

WESTERN SAMOAN TURTLE PROJECT

The Western Samoan Turtle Hatchery Project is, as the accompanying documents will show, a low-input, high-potential stock-reviving programme aimed primarily at increasing the amount of fresh protein currently available to the local population.

So far, in the 18 months since its inception, this project has proved very successful. Some 8,600 hatchlings have been returned to the sea and a further 140 of their siblings have been retained for growth comparison studies. "Mini-hatcheries" have been established at four educational establishments; 15,000 "Lesson Leaflets" have been distributed; two separate half-hour radio broadcasts on turtle conservation and management have been produced. This has been achieved for a cash expenditure on plant and equipment of some \$460, plus the allocation on loan from Fisheries Division of two Peace Corps volunteers, one 12 foot fibreglass outboard-powered launch and two local staff.

It is anticipated that future "live" releases of hatchlings will be:

1972	10,000
1973	15,000
1974 and thereafter	20,000

At this stable level and allowing for normal predation, and mortality we might expect a yearly "cull" or crop of some 7,000 males, giving some 200,000 lbs. of meat and approximately \$14,000 worth of shell per annum, all to be harvested directly by local fishermen.

SECOND PHASE:

With the practical side of Hawksbill Turtle Rearing more or less ensured, our turtle project should now begin to tackle certain broader problems of turtle behavior and movement (migration and navigation). Moreover, these studies should include and indeed concentrate on the large Green Turtle, whose presence in Samoan waters is commonplace but whose local breeding habits and movement cycles are still unknown.

Initial data to be collected should include:

- (a) Counting and concentrations as observed via aerial surveys.
- (b) Tagging of individuals and pair-tagging of copulating couples.
- (c) Tracking of "ripe" females by means of following visual and radar-reflected implanted markers.

Of these data-collection systems (a) above is already being carried out during the course of Fisheries Division's routine ship and fish bi-weekly aerial surveys.

With regard to the tagging programme this we would prefer to carry out at sea, since only in this manner can males and pairing couples be marked. Moreover, to do so requires the following basic equipment which Western Samoa does not possess nor is there likely to be budgetary sanction for such acquisitions:

Scuba Gear:

- 8 x 72 cu.ft. air cylinders
- 3 x 2-stage demand valves
- 3 x air pressure gauges
- 3 x single back packs
- 2 x twin back packs
- 1 x decompression/depth gauge
- 1 x 12 c.f.m. 3200 psi diesel powered semi-portable air compressor

With this under-water capability Turtle Project staff would be able to observe, track and tag feeding and pairing Green Turtles. We believe it to be particularly important that male turtles are included in this work for, in the past, all data has been based upon the shore-landing nesting female and no broad pattern of turtle behavior and movement can possibly be realized through the study of such a narrow section of the turtle population.

Western Samoa is actively seeking external interested institutions and foundations which might be prepared to provide part or all of this equipment. Due to considerations of ordering difficulties, etc., we would prefer direct supply of the gear itself rather than funds with which to purchase it.

With regard to Phase (c) of the Project, (the tracking of egg-bearing females), this requires a considerable degree of sophistication and financial expenditure and we would prefer to wait until the latter half of 1973 before attempting to undertake such an operation. The basic system envisaged would be the implanting of tags plus visual and radar reflecting markers upon egg-ripe females (e.g. light-weight meteorological balloons with aluminum foil reflectors attached by mono-filament line to the carapace) and then subsequent tracking by day and night by a suitably equipped vessel. At the moment, however, such plans are only in their early formulative stages.

APPLICATION FOR ASSISTANCE IN THE FORM OF TECHNICAL EQUIPMENT

Background

Western Samoa has a present population of 164,000; a population increase rate of 4.6%; an average population age of 12 years 8 months; a GNP of approximately \$4.3 million and a present serious protein and vitamin deficiency rate amongst young children of 8-1/4%.

These figures ~~provide~~ provide the background bed-rock data on which all social and economic programming must rest.

The Western Samoa Division of Fisheries was formed three years ago with the express purpose of:

1. Supplying cheap, plentiful fish-protein to the local population.
2. Providing culturally satisfying and rewarding work-outlets for the largely unemployed population.
3. Preventing population drift from the villages to the unprepared urban centres.
4. Establishing correct management programmes for local marine resources.

Methods

Attempts have been made to fulfill these requirements through the following avenues:

1. Establishment of village-fishing cooperative.
2. Establishment of marine turtle hatcheries.
3. Evaluation of natural stocks of marine resources.
4. Legislation to protect such stocks against foreign exploitation.

Of these item 4. has been completed; item 2 has become a viable, expanding enterprise; item 3 is in progress and item 1 has completed its first-introductory phase and must now expand on a higher level of sophistication.

