



SDI Review Form 1.6

PART 1:

Journal Name:	American Journal of Experimental Agriculture
Manuscript Number:	MS: 2012 AJEA 2718
Title of the Manuscript:	Diversity and Community Structure of Benthic Insects in Fish Farm Ponds in Southern Côte d'Ivoire, West Africa.

General guideline for Peer Review process is available in this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

- This form has total 9 parts. Kindly note that you should use all the parts of this review form.



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PART 2: Review Comments

This paper presents useful information concerning the aquatic insects inhabiting fish farm ponds in west Africa. It is an interesting subject given the commonality of managed ponds world-wide and the typical focus on fish production only. In fact, this paper documents three new taxa recorded in Cote d'Ivoire, one of which has only been identified to the family level. Apparently, there is a need for more comprehensive studies and taxonomy of aquatic entomology in Cote d'Ivoire and likely west Africa in general. While this paper does a good job describing the aquatic insect assemblages observed in a diverse selection of fish farm ponds, it makes a weak attempt at correlating the insects with associated environmental conditions. Please see my comments below to improve the readability and informative nature of the paper.

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<u>Compulsory</u> REVISION comments	#1: As a reviewer not familiar with fish farm ponds, I would very much like to read more description and discussion about the ponds and how their management may influence the aquatic insects. For example: Are the ponds different from natural wet-lands in Cote d'Ivoire? Were these ponds originally man-made or naturally occurring? What species of fish are present in the ponds and do they eat insects? Is there a regular input of fish 'food' that could influence primary production within the ponds and therefore the secondary production of aquatic insects? In what other ways might these ponds be different from a natural pond ecosystem? How common/abundant are fish farm ponds in Cote d'Ivoire and other countries in west Africa? #2: The paper needs more information relating the insects observed to the ponds and their environmental conditions or surrounding landscapes, and less quantitative measures. The authors have calculated more diversity metrics than are helpful, and reported not enough information on specific taxa life histories relevant to these ponds and environmental conditions. The environmental conditions and relationships need to be emphasized! They are what make the paper interesting, as opposed to a list of taxa and their abundances. See below for some specific recommendations and comments. #3: To improve the quality of the writing, the text within the Results & Discussion section needs to be re-organized. For each sub-section, the authors write the first paragraph as a standard results section and then the next paragraphs as discussion, resulting in much repeating of information. If the paper style is to have the Results & Discussion combined then the information reported should	Ponds are small shallow water bodies , natural or artificial. Artificial ponds are often created for the purpose of water supply , retention of flood waters , recreational, educational or wildlife management and research . Often, they are also the result of mitigating measures to offset the destruction of habitat and loss of ponds espèces. Ponds of different wetlands of Côte d'Ivoire are created by man. <i>Oreochromis niloticus</i> is the species which is present in these ponds. This species as fry , eat insect larvae , but as adults do not eat insects. The fish are regularly fed. These



