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THE ECONOMIC VALUE OF HUNTING AND OUTFITTING IN
EAST AFRICA

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INTRODUCTION

There is no doubt that the major economic benefits currently yielded by wildlife to East Africa are derived from hunting and game-viewing. Several papers at this Symposium explore the possibilities of other forms of utilization, but it will be a long time before the returns from these can compare with the tourist/recreational value of wildlife.

This paper describes our study on the value of hunting and the outfitted safari industry to East Africa. There has been insufficient time since the study got under way in March to do much work on Uganda and Tanzania, and so this report deals with Kenya. The final report of the study will include Uganda and Tanzania as well as Kenya.

The overall objectives of the study are:

1. to find out how much the outfitting and hunting activities are worth to East Africa;
2. to attempt to evaluate these activities as a form of land use for particular areas in a way which will permit comparison with other uses such as ranching;
3. to examine the policy options available for increasing the returns of the hunting activity.

This paper is concerned exclusively with the first two objectives. It must be emphasized that it is based on the data so far collected, and that the final report will include much more data and analysis. The figures here presented are different from those which will appear in the final report both because more sophisticated assumptions will be used in some instances, and because questionnaires are still coming in.

THE HUNTING AND SAFARI ACTIVITIES

Hunting and safari activities can be conveniently divided into three types.

1. Visitors' hunting safaris:

These last from two to five weeks on average (see tables 3 and 4 for a more detailed description). The size of the party is usually between one and four with one or two Professional Hunters and a field staff of 10 to 20. Most of the safari is spent in camp on two or three Hunting Blocks.

For visitors who have less time or money to spend but who wish to shoot some of the more common plains game species, shorter hunting expeditions of a couple of days to two weeks are becoming increasingly popular. The advent of large scale package tourism on the Coast is increasing the demand for

2.

this type of hunting although in the period covered by our study - Calendar 1966 - this factor had not assumed substantial proportions. These hunting expeditions may take place on either private or public lands and usually consist of one or two clients and a professional hunter. (It might be noted that all visitors who wish to hunt in Kenya must be accompanied by a Professional Hunter who is licenced by the Game Department and is a member of the East African Professional Hunters' Association.) The party may camp out, but is usually accommodated in a hunting Lodge maintained on private land or in a farm house.

2. Outfitted Photographic safaris:

These take the atmosphere and standards of the hunting safari in search of the extraordinary photograph rather than the extraordinary trophy. While some of the photography is conducted in the hunting blocks, most takes place in the National Parks and Game Reserves. The safari party may also camp in the National Parks on the payment of the appropriate fees.

Photographic safaris employ less staff than hunting safaris since there is no need for gun-bearers, skinners, etc. (For some description of parties see Tables 3 and 4).

3. Hunting by residents:

Residents do not have to employ a Professional Hunter unless they wish to hunt 'dangerous game' (elephant, rhino, lion, leopard or buffalo). In this event, they must either be accompanied by a Professional Hunter, or else satisfy the Game Department that they are capable of hunting the animals without undue risk to themselves or the animals. Their hunting usually consists of short weekend trips to public lands or the farms of friends where they shoot the commoner plains game species. (See Tables 5 and 6)

DESCRIPTION OF THE STUDY

1. Visitors

It was decided to send¹ a questionnaire to all persons who hunted in East Africa in 1966.¹ Since the Kenya Game Department does not require visitors to give their addresses in applying for hunting licences, it was necessary to approach professional hunters and outfitters. In spite of the fact that this is valuable commercial information, the names and addresses of 1966 clients taken out by² 67% of professional hunters resident in Kenya were supplied to us².

Table 1 shows the number of questionnaires sent and the response received so far. Although hunters and outfitters were requested to give the names and addresses of their 1966 clients, inevitably some questionnaires were sent to people who hunted in 1965 and 1967, and a couple even to persons who hunted in Botswana!

¹ A questionnaire is also being sent to active professional hunters to supplement the information on costs which the major outfitters have already given us.

² These include all of the hunters working regularly for the major Kenya outfitters. We are also grateful to the major Tanzanian and Ugandan firms for their full co-operation in supplying clients' names and addresses.

