

Definition of Barrier Islands: Discussion of: Pilkey, O.H.; Cooper, J.A.G., and Lewis, D.A., 2009. Global Distribution and Geomorphology of Fetch-Limited Barrier Islands. Journal of Coastal Research, 25(4), 819–837

Author: Otvos, Ervin G.

Source: Journal of Coastal Research, 2010(264) : 787

Published By: Coastal Education and Research Foundation

URL: <https://doi.org/10.2112/JCOASTRES-D-10-00005.1>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.



DISCUSSION



www.cerf-jcr.org

Definition of *Barrier Islands*: Discussion of: Pilkey, O.H.; Cooper, J.A.G., and Lewis, D.A., 2009. Global Distribution and Geomorphology of Fetch-Limited Barrier Islands. *Journal of Coastal Research*, 25(4), 819–837.

Ervin G. Otvos

Department of Coastal Sciences
University of Southern Mississippi
Ocean Springs, Mississippi, U.S.A.
otvos@cableone.net

Pilkey *et al.* (2009) present a well-illustrated paper on a great variety of mostly inshore islands that occur in enormous numbers worldwide. My issue is mostly with the term “barrier,” questionably attached to these features. In several key points, this designation conflicts with conventional coastal terminology, indeed with the universal consensus. Some of the cited landforms are actually not islands but mainland beach ridges that fringe mangrove swamps, permafrost-thermokarst tundra (Figure 13H), or glacial sandur and/or fjord-head coastal surfaces along the mainland shore (Figure 13E). Others represent recurved sand spits, also attached to the mainland shore (*e.g.*, Figure 5E). Those that actually are islands, located inside protected bays or offshore, often even lack rudimentary, thin, narrow, at least semicontinuous beach foreshore lithosomes.

A quick sampling of the vast modern coastal literature (*e.g.*, Davis, 1992, 1995; Fisher, 1982; Neuendorf *et al.*, 2005, p. 54; Oertel, 1985) clearly indicates that the defining common denominator of “barrier island” is the position and function of an island *as a barrier*; a supratidal, elongated, and narrow landform that lies seaward, off the mainland shore. Unlike sand-veneered and/or sand-fringed inshore islands and islets, they represent a sharp boundary between contrasting bathymetric and sedimentary settings. Barrier islands separate shallow brackish inshore basins (bays, elongated lagoons, sounds), usually characterized by muddy bottoms, from sand-floored margins of deep marine basins. They provide physical, biological isolation; protection of lagoons and the mainland coast and, most importantly, mitigate critical marine influences, including sand influx from offshore, high marine salinities, and storm impact.

Even sediment-starved very low islands, detached by subsidence from deltaic marsh plains and with insignificant Gulf beaches, as the drastically reduced Derniere island chain off the central Mississippi delta plain of Louisiana, have been accepted as valid barriers. Similarly, man-made and well-nourished, robust anthropogenic (“anthropic”) islands, such as

Sand Island, in the path of abundant westward-directed longshore drift west of Petit Bois Island, Mississippi (Otvos and Carter, 2008) may originate and evolve in actual, true barrier island settings.

Fetch, just as other hydrodynamic factors and various pertinent sediment sources, does play a vital role both in the functions and ongoing development of barrier islands, dubbed “open-ocean” or “classic” barrier islands by Pilkey and his coauthors. However, the use of that designation for a plethora of sundry inshore islands, islets, and a broad range of other landforms, both in paralic and in offshore settings, is objectionable. Lewis, Cooper, and Pilkey (2005) and, rather surprisingly, Davis himself (1994, p.1), did once before employ the word *barrier* for bay islands that under the influence of short fetch and weak littoral drift may develop minor- to-insignificant beaches, beach ridges, and sand spits. However, the cited crucial “barrier” function is completely absent from these “fetch-limited” inshore and nearshore islands, islets, and other cited coastal landforms. In conclusion, the term *fetch* is out of place when employed in this context, a confusing and invalid application of the term barrier island.

LITERATURE CITED

- Davis, A.D., Jr., 1992. *Depositional Systems*, 2nd edition. Englewood Cliffs, N.J.: Prentice Hall, 604p.
- Fisher, J.J., 1982. Barrier islands. In: Schwartz, M.L. (ed.), *The Encyclopedia of Beaches and Coastal Environments*. Stroudsburg, Pennsylvania: Hutchinson Ross Publishing, pp. 124–133.
- Lewis, D.A.; Cooper, J.A.G., and Pilkey, O.H., 2005. Fetch-limited barrier islands of Chesapeake Bay and Delaware Bay, USA. *Southeastern Geology*, 44, 1–17.
- Neuendorf, K.K.E.; Mehl, J.P., Jr., and Jackson, J.A., 2005. *Glossary of Geology*, 5th edition. Alexandria, Virginia: American Geological Institute, 779p.
- Oertel, G.F., 1985. The barrier island system. *Marine Geology*, 63, 1–18.
- Otvos, E.G. and Carter, G.A., 2008. Hurricane degradation-barrier development cycles, northeastern Gulf of Mexico. Landform evolution and island chain history. *Journal of Coastal Research*, 24, 463–478.
- Pilkey, O.H.; Cooper, A.G., and Lewis, D.A., 2009. Global distribution and geomorphology of fetch-limited barrier islands. *Journal of Coastal Research*, 25, 819–837.

DOI: 10.2112/JCOASTRES-D-10-00005.1 received 11 January 2010; accepted in revision 19 January 2010.

© Coastal Education & Research Foundation 2010.



CORRIGENDUM



www.cerf-jcr.org

Correction of Otvos, E.G., 2010. Definition of *barrier islands*: discussion of: Pilkey, O.H.; Cooper, J.A.G., and Lewis, D.A., 2009. *Journal of Coastal Research*, 26(4), 787.

Two references were left out or incorrectly reproduced. The correct references follow. The author apologizes for these errors.

Davis, R.A., Jr., 1992. *Depositional Systems*. Englewood Cliffs, New Jersey: Prentice Hall, 604p.

Davis, R.A., Jr. (ed.), 1994. *Geology of Holocene Barrier Island Systems*. Berlin: Springer, 464p.