ISSN 0031-7551

PHILIPPINE GEOGRAPHICAL JOURNAL

VOL. XXX JANUARY-JUNE, 1986 NUMBER 1 & 2

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ARTICLES

PUBLISHED QUARTERLY BY

The PHILIPPINE GEOGRAPHICAL SOCIETY, NATIONAL COMMITTEE ON GEOGRAPHICAL SCIENCES, NRCP, And The NATIONAL SCIENCE AND TECHNOLOGY AUTHORITY

MANILA, PHILIPPINES

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The *Philippine Geographical Journal* is published quarterly by the Philippine Geographical Society and the National Committee on Geographical Sciences (NCGS), National Research Council of the Philippines (NRCP) and National Science and Technology Authority and is sent to all members of the Society.

Subscription Rates: Philippines, per year — — — ₱14.00
Foreign countries, per year — US$14.00
Single copy, regular issue, local — ₱3.50; foreign — US$ 3.50
special issue, local — ₱5.00; foreign — US$ 5.00

All remittances should be payable to the *Philippine Geographical Journal*.

Editorial correspondence should be addressed to The Editor-in-Chief, *Philippine Geographical Journal*, P.O. Box 2116, Manila, Philippines.

Business correspondence should be addressed to the Business Manager, *Philippine Geographical Journal*, P.O. Box 2116, Manila, Philippines.

Re-entered as second-class mail permit at the Manila Post Office on July 5, 1963.

The
PHILIPPINE GEOGRAPHICAL JOURNAL
VOLUME XXX January-June, 1986 Numbers 1 & 2

FERTILIZER TRIALS UNDER 'INSFFER' IN THE PHILIPPINES[1]

by

J.C. BUNOAN, JR.[2]

INTRODUCTION

Nitrogen is the most critical plant nutrient required for all food crops grown in Philippine soils. The N-P_2O_5-K_2O weight ratio is approximately 4:1:1 as reflected for the past 10 years annual plant nutrients demand. In the annual demand for finished fertilizers, 45% is estimated consumed in the rice industry. Urea contributed about 43.3% of the total nitrogen demand. The recommended nitrogen fertilizer for our National Masagana Rice Production Program are 60 and 90 kg N per hectare for the wet and dry seasons, respectively.

In recent studies on paddy soils by Fillery, et al. (1982), about 48% of nitrogen applied was lost thru ammonia volatilization within 10 days after broadcasting urea 14 DAT (days after transplanting) into the floodwater. A peak loss of rate 0.84 kg N/ha/hr was obtained on the third day after broadcasting. A considerably lower rate of NH_3 loss (10-11%) was recorded when urea was topdressed prior to panicle initiation. When soil-incorporated prior to transplanting, NH_3 volatilization loss was reduced to 15-20%.

Zhi-Hong, et al. (1982) reported that 73% fertilizer ^{15}N was recovered by the rice plants during the dry season and 65% in the wet season from deep placement of supergranule urea. Similarly, Craswell, et al. (1983) confirmed highest plant recovery of ^{15}N in deep point placement of urea supergranules with an average of 58% at final rice harvest. He further stated that nitrogen fertilizer broadcasted and incorporated before transplanting, the average plant recoveries of ^{15}N were only 34% and 26% for urea and ammonium sulfate, respectively.

In 1975, the International Rice Research Institute (IRRI) launched a collaborative program on increasing fertilizer nitrogen efficiency in

[1] Paper presented before the INSFFER site visit tour and workshop in Australia held from April 8-17, 1985. INSFFER stands for International Network on Soil Fertility and Fertilizer Evaluation for Rice.

[2] Chief, Soil Fertility Division, Bureau of Soils, Ministry of Agriculture and Food, and Philippine INSFFER Collaborator.

Fertility and Fertilizer Evaluation for Rice (INSFFER). In collaboration with IRRI, the Soil Fertility Division, Bureau of Soils, Ministry wetland rice in Asia now known as the International Network on Soil of Agriculture and Food (MAF) started conducting INSFFER trials on N-efficiency in farmers' fields since 1981. At present, a total of 51 field trials were conducted on N-efficiency in rainfed and irrigated rice areas, use of N-applicators, Azolla and integrated organic/inorganic N-sources as shown in Appendix A. Twenty-six field trials were completed, nine are in progress and 16 trials were damaged due to infestation, drought or lack of enough irrigation water at critical plant stages.

The main objective of these INSFFER trials is to improve nitrogen efficiency on lowland rice by evaluating the different forms of urea nitrogen sources, time and methods of application and integrating organic and inorganic N-sources with emphasis on Azolla.

PROCEDURES

The procedures for the various types of trials are embodied in the INSFFER fieldbook as to site selection, soil sampling, experimental design and layout, variety, plant spacing, application of fertilizer, weed and insect control, harvest data and yield components to be gathered.

There are three sources of mineral nitrogen used in these trials, namely: prilled urea (PU), 46% N; sulfur-coated urea (SCU) with 36.7% N and release rate of 22.1% in 7 days and urea supergranules (USG), 46% N in 1.0 g and 2.0 g sizes.

The time and methods of nitrogen fertilizer application are best split where $\frac{2}{3}$ N at basal soil-incorporated before transplanting and $\frac{1}{3}$ N top-dress one week before panicle initiation for prilled urea (PU); broadcast and soil-incorporated for sulfur-coated urea (SCU) at last harrowing, and deep point placement at 10-12 cm soil depth for urea supergranules (USG) two-three days after transplanting, at the middle of every 4 hills.

The nitrogen levels in kg per hectare being tried for the various INSFFER trials are as follows:

1. **N-efficiency in rainfed, wetland rice:** 29 N, 58 N and 87 N.
2. **N-efficiency, irrigated, wet season:** 29 N, 58 N, 87 N and 116 N.
3. **N-efficiency, irrigated, dry season:** 58 N, 87 N, 116 N and 174 N.
4. **N-applicator, either wet or dry seasons:** 58 N and 87 N.
5. **Azolla utilization:** 30 N and 60 N for the wet season and 45 N and 90 N for the dry season.
6. **Integrated inorganic and organic fertilizers:** 29 N, 58 N and 87 N.

RESULTS AND DISCUSSIONS

The results of the various INSFFER trials conducted since 1981 to the present are shown in tables 1-9 and figures 1-3.

A. Nitrogen Fertilizer Efficiency, Rainfed Transplanted

The mean grain yields of lowland rice in rainfed INSFFER trials from four locations during the wet seasons of 1982 and 1984 in pooled analysis are shown in table 1. In all sources of nitrogen fertilizer, there was an increasing trend in grain yield from the lower rate of 29 kg N/ha to the higher rate of 87 kg N/ha. Lower grain yields were obtained using prilled urea than those obtained from sulfur-coated urea (SUC) and urea supergranule (USG). Although there was no significant differences between SCU and USG grain yields, SCU appeared slightly superior over USG. This can be seen in the efficiency of the different nitrogen sources in terms of kilograms rough rice produced per kilogram nitrogen applied as shown in figure 1. It will be noted that prilled urea gave the lowest efficiency ratings of 32, 19 and 17 kg rough rice per kg nitrogen at 29, 58 and 87 kg levels of nitrogen respectively. Highest efficiency was obtained using SCU at 29 kg N/ha with yield of 46 kg rice per kg nitrogen; 33 kg rice at 58 kg N, and 23 kg rice at 87 kg N/ha. Slightly below SCU, a kilo of urea supergranule produced 43 kg, 31 kg and 22 kg rough rice at 29, 58 and 87 kg N/ha, respectively. In table 1, there was no significant differences in grain yield between 58 kg N and 87 kg N/ha for both SCU and USG, averaging 68% more efficient than prilled urea at the 58 kg N/ha rate. It will take 87 kg N/ha of prilled urea to produce rice grains comparable to grain yields obtained using SCU and USG at 58 kg N/ha level.

B. Nitrogen Efficiency, Irrigated, Wet Season

A pooled analysis of the mean grain yields from INSFFER trials conducted in six locations during the wet seasons of 1981 to 1984 is shown in table 2. Significant higher grain yields of more than 5.0 t/ha. were obtained at 58 kg N/ha for both the SCU and USG nitrogen sources. Comparable grain yield of 5.36 t/ha using prilled urea was observed also at 87 kg N/ha. There was no significant differences in grain yields among the higher rates of nitrogen levels above 58 kg N/ha. In figure 2, the efficiency of USG in term of kg rough rice per kg nitrogen applied was slightly better than SCU at 29 and 58 kg N/ha. At 87 kg N, urea gave slightly higher grain yield increment over SCU and USG with consistently 24-25 kg rough rice per kg urea nitrogen at 29, 58 and 87 kg N/ha. In irrigated rice areas during the wet seasons, deep point placement of urea supergranules seemed to do better and more efficient than SCU as observed in many locations. Similar to rainfed transplanted results, USG or SCU at 58 kg N/ha will give higher grain yields than those produced using prilled urea at 87 kg N/ha.

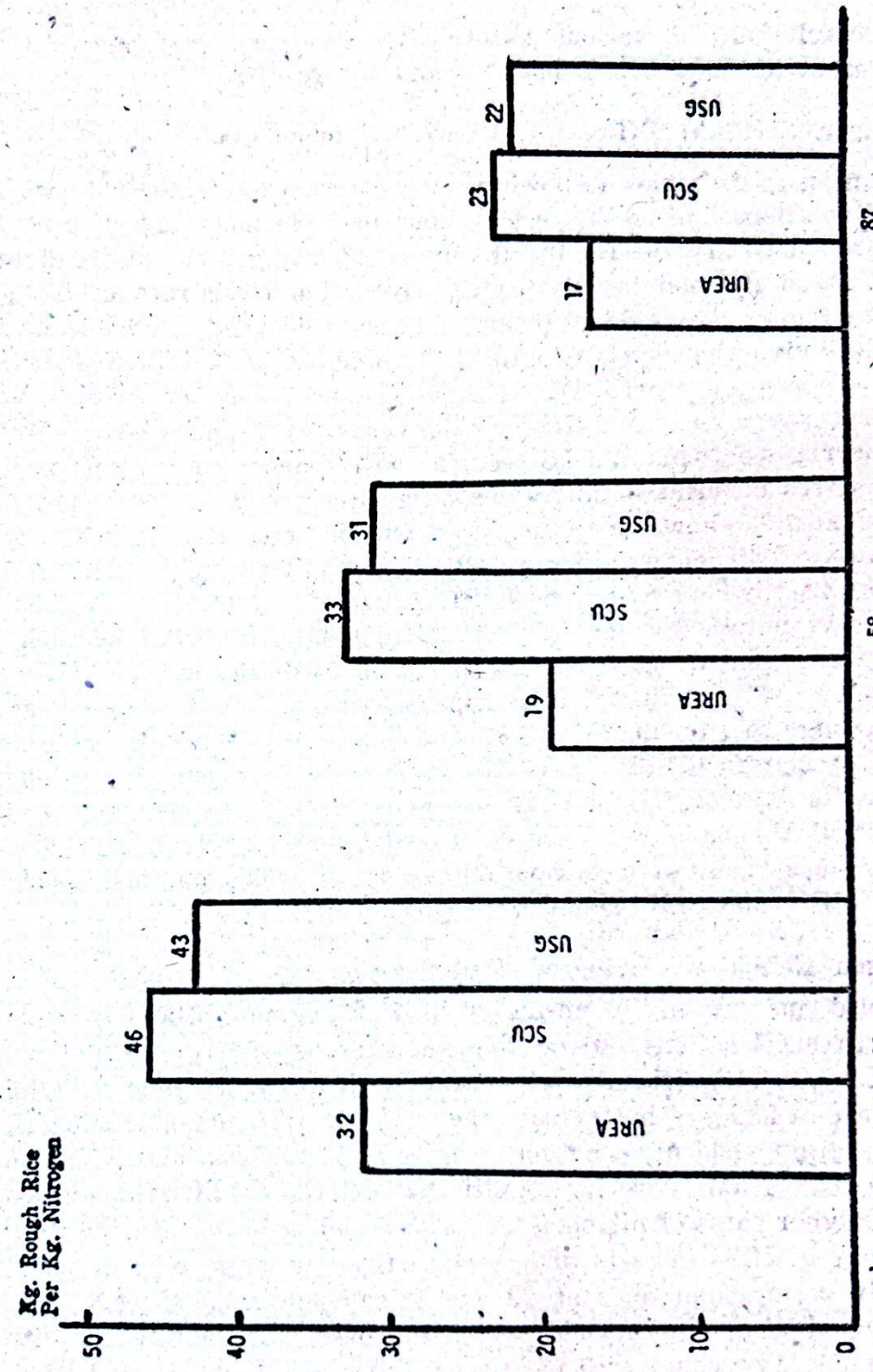

FIGURE 1 — AVERAGE GRAIN YIELD INCREMENT IN KILOGRAM ROUGH RICE PER KILOGRAM NITROGEN FROM FOUR LOCATIONS IN RAINFED INSFFER TRIALS

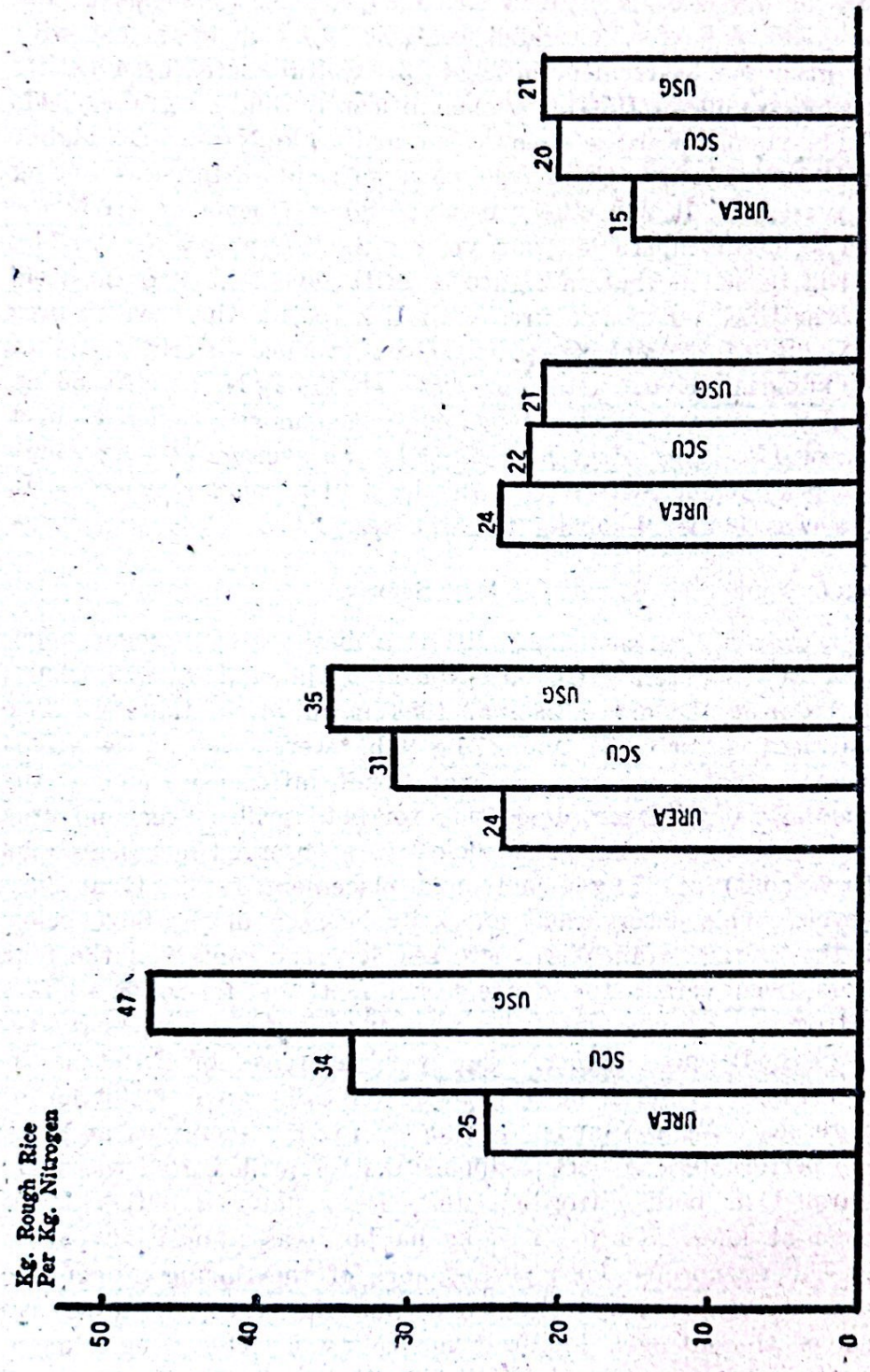

FIGURE 2 — AVERAGE GRAIN YIELD INCREMENT IN KILOGRAM ROUGH RICE PER KILOGRAM NITROGEN FROM SIX LOCATIONS IN WET SEASON IRRIGATED INSFFER TRIALS

C. Nitrogen Efficiency, Irrigated, Dry Season

During the dry seasons of 1983 and 1984, a pooled analysis of the mean grain yields from four irrigated locations is shown in table 3 with its average grain yield increment in figure 3. Sulfur-coated urea (SCU) and urea supergranules (USG) gave significantly higher grain yields over prilled urea at lower N-levels of 58 and 87 kg N/ha. At higher N-levels (116 and 174 kg), there was no significant differences among sources of nitrogen. It will take the next higher N-level of 116 N for prilled urea to give comparable grain yield with SCU and USG at 87 kg N/ha. It will be noted that in figure 3, SCU gave higher grain yield increment over USG and prilled urea with USG better than prilled urea at lower N-rate of 58 and 87 kg/ha. Urea produced slightly higher grains per kilogram N over SCU or USG at 174 kg N/ha. At 58 kg, SCU/USG gave an average of 12 kg rough rice more per kg N over prilled urea or 44% more efficient. At 87 kg, an average of 6 kg rough rice more per kg N for SCU/USG with about 21% more efficient than prilled urea was obtained during the dry season.

