

Table 2-2L-9 Stand Number by Species and Height (/ha)(Plot A No21, Comp.303M15 )

	Low	Mid	Tall	High	Total
Ra	50	0	0	0	50
Bc	50	0	0	0	50
Bg	100	0	0	0	100
Bp	100	0	0	0	100
Ao	100	0	0	0	100
Ac	500	0	0	0	500
Xg	250	0	0	0	250
Sa	150	0	0	0	150
Sh	50	0	0	0	50
Al	1000	0	0	0	1000
Tot	2350	0	0	0	2350

The following three plots were surveyed along the river, in the intermediate, and near the land area, respectively. The locations of the plots are shown in Figure 2-2L-39.

The structures of stands in Plots A, B and C are shown in Tables 2-2L-9, 2-2L-10 and 2-2L-11, respectively. Mangrove forests surveyed in Plots A, B and C are located on the riverside, on the landward fringe, and in the area between the former two, respectively

All of these plots are low height forests, but the crown density of the lower layer is over 70%. There is no open space except on small water channels. There

Table 2-2L-10 Stand Number by Species and Height(/ha)(Plot B No 22, Comp. 302M20)

	Low	Mid	Tall	High	Total
Ra	0	0	0	0	0
Bs	500	0	0	0	500
Ct	200	0	0	0	200
Li	1300	0	0	0	1300
Ao	0	0	0	0	0
Ac	0	0	0	0	0
Xg	150	0	0	0	150
Hi	50	0	0	0	50
Sh	300	0	0	0	300
Li	0	0	0	0	0
Tot	2500	0	0	0	2500

Table 2-2L-11 Stand Number by Species and Height (/ha)(Plot C No 23, Comp. 302M19)

	Low	Mid	Tall	High	Total
Ra	0	0	0	0	0
Bg	50	0	0	0	50
Ao	50	0	0	0	50
Xg	150	0	0	0	150
Li	1100	0	0	0	1100
Sh	900	0	0	0	900
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Li	0	0	0	0	0
Tot	2250	0	0	0	2250

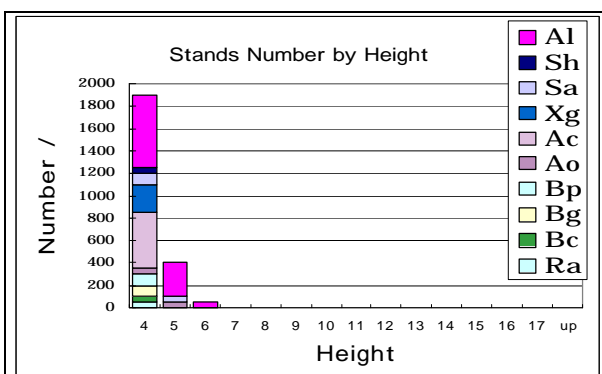


Fig. 2-2L-40 Stand Number by Species and Height(/ha) (Plot A No21, Comp.303M15 )

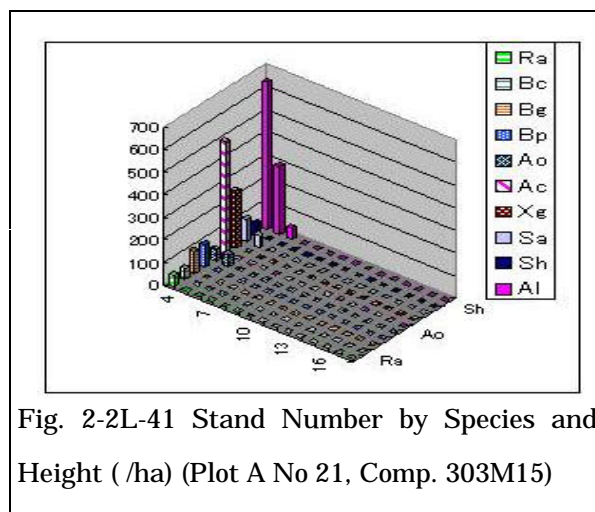


Fig. 2-2L-41 Stand Number by Species and Height (/ha) (Plot A No 21, Comp. 303M15)

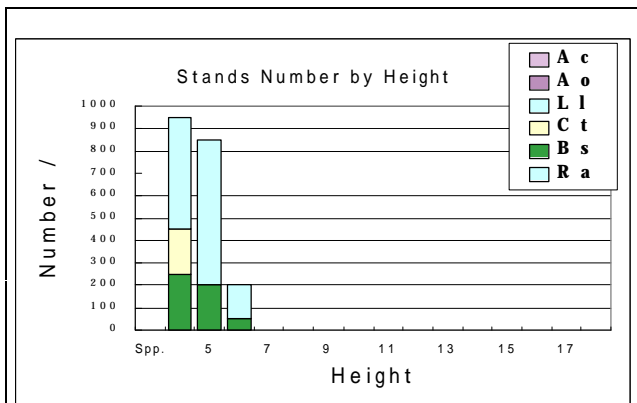


Fig. 2-2L-42 Stand Number by Species and Height (/ha) (Plot B No 23, Comp. 302M20)

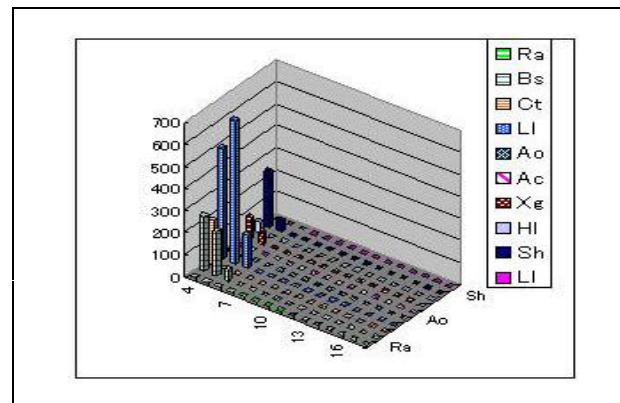


Fig. 2-2L-43 Stand Number by Species and Height (/ha)(Plot C No 23, Comp. 302M20)

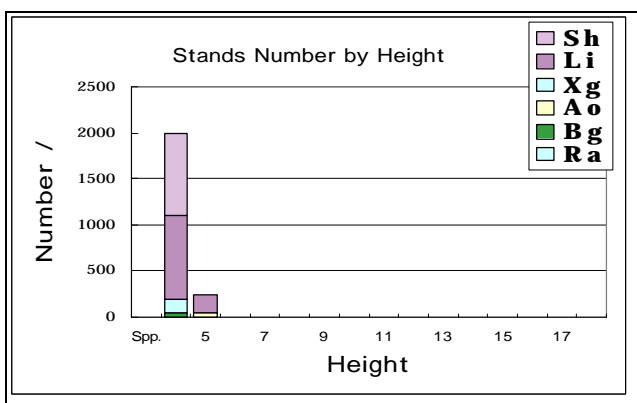


Fig. 2-2L-44 Stand Number by Species and Height (/ha)(Plot C No 23, Comp. 302M19)

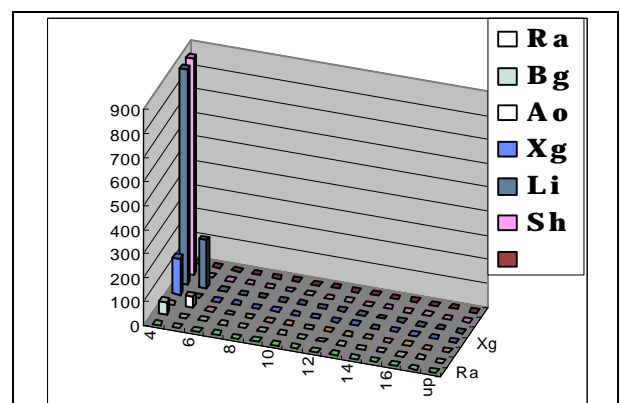


Fig. 2-2L-45 Stand Number by Species and Height (/ha) (Plot A No 23, Comp. 302M19)

are 2,000 to 2,500 trees per ha counted in these plots. They are composed of seemingly very similar layers. The majority of Plot A is represented by *A. lanata*, followed by *A. corniculatum*, *X. granatum*. This suggests that river water affect their distribution.

