Review Form 1.7

Journal Name:	**Journal of Advances in Mathematics and Computer Science**
Manuscript Number:	**Ms_JAMCS_111022**
Title of the Manuscript:	**Probabilistic Population Modeling with Interactions between Species**
Type of the Article	**Original Research Article**

Review Form 1.7

PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(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)*
Compulsory REVISION comments 1. **Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) 2. **Is the title of the article suitable?** (If not please suggest an alternative title) 3. **Is the abstract of the article comprehensive?** 4. **Are subsections and structure of the manuscript appropriate?** 5. **Do you think the manuscript is scientifically correct?** 6. **Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	**Section 1- Conditions, Assumptions, and Parameters for Probabilistic Model:** Suppose $that\ x(t)$ and $y(t)$ are the populations of two species at time t, and to find the probability distributions of these populations at time $(t, t+\Delta t]$ will accept the following axioms: **Axiom 1**: The probability that the incidence of species x(t) will be killed by the predator y(t) in a very short time interval is directly proportional to: i) the length of the interval Δt; ii) ii) the predator – prey population densities. Let alpha α be a constant of proportionality, then the probability of reproduction of m-individual is $p_m = p[one\ birth\ in\ \Delta t\ for\ x(t) = m\ ] = \alpha.m.\Delta t < 1$ and $p_n = p[\ one\ reproduction\ of\ y(t) = n\ individuals] = \beta.n.\Delta t < 1$ **Notice that:** α is the growth rate of one individual of x in a unit of time and β is the rate on one reproduction of predator y in a unit of time. **Axiom 2**: The probability that there is exactly one **kill-contact** between predator and prey in a very short period of time is proportional to the number n of the predators and m preys at time t and the length of the interval, $p[one\ contact\ during\ (t,t+\Delta t)] = \gamma.\cancel{p_m}.\cancel{p_n}nm.\Delta t < 1$ **Axiom 3:** Prey uses natural resources to grow, and prey is the only resource of food available for predators. When the **kill-contact** between prey and predator happens, the prey population will be reduced from $m\ to\ m-1$. **Axiom 4:** We will take time increment (Δt) sufficiently small, so that no individual can have more than one event like incidence to kill or reproduce one individual during that time interval $(t, t+\Delta t]$. **Axiom 5:** The probability of more than one **kill-contact,** or one contact and one birth, is negligible. **Notes:** 1. By axiom 1, the probability of no birth prey during $(t, t+\ \Delta t]$ is $p[no\ birth\ for\ prey\ x(t) = m] = 1 - \alpha.m.\Delta t$ By the same reason for the probability of no offspring during the time interval $(t, t+\Delta t]$ for predator is $p[no\ offspring\ for\ predator\ y(t) = n] = 1 - \beta.n.\Delta t$ 2. In a more complicated model one may assume that the probability of one birth of predator is proportional to the probability density of prey population at time t, that is in Axiom 1 there	

	can be $p[one\ reproduction\ of\ predator] = \beta.\sout{p_m(t)}.n.\Delta t$ **3.** Probability of kill-incidence in small time interval is = $\gamma.p_m(t).p_n.\Delta t$ **4.** Probability of no kill-incidence in small time interval is = $1-\gamma.p_m(t).p_n.\Delta t$	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**		
Optional/General comments		

PART 2:

	Reviewer's comment	**Author's comment** *(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)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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