D. Nitrogen Applicator, Irrigated, Dry Season

The mean grain yield comparing different methods of nitrogen application from two locations (Gapan, Nueva Ecija and Sta. Barbara, Pangasinan) during the dry season of 1984 is shown in table 4. Two rates of nitrogen, namely: 58 and 87 kg N/ha were tried. The pooled analysis showed that there was no significant differences among the different methods of nitrogen application for both prilled urea and urea supergranules although higher grain yields were observed in researcher's method (best split) at 87 kg N and hand placement for USG at both nitrogen levels. This observation can easily be seen in the table below comparing the average grain yield increases over the control of the four N-applicators tried versus the conventional methods for both sources of urea nitrogen. Although not significantly different, best split (researcher's method) gave higher grain yield increase of 2.19 t/ha or 66.97% at 87 kg N while hand placement of USG gave 2.10 t/ha or 64.22% increase at 58 kg N and 2.48 t/ha or 75.84% increases at 87 kg N/ha. The performance of both N-applicators for prilled urea was more or less parallel in both nitrogen rates. Deep plunger outperformed Press Wedge at lower N-rate of 58 kg/ha but was almost at par at 87 kg/ha. The unexpected poor performance of the Spring Auger and the Oscillating Plunger for prilled urea was the uneven release and distribution of the nitrogen fertilizer in the rows. The Deep Plunger was more efficient in injecting the USG balls into the soil but mechanical difficulties in operating the machine resulted in uneven injection spacing in the rows. Likewise, the Press Wedge did not place the USG balls deeper into the soil as such, balls were seen sometimes floating out on the surface of the soil.

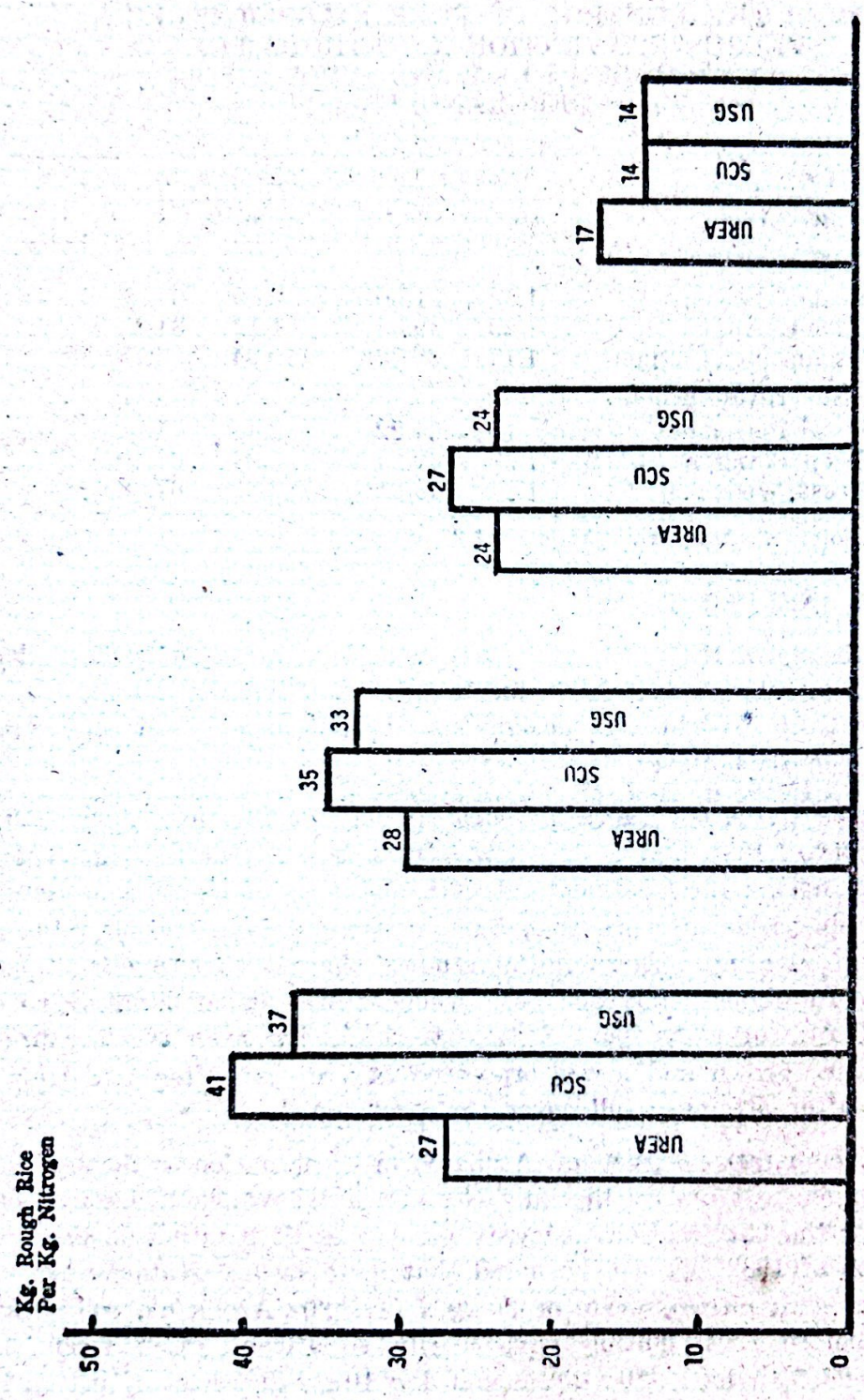

FIGURE 3 — AVERAGE GRAIN YIELD INCREMENT IN KILOGRAM ROUGH RICE PER KILOGRAM NITROGEN FROM FOUR LOCATIONS IN DRY SEASON IRRIGATED INSFFER TRIALS

COMPARATIVE AVERAGE GRAIN YIELD INCREASES OVER THE CONTROL OF FOUR N-APPLICATORS VERSUS CONVENTIONAL METHODS FOR PRILLED UREA AND UREA SUPERGRANULES

Placement	*At 58 kg N*		*At 87 kg N*	
Method	*t/ha.*	*%*	*t/ha.*	*%*
Prilled Urea				
Best Split	1.03	31.50	2.19	66.97
Spring Auger	1.29	39.44	1.12	34.25
Oscillating Plunger	1.17	35.78	0.94	28.75
Urea Supergranules				
Hand Placement	2.10	64.22	2.48	75.84
Deep Plunger	1.97	60.24	2.24	68.50
Press Wedge	1.57	48.01	2.22	67.88

Note: Control Grain Yield = 3.27 t/ha.

E. Azolla INSFFER Trials

The results of INSFFER trials on Azolla utilization on lowland rice are shown in tables nos. 5 to 9 due to pooled analysis of harvest data stratified as to experimental designs and crop seasons (wet and dry) from 1981 to 1984.

In table 5, the average grain yields from two locations during the wet season of 1981 and 1982 showed that there was no significant differences among the treatments at both distances of planting although higher grain yields of more than 5.0 t/ha were obtained at 40 x 10 cm distance of planting. These initial studies showed that Azolla-N can substitute for mineral nitrogen both when utilized in combination with half M-99 rate of nitrogen at 20 t/ha fresh Azolla or in two or three Azolla crops, grown and soil-incorporated before and after rice transplanting, after attaining full cover per Azolla crop.

The comparative effect of Azolla-N in combination with reduced M-99 nitrogen rate and as the only N-source is shown in tables nos. 6a and 6b for the two locations using two distances of planting during the wet season of 1982. It will be noted that in table 6a, treatment no. 4, reduced mineral nitrogen rate of 30 kg N plus 20 t Azolla/ha, soil-incorporated before transplanting gave highly significant grain yields of 5.9 t/ha and 5.3 t/ha at 20 x 20 cm and 40 x 10 cm distances of planting, respectively, although not significantly different with treatment no. 2 using the M-99 recommended rate of 60+30+30 for both distances of planting. The increases in yield due to Azolla-N were 1.5 t/ha and 1.1 t/ha for the two distances of planting with efficiency of about 20-27 kg rough rice per kg Azolla-N.

In using Azolla alone as nitrogen source with one crop of Azolla soil-incorporated before transplanting and two crops Azolla, grown to full cover and later incorporated into the soil, highly significant grain yields of 5.1 t/ha were obtained for both distances of planting and 1.7 t/ha or 50% grain increase over the control. The total Azolla biomass incorporated was about 35 t/ha equivalent to 98 kg Azolla-N with an efficiency of 17 kg rough rice per kg of Azolla-N. Two crops of Azolla with a total biomass of about 23 t/ha after transplanting gave only 1.2 t/ha or 35% grain increase over the control with an efficiency of 18 kg rough rice per kg Azolla-N. There was no significant differences between the two distances of rice planting.

During the dry season of 1983, one INSFFER Azolla trial was conducted and the results are shown in table 7a and 7b. The M-99 fertilizer rate of 90+30+30 (NPK) gave significantly higher grain yields of 5.86 t/ha and 5.66 t/ha for both distances of planting but do not differ with the half M-99 nitrogen rate plus 20 t Azolla/ha incorporated before transplanting. Azolla-N contributed about 0.5 t grain/ha yield, 50% less than the wet season with an efficiency of about 22 kg rough rice per kg Azolla-N. The effect of using Azolla alone as nitrogen source in table 7b, showed that lower grain yields of less than the expected 5.0 t/ha were harvested in treatment nos. 2 and 3 because of low biomass and no third Azolla crop was soil-incorporated due to infestation. Also, during the dry season of 1984, a pooled analysis of average grain yields from two locations showed no significant differences between the M-99 fertilizer rate (treatment no. 2), half M-99 rate plus 20 t Azolla/ha and using Azolla alone in treatment nos. 4 and 5 although higher significant grain yields were obtained in treatment no. 3 using Azolla to substitute for 50% of the nitrogen requirement (table 8). The effect of Azolla-N cannot be evaluated due to the absence of the half M-99 nitrogen rate treatment for both distances of planting used and the lack of total biomass data for treatment nos. 4 and 5.

The average grain yields from three locations during the wet season of 1984 is shown in table 9. There was no significant differences among all the fertilized treatments either with mineral nitrogen alone or in combination with Azolla-N and with Azolla-N alone but all treatments gave significantly higher grain yield from the control. The total results from these INSFFER Azolla trials showed that Azolla can be grown and utilized thru-out the crop year, both in the wet and dry seasons and assured the potentiality of Azolla-N to substitute for mineral nitrogen in rice production.

SUMMARY AND CONCLUSION

1. In collaboration with IRRI, INSFFER trials are being conducted in farmer's field by the Soil Fertility Division, Bureau of Soils, Ministry of Agriculture and Food in the Philippines.

2. A total of 51 INSFFER trials were conducted since 1981 and of which 31 trials were on increasing nitrogen efficiency in rainfed and wet/dry irrigated transplanted rice; 7 trials on the use of nitrogen applicators; 12 trials on Azolla utilization in irrigated riceland (wet and dry seasons) and one (1) long term trial on integrated use of organic and inorganic N-sources.
3. In INSFFER trials results on increasing nitrogen efficiency, sulfur-coated urea (SCU) and urea supergranules (USG) gave comparable significant higher grain yields at lower nitrogen levels of 29 kg and 58 kg/ha in rainfed wetland and irrigated, wet season, and at 58 kg and 87 kg/ha in the dry season. It took one level higher of nitrogen rate per hectare for prilled urea (PU) to equal the grain yields of the two other N-sources but at par in N-levels above 87 kg/ha.
4. In term of efficiency in kg rough rice per kg nitrogen, SCU is slightly better than USG at all nitrogen levels in rainfed and in irrigated dry season rice crops. In the wet season irrigated rice trials, USG showed better performance over SCU. SCU and USG averaged 11 kg rough rice more over prilled urea at recommended 58 kg rate in the wet season (rainfed and irrigated) and 6 kg rough rice more in the dry season at 87 kg N/ha.
5. The use of N-applicators for both prilled urea and urea supergranules showed possibility of being adapted for fertilizer deep placement with minor improvement on each of the present IRRI photo-types tried in the INSFFER trials.
6. On Azolla utilization as organic nitrogen source, all the INSFFER trials showed definitely the significance and efficiency of Azolla-N to substitute for 50% of the required mineral nitrogen for rice or even totally replaced mineral nitrogen if three Azolla crops can be grown fully and soil-incorporated before and after rice transplanting time.

APPENDIX A

LIST OF INSFFER TRIALS CONDUCTED IN THE PHILIPPINES YEAR 1981 TO 1985

Type	*Crop Season*	*Water*	*Number of Trials Conducted*			
			Completed	*Progress*	*Damaged*	*Total*
1. N-Efficiency	Wet	Rainfed	4	—	3	7
2. N-Efficiency	Wet	Irrigated	6	2	6	14
3. N-Efficiency	Dry	Irrigated	4	3	3	10
4. N-Applicator	Wet/Dry	Irrigated	3	2	2	7
5. Azolla	Wet/Dry	Irrigated	9	1	2	12
6. Integrated Use of Organic and Inorganic N-sources	Wet/Dry	Irrigated	—	1	—	1
TOTAL			26	9	16	51

Note: Excluding those trials conducted by IRRI and other interested parties such as Farmer-leaders, Regional Ministry of Agriculture and Food and Institutions.

TABLE 1 — MEAN GRAIN YIELDS OF LOWLAND RICE IN RAINFED INSFFER TRIALS FROM FOUR LOCATIONS IN THE PHILIPPINES DURING THE WET SEASONS OF 1982 AND 1984

NITROGEN FORM AND RATE (kg/ha.)	*GRAIN YIELD IN TON/HA.*				*MEAN*
	Loc. 1	*Loc. 2*	*Loc. 3*	*Loc.4*	
1. Control, No N	3.64 d	4.10 d	1.70 c	3.36 a	3.20 e
2. **Prilled Urea**					
29	4.43 c	5.02 c	2.97 ab	4.08 de	4.12 d
58	4.91 bc	5.16 bc	3.09 ab	4.06 de	4.30 cd
87	5.27 ab	5.50 abc	3.15 ab	4.80 bed	4.68 bc
3. **Sulfur-Coated Urea**					
29	5.47 ab	5.31 abc	2.75 b	4.61 bcd	4.53 cd
58	5.73 a	6.12 a	3.42 ab	5.24 cb	5.12 a
87	5.45 ab	6.20 a	3.57 a	5.52 a	5.18 a
4. **Urea Supergranule**					
29	5.16 ab	5.52 abc	2.77 b	4.36 cd	4.45 cd
58	5.87 a	5.86 abc	3.12 ab	5.10 abc	4.98 ab
87	5.83 a	6.00 ab	3.27 ab	5.34 ab	5.11 a

Note: Location 1 — Casiguran, Sorsogon (1982)
Location 2 — Mangaldan, Pangasinan (1982)
Location 3 — Sto. Tomas, Davao del Norte (1982)
Location 4 — Mangatarem, Pangasinan (1984)
DMRT at 1% level C.V. = 4.37%

TABLE 2 — MEAN GRAIN YIELDS OF LOWLAND RICE IN IRRIGATED INSFFER TRIALS FROM SIX LOCATIONS IN THE PHILIPPINES DURING THE WET SEASONS OF 1981 TO 1983

NITROGEN FORM AND RATE (kg/ha.)	GRAIN YIELD IN TON / HA.						MEAN
	Loc. 1	Loc. 2	Loc. 3	Loc. 4	Loc. 5	Loc. 6	
1. Control, No N	2.75 d	3.30 d	3.30 d	3.39 f	3.28 f	3.36 i	3.23 f
2. Prilled Urea							
29	3.89 bc	3.67 c	3.33 c	4.09 e	3.81 i	4.62 h	3.95 ef
58	4.72 abc	4.47 ab	4.60 ab	4.81 bcd	4.23 gh	5.05 ef	4.64 bcde
87	4.98 ab	5.00 a	4.97 ab	5.14 bcd	7.30 b	4.77 gh	5.36 abc
116	4.95 ab	5.07 a	5.17 a	5.27 abc	4.74 f	4.91 fg	5.01 abcd
3. Sulfur-Coated Urea							
29	3.61 c	4.10 bc	4.10 bc	4.25 de	4.14 hi	5.17 cde	4.22 de
58	4.67 abc	4.73 ab	4.60 ab	5.25 abc	5.55 e	5.47 a	5.04 abcd
87	4.27 abc	4.73 ab	5.18 a	5.73 ab	5.58 e	5.25 bcd	5.12 abcd
116	5.14 a	5.03 a	5.18 a	5.99 a	6.73 c	5.32 abc	5.56 ab
4. Urea Supergranule							
29	3.86 bc	4.33 abc	4.20 bc	4.56 cde	5.75 d	4.87 fg	4.59 cde
58	4.95 ab	4.83 ab	4.70 ab	5.61 ab	6.14 d	5.36 ab	5.26 abc
87	4.89 ab	4.93 ab	4.93 ab	5.97 a	4.46 fg	5.18 bcde	5.06 abcd
116	4.23 abc	5.10 a	4.93 ab	6.19 a	8.12 a	5.10 de	5.61 a

Note: Location 1 — Binalonan, Pangasinan (1981)
Location 2 — Austuries, Cebu (1982)
Location 3 — Moalboal, Cebu (1982)
Location 4 — Oas, Albay (1982)
Location 5 — Carmen, Davao Norte (1983)
Location 6 — Bayombong, Nueva Vizcaya (1984)
DMRT at 1.0% level C.V. = 10.97%

TABLE 3 — MEAN GRAIN YIELDS OF LOWLAND RICE IN IRRIGATED INSFFER TRIALS FROM FOUR LOCATIONS IN THE PHILIPPINES DURING THE DRY SEASONS OF 1983 AND 1984

NITROGEN FORM AND RATE (kg/ha.)	*GRAIN YIELD IN TON/HA.*				*MEAN*
	Loc. 1	*Loc. 2*	*Loc. 3*	*Loc. 4*	
1. Control, No N	1.99 g	3.43 c	3.92 d	3.86 d	3.30 d
2. Prilled Urea					
58	3.95 f	4.86 ab	5.11 c	5.59 c	4.86 c
87	5.22 cde	5.72 a	5.93 abc	6.20 bc	5.76 cd
116	5.34 bcd	5.92 a	6.55 a	6.48 ab	6.07 ab
174	6.36 ab	5:32 ab	6.61 a	6.84 ab	6.28 ab
3. Sulfur-Coated Urea					
58	5.05 de	5.64 a	5.44 bc	6.51 ab	5.66 abc
87	5.87 abc	5.67 a	6.53 a	7.30 a	6.34 ab
116	6.61 a	5.43 ab	6.57 a	6.95 ab	6.39 a
174	6.21 abc	4.54 b	6.23 ab	6.15 bc	5.78 ab
4. Urea Supergranaule					
58	4.33 a	5.36 ab	5.76 abc	6.42 abc	5.46 bc
87	5.63 abc	5.68 a	6.45 a	6.83 ab	6.14 ab
116	5.67 abc	5.51 ab	6.60 a	6.57 ab	6.08 ab
174	5.49 bcd	5.08 ab	6.37 a	6.37 bc	5.82 ab

