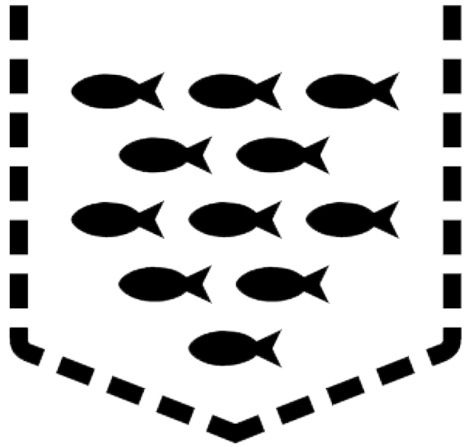
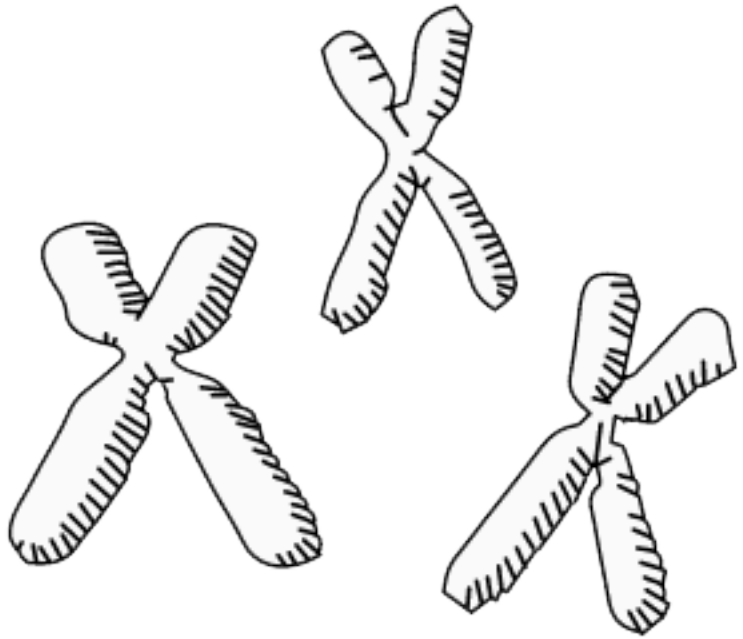
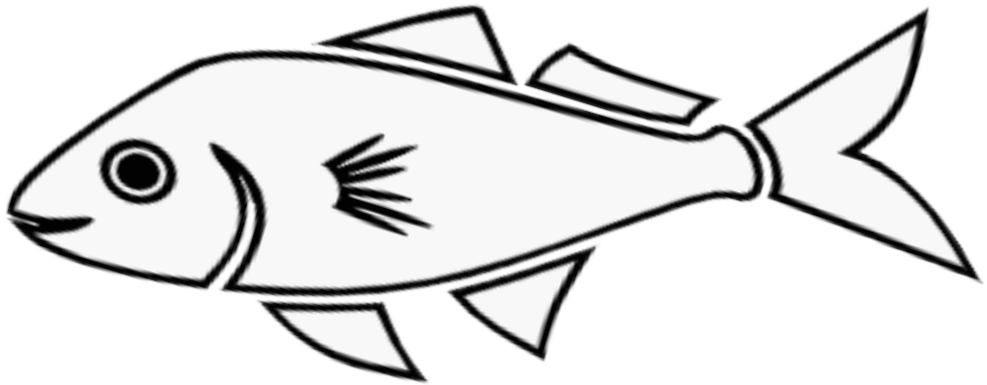


