The relationship (or lack thereof) between physical and human geography is a longstanding discussion within our field. Some commentators assume the possibility of synthesis and call for integrated work; others assume that deep integration is neither possible nor desirable. But even a brief review of the literature makes two points glaringly clear: this discussion has been going on for a long, long time and, given its regular reoccurrence, it would seem we have little to show for it. Rather than debate the possibility or desirability of such integration, I argue here that there is already a strong and growing body of work that draws together critical human and physical geography in an emerging sub-field: critical physical geography. Individually or in teams, critical physical geographers are bridging the gap, combining insights from geomorphology, ecology, and biogeography with approaches from political ecology, science and technology studies, and environmental history. The key characteristics that unify this work are its emphasis on treating physical processes and unequal power relations with equal seriousness, its acknowledgement of the politics of knowledge production, and its normative agenda of using research to promote eco-social transformation. By way of illustration, I present the results of a critical physical geography study of market-based environmental management in the US that I conducted with Martin Doyle (Duke), and Morgan Robertson (U Wisconsin). Drawing on social science data from document analysis and interviews and natural science data from geomorphic fieldwork, I argue that while the fluvial landscape bears a clear signature of environmental policy, the development of ecosystem service markets in “stream credits” has different consequences than could be expected.