Note: Location 1 — Oas, Albay (1983)
Location 2 — Urdaneta, Pangasinan (1983)
Location 3 — Gapan, Nueva Ecija (1984)
Location 4 — Bayombong, Nueva Vizcaya (1984)
DMRT at 1.0% level C.V. = 7.24%

TABLE 4 — MEAN GRAIN YIELD COMPARING DIFFERENT METHODS OF NITROGEN PLACEMENT FROM TWO LOCATIONS IN INSFFER N-APPLICATOR TRIALS DURING THE DRY SEASON OF 1984

TREATMENT	*MEAN GRAIN YIELD (t/ha.)*	
1. Control, O N	3.27 c	
2. **Prilled Urea**	**At 58 N**	**At 87 N**
2.1 Farmer's Practice	3.97 bc	4.49 abc
2.2 Researcher's Method	4.30 abc	5.46 ab
2.3 N-Applicator		
2.3.1 Spring Auger	4.56 abc	4.39 abc
2.3.2 Oscillating Plunger	4.44 abc	4.21 abc
3. **Urea Supergranules**		
3.1 Hand Placement	5.37 ab	5.75 a
3.2 N-Applicator		
3.2.1 Deep Plunger	5.24 ab	5.51 ab
3.2.2. Press Wedge	4.84 abc	5.49 ab

C.V. = 10.09% DMRT at 5% level

TABLE 5 — AVERAGE GRAIN YIELD FROM TWO LOCATIONS IN AZOLLA INSFFER TRIALS DURING THE WET SEASON OF 1981 AND 1982

TREATMENT.. (kg N/ha., dist. cm.)	*Loc. 1*	*Loc. 2*	*MEAN*
1. 0 N	3.90 d	2.92 c	3.41 b
2. 60 N			
20 × 20	4.80 bc	4.54 ab	4.67 a
40 × 10	5.56 a	4.96 ab	5.26 a
3. 30 N + 20 t A(BT)			
20 × 20	5.48 ab	4.22 ab	4.85 a
40 × 10	5.88 a	3.76 b	4.82 a
4. A_1 — R — A_2 — A_3			
20 × 20	4.70 c	4.62 ab	4.66 a
40 × 10	5.58 a	5.00 a	5.29 a
5. R — A_2 — A_3			
40 × 10	5.26 abc	5.24 a	5.25 a

Note: Loc. 1 — Binalonan, Pangasinan (1981)
Loc. 2 — Calinog, Iloilo (1982)
C.V. = 10.05% DMRT at 5% level

TABLE 6a — COMPARATIVE NITROGEN EFFECT AND EFFICIENCY OF M-99 FERTILIZER RATE VERSUS REDUCED NITROGEN RATE PLUS AZOLLA ON THE MEAN GRAIN YIELDS FROM TWO LOCATIONS (PANGASINAN AND ALBAY, PHILIPPINES) USING TWO DISTANCES OF PLANTING DURING THE WET SEASON OF 1982

TREATMENT (kg N/ha, dist. cm)	*Grain Yield (t/ha)*	*Increase Over Control (t/ha)*	*(%)*	*(t/ha) Increase Due to Azolla*	*(%)*	*N-Efficiency Kgm Rough Rice per Kgm Nitrogen*
1. CONTROL	3.4 c	—	—	—	—	—
2. 60 + 30 + 30 (M-99/wet)						
20 × 20	4.8 ab	1.4	41	—	—	23
40 × 10	5.1 ab	1.7	50	—	—	28
3. 30 + 30 + 30						
20 × 20	4.4 b	1.0	29	—	—	33
40 × 10	4.2 b	0.8	24	—	—	26
4. 30 + 30 + 30 Plus 20 Tons Azolla						
20 × 20	5.9 a	2.5	74	1.5	34	27
40 × 10	5.3 ab	1.9	56	1.1	26	20

NOTE: (a) For treatment no. 4, fresh *Azolla pinnata* at 2 kgm/sq.m. or 20 tons/ha were soil incorporated at least a week before transplanting.

(b) At 4.0% N content, there will be 2.8 kg Azolla-N per ton of Azolla with 7.0% dry matter.

(c) DMRT notation of 1.0% level of significance.

TABLE 6b — NITROGEN EFFECT AND EFFICIENCY OF USING AZOLLA ALONE ON THE MEAN GRAIN YIELDS FROM TWO LOCATIONS (ALBAY AND PANGASINAN, PHILIPPINES) DURING THE WET SEASON OF 1982

TREATMENT	*Grain Yield (t/ha)*	*Increase Over Control (t/ha)*	*(%)*	*Total Azolla Biomass (t/ha)*	*Increase per Ton Azolla (kgm)*	*N-Efficiency Kgm Rough Rice per Kgm Azolla-N*
1. CONTROL	3.4 c	—	—	—	—	—
2. A — R — A — A						
20 × 20	5.1 ab	1.7	50	35.8	47	17
40 × 10	5.1 ab	1.7	50	35.8	48	17
40 × 10						
3. R — A — A	4.6 b	1.2	35	23.3	51	18

NOTE: Blanket application of 30 kg P_2O_5, 30 kg K_2O and 5.0 kg $ZnSO_4$ per hectare.
DMRT at 1.0 level of significance.
One ton Azolla contribution is 2.8 kg nitrogen.
Tmt 2 = azolla — rice — azolla — azolla
Tmt 3 = rice — azolla — azolla

TABLE 7a — COMPARATIVE NITROGEN EFFECT AND EFFICIENCY OF M-99 FERTILIZER RATE VERSUS REDUCED NITROGEN RATE PLUS AZOLLA ON THE MEAN GRAIN YIELDS FROM MALANAY, STA. BARBARA, PANGASINAN, PHILIPPINES USING TWO DISTANCES OF PLANTING DURING THE DRY SEASON OF 1983

TREATMENT	*Grain Yield (t/ha)*	*Increase Over Control (t/ha)*	*(%)*	*Increase Due to Azolla (t/ha)*	*(%)*	*Efficiency Kgm Rough Rice per Kgm Nitrogen*
1. CONTROL	3.08 e	—	—	—	—	—
2. 90 + 30 + 30 (M-99/dry)						
20 × 20	5.86 a	2.78	90	—	—	31
40 × 10	5.66 ab	2.58	84	—	—	29
3. 45 + 30 + 30..						
20 × 20	5.02 abc	1.94	63	—	—	43
40 × 10	4.82 bcd	1.74	56	—	—	39
4. 45 + 30 + 30.. Plus 20 tons Azolla						
20 × 20	5.46 abc	2.38	77	0.44	9	23
40 × 10	5.33 abc	2.25	73	0.51	11	22

Note: (a) For treatment no. 4, fresh *Azolla pinnata* at 2 kg/sq.m. or 20 tons/ha were soil incorporated at least a week before transplanting.
(b) At 4.0% N content, there will be 2.8 kg Azolla-N per ton of Azolla with 7% dry matter.
(c) DMRT rotation at 5.0% level of significance.

TABLE 7b — NITROGEN EFFECT AND EFFICIENCY OF USING AZOLLA ALONE ON THE MEAN GRAIN YIELDS FROM MALANAY, STA. BARBARA, PANGASINAN, PHILIPPINES DURING THE WET SEASON OF 1983

TREATMENT	*Grain Yield (t/ha)*	*Increase Over Control (t/ha)*	*(%)*	*Total Azolla Biomass (t/ha)*	*Increase per Ton Azolla (kgm)*	*N-Efficiency Kgm Rough Rice per Kgm Azolla-N*
1. CONTROL	3.08 e	—	—	—	—	—
2. A — R — A — A						
20 × 20	4.55 cd	1.47	48	22.4	65	23
40 × 10	4.68 cd	1.60	52	22.4	71	26
3. R — A — A						
40 × 10	4.30 d	1.22	40	12.9	95	34

Note: Blanket application of 30 kg P_2O_5 and 30 kg K_2O per hectare.
DMRT at 5.0% level of significance.
One ton Azolla contribution of 2.8 kg nitrogen.
No second incorporation after transplanting was done, Azolla was attacked by worms.

TABLE 8 — AVERAGE GRAIN YIELD FROM TWO LACTIONS IN AZOLLA INSFFER TRIALS DURING THE DRY SEASON OF 1984

TREATMENT	*Loc. 1*	*Loc. 2*	*MEAN*
1. Control	3.84 c	3.52 d	3.68 c
2. 90 + 30 + 30			
20 × 20	4.50 ab	5.66 a	5.08 ab
40 × 10	4.26 b	4.60 c	4.43 bc
3. 45 + 30 + 30 plus 20 t Azolla/ha			
20 × 20	5.14 ab	6.02 a	5.58 a
40 × 10	5.22 a	5.64 ab	5.43 a
4. A — R — A — A			
20 × 20	5.16 ab	4.86 bc	5.01 ab
40 × 10	4.60 ab	5.08 abc	4.84 ab
5. R — A — A (40 × 10)	4.66 ab	5.20 ab	4.93 ab

Note: Location 1 — Bacacay, Albay
Location 2 — Balibago, Sorsogon, Sorsogon
Note: C.V. = 7.95% DMRT at 5% level

TABLE 9 — AVERAGE GRAIN YIELD FROM THREE LOCATIONS IN AZOLLA INSFFER TRIALS DURING THE WET SEASON OF 1984

TREATMENT	*Loc. 1*	*Loc. 2*	*Loc. 3*	*MEAN*
1. 0 N	4.62abc	2.45 d	2.94 c	3.33 b
2. 30 N	4.99 ab	3.45 ab	4.84 ab	4.42 a
3. 60 N	5.00 ab	3.48 ab	5.48 a	4.65 a
4. 30 N + 15 t A (BT)	5.15 a	3.07 c	5.21 ab	4.47 a
5. 30 N + 15 t A (3WAT)	4.92 ab	3.25 bc	4.34 ab	4.33 ab
6. A_1 — R — A_2 — A_3	4.38 bc	3.63 a	5.41 a	4.47 a
7. A_1 — R — A_2	4.65 ab	3.17 c	4.10 b	3.97 ab
8. R — A_2 — A_3	3.96 c	3.31 bc	5.49 a	4.25 ab

Note: Loc. 1 — Sta. Fe, Agoo, La Union
Loc. 2 — Malacampa, Camiling, Tarlac
Loc. 3 — Apad, Bayombong, Nueva Vizcaya
C.V. = 12.30% DMRT at 5% level

TOURISM, HOT SPRING RESORTS AND SEXUAL ENTERTAINMENT, OBSERVATIONS FROM NORTHERN TAIWAN — A STUDY IN SOCIAL GEOGRAPHY

by

WOLFGANG SENFTLEBEN[1]

Who benefits from Third World tourism? Sir George Young in his seminal book entitled "Tourism, Blessing or Blight?" (1973) explains from the English viewpoint the multi-faceted arguments for and against large-scale mass tourism, particularly in the Third World. Many of the pros and cons seem to be self-evident and may be briefly summarized. On the plus side are: foreign exchange, seasonal employment for the local people in the labor intensive hotel industry and a revival in craft arts. Tourism is an activating economic force which has multiplying effect on various sectors of wholesaling and retailing, transport, construction, utilities and businesses based on consumer spending. Dependence on monoculture is lessened by diversification. While tourism increases the contact between cultures, the influence, if detrimental, can be easily controlled as visitors are located in defined areas. On the minus side, the main complaint is the small percentage of the total package tour price which stays in the developing country, after airlines, luxury mostly foreign-owned hotel chains and tour operators take their slice and imported goods and some expatriate staff catering for the tourists have been paid. Non-monetary drawbacks may be also important to consider: The loss of peace and tranquility, the commercialization of hospitality, discontent provoked by the presence of wealthy visitors, the temptation to prostitution, children skipping school to follow the tourists for tips, agricultural workers leaving their land for hotel work (rural exodus), and an increased incentive for crime. Tourists may also destroy the healthy environment, landscape, ecology and traditional ways of life. It is believed that one of the most significant and least desirable by-products of tourism is its negative effect on the moral standards of the host population. Young members of host communities are particularly susceptible to the "demonstration effect" by tourists. However, the view that the influx of millions of tourists from rich industrialized countries to

[1] The author wishes to express his gratitude to the following students of the National Taiwan University who assisted in conducting a questionnaire survey and interviews among hotel and restaurant owners/managers in Peitou: Miss Selene Y.W. Chung, Mr. Shyu Chia-yuan, and Mr. Jehng Tian-jyuer.

poorer developing countries is a new form of colonialism and neo-imperialism is an extreme perception of tourist development held by a small minority of radical geographers and social scientists of the critical school in the United States and Germany.

The following treatise shall be a study in social geography, looking into the interaction between two social groups, i.e., prostitutes or girls closely associated with sexual entertainment on one side, and male tourists or local clients on the other side. In a case-study about Northern Taiwan, the different patterns of "sexual entertainment" and their spatial aspects have been discussed. It must be stressed, however, that in a conservative country like Taiwan which strongly bases her way of life on Confucian ideas, prostitution is a side-problem. For the large majority of Taiwan's population still the old rule applies that a man and woman, unless they are husband and wife, were not supposed to touch each other. Chinese literature clearly distinguishes between a prostitute who engages in promiscuous sexual intercourse strictly for cash, and a courtesan who courts with more than cash. The novel **Chiu-wei-kuei** (Nine-Tailed Tortoise), which describes life in the 1930s, indicates a man might spend several months and many thousand dollars before bedding with a woman of easy virtue.

Little or no attention has been given to the relationship between tourism and prostitution in existing scientific literature. Symanski's geographical analysis of prostitution in Nevada (1974) examined the interactions between prostitutes and their clients, but made no explicit reference to tourism. While sex trade is a tourist attraction, it is also a constraint on tourism growth. Contrary to expectations, contemporary tourism seldom generates strong intercultural relationships, as R. Hassan's interactional analysis of Japanese tourists in Singapore (1975, 27) has demonstrated. Prostitution is technically illegal in many Asian countries, such as in Thailand and the Philippines, but the law is poorly enforced. The prevailing opinion is, that what a tourist does in his hotel room, is none of the authorities' business. Mathieson & Wall (1982, 149) note that it is exceedingly difficult to say how much, if at all, tourism has been responsible for upsurges in prostitution in such tourist locations as Bali, Fiji, the Seychelles, Tonga and parts of Mexico. With sufficient money in his pocket, the tourist believes he is entitled to do everything he likes. But it is certainly not true that only tourism is responsible for social evils, such as corruption of morals, prostitution, teenage pregnancies, alcoholism and crime. It cannot be denied, however, that mass tourism has augmented and accelerated these problems. Ethnic and social minority groups are usually more receptive to the negative effects from tourism and often become victims of the "demonstration effect". This is particularly true in Taiwan where the majority of prostitutes are not Han Chinese, but aborigines girls of Polynesian-Malayan origin from Taiwan's East coast or the mountainous interior.

A particularly striking example is the small island of Lanyü (or Orchid Island, only a stone's throw away from the Philippine Batan Archipelago), which is inhabited by the Yami tribe with a primitive, but distinctive culture. When the Japanese held Taiwan from 1895 to 1945, they maintained Lanyü (then called Botel Tobago) as a sort of natural anthropological museum. No foreign missionaries were permitted and Chinese immigrants and foreign visitors were banned, as the Japanese attempted to keep the Island's culture unchanged. It was only in the 1960s that a new cultural policy called for a massive sinization programme to convert the backward aboriginal tribes into modern Chinese citizens. Lanyü was opened to Chinese traders and tourists from all over the world. In the process of acculturation the Yami people of Lanyü paid a heavy price: Their culture and social structure had been disrupted, their traditional skills and techniques of boat-building and production of weapons are shrinking, their religion, customs, magic beliefs and folklore are gradually replaced by Chinese Confucian ideas, and many Yamis have turned to prostitution, mendicancy, alcoholism and laziness. Once a proud people with fighting qualities, they have lost their own identity and self-assurance.

There are certainly isolated cases where "sex trade" is entirely geared towards tourism, as some Southeast Asian examples may suggest. Singapore's famous Bugis Street, traditional home of transvestites, transsexuals and male and female prostitutes, has become a landmark of entertainment by the "creatures of the night". But otherwise it is not worth speaking of prostitution in Singapore, since Singaporians (as well as Malaysians) usually go to Haadyai or Bangkok if they seek sexual adventures. Semi-official sources indicate that half a million Thai woman are engaged in prostitution in Thailand and abroad, and about 10 percent are forced into sex trade by pimps, job brokers or brothel owners. The Southern Thai town of Haadyai near the Malaysian border thrives on two things: smuggling and prostitution. Prostitution is exclusively geared to the massive influx of Malaysian visitors, nearly 600,000 in 1984. Even in a strict Muslim country such as Malaysia, high-class prostitution can be found in Kuala Lumpur and its satellite town of Petaling Jaya, as Abdul Hadi bin Zakaria's dissertation (1975) has revealed. However, most female prostitutes in Malaysia belong to the Chinese, Tamil and Eurasian race, whereas Muslim Malays are fond of boy prostitution. In sex capitals like Bangkok and Manila, nightlife areas for foreign clientele are separated from those for local people: Bangkok's Patpong Road and Sukumvit Road and Manila's M.H. del Pilar Street and Sta. Monica are entirely orientated towards foreign following. In the Philippines, sexual aberrations, such as child prostitution, homosexuality, sodomy, and mail-order brides in notorious places such as Manila's Ermita or favorite tourist destinations such as Pagsanjan

town or Puerto Galera, are a foreign element artificially created through tourist demands. But this is just an incident of tourism, and the problem is not unique to the Philippines.

