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# MODEL DEVELOPMENT TO PREDICT THE BEST AGE FOR THE GENETIC SELECTION FOR THE GROWTH IN MAHA MAGUR

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## Introduction

- Maha magur is the genetically improved Indian freshwater catfish *Clarias magur*. The ICAR-Central Institute of Fisheries Education, Mumbai, initiated the first genetic improvement program of *Clarias magur* in 2013 to improve the body weight at harvest (360 days).
- In the present study, the best age for genetic selection was identified to increase the genetic gain of Maha magur.
- The development of a predictive model for identifying the best age for genetic selection holds immense promise in optimizing resource management and contributing to the sustainable development of fish farming practices.

## Materials and Methods

- A total of 7908 fish with 20,393 observations of body weight belonging to 5 generations were collected from the breeding records available in the Freshwater Fish Farm, Balabhadrapuram, India, and compiled and used in this study.
- The primary and secondary traits studied are body weight and the daily weight gain, respectively.
- Kernel's Density Estimates were generated by using univariate and bivariate models.
- Spline regression models were developed for overall and generation-wise to understand where the growth rate starts declining.

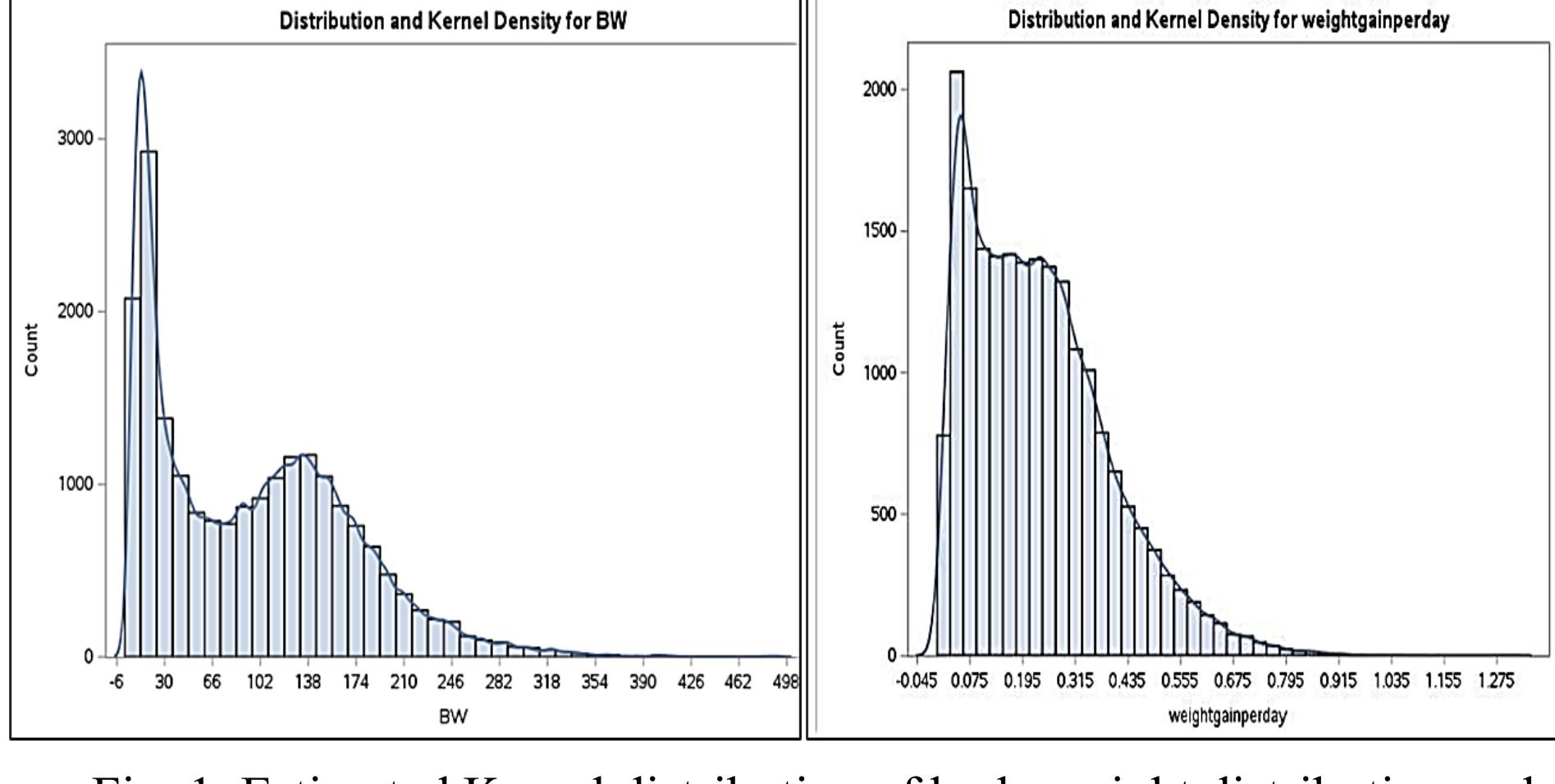


Fig. 1. Estimated Kernel distribution of body weight distribution and daily weight gain across all generations.

