***File:***

Beaches\_GL\_GLEAM\_data.shp

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***Description:***

This data set was created as part of a larger work, the Great Lakes Environmental Assessment and Mapping (GLEAM) Project. For a full description of the GLEAM project, please see:

Allan, J.D., et al., 2015. Using cultural ecosystem services to inform restoration priorities in the Laurentian Great Lakes. *Frontiers in Ecology and the Environment*, 13(8): 418-424. doi:10.1890/140328

Please cite Allan et al. 2015 when using this dataset.

*Beach use (beach locations, geo-cached photo counts).* Beach locations were obtained from the U.S. EPA BEACH Act Geospatial database, and Canadian beach locations were provided by Environment Canada and supplemented with provincial park beaches identified from Canadian protected lands databases. We identified 1,277 public-access beaches along the Great Lakes shoreline, which vary from destination beaches to road-ends, city parks, and national shorelines. Because comprehensive beach visitation data are lacking, we employed several criteria to ensure that included beaches were likely to experience regular use. We selected beaches that were: a) monitored, b) within state, national, or provincial parks, or c) located among one of the four U.S. National Lakeshores along the Great Lakes. Hence, we believe this dataset (n = 874) represents the minimum number of beaches that are visited on the Great Lakes. The presence of monitoring indicates state or provincial concern for health advisories (786 of the 874 were monitored) and thus should be a strong indicator of beach use. The 88 unmonitored beaches occur mainly along the coast of Lake Superior, in the Sleeping Bear Dunes area of Lake Michigan, and along Lake Huron’s Georgian Bay. Where beaches and parks coincide, we count use for each service, as we could not discriminate beach-goers from other park users, such as hikers, campers, birders and boaters. As a proxy for beach visitation, we used the InVEST model (Natural Capital Project, 2013) to count the number of geo-tagged Flickr photos within a 500 m buffer of each beach location (methodology in Wood et al. (2013). The model sources metadata from Flickr’s public API, and calculates the annual photo user days as the number of days a unique Flickr user uploads at least one photograph (averaged over 2005-2012). While photo user days are not a measure of absolute visitation, they are shown by Wood et al. (2013) to be an appropriate proxy.

***Resources:***

Natural Capital Project (2013) InVEST (version 2.5.6). Available at http://www.naturalcapitalproject.org/InVEST.html. Accessed October 2013.

Wood SA, Guerry AD, Silver JM, & Lacayo M (2013) Using social media to quantify nature-based tourism and recreation. *Sci Rep-Uk* 3.

***Field map:***

|  |  |
| --- | --- |
| **E\_COUNTY** | **County in which beach resides** |
| **E\_BEACHID** | **U.S. EPA Beach ID** |
| **E\_OWN\_ACC** | **Ownership public or private?** |
| **E\_LENGTH\_\_1** | **Length in meters** |
| **E\_TIER** | **U.S. EPA Beach Tier (1, 2 or 3)** |
| **BEACHNAME** | **Beach name** |
| **MONITORING** | **Yes/No for whether beach water quality is monitored** |
| **STATE\_PROV** | **State or province in which beach resides** |
| **BEACHDAYS** | **Number of swimmable days the beach is open** |
| **ZACTDAYS** | **Percentage of swimming season under advisory/closure (ACTIONDAYS/BEACHDAYS)** |
| **ACTIONDAYS** | **Number of “action days” – or days with advisories or closures** |
| **POP30KMNEW** | **Population within 30km of Beach** |
| **FLICKR** | **Number of flickr photo user-days** |