G. Dress (1978, 185) reports from Bali that widespread prostitution is an outgrowth of mass tourism in Bali's "tourist gettoes" at Kuta and Sanur beaches. Prostitution in the agrarian-structured traditional Balinese Hindu society was neither possible nor necessary. It was only with the appearance of foreigners that a "Bangkok-image" was created which imperils local customs. Since any sexual relationship of local Balinese girls with strangers would mean an outlawing by the villagers, women and young girls from Java and other Indonesian islands migrated to Bali. The unofficial slogan of the tourist industry in many Third World countries advertises the four Ss (Sea, sun, sand and sex); Sri Lanka, Fiji, the Seychelles, Tonga, Western Samoa, the Trobriand Islands and Reunion Island may be cited as examples. In the Seychelles one of the "come-ons" used to draw tourists, is the tourist promotion slogan "Islands of Love", which relates not so much to organized prostitution, but to the system of "en ménage", i.e., living together without being married. With regard to Samoa, Margaret Mead's anthropological classic read by millions "Coming of Age in Samoa" (1928) painted a portrait of adolescent free love and sex without restraint, where rape was virtually unknown, which influenced a probably wrong world opinion about the Samoan society. However, for tourist promotion purposes, it could not have been a better publicity. Low moral standards and unhampered sex life are certainly an exception in most Asian countries, but extreme poverty and unhappy love affairs together with illegitimate births are the main reasons that drive young girls into prostitution.

Are the economic benefits derived from tourism really worth? Who actually has the main profit from tourism? A Japanese journal "Asian Women's Liberation" of 1980 in an article entitled: "Quo Vadis, tourist dollar?" concluded that most of the Japanese tourist expenditure abroad flows back to Japan:

> "A Japanese travel bureau organizes a tour for Japanese tourists to Taiwan. Japan Asia Airways (a sister-company of Japan Airlines) is in charge of transport to and from the destination. Accommodation is arranged in one of the many hotels in Taipei that is owned by Japanese capital. The local travel agencies, which take care of the tourists during their stay in Taiwan, are branches or sisters of their Japanese head companies. Tour guides and group attendants are Japanese. Many of the night-clubs are owned by Japanese or financed with Japanese capital. — To sum up: Almost the entire expenditure of the tourist group will remain in Japanese hands, with one exception, that is for girls — they are locally provided and cheap!"

A Locational Profile of Nightlife in Taipei

Nightlife in Taipei, as well as in most other metropolitan cities of the Far East, is certainly not a creation of tourism. Nightclubs, teahouses, bars, and even brothels are existing in most country towns, where tourists never or seldom show up. It might be true to say, however, that in large cities like Taipei tourism has strongly contributed toward the expansion of nightlife. Forms of what could be called "sexual entertainment" are strictly for males, and extramaritial relationships for males maintaining a concubine, a dance-hall girl, or frequenting a brothel have been entirely tolerated in the traditional Chinese society, provided it was done in a discreet manner, as studies by Gustave Schlegel on the "History of Prostitution in China" (1881) and R.H. van Gulik on "Sexual Life in Ancient China" (1961) show. Shanghai's open air houses of prostitution are almost proverbial and unparalleled in the whole world, and they only disappeared during the Cultural Revolution.

In the nineteenfifties and sixties Taiwan had the dubious reputation as a paradise for extremely pretty and dirt-cheap girls for venereal services. At the peak of America's Vietnam War, the nightlife in Taipei flourished, particularly along the "Sugar Daddy Row", the area around Shuang Cheng Street near the President Hotel. It was the equivalent of Bangkok's Patpong district, Manila's Ermita and Seoul's Itaewon. Those days of the U.S. army "Rest-and-Recreation" (R-and-R) era ended abruptly after the Vietnam War and the American "de-recognition" of the Republic of China government in 1979. With nightlife business in the doldrums and the awakening of public morals based on Confucian values, many nightclubs either closed or reverted back to the Chinese taste (Reid, 1984, 253).

Whereas the generation of women who were working as prostitutes in the 1950's entered the profession out of financial necessity, either their own or their parents', the situation today is entirely different. Confucian moral philosophy which centers around a healthy family life and even prohibits by taboo the discussion of physical acts of sex, increasingly restrictive government measures against the once rampant sex trade, a phenomenal rise of income and standard of living, and an easy availability of jobs for unskilled country girls in the thriving manufacturing industry has radically changed the nightlife scene.

It is true that crowds of single Japanese males continue to come to Taiwan for "sex tourism". For the Western tourist, however, the Taiwan nightlife scene looks unprepossessing and over-commercialized. Diligently compiled statistics (Report on Tourism Statistics, 1984) provide discreet indications on the extent of Japanese "sex tourism"; 87.7 percent of all Japanese visitors in 1984 indicated "pleasure" as the main purpose of their trip, whereas the general average of all nationalities is just 63.7 percent. The overwhelming majority of all Japanese visitors

are males: 81.2 percent, against a general average of just 73.5 percent. The average length of stay for Japanese visitors is just 4.47 nights, which is considerably shorter than the average for all nationalities with 6.35 nights. On the other hand, the expenditure of Japanese visitors is considerably higher than for all other nationalities, except for those from the Middle East. In 1984 the Japanese tourist has spent 157.80 US-Dollars per person per day, compared with visitors from Hongkong: 60.50 US-Dollars, from Singapore: 90.50 US-Dollars, from the U.S.A.: 85 US-Dollars and from West Germany: 88.50 US-Dollars. A total of 619,727 Japanese tourists in 1984 have spent the considerable amount of 437.1 million US-Dollars, and it can be assumed that a substantial amount of this money went for nightlife and sex-related activities. To some extent, this is also true for Arab visitors from the Middle East, although the number involved is comparatively small. Japan's post-war economic miracle and the fact that an Anti-Prostitution Law was introduced in the Japanese Diet in 1955 making prostitution illegal with effect from April, 1958 has shifted much of this activity abroad, and Taiwan as Japan's nearest neighbor experienced a surging boom in "sex tourism" in the 1960's. However, as Japan's example clearly demonstrated, prohibition of prostitution through passing of laws did not substantially reduce the number of brothels, but drove them underground. Many of the brothels renamed themselves "inns" or "tea-houses" and went ahead with "business as usual" (see also the descriptions of Boye De Mente, 1966 and Sara Harris, 1962).

As a matter of principle we have to distinguish between legalized forms of "sexual entertainment" which is in Taipei restricted to the old city areas of Wanhua and Yüanhuan, as well as several selected international hotels of the luxury class with licensed nightclubs. All these are rigidly controlled by local authorities (Police, health and sanitation department, tax administration, etc.) and bring in a substantial amount of revenue for the local government, i.e., the prefectural or municipal governments. Both the Amusement Tax and Feast Tax amount to approximately 10 percent of the total local government revenue, although the Feast Tax was not collected after July 1, 1981 any more. According to the Yearbook of Tax Statistics, Republic of China, 1984 Taipei had the following licensed establishments (amusement places), Dancing Halls: 9, Movies: 79, Billiard Rooms: 65, Music Halls: 2, Play Houses: 0, Nightclubs: 5, Acrobatics: 5, and Bowling Centers: 8, all of these are classified as "special business".

On the other hand, there are hundreds of entertainment places that carry out their business without proper license, i.e., they simply licensed as "Eating and Drinking Places" (restaurants with waitress, bars, tea room and coffee houses), but add some additional activities not covered by the license. These semi-legal underground establishments can only exist, because the law-enforcement authorities have chosen to turn a

blind eye. The local district police is usually bribed with "under-table money", but when the foreign affairs police or vice squad is called in, these illegally operating establishments are raided and closed. The life-span of these places is therefore never very long, however, long enough to pocket a heavy profit. In addition to bribery, criminal Chinese secret societies usually demand "protection money" from these underground amusement centers. In 1984 the Tourism Bureau of the Ministry of Communications conducted a sample survey among departing visitors from Taipei. The most commonly cited negative comment by visitor respondents was the complaint that a thriving nightlife in Taipei is practically non-existent, and those few places available for tourists are prohibitively expensive. Strictly speaking, this is not entirely correct. There are considerable forms of nightlife existing, but most of them operate **sub rosa**. The large majority of nightclubs, dance-halls, bars, massage parlors, etc., are hidden somewhere in blind corners off the beaten track for tourists, and most of them do not clearly indicate the real function of their business. Business signboards and promotion slogans are often misleading and are only recognizable to connoisseurs and insiders. Each type of "sexual entertainment" will be discussed in turn:

(1) **Legalized Prostitution:** This is confined to two areas in the old Taiwanese city districts of Wanhua and Yüanhuan, both areas are located near to the Tamsui River and historically belong to the oldest section of Taipei, i.e., to the pre-Japanese era. Most of the girls here are government licensed and are inspected twice a week for venereal diseases. A) **The Yüanhuan Area:** It is interesting to note that in this part of Taipei between Chung Ching North Road, Section 2 and Yen Ping North Road, Section 2, business branches of the same trade are grouped and located together, similar to the pattern we find in a typical Oriental city. Prostitution described as the world's oldest trade is located along Po An Street (between Kan Chou Street and Ning Hsia Road), and cheap sex is spawned in the area's numerous back-streets and alleyways along Po An Street. Hundreds of small brothels are clustered together in this "Red Light District". The area is exclusively for local clientele and foreigners or outsiders never would mistakenly pass this area. The girls here are of advanced age — most of them are over thirty — and less attractive women. The brothels of the lower-class districts have much of their trade during the daylight hours. The girls charge by the "hour", usually for a period of fifteen minutes, and sexual intercourse is relatively cheap and easily affordable. As a consequence of this, most prostitutes usually have a large number of clients per day, which greatly increases the danger of catching a venereal disease. It is unhygienic and dangerous to participate, but if the intrepid visitor approaches it as a voyeur, his stay will be entertaining and very educational.

B) **The Wanhua Area:** A few minutes walk from Taipei's oldest Buddhist temple, the Lungshan Szu, is not only one of the most exotic night-markets, but its main attraction is the so-called "Snake Alley", or the Chinese know this alley's main thoroughfare as Hwa Hsi Street, famous for its gruesome snake shows, fortune-tellers, vendors of herbal potion, tattoo parlors, fresh fruit stalls, raree-shows, performing monkeys, cheap photographers, infant prodigies, and hawkers of bauble and bangles. Numerous stalls are offering a concoction of snake blood that is said to promote male sexual vitality. Few tourists and outsiders who unsuspectingly walk along Hwa Hsi Street, however, realize that they are in the midst of one of the most exotic centers of prostitution. This is not only the oldest part of Taipei — the oldest settlement mentioned in the annals (Meng-chia) dates back to 1720 — but it is reportedly the oldest center of prostitution in Taipei, and its origin and rise go back to the early period of the Japanese occupation. It is a small replica of Tokyo's notorious district of Yoshiwara, Tokyo's former "city of the senses", which was doomed to disappear in the 1930s. Yoshiwara, which was not far from the Northern edge of the park surrounding the Asakusa Kannon Temple in Tokyo, was founded around 1657 by a group of young prostitutes who moved their trade from old Yoshiwara at Tôkaidô in Suruga. This famous "quarter of ill fame" existed until World War II, but it preserved Tokyo from the disorderly scenes that obtrude themselves on the passerby in many other Asian cities. By the way, most prefectural cities in pre-War Japan had their respective quarters of prostitution, for instance in Kyoto it was Shimabara, and in Osaka it was Shimmachi. M. Schwind (1981, 156) advocated the idea that large amusement centers are usually formed in accordance with the existence of famous temples which are frequented by many people of different social classes. This was not only typical for Tokyo's Yoshiwara in the vicinity of the Asakusa Kannon Temple, but it can be equally noticed in Taipei's Wanhua district, where the Langshan Szu stimulated the creation of an amusement street combined with prostitution. A description of Yoshiwara in Murray's Handbook for Travellers in Japan of 1913 (Chamberlain & Mason, 1913, 133) could equally apply to Taipei's Hwa Hsi Street:

> "About 1 mile to the N. of the great Asakusa Temple lies the world famous Yoshiwara, the principal quarter inhabited by the licensed hetaeae (=prostitutes) of the metropolis. Many of the houses within the district are almost palatial in appearance, and in the evening present a specticle probably unparalleled in any other country, but reproduced on a smaller scale in the provincial Japanese cities.
>
> The unfortunate inmates, decked out in gorgeous raiment, sit in rows with golden screens behind, and protected from the

> outside by iron bars. As the whole quarter is under special municipal surveillance, perfect order prevails, enabling the stranger to study, while walking along the street, the manner in which the Japanese have solved one of the vexed questions of all ages."

M. Terzieff (1984, 155) in comparing Taipei's Hwa Hsi Street with Hamburg's Reeperbahn came to the conclusion that Hamburg's Herbert Street is a "sterile sick-ward" in contrast to Taipei's thriving whore-house alley. A large number of small brothels are clustered together along two side-ways of Hwa Hsi Street and one block of brothels along Huan Ho South Street, Section 1. Business here starts around 10 a.m. when most of the girls get ready, but real life begins only after darkness closes in over the area, when countless onlookers and curious bystanders frequent the alleys. This "Red Light District" is then brightly illuminated with neon light of all colors and the "taxi girls" present themselves standing to attract clients. Most of them are showily dressed with expensive evening gowns and some are even wearing a chi-pao, the Chinese traditional dress, a close-fitting garment with a high collar and slit-seams, made of silk, sateen, brokade or velvet, with decorative sequins, embroidery, lace or elaborate shoulder or front openings. In striking contrast to Pao An Street, the girls are conspicuously young and attractive. Although the legal age barrier for this profession is twenty (age of majority), many prostitute teenagers circumvent these restrictions by presenting false birth certificates or those of their elder sisters or cousins. Prices in this area are slightly higher than in the Yüan Huan area. You first pay the mamasan a tidy sum which allows you to select the girls of your choice to accompany you inside for a period of not more than twenty minutes; after that you have to pay again. The price is usually the same for each girl whether young or old, however, a steep extra charge is asked when the girl is a virgin or novice in the business. The girl's beauty and charm determines how often she is selected by her clients. She usually receives around forty percent of the income as her own earning, the remaining money is kept by the brothel-keeper. The clientele is predominantly Chinese, and most girls usually shrink back from entertaining foreigners, because of the language barrier, timidity and the stereotyped idea that Western people may hurt them or may have sexual demands outside the normality. As a consequence of this, foreigners and tourists usually have to pay 1½ times the normal price. All girls are strictly kept to use condoms to prevent venereal infection or as a contraceptive. The girls never get emotionally involved with their partners, and kissing on the mouth is in bad taste.

(2) **Forms of Underground Prostitution:** Visibility and dimensions of illegal forms of prostitution operating under the cover of licensed hotels, bars, nightclubs, coffee-shops, barber-shops, tea-houses or simply walk-

ing the street are more difficult to describe; it is certainly more diffuse and widespread. One can only speculate upon the extent of underground prostitution, but frequent coverage in the local news-media about police-raids and compulsory closure of dubious establishments indicate the existence. The following forms can be observed:

A) **Street-walking — Po Ai Road:** Po Ai Road in Taipei's Cheng Chung District is a busy street noted for respectable stores and shops. It is one of Taipei's principal shopping areas for middle-income groups and commands a strategic position as a traffic junction favorably situated, as most bus lines converge here. Apart from shopping, there are not other forms of night-life here. However, recently the area between Taipei New Park and Chung Shan City Hall has become notorious for independently operating prostitutes, so-called "streetwalkers" or "hunting girls". Despite the fact that this area is only a stone's throw away from the Presidential Palace and the Municipal Police Headquarters, the police is either unaware of this activity, or it is tolerated because they are yielding to pressure from some influential people. The girls usually operate in pairs and are inconspicuously dressed to avoid police detection. They solicit potential male Chinese customers, but seldom attract attention among the unsuspected passers-by. The price is entirely a matter of bargaining and normally very cheap, but when middlemen, pimps or touts are involved, it can go up tremendously. To pick up those girls is dangerous, because many of them are pickpockets, and shoppers usually carry a lot of money.

B) **Callgirls — Middle-class Hotels:** The easiest and most common way for foreign tourists and visitors unfamiliar with local conditions who desire female company, is through hotel staff and tour guides to act as agents. Almost all managers of middle-class hotel and some well-furnished first-class hotels increase their income through "sex trade". There are no resident prostitutes in the hotel any more — as it used to be in former times — but each hotel maintains a list of callgirls who are phoned on request. They arrive by taxi, and if the client is not satisfied with the model, a second or even third callgirl is requested. The upper-class callgirls are in many cases part-time or casual prostitutes, as they persue a normal life during day-time as a barber-shop girl, saleslady or waitress. They are relatively expensive, since they have only few customers a week. The hotel management also wants to pocket a substantial profit, and hotel room and taxi fares must be covered. Hotels that rent out rooms "for short time" can be found in almost all parts of Taipei, but a large concentration can be noticed along Min Chuan East Road, Nanking East Road, Section 1 and the entire length of Lin Sen North Road. A few highly reputed international hotels of the luxury class, such as the Grand Hotel or Asia World Hotel, do not engage in "sex trafficking". The general public usually becomes aware of the evil, when accidents happen. On May 28, 1984 in the

morning the Time Hotel on Taipei's Hsin Sheng North Road burned out in a hotel fire which resulted in 19 deaths and 48 injured. Many of those trapped or injured in the flames, were said to be customers of the sex related business in the building. Many of the young girls who jumped down from the upper floors in broad daylight were half-naked. Another notorious prostitution house is the 666 Hotel in Chinchow Street which caters for customers who enjoy drinking while girls strip.

