Fish Performance

Dr. Sérgio Rocha

Fish Perfomance

Table 7
Growth performance parameters of fish fed the experimental diets with increasing inclusion level of *P. variotii* for 9 weeks (n = 3 tanks

Parameter	Diet 1	Diet 2	Diet 3	Diet 4	SEM[1]	P_{ANOVA}[2]
Initial body weight (g fish^{-1})	24.0	24.0	24.0	24.0	0.01	0.3300
Final body weight (g fish^{-1})	109.3	111.2	108.9	115.5	3.53	0.5530
Weight gain (g fish^{-1})	85.3	87.2	84.9	91.6	3.53	0.5497
SGR[4] (% day^{-1})	2.37	2.40	2.36	2.46	0.05	0.5358
TGC[5] [g$^{1/3}$(°C × day)$^{-1}$]	0.202	0.205	0.201	0.211	0.01	0.5577
Feed intake (g fish^{-1})	64.0	64.9	63.1	66.7	2.38	0.7436
Feed conversion ratio	0.75	0.74	0.74	0.73	0.004	0.0855

[1] Standard error mean.
[2] Significance of the one-way ANOVA.
[4] SGR = specific growth rate.
[5] TGC = thermal-unit growth coefficient.

https://doi.org/10.1016/j.aquaculture.2024.740905

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SGR – Specific Growth Rate

SGR is the relative growth index based on logarithms of body weight

$$\frac{ln\text{FBW} - ln\text{IBW}}{\text{Experimental period (days)}} \times 100$$

FBW: final body weight (g/fish)
IBW: initial body weight (g/fish)

Brett and Groves (1979)

TGC – thermal-unit growth coenficient

TGC is based on one-third powers of body weights and the summation of temperature over time.

$$100 \times \frac{FBW^{1/3} - IBW^{1/3}}{\sum T \times D}$$

FBW: final body weight (g/fish)
IBW: initial body weight (g/fish)
T: water temperature in degrees Celsius
D: time in days

Iwama and Tautz, 1981; Cho, 1992

frontiers | Frontiers in Marine Science

Relationships between the specific growth rate and the thermal-unit growth coefficient applied to cultured juvenile fish

Lorenzo Márquez[1,2], Eduardo Almansa[3]*, Nancy E. Ruiz Díaz[4,5], Manuel Díaz[6] and Francisco J. Moyano[6]