Out of the 496 visitors who were issued with Kenya hunting licences in 1966, responses have been received from 156 i.e. 31.4%. While the number of persons who hunted in Kenya in 1966 was undoubtedly different from the number who took out licences in that year³ we use the latter figure for 'multiplying up' the expenditures reported on returned questionnaires to get the totals reported in Table 8.

2. Residents

Questionnaires were also sent to residents of Kenya who were issued with hunting licences in 1966 or 1965. (See Table 2 for responses). We do not know exactly how many residents hunted in Kenya in 1966. Anyone who took out a full or private land licence in 1965 or 1966 may have hunted in 1966. An analysis of the names on the Game Department's files show that of the 1185 licence holders to whom questionnaires were sent, 355 had taken out licences in both 1965 and 1966, 277 in 1965 but not 1966, and most of the remainder in 1966 but not 1965. Questionnaires were sent to 89% of 1966 licence holders and 86% of 1965 licence holders. Until a more careful analysis has been carried out we assume for purposes of estimation that the relevant population is 1185, rather than the 1361 suggested by the fact that we were unable to secure names of all residents entitled to hunt in 1966. For this reason, we expect our estimates of residents' expenditures to be low.

For the purposes of this paper it is assumed that in each case those who completed questionnaires form a 'representative' sample. The more sophisticated analysis of the final report will permit investigation of the randomness of response, and checks for possible sources of bias.

THE VALUE OF HUNTING AND THE KENYA CUTFITTING INDUSTRY

Table 7 shows the itemised average expenditures per person from the visitors' questionnaire. Separate figures are given for hunting and photographic safaris. It should be noted that the Grand Totals are the sums of the arithmetic means for the different items, and not the mean of the Grand Totals on the questionnaire. For both hunting and photographic safaris, the latter figure was some £100 less than that given. The reason for this is that different numbers of people replied to different numbers of the sub-heads, and very often a 'total' figure was coded from a questionnaire where one or more items of expenditure had not been given. For example, a number of people replied 'don't know' to the 'transport of trophies' item, a few explaining that they had not received their trophies yet. We feel that a better estimate of total expenditures is given by our procedure, which in effect assigns to such people the average expenditure on 'transport of trophies' given by those who did respond to that sub-head, and so increases their totals by the same amount.

3 The full licence and the full private land licence are both valid for 12 months after the date of issue. While licences for visitors are usually issued at the beginning of their safaris, this need not be so. Since the trend in issues of licences has been upwards, the number of licences issued will tend to overstate the number of persons who hunted. On the other hand, since a few hunters hunt twice on the same licence (returning in Feb. '66 say, when their June '65 licence is still valid), the discrepancy could be the other way. In the lack of firmer knowledge, we assume that the net effect is negligible, i.e. that the number of visitors who hunted in Kenya in 1966 was 496.

Table 7 indicates that those on hunting safaris spend more in East Africa than those on photographic safaris. The difference is partly due to the higher 'basic price of safari' paid by the former. Comparison with Table 3, which shows length of stay and disposition of time, indicates that per day the 'basic price of safari' is approximately the same for the two types of visitor. Part of the difference is therefore accounted for by the longer stay in East Africa and higher proportion of time spent 'on safari' by the hunters. The remainder of the difference is largely accounted for by the particular expenses of hunting, such as licences and taxidermy. It is interesting to note that even for visitors who spend such large sums of money in East Africa as these, 'round trip transport' is a very considerable part of total expenditure (22% for hunters, 30% for photographers).

Also noticeable is that the expenditures of persons taking photo safaris are more evenly spread between the three countries. This is particularly so of the on safari expenditures. A minor reason for this may be the restrictions on Kenya outfitters taking hunting safaris into the other countries, but the major one is that photographic safaris follow an itinerary covering the southern Kenya and northern Tanzania parks and game reserves.

Table 8 gives estimated totals for visitors' expenditures in 1966. The estimation procedure is explained in the notes to the Table.

Table 9 gives itemised expenditures per person for those who replied to our residents' questionnaire, and estimated totals for expenditures by holders of Kenya hunting licences in 1966. The methods of calculation are again explained in the table notes.

