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Quinitio, Gerald F.

Aquaculture Department, Southeast Asian Fisheries Development Center

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A comparison between the catching efficiency of two milkfish fry collecting gears and their respective modifications

G.F. Quinitio and G. Kawamura

The experiment was conducted along the shore (about 400 m from the nearest river mouth) of Culasi, Antique in Panay to compare the catching efficiency of the ordinary fry seine against its innovation and the ordinary sweeper against its two modifications.

Two improved sweepers and a fry seine were used. The innovated sweeper had exactly the same parts and dimensions as that of the ordinary sweeper (Fig. 1a) except that one had wings made of dark green colored coarse-meshed nylon netting, mesh size = 2.0 cm, (Fig. 1b) while the other had no wings (Fig. 1c). The innovated fry seine also had the same parts and dimensions of the ordinary seine (Fig. 1d) except for the two ends which were made of dark green colored coarse-meshed nylon netting that covers one-fourth of the net on both ends with the center part still made up of fine-meshed "sinamay" (Fig. 1e).

Each experimental gear was operated together with a control gear (ordinary type of the presently used gear) in the same ground and at the same time. The gears were pushed or dragged along a distance of about 100 m. A set of two fry sweepers or two fry seines were continuously operated for nine hours at daytime and four to five hours at night. Number of fry caught were counted every 30 minutes.

Results are summarized in Table 1. The correlation coefficients of catch between control and experimental gears are all statistically significant. This means that both gears probably caught the same group of fry and the adapted operation design was suitable for the purpose. As expected, milkfish fry can be caught by sweepers with coarse-meshed netting wings or without netting wings and also by the fry seine which has coarse-meshed netting at both ends. As demonstrated by Kawamura *et al.* (1980) a coarse-meshed netting could drive milkfish fry but the driving efficiency of the wings of a collecting gear might vary depending on the underwater visibility. When the water was turbid, the relative catch of the experimental sweepers, especially the one without netting wings, were very small compared with that of the control gear.

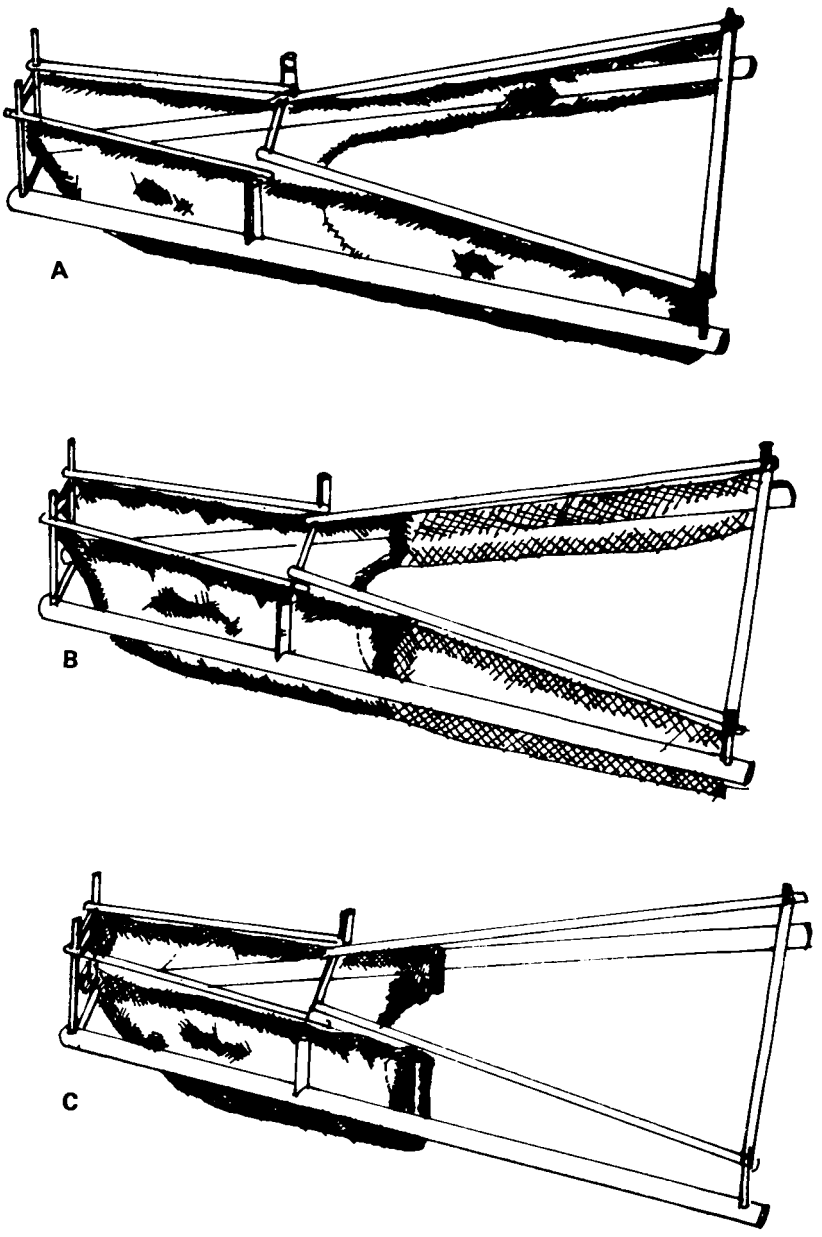

Figure 1. a-c Schematic diagram of the different gears used during the experiment: a) ordinary sweeper, b) sweeper with coarsed-meshed wings, c) sweeper without netting wings (not in scale).

