MORI: Mapping Outdoor Recreation Intensity

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High resolution spatial-temporal data regarding human impact on the environment in non-urban areas is very important for research on cumulative impacts on wildlife. Proxies for outdoor recreation activity can be collected from geotagged metadata contained within social media posts. The goal of our research is to extract location data from multiple different social media platforms and aggregate it to create an intensity map of outdoor recreation in non-urban spaces across Canada. We will take a data fusion approach to aggregating multiple social media sources, leveraging the best properties (spatial-temporal resolution, coverage) of different datasets. Location and time information will be extracted from social media sites via application programming interfaces (API's; e.g., OSM, iNaturalist, Twitter, Flickr) and through manual collection methods when they are unavailable (e.g., AllTrails, Strava). A heuristic approach will be used to develop models aimed at mapping overall outdoor recreation intensity, accounting for known spatial and temporal biases present in available datasets. Future work will use ground truthing from remote counters placed at a sample of the locations that social media data is collected from to compare against the social media measurements. The overall objective of this research is a national spatial database that captures outdoor recreation activity as a temporally dynamic heatmap. This map will be a useful tool for tracking the impacts of human recreation in natural areas and studying their impacts on wildlife and plant ecology.