

Understanding the coast as a peopled place: A literature survey of place attachment in climate change adaptation

By

Joanna Wozniak-Brown, Ph.D., AICP

1080 Shennecossett Road, Groton, CT 06340

University of Connecticut, Connecticut Institute for Resilience and Climate Adaptation

joanna.wozniak-brown@uconn.edu

ABSTRACT

As the field of adaptation science grows, there are new and emerging paradigms to approach climate change planning. This paper includes a literature survey of articles and manuscripts that evaluate coastal climate change adaptation in the place attachment paradigm. The survey included a database review for an 11-year period with associated search terms and, after initial sifting of the results for duplications or non-related works, I reviewed the relationship between place attachment and adaptation, empirical methods for studying place attachment, major framing of their relationship, and how these concepts relate to equitable and “just adaptation.” Most studies used multiple and mixed methods with frequent use of semi-structured interviews and a psychometric scale. Primary frames for place attachment in adaptation were social capital, cultural heritage, managed retreat and migration, and ecosystem services. Place attachment can be a motivator for environmental action but a barrier to change, especially managed retreat. It can reveal critical elements and socio-cultural practices dependent on the landscape that are priorities to the residents and visitors. Finally, place attachment provides an opportunity, for more equitable and just adaptation, if done intentionally. After discussion of the results, I present research, policy, and practice considerations to further the intersection and application of place attachment in adaptation.

KEYWORDS: Climate change adaptation; place attachment; sense of place; coastal; planning; equity; methods; sea level rise; managed retreat.

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In the United States, when thinking of “the sea coast,” you might imagine the feel of the salt spray, the ongoing sound of crashing waves, and the sun reflecting off the sand. If you get even more specific — for example, a New England coastline — you might also imagine rocky jetties, small beach sections, crowds of summer visitors, lobster rolls, and whale-watching. Those familiar with the region can also think of specific locations along the coast that bring an emotional response. That feeling can come with varying degrees of emotional intensity depending on the memories, interactions, or cultural practices that may be associated with the place. Where humans live along the coast, complex governance of the socio-ecological system has required careful negotiation. While the coastal landscape has always been a dynamic place, the shoreline itself is rapidly changing due to sea level rise, ecological regime changes, and development pressure. In the United States alone, with between 0.9 m and 1.8 m of sea level rise by 2100, 4.5 million to 15 million people, respectively, are at risk of inundation (Hauer *et*

al. 2016). Within 150 years, it is hard to imagine what images one will evoke of the New England coast.

Place attachment as a lens for climate change adaptation offers an opportunity for a holistic response to the climate stressors, protects existing social capital, and focuses on community priorities. It is imperative that planners, climate change adaptation practitioners, and those that associate themselves with the coastal identity consider the particular elements, dimensions, and tensions that create a cohesive landscape identity or character (Wozniak-Brown 2017) as the very landscape is re-patterned from the impacts of climate change. Important quality of life components are at risk of damage or extinction and cannot be easily quantified and, perhaps, should be considered significant factors in decision-making. Human geography, environmental psychology, and planning offer the concept of “place attachment” that articulates the interrelatedness between human-place relationship.

Patterson and Williams (2005) explain that “place” is a “domain of research

informed by many disciplinary research traditions at the research program and paradigmatic level” and it can be explored through a variety of terms (Devine-Wright 2007), such as: sense of place, rootedness, topophilia, placelessness, place attachment, place dependence, displacement, and place identity. In addition to these terms, the literature holds a “variety of definitions and interpretations of terms such as place attachment or place identity employed in different studies” (Devine-Wright 2007). While different disciplines have debated the exact constellation of what constitutes place attachment, Scannell and Gifford (2010) propose a framework that defines place attachment with three pillars: person (cultural/group and individual); place (social and physical); and process (affect, cognition, and behavior). Scannell and Gifford (2010) note that there can be both a community of interest, from shared social interests, and community of place, with geography driving the connection (McMillan and Chavis 1986; Nasar and Julian 1995). Many scholars have delved into the genealogy of place attachment with such descendants as place identity and place dependence (Low and Altman 1992; Williams and Vaske 2003; Brown and Raymond 2007) and “sense of place” as a parental and inclusive term, often in the planning and geography literature. For the purposes of this paper, place attachment is a positive association between an individual, either as an individual or a member of a cultural group, to a particular locale, which is generally a unique but cohesive

Table 1.
Database search.

Databases	Search date	Publish date	Types	Keywords	# of results
Academic Search Premier, OpenDissertations, SocINDEX with Full Text	4/27/2022	2011-2022		(Climate change adapt* OR adaptation OR resiliency OR climate change resilien* OR climate resilien* OR climate adapt* OR hazard mitigation) AND (coast OR coastal OR coastline) AND (sense of place OR place attachment OR place identity OR place dependence)	29
Science Direct	4/27/2022	2011-2022	Research Articles and Book Chapters	("Climate change adaptation" OR "hazard mitigation" OR "climate change resiliency") AND (coastal AND ("sense of place" OR "place attachment" OR "place identity" OR "place dependence"))	152

Note. The difference in keyword formatting is because of limitations and/or requirements of the search function for the databases.

landform at a singular site, neighborhood, or landscape. This relationship exists both temporally and geographically (Razem and El Kaftangui 2020). The intensity of the association “ranges from appreciation, pleasure, and fondness to concern, respect, responsibility, care, and deep love of place” (Seamon 2014, p. 21). For an extensive systematic literature review of these terms, see Hamzei *et al.* (2020).

For several reasons, by understanding the way that people relate to their place, what makes the experience unique, and how that experience is and will be impacted by climate change, communities can implement adaptation that addresses both structural and emotive experiences. Firstly, “sense of place” and shared narratives are a critical component of a resilient socio-ecological system (Alkon 2004; Norris *et al.* 2008; Sherrieb *et al.* 2010; Cox and Perry 2011; Dunning 2021). Secondly, understanding the phenomena in the coastal socio-ecological system is important for coastal management and designing adaptation (Cutler *et al.* 2020; Di Baldassarre *et al.* 2013; Lazarus *et al.* 2016; Murray *et al.* 2013). Coastal landscapes are complex and dynamic places with unique socio-ecological systems. Coastal-dependent activities, such as shell-fishing, unique food cultures, and maritime story-telling, can foster a unique communal identity from inter-generational practices and shared narratives (Urquhart and Acott 2014) by forming “blue roots” (Pittman *et al.* 2019). They are also along the frontlines of climate change with rising sea levels consuming land and settlements. The

physical landscape can be central to personal and communal identity, as in the case of land-loss in Louisiana (Burley *et al.* 2007). Failure to consider psychological, symbolic, and emotional aspects of socio-ecological systems management is not only misleading but it risks undermining the very goal of adaptation (Agyeman *et al.* 2009). For example, representing the activity of fishing only as the extraction of fish from an ocean waterbody is an over-simplification and ignores the economic dependency of small businesses on many ecosystem services using traditional skills attained through multiple generations of a fishing tradition with localized knowledge of the coastal landscape and marine geomorphology. It is, in fact, essential, if we are to understand how people will be affected by and respond to the adaptation process (Graham *et al.* 2018) and to equitably and holistically craft adaptation strategies.

