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CORRECTION

Correction to: Evolution of states in a continuum migration model

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Correcting Lemma 4.1 and Theorem 2.5

The proof of Lemma 4.1 of [1] has a certain inexactness which should be corrected. Namely, in proving the estimate in (4.18), one has to consider in (4.17) the case of $l = 1$ separately from all other cases as $F^{(l-1)}(\emptyset) = 0$ holds only for $l \geq 2$. For $l = 1$, we have that $F^{(l-1)}(\gamma \setminus x) = 1$ for all $\gamma \neq \emptyset$, including $\gamma = \{x\}$. Thus, starting from the second line in (4.17), we have, see the beginning of Sect. 3.2.2,

$$\frac{d}{dt} q_{\Delta}^{(1)}(t) \leq b_{\Delta} - \int_{\Gamma_{\Delta}} \left(\sum_{x \in \gamma_{\Delta}} \sum_{y \in \gamma_{\Delta} \setminus x} a(x-y) \right) R_{\mu_t}^{\Delta}(\gamma_{\Delta}) \lambda(\gamma_{\Delta}),$$

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where $R^{\Delta}_{\mu_t}$ is the density of the projection of μ_t with respect to the Lebesgue–Poisson measure λ. By (2.5) and (3.32), this can be rewritten

$$\begin{aligned}\frac{d}{dt}q^{(1)}_{\Delta}(t) &\leq b_{\Delta} - \sum_{n=2}^{\infty}\frac{a_{\Delta}}{(n-1)!}\int_{\Delta^n}\left(R^{\Delta}_{\mu_t}\right)^{(n)}(x_1,\ldots,x_n)dx_1\cdots dx_n \\ &= b_{\Delta} - a_{\Delta}\int_{\Delta}k^{(1)}_{\mu_t}(x)dx + a_{\Delta}\mu_t(J_{\Delta}) \leq b_{\Delta} + a_{\Delta} - a_{\Delta}q^{(1)}_{\Delta}(t),\end{aligned}$$

where $J_{\Delta}(\gamma) = 1$ if $|\gamma_{\Delta}| = 1$ and $J_{\Delta}(\gamma) = 0$ otherwise. That is,

$$\mu_t(J_{\Delta}) = \int_{\Delta}(R^{\Delta}_{\mu_t})^{(1)}(x)dx \leq 1,$$

where the latter estimate follows by the fact that μ_t is a probability measure. The meaning of this correction is that the competition contributes to the disappearance from Δ (caused by entities located in Δ) only if the number of entities in Δ is at least two. This fact had not been taken into account in the previous version. Then, the estimate in (4.16) holds true with

$$\kappa_{\Delta} = \max\{\mathrm{V}(\Delta)e^{\vartheta}; 1 + b_{\Delta}/a_{\Delta}\},$$

instead of that given in (4.12). However, for this κ_{Δ}, we cannot get the limit of $\kappa_{\Delta}/\mathrm{V}(\Delta)$ as $\mathrm{V}(\Delta) \to 0$. Therefore, all the claims of Theorem 2.5 hold true except for the point-wise boundedness as in (1.8).

Reference

1. Kondratiev, Y., Kozitsky, Y.: The evolution of states in a continuum migration model. Anal. Math. Phys. **8**, 93–121 (2018). https://doi.org/10.1007/s13324-017-0166-8