Report on "Block bootstrap consistency under weak assumptions" by Gray Calhoun

This is a nice short paper that revisits the issue of consistency of different block bootstrap methods (including the stationary bootstrap) under weak assumptions that may involve some nonstationarity.

The author shows consistency under an appropriate use of the NED assumption generalizing earlier work by Goncalves and co-authors. In particular, the author shows that the degree of nonstationarity allowed can be more appreciable than previously believed, and shows what happens if the allowed degree is surpassed.

I recommend publication subject to a revision that will take account of the following specific comments.

Specific comments:

-The informal "I'll" (p. 2, 5, etc) should be substituted by the more formal "I will" (or even better--third person: "it will be done")

-Footnotes 1 and 2 are confounded (it reads as footnote 12).

-The weakest condition for the block bootstrap consistency under stationarity were given by Radulovic (Stat.Prob.Letters, 1996), and are tantamount to a CLT. However, Radulovic does not tackle nonstationarity, nor the stationary bootstrap.

-In Theorem 1, please:
--define strong and uniform mixing of a nonstationary series --define the norm in Assumption 2 --which quantity is uniformly bounded in in Assumption 2?
--define the notion of uniformly finite
--the final convergence in distribution is stated too vaguely here (and in other theorems); one of the two distributions (the bootstrap one) is gotten conditional on the data, and is therefore unconditionally a random variable. So, usually the way to write this is use a distance between the two distributions (the true one and the bootstrap) and show that this distance tends to zero either in probability or a.s. Which of the two are you proving?
[In prob. is sufficient for most statistical inferences.]

-p. 3 (bottom 3 lines): is this referring to the norm convergence in Assumption 2? Why is the variance of X_{nt} not depending on t?

-The discussion before Corollary 3 does not do justice to the findings there. There is a positive result (Corollary 3) and a negative result (inconsistency under too much nonstationarity).
These paragraphs need to be re-written to bring these out more.
Also, the conditions that control the degree of nonstationarity in Corollary 3 must be explained.

-There is a recent discussion by Goncalves and Politis (Korean J. Stat., 2011) that also revisits the issue of block bootstrap consistency under some degree of nonstationarity. How does their discussion fit in with the paper at hand?

-Just after Corollary 3, a new Section could start entitled "An Auxilliary finding" or something like that.

-Define var** before Lemma 5.

-I am wondering if the Tapered Block Bootstrap of Paparoditis and Politis (Biometrika, 2001) can also be shown to be consistent under the same NED conditions.

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