

1. SEA CUCUMBER ACTIVITIES

1.1 HARVEST & PROCESS FROM FARM

For the first time, the Vast Ocean carried out their very first harvesting of farmed sea cucumber from their farm cages, working closely with the aquaculture section. This activity was carried out after the HTHH volcanic eruption and tsunami, which caused damages and disruption to the farms and cages. However, this is an important milestone to commemorate because it is for the first time. successfully cultured sea cucumbers are being harvested and processed despite the challenges of natural disasters. With the intention of restocking back wild stock into the ocean, there is a very high hope that this would be the first of a successful continuation of sea cucumber farming expansion, increase abundance in the wild and harvesting. Shown below are the data/numbers recorded during and after the first harvest and process:

- Total harvested 28,843 pcs
- Total sample export 125.8kg/13,335 pcs of dry product
 - Australia 5kg/350 pcs
 - Hong Kong 120kg/12,985 pcs
- Total in-stock (VO) 100.5kg/12,365 pcs

1.2 MONITORING & FARM ACTIVITY

Continuation of monitoring sea cucumbers at SMA farm is an ongoing activity with measurements taken monthly to monitor their growth & survival rate. A total of 6 community SMA farm set up that are closely monitored (4 in Tongatapu and 2 in Vava'u) All data are recorded and analyzed at the aquaculture section, and report to the Ministry of Fisheries

The team also managed to stock a total of 2,000 juvenile sea cucumbers to the Pangaimotu cage farm and is monitored accordingly

2. PEARL FARM ACTIVITIES

2.1 DEPLOYMENT OF MAIN LINE

Expansion of Mabé Pearl farm includes deploying of Pearl main lines for farmers who have obtained





license and have met all requirements to establish a farm. The team managed to deploy a total of 3 Pearl main lines in Tongatapu. 2 pearl lines for the Sopu community, 1 for the Sopu youth association and 1 for the Sopu fisheries association. The team also managed to assist pearl farmers by deploying a new line in Pangaimotu for pearl farmer Pangia, after his line was badly damaged by the HTHH tsunami.

2.2 MABÉ PEARL TRAINING

The Head of Aquaculture Section, Mr. Martin Finau with 5 staff travelled to Ha'apai to conduct training, capacity building and deliver extension services to Pearl Farmers. The purpose was to support the aquaculture development together with the development of the Pearl Industry by;

- i. Training of new farmers on farming practices and management
 - Maintenance and fixing of lines damaged by the tsunami
- ii. Improve & enhance skills of the Ha'apai Pearl Association on seeding
- iii. Deployment of spat collector
- iv. Capacity building for the Ministry of Fisheries Ha'apai staff on pearl farming and aquaculture activities

The trip was after the HTHH natural disaster with the intention of reviving farms that were affected by the tsunami. The trip was successfully held for 2 weeks with activities carried out at the Fisheries main office in Pangai and also in the outer Island communities of Felemea, 'Uiha and Lofanga. The Ha'apai Pearl Farm Association received great support and help from the Ministry staff on both technical practices, advisory information and spat distribution. Training on how to make spat collectors was also conducted with the deployment of 1 spat collector at the Ministry line. Harvest from the spat collector would be distributed to the Ha'apai pearl farmers.

Table below are the pearl farmers with numbers of seeded oysters during training.





Farm	Names	Number	Number	
Location		of	of nuclei	
		oysters	seeded	
Pangai	Finau Molisi	62	3	
Felemea	Kaloni 'Aholelei	27	3	
Hihifo	Samiu Tonga'onevai	32	3	

A total of 200 oyster spats also transferred to Vava'u for distribution of spats to pearl farmers.

3. GIANT CLAM ACTIVITIES

3.1 MONITORING GIANT CLAM BROODSTOCK

Closely monitoring of giant clam broodstock at the Fangatapu SMA is ongoing with a total of 87 giant clam broodstock altogether. These 87 include; 47 *T.squamosa (matahele)*, 13 *T.maxima (Kukukuku)* and 27 *T.derasa (tokanoa)*. These are broodstocks for the SMA distribution. SMA consultation is also ongoing with the SMA section monitoring meetings, for discussion and processing of the new Ministry initiative giant clam distribution (15 from Fisheries & 20 from SMA)

3.2 GIANT CLAM SPAWNING

Part of contributing to aquaculture development, the aquaculture section is responsible for spawning of its aquaculture commodities. The team were able to collect 24 giant clam broodstock from Fangatapu SMA in preparation for spawning. 12 *T. maxima* and 12 *T. derasa*. On the 14th September the team managed to start the spawn inducing (thermal shock method) process in order to stimulate spawning. *T. maxima* successfully spawned after hours of repeating the thermal shock method at approx. 1500 – 1740hrs. Cleaning of eggs was immediately done before transferring to them to buckets/ bin for fertilization.

Fertilization process was left for 2 hours at most to occur with close monitoring of the development of the egg. Results showed 100% success rate of fertilization with approx. 4 million fertilized eggs.





However, *T. derasa* successfully spawned on the 29^{th} of September. Same process and steps were applied and done by the team for the *T. derasa* with approx. 9.8 million successfully fertilized eggs. When the process is complete and the fertilized eggs reach the trochophore larvae stage, they are then transferred to the tanks inside the hatchery.

Trochophore larvae are kept in the tanks for 48 hours, closely monitored under microscopic lenses. Once they develop and reach D-veliger larvae stage, they are then transferred outside to the raceway tanks. Straight after they are transferred, zooxanthellae are used for the first feeding of larvae. Continuation of feeding using yeast and 12AB antibiotic with all work involved recorded until settlement. Monitoring and feeding are continued by the team daily or when required.

4. POND FARM ACTIVITIES

4.1 FIN-FISH (MULLET & TILAPIA)

The aquaculture team also managed to construct and installed an additional cage at the fish pond for mullet fish and tilapia. Construction included excavating fish pond area for a proper water inlet and outlet system. Monitoring and feeding of the fish farm are ongoing carried out by the team daily. Again, the advantages of culturing fish in cages includes a much lesser labor intensive when harvest, and very efficient to monitor and feed.

Numbers below are stock density for mullet fingerlings stocked to pen & floating cages

Mullet Stocking Data				
Date	Pen cage #2	Floating Cage	Total	
29/07/22	29	29	58	
01/08/22	23	13	36	
02/08/22	106	60	166	
11/08/22	7	0	7	
12/08/22	206	50	256	
27/09/22	220		220	
Total	591	152	743	

4.2 SHRIMP FARM

Clearing of the shrimp pond farm was also carried out by the team in preparation for capturing and stocking more in to the farm.





Harvest & process sea cucumber from farm



Monitoring sea cucumber farm activities





Deployment Pearl Line









Giant Clam Spawning











Pond farm activities



Capturing mullet and tilapia



