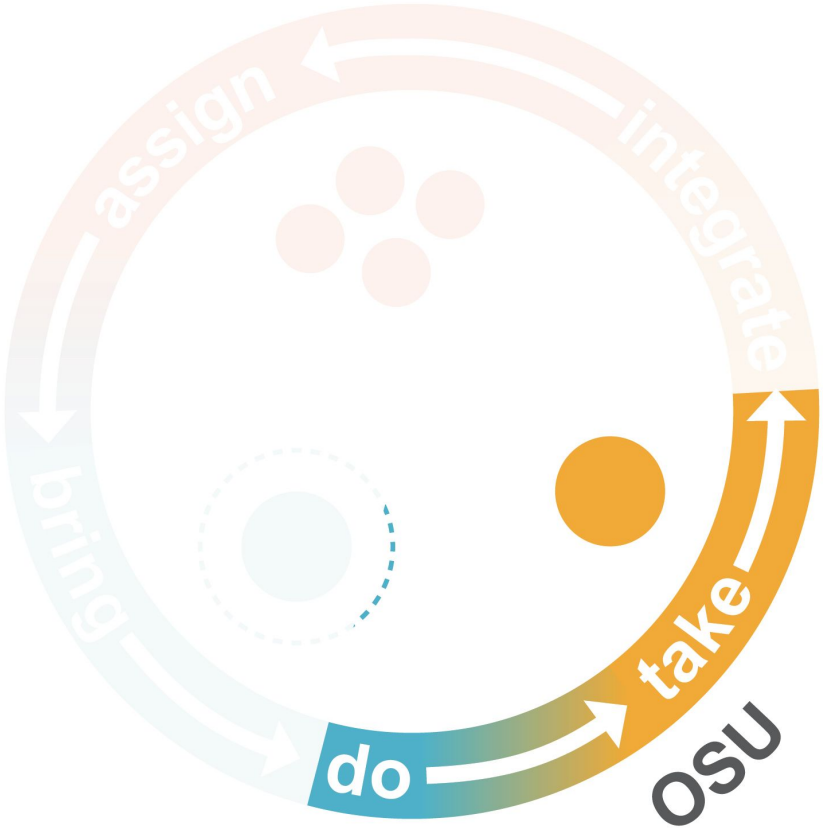
Audience Questions

Oregon State University's

Center for Research on Lifelong Learning

Martin Storksdieck

Oregon State University



Research Question

What are the entry characteristics of visitors and how do these characteristics play out in terms of behaviors during the Z/A visit?

Study Design

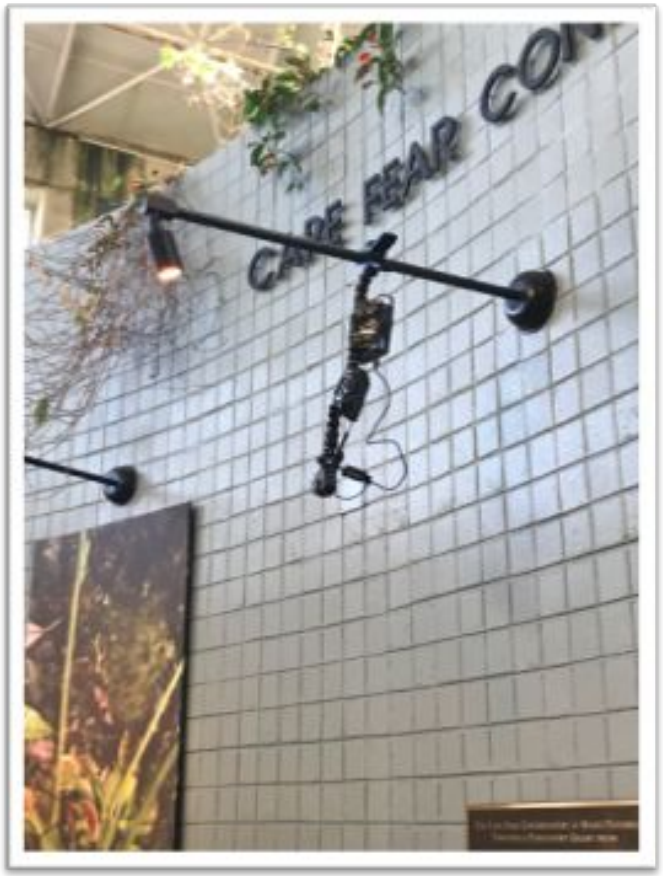
Part 1:

- Characterizing Groups
- Video Tracking Study

Part 2:

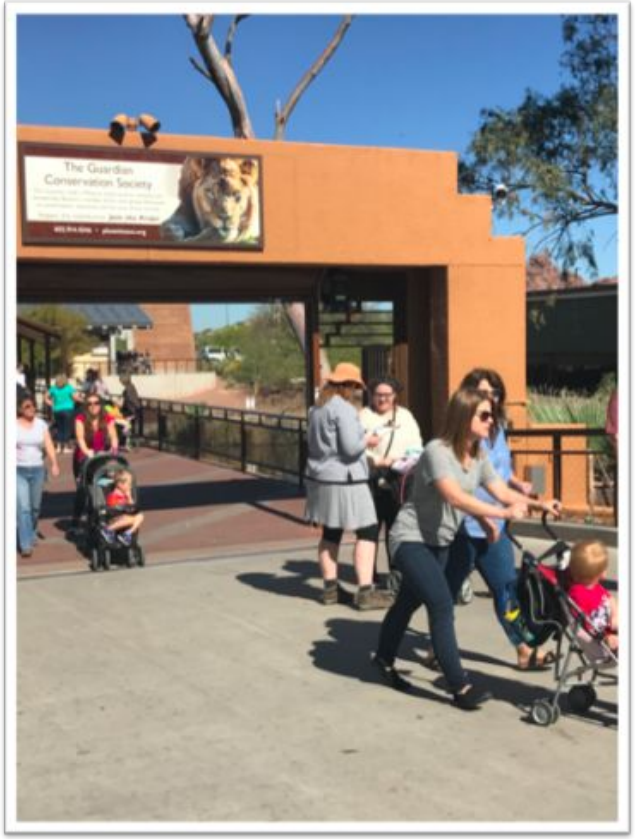
- Interpretive In-Situ Experimental Study

Entry Cameras



Entry Camera Analysis

- 150 entry interviews at each zoo or aquarium (N=900)
- Error Estimates for Accuracy:
  - 95% for group size
  - 96% for group type
  - 93% for gender expression
  - 86% for race/ethnicity
  - 85% for age



Entry Camera Findings

- Most groups (67%) in our sample were visiting with children
- **Adult Groups:** Median group size was 2 & median age was 25-34
- **Groups with Children:** Median group size was 3 & median age was 25-34

Entry Camera Findings

- White visitors, female visitors, & some age categories were over-represented in our sample when comparing to US Census data

	Study Sample	Census Data
Race: White	86%	77%
Gender: Female	55%	51%
Age: <5	15%	6%
Age: 5-9	12%	6%
Age 25-34	27%	6%
Age 35-44	12%	6%

Tracking Study

- Entry-Exit Interviews:
  - Entry characteristics, plans for visit, & perceived mission of Z/As (pre-)
  - Visit details, behaviors, & decision-making processes (post-)
- Full visit experience with GoPro cameras

Phase 1 Data

Entry Interview (n=62)	Z/A Observations (n=70)	Exit Interviews (n=61)
• Group characteristics • Who do they typically visit with • Motivation for the visit • Plans for the visit • Perceived mission of zoos/aquariums	• Time at exhibits • Time in transit • Time engaged in meaning making talk • Decision-making conversations and behaviors	• Remembered visit behaviors • Extent to which group adhered to visit plan • How decisions were made • Learning about group members and about self • Perceived mission of zoos/aquariums

Entry/Exit Interview Open-ended Question

Code (N=77)	Entry	Exit
Education	41.6% n=32	39.0% n=30
Conservation	40.3% n=31	45.5% n=35
Direct Encounters & Interactions	6.5% n=5	9% n=7
Entertainment	5.2% n=4	2.6% n=2
Multiple, Complex Goals	0%	1% n=1
No response / I don't know	6.5% n=4	2.6% n=2

Entry/Exit Interview Rating Question

Please rate on a scale from 1 to 5 where “1” is “not important” and “5” is “very important.”	
To provide public with educational experiences	4.8
To protect critical habitat, endangered, and threatened species	4.7
To provide public with connections to the natural world	4.7
To provide public with entertaining and enjoyable experience	4.7
To provide direct Encounters with nature and wildlife	4.5
To improve public understanding of science	4.4
To be leaders in sustaining and protecting the environment	4.4

Entry/Exit Interview Ranking Question

Rank which statements you would say are the *most* important to the mission of zoos/aquariums
Leaders in sustaining and protecting the environment
Protecting critical habitat, endangered, and threatened species
Provide public with educational experiences

Coding Framework

Entry Characteristics	Group demographics, visit motivations, plans for the visit, perceptions of the Z/A mission, prior Z/A experience
Visit Behaviors	Timing at exhibits and in transit, path analysis, decision-making talk & behaviors, meaning-making talk, wayfinding talk & behaviors, intensity of visit
Exhibit Characteristics	Presence of animals, type of animal exhibit (one species versus mixed), presence of conservation message, level of crowding
Exit Narrative	Self-reported visit activities and decision-making behaviors, perceptions of Z/A mission

Tracking Study: Emerging Findings

Visitors engage in some meaning-making talk when not at exhibits (e.g., in transit between exhibits, gift shop)

Example: (In transit between exhibits)

Child #1: What does the octopus eat?

Child #2: It eats the squid.

Mother: It does?

