

Development document for:

Lost Rivers of Toronto "Ashbridges Walks Maptour" - "Story map" web-maps

Using: ArcGIS Online and Shapefile data, published to ArcGIS Online

Link to webmap:

<http://hgisportal.esri.ca/portal/apps/MapAndAppGallery/index.html?appid=3272511933fa41498201836717b41a27>

REQUIREMENTS: A map with numerically ordered point symbols linked to a story panel containing corresponding text and images. Suitable for Lost Rivers walking tour data for 3 walking tours: Ashbridge's Bay Watershed Walk, Ashbridge's Creek Walk and Tomlin's Creek Walk. Historical map image showing original river pattern should be incorporated with adjustable transparency.

Credits: Lost Rivers of Toronto Project (John Wilson), Nathan Ng, University of Toronto Map and Data Library, Canadian Historical GIS Partnership Development project, GIS and Cartography Office Dept. of Geography University of Toronto, Esri Canada.

Note: The ArcGIS Online documentation is extensive and comprehensive. Therefore many details will only be referenced to that documentation rather than explained in full here.

Approach: Decision made to use ArcGIS Online Story map template, hosted on ArcGIS Online

ArcGIS Online has a large number of Story Map templates, many of which could be suitable for the purpose of this map. See: <https://storymaps.arcgis.com/en/app-list/>

Possible options considered: Story Map Tour, Story Map Journal, and Story Map Shortlist.

Each of these options was explored and it was decided to use the Story Map Shortlist (BETA).

<http://storymaps.arcgis.com/en/app-list/shortlist/>

Since the template for this Story Map was in Beta, it was only available hosted on ArcGIS Online. It could not be hosted directly on the Portal for ArcGIS developed by Esri Canada for the Canadian HGIS project. It is expected to be included in future releases of the Portal. However, at the time the only option was to develop the app on ArcGIS Online, so the University of Toronto Organizational ArcGIS Online site was used. The app was then registered with the Canadian HGIS portal so that it appears in the Lost Rivers Gallery on the portal (see link to webmap above.)

It should be noted that the Shortlist app, and other Story Map templates, are Open Source and can be downloaded and hosted on the user's independent web server. Customized functionality and graphics may then be programmed for the app, in the Development version. See:

<https://developerscorner.storymaps.arcgis.com/> and for the code for the Shortlist app, see:

<https://github.com/Esri/storymap-shortlist/>

Functionality

Mapping functionality: ArcGIS Online Web Map

Interface functionality: ArcGIS Online Story Map Shortlist (BETA)

Historical background map image: ArcGIS Online Tile Layer (hosted)

Map Data:

Overlay Mapping data: Points and lines for map tours: ArcGIS Online Feature layer (hosted)

Base map: Esri World Topographic Base map COMBINED WITH

Historical background map: Georeferenced map image jpeg published as ArcGIS Online Tile Layer (hosted)

PRODUCTION NOTES

Shortlist Story Map App Builder

The Shortlist Story Map Shortlist App page is a good place to start to learn about the app.

<http://storymaps.arcgis.com/en/app-list/shortlist/>

The app appears well-adapted for the project requirements above. It provides tabs for different "themes" - in our case 3 tabs for the 3 walking tours - as well as linking points on the map to photos and text. There is a user-friendly interface - the Shortlist Builder - for creating and editing the "Shortlist layer" which contains the content for the app. There are three options for building the app:

1. Build interactively - Add all the points and related text/photos interactively online, either "from scratch" on a new web map, or as a new Shortlist layer overlay on a pre-existing webmap

(This method is outlined in detail in the online Tutorial: <http://storymaps.arcgis.com/en/app-list/shortlist/tutorial/>)

2. Importing the point data, i.e. using the data from a point layer or data table (.csv file) in the web map as your "Shortlist layer", and adding or editing the points and related text/photos interactively online

3. Using the point data "as is" - i.e. creating your "Shortlist layer" by a live link to a point layer in your web map, pre-formatted using the Shortlist data template, and managed by editing the web map itself, NOT through the Shortlist Builder online. This option requires that your point data uses the particular set of fields ('schema') expected by the Shortlist. The schema is explained in the README file contained in the data temaplate download, at

http://links.esri.com/storymaps/shortlist_layer_template

This is also available on our site here:

http://geohist.ca/wp-content/uploads/2017/09/Shortlist_data_template_readme.pdf

These and other specific questions are explained in the app FAQ page. For example:

Can I use existing point data as places in a Shortlist?

