

UNIVERSIDADE FEDERAL RURAL DE PERNAMBUCO

Departamento de Pesca e Aqüicultura
Programa de Pós-Graduação em Recursos Pesqueiros e
Aqüicultura – PPG/RPAq

PROGRAMA DA DISCIPLINA

Disciplina: Fish sclerochronology and its applications (in English)	Código:
Área: Recursos Pesqueiros	Crédito:
PROFESSORES: Jacques PANFILI (IRD)	Carga Horária: 15 h
	PERÍODO: segundo semestre

OBJETIVOS:

"Sclerochronology" is the discipline that studies the calcified parts of animals to reconstruct their individual history, and therefore know their age, growth, behavior, and even to manage their populations. For fishes, scales, vertebrae, fin rays, and especially otoliths (literally "ear stones") are the parts that allow revealing life history traits. Through examples taken from different species of fish and in different ecosystems, the course will delve into the intricacies of deciphering the black boxes made up of calcified parts, and especially otoliths, unique concretions in the living world. In addition to age and growth, otoliths, through their shape and chemistry, also allow the study of ichthyological faunas, the reconstruction of the communities or environments crossed by individuals and their diet.

EMENTA:

The course (15h) is built on an alternation of theoretical information (images and videos), and practical works. All the calcified parts of the fish will be presented and discussed, and then a practical session will allow their extraction and interpretation. Applications will be given on age and growth estimations, based on direct applications from published scientific works. The use of the shape of otoliths will have a session with practical works. Finally, the microchemistry of otoliths, and their use to reconstruct diets will be based on theoretical approaches and examples given in different aquatic environments.

CONTEÚDO PROGRAMÁTICO

= 2.5 days / 15h

Day 1

1. Sclerochronology: calcified parts and observation methods(6h)
 - Theory (3h morning)
 - Practical work (3h afternoon)

Day 2

2. Sclerochronology: applications(3h morning)
3. Otolith shape and its use(3h afternoon)
 - Theory
 - Practical work

Day 3

4. Otolith microchemistry and its applications(3h morning)

BIBLIOGRAFIA INDICADA:

- Campana, S. E. (1999). Chemistry and composition of fish otoliths: pathways, mechanisms and applications. Marine Ecology Progress Series 188, 263-297.
- Campana, S. E. & Thorrold, S. R. (2001). Otoliths, increments, and elements: keys to a comprehensive understanding of fish populations? Canadian Journal of Fisheries and Aquatic Sciences 58, 30-38.
- Panfili, J., de Pontual, H., Troadec, H. & Wright, P. J. (2002). Manual of Fish Sclerochronology. Brest, France: Ifremer-Ird Editions.
- Reis-Santos, P., Gillanders, B. M., Sturrock, A. M., Izzo, C., Oxman, D. S., Lueders-Dumont, J. A., Hüseyin, K., Tanner, S. E., Rogers, T., et al. (2023). Reading the biomineralized book of life: expanding otolith biogeochemical research and applications for fisheries and ecosystem-based management. Reviews in Fish Biology and Fisheries 33, 411-449.
- Sirot, C., Grønkjær, P., Pedersen, J. B., Panfili, J., Zetina-Rejon, M., Tripp-Valdez, A., Ramos-Miranda, J., Flores-Hernandez, D., Sosa-Lopez, A. & Darnaude, A. M. (2017). Using otolith organic matter to detect diet shifts in *Bardiella chrysoura*, during a period of environmental changes. Marine Ecology Progress Series 575, 137-152.
- Thomas, O. R. B. & Swearer, S. E. (2019). Otolith Biochemistry—A Review. Reviews in Fisheries Science & Aquaculture 27, 458-489.

SEMESTRE: Segundo _____ ANO: 2025
PROF.: Jacques PANFILI (IRD, France)
COORDENADOR: _____