Every pixel counts
web map symbols for the National Park Service

Jake Coolidge @jccartography
NACIS Annual Meeting
Minneapolis, MN Oct. 15, 2015
Web and mobile maps for the NPS
Design Considerations

photo by Bruce Fingerhood, 2004
http://www.flickr.com/photos/springfieldhomer/42195419/
Design Considerations

Recognizability

P. Hofmann: “bank on the learnability of a simple symbol rather than the immediate intuition of a complicated symbol”

Google Maps
Design Considerations

Recognizability

J. Stevens et al: “Symbols with strong semantic relationships with their referent can be identified more quickly.”

Mapbox Maki
Design Considerations

Recognizability

Legibility

NPMap laundry symbol in six sizes (32px, 25px, 16px, 17px, 13px, 9px)

9 x 9px amphitheater symbol
Design Considerations

Recognizability

Legibility

Complexity

Erika Hall
https://www.flickr.com/photos/mulegirl/99132433

Alex Valdivia
https://thenounproject.com/search/?q=bicycle&i=16775
## Design Considerations

- Recognizability
- Legibility
- Complexity

<table>
<thead>
<tr>
<th><img src="heart" alt="" /></th>
<th><img src="airplane" alt="" /></th>
<th><img src="christmas-tree" alt="" /></th>
<th><img src="running" alt="" /></th>
<th><img src="sunset" alt="" /></th>
<th><img src="pool" alt="" /></th>
<th><img src="car" alt="" /></th>
<th><img src="fire" alt="" /></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="tent" alt="" /></td>
<td><img src="triangle" alt="" /></td>
<td><img src="beach" alt="" /></td>
<td><img src="hiking" alt="" /></td>
<td><img src="ship" alt="" /></td>
<td><img src="jetway" alt="" /></td>
<td><img src="lighthouse" alt="" /></td>
<td></td>
</tr>
<tr>
<td><img src="first-aid-kit" alt="" /></td>
<td><img src="lunch" alt="" /></td>
<td><img src="knife" alt="" /></td>
<td><img src="camera" alt="" /></td>
<td><img src="fork" alt="" /></td>
<td><img src="toilet" alt="" /></td>
<td><img src="gas-station" alt="" /></td>
<td><img src="man" alt="" /></td>
</tr>
<tr>
<td><img src="horse" alt="" /></td>
<td><img src="tractor" alt="" /></td>
<td><img src="dog" alt="" /></td>
<td><img src="question-mark" alt="" /></td>
<td><img src="laundry" alt="" /></td>
<td><img src="baby" alt="" /></td>
<td><img src="bed" alt="" /></td>
<td><img src="anchor" alt="" /></td>
</tr>
<tr>
<td><img src="bicycle" alt="" /></td>
<td><img src="h" alt="" /></td>
<td><img src="picnic" alt="" /></td>
<td><img src="email" alt="" /></td>
<td><img src="scooter" alt="" /></td>
<td><img src="home" alt="" /></td>
<td><img src="recycle" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>
Design Considerations

Recognizability

Legibility

Complexity

Style, look and feel
Design Challenge
Improve NPMap’s symbol set, 2014
# Design Challenge

**Improve NPMap’s symbol set, 2014**

<table>
<thead>
<tr>
<th>Optimized for 72dpi</th>
<th>Optimized for 72dpi</th>
<th>Optimized for 72dpi</th>
<th>Optimized for 72dpi</th>
<th>Optimized for 72dpi</th>
<th>Optimized for 72dpi</th>
</tr>
</thead>
<tbody>
<tr>
<td>30px Black</td>
<td>30px White</td>
<td>22px Black</td>
<td>22px White</td>
<td>14px Black</td>
<td>14px White</td>
</tr>
</tbody>
</table>

- Plane
- Sphere
- Wind
- Bus
- Bicycle
- Car
- Fire
Background

NPS print map symbols

Map of Grand Teton National Park
by the cartographers at the Harpers Ferry Center
Background

NPS print map symbols

**Map Pictographs**
- Airport
- Amphitheater
- Boat launch
- Boat tour
- Bicycle trail
- Bus stop/Shuttle stop
- Campfire
- Campground
- Canoe access

“The NPS Graphic Identity Program develops graphic standards that guide the design of a broad range of communication media within NPS... (and) provides tools and guidelines to help all of us achieve a more consistent approach to the design of our visual communications.”
Background
NPS print map symbols originate from the Ultimate Symbol Collection

www.ultimatesymbol.com
Background

NPS print map symbols originate from the Ultimate Symbol Collection.