AQS 224 Fish Breeding

Dr. F. Sertel SEÇER





1. Week Domestication, Genetic Improvement Practices in Aquaculture

2. Week Selective breeding / production in seafood

3. Week Theoretical Foundations of Cultivation and Selection

4. Week Breeding Programs

5. Week Strategies for Breeding

6. Week Selection and Mating Design Methods

7. Week Estimation of Breeding Values

8. Week Genotype and Environment Interaction

9. Week Calculating the Selection Response

10. Week Side Effects in Fish Breeding Practices

11. Week Biotechnology in Fish Farming

12. Week Reproduction Techniques in Fish Breeding 1

13. Week Reproduction Techniques in Fish Breeding 2

14. Week Economic Evaluation of Fish Farming

2. Week

Selective breeding / production in seafood

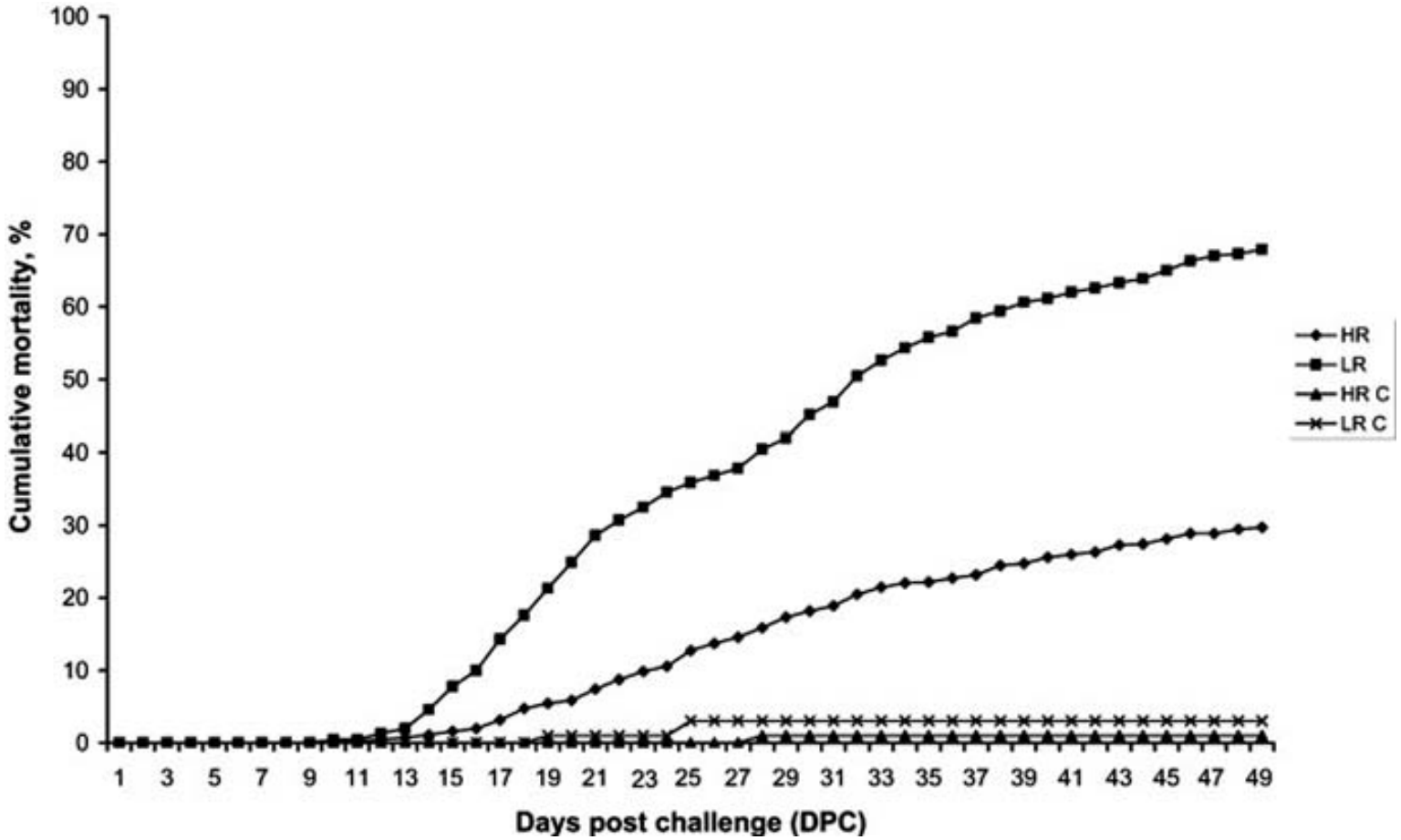
- Trout
- Tilapia
- Carp
- Catfish
- Sea Bream
- Shrimp
- Genetic Improvement in Aquatic Species Compared to Terrestrial Livestock Species

