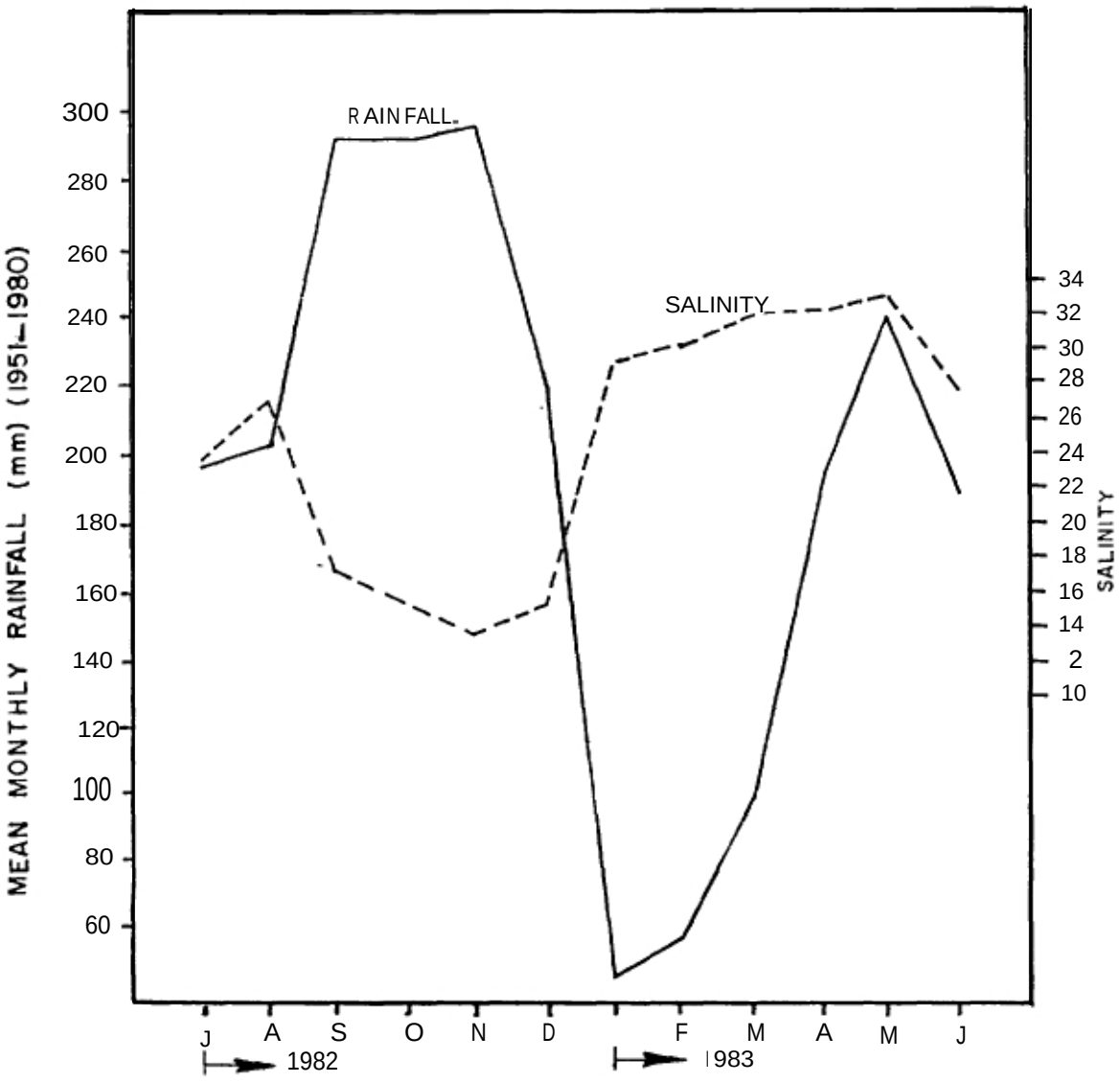
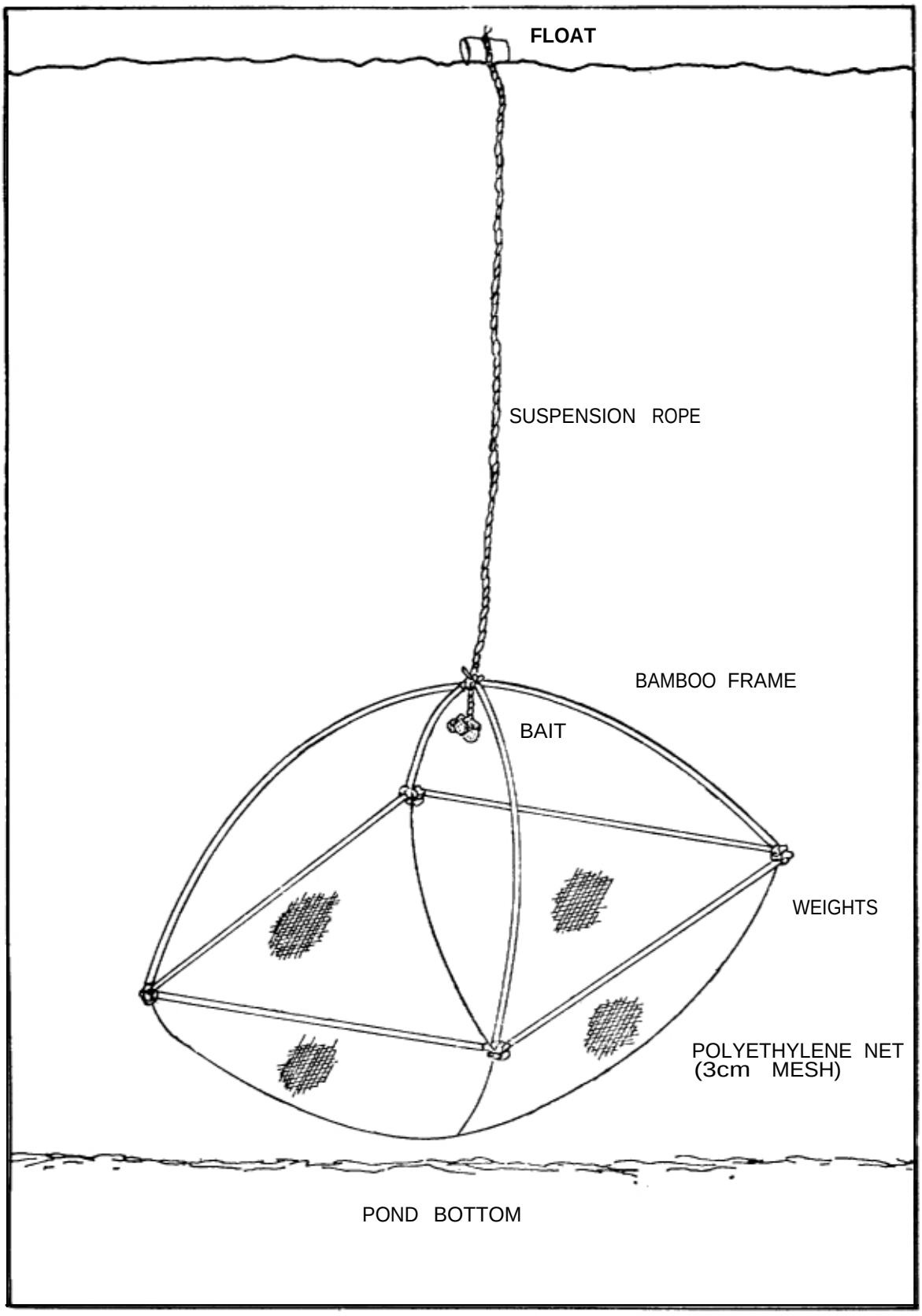
Appendix 8: SALINITY AND RAINFALL DATA