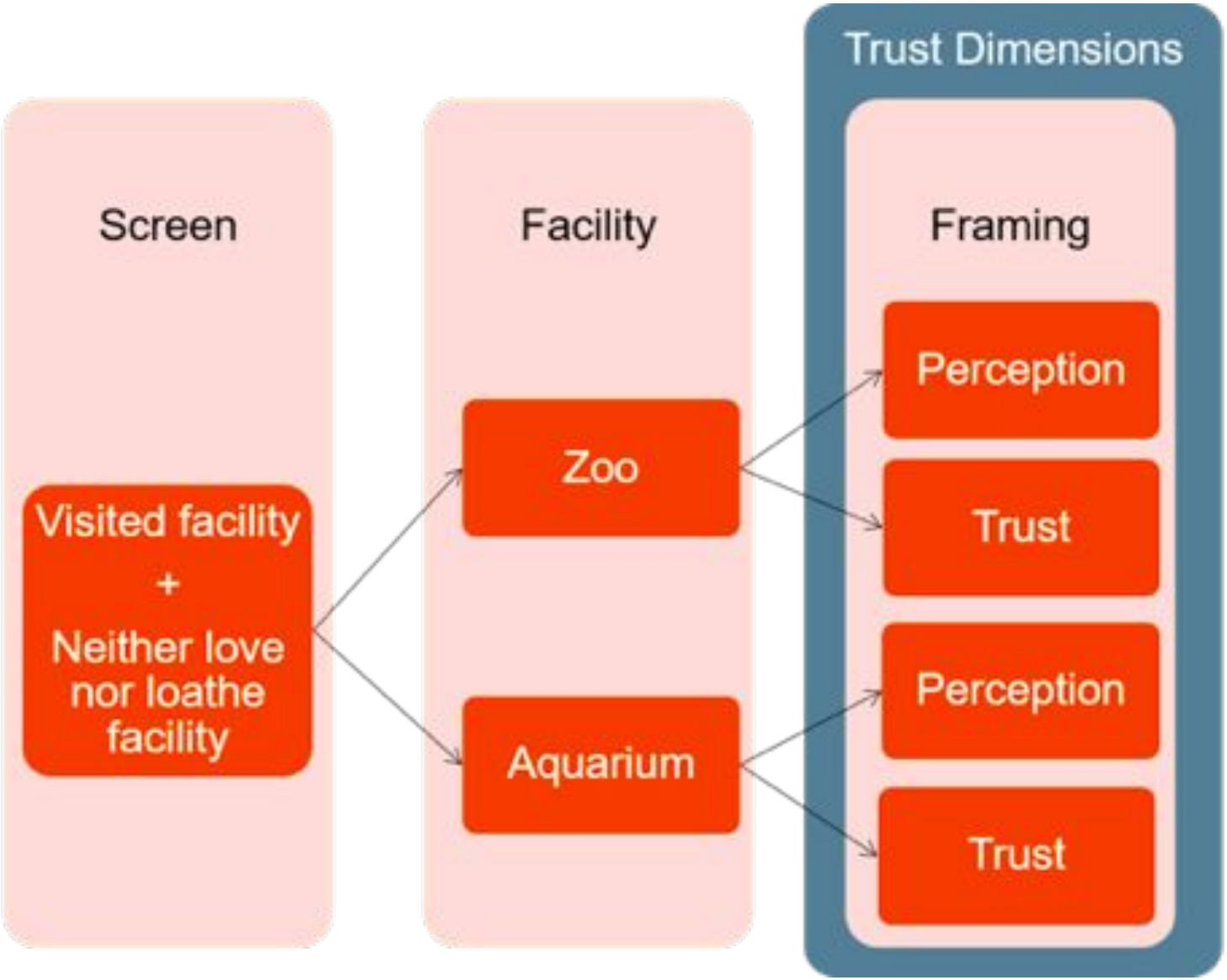
Child #1: I think. I don't know fo sho.

Audience Questions

New Knowledge Organization, Ltd.

