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Policy pivot in Puget Sound: Lessons learned from marine protected areas and tribally-led estuarine restoration

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ABSTRACT

Environmental change amplifies the challenge of protecting and restoring Puget Sound. As rising pressures from population growth, development, unsustainable resource use, climate impacts and other factors alter this urbanizing basin, efforts to recover salmon and ecosystem health and to enhance climate resilience face unprecedented social complexities and intensifying competition for space. A multi-method study of citizen and practitioner perspectives on protection and restoration suggests that capacity to manage under these conditions can be improved through strengthening an approach that has already become central in restoration practice: multiple-benefit planning. In this research, we examine and compare planning approaches used to develop marine protected areas (MPA) and estuary restoration (ER) projects in Puget Sound. Surveying non-tribal public attitudes toward these projects, we found limited knowledge concerning existing MPAs but support for wider use of such protections. We find that initiatives pursuing conservation, protection, restoration and resilience can gain advantage from (a) broadly inclusive and collaborative planning; (b) recognition of tribal treaty rights, management authorities, and leadership; (c) careful consideration and mitigation of project impacts on affected people (e.g. especially tribal and non-tribal fisheries for MPAs; farm interests and landowners for restoration projects). We note that "no-take" MPA designation has stalled, while ER efforts are overcoming sharp objections and controversies by crafting projects to deliver multiple social-ecological benefits: improved flood control and drainage, salmon recovery, recreational enjoyment, and resilience to climate change. Comparable strategies have not yet evolved in designation of "no-take" MPAs in Puget Sound. We offer conclusions and recommendations for accelerating conservation and resilience initiatives to keep pace with a changing environment. A key human dimensions research-based recommendation is that increasing environmental pressures intensify the need to strengthen collaborative and sustained planning and implementation processes.

1. Introduction

We examine two approaches to restore the Puget Sound basin in light of multiple drivers of change that place an accelerating squeeze on marine and coastal habitats and limit their ability to provide ecosystem services. These drivers constrain recovery measures where tidal wetlands have been lost to development (Cereghino, 2015). Marine Protected Area (MPA) designation and estuarine restoration (ER) represent two leading approaches among others to manage Puget Sound sustainably. MPAs are an important marine spatial planning tool defined as "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." (Dudley, 2008:8). ER is defined to include mitigation, management of nearshore processes and large-scale projects such as flood control, breaching dikes and re-opening tidal areas and other measures to adapt to climate change (Elliott et al., 2007). Each approach is seen by tribal, state, federal managers and non-governmental stakeholders as having benefits and costs within a coupled social-ecological system to achieve resilience. Understanding of the conditions

