

Circulating insulin-like growth factor-I in juvenile chum and pink salmon: relationship with growth rate and changes during downstream and coastal migration in eastern Hokkaido, Japan

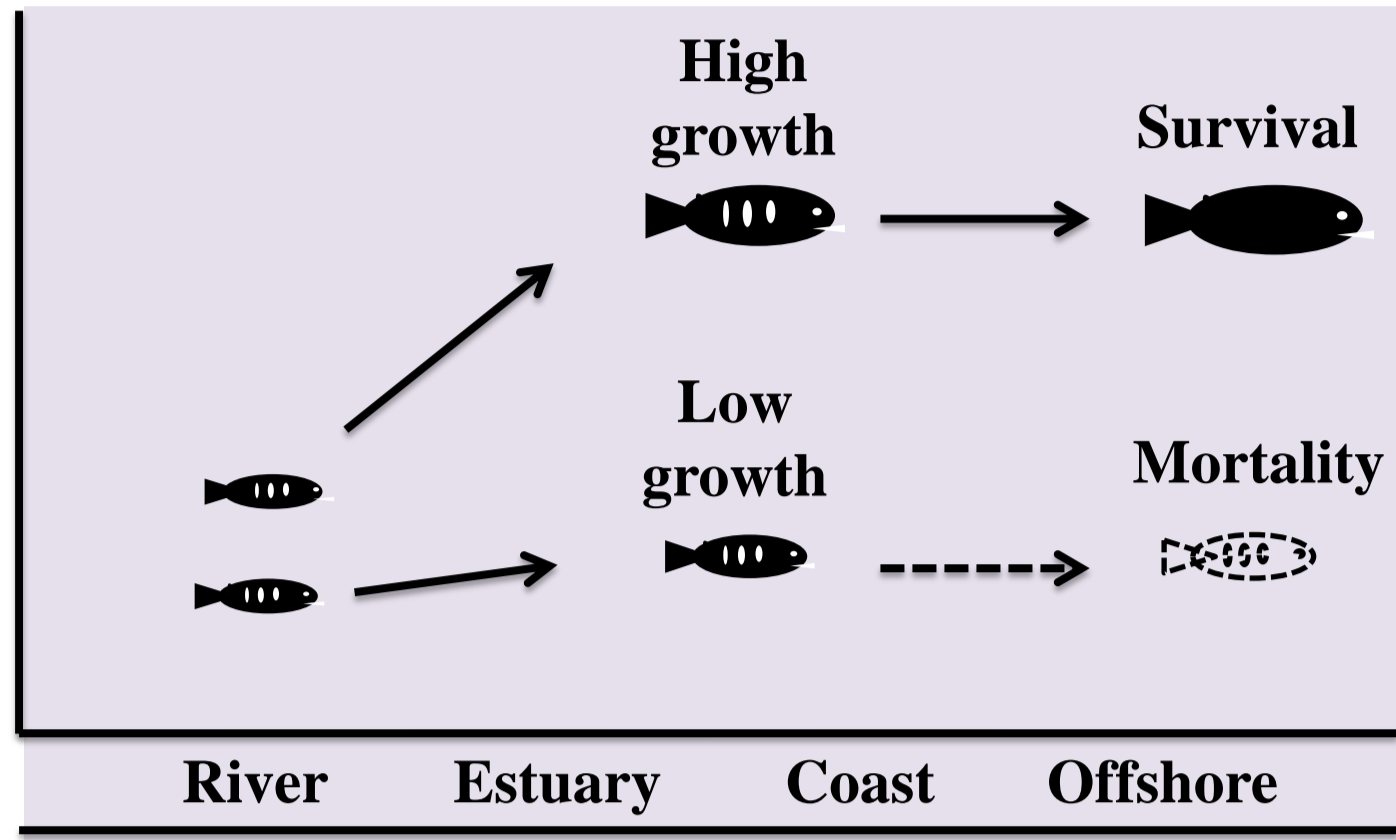
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Background

In salmon, high growth rate during early marine life is critical for survival (Beamish *et al.*, 2004). Therefore, monitoring growth during this period is important to estimate their survival. **Insulin-like growth factor (IGF)-I is a major hormone regulating fish growth and may be a good growth index** since its circulating level correlates well with individual growth rate in several fishes.