<http://storymaps.arcgis.com/en/faq/#question49>

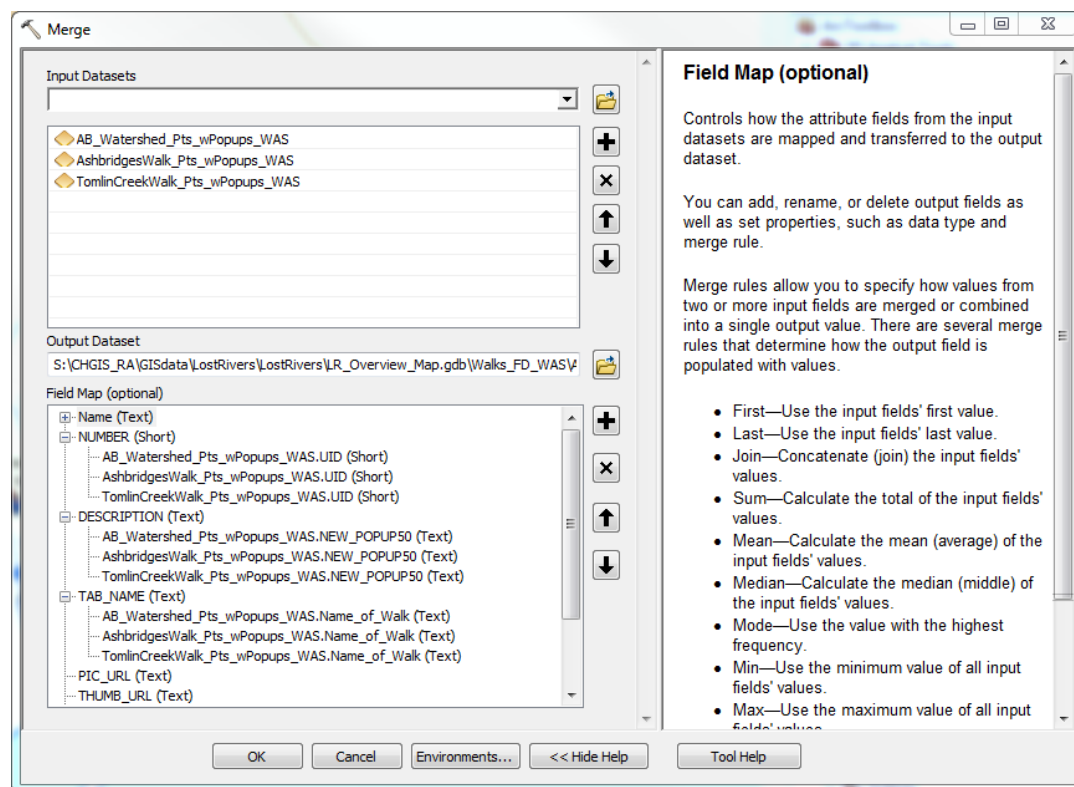
For the Lost Rivers map tour we used above option **2.: Importing the point data** from a point layer in the web map. This is detailed below.

OVERLAY MAPPING DATA

Point and Line Overlay Layers - ArcGIS desktop

ArcMap was used to create the points and lines for the map tours. These were done in a File Geodatabase. Separate feature classes were created for each of the 3 Walking tour paths and each of the stops along each of the 3 routes.

Importing a point layer into Shortlist template requires all the points in your site to be in a single data layer, with specific fields to be used to populate the different sections of the interface: Place name, Tab name, URLs for photos, and Description fields. (See README file referenced above). To do this we used the ArcGIS Merge tool to combine and reconfigure the fields from the shape files we created previously:



Reference Line layers

The following two layers were included for reference.