https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2024.1332912/full

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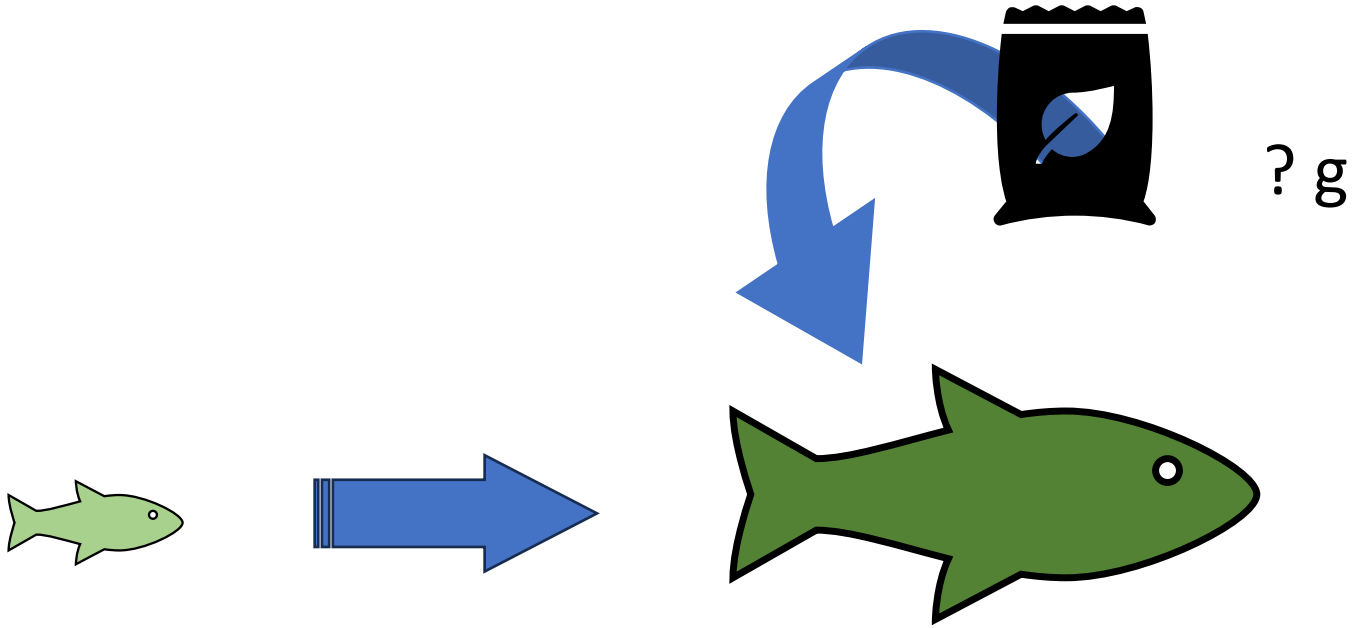
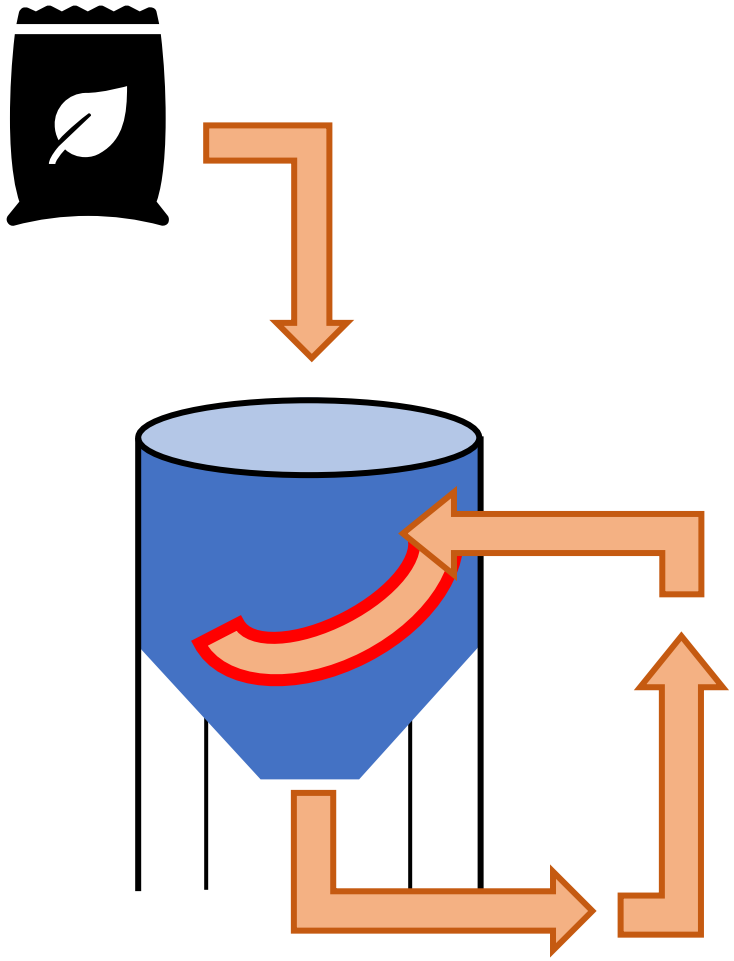
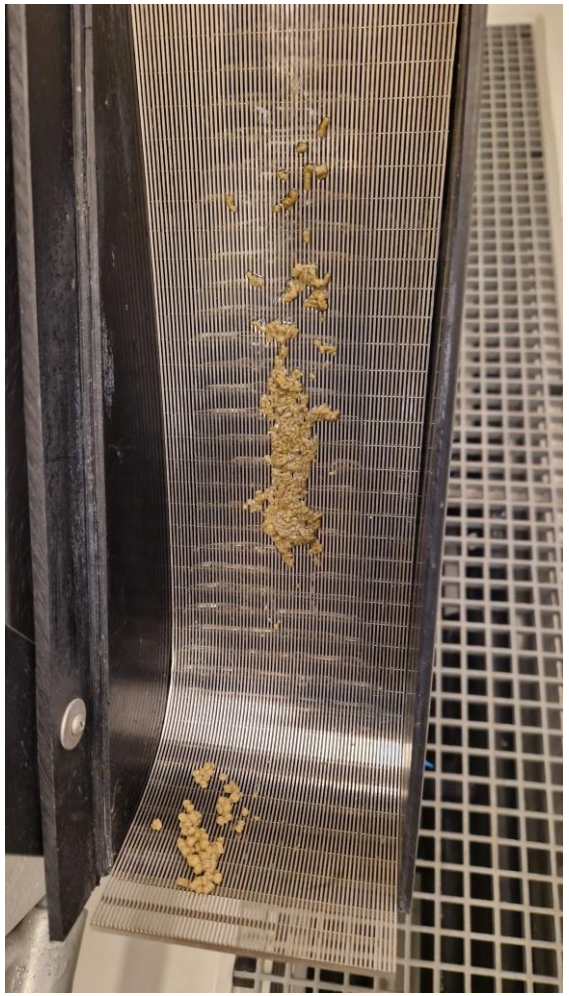
Feed intake