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	be all together without redundancy. State a result and then discuss it so that the result and discussion flow together. As is, there is much redundancy in the text. See below for specific recommendations. Page 4 Statistical Analysis: In the ANOVA tests, what were the predictor (X) variables used? I presume Station and Season, but what about their interaction? Are you actually testing for spatial differences (differences between stations)? Page 4 Statistical Analysis: In the CCA, how many taxa were considered principal and included in the CCA? How many taxa were considered rare and not included in the CCA?	ponds differ from natural ponds by the immediate environment, by vegetation that natural ponds contain. Artificial ponds contain no vegetation. In Côte d' Ivoire, there are many ponds but I have no idea of ponds of West Africa . Page 4: The variable X represents the environmental variables Shannon-Wiener diversity , evenness, density and biomass Season interaction is shown in table 2, spatial variation is shown in table 3 Sixteen taxa were considered principal and fifteen were considered rare
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Minor REVISION comments	Abstract: Rewrite given the changes outlined above and below (i.e., more about the pond unique ecosystems and habitat relationships to observed aquatic insects). Emphasize the results hinted at in line 40 and how the ponds different environmentally. Reduce the emphasis on the results in lines 36-39. Page 2 line 50-53: Rewrite sentence to say, "Few studies have been carried out on the ecological and systematic aspects of aquatic entomofauna and the vast majority of this work was undertaken in running water in the northern part of the country." Page 2 line 59-60: On the contrary, there has been much attention given to ponds, natural and artificial, just maybe not in Cote d'Ivoire. Either cut or rephrase sentence specific to Cote d'Ivoire. Page 2 line 60-62: Cut sentence "In Cote d'Ivoire ... remains whole." Bad grammar and sentence is redundant to the next sentence. Page 2 line 63-64: Cut "In the afore-mentioned context", begin sentence with "The present study..." Page 2 after line 66: Add something to the effect that aquatic insect assemblages are related to environmental habitat parameters (such as...). Page 4 line 180: What do you mean by "superior"? Superior to what? Page 4 line 181: Replace "Mars" with "March" (correct?) Page 4 line 184: What do you mean by "significantly recorded"? Was it very high, low, or different between sites? How was it significant? Page 4 line 186-187: Since the results and discussion are combined, this is a good time to point out that Layo had the highest conductivity due to its brackish water source. Page 4 line 187-189: State the max conductivity values for the other stations because their values are unreadable on the conductivity graph due to the extremely high values from Layo. Page 4 line 190 & 191: Replace "presented the strongest value" with "had the clearest water", and replace "highest values" with "clearest waters".	OK We did it, the new part is "Insect benthic fauna is clearly dominated by Chironomid Diptera. <i>Nilodorum fractilobus</i>, <i>Chironomus imicola</i>, <i>Stictochironomus Tanypus fuscus</i> and <i>Ceratopogon</i> sp. were the dominant taxa. Anyama II station recorded the maximum values of Shannon-Wiener diversity and evenness. Insect community structure was visualized using Canonical Correspondence Analysis to the affinities of each species for selected environmental parameters". Page 2 line 50-53: Ok we did it Page 2 line 59-60: Ok we did it "However, very little attention has been given to natural or artificial ponds ecosystems in Côte d'Ivoire" Page 2 line 60-62: OK we did it, the sentence "In Cote d'Ivoire ... remains whole." Is cuted. Page 2 line 63-64: Ok we did it Page 4 line 180: we want to say "greater than" Page 4 line 181: Ok we did it Page 4 line 184: we want to say that it is high, the maximum value Page 4 line 186-187: Ok we did it Page 4 line 187-189: Ok we did it Page 4 line 190 & 191: Ok we did it
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	Page 4 line 193: Replace “nitritre” with “nitrite” Page 4-5 Results and Discussion, Physical and chemical variables: Why do you think the nutrient levels varied so much between the sites and varied differently over time? Possibly due to the different water sources or surrounding landscapes? Or are the ponds managed differently, like in the type of fish food added or fish species present? Results and Discussion, Taxonomic richness, pages 6-8: Lines 251-276: Cut the entire first paragraph as it is mostly redundant to Table 1 and the rest is redundant to the next paragraph. See major comment #3. Specifically, lines 253-267 and 271-276 are redundant to Table 1. Lines 268-271 are repeated in the next paragraph on lines 293-294. Line 288: pluralize “insects in fishponds” Line 289: Cut “and qualitative”. Quantitative refers to data based on quantities or other quantifiable data (which is what this study is), as opposed to qualitative information which deals with apparent or subjective qualities (which is NOT part of this study). An example of quantitative information is being able to state that the transparency of one pond is 30cm compared to another pond with 20cm of transparency, whereas qualitative information would be if one pond had water that looked less transparent than another but with no measurements. I believe that this study is fully quantitative, which is good. Qualitative data in science is generally frowned upon. Line 292: Replace “complete” with “add to”. Who knows when a taxonomic list is ever complete? Lines 295-296: Cut, because redundant to next paragraph where these ideas are much better explained. Line 305: add “always” after “almost” ? Line 322: pluralize “aquatic insects” Results and Discussion, Density and biomass, pages 8-9: Paragraphs 1 and 2 could be better incorporated together. See major comment #3.	Page 4 line 193: Ok we did it Page 4-5: In ponds, nutrients are released by mineralization of rice bran (Dabbadie, 1996). The highest values of nutrients unregistered in Layo station compared to those of Azaguié, Anyama I and II Anyama is due to the fact that in Layo (experimental station), food is regularly supplied to fish. In contrast, other active farms owned by individuals. The excessive cost of inputs often causes breaks in the distribution of the food which is not given optimal amount. The difference in the amount of food distributed to fish would be the basis of the difference observed between the content of nutrients. Ponds of Layo and Banco are aging compared to other stations. These ponds are no longer priests. Accumulation of sediment could increase the nutrient content in these ponds, particularly for Banco station. In Layo station, lagoon nature of pond water could also be in favor of increasing the nutrient content Lines 251-276: Ok we did it Line 288: Ok we dit “insects” Line 289: Ok we did it Line 292: Another reviewer advise me to write “It is a contibution...”, nobody knows when a taxonomic list is ever complete