The majority of Plot B is represented by *L. littorea*, followed by *B. sexangula* and *S. hydrophyllacea*. There are also *H. littoralis* as a high-intertidal mangrove species and *C. tagal*. *A. officinalis* is not found at all.

The majority of Plot C is represented by *L. littorea*, followed by *S. hydrophyllacea* and *X. granatum*. The appearance of *B. gymnorrhiza* and *A. officinalis* probably means that the river still affects their distribution.

Low forests partially look slightly white or dark gray in the aerial photograph depending on how many mangroves with large crowns are mixed in them. Since these changes are continuous, they cannot easily be divided into three patterns. In such areas, the extent of sub-compartments is determined by putting parts

together, which are similar in crown size and color tone and setting a boundary in the middle of adjacent parts, which are different in color tone.

There is a third zone, which topographically differs from the fore-mentioned zones in the Lamon Bay area. The Kabibihan River Zone, in which less seawater flows into, forms vegetation, which remarkably differs from the mangrove forest along the coast of Lamon Bay. The most part of the mangrove zone has already been converted to fishponds, and the original condition of the forest could not be observed.

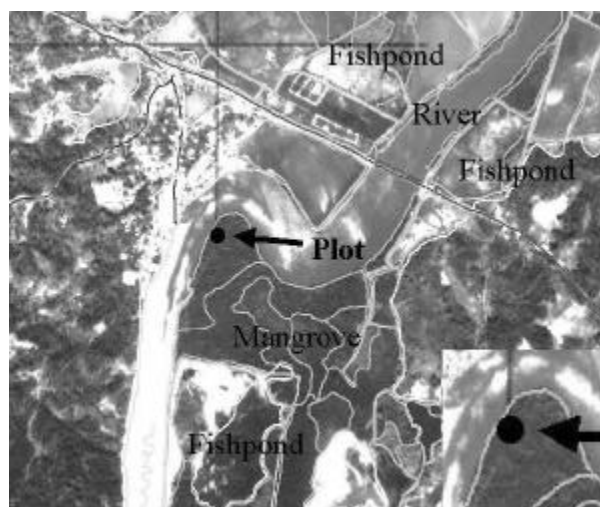


Fig. 2-2L-46 Location of a Plot Survey in Kabibihan River (Plot No 29, Comp. 710M1)

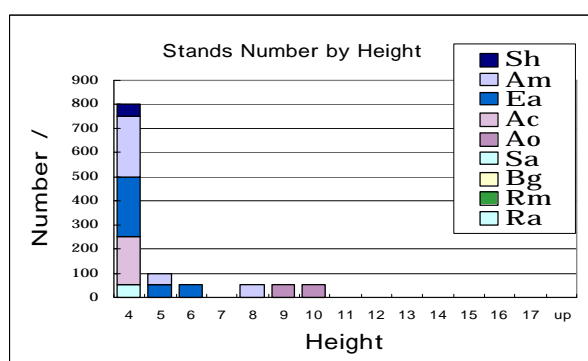


Fig. 2-2L-47 Stand Number by Species and Height (/ha) (Plot No 29, Comp. 710M1)

Table 2-2L-12 Stand Number by Species and Height (/ha) (Plot No 29, Comp. 710M1)

	Low	Mid	Tall	High	Total
Ra	0	0	0	0	0
Rm	0	0	0	0	0
Bg	0	0	0	0	0
Sa	50	0	0	0	50
Ao	0	100	0	0	100
Ac	200	0	0	0	200
Ea	350	0	0	0	350
Am	350	0	0	0	350
Sh	50	0	0	0	50
0	0	0	0	0	0
Tot	1000	100	0	0	1100

A plot survey was conducted in a secondary forest slightly remaining along the Kabibihan River. The location of the plot is shown in Figure 2-2L-46. The plot is an area in which 7-10 m *A. officinalis* trees are found on the riverside.

*N. fruticans* and *A. ilicifolius* grow like bushes over the forest floor. Much *E. agallocha* trees as well as 4-6 m *A. lanata* and *A. corniculatum* trees are also found.

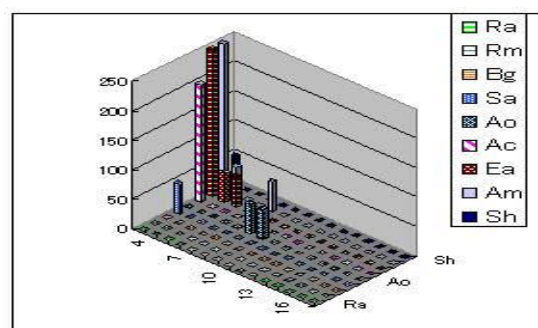


Fig. 2-2L-48 Stand Number by Species and Height (/ha) (Plot No 29, Comp. 710M1)

*S. alba* and *S. hydrophyllacea* are also somewhat mixed with them. Data on the structure of stands in the plot are shown in Table 2-2L-12 and Figures 2-2L-47 and 2-2L-48.

The final sample of the Lamon Bay area is a forest of *A. marina* and *S. alba* observed in the Lopez Zone. The location of the plot is shown in Figure 2-2L-50. Mangrove forests in the Lopez Zone are distributed in a belt 100 m to 200 m wide with 4-8 m low height stands extending along the coast. Following them, 8-12 m *A. officinalis* stands extend landward with large crowns. Seaside flat areas in the Lamon Bay area are usually occupied by *R. apiculata* and *R. mucronata* as pioneer species. However, this plot is mostly a pure forest of *A. marine*.

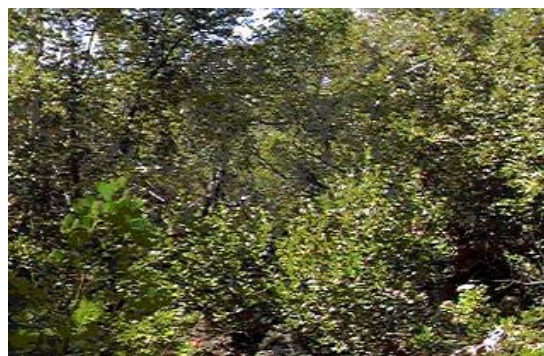


Fig. 2-2L-49 Photograph of the Survey Plot in Kabibihan River(Plot No 29, Comp. 710M1)

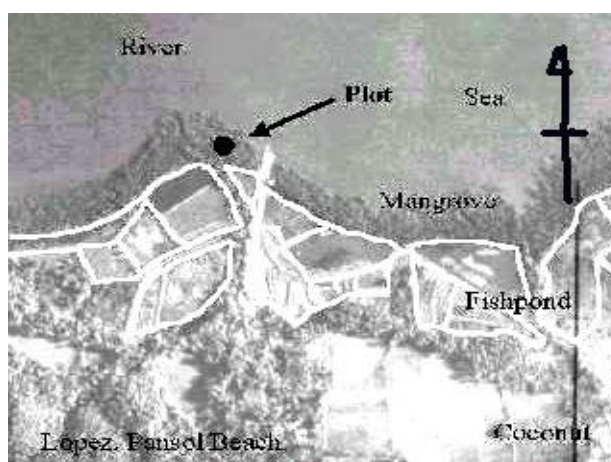


Fig. 2-2L-50 Location of a Plot Survey in Lopez (Plot No 30, Comp. 903M3 )

Thus, the team have surveyed and analyzed mangrove forests in the Lamon Bay area. Then, have comprehensively examined the relationships between the distribution of mangrove forests and it's geographical conditions, comparisons with aerial photo imagery patterns, special expanses, and the possibility of