To understand how scholarship has explored place attachment in the context of climate change adaptation, I conducted a literature survey of journal articles and manuscripts from the past 11 years. This paper reviews how place identity, place attachment, and sense of place have been explored in other locations, potential research methods, and how these concepts could inform climate adaptation planning. The original intent of the article was to provide a New England context, specifically research methods and associated adaptation techniques that would apply to that geography. Climate change was noted as the highest ranked concern of stakeholders in New England’s land

use and management sector (McBride *et al.* 2019). However, due to the handful of studies conducted in the New England context, this paper instead includes place attachment or sense of place and climate change adaptation in coastal areas around the world. Additionally, I describe how these concepts can be used to reinforce and/or mitigate exclusionary and racist practices, which inherently determine whether or not a community can achieve just adaptation.

REVIEW METHODS

To address this question of how place attachment can inform coastal adaptation, I conducted a targeted literature survey. This survey provides a substantive but not exhaustive framework for human geographers, planners, and adaptation scientists to explore and enrich their current efforts.

Search strategy and eligibility. To improve the replicability of this review, and therefore, the rigor of this approach, I include here the years that were searched, the Boolean operators used to conduct the search, and the wider array of item types (not just academic articles) that were included (King *et al.* 2020). To conduct this systematic review, I searched the following databases: SCOPUS, SocINDEX, Academic Search Premier, and Science Direct. A full list of the search term iterations is provided in Table 1. Hamzei *et al.* (2020), in their literature review on place, did not use keyword-based criteria to avoid missing documents that used “interchangeable usages of the term *place* with other related terms in the

literature, such as *landscape*, *region*, and even *location* (Cresswell 2004; Bennett and Agarwal 2007).” In the results, place was occasionally used instead of place attachment; however, those articles were not predominantly evaluating sense of place or place attachment and reference it briefly. The use of broader geographic terms such as *landscape*, *region*, or *location*, when combined with climate change-related terms, was not specific enough. As this paper presents an overview and not a conclusive account of the topic, the use of particular terms in my database search is purposeful and appropriate. The types of publications reviewed were written in English and were journal articles, conference proceedings, and/or dissertations. Encyclopedia entries, conference abstracts (conference papers were included), editorials, reviews, opinions, news, and commentaries were excluded. A review of policy or planning documents may produce further information; however, that would require extensive time and effort and involve additional case study methods. Years searched were between 2011 and 2022. The search, conducted on 27 April 2022, returned 170 items. Removing duplicates and items without full-text availability reduced the number to 142 items.

After this initial collection, I manually reviewed the full text of each item and removed items based on several criteria. Items focused on climate change mitigation (reducing greenhouse gases or installation of wind turbines) and/or reference climate change adaptation or hazard mitigation in passing were removed. Similar to Hamzei *et al.* (2020), publications that were generally about a place, e.g. adaptation in a specific coastal town, but not considering the construct of place in a meaningful way, were also removed from the collection. Items that focused on cultural heritage with a minimized focus on “sense of place” or its derivatives were still reviewed. Where a publication offered a citation for a substantial theory or finding, this item was additionally reviewed, which included 40 additional publications. Publications that focused on political or communication aspects were not included.

Of the 97 items remaining after the initial review, the full text was read thoroughly for the major conceptual connections between place attachment and climate change adaptation in the coastal

context; research methods deployed; and how place attachment research, in addition to other efforts, could support equitable or just adaptation.

Limitations of this approach. The focus on a set of targeted search terms, dates, and the coastal landscape may have excluded items with substantive merit. Other terms such as “marine” or “island” and “environmental change” or “global warming” may have produced additional results. The analysis generally follows a narrative synthesis approach to share a summary of the current state of knowledge (Popay *et al.* 2006) of the collected studies. It is not, however, a reflection on the superiority, validity, or merits of the individual studies discussed herein or intended to serve as an all-encompassing presentation of the literature on place attachment. This research is intended to develop an overview of the concept and how it might apply to the coastal context. With only one researcher, there is inherent subjectivity and bias in the selection and review process. There were numerous items that mentioned the same antecedent studies implying there was some saturation in the sample; however, without further review, that cannot be confirmed.

LITERATURE SURVEY RESULTS.

Studies were published in array of environmental journals. Of the 97 items reviewed, only two were in publications that had “Planning” in the title. For concepts that directly inform land use planning and quality of life, this seems like a significant gap. Also in this literature survey, the natural and spatial sciences were represented less often but should be better integrated with place attachment studies. Hausmann *et al.* (2016), as an example, share a conceptual framework of pathways between human well-being, sense of place conservation, and biodiversity conservation.

From the database search, researchers have been exploring place attachment in coastal areas around the world including urban and rural areas. The empirical studies from the original selection of 97 items are listed in the Supplementary Material and North American studies are listed in Table 2. There were five or fewer studies in Africa and Asia; none in Antarctica; 18 in Australia/Oceania; 30 in North America; and 34 in Europe. The United States comprised most of the North

American studies with 21 and Canada and the Caribbean had six and three, respectively. States included: California (2), Louisiana (3), Maryland (1), Mississippi (1), Nebraska (1), New York (4), North Carolina (5), Oregon (2), Rhode Island (1), South Carolina (1), Texas (1), and Wisconsin (1).

How place studies inform adaptation. By conducting place attachment studies in the context of climate change, researchers and practitioners can seek to understand how different populations relate, prioritize, and interpret geographies constructed around and activities associated with a given place. This type of information can identify elements (quantifiable landscape or built features), dimensions (socio-cultural values or activities), or tensions (inherent juxtapositions) that shape a community’s identity (Wozniak-Brown 2017) and then guide planning decisions to protect those places of meaning in times of change. As Neef *et al.* explain:

“by considering culture, identity and place as key aspects of a secure livelihood we are able to understand how these factors influence choices around adaptation, and how adaptation can in turn re-shape social and cultural norms. The point at which adaptation becomes maladaptive or undesirable is determined not by the loss of ‘culture’ or ‘tradition’ in any generalized sense, but rather by the collective perception of what socio-cultural changes can be justified in order to adapt to a changing climate” (Neef *et al.* 2018, p. 135).

