

Estimation of Probabilistic Maturation Reaction Norms (PMRN) under controlled conditions.

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The Probabilistic Maturation Reaction Norm (PMRN) is a statistical tool commonly used in the study of fisheries-induced evolution, because of its potential in disentangling genetic effects on maturation from environmental ones.

PMRNs characterize maturation schedules and changes in e.g., its midpoint (age and size at which maturation probability is 50%) suggest genetic change.

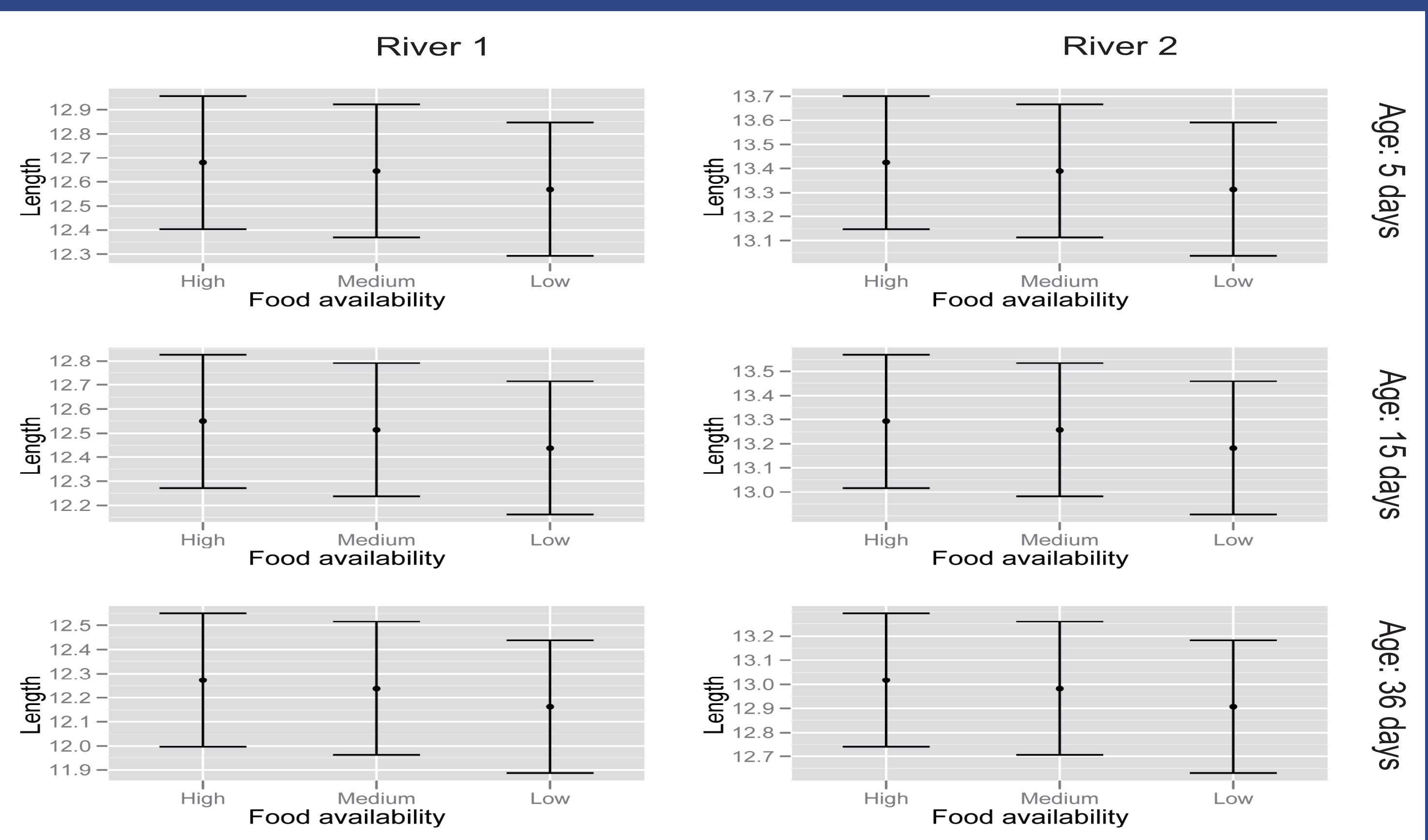
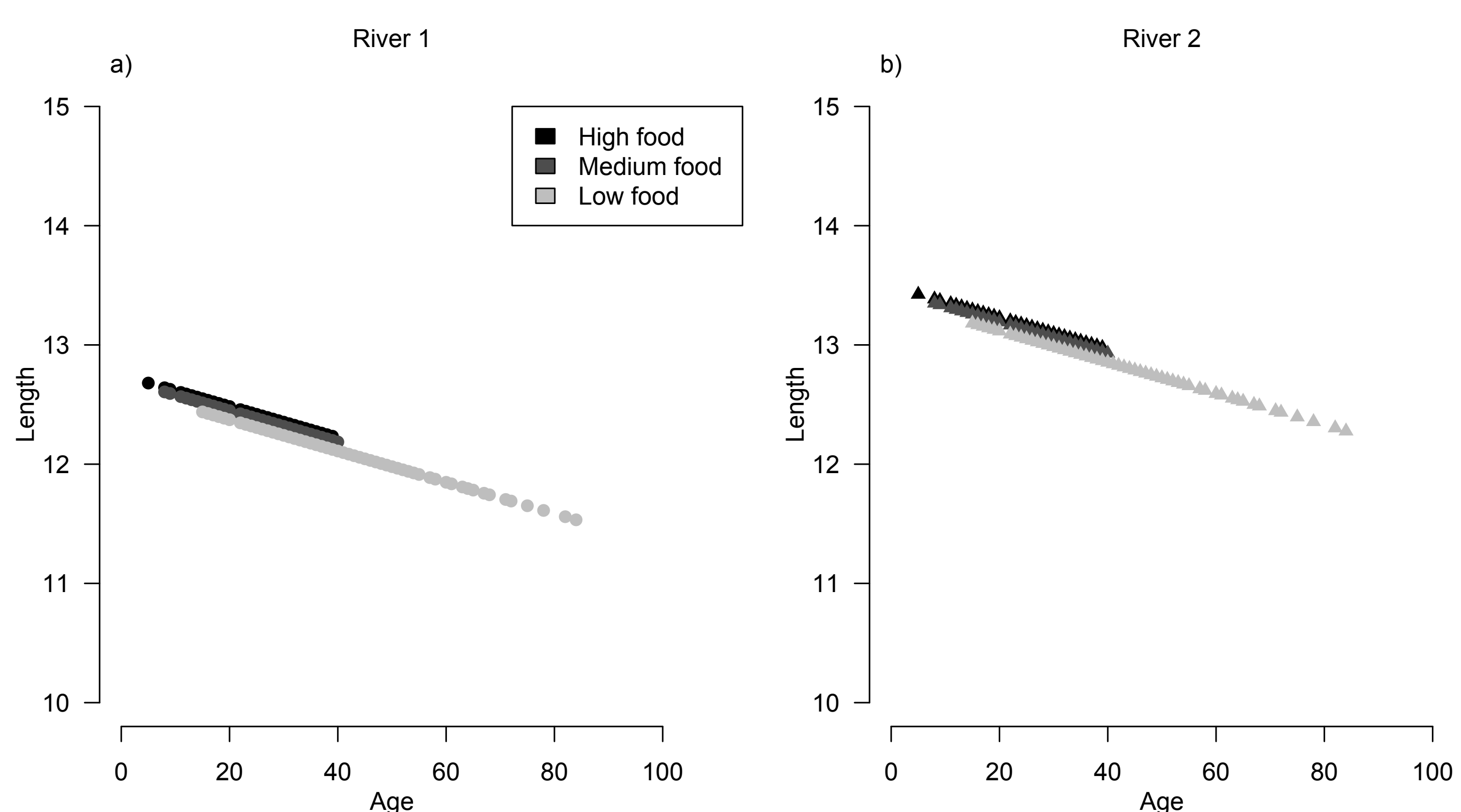
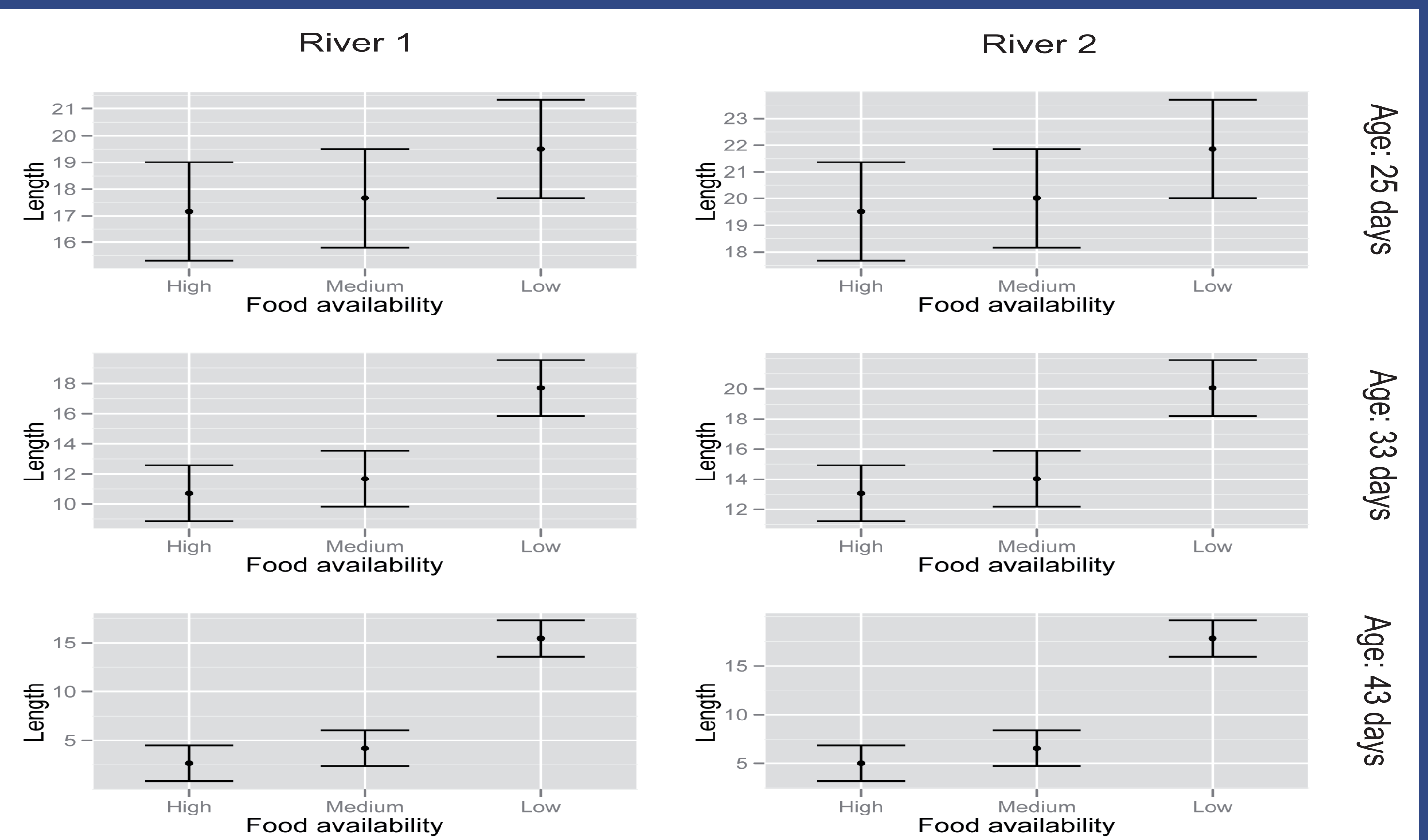