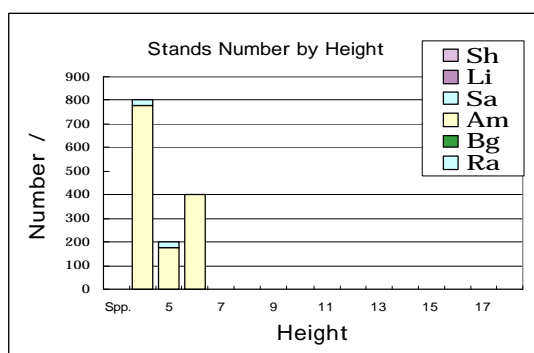


Fig. 2-2L-51 Stand Number by Species and Height (Plot No 30, Comp. 903M3 )

Table 2-2L-13 Stand Number by Species and Height ( /ha) (Plot No 30, Comp. 903M3)

	Low	Mid	Tall	High	Total
Ra	0	0	0	0	0
Bg	0	0	0	0	0
Am	1356	0	0	0	1356
Sa	44	0	0	0	44
Li	0	0	0	0	0
Sh	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Li	0	0	0	0	0
Tot	1400	0	0	0	1400

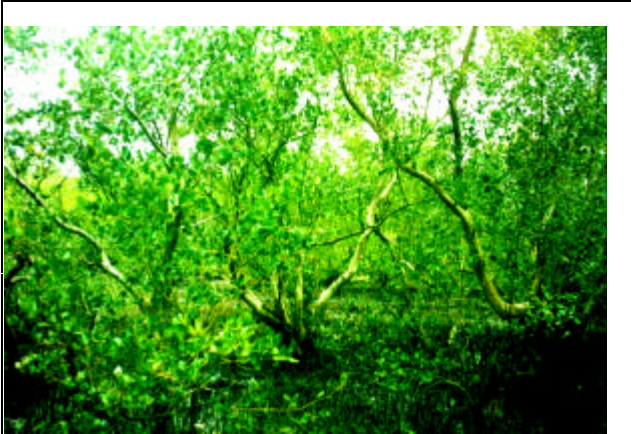


Fig. 2-2L-53 Photograph of the Survey Plot in Lopez ( A.m) (Plot No 30, Comp. 903M3 )

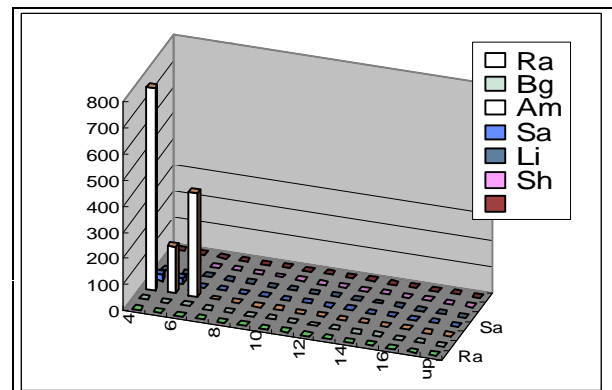


Fig. 2-2L-52 Stand Number by Species and Height(Plot No 30, Comp. 903M3)

distinguishing a pattern from adjacent patterns in the photograph.

Based on these results, mangrove forests in the Lamon Bay area was divided into the following eleven groups and similar forests were classified into sub-compartments.

#### Seaside flat area

( Santa Cecilia Zone, Binactocan Zone, and along with Calauagu Bay coast of the Calauag Zone. )

- a. **LRD** :Small and low height *R. apiculata* dominated area
- b. **LRB**:Small and low height *R. apiculata* and with *C. tagal*, *B. gymnorhiza* mixing area.
- c. **LAS** :*A. officinalis* rather tall and recognizable crowns are observed and *S. hydrophyllacea* occupied lower layer, and *C. tagal*, *X. granatum* are commonly associated area.
- d. **LHS** :Middle height *H. littoralis* dominated and with high tidal mangrove species such as *S. hydrophyllacea*, *E. agallocha* are mixing. These areas are commonly covered in large parts by shrubs and vines. And *A. ilicifolius*, *A. aureum* are often covers the floor.

#### Tidal flat and following riverside area

( Tiniguiban Zone, Santo Angel Bay Zone and Tinagan Dapat Bay in the Basiad Zone. )

- e. **LSA** :*S. alba* and/or *A. marina* and with *R. apiculata* standing outskirts of the sea shore line area.
- (a. Small and low height *R. apiculata* highly dominated area : Same as -a: LRD)
- (b. Small low height *R. apiculata* and with *C. tagal*, *B. gymnorrhiza*: Same as -b: LRB)
- f. **LAB**: Medium height *A. officinalis* and with low height *A. lanata*, *B. sexangula* mixing area (LAB)
- g. **LLX**: *L. littorea*, *X. granatum*, *B. parviflora*, *B. sexangula*, *S. hydrophyllacea*, *H. littoralis*. Low height stands are mixt.
- h. **LLA** :*A. floridum*, *A.s corniculatum*, *A. lanata*, *X. granatum*, *R. apiculata*, *B. sexangula*, *C. tagal*, *Camptostemon philippinensis* low height stands mixed area.
- (d. *H. littoralis* dominated and with high tidal mangrove species such as *S. hydrophyllacea*, *E. agallocha* are mixing. :Same as -d : LHS)

#### Kabibihan Zone and Makahadak Zone

- i. **LAA**: Medium height *A. officinalis* and with *A. lanata*, *S. hydrophyllacea*, and *A. corniculatum* area
- j. **LBE**: Bush and *E. agallocha* growing.
- k **LND**: *N. fruticans* dominated asrea
- (e. *S. alba* and/or *A. marina* and with *R. apiculata* standing outskirts of the sea shore line area :LSA)

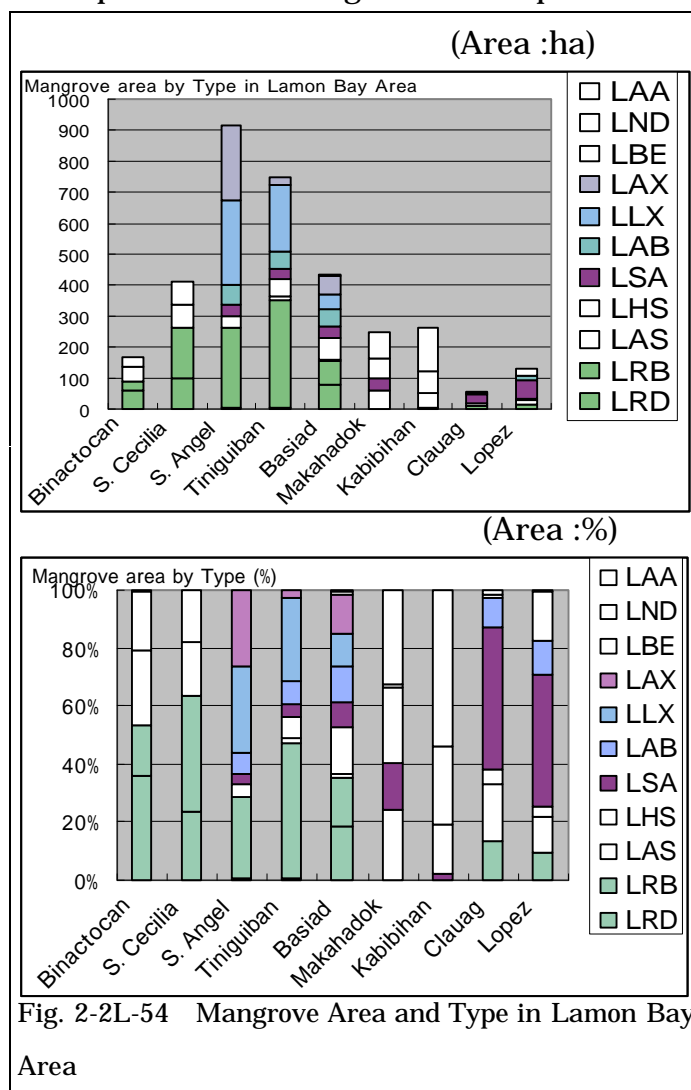
#### Lopez Zone (including riverside part of the Calauag Zone)

- (e. *S. alba* and/or *A. marina* and with *R. apiculata* standing outskirts of the sea shore line area: same as -e:LSA)
- (f. Medium height *A. officinalis* and with low height *A. lanata*, *B. sexangula* mixing area: same as -f:LAB)
- (k. *N. fruticans* dominated asrea: same as -k:LND)

Interpretation of the aerial photographs gives some data about above mentioned classified groups areas in total. The area was calculated by computer using GIS, based on Mangrove Forest Type Map. The result is shown on table 2-2L-14 and guraphs 2-2L-54 to 2-2L-56. Total originally mangrove including nipa area (existing mangrove/nipa areas + existing fishpond area) is 5936.14 ha. 2499.52 ha, as amount of 42% of total area has converted to fishponds.

