

## BACKGROUND

- The Burmese loach, *berdmorei*, a high-value food and ornamental fish, thrives in various Asian freshwater habitats but faces population decline due to overfishing.
- This study explores the captive breeding of *L. berdmorei* using an artificial diet in a photo-regulated, sand bed biofilter recirculatory system.

## OBJECTIVES

- To study the eco-biology of *Lepidocephalichthys berdmorei*.
- To assess the breeding potential and seed rearing of *L. berdmorei* in captivity.

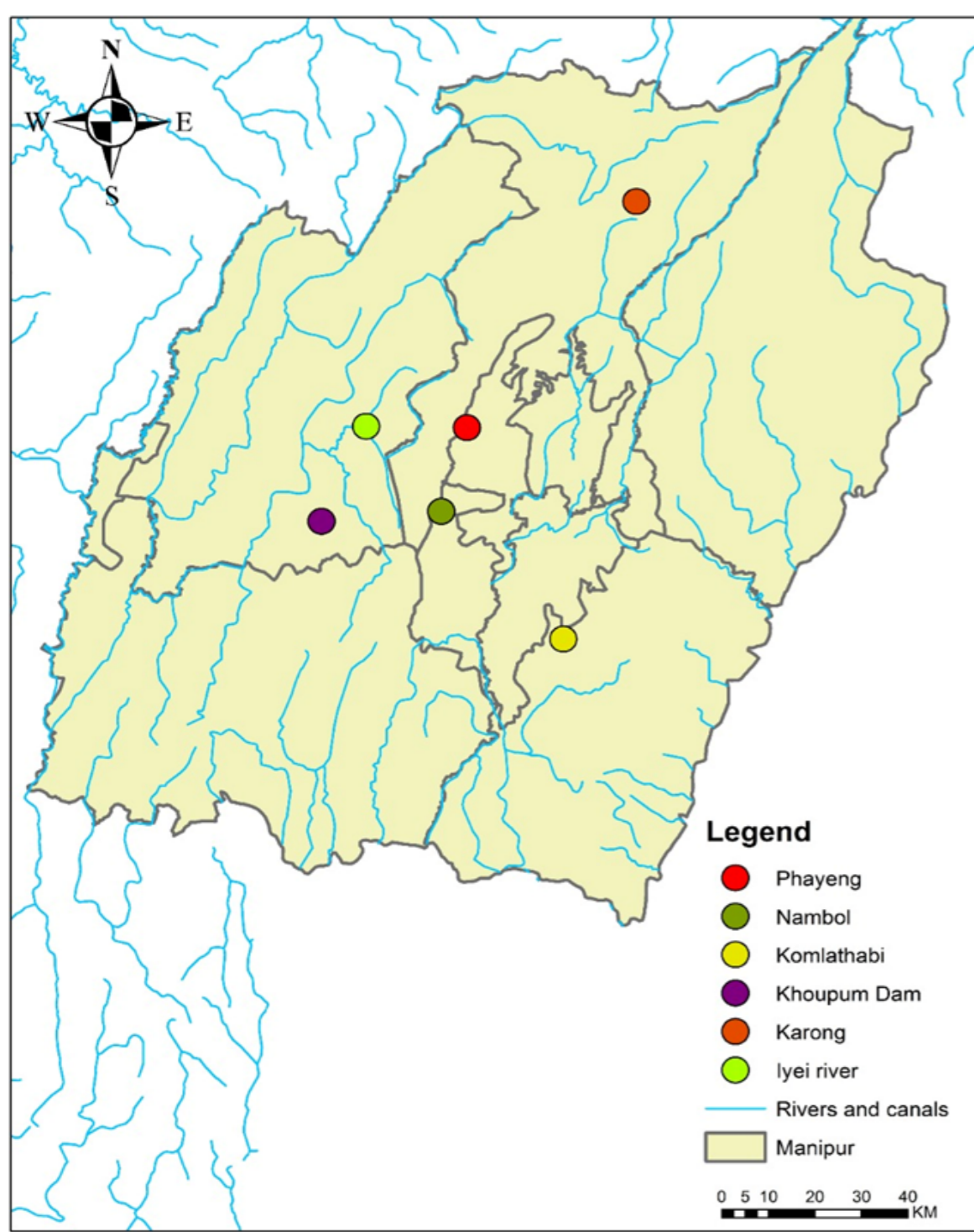
## METHODOLOGIES

- Sample collection from wild habitats; studies on environmental factors (water temperature (WT), pH, DO, Alkalinity, Total Hardness NH<sub>3</sub>, NO<sub>2</sub>, PO<sub>4</sub>, etc.); growth parameters estimation (L-W relationship, condition factor); gut content analysis using standardized methods (GaSI, RLG).
- Reproductive biology studies including GSI and histological staging of gonads.