Agyeman *et al.* (2009 as cited in Devine-Wright 2013) argued that “adaptation policies and interventions should be based on recognition of emotional bonds with places as well as the ecological, technical, and economic issues that are typically emphasized” (Devine-Wright 2013, p. 65). In the course of adaptation planning, decision-makers have to carefully select, moderate, and implement actions, not just on reducing the climate impact, but also the human geography within a place.

As an example of how place is a construct, in a coastal Norway study, respondents mentioned the presence of the landscape then further described the function and aesthetic of the coastal landscape (Amundsen 2015). Viewsheds, employment, tourism, cultural practices

Table 2.**North American Place Attachment study locations.**

Citation	Place name	Geographic location
Lohmann, H., 2015.	La Caleta/Boca Chica, Samana, and Monecristi	Dominican Republic
Navarro, O., Krien, N., Rommel, D., Deledalle, A., Lemée, C., Coquet, M., Mercier, D., and G. Fleury-Bahi, 2021.	Pointe-à-Pitre, Sainte-Anne, Gosier/Abymes	Gadeloupe, Lesser Antilles
Martinez, G., Celliers, L., Collard, M., de Jong, F., Huang-Lachmann, J.-T., Manez Costa, M., Rubio-Martin, A., Ozier-Lafontaine, H., Garcia Prats, A., Stelljes, N., Swart, R., Wimmermann, T., Llario, F., and M. Pulido-Velazquez, 2022.	Nijmegen, Netherlands; Eckernförde, Germany; Valencia, Spain; French West Indies; Kaohsiung City, Taiwan; Kiel bay, Germany.	Germany, Netherlands, Spain, West Indies
Galappaththi, E.K., Ford, J.D., Bennett, E.M., and F. Berkes, 2021.	Pangnirtung (Canada), Kunjankalkulam (Sri Lanka)	Canada, Sri Lanka
Cunsolo Willox, A., Harper, S.L., Ford, J.D., Landman, K., Houle, K., and V.L. Edge, 2012.	Rigolet, Nunatsiavut	Canada
Philippenko, X., Goeldner-Gianella, L., Le Cozannet, G., Grancher, D., and Y. De La Torre, 2021.	Saint-Pierre and Miquelon (French territory near Newfoundland)	Canada
Scannell, L., and R. Gifford, 2013.	Vancouver Island, the Okanagan, and Kootenays, BC	Canada
Shamai, S. 1991.	Toronto, ON	Canada
Wolf, J., Allice, I., and T. Bell. 2013.	Rigolet, Nunatsiavut, and St. Lewis, NL	Canada
Binder, S.B., Baker, C.K., and J.P. Barile, 2015.	Oakwood Beach and Rockaway Park, New York, NY	USA
Burley, D., Jenkins, P., Laska, S., and T. Davis, 2007.	Grand Isle, Dulac, Chauvin, and Cocodrie, Louisiana	USA
Carpenter, A., 2015.	Coastal Mississippi	USA
Davenport, M.A., and D.H. Anderson, 2005.	Niobrara National Scenic River, NE	USA
Davis, C.R., Griffard, M.R., Burton, A., Weinberg, J., Kaneria, K., Smith, M., Sabin, G., and T. Barnes, 2022.	Eastern North Carolina	USA
Dunning, K.H., 2021.	Coastal Texas	USA
Fatorić, S., and E. Seekamp, 2017.	Portsmouth Village and Cape Lookout Village, NC	USA
Fischer, A.P., 2018.	Gold Beach, Port Orford, Florence, Newport, Depoe Bay, Garibaldi, OR	USA
Graham, L., Debucquoy, W., and, I. Anguelovski, 2016.	New York City, NY	USA
Haugen, B.I., Cramer, L.A., Waldbusser, G.G., and F.D.L. Conway, 2021.	Coastal fishing communities, OR	USA
Johnson, F. A., Eaton, M. J., Mikels-Carrasco, J., and D. Case, 2020.	Low country (region), SC	USA
Kochnowar, D., Reddy, S.M.W., and R.E. Flick, 2015.	Ferry Point Park Living Shoreline, MD; Surfer's Point, CA; Durant's Point Living Shoreline, NC	USA
May, C.K. 2019a.	Two Rivers, NC	USA
May, C.K. 2019b.	Beach (populated place), Inner Banks, NC	USA
May, C.K. 2019c.	Delcambre, LA	USA
Phillips, B., Stukes, P.A., and Jenkins, P. 2012.	Princeville, North Carolina and New Orleans, LA	USA
Rickard, L.N., Yang, Z.J., and J.P. Schuldt, 2016.	New York State and Singapore	USA and Singapore
Rittelmeyer, P., 2020.	Sacramento-San Joaquin Delta, CA	USA
Stedman, R. C. 2003.	Northern Highlands Lake District, WI	USA
ten Brink, T. S. 2020.	Block Island or Point Judith, RI	USA
Toomey, A.H., Campbell, L.K., Johnson, M., Strehlau-Howay, L., Manzollilo, B., Thomas, C., Graham, T., and M. Palta, 2021.	Coney Island Creek, Brooklyn, New York City, NY	USA

Notes: The study locations listed above are of the empirical studies in North America found within the literature survey. The geographic location column is country/continental proximity and not the political governing entity.

are some spatial functions that may be priorities to community members. Even along shorelines, both water quality characteristics like clarity or lower chlorophyll levels and places of respite contribute to place attachment (Stedman 2003). Place-dependent activities like local festivals, job opportunities, and local institutions are important to community members and potential focal points for adaptation projects.

Some studies assumed that length of residency implies that residents experience the impacts of climate change and therefore support of adaptation policies (Houser *et al.* 2022). Notably, demographics and their dynamics can influence to what elements or dimensions local stakeholders are attached. Stedman (2003) and Rey-Valette *et al.* (2015) point out the differences with second homeowners and primary residents. Stedman (2003) found that full-time residents attachment focused on a sense of community and social networks and seasonal or in-migrant populations attachment focused on the perceived environmental quality. The shifting demographics results in a dynamic place attachment, which also reflects a dynamic community resilience (Faulkner *et al.* 2018).