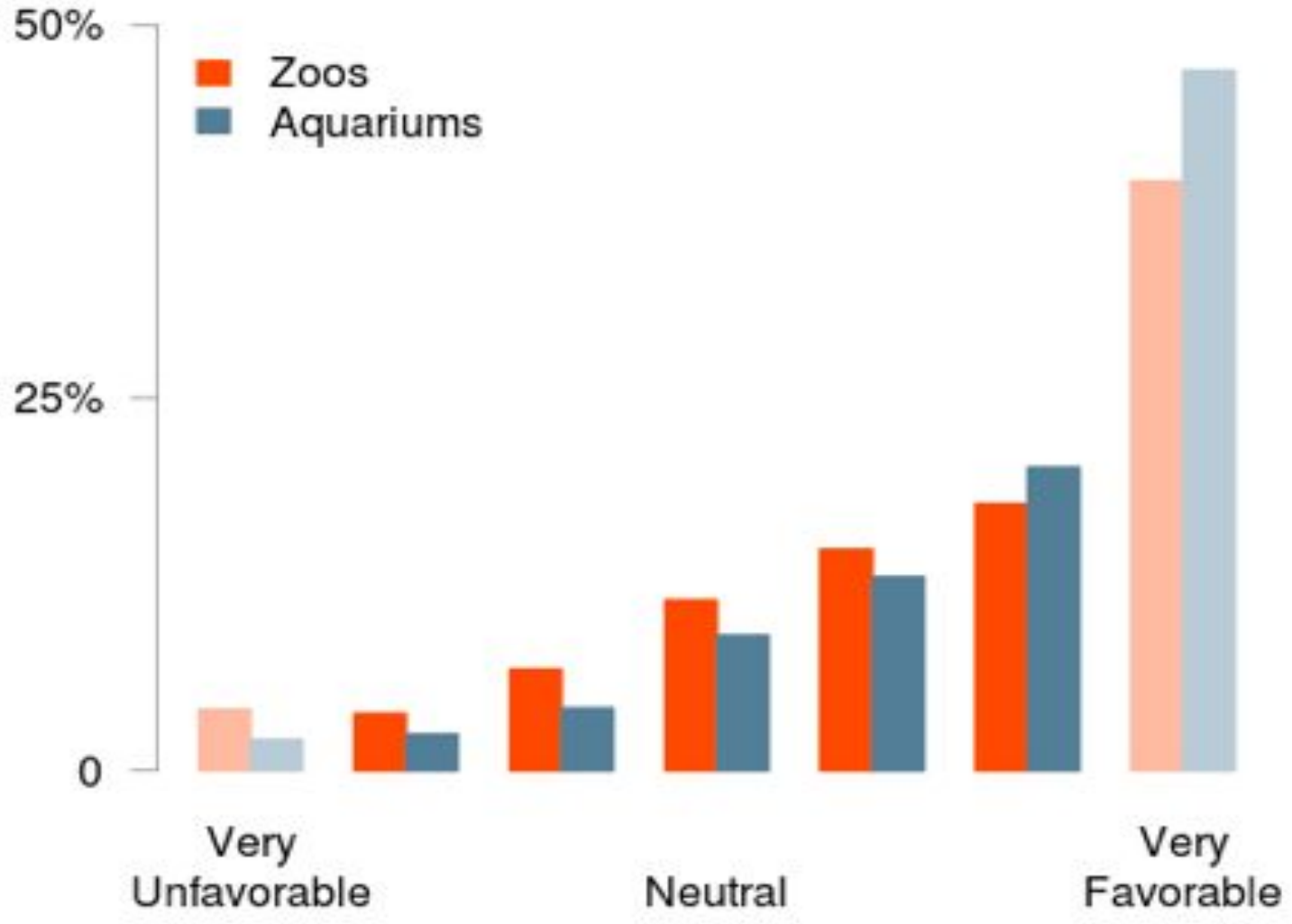
John Fraser

Trust Study Design



Sample: “Moderate Middle”

Those without strong bias for or against zoos and aquariums.



Gap in Trust and Perception

The Facility...	Est. Diff (b)	*M* Perc.	*M* Trust
Has the space to meet the physical needs of the animals in their care	2.18	4.46	6.71
Has the facilities to meet the needs of the animals in their care	1.51	5.19	6.73
Has the expertise to meet the emotional needs of the animals in their care	1.44	4.98	6.48
Sets standards for itself that far exceeds government regulations for animals in their care	1.14	5.00	6.28
Shares when certain animals die	1.11	4.13	5.40

Ethical Integrity Dimension

The Facility...	Est. Diff (β)	*M* Perc.	*M* Trust	Ethical Integrity
Has the space to meet the physical needs of the animals in their care	2.18	4.46	6.71	0.77
Has the facilities to meet the needs of the animals in their care	1.51	5.19	6.73	0.83
Has the expertise to meet the emotional needs of the animals in their care	1.44	4.98	6.48	0.76
Sets standards for itself that far exceeds government regulations for animals in their care	1.14	5.00	6.28	0.72
Shares when certain animals die	1.11	4.13	5.40	0.58