Small *R. apiculata* dominated area as defined LRB is occupied largest area 890.12 ha(26% of total Mangrove area excluded mangrove area within fishpond). Next is low height *L. littorea*, *X. granatum*, and other mangrove species mixing area as defined LLX (536.32ha/ 16%). Follo-wing LLX, high inter-tidal mangrove area as defined LHS(344.09 ha,10%), middle to high inter-tidal area mixing several pattern of mangrove forest type as defined LAX(321.88 ha/ 10%) are listed.

Mangrove is covering some parts of fishpond. Total mangrove and nipa areas within fishpond is calculated 386.80 ha. Therefore grand total of mangrove areas in Lamon Bay area is 3760.40 ha. 63% of the total area of the Lamon Bay area is covered by Mangrove. Nevertheless, the percentage of the mangrove covered by each zones are big difference. Binactocan, S.Cecilia, S.Angel, Tiniguiban zones have still remaining big Mangrove areas. Even these areas are may affected fuel wood collection by local villagers, and these mangrove areas are low height secondly forest, the areas are remaining variable mangrove habitat to contribute renewable seashore fishery.



Concerning fishpond, total fishpond area is 2499.52 ha as occupied 42% of the total areas. In Binactocan, S. Cecilia, S. Angel and Tiniguiban Zones fishponds are not many, covered 5 to 16 % of each study areas. In other side, Basiad, Makahadok,

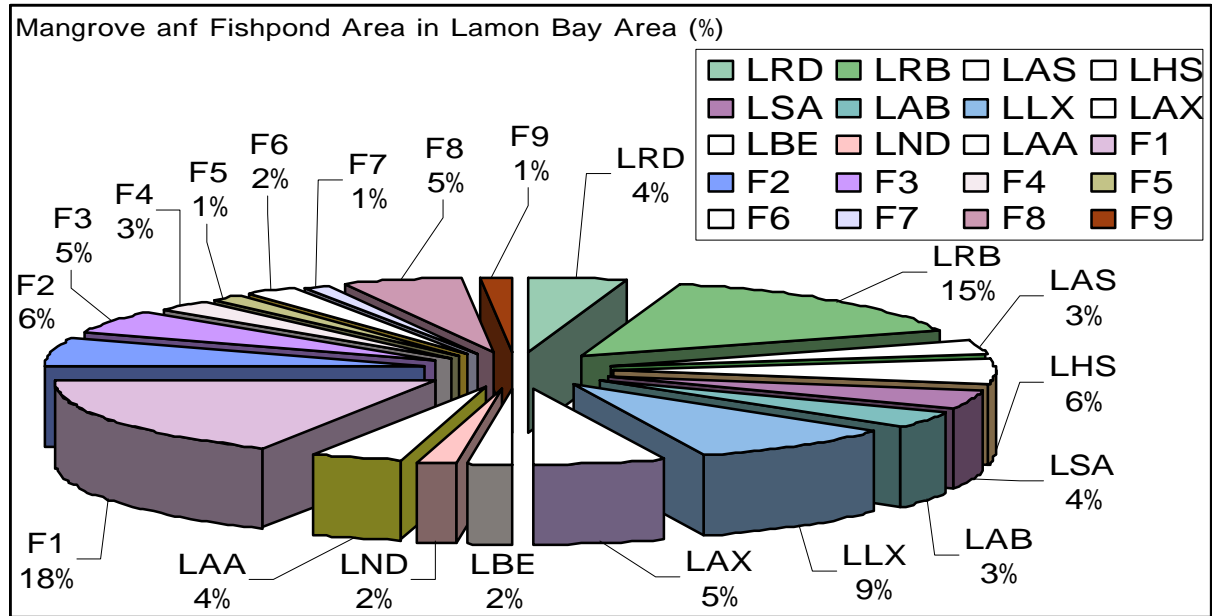


Fig. 2-2L-55 Mangrove and Fishpond Area in Lamon Bay Area

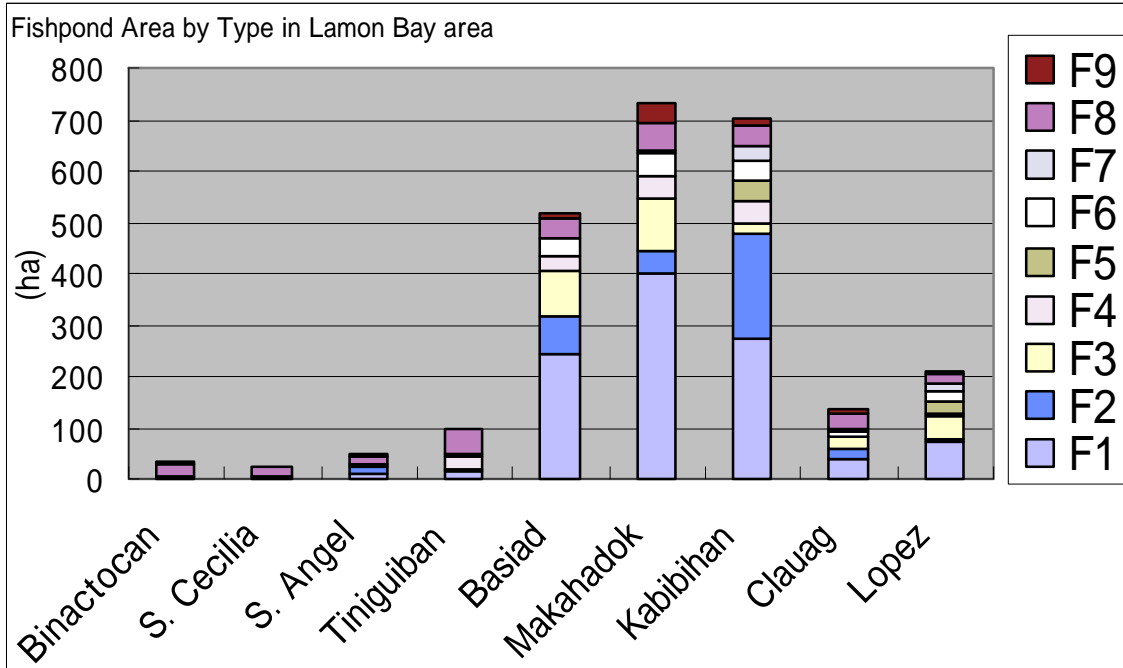


Fig. 2-2L-56 Fishpond Area By type in Lamon Bay Area (ha)



Kabibihan, Calauag and Lopez Zone are showing high percentages of fishpond areas. Makahadok zone is the highest with 74%. Table 2-2L-15 is showing the areas by fishpond types. Type F1 as filled with water is 1053.92ha (33%). 359.60ha looks drying (F2). Fishpond covered by vegetation is 386.80ha. Except type F1, F9 and vegetation covered part. The open fishpond without mangrove may be the target place for rehabilitation. This area is calculated approximately 1056 ha scattered on the Study area in Lamon Bay area.