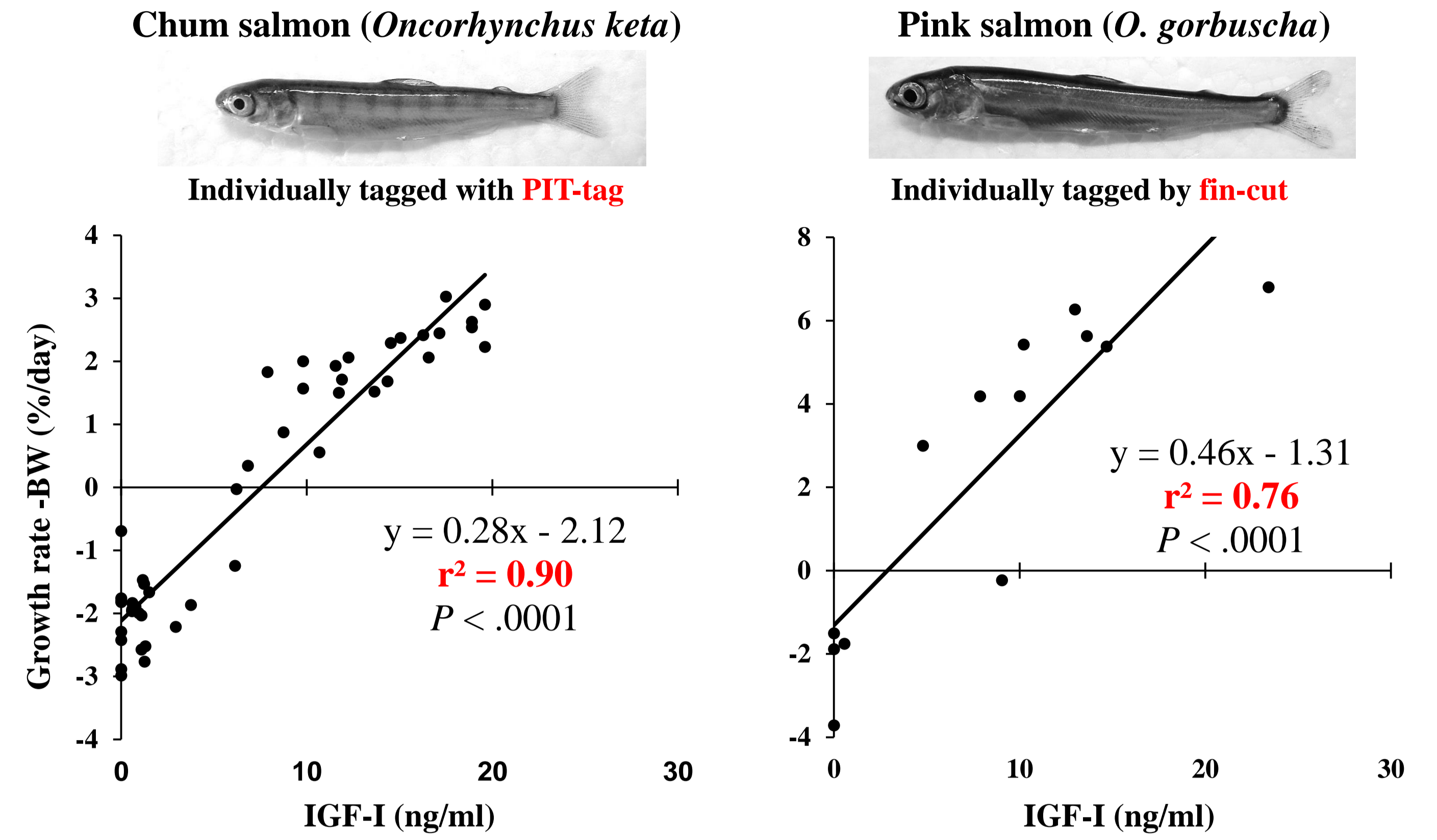


Chum and pink salmon are commercially important fish supplemented by hatchery release in Japan (Miyakoshi *et al.*, 2013). However, no study has evaluated growth status using IGF-I in juvenile chum and pink salmon. Moreover, it is not known if IGF-I can be used as a growth index in these species.

