

A perfect storm: How shifting climate and demographics are contributing to the demise of pond hockey in Canada

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Pond hockey: Past & present

- Outdoor hockey ('pond hockey') has been a popular pastime in Canada for over two hundred years, and is typically practiced on natural bodies of water such as frozen ponds and lakes that have frozen (Kivinen et al. 2001; Robertson, McLeman & Lawrence, 2015).
- Given the history and nostalgia many Canadians associate with pond hockey (Johnson & Ali, 2017; Ramshaw & Hinch, 2006), it is reasonable to consider pond hockey an important cultural activity in Canada, and skateable ice an ecosystem service (Schaich, Bieling & Plieninger, 2010).

Assessing vulnerability

- Vulnerability is "the likelihood that an individual or group will be exposed to and adversely affected by a hazard. It is the interaction of the hazards of place... with the social profile of communities" (Cutter, 1993).
- Climate impacts must be considered in tandem with social factors such as demographics, economic capacity to support change, etc. (Fussler, 2011)
- Research on 'double exposure' has examined climate hazards and social change at once, to examine overall vulnerability (O'Brien and Leichenko, 2000; O'Brien et al., 2004b)

Methods

- Semi-structured interviews examining hockey managers' perceptions of climate hazards and social changes
- Sample of 13 pond-hockey managers in ON & QC (tournament owners/managers, outdoor rink & facility managers, pond hockey league convenors, a pond hockey heritage manager/historian)
- Triangulation using secondary data: Stats Canada demographic info, EnviroCanada weather and climate history, IPCC projections (5th Assessment Report)

Findings: The double-exposure of pond hockey

Climate impacts

- The length of the outdoor skating season has been declining since the 1950s (Damyranov, Matthews & Mysak, 2012)
- 34% projected reduction in days with skateable conditions by 2090 (Robertson, McLeman & Lawrence, 2015)
- Every major ON and QC pond hockey tournament has been impacted by unstable conditions in the past 5 years (Canadian Pond Hockey Championships, Source for Sports Pond Hockey Classic, the Pond Hockey Classic, Pond Hockey Tournament at Sandy Lake, Canadian Pond Hockey Face-Off, Pond Hockey Festival On The Rock)
- Biggest threats to ice conditions are direct exposure to sun, rising temperature, and wind exposure. Two of these can be managed (sun and wind).

Social and demographics change

- The population in ON and QC is ageing: the number of Canadians over 80 years of age has increased by 25% between 2001 and 2006 (Martel & Caron Malenfant, 2007) and fertility rate has been low for a long time (Statistics Canada, 2016).
 - There are fewer children to recruit into hockey.
- The population in ON and QC is diversifying: Immigrant population across Canada has been rising since 1991: the 2016 Census reported the highest immigration since 1921 (Statistics Canada, 2017). Of recent immigrants who came here between 2011 and 2016, only 13.6% are from the US or Europe, places that have even a slight hockey connection.
 - Immigrant communities have demonstrated a higher interest in soccer and basketball than in hockey (Jedwab, 2007)
- The middle class is shrinking:
 - Considering the costs of hockey participation, particularly indoor hockey, there are fewer prospective participants (Letts & Steckley, 2013; Mirtle, 2012). The most likely participants in pond hockey are those that also play indoor hockey.

Implications

- The continued practice of pond hockey relies on tenable skating conditions, and sustained or increased interest in this sport. Trends related to both skating conditions and interest have been in decline since the 1950s and 1970s, respectively.
- Future projections show similar downward trends of skating conditions and interest.
- Pond hockey is thus an example of 'double exposure' vulnerability.
- Not all regions of ON and QC will be affected the same way.

Recommendations

- Managers of outdoor rinks should consider roofs and partial walls (e.g. a gazebo-style risk) to preserve the outdoor experience but protect against sun and wind;.
- Managers of outdoor rinks ought to diversify use of the space (e.g. using the space for roller-skating or box lacrosse in off-season to increase use of space and offset reductions in physical activity)
- Tournament managers and pond hockey team managers should plan indoor alternatives for games and practices; eliminating possibility of cancellations.