The expenditures of persons taking outfitted safaris and of resident hunters given in Tables 8 and 9 are not the appropriate measure of the contribution of these activities to the economy. Other papers in this Symposium (cf. Mitchell, 'The Value of Game-Viewing as a Form of Land Use') discuss the appropriate measure in detail. We content ourselves here with presenting two approximations to it. On the basis of cost information provided by the major Kenya outfitters, we estimated the import content of goods and services taken by safari visitors at £232,900, on the assumption that all domestic factors of production employed in serving safari visitors would be unemployed in the absence of this industry, the net contribution to the economy of this industry would come to £841,600. This is by way of a maximum estimate of the appropriate figure. A minimum estimate would consider only indirect taxes, licences, and fees paid, which amounted to roughly £165,900. From this should be deducted the cost of administering hunting. The Game Departments do not analyse their expenditures by activity, but we understand that £10,000 would be a high estimate of the money cost of administering hunting in Kenya for residents plus visitors. Applying the whole cost to visitors (and ignoring hunters who went to Tanzania because of their numbers), we are left with a rock-bottom-minimum estimate of the net contribution to the East African economy of the Kenya outfitted safari industry of £155,900.⁴

⁴ We have not done similar calculations for the residents due to lack of time and also some analytical difficulties not present in the case of visitors. These will be discussed fully in the final report.

The yield of hunting as a form of land use

The second object of this study is to relate the returns from outfitting and hunting to particular areas of land. Much more analysis must be done on this aspect, but it is perhaps worthwhile giving some very crude estimates here.⁵ These estimates are shown in Tables 10 and 11.

That part of expenditures comprising Controlled Area Fees paid for animals shot may reasonably be allocated to the Blocks in which the animals were shot. It is not so easy to allocate other expenditure items. In the case of residents, we know which blocks each one used, and the number of days spent on private and public land (cf. Table 5). We have allocated resident's expenditures on the basis of where they spent their hunting time.

In the case of visitors, we do not know which Blocks were used by particular visitors, or how many visitors used each Block. We have for purposes of this paper adopted the expedient of allocating visitors' expenditures on the basis of the proportion of controlled area fees paid on each block.⁶

CONCLUSION

This paper has provided some preliminary information from our returned questionnaires. A couple of conclusions can be drawn even from the information presented. Hunting, as an exclusive form of land use, will clearly be optimal only in areas which are extremely marginal for other uses. (Large parts of the Northern Province might qualify - a point which has frequently been mentioned by respondents to our questionnaire). However, hunting is not an exclusive form of land use in Kenya. It has always co-existed happily with traditional forms of ranching. Then we consider that the estimated gross output (including subsistence output) of pastoralists in many of the best hunting areas of Kenya is less than £. 5 per acre, gross returns of even £. 1 - 2 per acre, raising the total yield to £. 6 - 7 per acre, suggest that this activity is attractive enough to warrant a claim to exist. Several large scale modern ranches are presently finding it worthwhile to exploit the possibilities of hunting, at least for the smaller plains game type safaris. In view of the value of hunting to the economy, it is to be hoped that the improved ranches planned for the pastoral areas will not be so organised as to eliminate this activity from the areas which it now uses.

5 If blocks were auctioned, we would have a very acceptable method for allocating hunters' expenditures to particular pieces of land. However, blocks are currently rationed on a first come first served basis. Since there is considerable competition among outfitters to book almost every block open to hunting, the rationing process does not afford a basis for allocating expenditures to particular areas.

6 Allocating expenditures in this way for visitors assumes that (1) all of their expenditures are "caused" by the animals which they actually shoot, (2) that amounts paid for each animal shot represent their relative values to each hunter, and that (3) the visitor preferred to shoot the animal where he did rather than anywhere else. All of these assumptions are very crude. Even for hunting visitors, there are other attractions of East Africa (which are responsible for their coming here and spending money) than actually killing animals. At the very least, they gain some pleasure from the hunt as contrasted with the kill, yet our procedure assumes that the kill is the thing. Second, since there are limits placed on the number of each variety of animals which may be bagged in any one year by any hunter, it is not clear that the prices paid for killing animals will reflect the relative values of each animal. Further analysis will take account of these points in part by including Special Licence Fees as well as Controlled Area Fee in making the allocation.

Table 1 - Response to visitors' questionnaire

Questionnaires sent to		First round response		Second round response		Total response		Including Wives covered *	
		No.	%	No.	%	No.	%	No.	%
U.S.A.	302	146	48	30	10	176	58	198	66
All non-U.S.A.	172	48	28	21	12	69	40	74	43
Total	474	194	41	51	11	245	52	272	57

* A large number of the married couples to whom questionnaires were sent considered that one reply was adequate for both of them. When the spouses of these respondents are included as covered the overall response rate is 5% higher. As far as some of the information is concerned this is a genuine contribution to our responses.