## SAMPLING

Fish specimens of various ages were collected from different districts of Manipur between January and December 2019.

- Fish habitats included paddy fields, wetlands, streams, and shallow, sandy riverbanks.



## RESULT

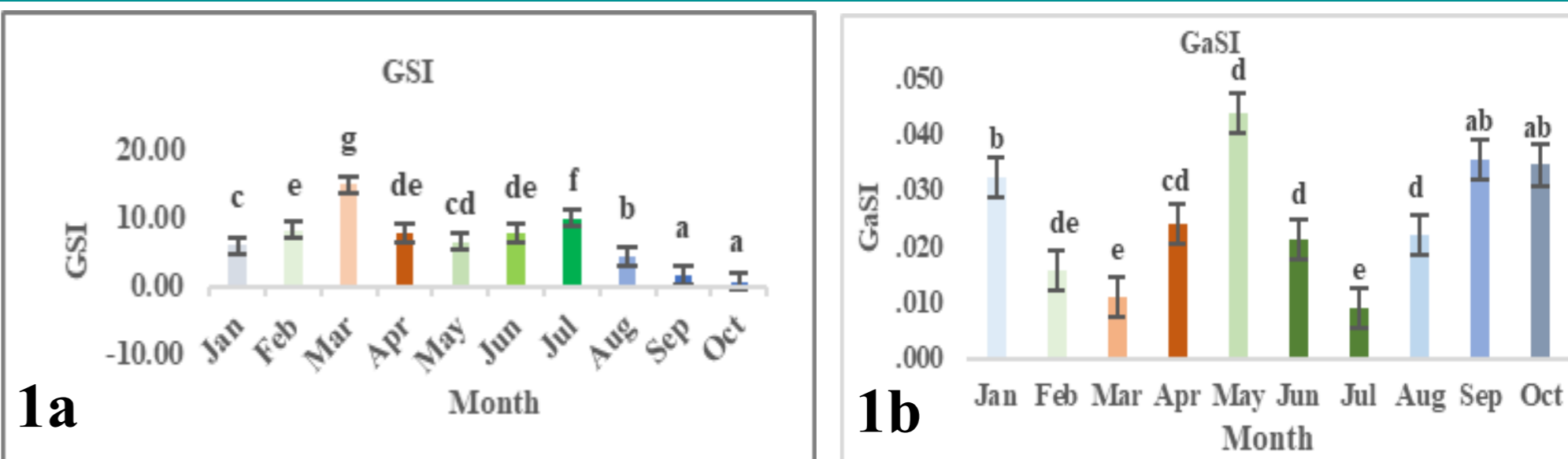
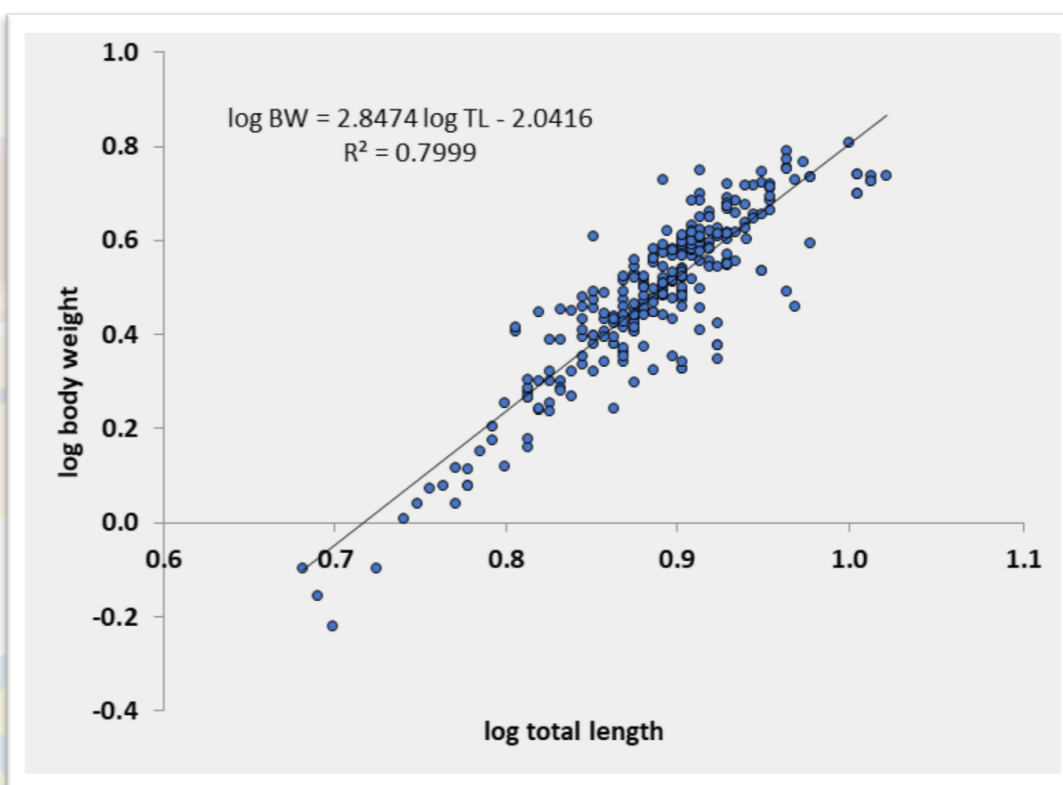
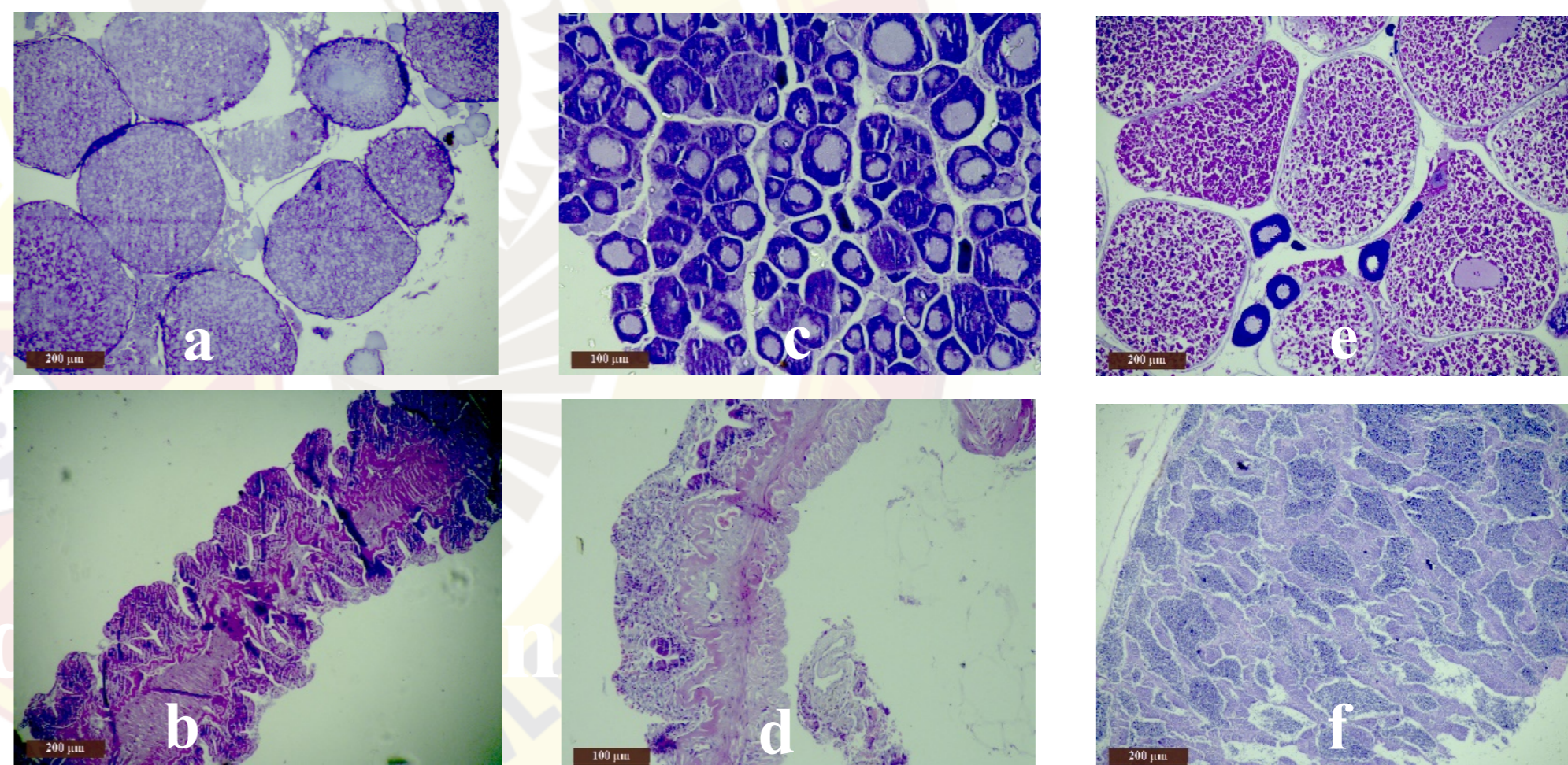