Dimensions of Trust

Competence

Responsibility to Inform

Interactional Courtesy

Financial Balance

Quality Assurance

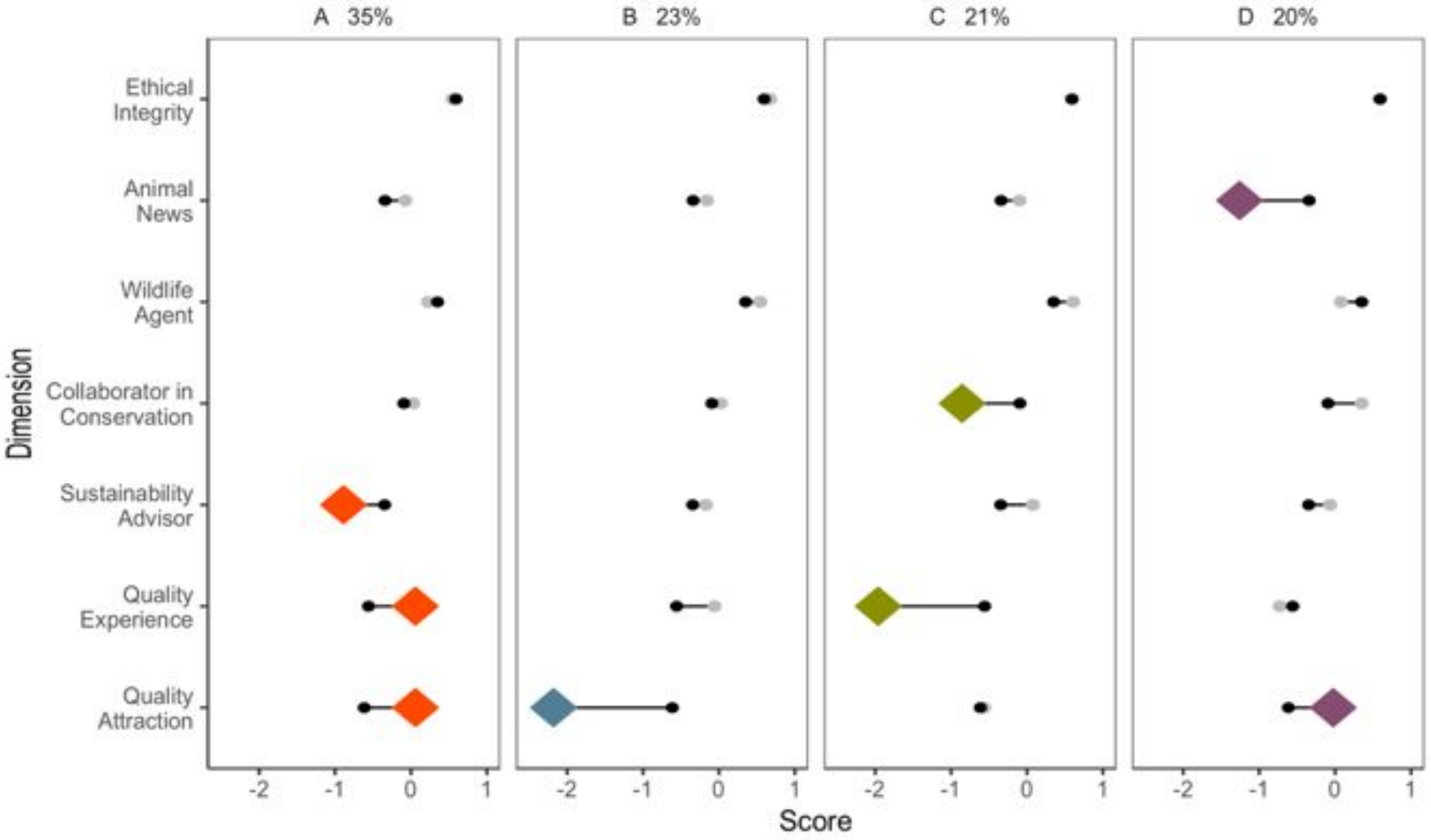
Procedural Fairness

Legal Compliance

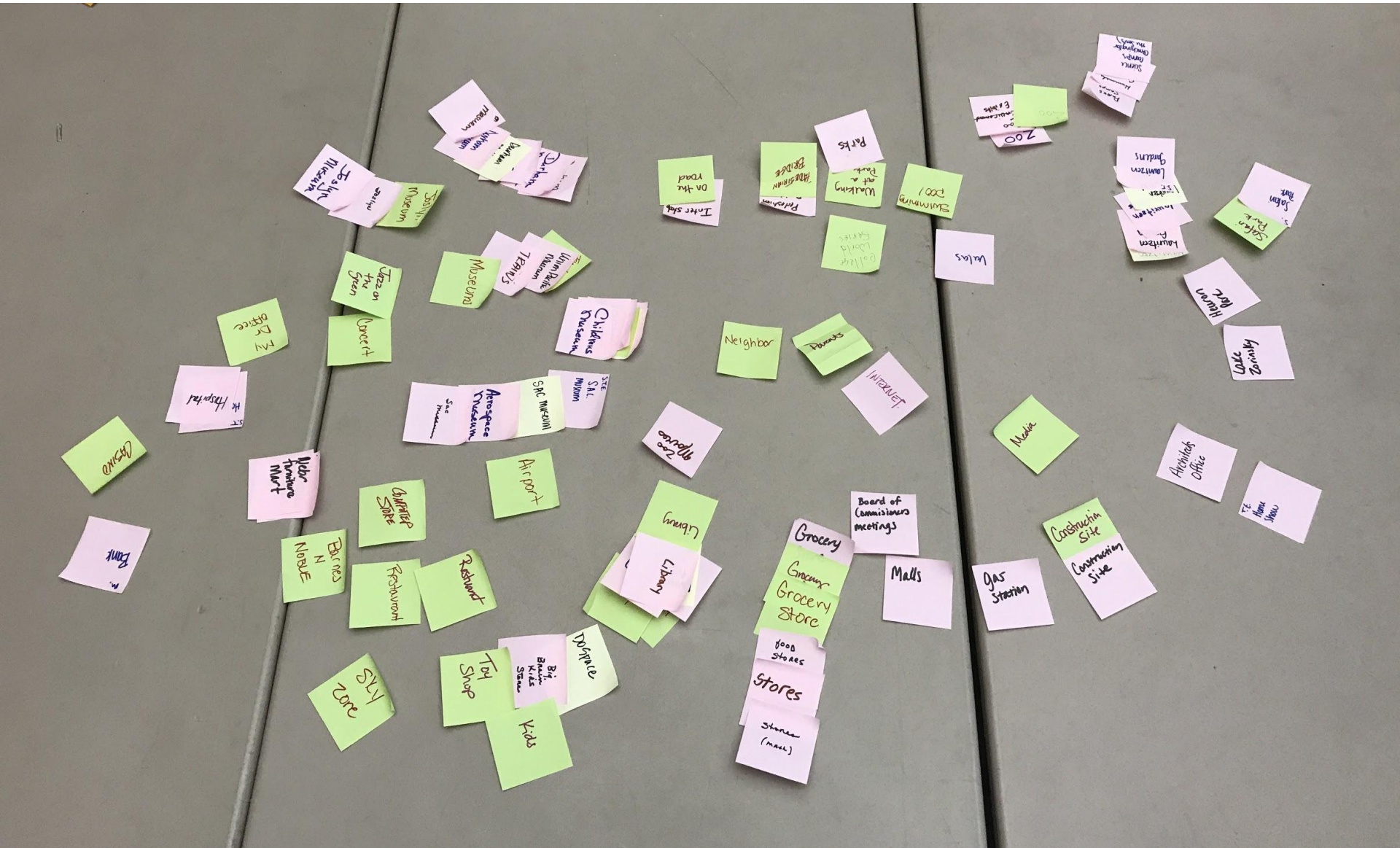
1. Ethics
2. Wildlife agent & informant / Activator
3. Inform about sustainability
4. Collaborator in conservation
5. Quality attraction
6. Inform about specific animals
7. Quality experience

Ethical integrity	Ethics
	Inform about specific animals
Conservation agency	Wildlife Agent, Informant, Activator
	Collaborator in conservation
Transparency	Advise on sustainability practices
Quality	Quality attraction
	Quality experience