It is this last project, the up-grading of village-fishing endeavor that this report concerns itself with.

Village Fishing Endeavors

1. The Past Three Years has seen the resurrection of original "Fishermen's Guilds" within the traditional framework of Polynesian cultural activities. Due to, firstly, the need to build upon traditional forms and secondly, the scarcity of finance, - the vehicles by which serious off-shore fishing were to be resumed were locally (village) constructed catamarans (Samoan "alia") propelled by outboard motors.

In the first three years some 44 village fishing "guilds" have been formed. Results have been as follows:

- (1) 60% have failed due to social reasons and/or lack of Fisheries Division technical support.
- (2) 15% are marginally successful and have succeeded in supplying immediate (village) protein needs.
- (3) 25% are highly successful and are now supplying other villages besides their own on a quasi-commercial basis (i.e., trade or barter).

2. The Present Position: Those successful village fishing guilds (11 in number) have now reached a stage at which their catamarans are no longer suitable for continuous fishing operations due to the following factors:

- (a) They cannot operate in difficult weather.
- (b) They provide no shelter and are extremely uncomfortable for their crews.
- (c) Outboard motors are expensive to operate, are not designed for commercial usage and spares difficult and expensive to come by.
- (d) They are not fast enough to reach offshore fishing banks within the voyage time available nor to catch up with schools of tunas.

Consequently, we must look for a method of replacing them with more effective craft. Such craft should be:

- (a) Built locally and be simple enough in construction so that the fishermen themselves can participate in their building.
- (b) Able to perform in worse weather and provide more sheltered conditions for their crews than the catamarans.

- (c) Considerably faster than the catamarans.
- (d) Shallow draft and light to allow reef-passage operation and beach landings.
- (e) Cheap in operation and construction so that their investment in capital be returned rapidly through average fish catches.

After exploration into and evaluation of many types of small fishing craft, it appears that a modified Oregon Dory would suit these requirements best. Such craft have already been built in American Samoa and are now going into operation in Micronesia and Gilbert and Ellice Islands. Western Samoa is currently seeking to establish a building programme for such dories based upon the following integrated project-effort.

- (1) Provision of boat-building shed, facilities and ramp out of Western Samoa budgetary funds.
- (2) Provision of advance capital for the construction of an initial 8 boats through Western Samoa Development Bank funding, to approved village fishermen's guilds.
- (3) Training of Guild Fishermen in the operation of these craft and their fishing mechanics by Fisheries Division staff.
- (4) Provision of the Boat-builder instructor (necessary to train local boat-builders) for a period of 6 months through the agency of an FAO grant.

What still remains to be done to enable the project to begin is:

To locate an institution or donor who will provide:

- (a) Boat-building tools (itemized value \$5,100)
- (b) Engine repair and maintenance shop tools (itemized value \$4,000).

In order to avoid complications regarding transfer and auditing of actual finance, Western Samoa is seeking assistance in the supply of the actual tools and equipment as listed, rather than their monetary value.

POWER TOOLS

12 inch tablesaw/with stand	1 each
14 inch bandsaw/with stand	1 each
12 inch radial armsaw/with stand	1 each
7 inch circular saw (Skill)	2 each
sabersaw, small	1 each
sabersaw, large	1 each
7 inch disc sanders	2 each
8 inch hand grinder	1 each
3 inch belt sander	1 each
power hand plane	1 each
power block plane	1 each
3/8 drill motors	2 each
screw guns	2 each
impact wrench	1 each
routers	2 each
120 amp welder (50-foot leads)	1 each
oxy acct welding and cutting	<u>1 each</u>

US \$2,250.00

HAND TOOLS

hammers - 16 to 20 oz.	4 each
handsaws-crosscut-10 tooth	2 each
straight edge - 8 foot	1 each
straight edge - 4 foot	1 each
stiff backsaw	1 each
yankee screwdriver(large)	1 each
wood chisels (1/4", 1/2", 3/4", and 1")	1 each
block plane	1 each
plane - 12 inch	1 each
rafter square	1 each
combination square	1 each
level - 30 inch	1 each
wood spade bits (1/4" to 1-1/2")	1 each
tapes - 12 foot	6 each
tapes - 50 foot	1 each
bevel square	2 each
chalk line and chalk	1 each
scribe	1 each
wood rasp - 1/2 round (8", 10", and 12")	2 each
nail file (8", 10", and 12")	2 each
flat mill file (8" and 12")	3 each
bastard file (8" and 12")	3 each
protractor	2 each
nail sets (large)	6 each
foxtail brushes	6 each

