

AQUACULTURE ILLUSTRATED

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LURES and WILD FISH FRY

THE PHILIPPINES RANKS AMONG THE WORLD'S LARGEST FISH PRODUCER. AQUACULTURE CONSTITUTES ABOUT 35% OF TOTAL FISH PRODUCTION MAINLY FROM SHRIMPS, SEAWEEDS, MILKFISH AND TILAPIA...



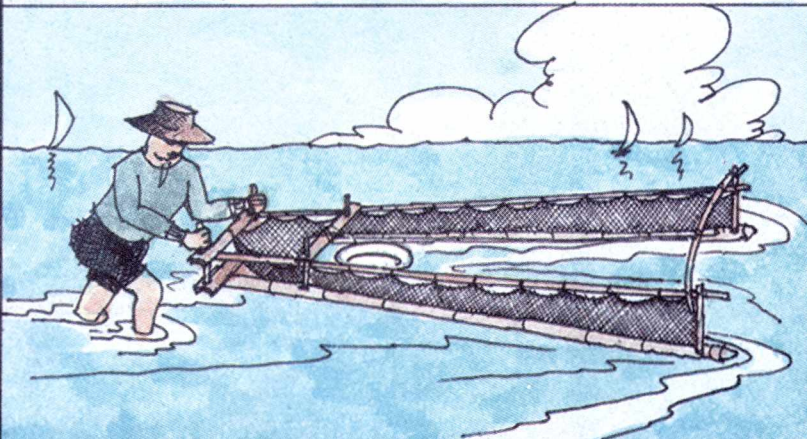
SHRIMP, TILAPIA, CARP, AND TO A CERTAIN EXTENT MILKFISH, HAVE WELL-DEVELOPED HATCHERY INDUSTRIES THAT PROVIDE FRY OR FINGERLINGS TO GROW-OUT POND, CAGE AND PEN OWNERS...



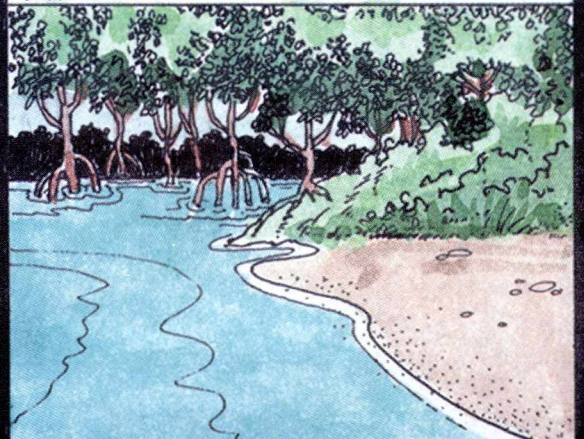
THE REST, PARTICULARLY OTHER FISH SPECIES, STILL DEPEND ON WILD-CAUGHT FRY WHOSE SUPPLY IS LIMITED AND SEASONAL