Purposes

1. Can IGF-I be used as a growth index in chum/pink salmon?
2. How does circulating IGF-I change in fish in wild environment?

Rearing experiment: serum IGF-I level v.s. growth rate

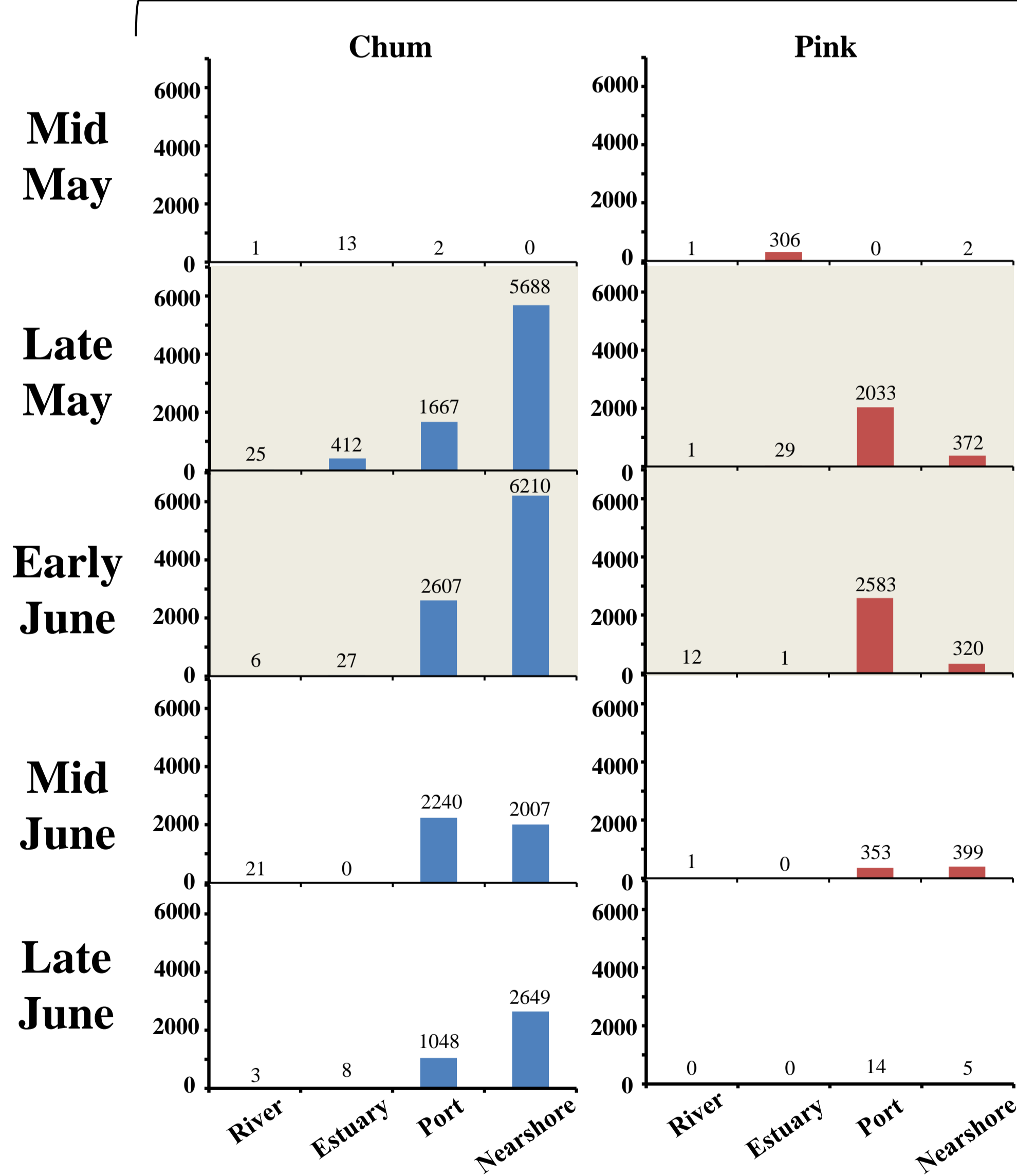


Serum IGF-I showed positive correlations with growth rates.

