

UNIVERSIDAD DE LA FRONTERA

Facultad de Ingeniería y Ciencias

Doctorado en Ciencias de Recursos Naturales



**TROPHIC RELATIONSHIPS BETWEEN BENTHIC
FAUNA AND EARLY SALMONID STAGES ON THE
ALLIPEN RIVER ECOSYSTEM, TOLTEN BASIN, LA
ARAUCANÍA REGION, CHILE.**

**DOCTORAL THESIS IN FULFILLMENT OF
THE REQUIREMENTS FOR THE
DEGREE DOCTOR OF SCIENCES IN
NATURAL
RESOURCES**

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“TROPIC RELATIONSHIPS BETWEEN BENTHIC FAUNA AND EARLY SALMONID STAGES ON THE ALLIPEN RIVER, TOLTEN BASIN, LA ARAUCANÍA REGION, CHILE.”

Esta tesis fue realizada bajo la supervisión del Dr. Jorge Farías Avendaño perteneciente al Departamento de Ingeniería Química, Facultad de Ingeniería y Ciencias de la Universidad de La Frontera.

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Thesis summary

"The identification of species' feeding habits is crucial for understanding their life cycles and developments. In the Allipen River, the species *Oncorhynchus mykiss* (rainbow trout) exhibits higher predation on native fauna, particularly macroinvertebrates like Gripopterygiidae, Baetidae, and Hydropsichidae from the orders Plecoptera, Ephemeroptera, and Trichoptera, respectively. This study reveals, for the first time, the presence of juvenile stages of *Oncorhynchus tshawytscha* (Chinook salmon) in the Allipen River basin, along with a unique fish community composed of nine species, six native and three introduced/exotic. The macroinvertebrate community includes around fifteen families from various orders. Importantly, diet analysis reveals unexpected piscivory and highlights the value of microsatellite loci in identifying Chinook salmon populations, aiding their management in the river. These microsatellite markers are expected to have broad utility due to their efficiency, cost-effectiveness, and superior performance compared to other DNA-based methods."