Rivers plotted by Lost Rivers Project - historical river courses for Ashbridge's Bay area provided by John Wilson of the Lost Rivers Project

Shoreline 1882 (McMurrich) - Tracing of shoreline of historical base map McMurrich 1882 (see below)

Publishing layer as a hosted Feature Service

These layers were published as a hosted Feature Service on the University of Toronto Arcgis.com site: <http://utoronto.maps.arcgis.com/home/item.html?id=4d5a289479204a9081c31d78bf3f7761>

There are a variety of ways to publish hosted layers on Arcgis Online sites. For an overview see: <http://doc.arcgis.com/en/arcgis-online/share-maps/hosted-web-layers.htm> .

BASE MAPS

Reference Base Map: Selected from ArcGIS Online base maps

The World Topographic base map was selected from the standard ArcGIS Online base maps, as most appropriate for this application.

Historical background map georeferenced raster overlay

The original image was obtained from the Historical Maps of Toronto website by Nathan Ng, provided courtesy of Toronto Public Library:

<http://oldtorontomaps.blogspot.ca/2013/02/1882-city-engineers-office-plan-of-city.html>

The image was georeferenced in ArcMap. It was published from ArcMap as a Map Service Tile Layer (hosted) to the University of Toronto ArcGIS online site.

<http://utoronto.maps.arcgis.com/home/item.html?id=dc186dd4af1845a381519cd063e6826f>

The quality of the Tile Layer retains the quality of the original and performance is excellent.

The design called for the base map to include both the topographic layer and the historical map layer as a transparency. ArcGIS Online allows one to do this by creating a Multilayer base map. See:

http://doc.arcgis.com/en/arcgis-online/create-maps/choose-basemap.htm#ESRI_SECTION1_5C28F0CDBF184E0D96D010E37F799B27

Unfortunately, this method makes it impossible to separately turn off or make transparent the historical map layer in the interface. See ISSUES below.

CREATION OF WEB MAP AND SHORTLIST STORY MAP APP

As noted above, there are many ways of publishing maps or data layers to ArcGIS Online, including directly from ArcMap, from ArcGIS Pro, or as individual items which can then be assembled and styled into a web map. We tested a variety of methods and found that building and symbolizing the map in ArcMap and then publishing it as a Map Service was the easiest for us. The feature layers inherit the map symbolization from ArcMap, and so are easy to reassemble into a Web Map.

Once the Web Map is created, from its Contents page we clicked "Create Web App" and specified the Story Map Shortlist configurable template. This presents you with a series of menu choice to set up the app: for example:

(See images next page)

CHOOSE YOUR POINT DATA lets you specify how to use point layers in the map:

The screenshot shows a web browser window with the URL `utoronto.maps.arcgis.com/apps/Shortlist/index.html?appid=bfa1e09c2a8c4d89ac23d86e83290238&edit=true`. The browser's address bar and tabs are visible. The main content area displays a dialog box titled "CHOOSE YOUR POINT DATA" with a blue pencil icon. The dialog text asks: "Your web map contains point data. Do you want to use those points as places in your Shortlist?". There are three radio button options: "Yes, import them" (selected), "Yes, use them as-is", and "No". Each option has a brief description of its effect. A blue "NEXT" button is located at the bottom right of the dialog.

CHOOSE YOUR POINT DATA

Your web map contains point data. Do you want to use those points as places in your Shortlist?

- ☒ Yes, import them
You will be able to edit, manage and add to your places in the Shortlist Builder. A copy of your web map is automatically created so your original data is not modified.
- ☐ Yes, use them as-is
You will continue to edit and manage your places in your web map, not in the Shortlist Builder. Updates you make to that data will be automatically reflected in your Shortlist. This option requires that your data uses this template. ([Download template](#))
- ☐ No
Your points will be displayed on your Shortlist map but won't be used as places. Instead you'll add your places into your Shortlist in the Builder.