Table 2 - Response to residents questionnaire

	Mailed first round	First round responses		Chasers mailed	Chasers responses		Total responses	
		R.T.S.	Good		R.T.S.	Good	R.T.S.	Good
	1185	110	262	776	43	98	153	360
as %ge of first send out		9	22	65	4	8	13	30
as %ge of those who may have received questionnaires			25			9		34

* R.T.S. (Returned to sender) includes not only those questionnaires returned as undeliverable by the Post Office, but also those to persons whom we know have left the country and responses that do not tell us whether the resident in question hunted in 1966 or not.

** 'Good' covers not only completed questionnaires but also replies stating that no hunting was done in 1966.

Table 3 - Visitor responses, broken down by length of stay and days spent on and off safari in Kenya, Tanzania, and Uganda

Allocation of time	Number of days							averages
	0	1-5	6-15	16-25	26-35	36-45	46+	
<u>Hunting Visitors</u>								
Days 'on safari':								
--Kenya	5	10	32	47	56	6	2	26.7
--Tanzania	138	3	10	5	3	1	-	2.2
--Uganda	155	1	3	1	-	-	-	0.2
--in E. Africa								29.1
Days not 'on safari':								
--Kenya	15	83	50	3	1	-	2	4.2
--Tanzania	147	9	3	1	-	-	-	0.4
--Uganda	149	7	4	-	-	-	-	0.3
--in E. Africa								4.9
								34.0
<u>Photographic Visitors</u>								
Days 'on safari':								
--Kenya	1	2	36	7	1	1	-	12.5
--Tanzania	7	7	33	1	-	-	-	8.1
--Uganda	34	1	12	1	-	-	-	3.1
--in E. Africa								23.7
Days not 'on safari':								
--Kenya	8	17	16	2	-	-	1	6.3
--Tanzania	46	2	-	-	-	-	-	0.2
--Uganda	46	2	-	-	-	-	-	0.2
-- in E. Africa								6.7
								30.4

* Days not 'on safari' were broken down into days spent

- (a) in Game Lodges
- (b) at the coast
- (c) with friends and relatives
- (d) on business
- (e) other

Table 4 - Visitor responses by size of party & professional hunters per party.

	No. of adults in party					No. of professional hunters with party					
	1	2	3	4	5+	0	1	2	3	4+	
Hunting	27	85	15	22	6	-	103	46	2	4	
Photographic	3	16	4	10	20	7	30	12	2	1	

This Table should not be interpreted to mean that 'more than half' of all hunting safaris consist of two clients. The table gives the responses to the question 'how many adults...?' from the individual questionnaires analysed. Safaris with two or more clients may be counted more than once, and if our sample contains the same proportions of visitors coming in pairs as singly, the ratio of the numbers of hunting safaris with one visitor to those with two will be 27:43 rather than 27:85. On the other hand it does appear that by far the majority of safaris are accompanied by just one professional hunter.

Table 5 - Resident responses, by days hunting in 1966 on private and public land in Kenya, and other E. Africa.

Country and type of land land	DAYS									mean
	0	1-5	6-10	11-15	16-20	21-30	31-40	41-50	5+	
Kenya:										
Public	45	59	50	41	19	24	3	10	9	12.0
Private	132	64	24	10	9	10	2	3	1	4.7
Tanzania &										
Uganda	221	4	2	-	-	1	-	-	1	0.5
Total	-	66	56	43	33	39	9	3	17	16.0