C) **Barber-shops and Massage Parlors:** Another form of sexual entertainment can be found in the massage parlors. There are two types, the **an-mo yüan** and the **li-lian yüan** . In the former, the masseuses are usually blind girls who have been trained to do the work. The second type not only have masseuses but also equipment for giving steam baths. Steam baths and massages are thought to be therapeutic by the Chinese (D.C. Schak, 1974, 195), however, many establishments of sexual recreation often offer a wide range of extra services. The many thousand barber-shops would hardly survive, if they had to rely simply on hair-dressing. Besides paying the normal fee, the customer usually tips the girl, and gradually through repeated visits and generous tips establishes a more personal relationship with the girl. Few barber-shop girls are willing to engage outright in prostitution, but they tend to please their customer through "sexual sensation". It is the nature of these places that the man usually plays a passive role. Lack of privacy, as the massage-chairs are separated only by a scanty curtain, may be tolerated by Asian customers, but it is certainly not the Western taste. Police used to crack down on barber-shop sex. As a result, shops now insist on seeing a customer's I.D. card, which lists the occupation, in order to make sure the customer is not a policeman in disguise. Massage parlors can be found everywhere in Taipei, but a remarkably strong concentration occurs along parts of Min Sheng East Road, Chilin Road and Chang An East Road, Section 1.

D) **Girlie-bars, Clubs and Western-style Pubs:** Unlike Bangkok or Manila, there are Go Go-Bars with bickini-clad "hospitality girls" as dancers in Taiwan; this would be contrary to the policy of the authoritarian and puritanical Chinese government. In the period between 1975 and 1980, with the abrupt departure of American troops from Taiwan as a result of the lost War in Vietnam and the "de-recognition" of the Republic of China government, there was a structural as well as a locational reorientation of nightlife in Taipei. The diminution of nightlife was either a result of economic necessity, or of government intervention through exorbitant taxation and license fees.

a) **Girlie-bars and Clubs:** In the pre-1980 period Taipei had a reputation for plenty of girlie-bars which were the same as girlie-bars in Hongkong or elsewhere in the Far East. Both the girlie-bars as well

as the clubs are attended by numerous pretty "hostesses", who chat with their customers. The difference between a girlie-bar and a club lies in the appearance: Girlie-bars are more informal, inexpensive and suitable for short visits, whereas clubs usually demand a high cover-charge or minimum charge, they are lavishly furnished with expensive interior decor and many of them are reserved "for members only". Girlie-bars are predominantly frequented by casual Western visitors and in former years by American servicemen, whereas Club are patronized predominantly by Chinese and Japanese businessmen who frequently entertain their business partners at companies' costs. Girlie-bars have almost disappeared from Taipei's nightlife scene after 1980. Along Shuang Cheng Street and Min Tsu East Road only two out of forty have survived: Aloha Club and Charlie Brown Club. In former times, many girlie-bars were located on Min Chuan West Road and several of the streets — including Chin Hsi Street — which run off Chung Shan North Road, Section 2. Today the entire nightlife in the area has been deserted and most of the establishments closed down. A large number of expensive clubs, however, are still operating along Shuang Cheng Street near President Hotel, along Lin Sen North Road near Gloria Hotel, along Nanking East Road, Section 1 near Emperor Hotel. The majority of girls working in Girlie-bars and Clubs have a fairly good command of English language and a relatively high standard of education. It must be stressed that most of the bar attendants, hostesses and girls who incite the guests to drink, are not prostitutes in the strict sense. Her main job is to entertain customers. They may be willing, however, to have sexual intercourse with some of their customers, but usually on a different basis than a prostitute. With the prostitute, sexual intercourse is strictly commercial; with a bar girl it is on a **kan ching** basis, i.e., the customer will bestow expensive gifts on the girl, or pay some of her living expenses. In this way, the relationship is considered by both parties to be on a higher level, than that of a prostitute and her customer (D.C. Schak, 1974, 197). To take the girl out of the nightclub one has to pay a "bar fine", everything else is a matter of bargaining and the price depending on the model.

b) **Western-style Bars** are becoming increasingly popular today. They are patronized exclusively by Westerners, westernized Chinese or overseas Chinese for the purpose of drinking, playing games or simply for having fun. There are no girls employed other than the manageress and waitresses. However, later in the night and during wee-hours, it can happen that prostitutes are among the guests. These ladies are usually long-time professionals above thirty and very sophisticated. Their main target are rich businessmen. They impudently ask for exorbitant prices for their services, however, at a late hour and with no business in sight, they may settle for much less. This can be noticed in many of the Western-style bars along Shuang Cheng Street, such as

the Ploughman's Pub, the Mariner's Pub, or certain bars in luxury international hotels, such as Hilton's Galleon Pub.

E) Dancing Halls, Discos and Cabarets: Another kind of establishment is the dancing hall (wu-ting), which is known in Taiwan as "cabaret". There are two types of places where one can dance: 1) nightclubs or discos, where one has to provide his own partner, and 2) cabarets where "taxi-dancers" or "dancing girls" are available for those who do not wish to bring their wives or girlfriends. Because of the high licensing fees charged by the government, there is a large number of unlicensed "underground" discos which are quite popular by local Chinese, but they may get raided by the police. The clientele at the dancing halls are, for most part, wealthy businessmen. Many of the places are by no means cheap and an evening can become very expensive in one of the better dancing halls, as the girls charge by the "hour". Besides a nominal entrance fee, which varies according to the hour of the day, one has to pay for the company of a girl of one's choice for dancing, drinking, or enjoying activities outside the dance hall. Most "taxi-dancers" speak little or no English, since dance halls are part of the local Taiwanese nightlife. D.C. Schak (1974, 194) explains that it is a matter of prestige for Chinese to show their friends and associates that one is affluent enough to maintain a dance hall girl. Most "taxi-dancers" are only this, and may not be willing to have sexual relationship with their dancing patrners. The large majority of "taxi-dancers" are young and attractive country-girls who migrated from the countryside to the large cities in search for jobs and a pleasant life. However, as Margery Wolf (1972, 214) pointed out, for most girls the escape to the dancing hall becomes just the first step to prostitution. Since their neighbors and family are assuming that they are sleeping with their dancing partners anyway, soon or later they may be willing to accept a dinner invitation and eventually a hotel invitation. Taipei's "taxi-dancing" establishments are predominantly located in **Hsi Men Ting**, the principal amusement and entertainment district of Taipei, such as the "International" and "Waldorf" (Sining South Road), the "Orient" (Hankow Street, Section 1), the "Paris" (Wuchang Street, Section 2), and several others in the old section of Taipei, West of the railroad line, such as "Ciro's" and "First" (Yenping North Road) and "Singapore" (Changan West Road).

F) Striptease Floorshows — Theater Restaurants: A particularly enjoyable and inexpensive form of "sexual entertainment" are Taipei's Theater Restaurants. They present a very entertaining variety floorshow which usually includes nightclubs acts and total striptease. In contrast to music halls (or sing-song halls), where chief entertainers are pretty Chinese singers, theater restaurants also include acrobatics, magic and sorcery, and short dramas at the show's end. Occasionally European and non-Chinese nightclub acts are featured on the bill as

well. A "total" striptease is frowned upon by the authorities, but enterprising theaters always manage to find loopholes to give their audiences a bit more for their money. The program is changing every forthnight, and sometimes it even features "striptease-without-intermissoin". The best supper-show is at the Hoover Theater (at Fu Shun Street), which is modelled on Tokyo's famous Mikado. Here one can enjoy a rich Cantonese dinner to the accompaniment of excellent and professional stage shows by Chinese and Japanese casts. The place is recommended by the government, frequented predominantly by foreign tourists and does not engage in indecent acts. Quite different are the other theater restaurants which are patronized by local Chinese people, predominantly from the lower classes, and foreign visitors are a rarity here. Because "total" striptease is conflicting with public morals, theater operators treat foreigners with suspicion, as it increases their risk of police intervention. Pockets of suspicious guests are carefully searched to prevent visitors from taking unwanted pictures of indecent acts. The two leading theater restaurants are located in the Yüan Huan area in the old section of Taipei: The Cloud Hall Show House or Golden Dragon at Huaying Street near to the back entrance of the railway station, and Kuo Sheng Theater at Ninghsia Road near to the Yüan Huan restaurant circle. A number of others were forced to close, because their performance was contra **bonos mores.** Several low-class nightspots are located in the suburban cities of Taipei **Hsien** beyond the Tamshui River. Nanszekuo Theater at Ching Hsin Street in Chung Ho City has banned "total" striptease from the main show, however, stripteasers present themselves naked in a special performance prior to the main show for those interested at no extra costs.

G) **Tea Houses, Music Halls and Girlie-Restaurants:** Tea houses (**cha-shih**), where hostesses are employed, are not very common in large cities like Taipei, but they are still a common site in remote rural areas, such as Taiwan's East coast. The guests sit, drink, and chat with the hostesses. The customer usually chooses a particular girl to sit with him. However, since there is a shortage of hostesses nowadays, girls cannot spend the whole evening with one visitor. The girls usually have several customers and keep going from table to table. Only after repeated visits to the tea-house a closer relationship may develop between the customer and a particular girl. A very similar pattern can be found in Taipei's ubiquitous Chinese-style Music Halls. In both the tea-houses and music halls, the customer pays a fee to enter and also pays for what he eats and drinks. By giving very generous tips he may establish a closer relationship with a particular girl. "Girlie Restaurants" or "wine restaurants" are a special part of Taipei's nightlife. Although offering no shows, the "wine girls" (similar to Japan's Geishas) in the restaurants mostly parlay their charm and beauty into their male patrons' favor and amour in a pleasant setting. These places tend to be rather expen-

sive, and if one guest arranges to take a particular "wine girl" out for more intimate entertainment, the standard "take-out" fee paid to the management can be quite steep. Last but not least, Western-style discos with livebands playing pop music or rock-and-roll are becoming more and more popular in Taipei. These places are often frequented by groupies, or girl fans of rock groups or other popular personalities who follow them about, often in the hope of achieving sexual intimacy.

Hot Spring Resorts and Sexual Recreation

In Taiwan hot springs are bursting out all over. The Japanese began exploiting their potential during the first half of this century and today, Taiwan boasts a selection of some of the best spas in Asia (D. Reid, 1985, 5). The Tourism Bureau's guidebook "Introduction to Taiwan's Hot Springs" (Yu, Wei, 1981) lists 55 thermal springs for the whole of Taiwan. No volcano is known to be active in Taiwan in the historical record, but these volcanoes may not be entirely extinct, as geothermal evidence is still extensive there. Hot springs, fumaroles and solfataras are found at many places in Northern Taiwan. There is considerable literature existing about hot springs in Taiwan (see Chen, Cheng-siang, 1963; F.C. Liou, 1979; Hung-hsi Liu, 1975 & 1976; D.P. Reid, 1984 & 1985; W. Senftleben, 1985; W.T. Tsay, 1967; and C.P. Yen, 1955), but their potential role as major tourist destinations, their therapeutic and medicinal value and their infamous association with sexual recreation has been largely ignored. The first written record about the curing effects of hot mineral springs in Chinese history goes back to the Han Dynasty around 132 A.D., but it is in Japan that hot spring resorts (onsen) developed a distinctively indigenous character as recreational settlements. This habit of going to the hot springs was brought to Taiwan during the Japanese colonial era from 1895 to 1945. Two of the most fashionable spas in Northern Taiwan may be briefly discussed, both of them have been closely associated with sexual recreation, i.e., Peitou, a Northern suburb of Taipei and Chiaohsi, a pleasant little resort at the Northeast coast near Ilan.

A) **Peitou** (meaning "Northern sojourn") is Taiwan's most distinctive spa. It is located about 15 km. North of Taipei sitting at an elevation of approximately 150 m. up the mountainslope and on the foothills of the Tatun Shan volcano (1090 m.). There are three hot spring sources in Peitou. The first and second one are so-called "White sulphur" springs with some odor, and are said to be good for curing neuralgia and stomach-ache. The third one is located in the "Hell Valley" and is a so-called "blue sulphur" spring. Bathing in the hot mineral water is said to have a curing effect for chronical ailments, such ar arthritis, rheumatism, sciatica, lower back pain, poor circulation, weak limps and skin problems. The water may also be taken internally to relieve stomach-aches, sluggish digestion and other gastrointestinal problems. During the Manchu

Dynasty the Chinese in Northern Taiwan used to extract Peitou's sulphur, but they did not use the hot water. 1) **The Japanese Period 1895-1945):** The actual development of Peitou with its recreational functions goes back to the Japanese period. The first man who discovered the medicinal value of Peitou's hot springs was a German merchant, Mr. Ohly, when he built a club there in 1894. Three years later a Japanese, Mr. Gengo Hirata, established the first hotel in Peitou, the Tengu-An Hotel besides Peitou brook. In the Japanese time, Peitou was known as "Hokutö". The Japanese, eager to utilize the natural curative properties of the sulphur spring, soon began to build hospitals, hotels and inns alongside the Buddhist temples. There were 24 hotels at Peitou in 1929. Murray's "Handbook for Travellers in Japan, including Formosa" of 1913 already gave Peitou a prominent coverage (Chamberlain and Mason, 1913, 529):

> "At Hokutö there are some sulphur springs. The gorge behind reeks with the fumes of numerous geysers, where the manufacture of sulphur may be seen. Further back in the hills are larger solfataras, besides two extinct craters. The Hokutö sulphur pit is a large circular cavity in the hills, one side being cut away as if by the action of water, and at present furnishing a means of exit to the flow from numerous boiling springs, geysers occur every few yards. A second more extensive pit is to be found at Hanreisho. Hokutö has a European-style hotel, the Shoto-en Hotel and several Japanese inns with **tatami** accommodation."

Based on historical record and evaluation of the telephone directory Peitou's rise and decline can be clearly seen from the number of hotels:

1896	1	1950	39
1909	11	1960	63
1919	14	1967	63
1929	24	1975	62
1935	32	1984	54

During the Japanese period, Peitou had a similar function as the "hill station" of India and Southeast Asia, to serve as a retreat for administrators during the unpleasant period of the year. The Japanese had turned the town into a charming resort for their officers and magistrates. 2) **Peitou's Heyday (1950-1979):** In 1945 Taiwan was restored to Chinese rule. However, the big boom for Peitou came after 1950 when the Chiang Kai-shek government retreated to Taiwan and Taipei became provisional capital of the Republic of China. Many influential people moved their homes to Peitou which became a suburban dormitory for well-to-do people from Taipei. At the same time Peitou's touristic functions grew, which is clearly reflected in the increasing number of hotels. Between 1950 and 1960 hotels and inns multiplied from 39 to 63, and the style changed from Japanese-type timber cottage to modern

concrete buildings. The new hotels were big and grand to catch the tourists' attraction. For example, the "Peitou Hotel", established in 1965, was a twelve-floor building with 160 rooms, the "Atami Hotel" (now renamed "New Angel Hotel") with 350 rooms, the "Insular Hotel" with 555 rooms and the "Communication Palace" with 300 rooms followed. During the Japanese period the principal location of the hotels was along the Peitou brook in the valley. Gradually, as the town grew, the hotels spread and moved upward to the hill slopes.

Peitou's phenomenal growth in the 1950's and 60's can be partly attributed to the "sex trade". Peitou lured men because prostitution was legal here. Although Peitou at that time was famous as a notorious "red light district" and known for its proliferation of hotels with female company, its function as an amusement center was of a high order. When Japan's once solidly entrenched prostitution became illegal in April 1957, much of this activity shifted to Taiwan, and particularly to Peitou. It became notorious as a get-away for large groups of male tourists from Tokyo and other locales. When the U.S. stationed troops in Taiwan, especially during the Vietnam War, many soldiers on R. & R. came to Peitou for relaxation, hot sulphur baths and the company of attractive girls. Peitou was nicknamed "the tender town" at that time, as its reputation stemmed from the "fallen flowers" and "wild chickens" who used to accompany male customers to bath and bed (D.P. Reid, 1985, 5). Few of these girls were actually "resident prostitutes", but female company was usually arranged at short notice by transporting the girls on "special delivery" motorcycles to the hotels. An obviously posed photo published in the TIME magazine in 1967 showing an American soldier on leave from Vietnam while relaxing in a sulphur bath in the company of two young Chinese girls, caused an outcry from official Chinese circles (Nerbonne, 1973, 148). From that time all callgirls in Taipei were urged to refrain from posing for nude pictures. 3) **Prostitution Prohibited (since 1979):** After a long debate, the Taipei City Council finally passed a resolution prohibiting the practice of prostitution at Peitou in 1979. The hotel business declined drastically and several hotels were forced to close. A hotel survey revealed that very few guests actually stay overnight, but they come usually for a few hours in the evening only. Hotel business converted from accommodation to entertainment, i.e., guests come to eat and to drink with the company of girls, and the new function is very similar to Taipei's "girlie restaurants". These hotels have no "public restaurant", but meals are served in the guest rooms. They are patronized by businessmen who invite their clients there to conclude business deals. Most of the guests are regular customers, well known to the management, and they always use cheques as a form of payment. The "wine girls" usually receive generous tips from their drunken customers. The Peitou experience has demonstrated that many of the former prostitutes now work as "waitresses" in the wine restaurants, and still many may persue

the old profession under disguise. But it is clearly noticeable that Peitou is going to return to its former status as a hot spring resort, and the debaucheries of the past may have to go gradually. Whereas all-male tour groups dominated the scene in former years, couples and families now increasingly discover the beauties of Peitou surroundings for recreational purposes.

B) **Chioahsi Spa** is a pleasant little resort at Taiwan's Northeast coast. More than thirty hotels with hot spring facilities provide accommodation for visitors to Chiaohsi, which has an old-world ambience very similar to Peitou. In former years, Chiaohsi had the reputation to serve as a "training ground" for young country girls bound for the "Big Leagues" of Peitou (D. Reid, 1984, 150). When prostitution was declared illegal in Peitou in 1979, much of the activity shifted to Chiaohsi. During the last ten years, this little spa experienced a phenomenal building boom and a large number of new hotels opened for business. Besides the "Hill Garden Hotel" which dates back to the 1960's, several other first-class hotels, such as the "Lucky Star Hotel", the "Hotel Champagne" and the "Tong Nan Hotel" were built. Half-a-dozen of small inns function as brothels, with "resident prostitutes" waiting for their clients in the hotel lobby. The large number of other hotels leave a more upright impression for the unsuspected visitor, however, the hotel management would not refuse to get some extra commission for arranging for female company. Those girls are usually picked up by the manager from a collecting place where they live together. The Ilan-Delta of the Lan Yang River has a long-established reputation as a region of origin for many prostitutes who work in Taipei and Peitou. Ilan County was traditionally a very poor agricultural problem area with many mini-sized fragmented uneconomic farms and large families. If the limited farmland could not support the family, girls were often sold by their parents into prostitution. With rapid industrialization today, this does not apply any more to such an extent.