[NEXT](#)

CHOOSE THE FIELDS THE SHORTLIST SHOULD USE allows you to identify fields to use for the template:

The screenshot shows the same web browser window as the previous one, but the dialog box is now titled "CHOOSE THE FIELDS THE SHORTLIST SHOULD USE". It contains several configuration options for the Shortlist template. The "Field containing the name of each place:" is set to "Name". The "Field(s) that will appear in the description for each place and their order:" list includes "SHORT_DESC", "DESCRIPTION", "DESC2", "DESC3", "DESC4", "PIC_URL", "Name", and "WEBSITE", with the first four checked. The "Field containing the URL for 'More info' about each place (optional):" is set to "WEBSITE". The "Main image:" is set to "PIC_URL" and the "Thumbnail:" is set to "THUMB_URL". A note at the bottom says "Leave these set to none if you want to add images to your places in the Builder". There are blue "< BACK" and "NEXT" buttons at the bottom.

CHOOSE THE FIELDS THE SHORTLIST SHOULD USE

Field containing the name of each place:
Name

Field(s) that will appear in the description for each place and their order:

- ☒ SHORT_DESC
- ☒ DESCRIPTION
- ☒ DESC2
- ☒ DESC3
- ☒ DESC4
- ☐ PIC_URL
- ☐ Name
- ☐ WEBSITE

Field containing the URL for 'More info' about each place (optional):
WEBSITE

Fields containing URL to images for each place (optional):

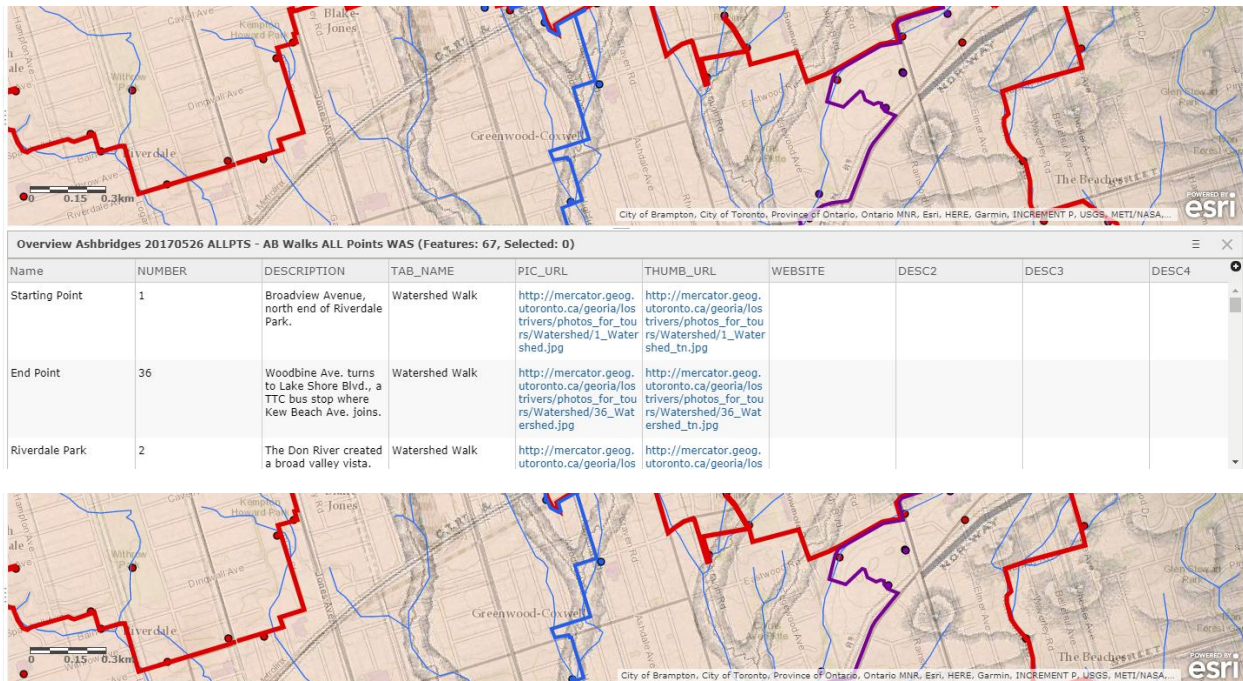
Main image: PIC_URL

Thumbnail: THUMB_URL

Leave these set to none if you want to add images to your places in the Builder

[< BACK](#) [NEXT](#)