Table 6 - Resident responses, by number of hunting trips in 1966

No. of trips	1	2	3	4	5-6	7-8	9-10	11-13	14-16	17+
No. of hunters	50	32	32	37	38	22	9	15	3	4

mean number of trips = 4.6

mean number of days per trip = 3.5

Table 7 - Visitors' expenditures per person

	TOTAL SPENT (£)	KENYA (£)	TANZANIA *(£)	UGANDA *(£)
<u>Hunting</u>				
Safari expenses:				
1. Basic price of safari	930	855		
2. Special clothing	26	24		
3. Photographic film	33	30		
4. Liquor and tobacco	27	25		
5. Tips to safari personnel	41	38		
6. Sundries	43	39		
Hunting expenses:				
7. Licences and fees	151	139		
8. Gun hire and ammunition	26	24		
9. Taxidermy	134	124		
10. Transport of trophies	73	67		
Non-safari expenses:				
11. Gifts and curios	53	45		
12. Other (inc. hotels)	73	63		
Total in East Africa	1611	1473	120	18
13. Round trip transport	461	-	-	-
Grand total:	2072	-	-	-
<u>Photographic</u>				
Safari expenses:				
1. Basic price of safari	655	345	224	86
2. Special clothing	24	13	8	3
3. Photographic film	68	36	23	9
4. Liquor and tobacco	15	8	5	2
5. Tips to safari personnel	26	13	9	4
6. Sundries	33	13	11	4
Non-safari expenses:				
11. Gifts and curios	47	29	13	5
12. Other (inc. Hotels)	104	98	3	3
Total in East Africa	972	560	296	116
13. Round trip transport	423	-	-	-
Grand total	1395	-	-	-

Expenditures in this table and Table 8 were divided between the three countries as follows:-

- (a) Safari and Hunting expenses in proportion to the average number of days on safari spent in the three countries (see Table 3).
- (b) 'Gifts and curios' in proportion to the average total days spent in each country.
- (c) 'Other' in proportion to average days not on safari spent in each country.

This procedure is rather arbitrary but gives some idea of the relative magnitudes. In particular the figures for the sub-heads for photographic safaris in the individual countries should be treated with caution. The final analysis will allocate the expenditures on particular individuals in proportion to the number of days spent in the three countries.

* The expenditures for Tanzania and Uganda were not itemised since the separate items would be so small that a slight bias in the proportion allocated to Kenya would lead to an enormous proportionate error in the Tanzania and Uganda figures.

Table 8 - Visitors' expenditures: estimated totals.

	TOTAL SPENT (£)	KENYA (£)	TANZANIA (£)	UGANDA (£)
<u>Hunting</u>				
Safari expenses:				
1. Basic price of safari	565,200	519,400		
2. Special clothing	15,800	14,600		
3. Photographic film	20,000	18,200		
4. Liquor and tobacco	16,400	15,200		
5. Tips to safari personnel	24,900	23,100		
6. Sundries	26,100	23,700		
Hunting expenses:				
7. Licences and fees	78,700	72,400		
8. Gun hire and ammunition	13,500	12,500		
9. Taxidermy	69,900	64,600		
10. Transport of trophies	38,000	34,900		
Non-safari expenses:				
11. Gifts and curios	32,300	27,300		
12. Other	45,000	38,300		
Total in E. Africa	945,600	864,200	70,500	10,900
13. Round trip transport	280,100	-	-	-
Grand Total	1,225,700			
<u>Photographic</u>				
Safari expenses:				
1. Basic price of safari	87,100	45,900	29,800	11,400
2. Special clothing	3,200	1,700	1,100	400
3. Photographic film	9,000	4,800	3,100	1,100
4. Liquor and tobacco	2,100	1,100	700	300
5. Tips to safari personnel	3,400	1,700	1,200	500
6. Sundries	4,400	2,400	1,500	500
Non-safari expenses:				
11. Gifts and curios	6,300	3,900	1,700	700
12. Other	13,800	13,000	400	400
Total in East Africa	129,300	74,500	39,500	15,300
13. Round trip transport	56,100	-	-	-
Grand Total	185,400			
Total, hunting and photo in East Africa	1,092,300	938,700	110,000	26,200
Grand Total	1,411,100			

Estimation procedure: for each item, the per person figure was multiplied by an estimate of the number of visitors in the relevant category taken out by Kenya outfitters in 1966.

- a) Hunting: each average was multiplied by $164 \times 496 + 155$.
 (496 was the number of licences issued in Kenya in 1966.
 164 is the number of licence holders in our sample, 155
 the number of these who held Kenya licences.) For all
 'non-hunting' expenses (i.e. items 1-6 and 11-13) a further
 16.6% was added to the total thus obtained, this being the
 ratio of non-shooters to shooters on hunting safaris estimated
 from the questionnaire responses.