Table 2-2L-14 Total Mangrove area by Zones in Lamon Bay area

	Binactocan	S. Cecilia	S. Angel	Tinguiban	Basiad	Makahadok	Kabibihan	Clauag	Lopez	Total
Mangrove total (a)	170	412	915	746	436	245	264	55	132	3374
Fishpond total	33	26	51	95	518	729	701	137	209	2500
Other area total	0	2	6	4	16	9	24	0	1	63
<b>Grand total (b)</b>	<b>203</b>	<b>440</b>	<b>972</b>	<b>845</b>	<b>970</b>	<b>984</b>	<b>989</b>	<b>192</b>	<b>341</b>	<b>5936</b>
Mang. within Fishpond ©	22	2	8	12	49	71	153	18	51	387
Mangrove total (a+c)	192	414	923	758	485	316	417	73	182	3760
total Mang.%(a+c)/b	94	94	95	90	50	32	42	38	53	63

Percentage structure of the above table

	Binactocan	S. Cecilia	S. Angel	Tinguiban	Basiad	Makahadok	Kabibihan	Clauag	Lopez	Total
Mangrove total	84	94	94	88	45	25	27	28	39	57
Fishpond total	16	6	5	11	53	74	71	72	61	42
Other area total	0	1	1	0	2	1	2	0	0	1
<b>Grand total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Table 2-2L-15 Mangrove and Fishpond Areas by Zone (ha)

		Binactocan	S. Cecilia	S. Angel	Tinguiban	Basiad	Makahadok	Kabibihan	Clauag	Lopez	Total
Mangrove	LRD	60.79	96.49	6.87	2.72	79.96					246.83
	LRB	29.97	165.01	254.30	348.27	73.09			7.27	12.21	890.12
	LAS	44.53	76.65		11.78	5.48			10.84	16.41	165.69
	LHS	33.65	73.67	39.89	57.69	72.15	59.73		2.75	4.56	344.09
	LSA			35.07	33.09	36.13	40.08	5.86	26.91	60.38	237.52
	LAB	1.26		63.46	57.90	54.00			5.54	15.01	197.17
	LLX			274.31	212.37	49.64					536.32
	LAX			241.1	21.83	58.95					321.88
	LBE						63.00	44.82			107.82
	LND					3.88	2.84	70.62	0.46	22.21	100.01
	LAA					2.32	79.68	142.29	0.94	0.92	226.15
Sub Total		170.20	411.82	915.00	745.65	435.60	245.33	263.59	54.71	131.70	3373.60
Fishpond	F1		0.47	10.91	12.92	245.96	400.21	271.76	39.62	72.07	1053.92
	F2			11.39	7.27	71.00	41.39	204.04	17.31	7.20	359.60
	F3			2.54		86.78	106.83	20.65	26.44	43.38	286.62
	F4		2.32	6.21	23.95	29.82	40.55	43.70		4.54	151.09
	F5				0.66	2.34	2.37	42.30		22.77	70.44
	F6				1.37	32.31	41.16	35.82	11.12	18.76	140.54
	F7	2.84			3.36	2.02	7.29	28.26	1.66	16.85	62.28
	F8	27.66	23.14	14.07	45.67	37.3	52.03	39.94	32.86	17.59	290.26
	F9	2.69		5.69		10.33	37.48	14.59	8.47	5.52	84.77
Sub Total		33.19	25.93	50.81	95.2	517.86	729.31	701.06	137.48	208.68	2499.52
Others			2.49	6.28	3.77	16.3	8.95	24.28		0.95	63.02
G Total		203.39	440.24	972.09	844.62	969.76	983.59	988.93	192.19	341.33	5936.14

Mangrove within FP	22.00	2.48	8.42	12.36	48.93	70.78	152.92	18.21	50.70	386.80
(%)	(%)									

		Binactocan	S. Cecilia	S. Angel	Tinguiban	Basiad	Makahadok	Kabibihan	Clauag	Lopez	Total
Mangrove	LRD	35.7	23.4	0.8	0.4	18.4	0.0	0.0	0.0	0.0	7.3
	LRB	17.6	40.1	27.8	46.7	16.8	0.0	0.0	13.3	9.3	26.4
	LAS	26.2	18.6	0.0	1.6	1.3	0.0	0.0	19.8	12.5	4.9
	LHS	19.8	17.9	4.4	7.7	16.6	24.3	0.0	5.0	3.5	10.2
	LSA	0.0	0.0	3.8	4.4	8.3	16.3	2.2	49.2	45.8	7.0
	LAB	0.7	0.0	6.9	7.8	12.4	0.0	0.0	10.1	11.4	5.8
	LLX	0.0	0.0	30.0	28.5	11.4	0.0	0.0	0.0	0.0	15.9
	LAX	0.0	0.0	26.3	2.9	13.5	0.0	0.0	0.0	0.0	9.5
	LBE	0.0	0.0	0.0	0.0	0.0	25.7	17.0	0.0	0.0	3.2
	LND	0.0	0.0	0.0	0.0	0.9	1.2	26.8	0.8	16.9	3.0
	LAA	0.0	0.0	0.0	0.0	0.5	32.5	54.0	1.7	0.7	6.7
		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Consideration on Mangrove Forest Distribution Categorizing

Vegetation Type (Dominant Species)	Landscape Condition			Location	Soil	Salinity	Stands Condition		Occupied Area								
	Inter tidal level	Estuarine Location	Location				Crown size	Tree height									
Area	High	Middle	Low	Up	Middle	Down	Ng	B	M	S	I	N	H	M	L	S	
Se, Am & Ra																	Seaside pioneer zone, narrow belt on sandy sea shore in Sant angel, Tinapog Dupat, Lopez zones
Ra																	All around seaside area
Ra & Ct																	All around seaside area behind Ra, made small group peached
B. spp. Mix & A.o																	Tidal flat area behind Ra and Ct, not so wide
A.o & S.h																	All around intermediates to high intertidal zone
Hi & Xg																	All around high intertidal zone to land ward fringes, wide in Kabibihan, Mahabakok zone
L.l & X.g & Sh, A, A.o																	High inter tidal zone on tidal bay
A.o & Ai & A.o, Sh																	On Tidal bay and continuous river side flat area
Nf																	On every inter-tidal zone except land-ward fringes
Ea & Bush																	On high inter-tidal zone

(Dominant Species)	Possibility to identify on aerial photo graphs and draw on 1:10,000 map	Sizes of Areas by Vegetative types	Mangrove forest Types on Map	Explanation of Mangrove forest types
Se, A.o & some Nf	Difficult, too narrow		AAN	Merge to surrounded sub-compartment
A.o & some Hi, Nf	Possible		AMN	A.o rather big crowns are observed within Nf or narrow belt along with riverside
B. spp. & some Nf	Possible but only limited place on Lineas zone		APN	Mangrove species such as A.o, Se and Ea are dominated and Nf are mixed
Hi, Xg, & Nf + Bush	Difficult, too small patch		ANM	Merge to surrounded sub-compartment Nf
Nf	Possible		ASN	Almost occupied by Nf (Pure Nipa area)
Ea & Bush + Nf	Possible			Nf are dominated and high inter tidal mangrove species mixed.
				Shrubs mixed with Nf and high inter tidal mangrove species such as Ea, A.o and Ai