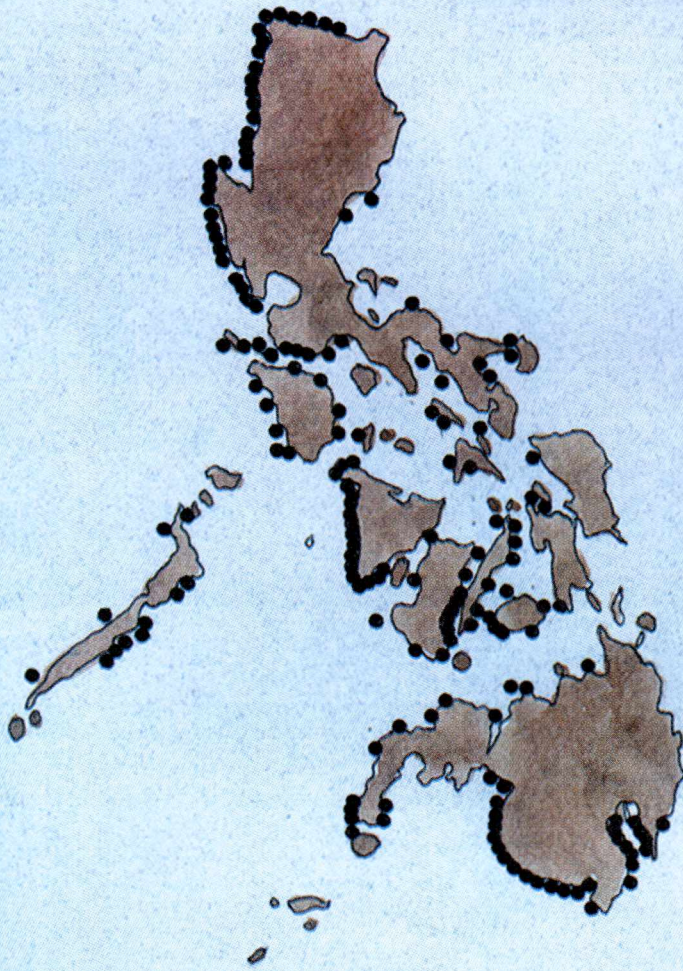
MILKFISH HAS A WELL-DEVELOPED GROW-OUT INDUSTRY, BUT AS OF 1998, ONLY ONE COMMERCIAL HATCHERY IS ON RECORD. THE INDUSTRY STILL DEPENDS ON WILD-CAUGHT FRY.



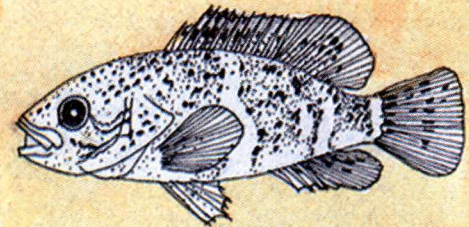
FRY GROUNDS ARE USUALLY SANDY BEACHES, RIVER MOUTHS, TIDAL CREEKS, AND MANGROVE SWAMPS...



MAP OF THE PHILIPPINES SHOWING MILKFISH FRY GROUNDS :



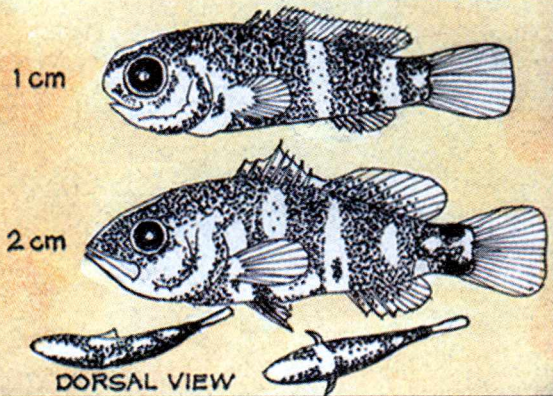
AMONG CULTURED SPECIES THAT RELY ON WILD-CAUGHT FRY ARE : GROUPER, SEABASS, MILKFISH, SNAPPER, SPADE FISH AND SIGANIDS.



GROUPER 30 mm

GROUPER FRY HAVE A CONTINUOUS DORSAL FIN. YOUNGER ONES MAY HAVE ELONGATED SECOND DORSAL AND PELVIC SPINES SIMILAR TO SNAPPERS.

SEABASS FRY OF DIFFERENT STAGES : NOTE THE DORSAL HEAD STRIPE . LENGTH VARIES FROM 5-20mm....



1 cm

2 cm

DORSAL VIEW

LATE POST LARVAE MILKFISH FRY ARE 10-17mm IN LENGTH. IT IS ABOUT 2-3 WEEKS OLD FROM THE TIME OF SPAWNING. FINGERLINGS ARE 15-100 mm IN LENGTH, ABOUT 1-2 MONTHS OLD.

SNAPPER LARVAE HAVE AN ELONGATED SECOND DORSAL AND PELVIC SPINE. THEY ALSO HAVE LARGE MOUTH WITH CANINE-LIKE TEETH.

