

SPECIAL REPORT

Development of aquaculture techniques for new aquatic species

SEAFDEC/AQD



Towards the creation of new aquaculture industries, SEAFDEC/AQD and the Government of Japan-Trust Fund (GOJ-TF) have been researching the potential of new aquaculture species since 2020. The candidate species are shortfin scad *Decapterus macrosoma*, kawakawa *Euthynnus affinis*, and slipper lobster *Thenus orientalis*.

The biological characteristics of the species are being investigated, and the development of rearing techniques are underway, as part of the GOJ-TF project “Development of aquaculture techniques on new aquatic species for promotion and creation of local aquaculture industry.” The project duration is from 2020 to 2024. Studies initially focus on their reproductive biology, and the collection and transport of wild breeders. Research will also deal on development of techniques for broodstock management and larviculture.

Shortfin scad

The shortfin scad is a staple fish in the Philippine and a major source of affordable protein for lower income groups. However, supply is wholly dependent on wild catch that has dwindled in recent years, leading prices to soar to as much as US\$ 6 per kilogram.

In 2020, the research began with collecting breeders off the coasts of southern Iloilo and Antique in the Philippines. After multiple efforts to collect shortfin scad breeders, SEAFDEC/AQD finally documented the spawning of the fish.

The breeders captured in August and October 2021 laid eggs in December 2021 and continued to produce good eggs until February, and again in May 2022. It was the first time in the world that the fish was documented to have spawned in captivity, marking a critical milestone towards farming the fish.



Some of the world's first captive-bred galunggong 48 days after hatching at the SEAFDEC/AQD in Tigbauan, Iloilo.

Initially, the fish were observed to grow very fast, especially when they reach 20 days old, and can reach 2.5 cm in length in 25 days. Survival rates varied but reached as much as 20% 25 days after hatching.

Further broodstock collections were done in 2022 to replicate the earlier spawning successes. New collection and transport methods achieved up to a zero-percent mortality rate. AQD hopefully aims to produce more juveniles that can then be grown in sea cages to begin research in the grow-out of the shortfin scad.

Kawakawa

Kawakawa is a neritic tuna that is valued by commercial and small-scale fishers as a substitute for oceanic tunas. Its relatively smaller size and fast growth makes it an attractive target for aquaculture. While breeding technology for the species has already been developed in Japan, AQD is aiming to adapt the techniques in the Southeast Asian setting.

Regular sampling of kawakawa has been done since 2020 in Antique province and continues to be done. Samples were collected from otoshi-ami, ring net, purse seine, and hook and line methods. They are dissected to better understand their reproductive biology and feeding habit.

Success in collection and transport of kawakawa has been achieved. Live samples were successfully brought to the Tigbauan Main Station in 2022 and broodstock management protocols for the species is currently being developed. However, protocols for handling the fish in captivity still need to be refined.



Wild kawakawa matured in captivity at AQD by the third quarter of 2022.

Slipper Lobster

The slipper lobster is considered to be a more affordable alternative to the more commonly traded spiny lobster. In the

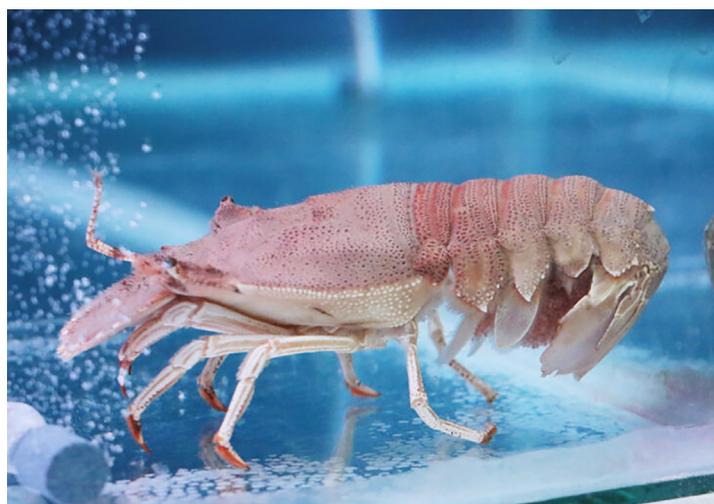
Philippines, they are expected to gain popularity as a local delicacy, especially because of their consistent meat yield and quality. Their meat also readily separates from the shell, making cooking and eating easier.

While most focus on developing techniques for the culture of spiny lobsters, AQD aims to promote the slipper lobster as a more practical species for culture. Slipper lobsters have only four larval stages that lasts a total of 30 days, compared to the 11 larval stages or up to 300 days for spiny lobsters. Thus, the culture period for slipper lobsters is shorter at 14 to 16 months, while spiny lobsters take 22 to 24 months.

AQD has been gathering slipper lobster breeders in Negros Occidental province since 2021. They are then packed for waterless transport to AQD facilities in Tigbauan, Iloilo where their feeding behavior and egg development is observed.

The first hatching of slipper lobsters took place in September 2021 from egg-bearing specimens that were brought to the AQD hatchery. A slipper lobster fanned out thousands of eggs with its pleopods to facilitate the hatching of phyllosoma larvae. A subsequent hatching was video-documented by AQD in October of the same year to better understand its hatching behavior.

Meanwhile, slipper lobster breeders continue to be retrieved, transported, and allowed to hatch at AQD's hatchery in Tigbauan, Iloilo. The best way to grow the phyllosoma larvae is now being studied, including the optimal holding tank design to keep the larvae from sinking to the bottom. Also being studied are water quality maintenance, water agitation methods, and proper food and feeding systems. AQD aims to grow the larvae to juvenile size so they can then be grown in nurseries and grow-out cages. ❖



Slipper lobster, one of the lobster species traded in the Philippines that is now the subject of studies at SEAFDEC/AQD in Tigbauan, Iloilo.