

## **Batticaloa Lagoon: An Ideal Resource, Idle**

**Dr. Thangamuthu Jayasingham**  
Department of Botany  
Eastern University  
Chankaladi  
Sri Lanka

## Abstract

Batticaloa district is gifted with the network of three lagoons from the north to south namely the Panichankerni Lagoon(3,125 hectares), Valaichenai lagoon(1500 hectares) and the Batticaloa Lagoon(11500 hectares). This paper confines itself to the latter only, which is the second largest lagoon system in the country. Batticaloa is gifted that the lagoon interlaces with the township. Though we envy the waters of Venice and Thames hardly much positive recognition is given to this lagoon at present owing to many socio-economic and political reasons. In fact its utility had decreased in the last two decades than the years preceding it.

Batticaloa stretches for a North South distance of about 56 km with the maximum width of around 4 km covering 11500 hectares of water. It connects to the sea at two points in Kallady and Kallar. Studies show, that the salinity varies from the mouth to distant locations from 40ppm to 0 ppm in some seasons. Most of the water of the district is discharged into these before reaching the sea. The Bar mouths are often covered by the sand bar which is 'opened' when interior water level reaches very high levels. The Lagoon was the main mode of transport until the bridges were constructed in Kottamunai, Kalladi, Valayaravu. The impact of the bridges on the flow and the lagoon system had never been studied. However salinisation of cultivation land has been recorded. Brohier describes "the shores are empowered with richest vegetation or fringed by dense thickets of ever-green mangroves" which is no more to be seen. The patches of mangroves that border the lagoon are seen at places. It is reported that between the period of a decade more than 10% of the mangroves had been destroyed. No one had really estimated the impacts of various factors on these fragile ecosystem.

The lagoon has become the dump yard of Municipal and domestic waste. The effects are little known and the controls are practically not available. The water where children played a decade ago seems 'polluted' or 'not conducive to enter' at present. reports have suggested that blooms of various algae have been frequently noted with a pungent smell. *Micrococcus* has been identified as one of the causes. The fish have been affected with 'mysterious' disease in a season for which we have no explanation or remedy, yet.

The lagoon is the second largest employer in the district. 10,000 families depend on it. Yet the dynamics of the lagoon, fish and prawn populations, optimum fishing levels, carrying capacity etc. have not been studied in detail. Recently many shrimp farms have cropped up and bordered the lagoon in many places. Controls and licensing systems have not been evolved.

Despite all these the lagoon remains a huge potential of resource for the future, which is waiting to be tapped. The long term policies for the lagoon have to be developed. Recently, BIRRP under the patronage of NORAD undertook a pilot study on preparation of a management plan which has been halted in midway for unknown reasons.

In this paper I discuss the potential of the lagoon as a food resource, tourist attraction, aesthetic comfort, recreation facility, transport potential etc. and argue for the need of information on the lagoon and a flexible long term plan with meticulous implementation to make this a reality.

This is a clear case where the lack of concrete policies on ownership, fishing, pollution etc. and disputes and doubts on authority and identification of responsibilities has caused the dilemma where the Batticaloa Lagoon, an ideal resource remains idle in shade.

## **Batticaloa Lagoon - An ideal resource, idle**

Eastern Sea Board of the Batticaloa district stretches 73.5 km from Verugal in the North to Thurai Neelavanai in the South and is distinctly separated from the green paddy lands of the western flank by a series of three large lagoon systems viz. Panichankerni lagoon-Uppar- (3,125 ha), Valaichenai Lagoon-Vandaloo Bay (1500 ha) and the Batticaloa lagoon (11,500 ha). They make a total of 16,125 hectares in the district and is one of the largest lagoon systems in the country. Most of the population is distributed in the eastern flank where the towns have developed and the western flank, yet, holds the vast green fields of the district (Fig 1).

50% of the population is engaged in cultivation or fishing. Fishing is mostly in the shallow coastal sea or the lagoons. Deep sea fishing is very limited at present and prior to 1986 was mostly done by the migrant fisherman from the south of the country. Production from the lagoon have been limited and have been 'over exploited' in the recent times by more people taking onto inland lagoon fishing as a result of limited mobility to engage in other activities. The general catch in the lagoon includes Tilapia, Sethal, Palai and Kayal. Tilapia was introduced in the last few decades with the development of the Gal Oya valley. The prawns and crabs of Batticaloa have been very famous from early times, though the production have been reduced at present and the increased price makes it lucrative for transporting to Colombo rather than to sell it at local markets. One of the reasons for the decline of the catch may be the reduction of the Mangroves in the district, at the hands of expanding paddy fields and for security clearance. This in theory would have a tremendous negative impact on the juvenile population of the fish and prawn population of the lagoon.