C) **Reasons and Motives** that drive young girls into prostitution have changed in Taiwan over the last twenty years. Although no representative survey has been conducted and few facts and statistics are available, the following speculative assertions can be made: 1. **In traditional China** the occupations of prostitute and entertainer, who were merely to serve or entertain others, were therefore placed lowest on the prestige scale. However, prostitutes who managed to become wealthy through their profession, were able to marry at some point of their life, or even could be well respected in society after their return to conventional life. 2. **In former times in Taiwan** extreme poverty in rural areas was the principal motive that forced young girls into prostitution. It was not uncommon that girls were "sold" by their parents into prostitution, but only as a last resort, especially when their economic situation was hopeless or when they had to repay huge debts. M. Wolf (1972, 214) remarks in this

respect: "In China, a girl who becomes a prostitute to support her parents is one thing, but a girl who becomes a prostitute to defy her parents is quite another." In the old days when marriages used to be arranged by the parents, many country girls used the brothel to escape a marriage which they found intolerable. 3. **In modern Taiwan** the majority of girls become prostitutes by their own choice and in most cases the family does not have a knowledge of the girl's activity. The following reasons have been cited: a) Unhappy love affairs often pave the way into prostitution. b) The birth of an illegitimate child often forces the girl to support herself. Since the baby needs the mother's attention during day-time, "night-jobs" are often the only solution. Frequently, this is the first step into prostitution. c) Jobs in the nightlife sector are financially far more attractive than a ten-hour shift in a factory. d) Expensive gifts, invitations for sumptuous dinners or social events are often an incentive to which many girls cannot resist. Others might get involved with their clients hoping to meet a wealthy man who will fall in love with them and eventually marry them.

However, with growing prosperity and rapid industrialization in modern Taiwan, the institution of professional full-time and life-long prostitutes is slowly dying out. Whorehouse alleys and "red light districts" like Peitou, Hwa Hsi Street or Po An Street in Taipei are doomed to die a slow natural death. What we find today, is something that exists on the borderline between prostitution and a frivolous life.

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CORBETT NATIONAL PARK — A WILDLIFE RECREATIONAL RESOURCE

by

S.L. KAYASTHA and H.C. RAI*

INTRODUCTION

The concept of wildlife parks and sanctuaries as a 'crop' should find a significant place in the 'Forest Management' of India to preserve the **flora** and **fauna** resources of the country. Presently, the world has become more conscious about the preservation and conservation of **faunal** resources. Even in India, conservation has become one of the major aspects of the environmental planning as the environmental deterioration has become a matter of serious concern attracting attention of all scientists and citizens. Today, the pressure of growing number of tourists in the parks and sanctuaries has also adversely affected the environment. Hence, the United Nations has launched a 'Global Environmental Programme' — 'Man and Biosphere', which was started by UNESCO in 1971 to create the worldwide awareness for conservation of natural resources. The Indian government has also taken some appropriate action to promote and preserve the ecology and wildlife heritage. For instance, the wildlife protection Act of 1972 was intended to promote and conserve the **faunal** species.

Origin of the Park

Reconstructed within the modern developed concept of National Parks (Sankhla, K.S.), the Corbett Park is among the oldest, largest and renowned wildlife parks in India. The Corbett National Park (United Provinces National Park Act, 1934) is basically a victorian innovation, setup in 1935, which took the form of landscaped area for providing pleasing vistas and promenades for sauntering in the Patli Dun valley of the Outer Himalayas. The park, originally covered an area of 99.07 km^2, and was named 'Hailey National Park' after the then Governor, Sir Malcolm Hailey of the United Provinces. Keeping in view the problem of free movement of wildlife, viz., tigers, leopards and elephants, the park area was extended to 323.72 km^2 and it was renamed (1948) as 'Ramganga National Park' after the river Ramganga which flows

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across the Park. The area of the park known as 'Corbett National Park' was made popular all over, by Jim Corbett, after whom it has been named for the perpetual memory of this great sportsman, naturalist, and writer.

Park Area

Now, the park possesses an area of 520.0 km² which sprawls between Lat - 29°13′30″ to 29°35′15″ N and Long. 78°33′E to 78°36′E (Fig. 1). About two-thirds of the park's area falls in Garhwal Himalaya, and rest is situated in Kumaon hills. The main objective of the creation of National Park is basically a biotic conservation, management of recreational values, preservation and conservation of floral and faunal species.

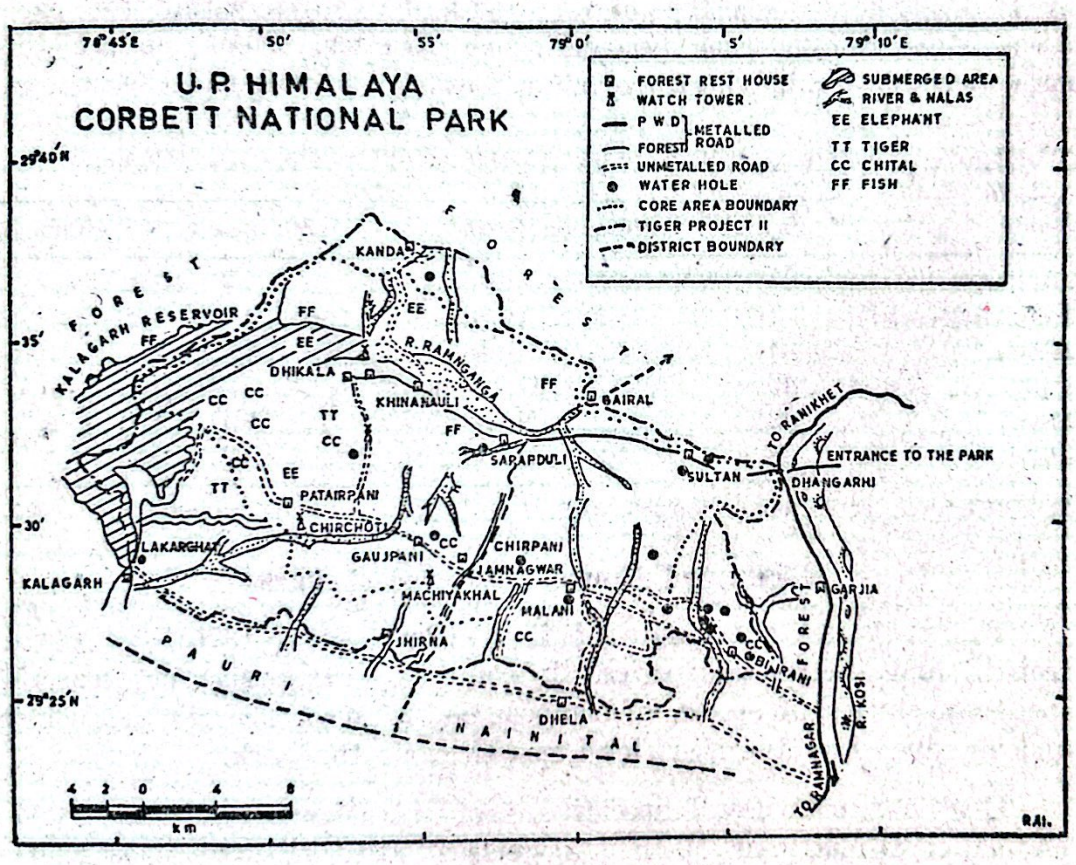

FIGURE 1

Topography and climatic characteristics of the park area

(i) The park area is characterized by undulating topography of temporary marshy depressions, ravines, and uplands. The altitude ranges from 400 m to 1200 m; and the highest point is found in Kanda (Forest Rest House) at 1210 m elevation. The Ramganga, which enters the park near Gairal Forest Rest House, is the only source of perennial water showing narrow high banks in the north-east. The springs or shrotas are the secondary sources of water which have originated from

the ridges. The river-bed contains sandy, rocky and pebbly structure until Khinauli is reached and thereafter forms a number of small islands. Such unique landforms present a beautiful look and the viewed from Dhikala.

(ii) The area of the park climatically, can be characterized by rain, winter and summer seasons which falls in mid-June to October, November to February and March to mid of June, respectively. The park offers comfort and pleasant weather during the months of March-April and November-December when the visitors can enjoy roaring of wildlife. During the spring season the visitors may also enjoy the lovely greenary of the park and the surroundings. The winter can be exploited by bird-watchers when the migrant avi-fauna moves within the park area, while rainy season becomes uncomfortable. Monsoons are the major source of rainfall with maximum rainfall in August (459 cm).

TABLE 1. AVERAGE TEMPERATURE IN THE PARK AREA (in °C)

Month	*Maximum*	*Minimum*	*Month*	*Maximum*	*Minimum*
January	25	3	July	—	—
February	27	5	August	—	—
March	34	9	September	—	—
April	40	13	October	—	—
May	42	19	November	30	8
June	44	22	December	27	4

SOURCE: Chief Wildlife Warden, U.P. Lucknow.

Floral and Faunal Resources of Park

The park has a treasure of flora (Pant, P.C., 1976) comprising tropical and subtropical species. It contains 110 species of trees, 51 species of shrubs, 33 species of bamboos and 27 species of climbers which undoubtedly, show the rich floral resources of the park.

Most dominant floral species are of sal (**Shorea robusta**), Haldu (**Adina cordifolia**) and Bakli (**Anogeissus latifolia**). Other associated flora are Dhak (**Butea monosperma**), Amaltas (**Cassia fistula**), Kachnar (**Bauhinia variegata**), Kusum (**Schleichera trifuga**) and others, having variegated tints offer rippling and pleasing scene in spring season.

The Sheesham (**Delergia sissoo**) and Khair (**Acacia catechu**) have provided the interesting features due to their strategic position.

The park also contains Dalchini (**Cinnamomus temala**), Pula (**Kydia calycina**), Gurial (**Bauhinia racemosa**), Khetwa (**Piliostigma Malabaracum**), Ber (**Ziziphus mauritiana**), Nim (**Azadirachta indica**), Semal (**Ceiba prutandra**), Mahua (**Bassia latifolia**), Kanju (**Holoptelea integrifolia**) and Banj (**Querous incana**), etc., have less significance.

Rohni (**Mallotus philppensis**) is one of the favorite trees of the elephants which grows abundantly in sal forest area. The common shrubs of park are Karaunda (**Cassia opaca**), Dhaula (**Woodfordia fructicosa**), Kapasi (**Helicterus isora**), Akash Bel (**Cascuta reflexa**), Dudhi Bel (**Cannabis buchanani**), etc. The 'Nall' (Elephant grass) is one of the favorite foods of elephants which is found in the forest of sheesham. The other grasses of the park are Sarkanda (**Themeda arundinacea**), Khas (**Vetivaria zizanioides**), Pelu (**Thysonolena maxima**) and some others which grow in plenty. The flat valley of Patli Dun in Outer Himalayas has become the house of spotted and hog deer. The park, being rich in botanical environment offers a favorite place of shelter to the several families of herbivores.

The Corbett National Park is one of the permanent home for faunal (Lamba, B.S., 1977) resource. The park area contains 50 species of mammals, 577 of birds, 26 of reptiles, 7 of amphibians, many arthropodes, and some small animal groups. The special types of mammals of the area are tigers (**Panthera tigris**), the wilddog (**Cuon alphinus**), the leopardcat (**Felis bengalensis**), and hog deer (**Axis porcinus**). The Himalayan black deer is the temporary visitor who comes to the park, especially in winter from the high mountainous region. Other larger mammals are Indian elephants (**Elphas maximus**), Nilgais (**Boselaphus tragocamelus**), Cheetah (**Axis axis**), Sahis (**Hystrix indica**) and barking deers (**Muntiacus muntijak**) which can be seen from tree-tops (Macchans). Goral, the only goat antelope, reserve its activities to the northern ridges of the river Ramganga.

Among smaller mammals, visitors can see the squirrels, rats, mangoos, otters, hedge-hogs, shrews, etc. The avi-fauna which can also be seen is both local and migratory. River Rampanga is the main attraction for birdwatchers during winter. The most common birds of the park area are parrots, pigeons, cuckoos, fly catchers, doves, woodpeckers, bulbuls bee eaters, kingfishers and others.

The Ramganga dam, a place of shelter, provides hill-stream fishes viz., Mahaseer, Indian trout, Rohu and the likes.

Recreation in Park Area

National Park provides an excellent opportunity for recreation, both types of formal and non-formal, and enhance the quality of the local environment. Parks have also been created for the protection and conservation of natural resources and for the enjoyment of visitors. The river Ramganga flows with the gurgling sound. Nature has well-endowed the park with numerous bounties. The fresh air of the park, crystal clear water of river and the roaming herds of wild animals create a pleasant environment. Elephant riding is another means of recreation inside the park for common visitors. The visitors are often lucky to observe the

basking crocodiles, muster of peacocks, sloth of bears, countless deer, an exhalation of larks, slithering pythons, dancing king cobras, drey of squirrels, peep of fowls, skulk of foxes, clonder of cats, a drift of hogs and herd of wild gambos. But tigers are the major attraction at the same time. The tiger, the lord of forest, has now become quite fearless and familiar and it has freely posed for photographs many times. According to the animal census of 1982, the Corbett Park had 91 tigers, 131 elephants, 38 bears, 47 leopards, 37 crocodiles and 1 fresh-water alligators. In brief, the park provides an opportunity to see the wild animals in its vicinity, and an opportunity for angling, photography, painting and writing, elephant rides, rest and relaxation to the visitors both foreign and domestic.

The impacts of the recreational activities on wildlife can be studied with the help of Fig. 2. The most acceptable aspect of environmental impact is that concerning recreational activities, although most of these studies refer more to picnic grounds, national parks and wilderness areas rather than to resorts as such (Wall, G. and Wright, C., 1977). Hence, tourism can be termed aggressive in many environments but not in case of National Parks. The triology (Tourism, Wildlife and Conservation) holds its sway in this field. If this is not so, parks would not be parks (Kaur, J., 1982).

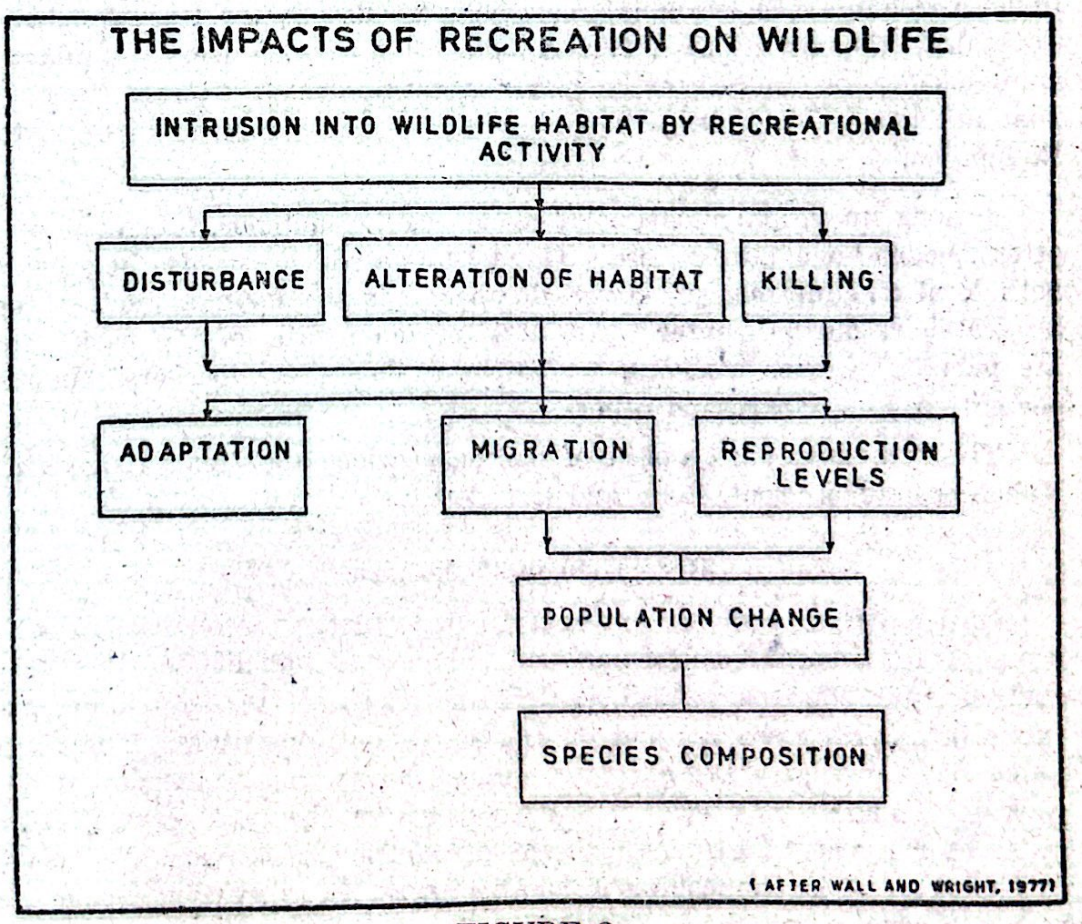

FIGURE 2

TABLE 1. TIME TO VISIT THE PARK

Month	*Animals to be seen*	*Weather*	*Remarks*
November	Tiger, crocodile and deer in a few numbers	Cold	Visibility poor owing to dense cover and tall grasses
December	- do -	- do -	- do -
January	Tiger, elephant, crocodile and deer in larger numbers	- do -	Visibility improved
February	Ideal months to see all sorts of wildlife	Night cool, day pleasant	Visibility excellent
March			Visibility excellent
April	- do -	Nights cool, day warm	Visibility excellent
May	Animals retire to dense cover early	Nights warm, day hot, dusty in the afternoon	Visibility very good

SOURCE: Chief Wildlife Warden, U.P., Lucknow, 1982-83.

Although, the tourist influx in Corbett National Park is increasing day by day but yet as compared to western advanced countries, the recreational activities in the parks of India is still significantly less. Table 2 shows that 4,124 tourists visited the park in 1971-72, the number, however tripled (13,445) in 1981-82. With the development of tourism in India, the Corbett Park attracts both foreign and home tourists. In 1971-72, the park visitors were recorded as 4,124, of which 3,261 were Indians and only 863 were overseas visitors. The flow of tourists increased to 13,445 in the year 1981-82, out of which, 1366 were foreigners. The figure indicates growing attraction for the Corbett Park.

