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CORRECTION

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Correction to: Global and local stability analysis in a nonlinear discrete-time population model

Özlem Ak Gümüş[1*]

*Correspondence:
akgumus@adiyaman.edu.tr
[1]Department of Mathematics,
Faculty of Arts and Sciences,
Adıyaman University, Adıyaman,
Turkey

1 Correction

In the publication of Ref. [1], there are some errors. These are identified and corrected in this article.

1. In the abstract:

The error "We conclude that the Allee effect decreases both local stability and global stability of equilibrium points of the population dynamic model." should instead read: "We conclude that the Allee effect decreases the local stability of the equilibrium point of the population dynamic model but increases the global stability of the equilibrium point of the population dynamic model."

2. Page 2, line 18:

The error "(i) $f'(N_t) < 0$ for $N_t \in [0, \infty); \dots$" should instead read: "(i) f' is continuous and $f'(N_t) < 0$ for $N_t \in [0, \infty); \dots$"

3. Page 2, line 31:

The error "(iv) The Allee effect increases as density increases..." should instead read: "(iv) The Allee effect decreases as the density increases...."

4. Theorem 5 should instead read:

Theorem 1 *Let N^* be a positive equilibrium point of* (2) *by the Allee effect at time t with respect to r^*. Then N^* is locally stable if the inequality*

$$-1 - r - rN^* \frac{\alpha'(N^*)}{\alpha(N^*)} < f'\left(N^*\right) < 1 - r - rN^* \frac{\alpha'(N^*)}{\alpha(N^*)}$$

holds.

Proof From (i)–(v), we can say that F'_α is a continuous function. The linearized form of (2) in a neighbourhood of N^* is given by

$$u_{t+1} = F'_\alpha\left(N^*\right)u_t$$

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such that $u_t = N_t - N^*$. By applying Theorem 2, we have

$$\left| F'_\alpha(N^*) \right| < 1 \quad \Rightarrow \quad \left| r^*\alpha'(N^*)N^* + r^*\alpha(N^*) + f'(N^*) \right| < 1$$

$$\Rightarrow \quad -1 < rN^* \frac{\alpha'(N^*)}{\alpha(N^*)} + f'(N^*) + r < 1$$

$$\Rightarrow \quad -1 - r < rN^* \frac{\alpha'(N^*)}{\alpha(N^*)} + f'(N^*) < 1 - r.$$

5. Page 6, lines 23, 24, 25:

The statement "Note that $F_{l,a} > 0$ is always true from Theorem 5. Namely, $-r[1 + N^* \frac{\alpha'(N^*)}{\alpha(N^*)}] < f'(N^*)$ is always provided. Since this inequality is related with $r[1 + N^* \frac{\alpha'(N^*)}{\alpha(N^*)}] < 1$, we must take this inequality as stability conditions." is incorrect.

6. Page 7, line 1:

The error "Corollary 11 The Allee effect at time t decreases the global stability…" should instead read: "Corollary 11 The Allee effect at time t increases the global stability…."

7. Page 8, line 2 below:

The error "Consequently, the Allee effect decreases the local stability and the global stability of the equilibrium points of (1)." should instead read: "Consequently, the Allee effect decreases the local stability of the equilibrium point of (1) but increases the global stability of the equilibrium point of (1)."

8. Page 7, line 5:

The error "$-1 - r < f(N^*) < -r$" should instead write: "$-1 - r < f'(N^*) < -r$".

9. Page 7, line 15:

The error "So, we confirm that the Allee effect decreases the local stability and global stability…" should instead read: "So, we confirm that the Allee effect decreases the local stability but increases the global stability of the equilibrium point of the population model.".

The author would like to apologize for these errors and for any inconvenience caused.

Publisher's Note

References
1. Ak Gümüş, Ö.: Global and local stability analysis in a nonlinear discrete-time population model. Adv. Differ. Equ. **2014**, 299 (2014). https://doi.org/10.1186/1687-1847-2014-299