Many bridges and causeways have been constructed across each lagoon joining the north and south or the east and west from the 1920s and 30s (Oddamawadi, Kalladi, Pattipali etc) as necessary. The waterways remained a major transport until then and even long after that and even at present the waterway serves for transport in many places (Manmunai, Ampilathurai). Ferries operate at some points, small boats at other, barge in some place etc. People use to swim in these waters in the earlier days but not any more, for fear of hygiene.

Of the three lagoons the largest is the Batticaloa lagoon which shall be the theme of my discussion ahead. The importance of this lagoon also rises from the point that it intermingles with many of the large towns in the district and stretches over about 56 km from Pankudaweli in the North to Sammnathurai in the South (though this is in the Amparai District at present) with around 4 km width at some locations. The lagoon has a maximum depth of 13 fathoms (ca. 25m) but is generally a shallow lagoon (4m) in most places. The lagoon meets the sea at two points at Kalladi and Kallar (Fig 1 and 2). Both form seasonal sand bars which have been opened when the water levels reach a particular height (flood level) traditionally. However recent years the practices have been less streamlined leading to some problems.

8 rivers flow into the lagoon discharging about 1.9 trillion cubic meters of water (Table 1). In addition part of the drainage from Gal Oya also enter the lagoon. Of the 8 rivers 3 major ones namely Mundeni aru, Magillavettuvan aru and Andal Oya originate from Badulla, Moneragala and Amparai districts(Fig 3). Deforestation and agriculture development in these districts have contributed to flash floods and silting of the lagoon in the recent years.

The Lagoons supports about 9500 families of which 6500 is dependant on the Batticaloa Lagoon. The production figures shown in Table 3 highlights the low production of the system. The sudden increase in 1994 seems questionable as it is unexplained, in any terms and may be an artifact of the methodology.

The utility of the lagoon is primarily confined to Fisheries at present also at the minimal level, thus making it **Idle**. I explain below to emphasize how **ideal** this is as a resource for the development of the region and the flowchart for such a change.

The settings of the lagoon makes it ideal for the following ventures which may be viewed in the angles of conservation, development, economic enhancement or in toto.

### **1. Fisheries**

Such a vast system of water is ideal for development. The Salinity ranges from 0 to 40 ppm depending on seasons and locations.

Development of Lagoon fisheries is a very important factor. However it is not a simple issue but which involves a range of factors which need to be consolidated to achieve the results. The conservation and establishment of mangrove areas in the lagoon which would favor the increase of the natural populations; The legislation's for fishing in the lagoon which may involve licensing, seasonal prohibition/limitation etc.; The limitation/prevention of raw sewage/waste entering the lagoon promoting survival of the fish and prawn populations in the lagoon.; There are 26 canals that enter the lagoon direct as of today with untreated sewage domestic or otherwise.; The opening of the lagoon bar mouth for better migration and salinity maintenance.

### **2. Agriculture**

The use of water for agriculture is limited except in areas distant from the bar mouth where in seasons the salinity approached zero. Lift irrigation systems are known to operate in Thannamunai/ Kaluthavalai areas. The closing of the Bar mouth may assist mare farmers to use water for agriculture. Confining the waters at smaller bays by bunds may result in fresh water pockets which may help agriculture.

### **3. Fresh Water**

Fresh water for domestic use and agriculture is critical today where many regions in the district have no water in the dry seasons around July/August, even to drink. The problem would become more acute as the days pass by, owing to additional requirements and additions in populations. One of the suggestions for Batticaloa has been to lift the dam at Unnichai and provide water. However a potential seems to be in the lagoon. The lagoon has 1.9 trillion cubic meters of water in flow per year. As seen on the map the Valauravu bridge divides a large pocket of lagoon from the rest of the lagoon and the closure of the bridge completely would disconnect it from the entire lagoon system. This pocket having the input of large amount of water every year( Table 1 ) with no influx from the sea the entire area would turn to fresh water over years which would provide not only for drinking but also for Agriculture as the bordering lands of these pockets have limited water for agriculture in the yala seasons.