- b) Photographic: it was arbitrarily assumed that responses were received from 40% of those who went on photographic safaris in 1966 with Kenya outfitters. The figure for hunters is 31%, and we have reason to believe we may have received a higher proportion of names for camera than gun safaris from outfitters. Accordingly, the averages for photographic safaris were multiplied by 133.

This procedure is crude and will be improved upon. For example, per person expenditures of Americans were higher (£1,470 in East Africa) than for visitors from Germany/Austria/Switzerland (£1,380) or Other Europe (£1,068). Since response rates are much higher for Americans (Table 1) our procedure will overweight the high spending Americans. This bias will be corrected for in the final report.

Table 9 - Residents: Expenditures per person and estimated totals

	Expenditure per person who hunted. £	Estimated totals (first column times 900) £
1. Fees to Govt. and county councils	22.7	20,400
2. Fees to private land owners	0.4	400
3. Fees to professional hunters	3.0	2,700
4. Ammunition	16.0	14,000
5. Wages of trackers, skinners ..	13.5	12,200
6. Petrol	24.3	21,900
7. Food used in camp	10.0	9,000
8. Room and board on hunting trips	5.9	5,300
9. Hire of vehicles	4.0	3,600
10. Hire of aircraft	1.3	1,200
11. Taxidermy	26.3	23,700
12. Other	2.6	2,300
	130.0	117,100

Estimation procedure: of the 362 returns analysed, 264 gave expenditure information, and a further 15 were from people who hunted in 1966 but gave no expenditure information. The remainder were professional hunters, farmers who hunted for control purposes on their own land, people who did not hunt in 1966, and a few uncertain cases. If those who returned questionnaires are representative of the population to whom they were sent the number of "ordinary" resident hunters in 1966 (i.e. leaving out Professional Hunters, farmers hunting on their own land, and non-hunters) was $279/362 \times 1185$ or 913. For ease of computation, the per person figures were multiplied by 900.

Table 10 - Expenditures Allocated to selected Kenya Hunting Blocks in £.

	Block 62	Block 63	Block 64	Block 65	Block 66
Visitors' expenditures	£	£	£	£	£
1. Basic price	2,910	25,240	22,020	21,820	23,680
2. Special clothing	80	710	620	610	670
3. Photo film	100	880	770	760	830
4. Liquor and tobacco	90	740	640	640	690
5. Tips	130	1,120	980	970	1,050
6. Sundries	130	1,150	1,000	990	1,080
7. Licences and fees	400	3,520	3,070	3,040	3,300
8. Ammunition	70	610	530	520	570
9. Taxidermy	360	3,140	2,740	2,710	2,950
10. Transport of trophies	200	1,700	1,480	1,470	1,590
11. Gifts and curios	180	1,540	1,340	1,330	1,440
12. Other	240	2,120	1,850	1,840	1,990
13. Total Visitors	4,890	42,470	37,040	36,700	39,850
14. Residents' expenditures	810	4,840	7,120	5,930	8,080
15. Grand Total	5,700	47,310	44,160	42,630	47,930

Table 11 - Expenditures and benefits allocated to selected Kenya Hunting Blocks, in Shillings per acre.

	Block number				
	62 Shs/ acre	63 Shs/ acre	64 Shs/ acre	65 Shs/ acre	66 Shs/ acre
Expenditures:					
a. by hunting visitors	0/14	1/16	1/96	1/13	1/09
b. by residents	0/02	0/13	0/38	0/18	0/22
c. total	0/16	1/29	2/34	1/31	1/31
Benefits:					
a. maximum	0/12	1/01	1/83	1/03	1/03
b. minimum	0/02	0/20	0/36	0/20	0/20

The estimated total visitors' hunting expenditures on the various items were allocated to blocks in proportion to Controlled Area Fees paid as calculated from the Kenya Game Department's records.

For residents a more complex procedure was followed. The formula used for each resident was

$$E_i = E \times D_p / D \times 1/b \text{ where,}$$

E_i = expenditure in block i (in which the resident in question hunted in 1966),
 E = total expenditure on the resident, D_p = days hunting on Kenya public land,
 D = total days hunting in 1966, b = number of Kenya blocks used in 1966.

The maximum and minimum estimates are of the net returns to the blocks on the definitions given in the text, and are obtained by applying the percentages for visitors' expenditures of Table 12.