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Discussions

Interactive comment on "Modelling drivers of mangrove propagule dispersal and restoration of abandoned shrimp farms" *by* D. Di Nitto et al.

Anonymous Referee #2

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Comments: DiNitto et al (Modelling drivers of mangrove propagule dispersal and restoration of abandoned shrimp farms) Biogeosciences Discuss., 10, 1267–1312, 2013

1. This study is a welcome effort in the pioneering field of restoration ecology of mangroves.

2. Most abandoned ponds in the Philippines are seaward in location (cause of abandonment is dike breaching), and therefore the need for mangrove regrowth is urgent in light of sea level rise and increasing storm intensity and frequency, in addition to the 20 or so typhoons that come each year.

3. Natural ecological succession (Natural Regeneration or NR) will take 15-20 years

for mangroves to fully recover (Primavera et al, 2012a), whereas Assisted Natural Regeneration (ANR) using the harvest and transplantation of excess wildings has allowed the return of a 9-ha pond into mangroves in only 4 years, with some of the wildings flowering in just 3 years after transplantation (Primavera et al, 2012b).

4. The use of wild recruits or wildings in ANR is based on mangrove seedling counts of up to 30/sq m in crowded pockets (Primavera et al, 2007). Such high counts are due to trapping mechanisms whether natural (dense pneumatophores, other root structures) or artificial (dikes of abandoned ponds) which retain the propagules otherwise washed away by tidal or river flow. It would be interesting to know the densities of wild recruits in the present study, in areas with roots present and bare soil (without roots/ other trapping mechanisms). Also, future studies could determine the no/ per cent mangrove seedlings that should remain untouched for the new generation – to guide projects that apply ANR and use wildings.

5. Many Southeast Asian countries focus on seafront planting in the mid- to lower intertidal (vs pond reversion in the upper intertidal) for reasons of convenience, presence of communities unable to relocate elsewhere, etc. What are the implications, if any, of the present results on seafront planting?

6. References – it is important to include not only the latest references on a given topic but also the earliest, for better historical perspective. For example, mangrove-pond conversion was already reported in peer-reviewed journals in the early 1990s (see Primavera 1991, 1993, etc.).

Additional Refs

Primavera, J.H. 1991. Intensive prawn farming in the Philippines: Ecological, social and economic implications. Ambio 20: 28-33 Primavera, J.H. 1993. A critical review of shrimp pond culture in the Philippines. Rev. Fish. Sci. 1: 151-201 Primavera JH, RN Rollon, and MS Samson. 2012a. The Pressing Challenges of Mangrove Rehabilitation: Pond Reversion and Coastal Protection. Chapter 10 in Volume 10: Ecohydrology

and restoration, (eds., L. Chicharo and M. Zalewski) in the Treatise on Estuarine and Coastal Science (Series eds., E. Wolanski, and D. McLusky), Elsevier, Amsterdam, pp. 217-244 Primavera JH, Savaris JD, Bajoyo B, Coching JD, Curnick DJ, Golbeque R, Guzman AT, Henderin JQ, Joven RV, Loma RA & Koldewey HJ. 2012b. Manual for community-based mangrove rehabilitation. London, UK: Zoological Society of London, viii + 240 p.

Interactive comment on Biogeosciences Discuss., 10, 1267, 2013.