The same could be exercised by the closing of the causeway next to the Hospital and the new bridge at Lloyd's avenue, providing more fresh water lagoons. However the limitation of input fresh water and the possibilities of altering water flow in the lagoon system may not make this ideal.

#### **4. Transport**

Transport in the lagoon has been a major feature until the 1930s. In fact the Dutch landed here through the lagoon. The ferries operated as late as 1934, the ferry point near the Batticaloa Fort is yet found. The other ports(thurai) as Sammanthurai, Thurai Neelavanai, Ampilathurai etc connotes their usage as a port in the names, as thurai means port. Kittangi near Sammanthurai means a store, and was the southern terminal point of the ferry. Many points are used even today to cross the lagoon east-west as the alternative would require a travel of about 10-30 km via the bridges.

River and water transport is considered seriously as an alternative to road traffic, in the modern cities. In fact transport in Thames, London is being seriously considered at present trying to avoid some congestion. However apart from transport for the purpose of mobility this feature combined with tourism/ecotourism has an immense potential to be developed in these waters which stretches 56 km north south, the longest stretch of lagoons in the whole country. Brohier writes "However very few persons realise what delightful water excursions these still river-stretches on the east coast offer. The shores are embowered with richest vegetation, or fringed by dense thickets of ever-green mangroves. Only filtered light penetrates into this maze of curiously arched and spreading roots hanging over a dark morass of smelling mud".

#### **5. Tourism**

Quiet water fronts have been always been very attractive for tourism development, which is available in plenty especially in the western coast. All forms of activities from simple skiing to swimming is a potential. Paddle pools for kids could be ideal near to the towns e.g. in front of Lake View Hotel, which would become an ideal children water park.

The Singing fish of Batticaloa is one that had attracted the whole world, and would also do today. Pasikkudah one of the best bays in the island is just a few miles of the lagoon would certainly be an added value to tourism.

## **6. Aesthetics and Landscape**

Lagoon needs to be developed into 'Blue waters of Batticaloa' with cleaning operations, dredging where necessary, pavements constructed by the lake for walks and gardens; maintenance of a reservation to increase the aesthetics apart from the conservation aspect is important. Pavemented paths and pleasure boats would make it as, Venice in the east.

## **7. Shrimp farms/ Aquaculture**

Batticaloa district has the largest area suitable for shrimp farms in the country. Shrimp farms have become an important export oriented venture in the country. The first major farm in the country was set up in Batticaloa in 1977 which had a fatal closure in 1983. Smaller farms have recently developed and are on the increase, but yet far bellow its potential.

However what is needed is an organised farming system, demarcated or zoned areas for shrimp farms, infrastructures including hatcheries, regulations to prevent eroding environment and implementation strategies etc. to make the whole process a viable and a welcome project for the region.

### **Recommendations:**

Water is a resource on its own. But a Lagoon is not just a resource but a system and the best use could only be achieved by integrated management rather than isolated leaps.

1. The Lack of an authority is the primary deficiency. The foremost need is the identification of the status quo of the Lagoon in the context of regional and national administration and assign the agency with authority to manage the lagoon which encompasses all spheres. However if more than one agency has the mandate to be involved it becomes vital that a overall coordinating authority is named or established and without such a structure, no integrated development/management may take place.

2. It is already established that this is a system and needs to be managed. A definite plan becomes a very important feature owing to the complexity as compromises have to be integrated into the plan as the sectors themselves would require opposite recommendations. Eg. a) Agriculture wishes to have the barmouth closed, the fisheries development would wish it to be open b) closing of the Valayiravu bridge for fresh water may not be the best for development of shrimp farms or conservation of mangroves. A plan of details becomes the most important at this juncture, which analyses cost benefits of all inclusive of social and ethical values.

3. Organised development of fisheries and allied industries is a very important feature which shall include processing. It is only by the usage of technical development that the industry could be made lucrative at present. This does not mean that we overlook the traditional approaches, but understanding both and making the best of both worlds would be the appropriate line of thought.

4. When a plan becomes the most important what feeds the plan is data. It is very important to obtain data for sectors that need to be planned. It is from good data and accurate information a management plan could be drawn or established. This is the area where much research and academic inputs have to be developed.