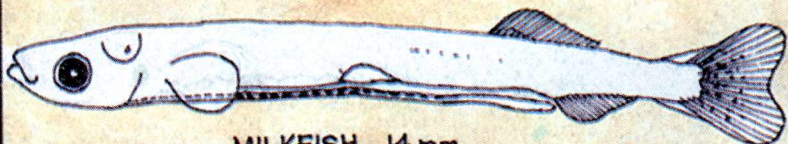
SIDE VIEW



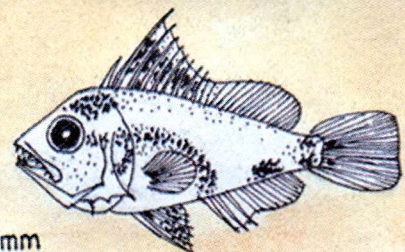
VENTRAL VIEW



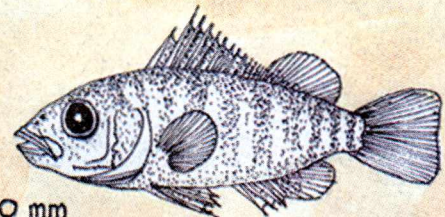
2 cm



MILKFISH 14 mm

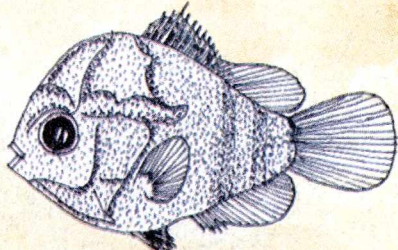


10 mm

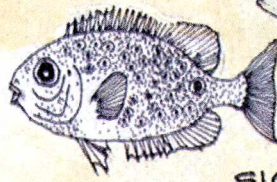


20 mm

SPADEFISH (SCATOPHAGUS ARGUS) FRY ARE BLACK, ALMOST DISCOIDAL IN BODY OUTLINE AND HAVE A BONY HEAD ARMOR. SLIGHTLY OLDER ONES ARE BROWN WITH BLACK SPOTS.



SPADEFISH

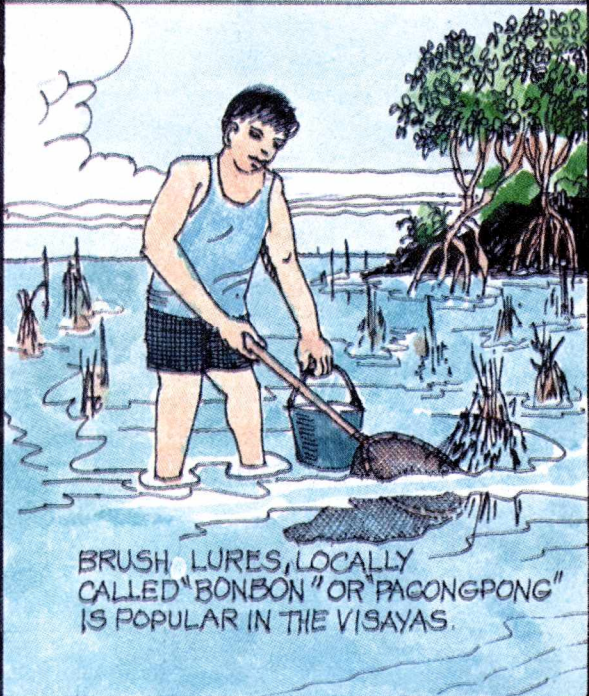


SIGANID

SIGANID FRY ARE FROM DIFFERENT SPECIES AND IN VARYING STAGES.

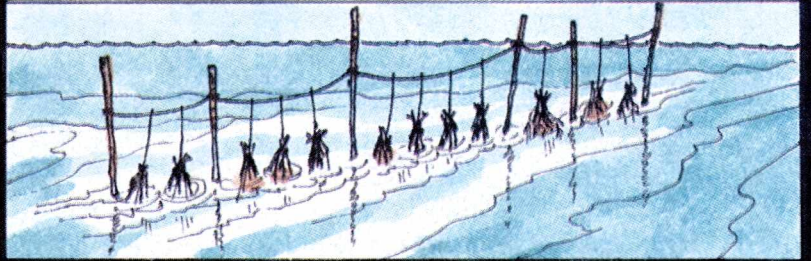


TRADITIONAL METHODS OF COLLECTING FRY DEPENDS ON THE BEHAVIOR OF THE FRY AND FINGERLINGS.