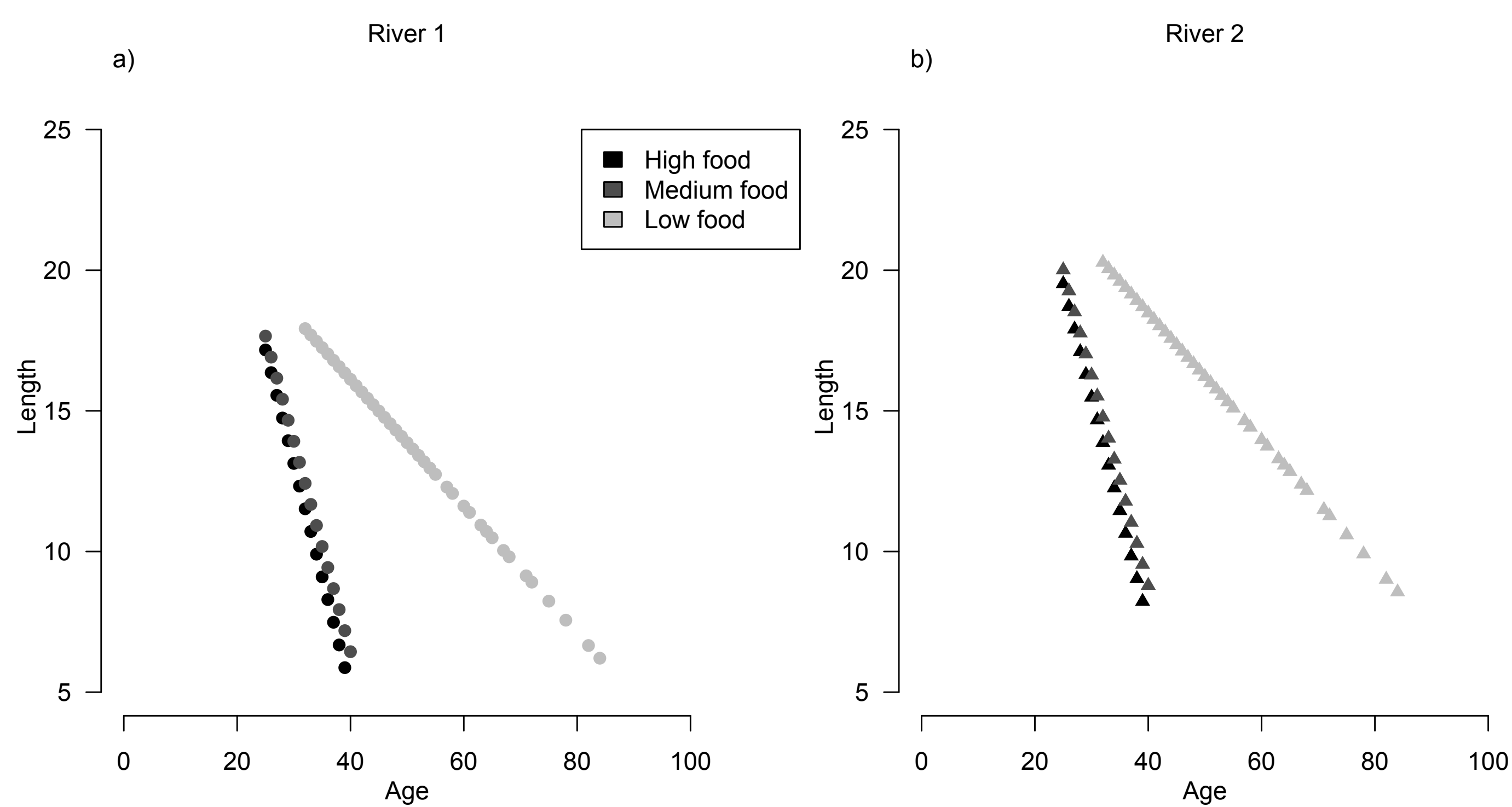
The laboratory experiments were performed under controlled conditions with male guppies, *Poecilia reticulata*, from different wild populations under three different food diets to assess size and age at initiation and completion of maturation (Reznick, 1990. J. evol. Bio. 3: 185-203).