The information and data would initially be the basic data on its physical/ biological/ ecological/ social/economical structure. Supply/demand data becomes very important to make compromises.

More data on cost benefit analysis on tourism needs to be added at this point for development. Hypothetical expectation alone will not be adequate when you wish to enter into Business in reality.

I have been quoting empirical data in many places as quantitative data are not available. As an example we could take the infection of fish. The fish in the lagoon are infected with a disease during the dry seasons, which is not explained to date. The possibilities of the agrochemical, fertilizers and other entries to the lagoon as a source for the infection, has been suggested. However no quantitative data is available, primarily to attend to the disease or systematic study.

5. Special features as Sewage Planning/ Waste disposal and other supporting structure becomes very important as the lagoon intermingles with all major towns in the region. Designs for structures take importance at this stage. In fact the limit for construction of a house has been reduced to 6 perch at present from 20 a decade ago. 6 perch to have the house, well and a pit and the neighbour to have the same...! You can imagine how impossible the puzzle becomes unless drinking water supply and sewage systems are designed. You would be surprised that the Mahaweli town Welikande has a central sewage system as far back as 1980s!

6. Education and Appreciation: The Lagoon as a wealth has to be understood by the people and appreciated. It is that which makes any resource manageable, in the end. Participation and commitment by the users of the system. Educating the people of its importance, value, potential and benefit takes priority over any other programme associated with the lagoon.

## **Conclusion**

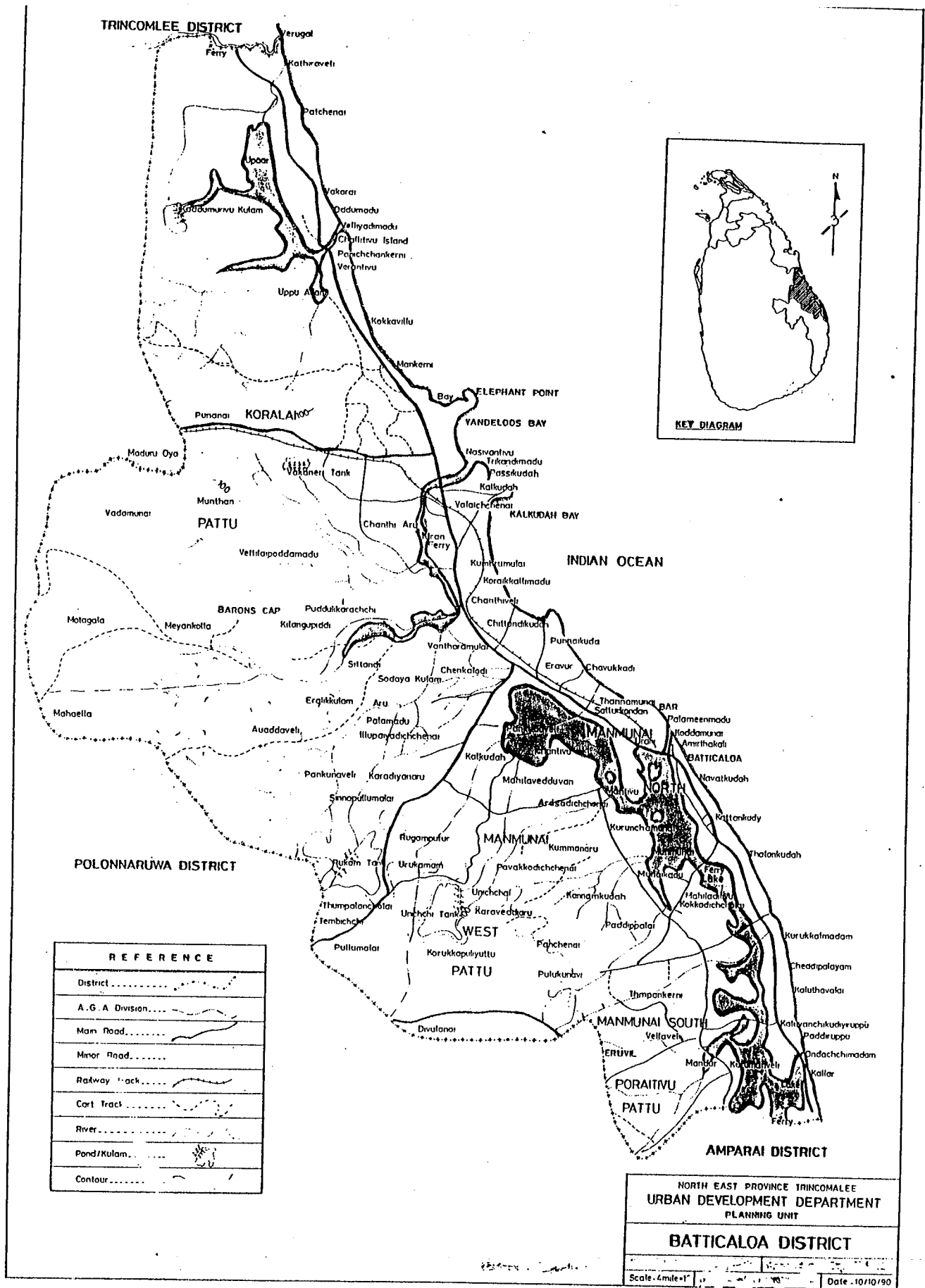
The Batticaloa lagoon with its large waterway intermingling with the populated towns of the region holds a tremendous potential waiting to be tapped. However it is limited by the fact that a definite authority and a plan is not available for operation. I am aware that one is in the pipeline now under the patronage of the DERBA project funded by NORAD. However it remains that vast amount of information is needed to facilitate the planning