BRUSH LURES, LOCALLY CALLED "BONBON" OR "PAGONGPONG" IS POPULAR IN THE VISAYAS.

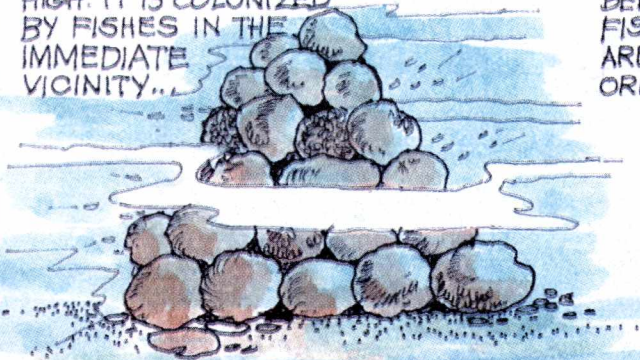
THESE TRADITIONAL DEVICES ARE MADE OF TWIGS OR PALM LEAVES THAT ARE SET IN SHALLOW BRACKISH-WATER MANGROVE AREAS. THEY ATTRACT GROUPER AND SEABASS FRY WHICH HIDE AND TAKE SHELTER IN THEM.



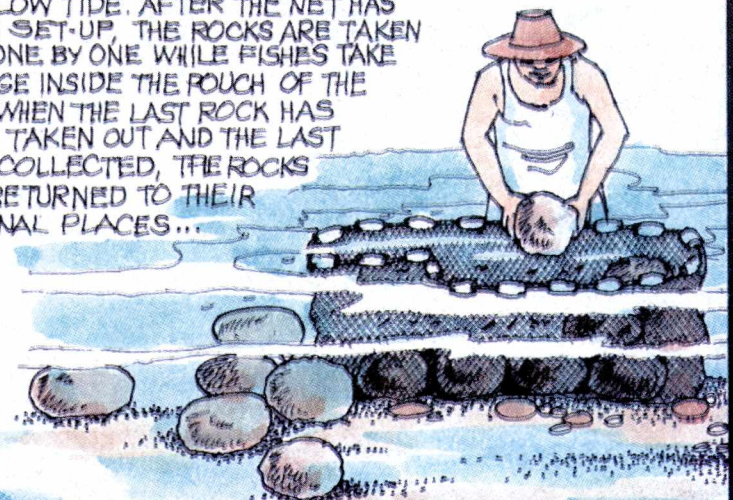
BRUSH PILES, LOCALLY CALLED "PADUGMON" OR "PADUM-OK" ARE SIMILAR TO ROCK MOUNDS BUT ARE MADE OF TREE BRANCHES, TWIGS AND PALM LEAVES. HARVESTING IS SIMILAR TO ROCK MOUNDS.



ROCK MOUNDS OR "GANGO" IS A CONICAL PILE OF ROCKS OR DEAD CORALS. IT IS CONSIDERED TO BE THE MOST ECO-FRIENDLY COLLECTION METHOD FOR FRY AND FINGERLING. THE "GANGO" IS USUALLY 0.5 TO 1.3 METERS HIGH. IT IS COLONIZED BY FISHES IN THE IMMEDIATE VICINITY...



