



# Overlooking the coast: Limited local planning for coastal area management along Michigan's Great Lakes



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## ARTICLE INFO

### Keywords:

Coastal area management  
Plan content evaluation  
Participant action research  
Great Lakes

## ABSTRACT

This paper presents an evaluation of local efforts to manage Great Lakes coastal shorelands through master plans, focusing on Michigan localities. We framed the analysis around the concepts of capacity, knowledge, and commitment. We conducted plan content evaluations, structured surveys of local officials, and multiple unstructured interviews of local officials and citizens through a participatory action research (PAR) program. We analyzed those data, along with census data, using descriptive statistics, correlations, regression analyses, and triangulation of observations. We found that Michigan's coastal localities are largely failing to consider their coastal areas in their planning, or to adopt meaningful plan policies to manage them, for at least four reasons: damaging erosion and storm events have been relatively infrequent; localities rely on the state to address coastal issues; insurance programs effectively indemnify them when a storm does happen; and—to some extent—shoreland owners push back against proactive local management. To the extent localities are planning, higher overall plan quality is associated with having in-house planning staff (a measure of both capacity and knowledge) and development pressure (knowledge and commitment). To the extent plans address their coastal areas specifically, the adoption of plan policies advancing coastal area management is associated directly with having higher median house values (capacity), in-house planning staff (capacity and knowledge), and development pressure (knowledge and commitment). Focus on coastal management is inversely associated, however, with the use of planning consultants. Higher plan quality is correlated significantly with the adoption of more robust plan policies overall. In sum, having knowledge about coastal dynamics appears important in explaining local planning efforts, but having the capacity to act on that knowledge and the commitment to do so are equally or more important.

## 1. Introduction

Near-shore coastal zones are popular places to build. They are also subject to high-risk hazards like erosion, storm surges, and inundation. There are federal programs in the U.S. that influence development within coastal areas given those values and hazards, including programs emanating from the federal Coastal Zone Management Act of 1972 and the Disaster Mitigation Act of 2000. Despite these programs, however, local governments ultimately play the key role in managing where and how shoreland development takes place. In doing so, they act primarily through their state-enabled local master planning and

development management programs (Beatley et al., 2002).

Paradoxically, while coastal communities face the greatest losses should a natural disaster occur, studies have shown that they mostly refrain from managing coastal zone development so as to reduce risk (Burby, 2006; Berke & Lyles, 2013). While these studies have been conducted in a variety of settings, those settings have included mostly ocean coastlines. We set out to evaluate whether this phenomenon is true for Great Lakes coastal communities as well.

In addition to its oceans, the United States enjoys inland freshwater seas, the five Laurentian Great Lakes: Superior, Michigan, Huron, Erie, and Ontario (Fig. 1).<sup>1</sup> The lakes extend some 750 miles and cover a

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<sup>1</sup> These five Great Lakes comprise the “Laurentian” Great Lakes because they drain to the Atlantic Ocean through the St. Lawrence River and Seaway Basin. They are international waters, bordering the U.S. and Canada along the Provinces of Ontario and Quebec. Several additional smaller lakes exist within the system as well, most notably Lake St. Clair separating Michigan from Ontario, but those lakes are not labeled “great” lakes. Even so, we include jurisdictions bordering Lake St. Clair and its connecting rivers for analytical purposes here.



Fig. 1. The Great Lakes Basin, showing the lakes, connecting rivers, and adjacent states and provinces.

combined surface area of about 95,000 square miles, roughly the size of the United Kingdom (see generally Gronewold et al., 2013; US GLERL, 2017; MDEQ, 2017a; US EPA, 2017a, 2017b). The U.S. portion of Great Lakes shorelines, including connecting waters, totals 4530 miles, making it almost as long as its Pacific, Gulf of Mexico, and Atlantic coastlines combined (Gronewold et al., 2013).

The Great Lakes are large enough to provide ocean-like amenities and to generate substantial hazards to coastlands. Great Lakes coasts are different from ocean coasts both physically and institutionally, however, as discussed more below. As a first step for evaluating systematically local efforts to manage Great Lakes coastal shorelands, we undertook a cross-sectional and longitudinal baseline assessment of those efforts. In doing so, we focused on the State of Michigan.

Michigan consists of two peninsulas, upper and lower, surrounded by waters of four of the five Great Lakes (Superior, Michigan, Huron, and Erie), with the smaller Lake St. Clair connecting Lakes Huron and Erie just north of Detroit. Virtually the entire state's land area drains to the Great Lakes basin, and the state enjoys 3288 miles of Great Lakes shoreline—about 72 percent of the U.S. Great Lakes shoreline (GLIN, 2017). As with most states, Michigan has delegated most of its land development management authorities and responsibilities—including those for coastal areas—to its local governments through broad planning, zoning, and other enabling acts (Fisher et al., 2012; MDEQ, 2017a, 2017b).

This article presents an analysis of local efforts to plan for the management of Michigan's Great Lakes coastal areas through master plans. We document the extent to which coastal localities are indeed

incorporating coastal shoreland management into their local planning efforts, and then explain those outcomes. We first review the literatures on plan content analysis and coastal area management and present a conceptual framework for analyzing local coastal shoreland management generally. We then describe the physical attributes that make the Great Lakes unique and the institutional arrangements that structure planning by Michigan's coastal localities. We report findings from the content analysis of local master plans conducted for selected localities in the mid 2000s and again in the mid 2010s; a survey of local officials conducted in 2008; results from statistical analyses and modeling of those data; and findings from ongoing participant action research (PAR) efforts. We conclude with a brief discussion of the applicability of these findings from Michigan to other Great Lakes and ocean coastal settings more broadly.

## 2. Evaluating local planning by coastal communities

### 2.1. Conceptualizing and evaluating local planning for coastal management

The research questions addressed here include first documenting systematically the extent to which coastal localities in Michigan are addressing Great Lakes shoreland management through their master plans, and second identifying the key factors that explain their planning efforts. The study sits at the intersection of several distinct literatures, including well-established work on evaluating the quality and policy content of local master plans (e.g., Burby & May, 1997; Berke & Godschalk, 2009; Lyles & Stevens, 2014) and planning for coastal area

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