Table 3.1 Genetic gain in Atlantic salmon over five generations of selection (Thodesen et al. 1999)

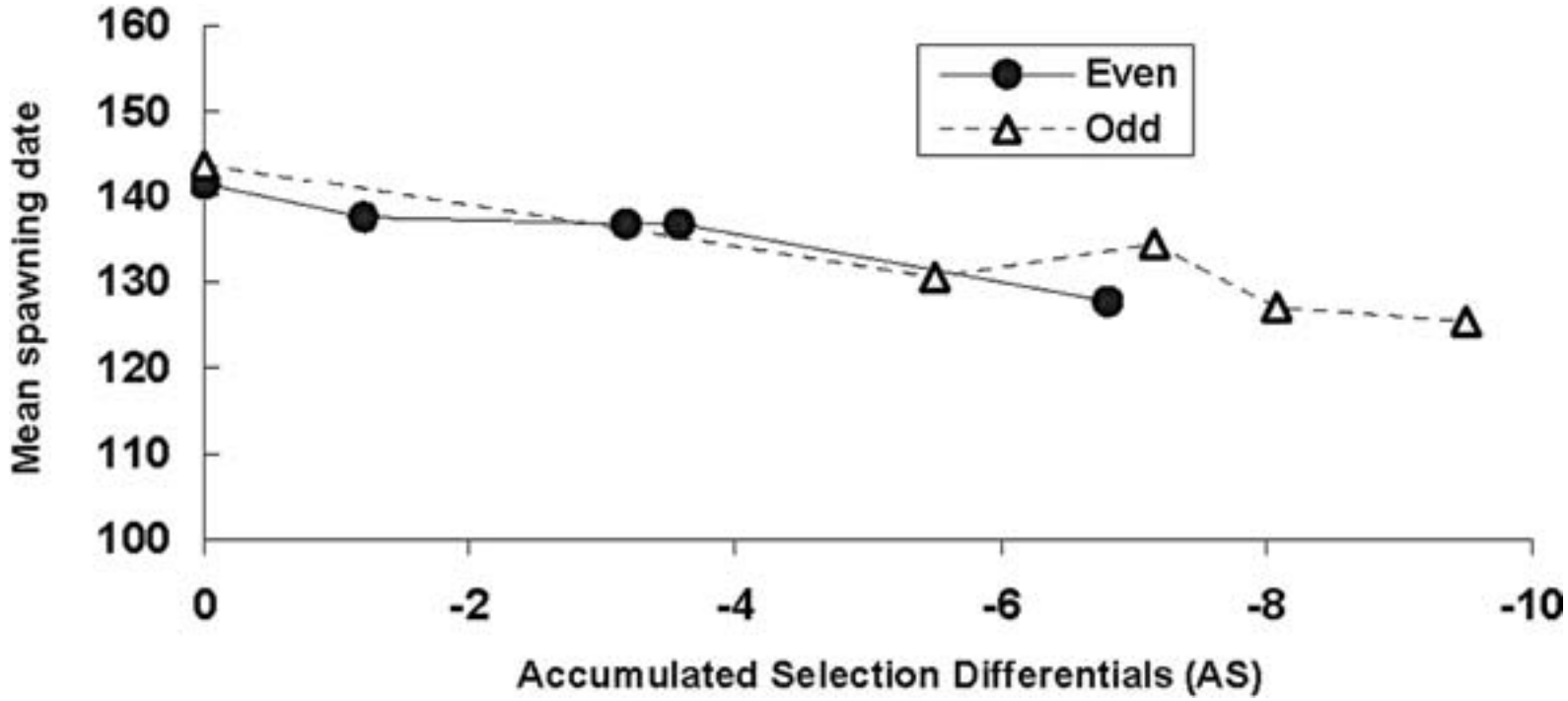
Trait	Improvement in selected over wild (%)
Growth rate	+113
Feed consumption	+40
Protein retention	+9
Energy retention	+14
FCR[1]	–20

[1]Feed conversion ratio or kg feed per kg body weight produced.