Fig 1: a, Gonadosomatic (GSI), and b, Gastrosomatic (GaSI) indices of *Lepidocephalichthys berdmorei* in different months.



- B=2.85, -ve allometric
- R<sup>2</sup>= 0.8, r=0.894
- LW relationship
- Log=BW=2.8474 log TL-2.0416
- Avg. Fulton's condition factor
- K-value=0.676

## HISTOLOGICAL ANALYSIS OF GONADAL DEVELOPMENT



**Fig. a.** Fully matured post-vitellogenic oocytes with no germinal vesicle.  
**Fig. b.** Male gonads in the late spawning capable phase, with abundant spermatozoa but no spermatogenic cysts.

**Fig. c.** Developing phase ovary, indicated by matured follicles with late vitellogenic oocytes.  
**Fig. d.** Testis is in the capable spawning phase, with active spermatogenic cysts in tubules and released spermatozoa in their lumen.

**Fig. e.** Represents a female's ovary in the regressed phase, indicated by the presence of only primary growth oocytes.  
**Fig. f.** Active spermatogenic cysts are no longer visible and the released spermatozoa are no longer abundant in the ductular region.

## DISCUSSION

Histological assessment of germ cell development is more accurate than macroscopic approaches for classifying reproductive phases, which are prone to subjectivity, especially in multiple spawners. [1,2]

Mature ovaries with fully matured post-vitellogenic oocytes were predominantly observed from March to July, indicating the onset of the spawning season with intensive yolk accumulation. [3]

In July, ovaries contained immature follicles in cortical alveolar stages and mature follicles with late vitellogenic oocytes, while postovulatory follicles indicated active spawning.

During the spawning period, female ovaries had oocytes in various stages of vitellogenesis, and by July and August, all loach ovaries were in the active spawning phase.

## CONCLUSION

The present study indicates that *L. berdmorei* starts maturing and breeding during May which progresses through July with intermittent spawning.

Max. GSI was recorded in March ( $15.16 \pm 0.61$ ) and min. Oct. ( $0.58 \pm 0.12$ ).

The result was further supported by the histological studies, which showed the presence of previtellogenic oocytes and oocytes in various stages of vitellogenesis during March.

The present study confirms that *L. berdmorei* can mature and breed in captive conditions other than its natural habitat.

## REFERENCES

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- Juchno, D. and Boron, A., 2006. Age, reproduction, and fecundity of the spined loach *Cobitis taenia* L. (Pisces, Cobitidae) from Lake Klawój (Poland). *Reprod.Boil.*, 6(2), pp.133-148.