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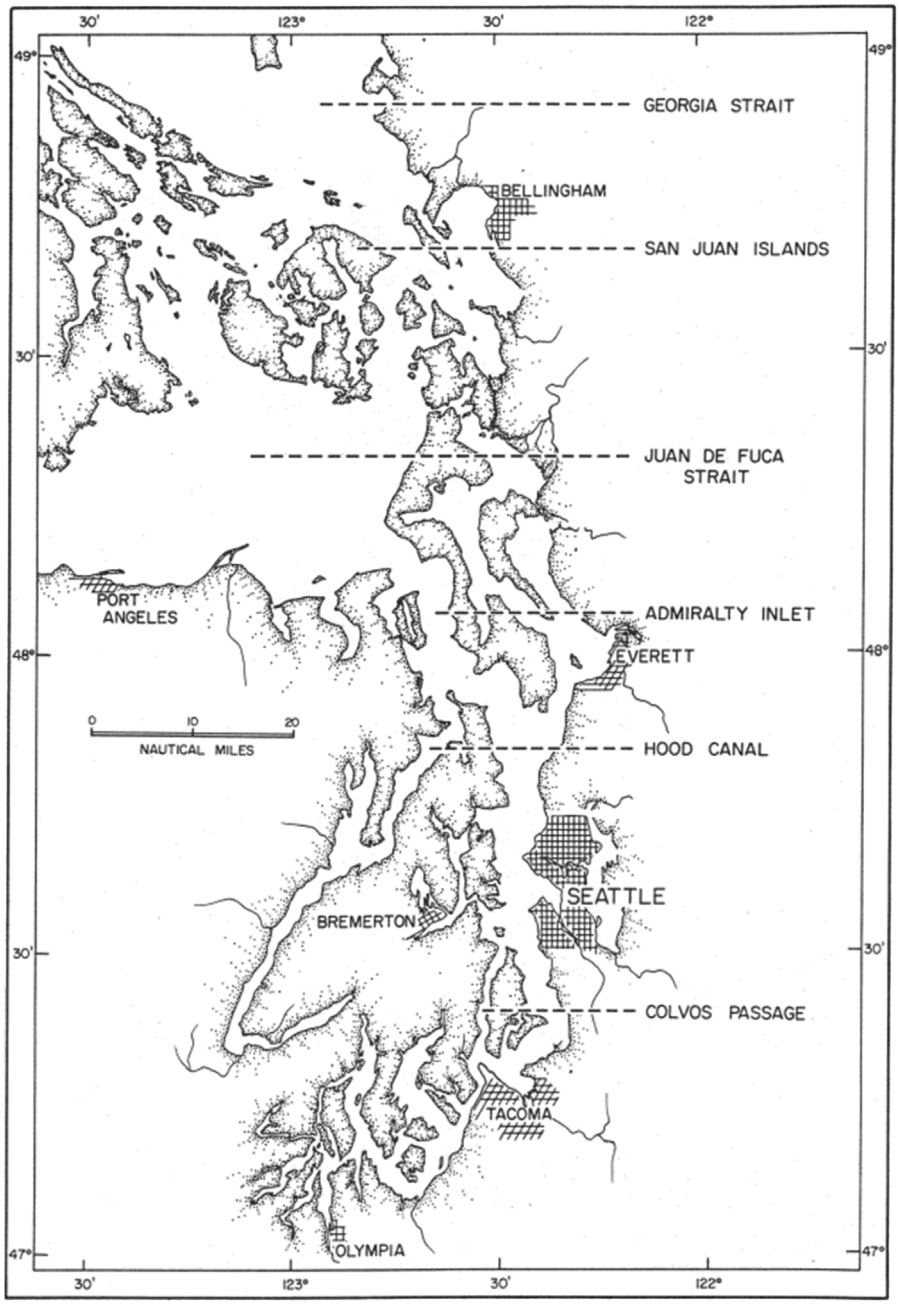

Fig. 1. Puget sound.

and processes leading to successful MPA and ER implementation is the goal of the research being reported. The perspectives of MPA and ER leaders, participants, and the public were elicited using a multi-methods approach. It is clear that "saving Puget Sound" is an on-going process and one that requires constant adaptation (Lombard, 2006).

In this paper, we first provide the context for evolving efforts to manage Puget Sound. Second, research multi methods are described. Third, case studies of MPA and ER are presented. Finally, we conclude and make recommendations on options to counter the accelerating consequences of population growth, development, unsustainable resource use, climate impacts and other factors in Puget Sound.

2. Historical context and background

Puget Sound is a large (2642 km^2, 1020 square mile) fjord-type ecosystem (Burns, 1990), the third largest estuary in the continental United States (Fig. 1). It is part of the larger Salish Sea, that extends into Canada. Puget Sound is home to critically endangered orcas, salmon and habitats and the source of commercial, recreational and cultural resources for millions of people from diverse backgrounds (PSP, 2016). There are approximately 4023 km (2500 miles) of shoreline (Gelfenbaum et al., 2006). Its 16 large river estuaries have been heavily modified with an estimated 74% (26,062 ha, 64,400 acres) of critically important wetlands lost (Gelfenbaum et al., 2006; Simenstad et al., 2011). Population growth throughout the region shows an anticipated rise from over 4,000,000 to 5,500,000 persons in the next few decades. This is expected to result in suburban sprawl and increases the impervious surface throughout the region, adding pressure on existing uses (Gelfenbaum et al., 2006). On top of those pressures, climate impacts (rising sea levels, loss of snowpack, seasonal compression of river flows, increasing storm intensity and storm surge), contribute to coastal erosion, flooding and sedimentation, limiting options for restoration