Fig. 2-2L-57 Vegetation and Mangrove Area Classification in Lamon Bay Area

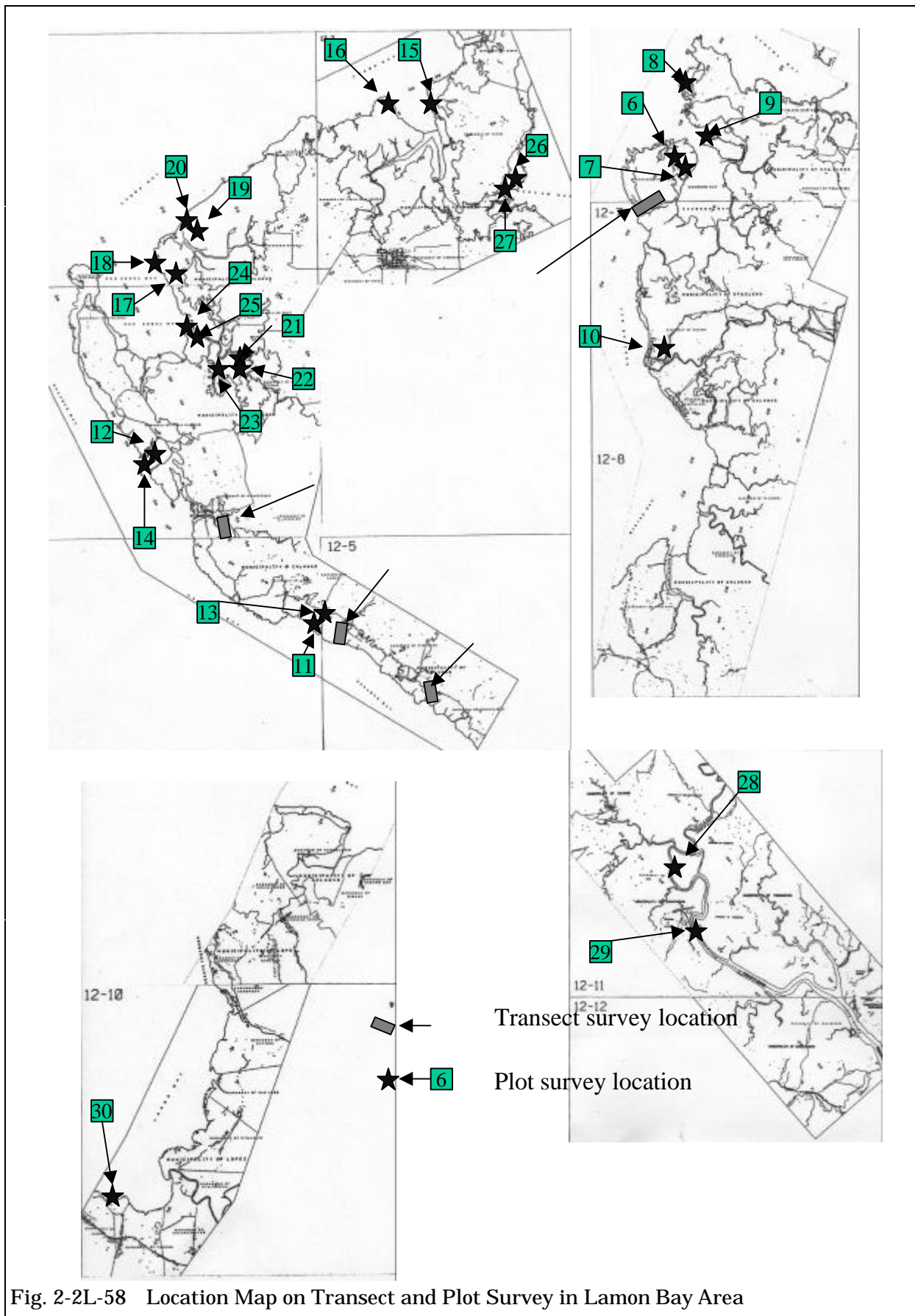


Fig. 2-2L-58 Location Map on Transect and Plot Survey in Lamongan Bay Area

### **2-3-3 Socio-economic Condition**

#### **(1) Provincial Level**

The Province of Quezon is bounded on the north by Aurora province, on the east by Polillo Islands and Lamon Bay, Bulacan, Rizal, Laguna and Batangas on the west and Tayabas Sea on the south. As the country's sixth largest province, Quezon has numerous natural resources and potential of development. Because Quezon is also part of the route from Metro Manila to the Bicol Region both by bus and by train, its towns which serve as stop-over points for the businessman, trader and travelers which benefit the Province. Quezon was at one time under the jurisdiction of various provinces. In sixteen century, the central portion was divided between Laguna and Nueva Ecija, while the other portion was divided between the provinces of Mindoro, Marinduque and Camarines. In 1591, Tayabas was created into a province under the name of Kalilayan. On September 7, 1946, Tayabas was renamed as Quezon Province. Province of Quezon has a land area of 8,706.7 sq. km., and a population of 1,537,742 (1995).

Major products of Quezon are; 1) coconuts (copra), 2) fishery products, 3) rice and corn. The average annual income of the people in Quezon is 30,958 pesos (1994 census, excluding Lucena City).

The socio-economic feature of Quezon is summarized in Table 2-3-1.

#### **(2) Municipal Level**

Lamon Bay, the Study Area, is located within the jurisdiction of three (3) Municipalities, namely Calauag, Lopez and Guinayangan.

##### **1) Significant Features**

The economy of these three municipalities depends on the agricultural sector, especially production of Coconuts (Copra). Fishery sector also occupies much significant source of income in the area. Municipality of Calauag is the center of fishery activities in Calauag bay, while Lopez is the center of fishery in Lopez Bay.

**TABLE 2-2L-16 GENERAL SOCIO-ECONOMIC CONDITION  
PROVINCE : QUEZON**

<b>1. General Feature</b>		
Area (ha)		8,706.7 sq.km
No. of City		1 (Lucena City)
No. of Municipality		40
No. of Barangay		1,210
Population (Total)		1,537,742 (1995 census)
(Labor force)		62.7%
(by occupation)	- Agriculture	49.9%
	- Services	34.3%
	- Inudstry	15.8%
Average Annual Income		30,958 peso (1994)
Average Annual Expenditure		26,514 peso (1994)
<b>2. Products</b>		(1996 census)
1) Agriculture	- Palay	64,194 ha                      141,848 metric tons
	- Corn	28,190 ha                      33,261 metric tons
	- Coconuts	219,297 ha                    779,937 metric tons
	- Cassava	6,840 ha                      40,071 metric tons
	- Camote	3,510 ha                      26,076 metric tons
2) Forestry	- Area	369,570 ha
3) Fishery	- Commercial	12,358 metric tons
	- Municipal	51,903 metric tons
	- Aquauclture	8,542 metric tons
4) Livestocks	- Carabao	37,880 heads
	- Cattle	28,370 heads
	- Hog	120,340 heads
	- Goat	37,933 heads
	- Chicken	546,310 heads
	- Duck	125,620 heads
<b>3. Infrastructure</b>		
Transportation	- Road	Total 3,670,017 km
	- Ports	35 nos.
	- Airport	2 nos. (Incl. private, military)
Communication	- Tel company	1 no.
	- Radio Stations	1 TV Station, 11 Radio Stations
Electricity	- Served	10 Municipalities
	- Covered	76,887 households
Rural Water Supply	- Level I	77,299 households
	- Level II	12 systems
	- Level III	18 systems
Medical facilities	- Hospital	1 (Gov.), 36 (Private)
Educational facilities	- College/Univ.	6 (state), 10 (Private)
	- Highschool	124
	- Elementary	829
Agri/fishery facilities	- Pear	35 nos.
	- Fishpond	426 nos. (under FLA) (Total 6,590ha)
	- Irrigation	4 National Systems, 134 Communal Systems
	- warehouse	7 (NFA), 42 (Private)

Source : Census of Agriculture, 1996, NSO  
Provincial Profile, 1996, PPDO, Prov. Government of Quezon

## 2) Development Policy/Strategy

Municipal Government of Calauag define its priority emphasis of development as the improvement of agricultural production, especially production of Coconuts, followed by fishery sector and health improvement. On the other hand, Municipality of Guinayangan has its priority projects in the road improvement and water supply. In case of Lopez, emphasis in development strategy is set on the general improvement of agricultural and fishery productivity.

## (3) Barangay Level

The Study Area is located within the forty five (45) Barangay, which are:

### Municipality of Calauag (21 Brgy.)

Atulayan, Lagay, Sta. Cecilia, Villa Magsino, Sto. Angel, Buli, Villa San Isidro, Kagtalaba, Plaridel, Kumaludkod, Kinalin Ibaba, Bigaan, Manhulugin, Kinamaigan, Anas, Tiniguiban, Maulawin, Kabuluan, Lainglaingan, Tamis, Sinag

### Municipality of Lopez (9 Brgy.)

Calantipayan, Pansol, Hondagua, San Jose, Sta. Lucia, Sta. Teresa, Bagacay, Sugod, Matinik

### Municipality of Guinayangan (6 Brgy.)

Balinarin, Bukal Maligaya, Hinabaan, Tikay, Danlagan Cabayao, Aloneros

### Municipality of Tagkawayan (3 Brgy.)

Manato, Cabugwang, Cabibihan

### Municipality of Sta. Elena (4 Brgy.)

Pulong Guit-guit, Basiad, San Vicente, Poblacion

## 1) Socio-Economic Condition

### a. Population

The Barangay in the Lamon Bay Area has an average number of household less than 200 and comparatively fewer than the other two Study Areas. Average number of Family member are ranging between 3 to 6 person.