TABLE 2. TOURIST FLOW IN CORBETT NATIONAL PARK (1971-82)

Year	*Home tourists*	*Foreign tourists*	*Total*
1971-72	3261	863	4124
1972-73	5972	1445	7417
1973-74	6457	1356	7813
1974-75	6527	829	7356
1975-76	8070	792	9042
1976-77	9732	811	10543
1977-78	10629	1449	12078
1978-79	8061	1304	9365
1979-80	9707	1132	10839
1980-81	9927	1215	11142
1981-82	12079	1366	13445

SOURCE: Tourist, Bureau, The Mall Road, Nainital, 1983.

Infra-cum-Supra-Structural Facilities

The park is well-connected by rail up to Ramnagar and then by road. Ramnagar, the base of the park, is the nearest railhead on Moradabad-Ramnagar line of the North-Eastern Railway (metre gauge). Ramnagar is also connected by road either from Haldwani through forest road or from Delhi via Moradabad and Kashipur. Dhikala, the Central place in the park, is 240 km and 504 km by road from Delhi and Lucknow respectively. Most of the rest houses are also connected by one and another inside the Corbett Park.

Although, it is not very easy to assess the recreation resource-capacity of the park, yet it has about 150 accommodation in several units of Dhikala,, Sarapduli, Brijrani and Gairal. Among them, Dhikala provides better accommodation facilities in its Forest Rest House (FRH), Tourist hutments, Swiss Cottages, Cabins and annexes. Ramnagar (Ramnagar-Accommodation) may be considered to be the main center for user facilities. It has the office of Tiger Project Park — Information Centers, Post and Telegraph, banking, health and other tourist facilities. Elephant rides and guides services are also provided inside the park. Kalagarh and Dhangari should be equipped with modern tourist facilities to attract the visitors from Garhwal Himalayas. Jeep, taxi and minibus are also available at Ramnagar Reception office for local conveyance. The facilities of fishing and photography are also provided on modest payment.

PROBLEMS AND SUGGESTIONS

It has been found during the visits to park that most of the settlers in the vicinity of park have encroached on a large tract of forest land illegally for the purpose of agriculture, lumbering, grazing and other purposes. Initially deforestation on this land was only marginal before the last decade but thereafter the encroachment and deforestation has taken place rapidly. Due to deforestation, the climate of Kaladhungi has changed drastically according to the local people. Inspite of these changes park animals by and large abound in the park. Recently, Ramganga Multi-Purpose Hydel Project has also threatened the faunal species of the park. About 78 km^2 (10%) of the park area has been submerged under water due to the construction of the reservoir. The animals inhabiting the savana type areas, are being affected and are migrating elsewhere due to Kalagarh Project, while it was considered an ideal habitat for wildlife. For instance, cheetal and hog deer have decreased to a considerable number but precise data on such loss is not available till now. The Kalagarh reservoir has become a barrier for free

movement of wildlife, particularly for elephants. It is a fact that 520 km² area of the park is too small for more than 120 heads (Singh, C.B., 1979) 131 heads (Kumar, S.M., 1985) of elephants.

Avoiding these problems, the dam can be considered a boon for migratory birds. Now, the visitors may enjoy the duck, moor hens, darters, gulls, sand pipers, ring fishers, plovers, etc. Fish have suffered due to dam construction because it has become a barrier for their seasonal and reproductive migration. Some special type of flora like sheesham bhoji and others are also affected by dam construction.

Actually, the park has lost a good deal of its environmental quality due to encroachment by people and establishment of Kalgarh dam. Therefore, the preservation of park should be done strictly by stopping the exploitation through hunting, agriculture, stock grazing and lumbering, etc. The aim of such Natural Parks is for the conservation of unique sites and eco-systems, protection and preservation of threatened species of all variety. In India, 'a national park is an area dedicated by government for all times to conserve scenary natural and historical objects of National significance and wildlife (Soni, R.C., 1961)'. Therefore, the park should be used only for recreational, educational and cultural purposes. This principle must be boldly applied in case of Corbett National Park, because of the 247 wildlife sanctuaries and 53 National Parks of India, it has the distinction of being the first and one of the best and most renowned wildlife reserves in India.

Hence, more powerful action is needed to minimize the transgressions of the park area and its vicinity. Efforts should be made for the development of improved fish screens, fishways, hatcheries and rearing ponds, etc. The planners and Park-developers should make a resource inventory of the dominant features of the park, fixing-up criteria and policies for recreational use-pattern. There is an urgent need to create an integrated multi-purpose plan which would consider tourism and recreation as an integral part of conservation. The Government should encourage the public and social organizations by providing financial assistance or otherwise by diverting its funds from non-development expenditures. On 1st April 1973, this national heritage was included under Tiger Project for the maintenance of park area. The planners have to realize that 'Environment and Development' must both grow as complementary and not as crisis situations.

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THE IMAGE OF RAJASTHAN

by

MUMTAZ KHAN*

INTRODUCTION

The Image — Present study — 'The Image of Rajasthan' belongs to the field of perception geography which may be considered an important theme of general behavioral perspective, wherein a more realistic view of man admitting subjectivity and inaccuracy of knowledge is taken into consideration in the analysis of human spatial behavior. Many of the decisions and actual behavior of man depends not on the accurate and scientific knowledge of the world but on the perception of the reality. "Perceptions are pieces of knowledge which are acquired by the individual as a result of his visual, tactile, verbal and auditory contacts, with the environment about him" (Cox, 1972, p. 100). The knowledge of man about the outer world is not only limited and inaccurate but also attached with value judgments. In fact, "...the political, social, cultural and economic values held by a man blend into an overall image about the space around him" (Gould, 1966, p. 262). It is actually this 'subjective' and perceived image and not the environment as it exists in terms of cold 'objective' facts which is meaningful and operational. The information acquired by man from the real world is converted into the perceived image. But before the formation of image the information passes through perceptual receptors and gets its precise meaning through the interaction with man's value system (Downs, 1970, pp. 84-85). His decisions and spatial behavior is decidedly a function of this perceived mental image of the space.

There is no doubt that the image formed by individuals is unique but at the same time it has some general characteristics more so when the group is homogenous. These individual images can be converted into single overall mental image by homomorphic transformation.

The Region — The state of Rajasthan which is situated in the north-western part of India, lies between 23°3'N and 30°12'N latitudes and 69°30'E to 78°17'E longitudes. Covering an area of about 342,274 square kilometers, it stands second amongst the states of the country and is inhabited by 34,108,292 persons (1981). At present the state

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is divided administratively amongst 26 districts. The region is not only varied historically but also geographically. Distinct and varied physical, socio-cultural, economic and political patterns through a long history have blended to form a complex overall character and system of the state.

OBJECTIVES

The chief objective of the present analysis is to test Gould's model of mental maps and also test a number of hypotheses.

About the hypotheses — In a recent review article it has been stated that of the three issues which seem important for the enhancement of the perception research, "The first is the necessity for an approach to the problem of perception via the development and testing of explicit hypotheses" (Downs, 1970, p. 82). Therefore an attempt has been made here to formulate and test certain hypotheses. Before putting them explicitly we should have a close look at the logic behind them.

Logically it is expected that every person knows much about places which are nearer to him. With the increase in distance his knowledge decreases. There is a human tendency to work and live in a familiar environment, unless and until the gains of a distant place outweigh the centripetal forces of a place. As such it is expected that every student would like to work in his own district which is not only more familiar but also exert the inertia of a local place so common in Indian cultural traditions. Generally "we would expect students to know most about and to feel most attached to those places of which they have most experience and knowledge" (Cox, 1972, p. 115). This attachment to local district do not confine to provide it highest rank but would also incorporate the adjoining districts getting higher ranks according to the hypothesis of neighborhood effect (Cox, 1972, p. 115). Similarly spatial discrimination effect (Cox, 1972, p. 115) is also expected to operate. Students discriminate more fully the nearby districts than the districts further away. Their familiarity with the adjacent districts provide a base by which certain deserving districts may get very high and others very low rankings.

One other factor which may be expected to influence fundamentally both the neighborhood and the spatial discrimination effect is the strong lust for cities. In all the developing countries, a common characteristic is the strong urban pull which is increasingly becoming a problem. Hence it is expected that students would prefer those districts highly which have big urban centers or in other words preference is directly proportional to urbanization.

Climate is also an important factor to enter in the service desirability of a district. Rajasthan provides much scope for it and it is expected that the districts of western Thar desert with its harsh climatic conditions, would be a fertile ground for breeding contempt.

The familiarity with a place or district also influences its ranking. The districts which have been seen by the students would naturally get higher ranking because they have more information about those districts.

Lastly the image from a particular place is not a simple phenomenon. It is a complex mixture of some shared common characteristics and its own particular view. This simple model is also worth investigating.

METHODOLOGY

(i) **Data Base** — It was desired to know the image of Rajasthan, in the minds of prospective service seekers, post-graduate geography students (1979-80) of all the colleges (except Dungarpur from where the schedule could not be filled properly) and Universities of the state. The data base was confined to the geography students, not only because of the ease in data collection due to personal acquaintance, but also their supposed familiarity in handling the map, as the data were also collected for ignorance surface. Instead of much familiar question of residential desirability (Gould, 1966, Gould and White, 1974, Weinand and Ward, 1979), the desirability of districts for service was explored, because unlike western countries, change of residence is a rare phenomenon in India, as the inertia of local land is so deeply rooted in the Indian culture. A blank districtwise map of the state of Rajasthan was provided to the students who were asked the question: "If you get a service, where would you like to serve? Give your preferences to all the districts of Rajasthan". Respondents were also asked to record their home districts as well as the names of the districts seen by them.

(ii) **The Technique** — The basic logic and procedure in constructing the image follows the model of Gould and White (1974) except in substituting the computer based factor analysis by simple ranking method. The students receive information about the districts through various sources. Through the voice of indifference and uncertainty these pieces of information are structured into ordered preferences.

The rank of preferences for a district were added and divided by the number of respondents. The scores were then converted into zero to hundred scale by the technique —

$$\text{Scaled score of a district} = \frac{|\text{Raw Score-Largest Score}|}{|\text{Largest Score-Smallest Score}|} \text{X100}$$

The straight line brackets in the equation denote the absolute difference, ignoring the sign.

The scores were plotted and isopercepts were drawn to give the image of Rajasthan from a perception center. Values for the composite image were calculated by adding the preferences of all the centers and proceeding likewise.

ANALYSIS

Now we can put our hypotheses explicitly and test them one by one.

Hypothesis No. 1 — The image of Rajasthan formed by the students of various perception centers would necessarily employ the distance decay function.

For the sake of gaining more insight this hypothesis is further broken down in three mutually related sub-parts.

(A) The perception center would get the highest preference score.

Analysis of the images of Rajasthan from all the perception centers (Fig. 1) reveals that our first hypothesis is proved. The percentage of students giving first preference to the perception centers (Table No. 1) varies from 90 (Bharatpur) to 30 (Ajmer and Bhilwara). But for the districts of Bhilwara and Ajmer all other perception centers have been accorded the highest desirability scores. This has happened because out of the 20 respondents from Bhilwara (getting 5th rank) only 9 belong to it while others belong to the districts of Udaipur (4), Banswara (4), Chittorgarh (1), Dungarpur (1) and Ajmer (1). Apart from it two students have provided Bhilwara lowest rank, thus bringing its score much down. Similarly half of the respondents from Ajmer do not belong to it. Most of the students belonging to other states have accorded their first rank to the capital city of Rajasthan. Some students belonging to other districts gave highest scores to their respective home districts. Apart from it two students gave much lower ranks (23rd and 24th) to Ajmer, thus bringing it lower to Jaipur. Leaving aside these two exceptions, all other centers prove the above hypothesis.

TABLE 1 — NO. OF RESPONDENTS AND THEIR PREFERENCES

Perception Centers	*Respondents No. of*	*First preference to perception center*		*First preference to Home District*	
		No.	*%age*	*No.*	*%age*
1. Jaipur	13	8	61.53	5	38.46
2. Udaipur	20	12	60.00	15	75.00
3. Bhilwara	20	6	30.00	13	65.00
4. Alwar	20	11	55.00	15	75.00
5. Ganganagar	14	11	78.57	9	64.28
6. Bharatpur	20	18	90.00	20	100.00
7. Kota	13	9	69.23	9	69.23
8. Ajmer	20	6	30.00	11	55.00
9. Jodhpur	9	6	66.66	9	100.00

(B) The areas of high desirability would be nearer to the perception center.

A close perusal of the various images of Rajasthan (Fig. 1) reveals that to a large extent this hypothesis is also proved. Without any

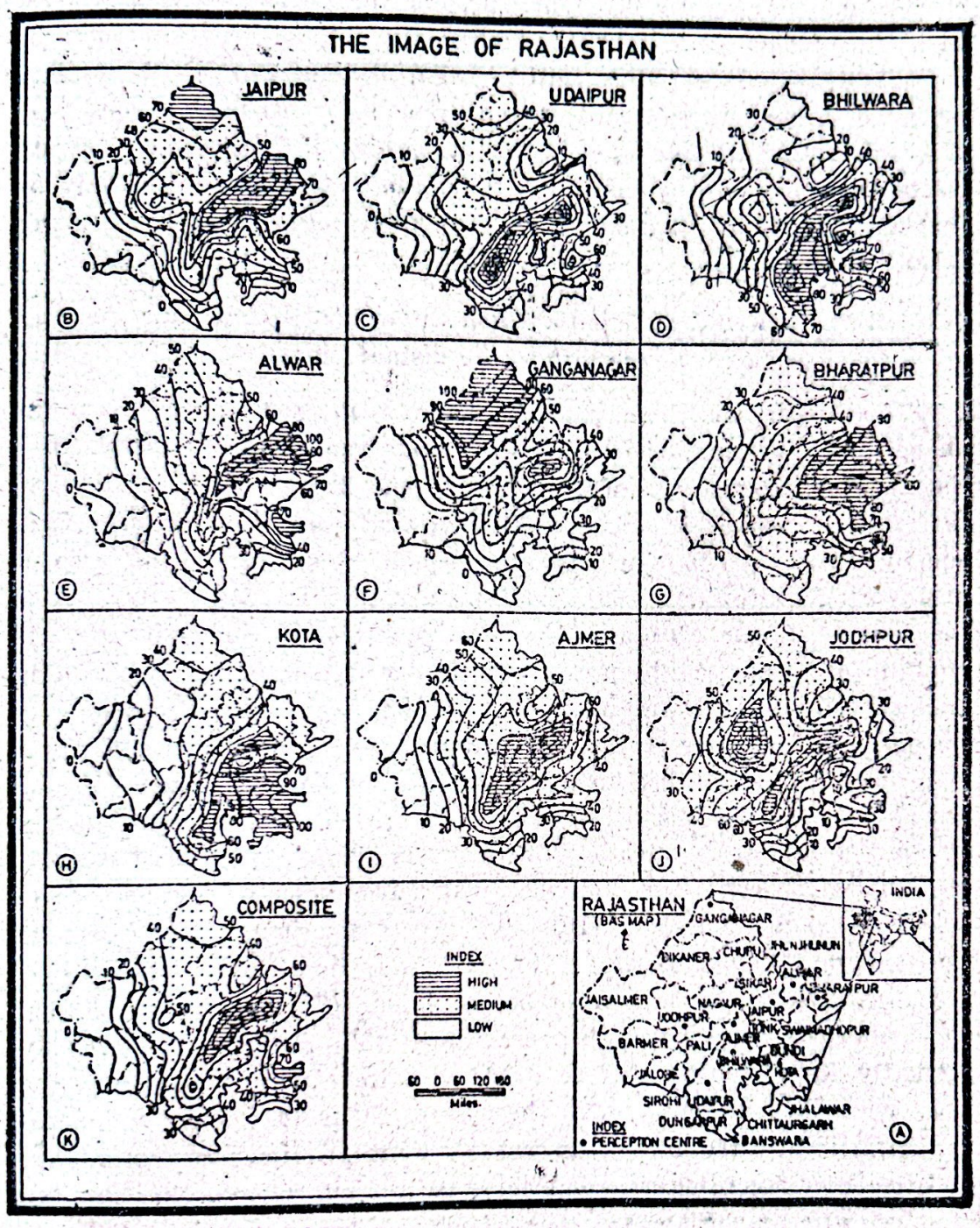

FIGURE 1

exception, the areas of high desirability, whose size and shape may vary considerably, are invariably found around the perception centers. Although secondary peaks of high desirability in few cases interrupt the often observed sequential pattern of high, medium and low desirability belts, but around these peaks also, the same pattern may be observed. It is interesting to note that in all the images, belt of low desirability is found always at the distant outlying districts separated mostly by the belt of medium desirability, thus making more clearly the distance decay effect visible.

(C) Students would differentiate and discriminate more fully between districts closer to them than the distant ones.

This spatial discrimination effect may also be discerned from the images of Rajasthan. The students of Jaipur could very well discriminate the neighboring districts of Ajmer (87) and Tonk (38), but failed in the case of distant districts of Barmer and Sirohi by scoring them equally (3). Udaipur students were equally justified in the case of neighboring Chittorgarh (63) and Dungarpur (23) but certainly not in the case of Alwar (40) and Sawaimadhopur (46). Similarly students of Bhilwara could easily provide justifiable ranks to its neighboring districts of Ajmer (95) and Tonk (19) but were certainly wrong in rating Sawaimadhopur (28) and Bharatpur (23). The students of Alwar were in a position to discriminate well the neighboring Jaipur (98) and Sawaimadhopur (58) districts, but found it difficult in the case of distant Dungarpur (18) and Banswara (21) districts. In the same way students of Ganganagar very easily provided justifiable ranks to the districts of Bikaner (89) and Jaisalmer (10) but failed to discriminate fully between Chittorgarh (13) and Barmer (10). Likewise Bharatpur students were right in according ranks to neighboring Jaipur (92) and Tonk (55) but could not differentiate fully between Churu (36) and Ganganagar (43). Similarly Kota students differentiated well their neighbors Bundi (90) and Tonk (53) but could not in the case of Sikar (41) and Ganganagar (47) which are far away. In the same way Ajmer students were justifiable in according reasonable ranks to their neighboring districts of Jaipur (100) and Sikar (44) but failed to discriminate between Bikaner (38) and Bharatpur (35). Likewise Jodhpur students could very well differentiate between its adjoining districts of Pali (53) and Jaisalmer (28), but were not in a position to discriminate correctly in the case of Tonk (10) and Bharatpur (12).