Aiming to estimate PMRNs for initiation and completion of maturation for the different populations with different food treatments.

PMRN for completion of maturation

PMRN's midpoints for the completion of maturation. The population in river 1 completes maturation at lower age and size than the population in river 2 (odds ratio=0.24, $z=-2.72$, $df=1$, $p<0.01$). Individuals under the lowest food treatment mature at higher age and size relative to those in high and medium food treatments (food: $z=2.44$, $df=1$, $p<0.05$; food*age: $z=-3.39$, $df=1$, $p<0.001$ odds ratio (age 33)=0.015).

Detailed probabilistic reaction norm for completion of maturation. Midpoint, 25 and 75% probabilities of maturing are represented for certain ages: 25 days old, when youngest individuals start maturing, 33 days old (peak of maturation) and 43 days old, when oldest individuals mature.



The midpoints for the initiation of maturation show that the probability of initiating maturation in the population of river 1 is higher relative to the population in river 2 (odds ratio=0.05, $z=-3.53$, $df=1$, $p<0.001$). Food treatment has no effect in the probability of initiation of maturation.

Detailed probabilistic reaction norm for initiation of maturation. Midpoint, 25 and 75% probabilities of maturing are represented for certain ages: 5 days old, when youngest individuals initiate maturation, 33 days old (peak of initiation) and 43 days old, when oldest individuals initiate maturation.

PMRN for initiation of maturation