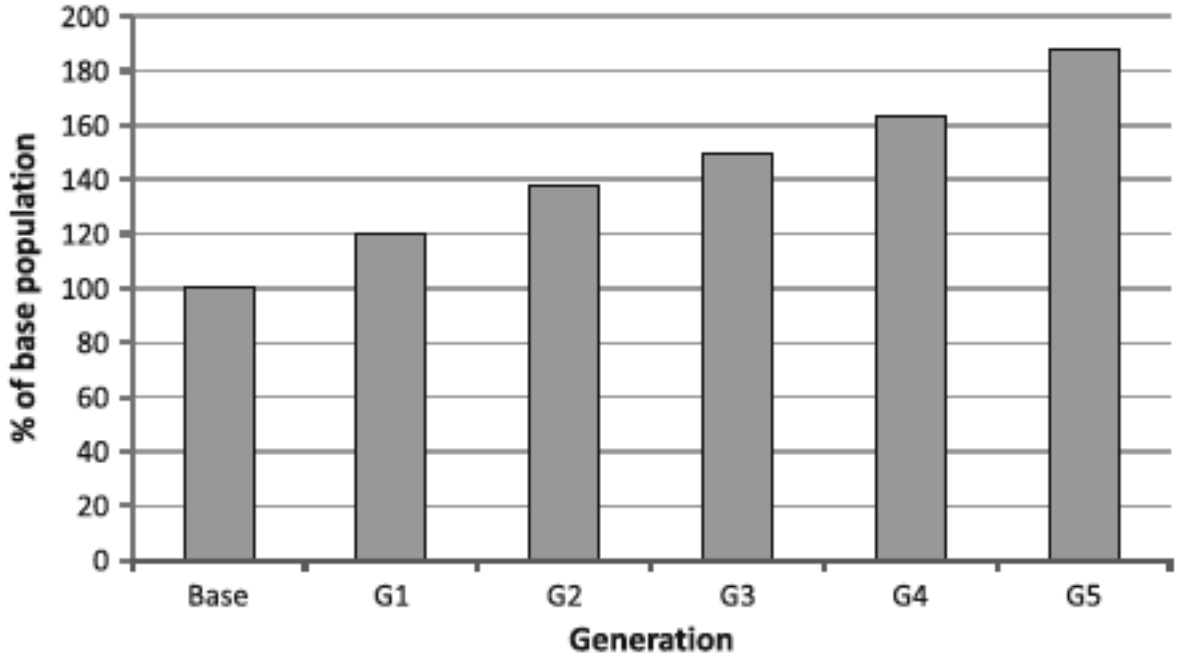
Gjedrem, T., & Baranski, M. (2010)



