

**BENEFICIARY:** BORD IASCAIGH MHARA  
**PROJECT REFERENCE NUMBER:** 19/KGS/STS010.1  
**NAME OF PROJECT:** RAMPS  
**IMPLEMENTATION PERIOD:** 1<sup>st</sup> JANUARY -31<sup>st</sup> DECEMBER 2019

### Project Scope

Recirculating Aquaculture Multi-trophic Pond systems (RAMPS) is an innovative project aimed at expanding Ireland's freshwater aquaculture sector. As aquaculture faces increasing pressure from a legislative and licensing point of view, innovative new methods of culture are required to address these constraints. The RAMPS project seeks to explore the potential for developing multi trophic freshwater systems on marginalised agricultural land and cutaway peatlands. Using algae and duckweed to treat fish waste and recirculating water in pond systems thereby reducing discharges and abstraction.

The aquaculture sector in Ireland faces increasing pressures as it seeks to develop sustainably. Environmental legislation has limited expansion in recent years and curtailed development. The RAMPS project seeks to aid significant expansion in areas which hitherto have been excluded from aquaculture development as they were seen as unsuitable for traditional production techniques. The majority of Irish freshwater farms producing salmon and trout have been based on river systems, abstracting water, utilising it and discharging back into the system, in many cases with minimal treatment. The RAMPS project seeks to modify traditional flow through systems by developing multi trophic units which recirculate water and utilise naturally occurring duckweed and algae to remediate wastes. An ancillary benefit of such systems is that they have the potential to not only develop as circular economy projects but produce commercially viable protein which can be abstracted from the algae and duckweed.

### Objectives

Ireland's freshwater sector is restricted from expansion due to lack of suitable sites and competitiveness aligned with high production costs. The utilisation of non agricultural lands for food production is a key aim of the European Union as it seeks to reduce the trade deficit in fish products. The project seeks to prove the viability of using RAMPS systems on cutaway peatlands. Some 80,000 HA of cutaway peatland will come out of commercial peat production over the next 10 years. The project offers an opportunity to significantly increase the scale of Ireland's freshwater sector and aid aquaculture development in rural inland areas using sustainable multi trophic systems.

Specifically the project focused on:

- Continued development of RAMP system
- Development of in pond grading system
- Trial to develop intermediary nursery system

- Improved Production of out of season juveniles
- Development of autogenous vaccine trials for Aeromonas
- Supply of niche organic product
- Development of sustainable IMTA system delivering both fish and plant products.
- Continued development of domesticated broodstock programme

### **Budget**

Maximum approved expenditure on the project totaled €230,000.

### **Achievements / Spend**

The RAMPS system is now operational at two sites in Ireland, Keywater Fisheries Ltd in Co. Sligo and Mount Lucas Fish Farm in Co. Offaly. Domesticated and vaccinated perch from Keywater have been transferred to the Mount Lucas facility and key parameters tracked including growth & survival. In tandem Rainbow trout have also been stocked in the Mount Lucas system and performance in 2019 exceeded expectations. Current obstacles to full commercialization of these systems include algal and cyanobacteria control and work in future will concentrate on these elements: The project garnered international attention and featured on RTE News and TG4.

### **Milestones achieved in 2019:**

- Rainbow Trout & perch grown together in the systems
- Duckweed cultivated and dried
- Perch produced out of season and stocked in systems
- Aeromonas vaccine tested
- Intermediary nursery system tested
- Mesocosm production of perch juveniles trialed and tested
- First production of fish on Irish Peatlands
- In pond grading and cage system trialed
- F8 broodstock developed and successfully spawned

### **Challenges for commercialisation:**

- Adequate control of algal levels
- Reduction of BOD
- Improvement of growth

<b>Total Approved</b>	
<b>Total Eligible Expenditure</b>	€230,000.00
<b>Total Drawdown</b>	€228,368.08
<b>EU – 50%</b>	€114,184.04
<b>Exchequer – 50%</b>	€114,184.04

Report: Damien Toner

Date: May 2020