The result of the Interview Survey by sampling 200 households from 14 Barangays in the Study Area (hereinafter referred as "the Interview Survey) shows that the average number of family member is 5.0 person (maximum 6.8 in Barangay Kagtalaba, minimum 4.2 in Barangay Santa Cecilia). Distribution by age is indicated in Table 2-2L-17 as below:

Age	Lamon Bay 14 Brgy.(%)	Nationwide Average (%)
0 ~ 4	11.4	13.7
5 ~ 9	12.8	13.0
10 ~ 14	13.6	11.7
15 ~ 19	11.7	10.9
20 ~ 24	8.4	9.1
25 ~ 29	6.8	8.4
30 ~ 34	6.3	7.1
35 ~ 39	6.5	6.3
40 ~ 44	5.6	5.0
45 ~ 49	5.0	4.0
50 ~ 54	4.6	3.0
55 ~ 59	2.3	2.5
60 ~ 64	2.3	1.9
65 ~	2.8	3.5

b. Income Resource, Production, Marketing

As main income resource, Copra is the common production in all Barangay surveyed. Next to Copra is the rice, fishery and Nipa gathering. As for fishery products, brackish water fish is their main catch. People in most of Barangay go to sell their products in the center of each Municipality, namely Calauag, Lopez, and Guinayangan, however, Copra and Nipa are commonly sold to intermediate buyer (middlemen) visiting their Barangay.

The Interview Survey shows that 33.8% of labor force in this Area is engaged in the fishery sector, 26.8% in agricultural sector. Monthly average income is P5,560.80 while expense is P4,493.86. This average income is 1.07 times of the



poverty threshold (expense necessary to secure 2,000 calories per family member) in Region-4 where Quezon Province is located, and 1.22 times of that of entire Philippines (average excluding National Capitol Region). Also, this average income is 1.02 times of the average income of fishery household in the Philippines (municipal, inland and fishculture fishery, excluding commercial fishing) which is P5,443.69. As for the employment style, 62.0% of the labor force in the Study Area is self-employed, 15.0 % is employed on permanent basis and 23.1% is employed on daily basis. An average 46.74% of the products from these fishery and agricultural sectors in this Area is self-consumed. 33.5 % of respondents sell their product within their Barangays, and 22.5 % replied that middlemen/traders visit their area to buy their products. This percentage is the lowest among three Study Areas (74.5% in Aparri Area, 39.5% in Ulugan Bay Area).

c. Infrastructures

Barangay located in the peninsula side of Calauag has no electric power and totally depending on their own generators (public and private). Most of Barangay has deepwell as their source of water, while Barangay in Guinayangan has spring for their drinking/domestic water use. Minimum infrastructure for production are observed in this area, especially small pier (landing pier) for fishery in the peninsula side of Calauag. Barangay hall, church, elementary school are common social infrastructure in these Barangay. Clinic and day care center are also commonly observed in this area.

According to the result of Interview Survey, 97.5% of families possess the house they are staying. Only 6.0% of households are electrified, but 93.5% of families have available potable water resources within their Barangay. 40% of households replied that they are using firewood as source of fuel, and this percentage is the lowest among three Study Areas (97.5% in Aparri Area, 60.7% in Ulugan Bay Area).

d. People's Organization

Religious and woman's groups are common in all Barangay. There are also existence of farmer's and fishermen's association, however, their activities are

minimum and they are not organized to have their own capital (fund). Only one cooperative is observed in these 14 Barangay.

Table 2-2L-18(1) Summary of Socio-economic conditions in Lamon Bay Area (1)		(Municipality of Calauag<1>)							
Items	Name of Barangay	Atulayan	Lagay	Sta. Cecilia	Villa Magsino	Sto. Angel	Buli		
1. Population				Municipality of Calauag					
a. Number of Household		360	175	61	101	302	90		
b. Average No. of Family Member		2.56	4.89	5.95	5.43	5.10	5.34		
2. Rural Infrastructure									
		Spring Devt - 1	Shallowwell - 16	Shallowwell - 1	Shallowwell - 3	No water supply	Deepwell - 4		
		Deepwell - 6	0% electrified	0% electrified	Spring Devt - 1	0% electrified	0% electrified		
		0% electrified	Generator - 1	Generator - 1	0% electrified	Generator - 1	Generator - 1 (priv.)		
		Generator - 1	Pier	Multi-purpose	Generator - 1 (priv.)	Pier	Landing Pier		
		Ricemill - 1		Pavement	Pier - 1		Multi-purpose		
		Waitingshed - 1			Waitingshed - 2		Pavement - 1		
		Solar Dryer - 1							
3. Social Infrastructure									
		Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1		
		Day Care Center - 1	Day Care Center - 1	Day Care Center - 1	Day Care Center - 1	Clinic - 1	Day Care Center - 1		
		Clinic - 1	Clinic - 1	Clinic - 1	Church - 1	Church - 3	Clinic - 1		
		Elementary - 1	Elementary - 1	Church - 3	Elementary - 1	Elementary - 1	Church - 1		
		Church - 1	Highschool - 1				Elementary - 1		
			Church - 3						
4. Average Annual Income		Approx. 13,000 Peso	Approx. 13,000 Peso	Approx. 13,000 Peso	Approx. 9,000 Peso	Approx. 9,000 Peso	Approx. 9,000 Peso		
5. Production (major 2 items)									
a. Forestry		1. Nipa	1. Nipa	1. Nipa	1. Nipa	n.a.	n.a.		
b. Fishery		1. Isdang Bato	1. Lapu-Lapu	1. Balawis	1. Balawis	1. Lapu-Lapu	1. Bakawin		
		2. Yapot	2. Tuligan	2. Isdang Bato	2. Isdang Bato	2. mixed small fish	2. Isdang Bato		
c. Agriculture		1. Copra	1. Copra	1. Copra	1. Copra	1. Copra	1. Copra		
		2. Rice	2. Cassaba	2. Rice	2. Cassava	2. Corn	2. Palay		
d. Others		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		
6. Major Market/Shopping Place		Calauag	Calauag	Calauag	Calauag	Calauag	Calauag		
7. Peoples Organization		BLMMC	Association of small scale Farmers and Fishermen	Barikatan	Barikatan	St. Angel Small	Barikatan		
		(Association of small scale Farmers and Fishermen)	Barikatan	(Woman's Group)	(Woman's Group)	Fishermen's Assoc.	(Women's Group)		
		PTA	(Woman's Group)	Religious Group (1)	PTA	Barikatan	PTA		
		Barikatan	(Woman's Group)	Religious Group (1)	Religious Group (1)	(Woman's Group)	Religious Groups (3)		
		(Woman's Group)	PTA			Religious Group - 1			
		Religious Group (1)	Senior Citizen's Group						
8. Implementation of Legal System									
a. No. of Fishpond ( in private land)		1 (20ha, abandoned)	2 (Ave. 1ha)	2 (Ave. 1ha)	3 (Ave. 0.5ha)	1 (2ha, abandoned)	1 (2ha)		
b. Fishpond Lease Agreement		None	None	None	None	None	None		
c. Mangrove Reforestation Project (under Coastal Env. Program)		None	None	None	1 (100ha) (completed)	None	2 (100ha, 70ha) (completed)		
d. Mangrove Stewardship Agreement		None	None	None	None	None	None		
e. Community-Based Forest Mgmt.		None	None	None	None	None	None		

Table 2-2L-18(2) Summary of Socio-economic conditions in Lamon Bay Area (2)  
(Municipality of Calauag<2>)