Trust Profiles

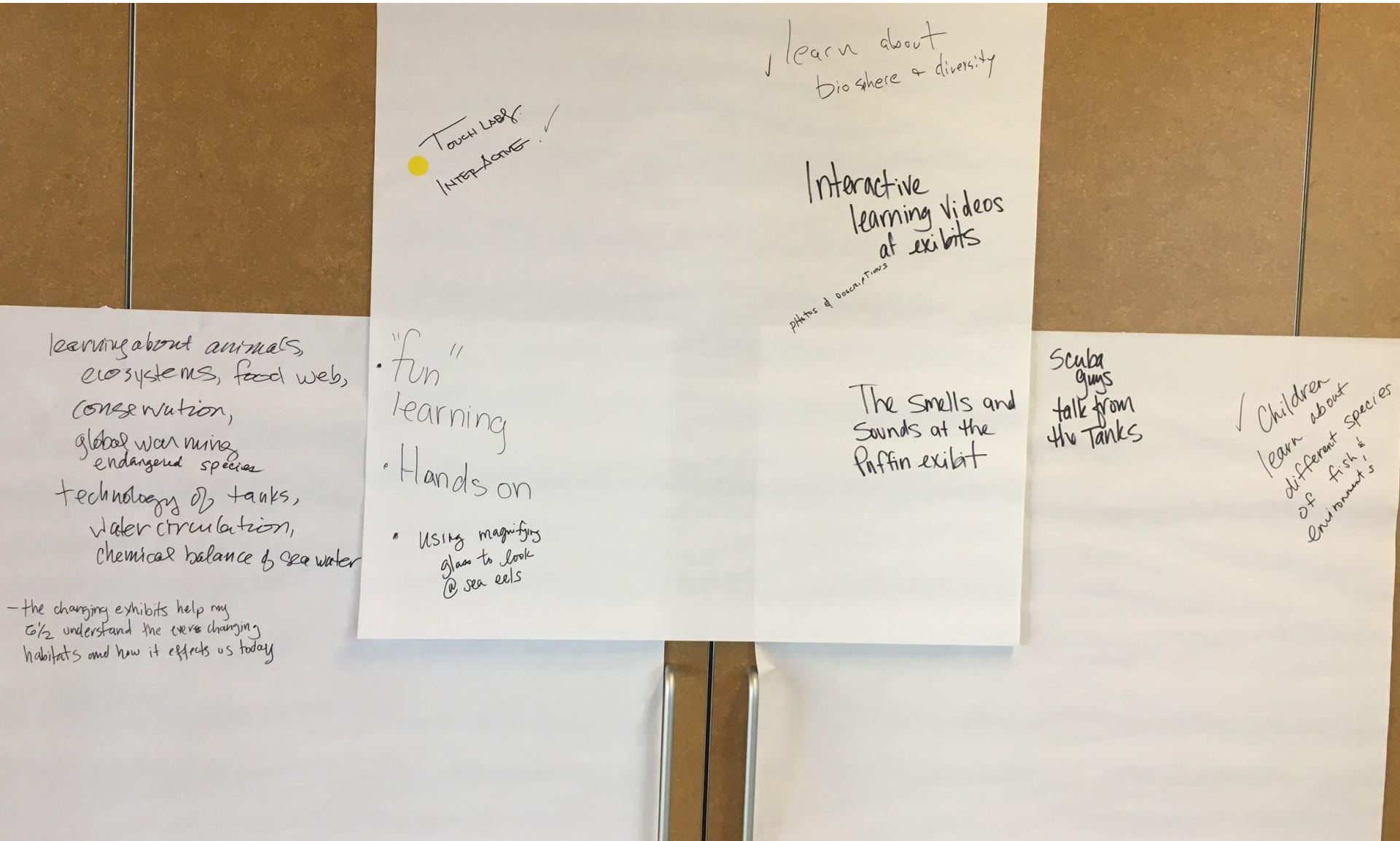


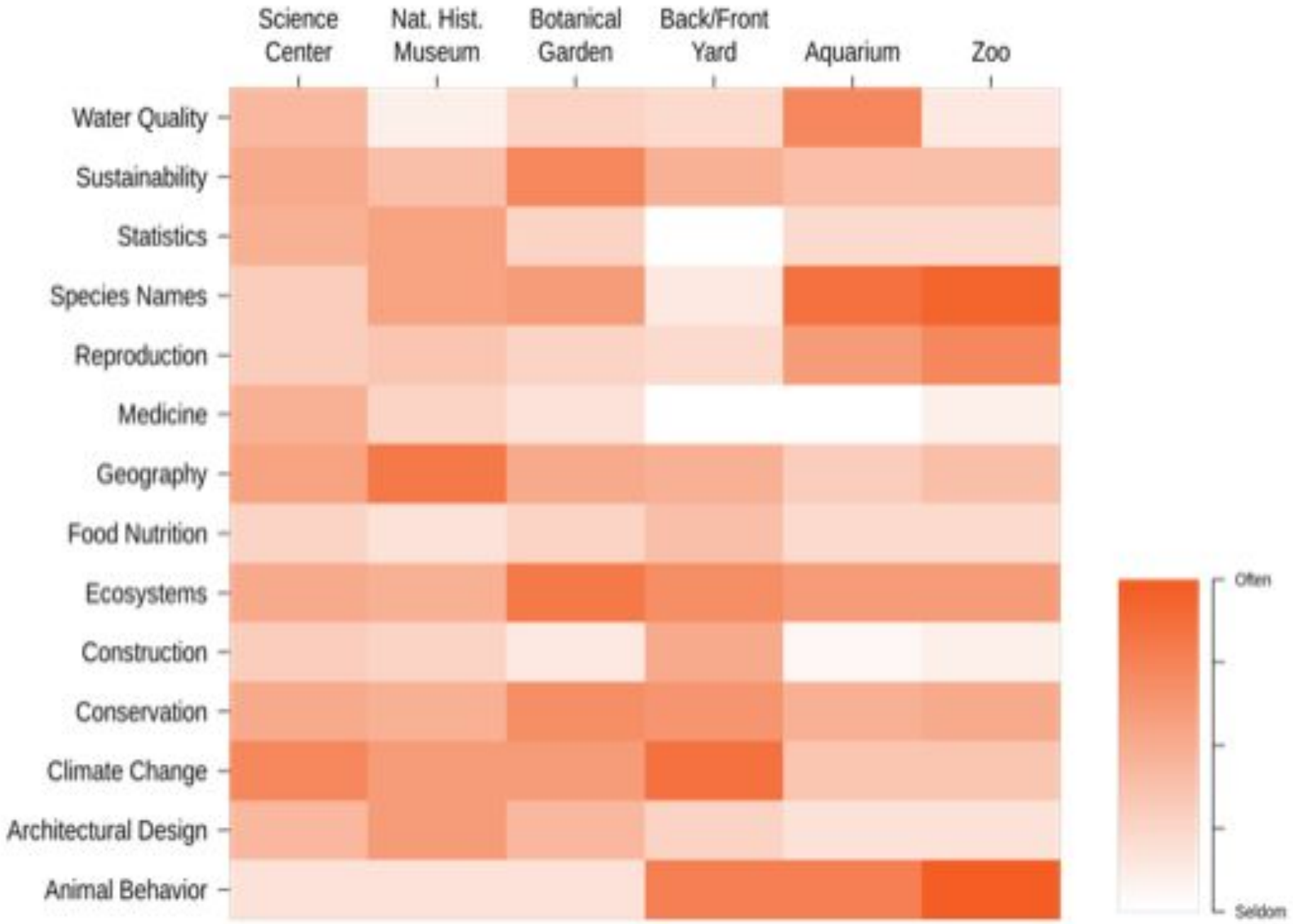
STEM Learning Ecology




Maker Space
Playground
Athletic Facility
Park
Planetarium
Auto Shop
Library
K12 Classroom
Pharmacy
Job
Restaurant
College
Home
(indoors)
Store
Financial Institution
Zoo
Aquarium
Back/Front Yard
Museum
Natural History Museum
Botanical Garden
State / National Park
Science Center

Topics in the Ecology




Science Center
Nat. Hist. Museum
Botanical Garden
Back/Front Yard
Aquarium
Zoo
Water Quality
Sustainability
Statistics
Species Names
Reproduction
Medicine
Geography
Food Nutrition
Ecosystems
Construction
Conservation
Climate Change
Architectural Design
Animal Behavior
Often
Seldom

The Project Team

Research Team

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Thank you to our collaborating zoos & aquariums!

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Wave 3: STEM Matters

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Adventure Aquarium

Africam Safari

Akron Zoological Park

Aquarium of the Pacific

Arizona-Sonora Desert Museum

Birch Aquarium

Birmingham Zoo

Blank Park Zoo

Boonshoft Museum of Discovery

Brevard Zoo

Bronx Zoo

Buffalo Zoo

Buttonwood Park Zoo

Cabrillo Marine Aquarium

California Science Center

Center for Aquatic Sciences at Adventure Aquarium

Central Park Zoo

Chattanooga Zoo

Cincinnati Zoo & Botanical Garden

Cleveland Metroparks Zoo

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Wave 3: STEM Matters

Columbus Zoo and Aquarium

Como Park Zoo and Conservatory

Cosley Zoo

Dallas Zoo

Denver Zoo

Detroit Zoological Society

Endangered Wolf Center

Great Plains Zoo & Delbridge Museum of Natural History

Greensboro Science Center

Henry Vilas Zoo

Hutchinson Zoo

Idaho Falls Zoo

Indianapolis Zoological Society

Jacksonville Zoo and Gardens