and operation process, which warrants research in all spheres, some for basic information and the others to continue along with the development steering through the years modifying as necessary, as in all biological and natural ecosystems that are managed. It is also very important that the people of Batticaloa understand, appreciate and participate in the whole process for it to become a success.



## References

1. Brohier, R.L (1965) "Seeing Ceylon", Lake House Investments Ltd., Sri Lanka
2. (1991) "Natural Resources of Sri Lanka", NARESA, Ed. Malcolm M Baldwin
3. (1992) Statistical hand book, District Planning Unit, Kacheri, Batticaloa.
4. (1993) "Batticaloa Today, the Land of the Singing Fish", North East province, Trincomalee
5. (1993) An Environmental Profile of the Batticaloa District, Central Environmental Authority, Sri Lanka
6. (1996) Master Plan for the Batticaloa Lagoon, work book, DELEC, Batticaloa, Sri Lanka



REFERENCE	
District	.....
A.G.A Division	.....
Main Road	.....
Minor Road	.....
Railway track	.....
Canal	.....
River	.....
Pond/Kulam	.....
Contour	.....

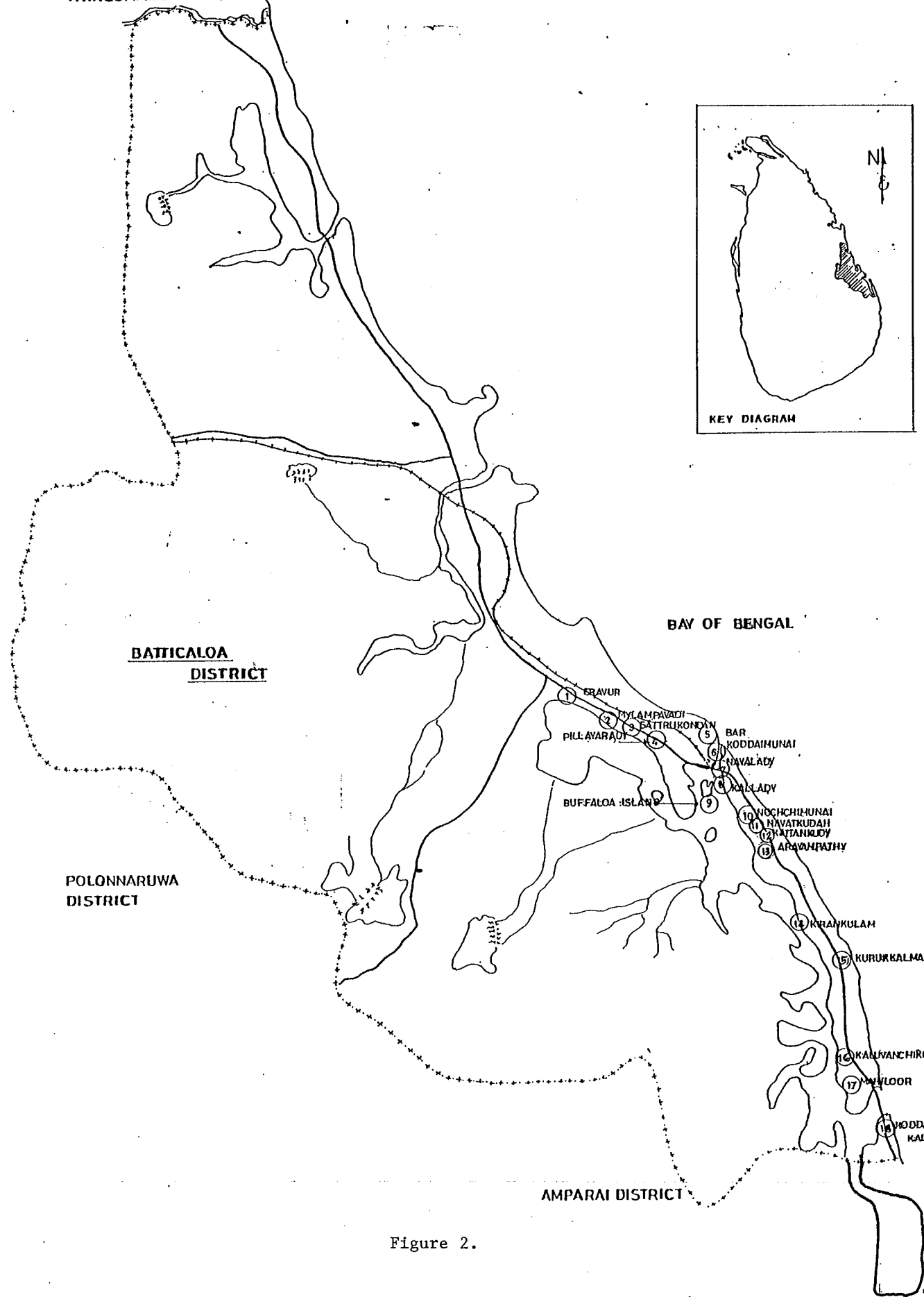
NORTH EAST PROVINCE TRINCOMALEE  
 URBAN DEVELOPMENT DEPARTMENT  
 PLANNING UNIT

**BATTICALOA DISTRICT**

Scale: 4 miles = 1"      Date: 10/10/90

Figure 1.

TRINCOMALEE DISTRICT



KEY DIAGRAM

BAY OF BENGAL

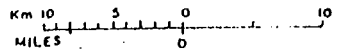
BATTICALOA  
DISTRICT

POLONNARUWA  
DISTRICT

AMPARAI DISTRICT

Figure 2.

**BATTICALOA DISTRICT**



SCALE 1:1 300,000

**SURFACE WATER**

NO.	RIVER BASIN
1	MAKARACHI ARU
2	MANDAN ARU
3	BODIGODA ARU
4	KIRIMICHCHAI ODAI
5	PULIYAIPOTA ARU
6	MADURU OYA
7	MEIYANKALLU ARU
8	MUNDANI ARU
9	MAGALAVATTUVAN ARU
10	VETT ARU
11	PATHATHE ARU
12	MANDIPATTU ARU
13	NAMAKADA ARU
14	THUMPANKERNI
15	ANDELLA OYA