Research has also indicated an active role for place attachment in motivation and/or support for environmentally-minded activities. While it might be easy to assume that high levels of place attachment might immediately result in opposition to any significant change, the process and performance of projects, in practice, is much more nuanced. Offshore wind projects like in Devine-Wright and Howes (2010) could offer further insight to adaptation project management. Reactions to the change can be influenced by the perspective if the change is a disruption or an enhancement (Devine-Wright and Howes 2010). A higher place attachment is not an inevitable path to opposition; notably, it depends on the individual's interpretation of the change, the context of their attachment, and their trust in the significant organizations involved (Devine-Wright and Howes 2010). This concept is further reinforced by the potential of effective response to extreme events to increase individual place attachment (Faulkner *et al.* 2018). Place attachment can motivate adaptation (Feitelson 1991; Dale *et al.* 2008; Adger *et al.* 2010; Gosling and Williams

2010; Fresque-Baxter and Armitage 2012; Devine-Wright 2013). It can also inspire action and increase engagement (Scannell and Gifford 2013; Amundsen 2015).

Due to the dynamic nature of coastal zones and a multitude of socio-cultural factors, the immediate changes from climate change may not be immediately obvious in coastal areas; and yet, the impacts of climate change cannot be extracted from other ongoing challenges locally (Amundsen 2015). Place attachment, as an agent of community cohesion, supports resiliency through adaptive capacity (Amundsen 2015; Jurjonas and Seekamp 2018). Place attachment is even a community-level indicator of resilience (Becker *et al.* 2015). Faulkner *et al.* (2018, p. 24) provides a succinct summary to the role of place attachment in adaptation and resilience:

“Place attachment is shown to enhance community resilience (Ross et al. 2010). It is a motivating factor for adaptation (Amundsen 2015; Karlsson and Hovelstrud 2015) based on its positive influence to maintain or enhance attributes of place that are valued (Vaske and Kobrin 2001). Yet, place attachment has limits in influencing adaptive capacity (Marshall et al. 2012). This can weaken resilience levels through desire to live in high-risk areas (Billig 2006) and negation to accept new ideas and practices (Marshall 2007).”

While the fine line between disaster recovery and climate adaptation deserves a stand-alone paper, the pace of both adaptation and post-disaster recovery are often syncopated. Significant resources in the form of technical, social, or financial support, may flow into a community after a disaster event. The severity and distribution of the event's impacts combined with focus on rapid “recovery” can significantly alter the fabric of a community. Often, that recovery is focused on restoring primary services and providing temporary housing and subsistence then economic, social, and infrastructure recovery are funneled into separate funding programs and bureaucratic processes. To align these two efforts, place attachment should be recognized as an inherent factor of local climate resilience and be prioritized in disaster and/or hazard mitigation planning. With an adaptation plan that incorporates place attachment, particular elements or dimensions can be prioritized for restora-

tion in the community — or, at the very least, be used to guide how the recovery actions are enacted.

Cultural practices, such as helping neighbors or seasonal events, may be an act of resilience (Agrawal and Gibson 1999; Jurjonas and Seekamp 2018). For example, residents' ability to use hand tools such as chain saws and tractors can quicken recovery efforts following extreme events or high density of agriculture could potentially increase food security during significant disruption to the food system in other regions (Wozniak-Brown 2017). Community events and a belief that someone “will stop for you on the highway if you have a flat” can foster social cohesion and capital (Jurjonas and Seekamp 2018).

Pre-event urban development dynamics and civic infrastructure influence post-event resilience operationalization (Graham *et al.* 2016). Adaptation should be a minimum threshold by which we judge recovery, not a separate planning process for a “later date.” Even the capacity building activities of planning forums and workshops can be motivated by place attachment (Fabricius *et al.* 2007). Disaster preparedness and adaptation that ignore local dynamics can result in “quick technical fix solutions” that are ineffective or maladaptive (Hamza *et al.* 2021) such as rapid relocation of indigenous communities without accounting for cultural practices, social capital, or supportive infrastructure. On the other side, place attachment can also drive people to live and remain in high-risk areas (Billig 2006). Coastal tourist developers need to make careful decisions between engineered, ecological, and evolutionary resilience along the coast as they prioritize various assets (Jarratt and Davies 2020).

MAJOR FRAMES

Researchers presented several common frames for place attachment, including social capital, cultural heritage, managed retreat or climate migration, and ecosystem services. Many studies addressed several frames at once. For example, Jennings and Bamkole (2019) discuss the positive pathway from the urban green space (as an ecosystem service) to social cohesion and social capital and then place attachment and empowerment.

Social capital. Social capital, like place attachment, is a relational concept with

different intensities that can be hard to articulate and measure. In the climate change literature, social capital is generally understood through human relationships, whether individual to individual; individual to community (at different scales); or community to community. Shin (2021) describes different manifestations of social capital including cultivation of social networks, the whole of a social network, and the mobilization (not just the stock) of resources. While place attachment context is a geographical place, social capital context may or may not be geographical in its boundaries, i.e. it may not be related to a particular landscape. Regardless, at times, place attachment may drive “social capital” in some relationships from a shared experience within a defined landscape. This is not limited to wide open, undeveloped spaces. In fact, urban green spaces can increase both place attachment and social capital by increasing social cohesion and improving health (Jennings and Bamkole, 2019). Convergence of social capital with place attachment presents a critical opportunity to push the field of place attachment forward (Wood and Giles-Corti 2008; Lewicka 2011). Social capital is also seen as a component of adaptive capacity as in the Paton (2010) adaptive capacity/resilience model, Becker *et al.* (2013) resilience indicators, and Cutter *et al.* (2014) Baseline Resilience Indicators for Communities (BRIC). In the BRIC model (Cutter *et al.* 2014), one of the social capital indicators is “disaster volunteerism.” In my case study in north-west Connecticut (Wozniak-Brown 2017), volunteerism was an important dimension of the area’s identity.

Cultural heritage. Locations of significant history, traditional practices, and even unique landscapes serve as cultural heritage markers. Siders and Rockman (2021) note several examples of how adapting cultural heritage, in a reflective way, can protect historical sites, symbolize the need for adaptation (Cape Hatteras lighthouse), and serve as a warning to future generations using historical local ecological knowledge (e.g. a tsunami commemorative stone in Aneyoshi, Japan and the Watersnoodmuseum immortalizing the 1953 flood in the Netherlands). Special designations of coastal sites have been demonstrated to deepen place attachment (Su and Lin 2014; Gurney *et al.* 2017; Wuepper and Patry 2017). Cultural heritage can indeed reinforce social capi-

tal and positively influence place attachment (Fatorić and Egberts 2020). Even monumental trees are “symbols of human culture, sense of place, and history” (Vaz *et al.* 2018).