John Ball Zoo

John G. Shedd Aquarium

Lake Superior Zoological Society

Lee Richardson Zoo

Lincoln Park Zoo

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Wave 3: STEM Matters

Living Desert Zoo & Gardens State Park, NM

Los Angeles Zoo

Louisville Zoo

Maryland Zoo

Mesker Park Zoo & Botanic Garden

Miller Park Zoo

Milwaukee County Zoo

Minnesota Zoo

Monterey Bay Aquarium

Mystic Aquarium

Naples Zoo

Nashville Zoo

National Aquarium

National Aviary

National Mississippi River Museum and Aquarium

New England Aquarium

New York Aquarium

North Carolina Aquarium at Fort Fisher

North Carolina Aquarium at Pine Knoll Shores

North Carolina Aquarium on Roanoke Island

North Carolina Zoo

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Omaha's Henry Doorly Zoo
Oregon Coast Aquarium
Oregon Zoo
Palm Beach Zoo
Philadelphia Zoo
Phoenix Zoo
Prospect Park Zoo
Queens Zoo
Racine Zoo
Reid Park Zoological Society
Riverbanks Zoo & Garden
Riverside Discovery Center
Roger Williams Park Zoo
Rolling Hills Zoo
San Antonio Zoo
San Diego Zoo
San Francisco Zoo and Gardens
Santa Fe College Teaching Zoo
SEA LIFE Aquarium at LEGOLAND California
Seattle Aquarium

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Sedgwick County Zoo

Seneca Park Zoo

Shedd Aquarium

Smithsonian's National Zoo

South Carolina Aquarium

Squam Lakes Natural Science Center

St. Augustine Alligator Farm Zoological Park

St. Louis Zoo

Sunset Zoo

Tennessee Aquarium

The Museum of Life and Sciences

Tracy Aviary

Tulsa Zoo

Utah's Hogle Zoo

Vancouver Aquarium

Virginia Zoo

WNC Nature Center

Woodland Park Zoo

Zoo Atlanta

Zoo Boise

ZooTampa at Lowry Park

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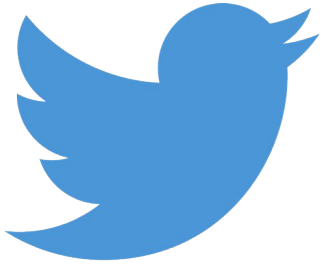
Monthly newsletter



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