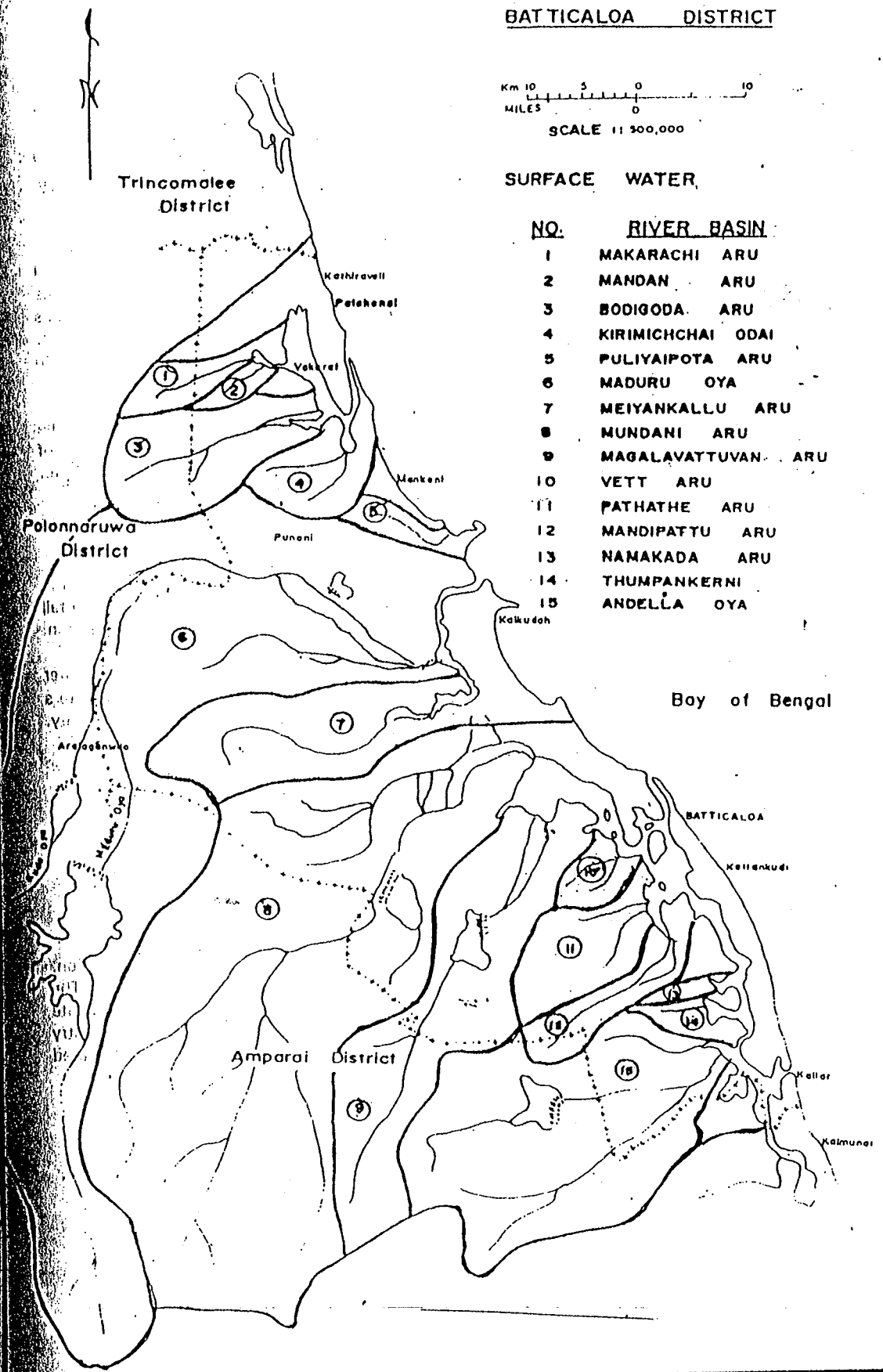


Figure 3

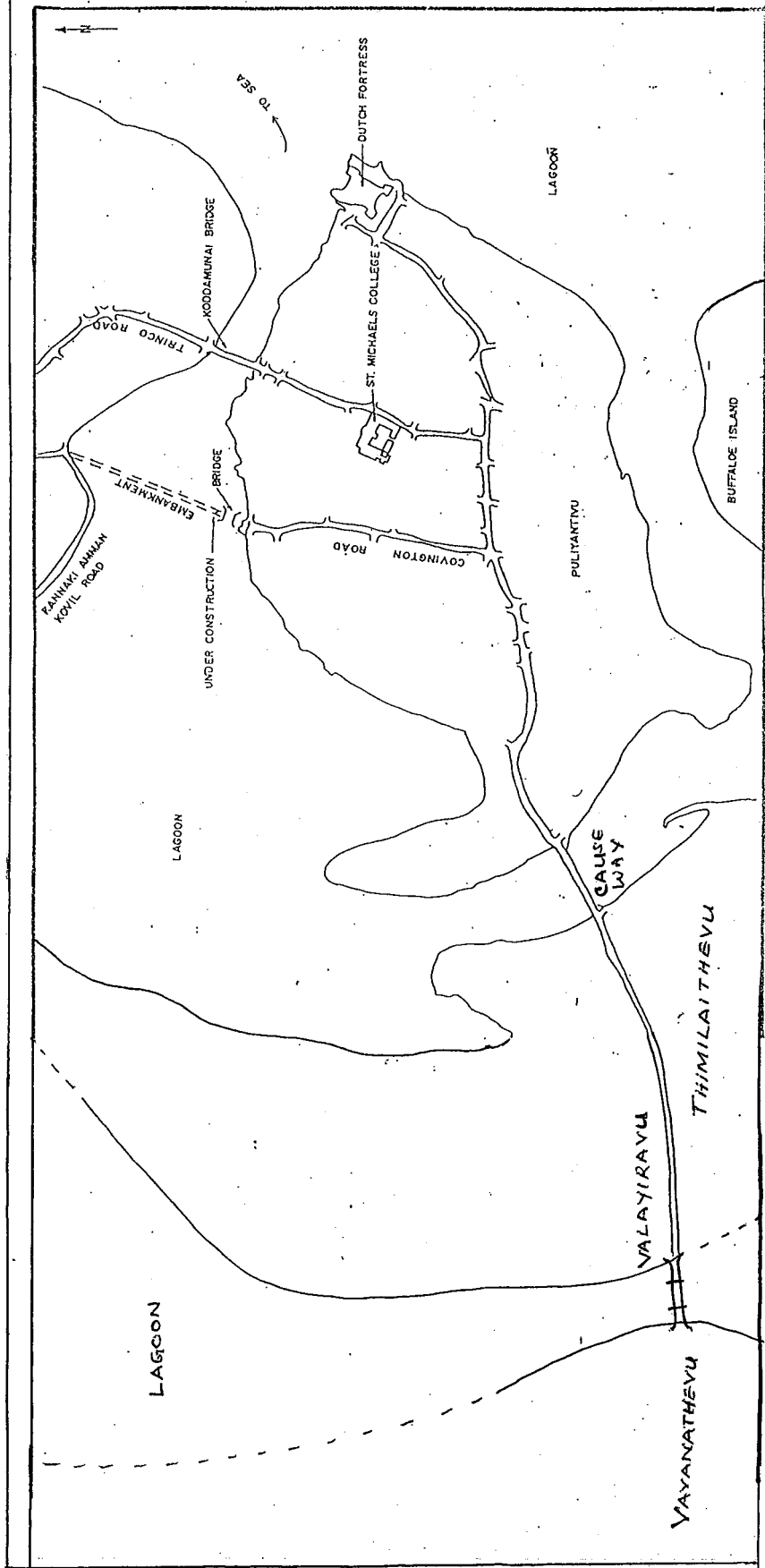


Figure 4.

Table 1 : Fish Production (in mt) in Batticaloa District. The purchase of fish by CFC(Ceylon Fisheries Corporation) is given for two years.

Year	Marine fish	Lagoon fish	Crab	Prawn	Cuttle fish	TOTAL	CFC purchase
1980	6675	402	22	48	08	7137	
1981	8837	375	18	94	11	9335	
1982	9283	342	24	81	09	9739	
1983	4098	271	09	22	05	4603	
1984	3582	360	15	37	14	4008	
1985	3256	375	16	69	11	3727	
1986	3256	142	12	74	19	3503	
1987	3382	141	09	29	15	3576	
1988	3432	207	13	19	16	3687	
1989	3218	223	17	23	19	3500	
1990	2938	21	06	21	07	2983	
1991	1472	310	48	30	36	1896	
1992	2380	368	20	30	09	2807	
1993	2316	990	192	98	35	3631	8.93
1994	5486	2025	138	249	06	7904	6.82
1995	4558	1161	336	242		6297	

source: Batticaloa today and DFEO, Batticaloa

**Table 2- River Basins, Batticaloa District**

No.	Basin/River/ Stream	Catchment Area sq.km	Precipitation Volume c.m. x 10 <sup>6</sup>	Discharge as % of Precipit.
01	Makarachi Aru	37	60	34
02	Mandan Aru	13	21	34
03	Bodigoda	164	303	27
04	Kirimichchai Odai	77	123	32.5
05	Puliyaipota Aru	52	84	32.5
06	Maduru Oya	1541	2476	32.5
07	Meyankallu Aru	225	362	32.5
08	Mundeni Aru	1280	2236	38
09	Magillavattuvan	346	605	48
10	Vett Aru	26	58	40.5
11	Pathathe Aru	100	225	91
12	Mandipattu Aru	100	223	91
13	Namakada Aru	12	26	40.5
14	Thumparkerni A	90	20	40.5
15	Andella Oya	522	869	33