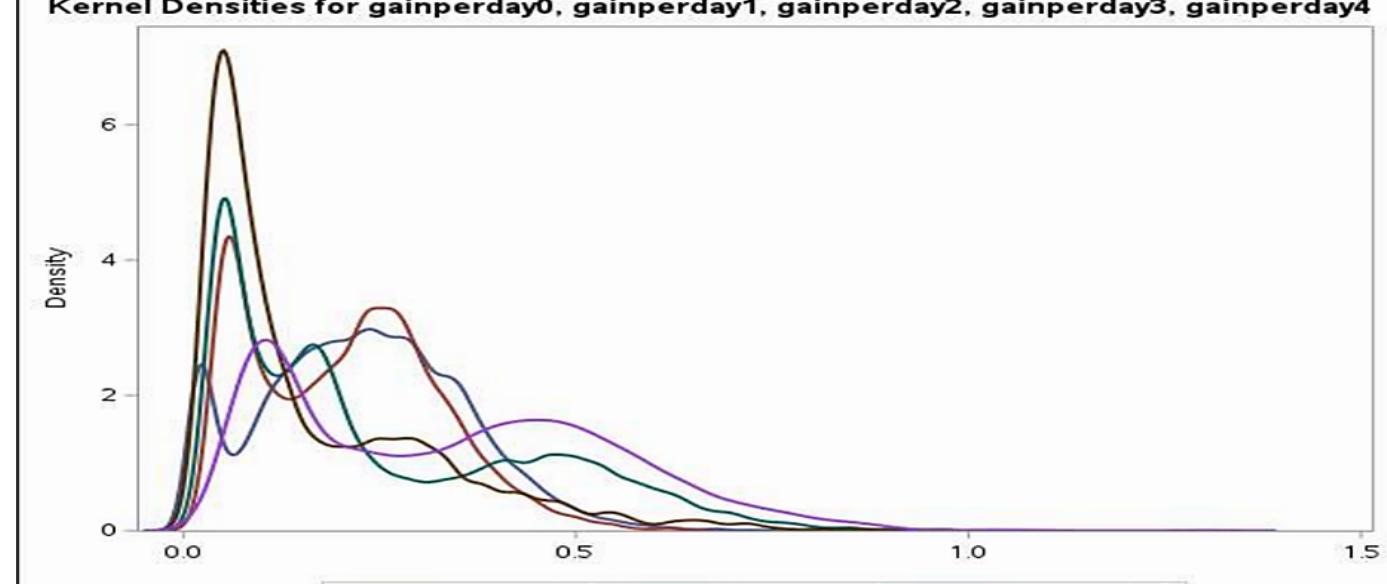


Fig. 2. Kernel density estimates for daily weight gain (Generation-wise)