Managed retreat and migration. Ajibade *et al.* (2020) note that loss of sense of place, identity, and culture are outcomes of both managed retreat and climate migration. Place attachment may in fact be a driver for managed retreat (Burley *et al.*, 2007) but it may also slow the process (Davenport and Robertson 2016; Dannenberg *et al.* 2019). High place attachment may make leaving less preferable, even among second-home owners (Adie 2020; Rey-Valette *et al.* 2015). Of post-disaster choices to relocate, return, or return and adapt, higher levels of place attachment often resulted in “returning” or “return and adapt” (Adie 2020). The choice to adapt is dependent on additional factors like financial circumstances or risk awareness (Adie 2020). The loss of sense of place represents a significant social risk of managed retreat, which in turn, threatens social capital (Doberstein *et al.* 2020). A cooperative managed retreat, as opposed to a state-led managed retreat or private-sector unmanaged retreat, may avoid a rapid severance of ties and avoid what Agyeman *et al.* (2009) refer to as “place displacement.” Access to resources and funding may provide the flexibility for adaptation that a community needs (Piggott-McKellar and McMichael 2021).

In slow-moving displacement, such as coastal Louisiana, the ongoing trauma of land-loss fosters a sense of fragility and uniqueness, which may drive a heightened place attachment (Burley *et al.* 2007). Widespread distrust and perceived negligence from governmental leadership, as noted by Burley *et al.* (2007), will likely hinder attempts at retreat. Research indicates disparate and lasting impacts to minorities compared to whites following major disasters, especially from the extended loss of services and direct exposure to the disaster (Davidson *et al.* 2013). Residents experiencing displacement, especially for those with strong place attachment, are at risk of several mental health challenges including anxiety and depression (Agyeman *et al.* 2009; Uscher-Pines 2009; Asugeni *et al.* 2015; Torres and Casey 2017; Dannenberg *et al.* 2019). The different manifestations of how connection to place is lost in those circumstances could

be the subject of another paper, especially related to the length of time, manifestation, and mitigating efforts related to the migration or retreat.

Ecosystem services. Coastal ecosystems provide unique ecosystem services including economic development, food, recreation, and, in some cases, flood protection. Sense of place can be considered an ecosystem service (Hansen *et al.* 2015) as a “non-material benefit people gain from ecosystems through spiritual enrichment, cognitive development, reflection” (Mubanga and Kwarteng 2020, p. 12) and should be considered in conservation decision-making (Hausmann *et al.* 2016). This sense of place can occur along the local to global continuum (Egidi and Salvati 2020). Ecosystem services along the coast can include fisheries, tourism and recreation, flood control, and even energy generation. In Alaskan communities, one vulnerability assessment included “dependence on resources that will be affected by climate change” (emphasis added, Himes-Cornell and Kasperski 2015). In that assessment, resource dependency was measured using commercial, recreational, and subsistence fishery or hunting data such as permits, licenses, and employment (Himes-Cornell and Kasperski 2015). Instead of measuring the fish population, they measured how individuals related to the resource. Tourism and recreation researchers, particularly in U.S. national parks, have been exploring the role of place attachment for visitors’ motivations and actions and the relationship to climate change. Some important findings, especially for tourism-dependent communities, have found that visitors with high levels of place attachment were “less likely to be deterred from future visitation under changing climate conditions” (Wilkins and de Urioste-Stone 2018). Emotional connections to a place are likely to increase loyalty and place attachment (Yuksel *et al.* 2010) and destinations should consider methods to protect existing attachment or loyalty while cultivating that among new visitors (McCreary *et al.* 2020; Wilkins and de Urioste-Stone 2018) and designing adaptation methods for those attachments.

PLACE ATTACHMENT RESEARCH METHODS

Due to the complexity of describing and contextualizing a relationship, most of the research methods used to investigate place attachment and climate

Table 3.**Place Attachment methods examples.**

Citation	Methods summary
Amundsen, H., 2015.	In-depth interviews with interview guide (40) with active local role; participant observation (local events, volunteering at events, walking with interviewees etc.); document analysis (local newspaper, tourism brochures, official documents, consultant reports for context.). Framework of The Community Adaptation and Vulnerability in Arctic Regions (CAVIAR) framework
Lohmann, H., 2015.	Structured face-to-face surveys of direct marine resource users and non-direct resource users (demographic info and Likert scale questions). Principal component analysis with varimax rotation and Kaiser normalization; adaptive capacity-type questions and awareness/preferences; qualitative responses to awareness/preferences section, responses were coded and counted
Binder, S.B., Baker, C.K., and J. P. Barile, 2015.	Survey only (150), survey & interview (23), interview only (5); article focuses on subset that decided on accepting or rejecting buyout at the time; survey adjusted from Communities Advancing Resilience Toolkit (CART; Pfefferbaum et al. 2013; Pfefferbaum et al. 2011); semi-structured interviews of residents and decision-makers differed; multiple imputation procedure then t-tests and Chi-square for quantitative data & a priori themes and open coding for qualitative
Brown, G., Raymond, C.M., and J. Corcoran, 2015.	Online survey with mapping exercise to communities of place (e.g. landholders), communities of interest (e.g. forestry, agriculture, conservation groups), and a crowd-sourced sample of the general public; respondents given 12 pre-defined landscape values and a special place marker to put onto map location then for place attachment, use 3 points for out boundaries of area “they most strongly identify with and/ or depend on for their lifestyle and livelihood.” Domicile was considered “coastal” if within 20 km of the coast. Participant characteristics related to the area-based polygons and domicile-landscape value distance were analyzed with statistical analysis.
Faulkner, L., Brown, K., and T. Quinn, 2018.	37-question survey to random residents from validated instruments using Likert-scale responses on the importance of the five capacities assessed for community resilience and what factors characterized each capacity, then focus group discussions survey respondents with topics from survey answers with residents. Participation focused on diverse instead of representative. Attendance based on availability and interest. ANOVA analysis of survey then manual deductive and inductive coding with thematic analysis from research process.
Phillips, B., Stukes, P.A., and P. Jenkins, 2012.	Multiple interviews, >40 people in 29 organizations between 2000-2003 in two cities. Sampling was purposive, snowball, time phase, and spatial zone. Document review (recovery plans, meeting minutes, proposals, & newspaper articles, video/digital/ still/documentation of recovery and mitigation projects and historic sites) used to support or contradict interview interpretations. Used audit trail notebook with field log, record of methodological decisions, links between analyses.
Roös, P. B., and D.S. Jones, 2015.	Climate vulnerability literature review of region; combined two processes (Australia-New Zealand Standards Risk Management Process and the Design-Based Adaptation Model); developed pattern language; focus group workshop with Adaptation by Design process, participants took online questionnaire prior to event, requested a pre-workshop walk of the neighborhood, then participate in the workshop. Participants were those with extensive knowledge of area, senior citizens who grew up there, and active community members.
ten Brink, T. S. 2020.	Semi-structured interviews (43), Spanish or English; pre-selected place meanings from fishing motivation literature and did series of logistic regression models, created odds ratios.
Wilkins, E. J., and S. de Urioste-Stone, 2018.	Probability survey sampling of visitors to Mount Desert Island (MDI), Maine, using initial demographic survey and postcard with link for self-administered online survey with personal access card. Place attachment questions based on Brownlee <i>et al.</i> (2014) and Hammitt <i>et al.</i> (2009). Quantitative analysis included multivariate two-step cluster analysis then chi-square and ANOVA.