Field survey

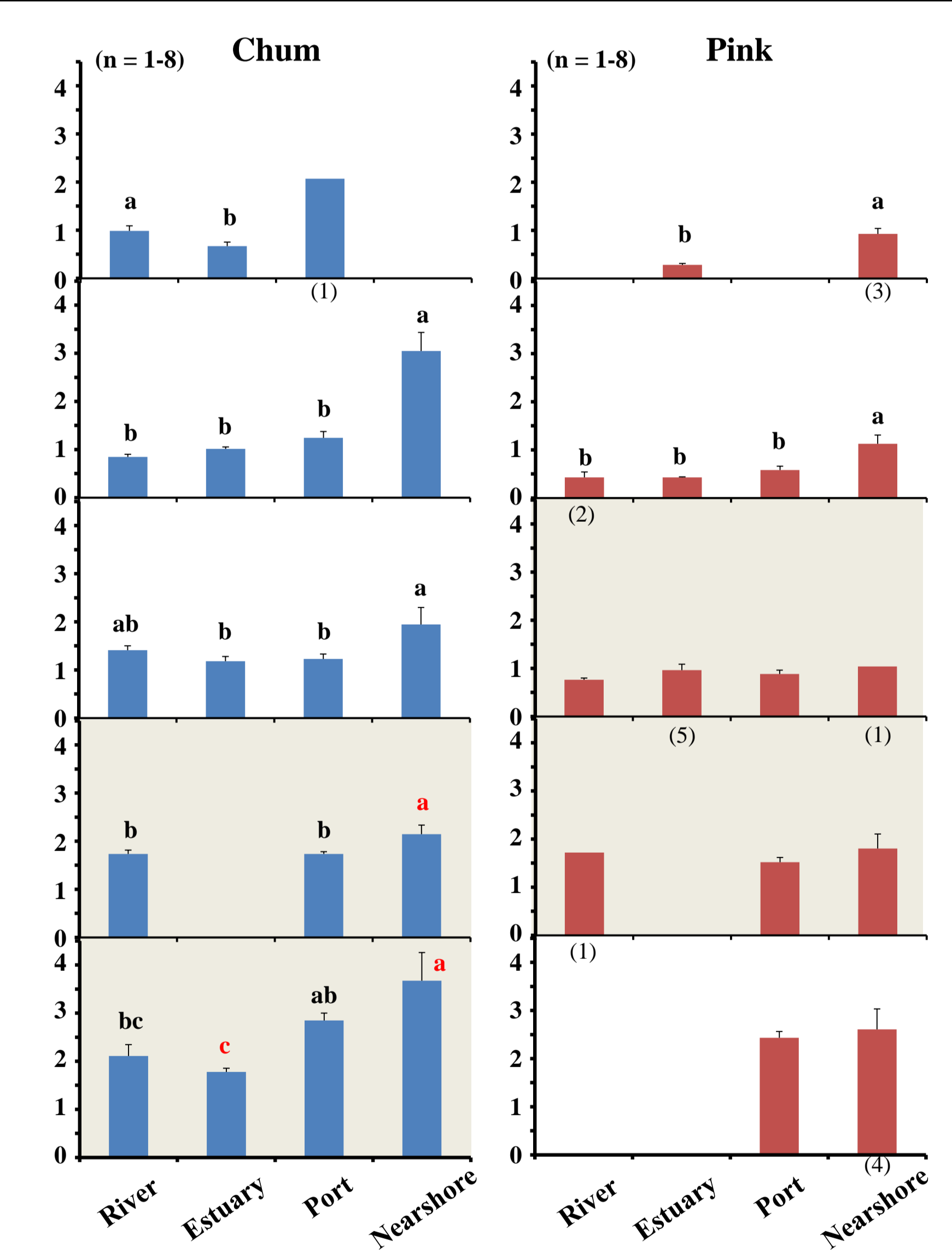


Catch per unit effort (CPUE)