## Results and Discussion

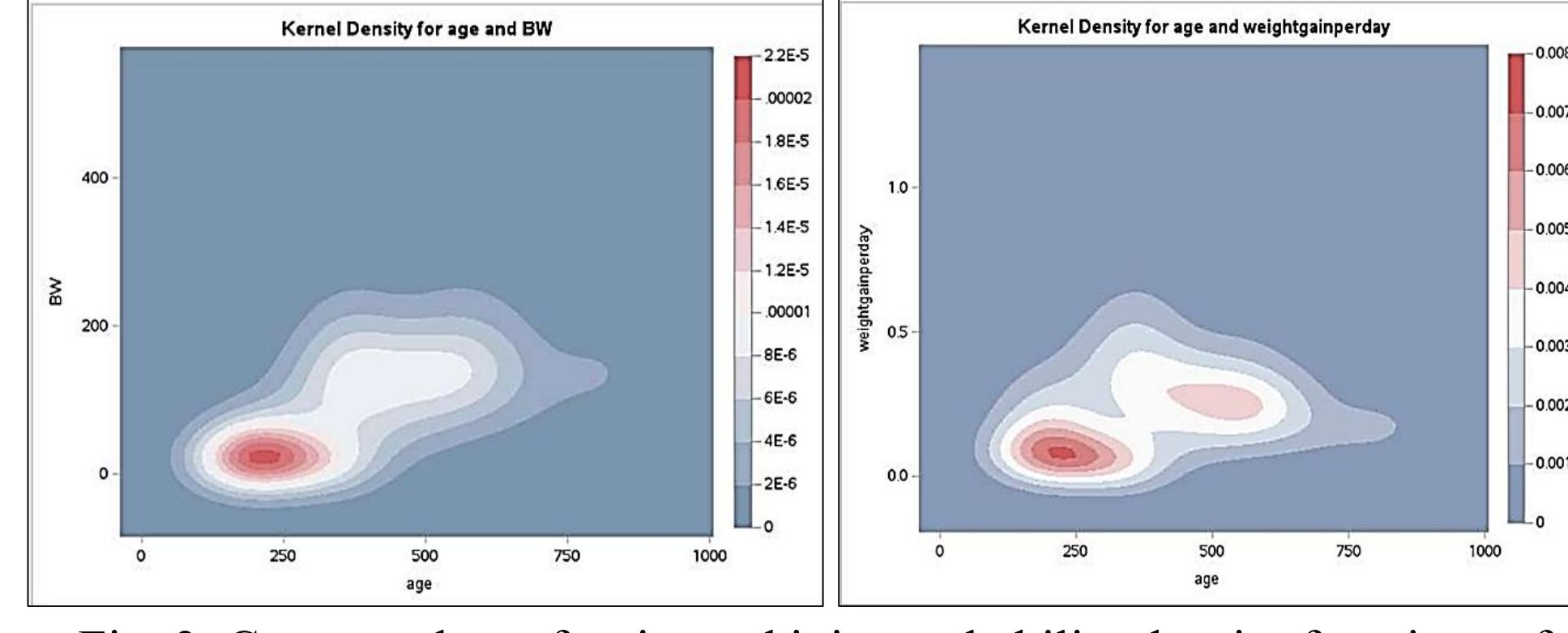


Fig. 3. Contour plots of estimated joint probability density functions of BW and age, daily weight gain and age across all generations.

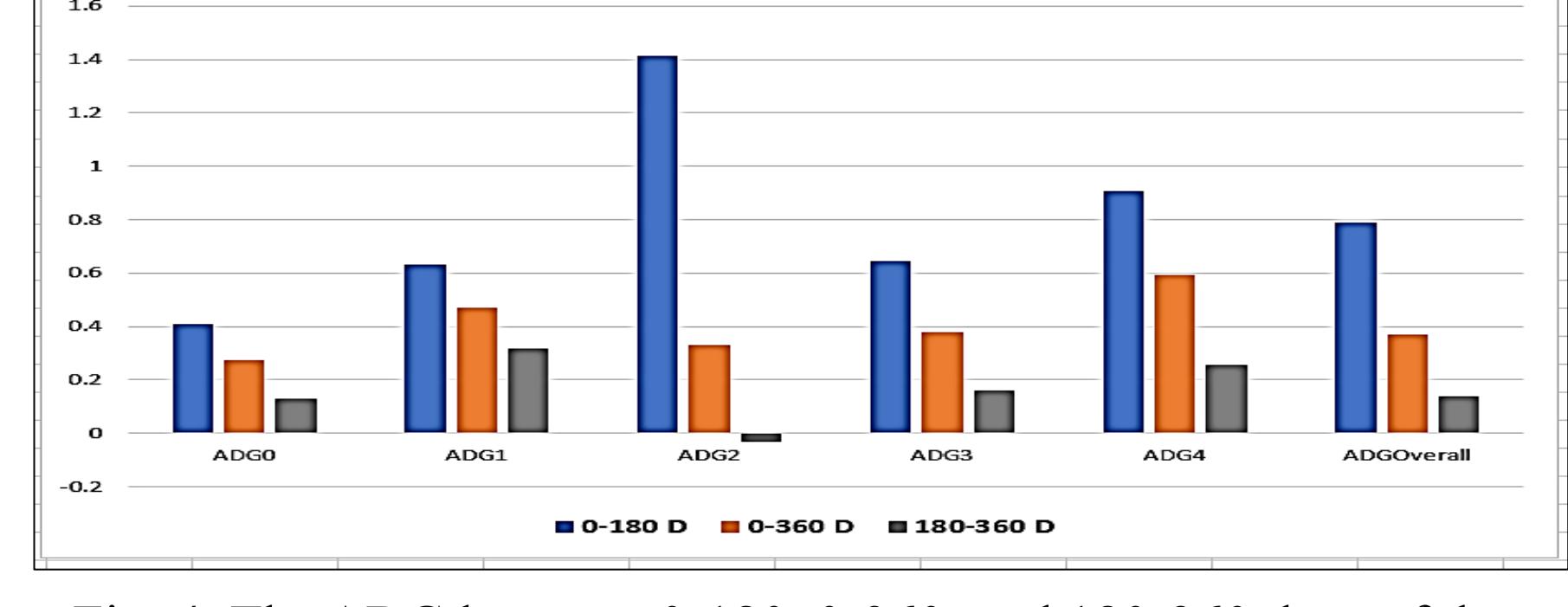


Fig. 4. The ADG between 0-180, 0-360, and 180-360 days of the culture period (Generation-wise and overall).

- The spline regression showed that the daily weight gain started declining after 180 days of culture.
- The heritability of body weight at 180 and 360 days of culture was similar ( $0.61 \pm 0.05$ ).
- Rameez (2021) showed the variation in heritability in magur during the 180-724 days of age. Heritability showed a declining trend as the age advanced.
- The heritability of daily weight gain was higher from stocking to 180 days ( $0.52 \pm 0.06$ ) than from 180-360 days of culture ( $0.32 \pm 0.05$ ).
- The genetic and phenotypic correlations between body weight at 180 and 360 days were high.

## Conclusion

This study may be concluded that the genetic selection of Maha magur can be carried out based on the body weight at 180 days of culture period, thereby it helps to reduce the generation interval and also maintain a similar magnitude of response to selection.

## References

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