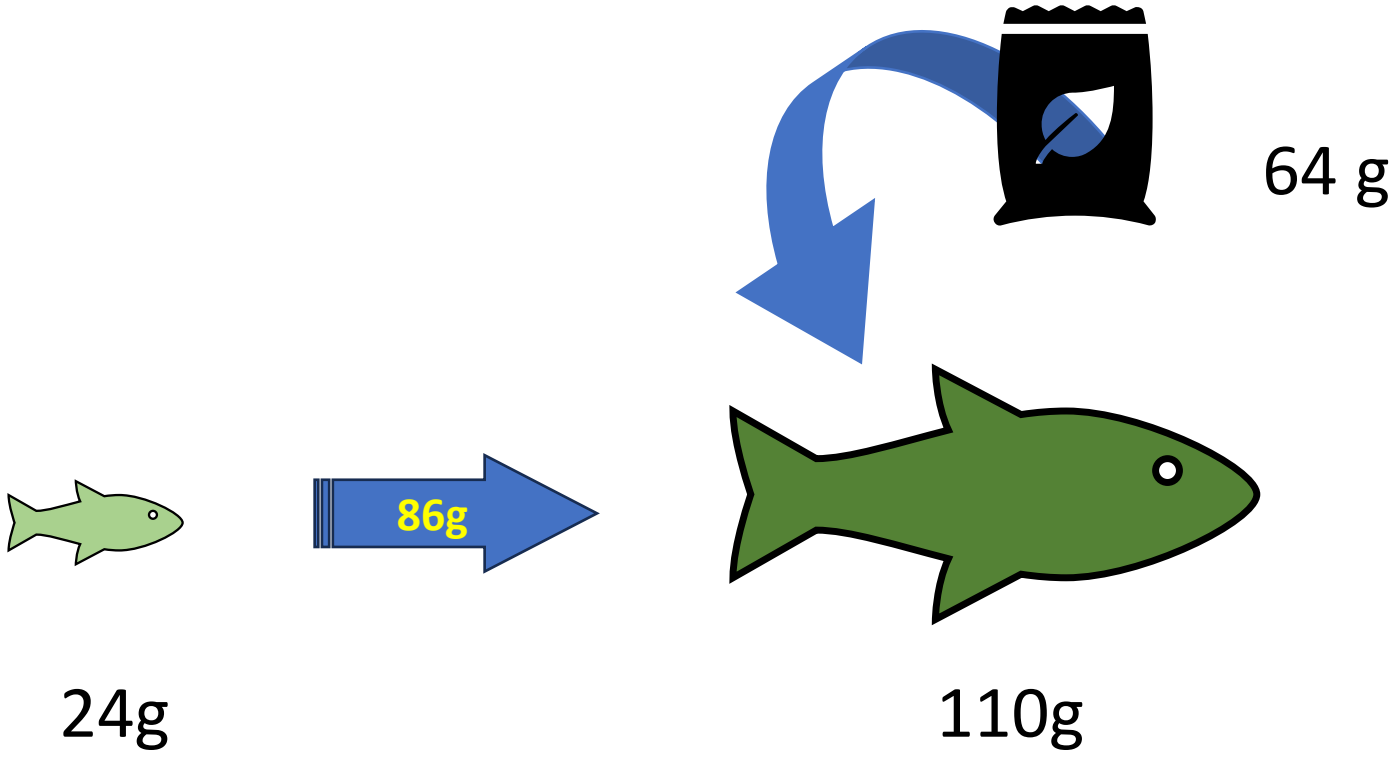


Feed intake





Feed intake

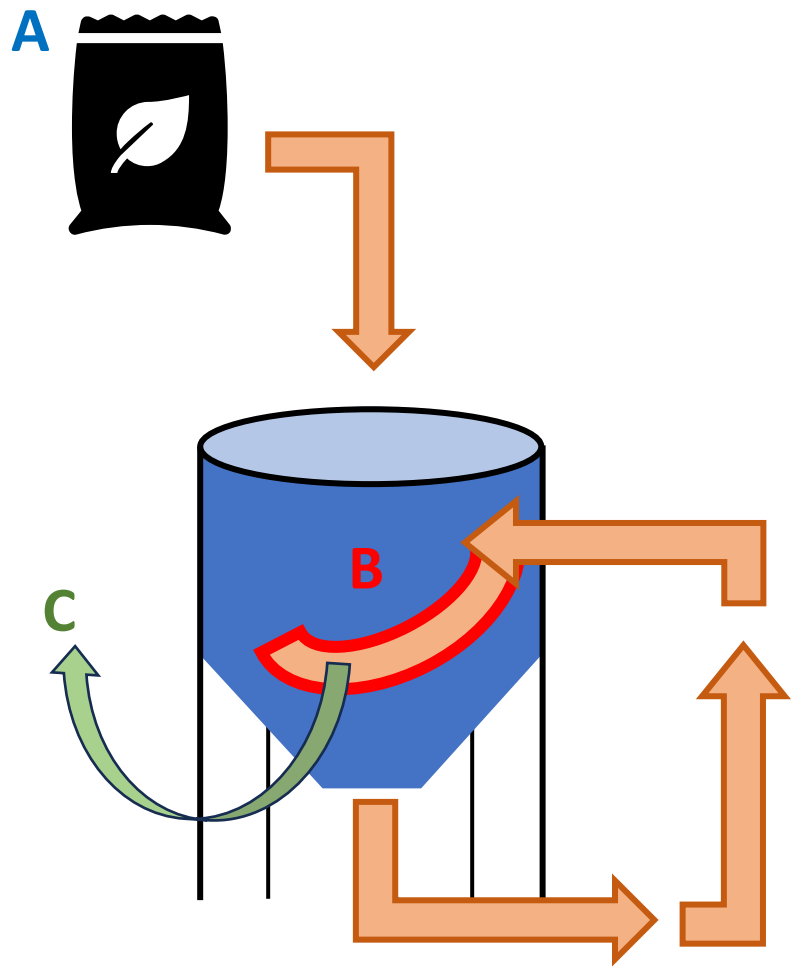


Feed intake

$$\frac{Total\ feed\ intake\ \left(g\ DM\ tank^{-1}\right)}{Number\ of\ fish\ per\ tank}$$

(g DM/fish)