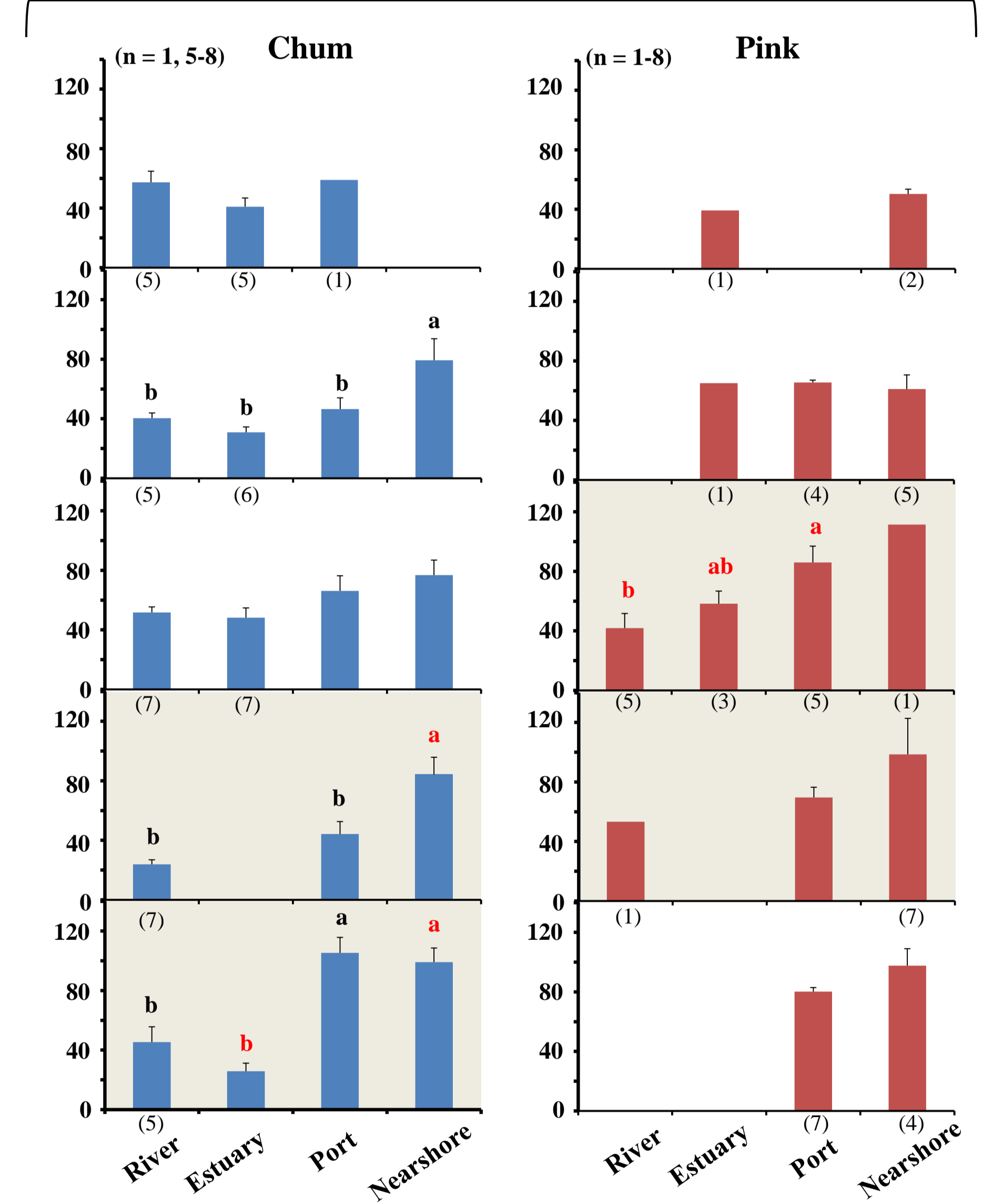
CPUE was high during late May and early June.

Body weight (g)



Bigger chum salmon were caught in the nearshore, while size of pink salmon was similar among sites in June.

Serum IGF-I (ng/ml)



Serum IGF-I in both species increased as fish migrated to nearshore. And chum salmon in estuary showed lowest value in June.

Summary

1. Circulating **IGF-I is a good growth index** in both species.
- 2-1. **Chum**: body size and serum IGF-I were highest in nearshore and lowest in estuary in June.
- 2-2. **Pink**: body size was similar among sites, while serum IGF-I increased as fish migrated to nearshore in June.

“Growth” profiles of sympatric chum/pink salmon were different.