Items	Villa San Isidro	Kagtalaba	Piaridel	Kumaludkud	Kinalin Ibababa	Bigaan
Name of Barangay	Municipality of Calauag					
1. Population						
a. Number of Household	163	204	260	70	195	74
b. Average No. of Family Member	5.25	5.52	5.11	5.69	4.97	5.42
2. Rural Infrastructure						
Deepwell - 8		Deepwell - 2	Spring Devt - 1	Deepwell - 25	River Intake - 1	Spring Devt - 3
Shallowwell (many)		Shallowwell - 10	Shallowwell (many)	0% electrified	90% electrified	95% electrified
0% electrified		80% electrified	30 % electrified	Solar Dryer(private)	Generator - 4	Landing Pier - 1
Generator - 1(priv.)			Ricemill - 1 (priv.)	Irrigation System - 1	Solar Dryer - 1	
Landing Pier			Waitingshed - 3			
Waitingshed - 1						
3. Social Infrastructure						
Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1
Clinic - 1	Day Care Center - 1	Day Care Center - 1	Church - 2	Church - 1	Day Care Center - 1	Clinic - 1
Church - 2	Church - 1	Church - 1			Clinic - 1	Church - 1
	Elementary - 1	Elementary - 1			Elementary - 1	Basketball Court - 1
					Church - 1	
					Basketball Court - 1	
4. Average Annual Income	Approx. 9,000 Peso	Approx. 6,000 Peso	Approx. 6,000 Peso	Approx. 8,400 Peso	Approx. 45,000 Pesos	Approx. 48,000 Pesos
5. Production (major 2 items)						
a. Forestry	1. Nipa	1. Nipa	n.a.	1. Anahaw	1. Pill-nuts	n.a.
	2. Cogon	2. Cogon		(for handycraft)		
b. Fishery	1. Isdang Bato	1. Shrimp	1. Shrimp	1. Bakawin	1. Bangus	1. Bangus
	2. Crab	2. Crab	2. Bakawin	2. Lapu-Lapu	2. Shrimps	2. Shrimps
c. Agriculture	1. Copra	1. Copra	1. Copra	1. Copra	1. Copra	1. Copra
	2. Palay	2. Palay	2. Palay	2. Rice	2. Rice	2. Rice
d. Others	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6. Major Market/Shopping Place	Calauag	Calauag	Sta. Elena	Calauag	Calauag	Calauag
7. Peoples Organization	Multi-Purpose	Barikatan	Multi-Purpose	Small Farmer's and	Farmer's Association	Home Owner's
	Cooperative	(Women's Group)	Cooperative	Fisherman's Assoc.	Mr. And Mrs. Club	Association
	Barikatan	PTA	Barikatan	SAMAKA	Religious Group (2)	Religious Group (3)
	(Women's Group)	Religious Group (1)	(Women's Group)	Woman's Club	Woman's Group (2)	KKC
	Senior Citizen's	Senior Citizen's	Senior Citizen's	Religious Groups(3)	Senior Citizen's	(Woman's Group)
	Group	Group	Group		Group	
			Religious Groups (2)		PTA	
8. Implementation of Legal System						
a. No. of Fishpond ( in private land)	4 (Ave. 1ha)	6 (Ave. 50ha)	2 (Ave. 50ha)	2 (Ave. 7ha)	4 (ave. 15ha)	3 (Ave. 20ha)
b. Fishpond Lease Agreement	1 (canceled)	1 (344ha)	None	None	1 (5ha)	2(Ave. 15ha)
c. Mangrove Reforestation Project	1 (100ha)	None	None	1	None	None
(under Coastal Env. Program)	(abandoned)		(Failed)			
d. Mangrove Stewardship Agreement	None	None	None	None	None	None
e. Community-Based Forest Mgmt.	None	None	None	None	None	None

Table 2-2L-18(3) Summary of Socio-economic conditions in Lamun Bay Area (3)  
(Municipality of Calauag<3>)

Items	Manhulugin	Kinamalgan	Anas	Tinigubhan	Maulawin	Kabultuan
	Municipality of Calauag					
1. Population						
a. Number of Household	56	124	100	278	384	360
b. Average No. of Family Member	5.58	4.53	5.63	4.78	9.27	5.16
2. Rural Infrastructure						
Deepwell - 4	Spring Devt - 1	Deepwell - 10	Shallowwell - 50	Deepwell - 10	Spring Devt - 3	Deepwell - 2
0% electrified	20 % electrified	0% electrified	50% electrified	30% electrified	56% electrified	Irrigation System - 2
Landing Pier - 3	Multi-purpose	Generator - 1	Landing Pier - 1	Generator - 2(priv.)	Multi-purpose	Multi-purpose
Waitingshed - 1	pavement - 1	Ricemill - 1	Warehouse - 2	Ricemill - 4 (priv.)	Pavement - 1	Pavement - 1
	Landing Pier - 2	Multi-purpose	Warehouse - 1	Warehouse - 1	Landing Pier - 4	Landing Pier - 2
			(for Copra)	(for Nipa)		
3. Social Infrastructure						
Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 1	Barangay Hall - 2	Barangay Hall - 1
Church - 1	Clinic - 1	Clinic - 1	Clinic - 1	Day Care Center - 1	Clinic - 1	Clinic - 1
	Day Care Center - 1	Day Care Center - 1	Day Care Center - 1	Clinic - 1	Day Care Center - 1	Day Care Center - 1
	Elementary - 1	Elementary - 1	Elementary - 1	Church - 3	Elementary - 1	Elementary - 1
	Church - 2	Church - 1	Highschool - 1	Elementary - 1	Highschool - 1	Highschool - 1
	Basketball court - 2	Basketball court - 2	Church - 1	Highschool - 1	Church - 6	Church - 2
			Basketball Court - 1	Basketball Court - 1	Basketball Court - 1	Basketball Court - 1
4. Average Annual Income	No data available	Approx. 45,000 Pesos	Approx. 17,400 Pesos	No data available	No data available	Approx. 37,200 Pesos
5. Production (major 2 items)						
a. Forestry	n.a.	n.a.	1. Nipa	1. Nipa	n.a.	1. Coconuts midribs (for basket making)
b. Fishery	1. Tambong	1. Alumahan	1. Galongong	1. Lamas	1. Bangus	1. Bangus
	2. Saging-saging	2. Shrimps		2. Malamis	2. Shrimps	2. Shrimps
c. Agriculture	1. Copra	1. Copra	1. Copra	1. Copra	1. Citrus	1. Copra
	2. Banana	2. Banana		2. Copra	2. Copra	2. Rice
d. Others	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6. Major Market/Shopping Place	Calauag	Calauag	Calauag	Calauag	Calauag	Calauag
7. Peoples Organization	Fishermen's Association	Barikatan (Woman's Group)	Bigkislakas (Fishermen's Assoc)	Tulungan (Traditional Group)	Agrarian Reform Beneficiaries Coop.	Woman's Group (1)
	Religious Group (2)	Kinamalgan Small Fishermen's Assoc.	Woman's League	PTA (2)	Farmer's Assoc.	Community Assoc. (2)
	Woman's Group (1)	Fishermen's Assoc.	Religious Group - 2	Religious Groups (3)	Woman's Group (2)	PTA (2)
		Religious Group (1)	PTA	Woman's Group (1)	Religious Group (2)	Religious Group (4)
		Mr. and Mrs. Group	PTA (1)		PTA (2)	Senior Citizen's Group
8. Implementation of Legal System						
a. No. of Fishpond ( in private land)	2 (Ave. 10ha)	None	1 (2ha)	10 (Ave. 1ha)	3 (Ave. 80ha)	12 (Ave. 18ha)
b. Fishpond Lease Agreement	1 (25ha)	None	None	None	4 (Ave. 10ha)	None
c. Mangrove Reforestation Project (under Coastal Env. Program)	Completed (1992)	1 (30 ha) (completed-1990)	1(1,200ha) (completed)	None	1 (100ha) (Completed)	None
d. Mangrove Stewardship Agreement	None	None	None	None	None	None
e. Community-Based Forest Mgmt.	None	None	None	None	None	None