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## SHELLFISHERS/FARMERS LOCAL ECOLOGICAL KNOWLEDGE(LEK) ON LOW TROPHIC AQUACULTURE PROMOTE THE CONSERVATION OF THE CRITICALLY ENDANGERED *PINNA NOBILIS* (PinnaSOS project)

I.E. Tsamadias<sup>1</sup>, D. Rizou<sup>2</sup>, D. Rizos<sup>3</sup>, A. Lattos<sup>4</sup>, I.A. Giantsis<sup>5</sup>, E. Spinos<sup>6</sup>, M. Douni<sup>7</sup>, A. Ramfos<sup>8</sup>, O. Anagnopoulos<sup>9</sup>, N. Bourdaniotis<sup>9</sup>, B. Michaelidis<sup>4</sup> and J.A. Theodorou<sup>7\*</sup>

<sup>1</sup> Directorate of Agricultural Economy, Region of Central Greece, Lamia, 35100, Greece

<sup>2</sup> Philosofish SA, Agios Serafeim, 35009, Greece

<sup>3</sup> Directorate of Agricultural Economy & Veterinary, Region of Central Greece, Lamia, 35100, Greece

<sup>4</sup> Laboratory of Animal Physiology, Department of Biology, School of Biology, Aristotle University of Thessaloniki, Thessaloniki, 54124, Greece

<sup>5</sup> Department of Animal Science, University of Western Macedonia, Florina, 53100, Greece

<sup>6</sup> Directorate of Agricultural Economy, Region of Western Greece, Patras, 26443, Greece

<sup>7</sup> Department of Fisheries & Aquaculture, University of Patras, Mesolongi, 30200, Greece

<sup>8</sup> Department of Biology, University of Patras, 26504 Rio, Greece

<sup>9</sup> APC Advanced Planning - Consulting S.A, 14 Solonos St, Athens, GR 10673, Greece

\* E-mail: jtheo@upatras.gr

### Introduction

The exploitation of aquatic, living resources, in particular mussels, provides work and income to mussel fishermen and farmers, societal cohesion in fishery-sector dependent communities and low cost, valuable protein-rich intake to consumers. Provided that mussel fishery and aquaculture are sustainably practiced, production, financial and ecosystem services are fully met.

Within the context of the EU and Greece co-funded research project (MIS 5052394) PinnaSOS ([www.PinnaSOS.upatras.gr](http://www.PinnaSOS.upatras.gr)) about enhancement of natural recruitment of fan mussel (*Pinna nobilis*), certain preliminary actions took place. Namely, experimental transplantation, extensive sampling, monitoring of any living specimens and artificial breeding of the critically endangered, according to IUCN, bivalve species were conducted by a conventionally staffed research team along with a vastly experienced group of mollusk fishermen and farmers.

This study shows that the ‘participatory’ approach used in PinnaSOS, presents a way forward to involve and mobilize local stakeholders, increases the sampling efficiency while in parallel promotes credibility and acceptance by society and funding agencies.

### Methods

During the transplantation / translocation phase shell-fishers and mussel farmers made available their vessels and technical expertise. Divers, mostly shell-fishers/farmers, removed the selected specimens and farmers’ vessels made the transportation from one place to another. As it was vital that the byssus thread of the fan mussel remain as much as possible intact, shellfish-divers went through this with remarkable success. Though strange it may sound, they were partly “co-writers” of the research protocol, and they had significant contribution to the selection of sites, being aware of local physical and meteorological conditions (depth, waving, windy regime). On the other hand, it was a mussel farmer who received the transplanted specimens next to his production unit by ensuring no anchoring or stealing could occur and therefore, bias the results.

Second, during the sampling and monitoring phase, fishermen gave continuous information about the current population existence due to their daily employment. Fishermen tend to make the optimum, both in terms of time and space, sampling, as they leave no sampleable area, unfished. Moreover, the dissemination of knowledge about biota, substrate and vegetation was imminent. In addition to this, farmers gave information and space about the potential settlement of fan mussels on or near their marine infrastructures (ropes, boats, production units, etc). Mussel farmers took part in the manufacture of spat collectors and their expertise was of great help. Finally, a significant endowment to the project was the provision of aquaculture equipment and the day-to-day monitoring of artificially manipulated specimens in situ, as well as a problem-solving approach due to the “adoption” of the project.

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### Results and Discussion

Davis & Wagner (2003) emphasized the need for researchers, when using local experts to gain from LEK, to describe, even briefly the selection criteria. In this case, we ranked our experts based (in descending order) on a) experience, b) willingness to collaborate, c) peer influence and d) (quality and safety of) equipment used. The corresponding criteria for farmers were a) willingness to collaborate, b) size of vessel, c) size of production unit and d) farmed species. Using a wider public to crowdsource data is an emerging technique that still needs elaboration. Choosing who to be your “partner” may substantially affect the project’s outcomes and the transparency and repeatability of results (Drescher *et al*, 2013).

Even though, that the above-mentioned project is not purely a conservation action, but more of a project trying to solve or mitigate a problem (the mass extinction of fan mussel), proposing possible etiological causes of the incurred disease and to a lesser extent conceptualizing conservation actions and fishery management plans, the framework (participatory process) argued by Buchs *et al*, 2021) was partly applied. Nonscientific knowledge has the potential to improve understanding of ecosystems and may act complementary with science (Hernandez *et al*, 2014; Theodorou *et al*, 2022).

### Conclusions

To conclude, nowadays, it seems that issues of research staffing is not only how to build a multi-disciplined team with inter-institutional attributes, committed to work for and achieve the common goal. It is also to engage local experts who can decisively contribute with ecological knowledge and technical expertise.

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