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	Line 327: Not clear what you mean when you say “spatial distribution”. Did you actually test for significant differences between stations? Because it appears that the Azaguie station would be significantly greater than Layo, but it is not? Table 2 footnote: Do the letters in the same row show differences among seasons, with or among stations? Were stations tested against each other or only seasons within stations? Lines 327-340 (Paragraph 1): Density and biomass follow the same spatial and seasonal patterns. Therefore, you can talk about them simultaneously. For example, “Benthic insect density and biomass were significantly higher in the dry season compared to the rainy season in stations Anyama I ($F_{1,180} = 6.47$; $P=.01$) and Anyama II ($F_{1,180} = 6.43$; $P=.01$).” Lines 329-330 and 337-338: Either cut these sentences entirely or rephrase into the previous sentences. As is, it sounds like you are saying that the overall highest density and biomass were observed in the dry season at Anyama I and II, which is not true. Line 341: Cut “In this study, it was shown that”. Begin sentence with “Benthic”. Lines 348-352. Obviously certain taxa prefer certain environmental conditions and are present at different seasons, but that is true for all animals and does not enrich the discussion here. What would help the discussion would be to know which taxa show a big difference between seasons, stations, environmental conditions, and relate that to their ecological requirements (preferred habitat) or life history (voltinism, feeding group, emergence timing, etc.). Table 2: Need to define DS and RS in table caption. Results and Discussion, Diversity and similarity indices, pages 9-11: *** No line numbers were listed on pages 10-15. *** There is no need for 2 diversity indices and evenness. They are redundant with each other. There is no difference in the results between the Simpson and the Shannon indices. Evenness doesn’t show any difference between seasons. Cut evenness and discussions concerning evenness, and 1 of the diversity indices.	Lines 295-296: Ok we did it Line 305: Ok we did it Line 327: this part is rewritten Table 2: We make now two tables at which we make details. In the first table, the letters in the same row show differences among stations and in the second’s, the letters in the same row show differences among seasons within stations. Lines 327-340: Ok we did it Lines 329-330 and 337-338: Yes it is true, in Anyama I and II, highest density and biomass were recorded in dry season. Line 341: Ok we did it Table 2 is table 3 now, we define DS= dry season and RS= rainy season We cut Simpson index, but Evenness is a second fundamental dimension of diversity, even if there’s no difference between the stations, I think it not mind if it is stored.
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	Table 2: Define what high (or low) values mean for the diversity measure(s). For example, "High values in the Shannon-Weaver index indicate diverse taxa with balanced abundances." Paragraphs 1-2: Rewrite so that the information is incorporated within the discussion below in paragraph 3. See major comment #3. What is the difference between the Renkonen and the Sorensen similarity indices? Why use both? They appear to have the same results. Table 3: Space needed in station names of Anyama I and Anyama II. Results and Discussion, Diversity and similarity indices, pages 10-11 Paragraph 3 (no line numbers): Replace "represented digitally" with "present and well distributed" Cut entire sentence, "In addition, the highest values ... taxa in this station." It is redundant to the previous statement. Replace ". This situation could be due to the presence of" with "indicating". Cut 2 sentences regarding evenness if that metric is dropped from the paper. The 2nd part of the sentence, "The settlement structure ... (Blondel, 1979)", does not make sense. ??? Cut the 2 sentences, "Indeed, <i>Nilodorum</i> ... These taxa dominated quantitatively the other." They are redundant to Table 1 and the discussion on taxa richness. The sentence, "The Shannon -Weaver index ... most of the stations." is confusing. Do you mean to say, "In most of the stations the taxa were diverse and well balanced in the dry season compared to the rainy season." ? What type of disturbances might occur to these ponds? Are you assuming that disturbances cause less diverse and unbalanced taxa distributions?	Table 2: Yes, High values in the Shannon-Weaver index indicate diverse taxa with balanced abundances. We write it in the text Paragraphs 1-2: We rewrite it The two similarity indices were a measure of dissimilarity between two communities (sites), based on relative abundances of individuals of composite species. We cuted the Renkonen similarity index Paragraph 3: We Cut entire sentence, "In addition, the highest values ... taxa in this station." It is redundant to the previous statement. " We reformulated the sentence ". This situation could be due to the presence of" . The 2nd part of the sentence, "The settlement structure ... (Blondel, 1979)" is cuted The 2 sentences, "Indeed, <i>Nilodorum</i> ... These taxa dominated quantitatively the other." Were cuted We want to say" The Shannon-Wiener index and Evenness values were important in the dry season in all stations indicating that ponds ecosystems presented fewer disturbances during the rainy season in Anyama II and during the dry
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	Because some disturbance is needed to create diverse environmental conditions for difference habitats to support many different taxa. This is the intermediate disturbance hypothesis. Last 4 sentences concerning the similarity indices: This is a lot of text to simply say, "The insect populations were quite similar between the other stations (Table 3)." You do not need to restate the values given in Table 3. Results and Discussion, environmental variables, page 11: Paragraph 2 line 10: Replace "wich" with "which" Conclusion, page 12-13: Line 4: Cut "qualitatively and" Line 6: Replace "This community has an important similarity" with "The insect communities are similar"	season in the other stations". The disturbances can be pollution, environmental Yes we assuming Last 4 sentences concerning the similarity indices: we corrected it environmental variables Paragraph 2 line 10: this part was reformulated Conclusion Line 4: Ok we did it Line 6: Ok we did it
<u>Optional/General</u> comments	Figure 2: Interesting that the pH levels at all the sites tend to increase over the year-long sampling period. I would not have expected that much variability, nor an increase over time. Table 1: To emphasize the proportionately dominant taxa per stations, either bold or mark with an asterisk (*) the number value that is highest per station.	Ok we did it