Thus it can be fairly concluded that the spatial discrimination effect can easily be traced out from all the images of Rajasthan but it would be difficult to stretch it in every case.

Hypothesis No. 2 — Districts having big cities would be preferred highly.

As has been explained earlier, urban pull is expected to be an important factor in ranking the districts, therefore those districts having big urban centers would stand higher in the desirability scale. It may also be expected that preference is directly proportional to urbanization.

TABLE 2 — RANK OF DISTRICTS HAVING LAC CITIES

Perception Centers	*Lac Cities*						
	Jaipur	*Jodhpur*	*Ajmer*	*Kota*	*Bikaner*	*Udaipur*	*Alwar*
Jaipur	1	8	3	10	13	9	2
Udaipur	2	8	3	4	15	1	10
Bhilwara	3	9	2	5	19	1	10
Alwar	2	16	5	4	15	6	1
Ganganagar	3	4	6	12	2	11	10
Bharatpur	3	14	6	5	18	13	2
Kota	4	21	5	1	23	7	10
Ajmer	1	12	2	10	18	3	6
Jodhpur	2	1	4	11	5	3	13
Composite Rank	1	10	2	3	16	4	5

Table No. 2 has been prepared to test this hypothesis. Ranks of only those districts have been abstracted from the preference table, which have lac cities. The district of Jaipur which has the biggest city of the state has got the highest rank. In the composite score it has acquired first rank while the lowest rank provided to it is only fourth. The rank of Jodhpur in the composite score is ten, although its lowest rank has gone down up to twenty-first. But Ajmer on the other hand has got second rank in the composite score and its lowest rank has gone only up to sixth. Kota has received third rank in composite score and its lowest rank has not gone below twelfth. The lowest rank in the composite scale of districts having lac cities has been acquired by Bikaner (16) who has also received the lowest rank of twenty-third. It may be pointed out that Bikaner was not amongst the perception centers. Both Udaipur and Alwar who have received fourth and fifth ranks respectively, have not allowed their lowest ranks to go below thirteen.

Thus it can be pointed out that the districts having lac cities have also got higher ranks. Correlation coefficient of the composite ranks of lac cities and ranks according to their size was calculated by the Spearman's method. Correlation coefficient value (+0.465) indicates

that, the composite ranks are positively correlated with the population size of the lac cities. Correlation coefficient was also calculated for the composite score of the districts and their urbanization. Correlation coefficient value (+0.431) reveals that the preference is directly proportional to urbanization.

From the above analysis it can be fairly concluded that our second hypothesis is also proved.

Hypothesis No. 3 — Districts having harsh climate would get lower ranks.

Climate being one of the important factors influencing the choice of desirability, the districts of western Thar desert having harsh climate are expected to get low ranks. A close perusal of the images of Rajasthan from various centers (Fig. 1) reveals that this hypothesis is also proved. Excepting the images from Jodhpur and Ganganagar all other centers display a common characteristic that the regions of low desirability are found mostly if not exclusively in the districts of western Rajasthan. In the case of Bhilwara the whole of western Rajasthan, excepting Jodhpur, Pali and Ganganagar, comes in this belt. On the other hand in the case of Ganganagar this belt is pushed southward because of the distance decay effect and is part of a semi-circular low desirability belt all along the borders of the state. Similarly in the case of Jodhpur, in the whole of western Rajasthan the low desirability districts are confined to Jaisalmer and Shekhawati regions. Here also the distance decay may be discerned and the low desirability region has been pushed mostly across the Aravalli ranges. But for these two exceptional cases, in all other perception centers the districts of western Thar desert forms the region of low desirability and thus the hypothesis enunciated above is proved.

Hypothesis No. 4 — Students would rank higher those districts which have been visited by them.

For testing this hypothesis the number of students visiting each district in each perception center were counted and then were added and ranked. Correlation coefficient of these ranks with the ranks of composite image of Rajasthan was calculated by the Spearman's method. A very high correlation (+0.85) value indicates that both are positively correlated and hence the hypothesis is proved.

Hypothesis No. 5 — The image of Rajasthan from various perception centers would confirm the simple model that the mental map 'from a particular place is a rather subtle convolution of (i) a shared, national viewpoint and (ii) a dome of local desirability'. (Gould, P. & White, R., 1974, p. 92).

An analysis of the image of Rajasthan from all the perception centers confirmed this model (Fig. 1 & 2). In most of the cases the perception center gets highest score and its surrounding region comes under the category of high desirability; mostly a ridge of high desirability runs along Aravalli ranges, and districts of western Rajasthan are scored very low; areas of low desirability are found in the outskirts of the state and the areas of high, medium and low desirability are found in a definite sequential pattern. All these common features may be discerned in each and every image of Rajasthan.

The dome of local desirability becomes clearer if the scores of composite image are subtracted from the individual perception centers and the residuals are plotted (Fig. 2). Local impact becomes more prominent when the perception center is located away from the Aravalli axis. It is completely hidden for the Jaipur and Ajmer viewpoints, begins to appear in the Udaipur and Alwar surfaces but is displayed most prominently when we move away from this central axis. Thus Ganganagar, Jodhpur, Kota and Bharatpur represent marked local impact. From the above characteristics it may be fairly concluded that the model is proved.

CONCLUSION

The prime objective of the study was to test certain hypotheses. It has been proved that the images of Rajasthan formed by the students of various perception centers have necessarily employed the distance decay function. It has been confirmed that, the perception centers have got the highest preference scores, the areas of high desirability are nearer to the perception centers, students have differentiated and discriminated more fully between districts closer to them than the distant ones, districts having lac cities have been preferred highly, districts of harsh climate have received lower ranks, and they have preferred highly those districts which have been seen by them. In fact the whole analysis confirms the simple model that the mental image from a particular place is a complex mixture of shared general characteristics and dome of local desirability.

ACKNOWLEDGMENTS

I am extremely obliged to Shri Jaipal Singh Yadav, Head, Dept. of Geography, Gov't. Arts College, Alwar for his constant inspiration and guidance. I am also extremely thankful to my students Miss Rachana Chawla for her immence help in processing the data and making maps, and Miss Suman Lata for the final drawing of the maps.

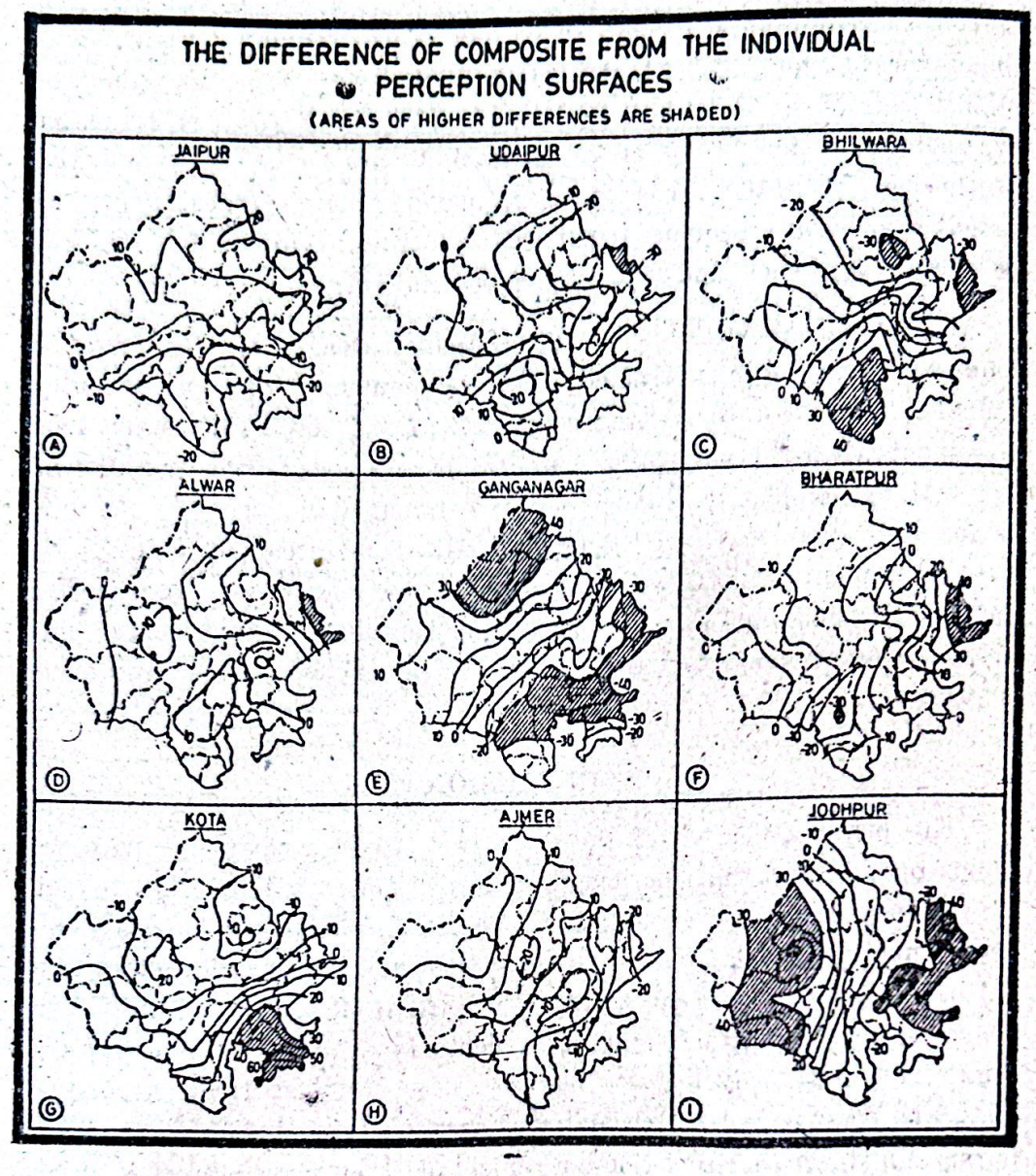

FIGURE 2

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Owner: PHILIPPINE GEOGRAPHICAL SOCIETY	P.O. Box 2116, Manila
Publisher: PHILIPPINE GEOGRAPHICAL SOCIETY	P.O. Box 2116, Manila
Printer: BOOKMAN PRINTING HOUSE	373 Quezon Ave., Q.C.

Office of Publication: PTRI Compound, Bicutan, Tagig, Metro Manila

In case of publication other than daily, total number of copies printed and circulated of the last issue date July-December, 1985.

1. Sent to paid subscribers	510
2. Sent to others than paid subscribers	490
Total	1,000

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PEOPLE POWER MIGHTIER THAN THE BULLET*

The Filipino people have proved that prayer, persuasion and passive resistance can be mightier than the bullet, taking just four days (February 22-25, 1986) to defeat an army which had maintained Ferdinand Marcos in power for 20 years.

The rebellion, which began with the odds stacked against a small rebel military force holding Camp Aguinaldo, developed into an awesome display of courage and determination by ordinary people from all walks of life.

Armed with nothing but their hope, and a willingness to die unresisting rather than surrender, they gathered in hundreds of thousands to form a human barricade massed on roads leading to Aguinaldo, and stretching for up to three kilometers away.

They then engaged in a novel form of psychological warfare, founded on a communal faith, that all were equally determined to win and that this was their last chance to defeat the old regime.

The key was their passivity.

Neither they nor the military rebels showed any intention of attacking Mr. Marcos or his forces leaving the president with the prospect of having to slaughter thousands of his citizens without being able to claim that they fired the first shot.

When Mr. Marcos tried to stage an attack on the rebel camp, his tanks were met with ranks of churchmen and civilians who sat in the streets, and simply defied the military to run them over.

Riot police using teargas and truncheons were met with linked arm ranks fronted by priests, who stood firm but made no move to counterattack.

Troops left stationed at the edge of the crowd were initially frightened, then bemused as the people approached them, not with insults but with cries of "We love you," offering food and flowers.

At one point, a group of 50 riot police was hemmed in by about 100 priests, initially crouched behind their shields, but later standing relaxed as the priests offered food and cigarettes and gently tried to persuade them to join the rebel cause.

The Catholic church was a vital factor in the non-violent rebellion, with priests and nuns constantly urging non-violence, urging the people to have faith, and holding open-air masses and prayer meetings in a crowd littered with images of Christ and the Virgin Mary.

The troops, many of them draftees, were virtually killed with kindness, as the people almost unwittingly proved the point that it is far harder to shoot someone you have just spent hours talking to and taking food from.

The civilian protectors abandoned homes, families and jobs and showed every intention of remaining without sleep for weeks if necessary.

One major Manila hotel sent a letter to clients saying that because many staff were demonstrating their "political opinions" it was curtailing its facilities.

After it was all over, rebel leader and Defense Minister Juan Ponce Enrile admitted Wednesday that Mr. Marcos could have defeated his troops if he had been willing to order a mass attack, and thanked him for his kindness in not doing so.

The emotional cost of this exercise in courage was perhaps seen most clearly after the victory — the sheer jubilation and looting of Malacañang palace was over five hours after it had started, and life was virtually back to normal in Manila Wednesday.

The key to this was a surprising absence of any sign of demands for vengeance, with new President Corazon Aquino saying she wanted to forgive and forget and no reports of reprisal attacks on Marcos supporters.

It was a remarkable popular rebellion, which achieved its aim in four days and at the cost of only 13 lives. (AFP)

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* Reprinted from the *Philippine Daily Inquirer*, March 1, 1986, page 7. — Ed.

RP FORESTS COVER ONLY 7.7-M HECTARES*

MANILA — (DEPTHnews) — Much has been said and published lately about our dwindling forest resources and the dire consequences to our country and people. But specific numbers may tell the story better.

A study released this October by the University of the Philippines College of Forestry's Forestry Development Center, a policy research group, gives the scores on existing forested areas, by region and province, for the whole country.

The study's results specify how much vegetative cover remain, where they are, and what they imply for the country's well-being. The FDC researchers estimated the proportion of trees and other plants growing in a place or area by interpreting Landsat (land satellite) images or photographs taken from 1979 to 1980.

On the whole, they measured six broad land uses, namely, adequately and inadequately stocked forests and open lands, all three categories within forest lands; adequately and inadequately stocked forests within alienable and disposable (A and D) lands; and other A and D lands such as those for agriculture, human settlements and other non-forest uses.

Adequately stocked forest means areas where there is enough vegetation growing, technically defined as areas with more than 40 percent crown cover per unit area. Foresters include old-growth, young-growth, and protection forests in this category, in relation to the goods and services they give to humankind. For example, the first kind supplies timber for the wood industry and for export.

The FDC researchers estimate the country's adequately stocked forest at about 7.762 million hectares, including 0.373 million hectares within A and D lands, in all they constitute more than one-fourth of the Philippines' land area.

The adequately stocked forests spread in varying proportion across the 12 regions of the Philippines. Only four regions though contain 70 percent of this forest cover that we want to have for the entire country. These are Regions 2 and 4 in Luzon, and Regions 10 and 11 in Mindanao, distributed as follows:

— Region 2, the Cagayan Valley including tiny Batanes, has 1.756 million hectares of adequately stocked forest constituting 48.2 percent of its territory.

— Region 4, Southern Luzon including the large Mindoro and Palawan islands, has 1.651 million hectares constituting 34.8 percent of its area.

— Region 10, Northern Mindanao, has 1.019 million hectares constituting 36 percent of the region.

— Region 11, Southern Mindanao encompassing the Davao provinces, has 1.152 million hectares constituting 36.5 percent of the region's territory.

Most of the remaining 30 percent of adequately stocked forest is concentrated in Regions 7, 3, 8, 9 and 12 which form the darker side of the national forestry picture (actually the lighter side when viewed from the satellite composite photo).

Region 1, the Ilocos Region, has 0.298 million hectares which is 13.8 percent of the region's territory. Eighty percent of this hectare is in Abra, Bontoc and Ilocos Norte.

Region 3, Central Luzon, has 0.442 million hectares, mostly found in Bulacan, Nueva Ecija and Zambales, which is 18.8 percent of the region's total area.

Region 8, Eastern Visayas, has 0.448 million hectares found mostly in Samar, and which is 20.9 percent of the region's territory.

Region 9, Western Mindanao, has 0.324 million hectares, constituting 17.3 percent of the region's total area. Almost all of this region's adequately stocked forests are found in the Zamboanga peninsula.

Region 12, Southwestern Mindanao, has 0.378 million hectares which is 16.1 percent of the region's total area. The bulk of the region's adequately stocked forests is in North Cotabato, Maguindanao and Sultan Kudarat.

The deforested areas, depicted by the light tone areas in the satellite composite photo, predominate in Regions 5 (Bicol), 6 (Western Visayas) and 7 (Central Visayas). Their very small area having enough forest cover totals only 0.410 million hectares, constituting 1.4 percent of their combined territories.

Bohol and Cebu have no adequately stocked forest.

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* Reprinted from *Bulletin Today*, December 26, 1985.

PHILIPPINE GEOGRAPHICAL SOCIETY
P.O. Box 2116, Manila, Philippines

ATTENTION

MEMORANDUM

To: All REGULAR MEMBERS OF PGS

From: AURORA S. TOLENTINO
Treasurer

Subject: Payment of Annual Dues
and Other Matters

We wish to remind you that you have not as yet remitted your annual dues for 1986 in the amount of ₱30.00.

As an active and paying regular member, you are entitled to receive without additional cost the Philippine Geographical Journal issues which are now under volume 30 (1986). As you know, without funds the Philippine Geographical Journal can not be printed and therefore will not be able to share its potentialities in the big task of nation-building.

May I request your whole-hearted cooperation on the matter and please remit the said amount at your earliest time possible.

Also, may we request members and friends to submit papers or manuscripts dealing with geographical facts and/or information on the Philippines for possible publication in our journal.

Thank you for your early attention to these matters.