Appendix 9: CRAB TRAP



Appendix 10

FACILITIES REQUIRED FOR SHRIMP AND FISH HATCHERIES

A. ***General hatchery facilities***

- sea water pump	***2*** sets
— air blower	***2*** sets
— emergency electrical generator 40-100 kVA	**1** set
— sea water reservoir, capacity 50% of total volume of hatchery with sand filter system	
- sea water elevated tank	

B. ***Facilities required for shrimp hatchery***

— tanks for maturation of broodstock : 4 m x 1.2 m deep	***4***
—spawning and hatching tanks 1 m dia x 0.9 m deep	***10***
— larval rearing tanks, 2 ton, conical	***10***
— post-larval nursery tanks, 2 x 8 x 1 m	***10***

C. Facilities required for finfish hatchery

— cages for holding and maturation of broodstock 10 x TO x 2 m	***4***
— breeding and spawning tanks — 10 m dia x 2 m deep	***2***
— larval rearing tanks 2 x 8 x 1 m	***8***

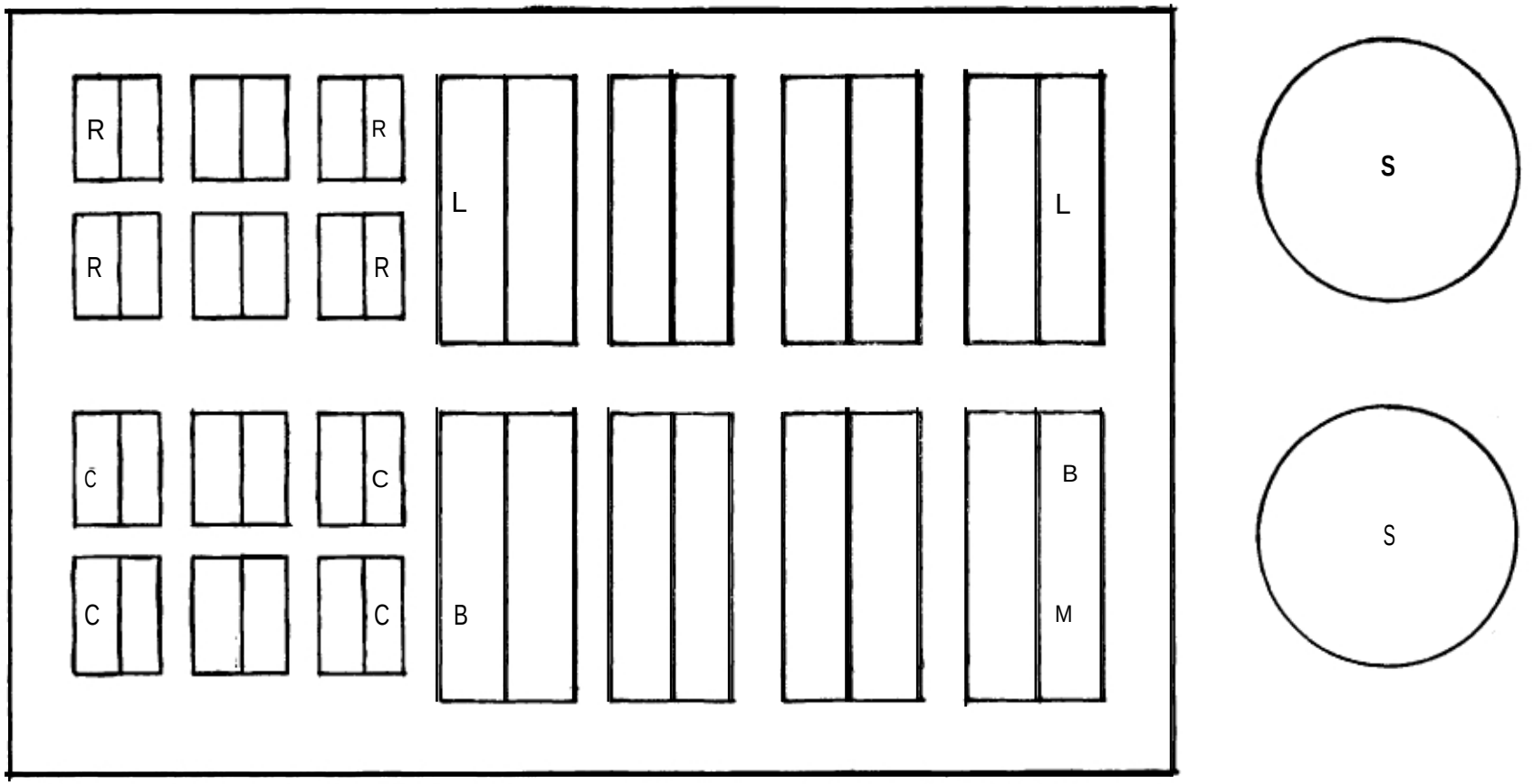
D. ***Tanks required for culture of food organisms***

— Artemia hatching 0.5 m^3	***8***
— diatom culture 1 .0 m^3	***10***
— Chlorella culture 1.2 x 3 x 0.9 m	***12***
— rotifer culture 1.2 x 3 x 0.9 m	***12***
— Moina culture 2 x 8 x 1 m	***8***

E. ***Associated facilities required for operation of hatchery***

— submersible pumps	***4***
— plankton nets, various sizes	
— various chemical reagents for checking water quality	
— fertilizers for phytoplankton culture	
— brine shrimp eggs	
— others, as would be required	

Appendix 11: FISH HATCHERY LAYOUT



FISH HATCHERY LAYOUT

S SPAWNING TANKS DIA. 10m x 2m DEPTH OUT DOOR

L LARVAL REARING TANKS 2 x1m

R ROTIFER CULTURE TANKS 1.2mx3x0.9m

C g CHLORELLA CULTURE TANKS 1.2x3x0.9m

MB= MOINA SP. OR BRINE SHRIMP CULTURE TANKS 2 x 8 x1m

Appendix 11 -A

DESIGN CRITERIA FOR A FINFISH HATCHERY

The design criteria for a finfish hatchery are as follows:

(a) Spawning tanks are 10 m diameter with a height of 2 m holding 1.8 m water: 30-50% of the water is exchanged daily.

Each tank should be able to hold 24 broodstock; 12 females 12 males.

In one spawning period (3-4 nights) about 2-3 million larvae can be collected.

(b) Nursery tanks are 1 x 2 x 8 m holding 0.8 m depth of water or a volume of 12m^3. 50 % of the water in each tank is changed daily. The tanks are stocked with 1 -day old larvae and held till they grow to about 1-1.5 cm. Each tank is stocked with 350,000 larvae — a stocking density of 30,000/m^3 Estimated production of 1 cm fry, 1-month age are 3000-5000/m^3. Production of fish fry would be 288,000-480,000/cycle and total production about 1.4-2.4 million/year.

(c) Rotifer culture should be maintained at the density 100-250/cc.

(d) To reduce the cost of brine shrimp, Moina culture tanks are also maintained. Feeding with Moina after two weeks is recommended. These culture tanks can also be used to grow brine shrimp for feeding one-week old larvae.

(e) Hatchery building should have 70% clear roofing.

(f) Air blower capacity:

— Diameter of outlet and inlet 7.5-10 cm

— motor power: 10 hp, 1400-1500 r.p.m.

— air volume discharge about 214 cubic foot/minute at pressure 7-8 pounds/square inch.

Appendix 12: SHRIMP TRAP