Sustainability at Shedd Aquarium

Water

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Water Stewardship at Shedd & Beyond!

- Great Lakes Stewardship
- Water Conservation at Shedd
- Sustainable Seafood
The Great Lakes are home to
- 36 million people
- 3,500 plant and animal species

and contain
- 20% of global surface freshwater
- 90% of U.S. surface freshwater
We have a responsibility to protect and preserve the wild places and animals that share our home, for us and for generations to come.
Great Lakes Action Days

Shedd’s Six Great Lakes Action Days locations

- Illinois Beach State Park
- Openlands Lakeshore Preserve
- Bunker Hill Riverwatch Site
- 12th Street Beach
- 63rd Street Beach
- Indiana Dunes National Lakeshore

Indicates Great Lakes Action Days locations
GLAD – Amphibian Restoration
Great Lakes Stewardship in Action

2015 Great Lakes Action Days Impact

- Volunteers - 1,961
- Volunteer hours - 4,875
- Debris removed from beaches - 3,544.59 lbs
  - Recyclables - 1,220.76 lbs
  - Trash - 2,323.83 lbs
- Invasive plants removed - 2,600 gallons
- Native plantings - 6,200
Water Conservation At Shedd

The 49% reduction story
Sustainability at Shedd is...

- Good for the animals in our care
- Reflects Shedd’s conservation mission
- Good for business
- Keeps Shedd near forefront of our industry
- Spurs innovation
Getting to 49% - Leadership & Innovation

Water reduction goal: 50% by 2018

The Challenge: reduce our water use without compromising the water quality or needs of our animals

- 2009 water use audit
  - Cooling systems biggest water consumers
- 2011 Sustainability Strategic Plan – water reduction goal established
- Baseline: 57,919,136 gallons in 2007
Getting to 49% - Scrutinizing Shedds Water Use

- Cooling Tower 38%
- Animals 16%
- Plumbing Fixtures 12%
- Leaks and Losses 9%
- Irrigation 6%
- Food Service Operations 4%
- Mechanical Systems 15%
Chillers – Water Conservation Story

The situation:
Chilling system using the most water and energy in the building

- Chiller system
  - 3, 500-ton chillers
  - 1500 ton cooling tower
  - Cooling 460,000 square food facility
  - Chilling millions of gallons per day for coldwater animals in Oceanarium
Chillers – Water Conservation Story

What we did:
Replaced chillers and cooling tower with high-efficiency system
• 3,000,000 gal, $20,000 annual savings

Installed closed-loop tenant condenser system to recycle water through chillers
• 10,500,000 gal, $70,000 annual savings

Collect rainwater for cooling tower
• 708,000 gal, $4,600 annual savings
**Penguin Habitat – Water Conservation Story**

**The Situation:**
Freshwater system, pre-Oceanarium renovation, used 5 gal/minute

**What we did:**
Replaced system with closed-loop saltwater system
- 2,628,500 gal, $17,348 annual savings

Replaced penguins’ reserve and medical pool systems
- 1,500,000 gal, $10,000 annual savings
The Situation:
Freshwater system, pre-Oceanarium renovation, used 5 gal/minute

What we did:
Replaced system with closed-loop saltwater system
• 2,628,500 gal, $17,348 annual savings

Replaced penguins’ reserve and medical pool systems
• 1,500,000 gal, $10,000 annual savings
The Situation:
Discharge water from freshwater Amazon Rising exhibit was being drained to sewer

What we did:
Replaced RO filtration system
• 2,000,000 gal, $13,200 annual savings

Utilize Amazon “waste” to backwash filters
• 579,000 gal, $4,000 annual savings
Follow That Water! – Water Conservation Story

The Situation:
Saltwater for the 3 million gallon Abbott Oceanarium habitats was prepared onsite from new freshwater

What we did:
Worked with Animal Care experts to determine if we could re-use water from shark and reef exhibits and route to Oceanarium

- YES! And it provides a richer microbiome for the animals (a win, win!)

Redirected and repurposed water from other habitats to Oceanarium

- 2,500,000 gal, $16,500 annual savings
### What We Accomplished

<table>
<thead>
<tr>
<th>Water Conservation Projects</th>
<th>Annual Gallons Saved</th>
<th>Annual $ Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life support system upgrades</td>
<td>9,207,500</td>
<td>$60,769</td>
</tr>
<tr>
<td>Chiller system upgrades</td>
<td>17,908,000</td>
<td>$118,193</td>
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<tr>
<td>Additional projects</td>
<td>1,000,000</td>
<td>$6,600</td>
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<tr>
<td>Cumulative minor changes to operations and practices, not included in application</td>
<td>844,068</td>
<td>$5,571</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>28,959,568</strong></td>
<td><strong>$191,133</strong></td>
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The Road Ahead: The Final 1%
Water Conservation Next Steps

**Water reduction goal: 50% by 2018**

**The Challenge:** the final 1% will be the most difficult

- Continue to identify opportunities for improvement
- Question the status quo
  - Innovation
  - Maximize efficiency and animal health
  - Microbiome project
  - Subtle shifts in behaviors/culture
From Our Home to Yours
Sustainable Seafood
Sustainable Seafood At Shedd

Animals – Care and Protect

• 2018 Goal: 100% sustainable seafood
  – *Best Choice* or *Good Alternative*

• Restaurant quality

• Big appetites = big impact
  – Capelin, Pollack, Shrimp, Clam, Squid, Mussels, Crab, and Krill
  – Shedd’s otters eat 25,000 lbs every year
Reduce, Reuse, Recycle!
Why Does Sustainable Seafood Matter?

- By 2050 the world’s population will reach 9.1 billion
- Food production must increase by 70%
- Need to produce an additional 200 million tons of protein!

That means more fish!

Source: FAO How to Feed the World in 2050
We need sustainable seafood & aquaculture

Global fish stocks can’t meet the growing demand
- 30% are overfished

It takes fewer pounds of feed to grow fish than any other animal protein!

Credit: National Geographic Magazine, FAO
Culinary Conservation – Join Us

Conservation you can do with your fork:
• Download and use the Seafood Watch app
• Eat seasonally
• Don’t forget your inland seas – eat local!
Thank you!

Questions?