The result of the latter set of choices is to create a new customized Point Layer in your original web map, labelled as "Shortlist Layer (DO NOT REMOVE)". Here is a comparison of the PRE- Shortlist and POST-Shortlist fields:



Overview Ashbridges 20170526 ALLPTS - AB Walks ALL Points WAS (Features: 67, Selected: 0)

Name	NUMBER	DESCRIPTION	TAB_NAME	PIC_URL	THUMB_URL	WEBSITE	DESC2	DESC3	DESC4
Starting Point	1	Broadview Avenue, north end of Riverdale Park.	Watershed Walk	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/1_Watershed.jpg	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/1_Watershed_tn.jpg				
End Point	36	Woodbine Ave. turns to Lake Shore Blvd., a TTC bus stop where Kew Beach Ave. joins.	Watershed Walk	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/36_Watershed.jpg	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/36_Watershed_tn.jpg				
Riverdale Park	2	The Don River created a broad valley vista.	Watershed Walk	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/2_Watershed.jpg	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/2_Watershed_tn.jpg				

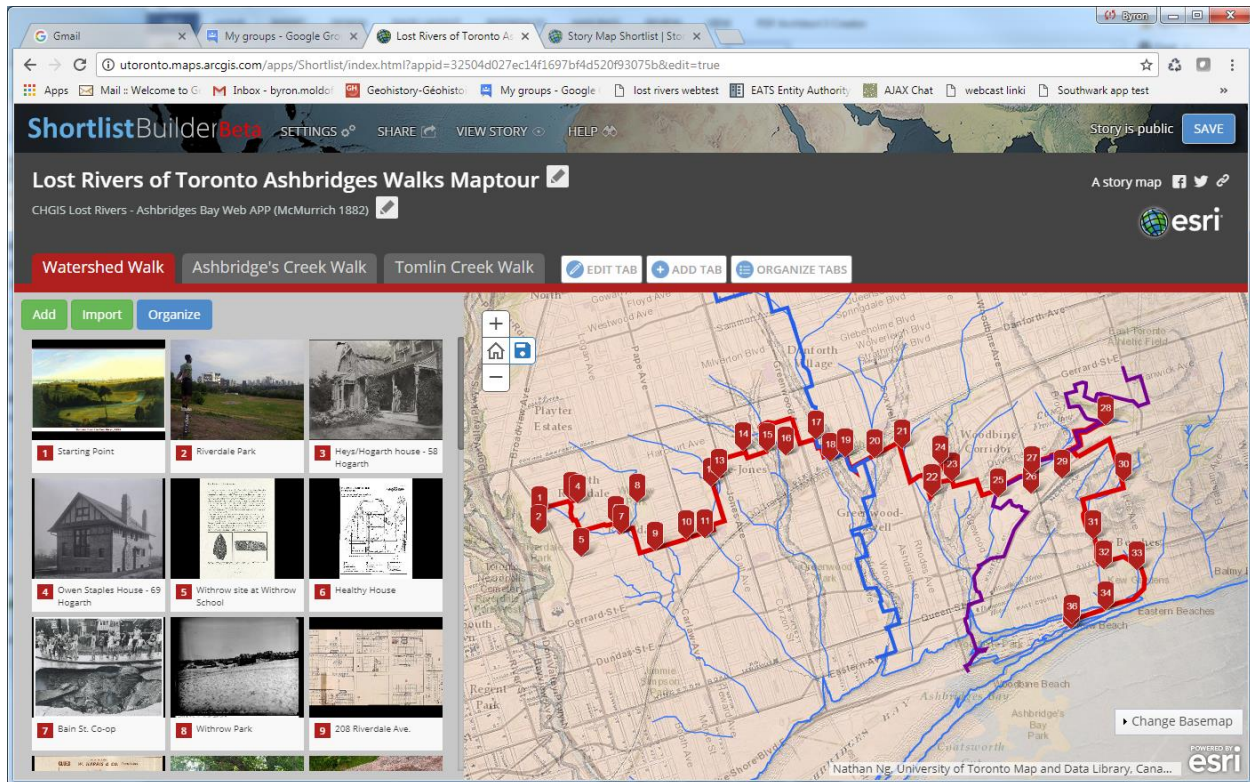
Shortlist layer (DO NOT REMOVE) (Features: 67, Selected: 0)