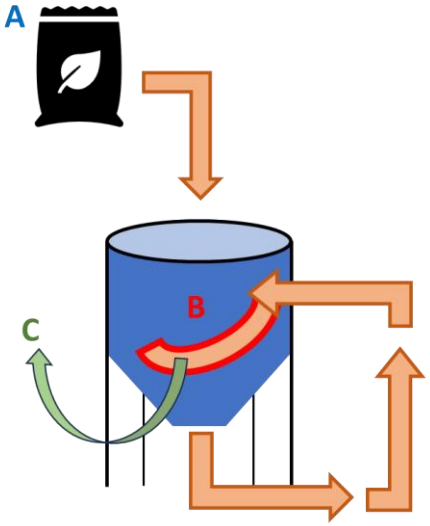
Dry matter for feed intake

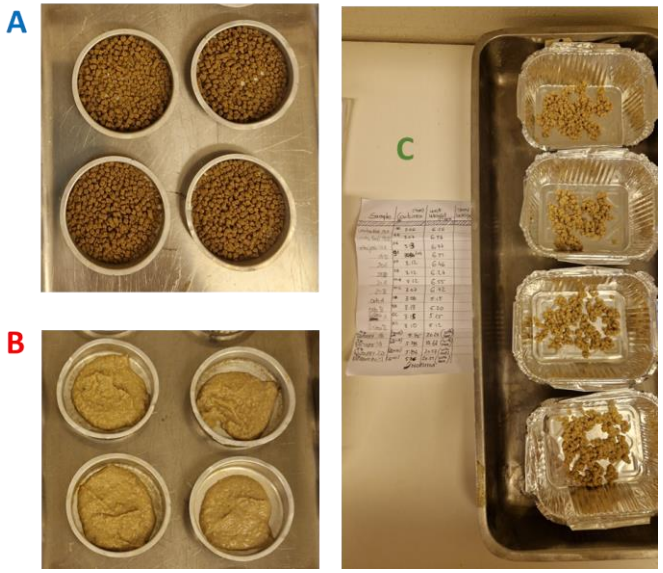


A

B

Feed intake





DM of supplied feed - (DM of uneaten feed, Normalized by the recovery)

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(g DM/fish)

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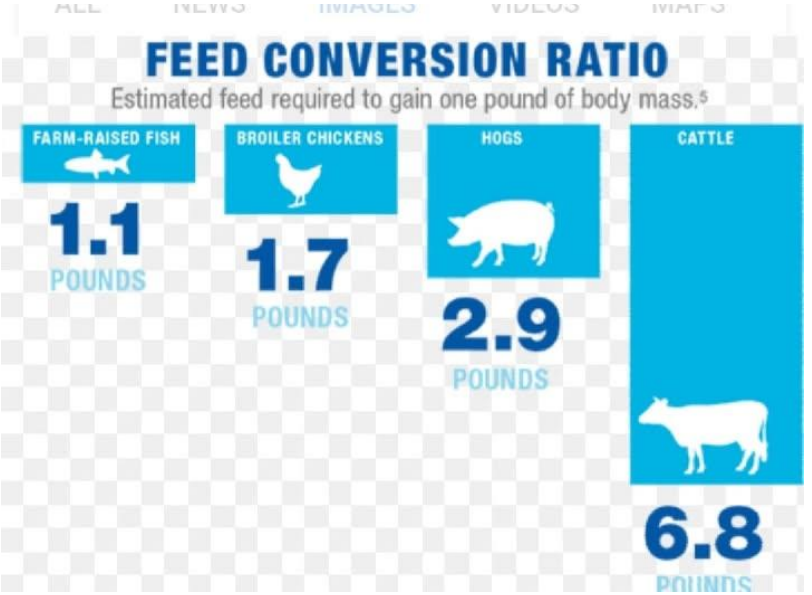
FCR – Feed Conversion ratio