Note. The studies may have included additional methods to assess concepts in addition to place attachment. The focus of this table is methods to assess place attachment. Some studies listed here were not original results from the database search but were referenced within the results.

change adaptation requires multiple and mixed methods using qualitative, quantitative, and spatial analysis. The use of qualitative methods can enable broader acceptability of resulting policies (Barclay et al. 2017). Other methods discussed in the literature were free association tasks, pictorial preferences, spontaneous drawings, Q-sort, photovoice (a research technique with photography and stakeholder discussion), virtual reality, and machine learning deployment in visual preference surveys. For more in-depth discussion on place attachment methodologies, review Lewicka (2011). A table of example methods used in the empirical studies is presented in Table 3.

One common method is the use of a psychometric scale of questions with a Likert scale. Statements resemble “I feel ‘X’ is a part of me” and “Doing what I do at ‘X’ is more important to me than doing it in any other place” (Williams and Vaske 2003) or “If something happened to this place, I would be upset” and “This place is a part of myself” (Faulkner et al. 2018). Originally from Williams and Roggenbuck (1989), Williams and Vaske (2003), Kyle et al. (2004), Jorgensen and Stedman (2006), Brown and Raymond (2007), and Raymond et al. (2010) subsequently validated it. Often, this is paired with semi-structured interviews to bring a richer description and articulate what particular elements or dimensions (Wozniak-Brown 2017) drive this relationship.

The methods, data analysis, and interpretations will dictate how the results can be used for local decision-making. As Brown et al. explain, “if the place attachment concept is to have utility for land use planning and decision support in the future, it must be operationalized, measured, and calibrated to the point which it can be shown to predict certain events or outcomes (Brown et al. 2015, p 52).”

Place attachment in just adaptation. Historical redlining, siting hazardous land uses near communities of color, and municipal focus on protecting high value homes to protect revenue, keep communities of color and lower income in harm’s way. These should be redressed with “just adaptation” which is “in a Rawlsian sense... the fair allocation of material and social benefits among people over space and time (Rawls 1971 in See and Wilmsen 2020). Just adaptation would indicate that the recipients of the benefits

have received equal benefits, with those most impacted receiving “just” benefits that go beyond equal or equitable, i.e. by redressing past wrongs and achieving parity in the costs and the benefits over a length of time both past and present. Which communities should receive assistance first and how much? Is assistance, be it technical, financial, or otherwise, limited to a narrowly defined adaptation strategy of reducing the climate impact and moving people out of the flood zone? How can relocation be done quickly, with minimum harm, while maintaining an intact community with the infrastructure and social support to lead fulfilling lives upon relocation? There are significant populations immediately facing relocation: over 30 Alaskan communities, 70 islands near the Carteret islands, and 40 or more Panamanian island communities (Dannenberg 2019) with many Asian, African, and Latin American populations facing climate-related migration (Warner et al. 2009; Tacoli 2009; Farbotko and Lazrus 2012). See and Wilmsen (2020) provide a deeper discussion on just adaptation.

While sustainable access to water, energy, and food is a recognizable and fundamental need, sense of place, as a cultural element, has also been recognized as a nonmaterial right (Romero-Lankao et al. 2018). Recent research has been “elaborating what fair adaptation is and how this relates to climate justice more broadly; identifying the challenges that governments face in developing and implementing (fair) local adaptation plans; and developing processes for democratizing adaptation to ensure local values are incorporated into adaptation plans” (Graham et al. 2018 p. 333). In their paper, Graham et al. (2018) explore a lived values approach to creating fairer adaptation plans, which is proximal to place attachment since lived values are “practices lived by people in places” (Graham et al. 2013).

For most planners and adaptation decision-makers, public participation as a concept should be familiar. However, most legal requirements for public participation are more public notification than participation, which would mean that all affected parties are represented, given agency, and receive equitable outcomes. The highest levels of citizen participation include citizen control, delegated power, and partnership (Arnstein

1969). Substantial participation from the affected parties, especially constituencies with less power and/or adaptive capacity, is crucial in representing their perspectives to design appropriate adaptations. Even the strength of a place attachment bond can influence participation in community planning (Manzo and Perkins 2006; Devine-Wright 2013). Graham et al. (2018) noted the need to use multiple methods for engagement with the public to reach different populations and have nuanced discussions, even for emergency management. The efficacy of risk communication methods may be dependent on whether an individual has personal experience of a risk event. In Markanday and Galarraga’s (2021) experiment, flood risk maps, as opposed to text-only framing, resulted in lower investments in protection among those with little place attachment. Respondents who experienced the hypothetical flood event made affect-driven decisions where those who did not experience loss, made more cognitive decisions (Markanday and Galarraga 2021).

Different groups may have different priorities, different spatial foci, or varying levels of resources dependency. For example, residents and second homeowners can have substantially different perspectives on coastal inundation risk or inundation risk management (Rey-Valette et al. 2015). Those who live on the coast or who farm may have smaller spatial areas of place-attachment (Brown et al. 2015) The composition of the groups can also vary based on the relationship to include recreational coastal users and even residents from adjacent non-coastal communities (Rey-Valette et al. 2015), which may lead to conflict between different cultural groups that have longstanding histories in a place. Deliberative planning with a concentrated effort to include the multitude of cultural perspectives can reduce competition and create a more “satisfactory” process (Manzo and Perkins 2006).