Name	Description	Picture URL	Thumbnail URL	Website	Shortlist Id	Number	Tab index	Location Set
Starting Point	Mary Hastings Fitzgerald Meyers, "Toronto from the Don River 1855"	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/1_Watershed.jpg	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/1_Watershed_tn.jpg		0	1	0	
End Point	In 1860 this image would have been our impression of Ashbridge's Bay.	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/36_Watershed.jpg	http://mercator.geog.utoronto.ca/georia/lostrivers/photos_for_tours/Watershed/36_Watershed_tn.jpg		35	36	0	

So it is clear that the layer has been ingested and re-configured into the format used by the template. For example, the TAB_NAME field, has been reconfigured into a "Tab index."

From this point on, the project contents must be edited within the interface of the Shortlist Builder, which is an easy and intuitive environment for editing text, photos, and the labels used for various components. See below:

(See images next page)



Within the Shortlist Builder (Beta) it is easy to customize the photos and text related to points, colours of tabs which are linked to the colour of markers on the map, add or re-organize points or tabs, change the basemap to use another from the ArcGIS online gallery, etc. It really is a very flexible environment for editing the design specifics of the pre-determined template.

ISSUES WITH THE SHORTLIST STORY APP TEMPLATE

Map-specific customization: main path and two other paths appearing below it

The design called for all three tour paths to be shown on all maps, but the two supplementary layers on each map tab to be given 60% transparency to put them below the main path in the visual hierarchy. This is not possible with the Shortlist Story Map as the same base map is used for all three tabs.

Toggling of Reference Line layers - not possible without customization

The design called for the reference layers to be capable of toggling on or off. This is not possible with the Shortlist Story Map without customization since no Layer List widget with checkbox control is provided.

Transparency slider for historical base map - not possible without customization

The design called for the historical base map to be capable of transparency and adjustable by a slider. Again, the Layer List widget allows transparency to be adjusted but is not provided in the Shortlist Builder template.

Adding quotation marks or special characters in the titles of features

Some of the features' titles or description required internal quotation marks or other special characters. It has been our experience with ArcGIS that bringing in content with special characters from other file formats (Excel, DBF, CSV) can be problematic, as field formats and special characters may be misinterpreted. Quotation marks are considered field delimiters, unless doubled quotations are used, so that if the title "Sand Dune" is required, it must be formatted as ""Sand Dunes"". Various other issues were encountered and re-coded. The best method is to bring the CSV into ArcGIS as a geodatabase data table, which is stable, and edit or trouble shoot its contents there.

Customization of template for second image

To satisfy the requirements of the Lost Rivers Project the story map template needed to be customized to accommodate a second image and description where desired. This is not possible within the Shortlist Builder environment, although a link to an external image or page is easily added. This goal was accomplished by including a link to the second image file in the text of the description in the field "DESC2" of the point layer uploaded to populate the Shortlist template. For example, for Stop No. 8 on the Ashbridges Watershed Walk, the field was input as:

8b Withrow Park toboggan run in filled ravine of Holly Brook, viewpoint northeast from Logan/Bain intersection, 1914.

This embedded the source image into the Shortlist panel description when the "Shortlist layer" was generated.