HAND TOOLS (Continued)

glue brushes (1 inch)	1 gross
paint rollers for glue	3 dozen
face shield	2 each
adjustable wrenches (6", 8", 10" and 12")	2 each
expansion drill (1-1/2")	2 each
brace	each
pony 50 lb. black pipe clamps - 3/4 inch	40 each
3/4 inch black pipe (18 inch long threaded one end)	38 each
3/4 inch black pipe (52 inch long threaded one end)	2 each
3 inch C-clamps	30 each
1-1/2 inch C-clamps	20 each
10 inch C-clamps	10 each
drop cord (50 foot)	each
extra end for cord	4 each
electrician tape	6 rolls
weldon 82 degree counter sinks - CS83	2 each
bostitch T5 st CR 5019 - 1/4" stapler	1 each
bostitch 1/4" staples	1 box
end wrenches (1/4" to 1-1/2")	1 each
socket set - 3/8 drive	1 each
1 tape set	1 each
die set	1 each

HAND TOOLS (continued)

wrecking bar (18" and 36")	1 each
ballpean hammer - 24 oz.	1 each
topping mall (5 lb.)	1 each
1 set drills, metal (1/32" to 1/2")	1 each
metal drill, 3/8" shank (5/8", 3/4" and 1")	1 each
vice - 6 inch	1 each
vice machine	1 each
vice pipe	1 each
vice grips (6" and 10")	1 each
pipe pliers (6" and 12")	1 each
needle-nose pliers (6 inch)	1 each
side cutters (8 inch)	1 each
common pliers (6" and 8")	1 each
nippers (10 inch)	1 each
hole cutters	1 set
hacksaw	2 each
hacksaw blades (18 tooth)	24 each
hacksaw blades (24 tooth)	24 each
electric welding hood (10 lb. glass)	1 each
acet glasses	1 each
grinding glasses	2 each
chipping hammer	1 each
wire brushes	2 each
striker & flints	1 each
welding rods/electric (1/8" mild steel)	1 box

HAND TOOLS (continued)

welding rods/gas (1/16" and 1/18")	10 pounds
brazing rod (1/8" coated)	10 pounds
flux	1 pound
silver solder (#3)	1 pound
flux	3 ounces
bandsaw blade (1/4", 3/8" , and 1/2")	12 each
circular blades (12" and 7")	6 each
sabersaw blades, small	24 each
sabersaw blades, large (8 inch)	10 each
sanding disc (60 and 16 grit)	100 each
sanding belts (36 and 80 grit)	100 each
hand grinding wheels	6 each
cut-off wheels for grinder	4 each
router bits (1/4, 3/8, 1/2 radius)	2 each
panel pilot bits	4 each
mortising bits (3/4" and 7/8")	4 each
1 inch tubing cutter	2 each
1 - 700 turn/tight expander	1 each
wax paper	10 rolls
nail aprons	12 each
48 inch heavy paper	1 roll
1 crimping tool micropress, large	1 each
screwdrivers (4, 6, 8, and 10)	1 each
off-set screwdriver	1 each
screw drills (1, 1-1/4, 1-1/2, & 2)	2 each

HAND TOOLS (continued)

allen wrenches	1 set
easy-out (1/4, 5/16, and 3/8)	1 each
1/4 socket set	1 each
extra drills (1/8, 1/4, 5/16, and 3/8)	2 each
8 inch 2-wheel grinder (coarse and fine)	1 each
putty knives 1-1/2"	3 each
sandpaper - garnet (60 and 120 grit)	1 box each
10 gauge wire	500 feet
14 gauge wire	300 feet
wire ends	
tinsnips (12 inch)	1 each
scissors (10 inch)	2 each
pencils	100 each
scratch pads	1 box
wire end kit	1 each
solder gun and solder	1 each
push brooms	2 each
scoop shovel	1 each
mixing can, large	100 each
mixing can, small	100 each
oil drums for packing	<u>4 each</u>

Approx. \$2,300.00

SCARFING MACHINE

1 dayton motor - 5K 149A - 1 hp - 3450 RPM - Model C 2548C1

1 - 2-3/4 inch pully

1 - 4 inch pully

1 - 2" x 6" planer head

1 cutler hammer stop and start switch

4 - 3/8" x 7" machine bolts

10 - 3/8" x 1-1/2" machine bolts

4 - 1/2" x 3" machine bolts

8 - 3/8" x 1" machine bolts

4 - 3/8" x 3" machine bolts

4 - 3/8" x 5" carriage bolts

4 - 5/16" adjustment screws

12 feet - 3/8" x 2" x 3" angle iron

6 feet - 3/16" x 1-1/2" angle iron

1 - 12" x 24" x 1/4" plate

3 belts to fit

U. S. \$550.00

TOTALS =	Power tools	\$2,250
	Hand tools	2,300
	Scarfig jig	<u>550</u>
	U.S.	<u><u>\$5,100</u></u> FOB