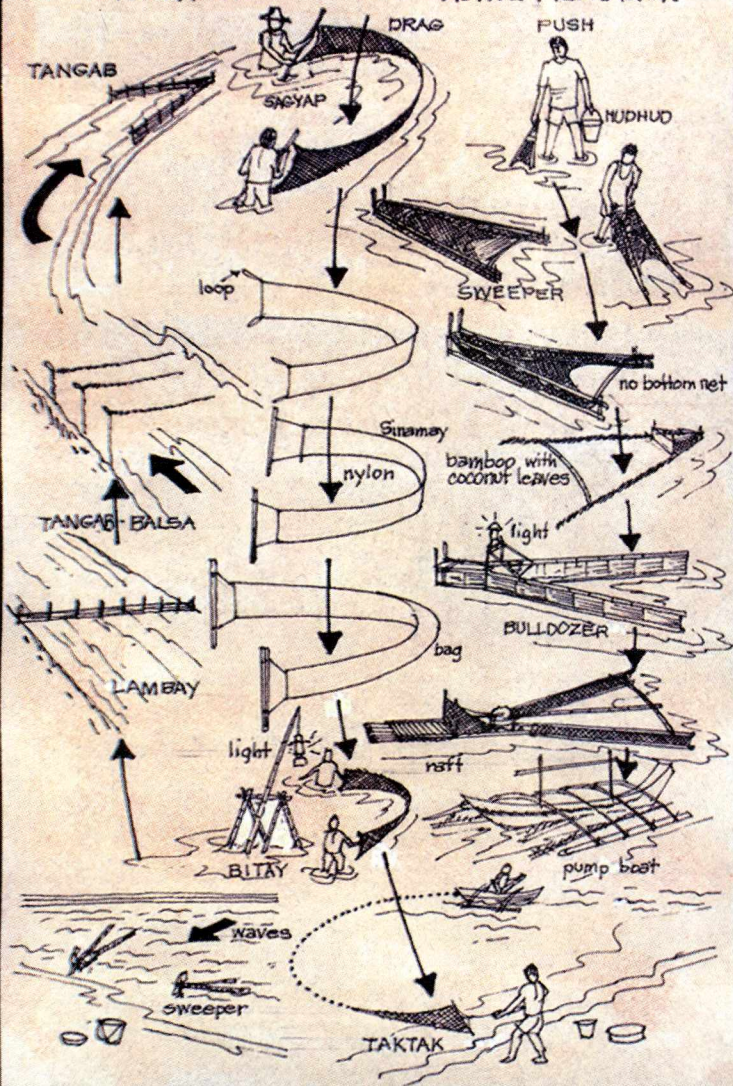
HARVESTING IS CARRIED OUT WITH THE USE OF ENCIRCLING NET DURING THE LOW TIDE. AFTER THE NET HAS BEEN SET-UP, THE ROCKS ARE TAKEN OUT ONE BY ONE WHILE FISHES TAKE REFUGE INSIDE THE POUCH OF THE NET. WHEN THE LAST ROCK HAS BEEN TAKEN OUT AND THE LAST FISH COLLECTED, THE ROCKS ARE RETURNED TO THEIR ORIGINAL PLACES...



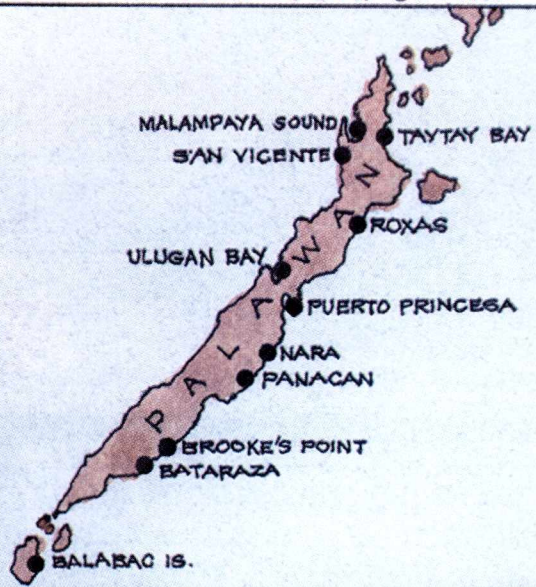
IN PANAY ISLAND, CENTRAL PHILIPPINES, THERE IS A WIDE VARIETY OF COLLECTION GEAR USED FOR MILKFISH FRY.