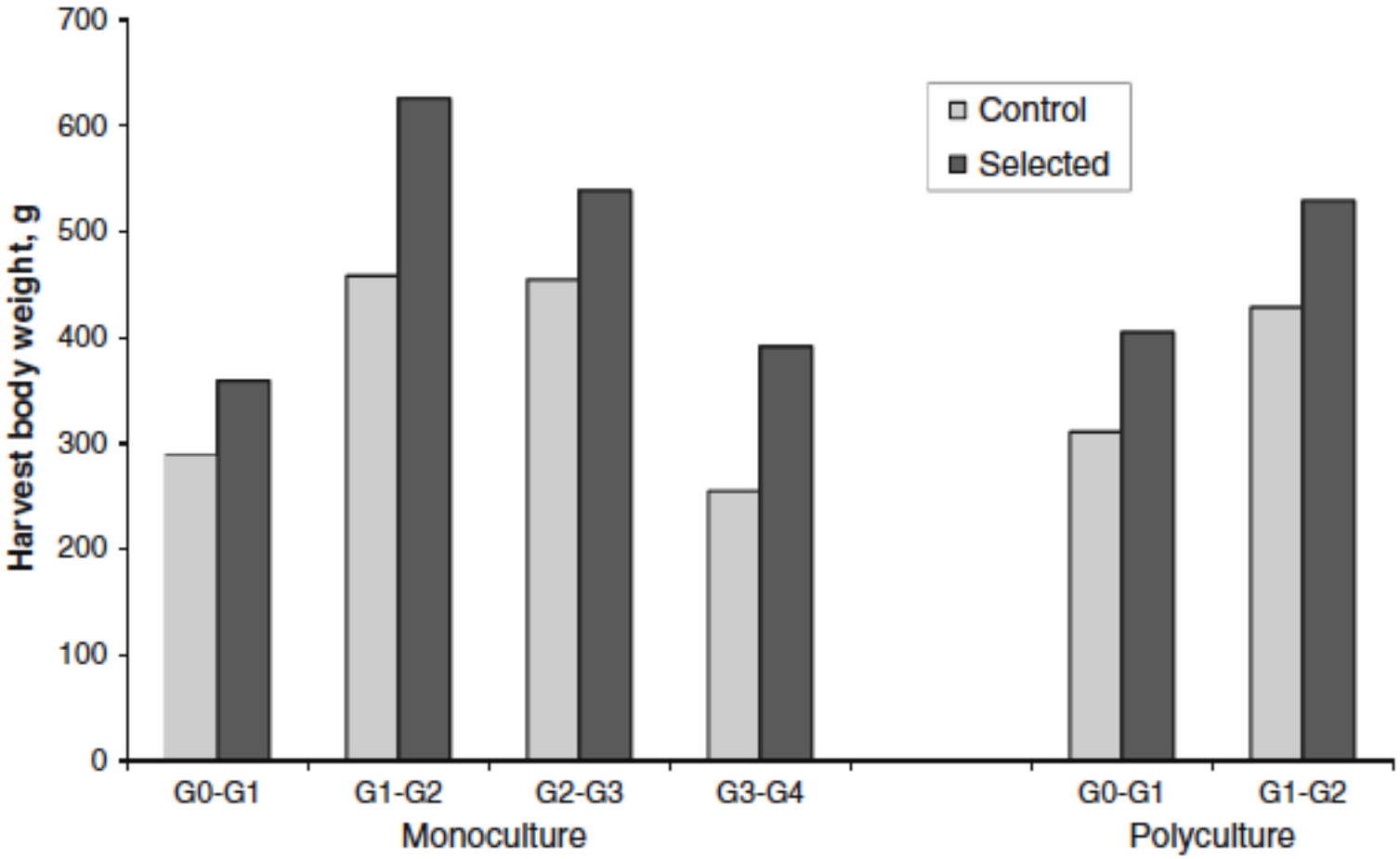
Gjedrem, T., & Baranski, M. (2010)



Gjedrem, T., & Baranski, M. (2010)



Gjedrem, T., & Baranski, M. (2010)



Gjedrem, T., & Baranski, M. (2010)

Table 3.2 Body weight averages and coefficients of variation (CV) in different farmed species

Species	Body weight	CV[1]	Reference
Atlantic salmon, kg	6.61	19	Rye and Refstie (1995)
Rainbow trout, kg,	3.41	21	Gjerde and Schaffer (1989)
Rohu carp, kg	0.30	31	Gjerde (pers. comm.)
Shrimp, *P. vannamei*, g	20.3	20	Gitterle et al. 2005
Broiler, kg	1.51	8	Rensmoen (pers. comm.)
Pigs, age at 100 kg	151	10	Sehested (pers. comm.)
Cattle, bulls, kg	440	7	Steine (pers. comm.)

[1]Coefficient of variation (CV) = (standard deviation/body weight) × 100.

Gjedrem, T., & Baranski, M. (2010)

- As productivity increases, more meat is produced per kilogram of feed, litre of water and unit of land area, meeting the increasing demands of growing populations.

Gjedrem, T., & Baranski, M. (2010)

Reference

- Gjedrem, T., & Baranski, M. (2010). *Selective breeding in aquaculture: an introduction* (Vol. 10). Springer Science & Business Media.