During their study on migration discourse in the Maldives, Arnall and Kothari (2015) identified a distinctive difference in interpretation of how sense of place influenced choices around migration between “elite” and “non-elite” interviewees. While elites (development or policy professionals) perceived that residents’ sense of place would prevent movement away from harm, the non-

elites (limited policy influence but direct impact from environmental changes) articulated historic practices of migration and described adaptive action that would be acceptable (Arnall and Kothari 2015). Actions and adaptation schemes must be co-led by the local and the state with an effective public engagement strategy to avoid over-representation of the elite and to avoid an undue burden on future generations as the problems grow more complex (McGinlay *et al.* 2021). This is particularly true for coastal and remote areas, especially from a colonial legacy, as distance from decision-making structures can entrench adaptation planning in antiquated strategies (Maru *et al.* 2014) and risks marginalization (Hamza *et al.* 2021). Or they may be referenced in policy statements but not represented in adaptation. For example, Lazarow *et al.* (2008) observed that Indigenous Australian attachment to particular coastal areas is often recognized in policy frameworks, but their attachment and other Australians' coastal attachment are not necessarily protected or prioritized in coastal planning and environmental protection programs.

As an outside researcher or even an embedded community member, place attachment and adaptation researchers must be careful to offer dispassionate analysis as respondents may celebrate a particular aspect of their place simply because "it's the way it's always been." Climate change adaptation must consider place attachment. And both adaptation and interpretation of place attachment have to reconcile inequitable planning processes that have been embedded into "business as usual." That over-reliance on sentimentality runs the risk of highlighting exclusionary planning practices like high-acreage lot minimums; single-family housing; or continually reinforced redlining, whether in the housing loan sense or continued forcing of minority groups into areas of high environmental risk exposure. "Thick description" as a validity-checking process in qualitative research centers the subjects' worldview (Geertz 1973) and may buffer the analysis from the researcher's assumptions to an extent. There's also the very real risk of re-writing the history of a place. Siders and Rockman (2021) recall a seemingly harmless looking plaque on a football stadium that commemorated the homes lost and property acquired in a buyout. It did

not memorialize that the land had been the only African American neighborhood in San Antonio.

While some scholars noted an increased place attachment related to positive experiences in a place (Rey-Valette *et al.* 2019), there is significant research in post-disaster communities or even areas of visible climate change that indicates a potential influence of repeated traumas, confounded by on-going societal harm from racial and economic injustice, that also result in an increase of place attachment that perpetuates living in risk (Manning 2005; Willox *et al.* 2012). (See Rush [2018] for a deeper discussion on this.) This repeated harm can happen simultaneously with a more beneficial activity of sharing inter-generational land-based knowledge, which can also increase place attachment (Wolf *et al.* 2013). Local knowledge and experience, although not without limitations, are essentially core competencies and central parts of local resilience that need to be integrated into adaptation planning (Setten and Lein 2019). From a methodological standpoint, some larger scale datasets and/or methods that rely on bulk mailings may mislead or miss groups of vulnerable people, especially if they have been subjected to repeated disasters. Recognizing these potential losses, maladaptation includes significant if not irreparable disruption to the community fabric and their long-standing socio-cultural practices. A dismantling or a drowning a community's collective identity simultaneously destroys the social capital and adaptive capacity that has been nurtured across generations.

Since buyouts require a relocation or migration, it represents a clear and immediate threat to place attachment. In many cases of repeated disasters and anticipated future risk, buy-outs are assumed to be the *prima facie* solution despite documented faults with existing programs from FEMA in both procedural and distributive definitions. Buy-outs have shown to not only favor well-resourced white neighborhoods, but

"Black populations are both increasingly less likely to receive buyouts and increasingly likely to receive disproportionately less money for their property when they do participate in buyouts... buyout compensation is lower in neighborhoods with high minority

homeownership [therefore] minority homeowners that receive a buyout may be likely to be poorly compensated in comparison to other buyout recipients in the same county" (Nelson and Molloy 2021, p. 11).

In fact, these buy-out programs rely on Euro-centric traditions of property of economic rationality that can be at odds with tribal traditions and cultural practices (Marino 2018). Presumption of buy-outs as the only solution is what Marino calls "adaptation oppression" (2018) and may interfere with a community's self-determination (Philips *et al.* 2012). See and Wilmsen (2020) followed with a warning that labeling resettlement a success when the process goes according to plan can obscure the power-play that prioritizes top-down interventions. Gentrification in most forms in coastal areas can lead to a fractured sense of place as traditional coastal resource-dependent uses are lost (May 2019a). Notably, transitions to recreation instead of extractive uses (like fisheries) are not necessarily more sustainable or resilient as it often depends on similar conditions (May 2019a) and may be untenable due to outmigration and lack of interest (Jurjonas and Seekamp 2018). In cases like this, it may be a local priority to acquire property for future wharf construction further inland, establishing new oyster beds in new places appropriate to sea level rise, or controlling rising housing costs to maintain the workforce. Twice (Hurricane Floyd in 1999 and Hurricane Matthew in 2016) has the oldest chartered Black town in America, Princeville, considered the prospect of buyouts due to devastating floods. In 1999, the town board of commissioners voted to not proceed with buyouts and, since 2016, individual homeowners are still waiting to hear what they are eligible for (Grace-McCaskey *et al.* 2021). Since 2016, the town has moved forward with a mixed approach, purchasing adjacent land out of the floodplain, wet floodproofing historic buildings, and upgrading the levee (Grace-McCaskey *et al.* 2021). This multi-generational recovery must be locally led in order to honor the reasons why residents return to Princeville: "The town's historical importance; importance for self-identity; and dedication to the future of the town" (Grace-McCaskey *et al.* 2021). By using a place attachment or values-based approach, climate change

adaptation can be better tailored to the individuals and communities in a place (Wolf *et al.* 2013) and avoid adaptations that may not increase harm to human health but are still maladaptive for the given locale.

For planners, these examples demonstrate the need for deep, deliberative coordination that empowers the community at risk with a long-term commitment of resources. Planners and researchers must take care to recognize the unique character and significance of the community and their cultural practices. It requires time and focus, which in turn, requires commitment from resourced state and federal agencies even across executive administrations.

CONCLUSION AND RECOMMENDATIONS

As discussed previously, studies on coastal place attachment and climate change adaptation discuss varied topics around the world including tourism in Maine, riverbank erosion in Bangladesh, ecosystem services in Scotland, localized scenarios of global parallel scenario in New Zealand, and post-disaster recovery in Louisiana. Together, they offer a multitude of frames including but not limited to social capital, cultural heritage, managed retreat, and migration, and ecosystem services. Researchers found adaptation practices that excluded, disproportionately harmed, neglected, or reinforced long-standing racist planning practices on communities of color, remote and coastal communities, and/or groups with less power or representation. It is critical for those designing and planning for adaptation to understand that the goal cannot be binary: protect or abandon; move or stay; restructure the economy; or hold fast until no longer tenable. There is an in-between, albeit complex. It does require significant time for decision-making, complex multi-level governance, an equity lens, and disciplined evaluation of the socio-ecological system to achieve the desired results.