PASSIVE FILTRATION

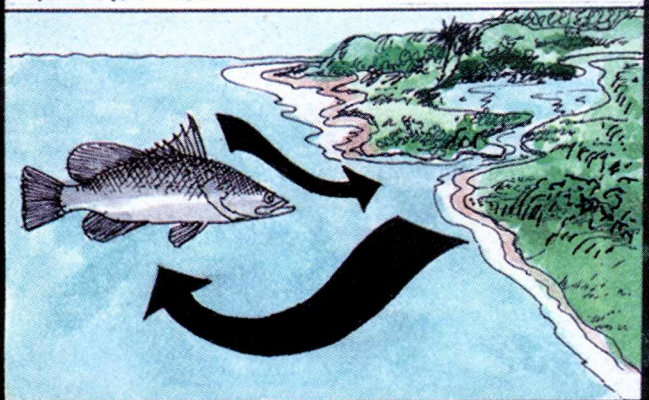
ACTIVE FILTRATION



FOR GROUPEY FRY, PALAWAN APPEARS TO HAVE THE RICHEST FRY GROUND.



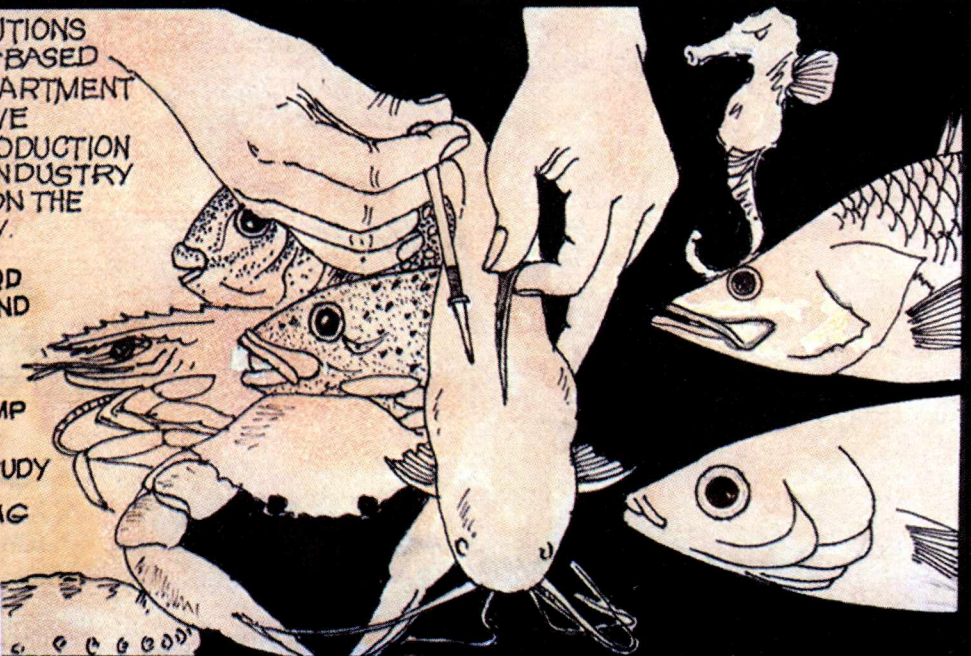
BUT TO GET AQUACULTURE MOVING THE INDUSTRY HAS TO DEPEND LESS ON WILD CAUGHT FRY, WHICH ARE UNPREDICTABLE, SEASONAL AND SUBJECT TO THE VAGARIES OF NATURE.



THAT IS WHY R & D INSTITUTIONS LIKE THE TIGBAUAN, ILOILO-BASED SEAFDEC/AQUACULTURE DEPARTMENT STUDY AND DEVELOP CAPTIVE BROODSTOCK AND SEED PRODUCTION TECHNIQUES TO HELP THE INDUSTRY LESSEN ITS DEPENDENCY ON THE UNCERTAINTIES OF WILD FRY.

OVER THE YEARS SEAFDEC/AQD HAS DEVELOPED BROODSTOCK AND HATCHERY TECHNOLOGY FOR MILKFISH, GROUPEY, CATFISH, RABBITFISH, BIG HEAD CARP, SEA BASS, TILAPIA, TIGER SHRIMP AND MUDCRAB.

OTHER SPECIES UNDER STUDY ARE SNAPPER, MARINE ORNAMENTAL FISH INCLUDING SEAHORSE AND ABALONE.



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