Sharing Tails®: Teaching Children about Native Arizona Fish

Carol A. Pacey and Paul C. Marsh

Native Fish Lab
Marsh & Associates LLC
Tempe, AZ
Why we created Sharing Tails®

• Most Arizonans are surprised to learn that we have fish unique to our state

• A majority of these fish (78%) is federally listed or candidates for listing as endangered or threatened or they are Wildlife of Special Concern in Arizona

• Millions of dollars spent on our native fish
How we created Sharing Tails®

- Researched what native fish information and programs were available to kindergarteners at local, state and federal levels.

- Submitted unsolicited proposal to the BR, Phoenix Area Office that coincided with their desire to convey to the public the value of native aquatic species.
Sharing Tails® K-2 Program

1. Create Microsoft ® Access school database
2. Develop staff costume
3. Create materials to meet State science standards
4. Develop on-site presentation
5. Develop native fish replicas
6. Perform on-site visits
Sharing Tails® Pre-Visit Materials

- Letter with instructions
- Teacher-assisted student questionnaire
- Teacher post-visit survey
- Self-addressed, stamped envelope
Sharing Tails® Pre-Visit Materials

- Coloring guide
- Location guide to see native fish in Arizona
- List of suggested fish reading for students
A native Arizona fish is the... Apache trout

This is Arizona's state fish!
Sharing Tails® Pre-Visit Materials
Kindergarten

fish sticks
Apache trout
A native Arizona fish is the Gila topminnow. This fish likes slow moving water!

Circle the best answer then find it in the “fishy” word search!

1. Fish move using their legs fins wings. 5. Fish breathe using their lungs balloons gills.
2. Fins help fish move up down up and down. 6. Gills are near a fish’s mouth tail food.
3. Fish have feathers tree bark scales. 7. A backbone helps a fish fly swim run.
4. Scales protect fish noses skin toes. 8. Backbones are hard soft sticky.

Sharing Tails® Pre-Visit Materials First Grade

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Observation: The desert pupfish and loach minnow are small fish. The desert pupfish and loach minnow are bigger than some first graders’ “Number 1” fingers. The Gila topminnow is also a small fish.

Question: Is a Gila topminnow bigger, smaller or the same as my “Number 1” finger?

Hypothesis: A Gila topminnow is ________ than my “Number 1” finger.

1. My “Number 1” finger is ________ inches.
2. The Gila topminnow is ________ inches.
3. Is my Hypothesis correct? Yes No
# Sharing Tails®

## First Grade Teacher Summary Table

Hypothesis results:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Correct&quot;</td>
<td>6</td>
</tr>
<tr>
<td>&quot;Incorrect&quot;</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

![Histogram of Length of Number 1 Fingers in inches](image)

### Notes:

- [Image of histogram showing length distribution of Number 1 fingers in inches]
Sharing Tails® On-Site Visits

24,000 miles to date!
1. Photos

2. Art, clip art and animated-clip art

3. Videos

4. Props

5. Hands-on materials
Sharing Tails® Presentation
Kindergarten Hands-on Materials
Sharing Tails® Presentation
First Grade Hands-on Materials

A hoop net too!
Sharing Tails® Presentation
Second Grade Hands-on Materials

A fish scientist may use anchor tags to mark fish with special colors and numbers.

Each tag makes “beep” sounds that are heard underwater to help find fish underwater.

A fish scientist may use sonic tags to help find fish underwater.
Sharing Tails® Presentation

Kindergarten
Sharing Tails®
Bubbles, bubbles and more bubbles!
Desert pupfish and gills!
Sharing Tails® Post-Visit Materials

Native Fish Replicas
# Sharing Tails® On-Site Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>% Target N Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K</td>
</tr>
<tr>
<td>One</td>
<td>100</td>
</tr>
<tr>
<td>Two</td>
<td>75</td>
</tr>
<tr>
<td>Three</td>
<td>50</td>
</tr>
</tbody>
</table>

- N stands for student number.
### Sharing Tails® On-Site Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>N Students (% Target)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>K</strong></td>
</tr>
<tr>
<td>One</td>
<td>5,985 (60)</td>
</tr>
<tr>
<td>Two</td>
<td>10,624 (+100)</td>
</tr>
<tr>
<td>Three</td>
<td>4,098 (82)</td>
</tr>
</tbody>
</table>
## Sharing Tails® On-Site Visits

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total $N$ Students (% Target)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>20,707 (92)</td>
</tr>
<tr>
<td>1st</td>
<td>3,420 (68)</td>
</tr>
<tr>
<td>2nd</td>
<td>486 (19)</td>
</tr>
<tr>
<td>Grand Total</td>
<td>24,613* (82)</td>
</tr>
</tbody>
</table>

*Grand total as of Dec 2010 – 100+ schools scheduled for Spring 2011
Sharing Tails®

Are we making an impact?

I will help protect them!

I will help protect them!

I will help protect them!

A Shh
Acknowledgements

Bureau of Reclamation, Phoenix Area Office, Glendale, AZ
•
Native Fish Lab
Marsh & Associates, Tempe, AZ
•
Randall D. Babb & Dave Ward
Arizona Game and Fish Department
•
Bureau of Reclamation, Boulder City, NV
Sharing Tails®

Teaching children about native Arizona fish

Marsh & Associates, LLC with USDI BR