Like any epistemology, place attachment in adaptation does have some limitations. Researchers must be cognizant of the dynamism of place attachment as populations, demographics, and geography change over time as a result from broader geopolitical influences, climate change, or even the passage of time. The dynamism of the coast, especially rising

seas and intense storms, presents unique challenges to those hoping to adapt. Place attachment can be a highly motivating factor for individuals; however, the articulations of whether that attachment supersedes convenience, socioeconomic conditions, or geopolitical views will be highly dependent on the local community and place. For example, while some tourists are motivated by attachment, it is possible that some may be persuaded otherwise based on their experiences (Jarratt and Davies 2020). Parsing those variations and individual patterning is essential to interpreting the meaning and applying to adaptation planning (Stedman 2016; Masterson *et al.* 2017).

Implications for research. In the growing field of adaptation science, researchers are increasingly deploying interdisciplinary methods and learning where their expertise should be leading or supporting the other disciplines in the research. Interdisciplinary research presents challenges to researchers as they have to articulate research questions carefully, use different tests for validity, and analyze the data across different methods. Mendoza and Morén-Alegret (2013) specifically mention methods of mental maps, documentary videos, ethnosurvey, and innovative GIS, as potential bridging methods across philosophies. Analyzing place attachment without understanding place meaning limits the ability to understand the attachment (Stedman 2008). This include deep descriptions of the place whether it is strict reporting or interpretive, like local character (Lyon 2014; Masterson *et al.* 2017; Wozniak-Brown 2017). The future of place attachment research should consider additional research methods discussed previously to provide richer descriptions of place meaning, offer broader public participation, and support local adaptation planning. Future research methods could also explore multiple valences of place attachment, particularly at the individual level, how the individual relates to the community via place attachment, and how the community at large identity relates to the place. Funding agencies should recognize the need and potential for this type of interdisciplinary research in adaptation planning.

There is a difference between how physical scientists and social scientists approach vulnerability and yet, in both approaches, they study the interactions

between social attributes and the biophysical environment (Christian *et al.* 2021). Emphasizing the central phenomena, instead of the discipline, may be a better way to initiate the research question and select the methods. Developing a common approach to regional ecosystem planning would greatly advance regional conservation and adaptation planning. Important challenges to consider are non-monetary representation of ecosystem services, integration of ecosystem services into vulnerability mapping, and predictions of different ecosystem regime changes. Mapping alone, in the sense of locating or delineating without context, provides spatial representation alone. Brown *et al.* (2015) suggest that mapping should be followed by the psychometric scales to represent the structure or intensity of place attachment and its dimensions. Even mental mapping activities, representing individuals' daily activities and cognitive relationship in a spatial format, can communicate the subjects' place-based construct (Mendoza and Moren-Alegret 2013). A potential alternative, not yet explored, could use an elements, dimensions, and tensions framework of place (Wozniak-Brown 2017) and the practice of indexed climate vulnerability used in multi-criteria decision support tools with categories of exposure, sensitivity, and adaptive capacity.

While case-studies are not necessarily transferable, a coordinated effort in different regions may produce a comparative and comprehensive assessment of a place attachment within a particular landscape. This is especially true for cases that have similar (multi-level) governance structures, ecosystems, cultural practices, or locations using the same adaptation strategy. These assessments, if coordinated, could provide new understanding of formal and informal adaptive capacity. (Note: The National Institute of Standards and Technology is currently undertaking a longitudinal disaster recovery study of Lumberton, N.C. on the role of social capital and place attachment in managing recovery and installing resilience activities.) As Marino stated: "What happens to renters in Houston, millionaires in Miami, or tribal communities along the Gulf Coast and in Alaska over the next 20 years will be the real test of who retreat and relocation policies actually protect" (2018, p 12). Scholars should explore the connections between procedural justice,

distributive justice, place attachment, and adaptation especially as evaluation mechanisms during the planning and implementation phases of adaptation.

Implications for policy and practice.

From the existing research discussed in this paper, there are many opportunities to inform and improve the adaptation planning process from the ideation, analysis of the alternatives, implementation, and evaluation of adaptation efforts using place attachment. Fatorić and Seekamp (2017) tested a structured decision-making approach to illustrate a locally engaged, place-focused adaptation planning process and how several disciplines have called for a similar approach. Roös and Jones (2015) provide an excellent example of centering local values and attachments in an adaptation planning process with public participation at its center. Planning and adaptation researchers should work closely with communities to test these approaches, especially within a coordinated research network that shared the same method and/or landscape. To bridge the disaster response and adaptation planning gap, research or planning practice could include scenario-based planning with different time horizons connecting acute and chronic events. This periodization may aid in plan integration and broader incorporation of the adaptation planning into different planning documents such as local comprehensive plans, hazard mitigation plans, long range transportation plans, and multi-generational ecosystem services plans. Some municipalities, regional entities, and even states have begun integration across these plans and even some states mandate inclusion of climate change in the individual plans; however,

it is not a common practice (Wozniak-Brown 2022). Longer timeframes for both vulnerability assessments and adaptation planning across these plans may recognize important features in the community that foster place attachment and develop adaptations that address those features appropriately.

Adaptation managers and planners should carefully consider aspects of place attachment as potential drivers, barriers, and opportunities for adaptation, whether in vulnerability assessments, prioritizing adaptation measures, assessing equity, or disaster planning and recovery. Ignoring place attachment, especially in the case of indigenous populations with limited adaptation options, could produce real harm. Coastal researchers, planners, and adaptation practitioners should carefully consider the results from this literature survey as they grapple with complex and impactful decisions and face the rising seas.

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Editorial

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and feelings, they can help correct for inequities and help build citizen capacity to understand risks and engage with decision-makers. Better methods and decision-making criteria that more fully reflect the diversity of benefits derived from building coastal resilience coupled with improved governance structures can help coastal communities really move forward. We may not be able to avoid social conflict and fragmented decision making, but we can lessen its impact to speed efforts that reduce the shock of coastal hazards.

Dr. Tom Herrington is the Associate Director of the Urban Coast Institute at Mon-

mouth University, and serves as the New Jersey Sea Grant Consortium Resilient Communities and Economies Specialist. He has 30 years of experience in coastal resilience and hazard mitigation research. Shannon Cunniff is a board member of the American Shore & Beach Preservation Association and scientific advisor to the Stone Living Lab. She has over 35 years of experience working in government and nongovernmental organizations on managing environmental risks.

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