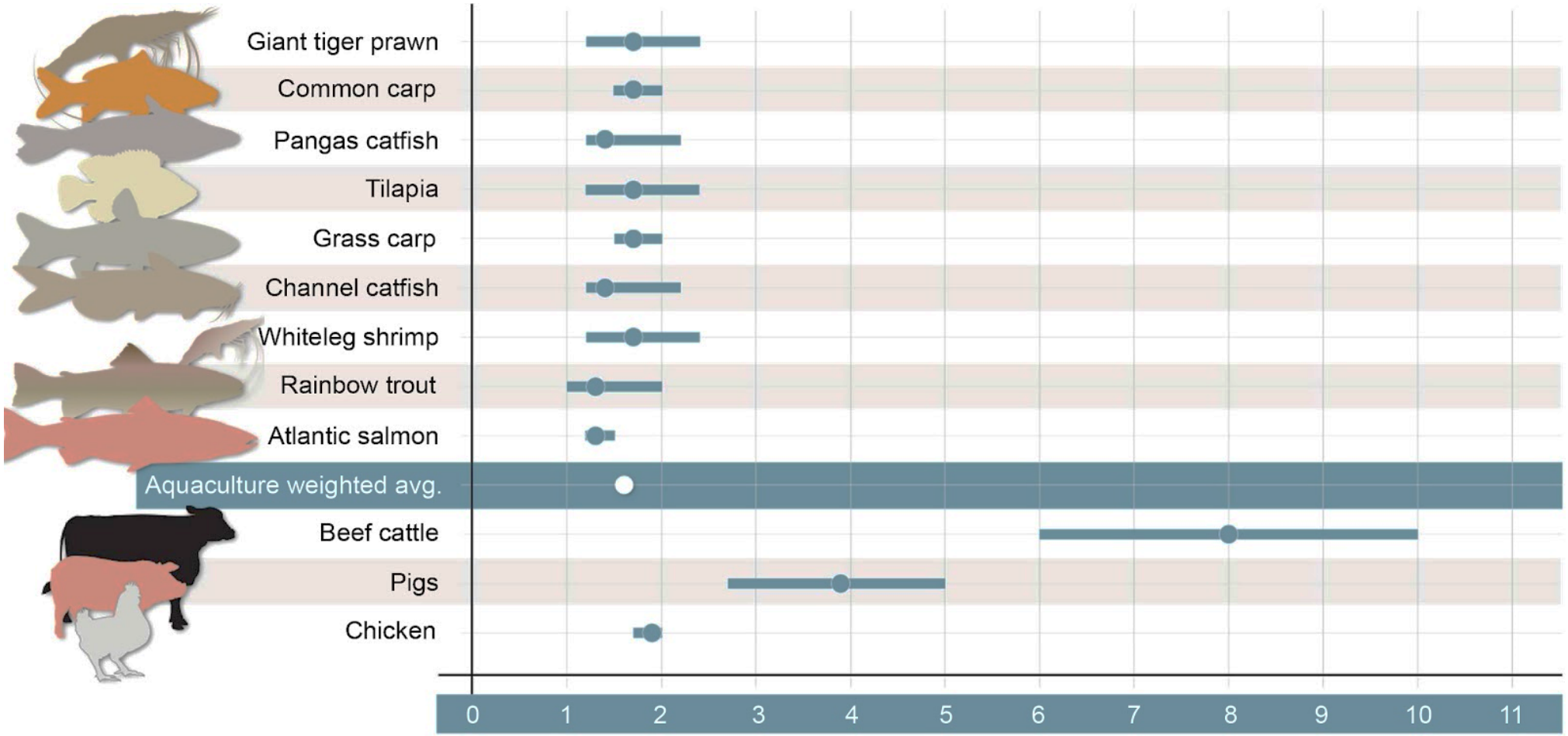
Measurement of how efficiently an animal converts feed into body mass.

$$\frac{Feed\ intake\ \left(g\ DM\ fish^{-1}\right)}{FBW - IBW}$$



FCR – Feed Conversion ratio

A lower FCR indicates higher efficiency, meaning the animal gains more weight for each unit of feed consumed.



Factors that can affect fish performance:

Age

Oxygen

Stocking density

Temperature

Feed quality and composition

Fish health and welfare

Handling