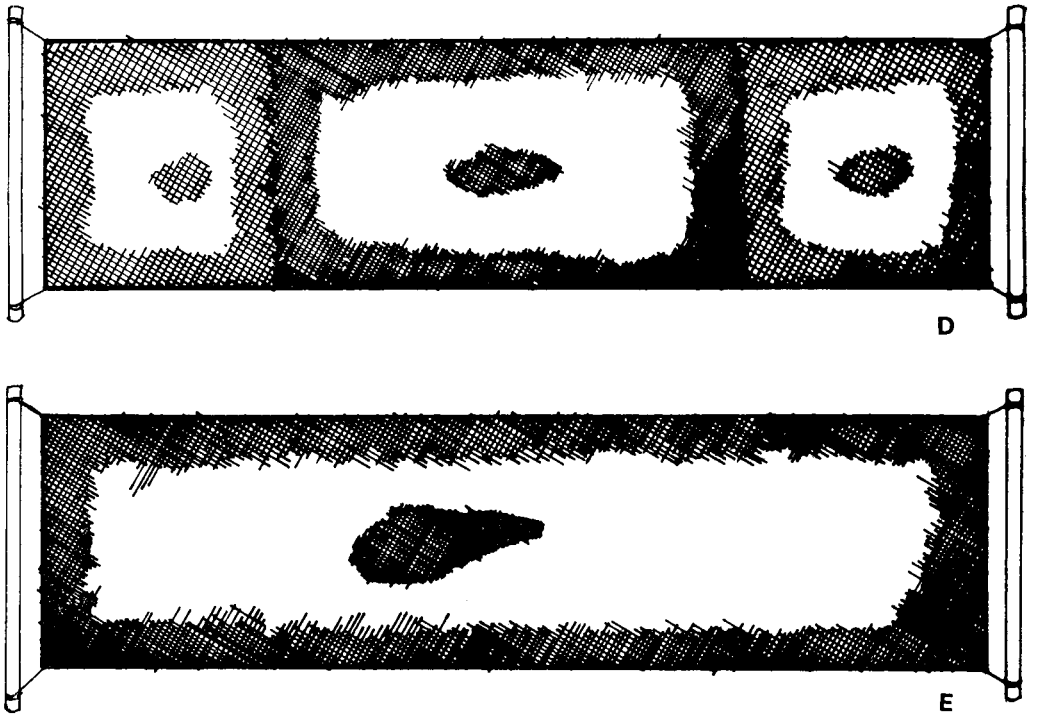

Figure 1. d-e Schematic diagram of the different gears used during the experiment: d) ordinary fry seine, and e) modified fry seine (not in scale).

In clear water the catch data obtained was different from that in turbid waters. The milkfish fry seem not to be distributed homogeneously in the shore so that if there were only a few groups of fry in a narrow area it would be very difficult to compare the collecting gears. The fry sweeper without netting wings caught fewer fry than the control. Probably this is because the vertical distribution of fry is not limited only on the surface and that the experimental gear with coarse-meshed wings and for the control in clear water were 64 and 80, respectively. The sweeper without netting wings and the control gave a sum of 170 and 269 respectively, indicating less catching efficiency for the experimental gear.

Results of night-time operations were different from those in daytime. This may be due to the difference in the vertical distribution of milkfish fry along the shore during day and night.

On the other hand, in clear water, the experimental fry seine had almost the same catch as that of the control. This suggests that both ends of the fry seine function as a driving device and not as a filter.

Based on the above results, it is possible to replace the wings of the presently used sweeper and the ends of the fry seine with a coarse-meshed netting as suggested earlier. Such improvement decreases the water resistance of the gears and will enable the fry gatherers to use larger ones thereby giving more catch.

Table 1. The number of milkfish fry captured by the control and experimental gears and the underwater visibility during the experimental period.

	Gear	Date Time	No. of fry	Correlation Coefficient	X^2	Underwater visibility of gear
Sweeper	Control Without netting wings	17 April 0730-1800 H	900 478	0.671**	129.23***	20-40 cm
	Control With coarse-meshed wings	18 April 0800-1800 H	222 174	0.958**	5.82**	
	Control Without netting wings	21 April 0800-1700 H	77 46	0.766**	7.81**	200 cm
	Control Without netting wings	2 May 0800-1700 H	192 124	0.888**	14.63***	
	Control With coarse-meshed wings	22 April 0830-1630 H	46 7	0.699**	28.70***	
	Control With coarse-meshed wings	1 May 0900-1700 H	34 57	0.553*	5.81**	
	Control Without netting wings	17 April 1830-2400 H	153 174	0.155	1.10	unknown
	Control With coarse-meshed wings	18 April 1830-0030 H	122 63	0.621	13.72***	
Fry seine	Control Experimental	19 April 0830-1640 H	285 314	0.879**	1.40	> 200 cm

*Significant at 5% level.

**Significant at 1% level.

***Significant at 0.1% level.

Literature cited:

Kawamura, G., S. Hara and T. Bagarinao. 1980. A fundamental study on the behavior of milkfish fry for improving the efficiency of the traditional collecting gears in the Philippines. Mem. Kagoshima Univ. Res. Cent. Pac. 1(1): 65-74.