Science, Technology, Research and Innovation for Development (STRIDE)

Protocol Development for the Culture of Two High Value Marine Finfi sh Species as a Livelihood Opportunity for the People of Palawan

GRANTEE: Western Philippine University (WPU)

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A sustainable method of fishing

The increasing number of professional fishing crews and the strong demand for fish led to the proliferation of unsustainable fishing practices, such as use of cyanide, overfishing, and retention of undersized fish. The increasing practice of retaining undersized groupers for grow-out purposes results in fewer groupers reaching maturity, which decreases the opportunity for reproduction and multiplication. Illegal fishing practices, on the other hand destroy coral reefs, the natural habitat of marine species. Failure to provide immediate and lasting solutions to these practices will eventually lead to the precipitous decline and depletion of marine resources contributing to the existing problem of food security. In Palawan, for instance, professional fishing crews often employ cyanide poisoning to catch groupers and other high-value demersal fishes due to insatiable market demand.

The research team explains how Grouper fingerlings (70-day old) are raised in a simple basin nursery

Realizing the adverse impact of the destruction of marine life, the College of Fisheries and Aquatic Sciences of WPU, with support from USAID STRIDE and in collaboration with the Centre for Sustainability, initiated the development of aquaculture protocol and the enforcement of environmental regulations to put an end to overfishing and ensure coral reef preservation, benefitting both the marginalized fishing crews and visitors or tourists frequenting Palawan. The protocol is aimed to optimize production of two finfish species, tiger groupers (*Epinephelus fuscoguttatus*) and orange-spotted rabbitfish (*Siganus guttatus*), known to have high aquaculture potential. Hatchery expansion for these finfish species with other high-value marine species decreases the pressure on Palawan's marine ecosystems.

Findings

The significant outcomes are enumerated as follows:

- Development of a protocol based on scientific outcomes/experiments as indicated:
  - Use of elevated temperature can increase hatching rates of grouper eggs;
  - Grouper survival rate is inversely proportional to density: highest survival (6.86%) occurs with lowest density, and lowest survival (1.33%) occurs with highest density);
  - Hatchery-produced tiger grouper can be raised in higher stocking densities in plastic basins without affecting growth and survival;
  - Survival rate increases from 91.67% to 99.78% for finfish with sizes 6.69 to7.47 cm fed with commercial feeds A and B, however feed A is highly recommended for bigger finfish;
  - Rabbitfish larvae can be raised in higher stocking densities in concrete tanks without affecting their survival;
  - Proper feeding of hatchery-produced rabbitfish can be increased during the nursery stage at higher stocking densities without affecting growth and survival; and
  - Commercial feeds for groupers could be used as effective feeds in nursery rearing of *siganid*.
- Better livelihood opportunities for rural fishing crews due to the increase in the availability of hatchery-bred fingerlings of different species; and
- Mitigation of price fluctuations due to increased grow-out production and diversification.

The learning experience of the research team was maximized by ensuring attendance and active participation in regular meetings and constant sharing of ideas and findings. A number of students from WPU were selected for on-the-job training at the project facility, where they assisted and participated in the research. Field trips were organized for WPU students to increase their understanding and appreciation of aquaculture and broaden their perspective about environmental preservation.

Engaging the communities in the research provided opportunities for growth and development, but most importantly it provided them better understanding of their responsibility for the preservation of the marine ecosystem or the environment as a whole.

STRIDE and research team visit the finfish nursery