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DISCUSSION



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Discussion of: van Gaalen, J.F.; Tebbens, S.F., and Barton, C.C., 2016. Longshore Sediment Transport Directions and Rates from Northern Maine to Tampa Bay, Florida: Literature Compilation and Interpretation. *Journal of Coastal Research*, 32(6), 1277–1301.

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The paper by van Gaalen, Tebbens, and Barton (2016) was brought to our attention as a citation in an undergraduate thesis. We read the paper, looking forward to an up-to-date compilation of the literature on longshore transport on the U.S. East Coast. However, we were disappointed that the paper (1) contained inaccurate information regarding the location cited by the student; (2) is based largely on older references; and (3) biased toward non-peer-reviewed publications.

The reference pertinent to the undergraduate's work was in Saco Bay, Maine, in which a 1956 Army Corps of Engineers report is cited to claim that sand for the beaches traveled south toward an old jetty at the mouth of the Saco River (USACE, 1956); this is actually cited by the Army in numerous reports as a 1955 report (USACE, 1955). This southerly transport of sand was part of the justification the Army made 150 years ago to construct a jetty at the mouth of the Saco River and to lengthen it greater than a mile. Great property losses in the vicinity of the jetty led local people to complain about the structure, which has long since outlived its original industrial purpose and resulted in numerous studies of the sand movement in the bay by ourselves and a number of colleagues. In a series of theses (Barber, 1995; Brothers, 2006; Heinze, 2001; Manthorp, 1995; van Heteren, 1996) and peer-reviewed papers (Brothers *et al.*, 2008; Buynevich, FitzGerald, and van Heteren, 2004; FitzGerald *et al.*, 2000, 2002, 2005; Hein *et al.*, 2014; Hill *et al.*, 2004; Kelley and Anderson, 2000; Kelley *et al.*, 2005; Kelley and Brothers, 2009; van Heteren *et al.*, 1996), we established that sand moves in a net northerly direction in the bay. The Army, after performing physical (Bottin, Mize, and Demirbilek, 1995) and numerical (Woods Hole Group Environmental Laboratories, 2006) modeling agreed with our field measurements. The problem of Gaalen *et al.* (2016) here was relying on a non-peer-reviewed publication by the Army that is 60 years old. A simple glance at Google Scholar shows that nine of the first 10 papers on the subject of "longshore transport Saco Bay Maine" are by

those listed above, and all disagree with the 1955 Army study, as do the more recent Corps publications.

Although we will not comment on the other locations cited in the van Gaalen, Tebbens, and Barton (2016) paper because we are not familiar with all of those locations, we remain skeptical about how many are accurate on the basis of the obvious misunderstanding of the sand dynamics of Saco Bay. Numerous references cited in the paper are non-peer-reviewed theses, technical reports, field guides, and Army Corps studies. Although these works may be accurate assessments, no objective, external reviewers ever had the opportunity to critique them.

Coupled with the problem of lack of peer reviewed work is that most of the references are dated. Clearly, there has been a reliance on studies from the 1970s and 1980s, and more recent research from 1990s and 21st century were missed. Almost 60% of the references are from the 1970s and 1980s, and more were published before 1970 than since 2000. Clearly our work from the 1990s and 21st century were missed; how many other recent papers were similarly ignored in favor of a paper from the past? We hope readers examine this paper to find how regions of their expertise were treated. van Gaalen, Tebbens, and Barton (2016) used dated and potentially erroneous work in an attempt "to provide a complete view of the longshore sediment transport from the northern border of Maine" (actually from southern Maine; see Kelley, Belknap, and Walsh [2015] for a paper on longshore transport on the northeasternmost beach in the United States) to the mouth of Tampa Bay, Florida. While broad trends in longshore transport on the east coast of the United States have been clearly recognized (see John Fisher's classic 1967 study), there are also many examples of longshore transport reversals owing to wave refraction around ebb tidal deltas.

To be fair to van Gaalen, Tebbens, and Barton (2016), they selected a daunting task for a Master's degree student to accomplish, and much of the paper may be correct, but for newcomers to the field like the undergraduate we worked with, there is a presumption of accuracy with the most recent peer-reviewed papers. To better accomplish this task, the authors would have been wise to consult with local experts or some of the existing books that describe regions of the United States in

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detail, like Orrin Pilkey's *Living with the Shore* series by Duke University Press (e.g., Kelley, Kelley, and Pilkey, 1989), that are locally authored within each state. Consultation of newer books by Miles Hayes and Jacqueline Michel (e.g., Hayes and Michel, 2013) would also be encouraged.

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