Shapes are then simplified, line widths and internal distances increased.
Background

NPS print map symbols originate from the Ultimate Symbol Collection.

Shapes are then simplified, line widths and internal distances increased intentionally bold for high contrast with map background.
Adapting symbols
Design framework
slim profiles

symbols in NPMap Builder
Adapting symbols
Design framework
slim profiles
black, off-white, and white
versions support multiple
backgrounds
Adapting symbols
Design framework
slim profiles
black, off-white, and white versions support multiple backgrounds
multiple sizes for greater cartographic flexibility

<table>
<thead>
<tr>
<th>Size</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>32px</td>
<td><img src="image1.png" alt="Image 1" /></td>
</tr>
<tr>
<td>24px</td>
<td><img src="image2.png" alt="Image 2" /></td>
</tr>
<tr>
<td>16px</td>
<td><img src="image3.png" alt="Image 3" /></td>
</tr>
<tr>
<td>17px</td>
<td><img src="image4.png" alt="Image 4" /></td>
</tr>
<tr>
<td>13px</td>
<td><img src="image5.png" alt="Image 5" /></td>
</tr>
<tr>
<td>9px</td>
<td><img src="image6.png" alt="Image 6" /></td>
</tr>
</tbody>
</table>
Adapting symbols
Design framework
slim profiles
black, off-white, and white versions support multiple backgrounds
multiple sizes for greater cartographic flexibility
shadow effects provide visual dimensionality
Adapting symbols
Design framework
HFC + NPMap

**Map Pictographs**
- Airport
- Amphitheater
- Boat launch
- Boat tour
- Bicycle trail
- Bus stop/Shuttle stop
- Campfire
- Campground
- Canoe access
Recent design examples
Information symbol

original HFC symbol
initial NPMap symbol
Recent design examples
Information symbol

revised NPMap symbol
(pixel preview)
Recent design examples
Campgrounds vs. campsites

(l) photo by Grand Canyon NP
https://www.flickr.com/photos/grand_canyon_nps/6890179264
(r) photo by Paxson Woelber
https://www.flickr.com/photos/paxson_woelber/5433948195
Recent design examples
Campgrounds vs. campsites

early design variations
finalized design
Recent design examples
Spring symbol

Many weeks later, and I’m proposing a rather radical departure from the traditional USGS symbol, which initially looked like this when modified to fit in our symbol library:

Now I’m proposing something that

- doesn’t use color
- hopefully better fits with the other symbols in the library
- is a little “heftier” with its pixels—I find the linework breaks down in smaller sizes

I’m going to mull this over, and welcome your feedback in the meantime!
Recent design examples
Spring symbol

Many weeks later, and I’m proposing a rather radical departure from the traditional USGS symbol, which initially looked like this when modified to fit in our symbol library:

Now I’m proposing something that
- doesn’t use color
- hopefully better fits with the other symbols in the library
- is a little “heftier” with its pixels—I find the linework breaks doing smaller sizes

I’m going to mull this over, and welcome your feedback in the meantime!
Recent design examples

Entrance station symbol

ranger station symbol  early variation  final design
Future developments
adapting symbols to OpenGL
better integration into our mobile maps
automating elements of the artwork production
revisiting/redesigning symbols based on feedback
revising the placemarkers used in NPMap Builder
Learn more

NPMap Symbol Library:
http://www.nps.gov/npmapp/tools/npmapp-symbol-library

Github repository:
https://github.com/nationalparkservice/npmapp-symbol-library

NPS Graphic Identity Standards:
http://www.nps.gov/hfc/services/identity/

References


thanks!

jake_coolidge@partner.nps.gov
@jccartography