Report on a Reconnaissance Soil Survey

of the

MIDDLE KAKUS AREA

4 th. Division

By

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June, 1967.

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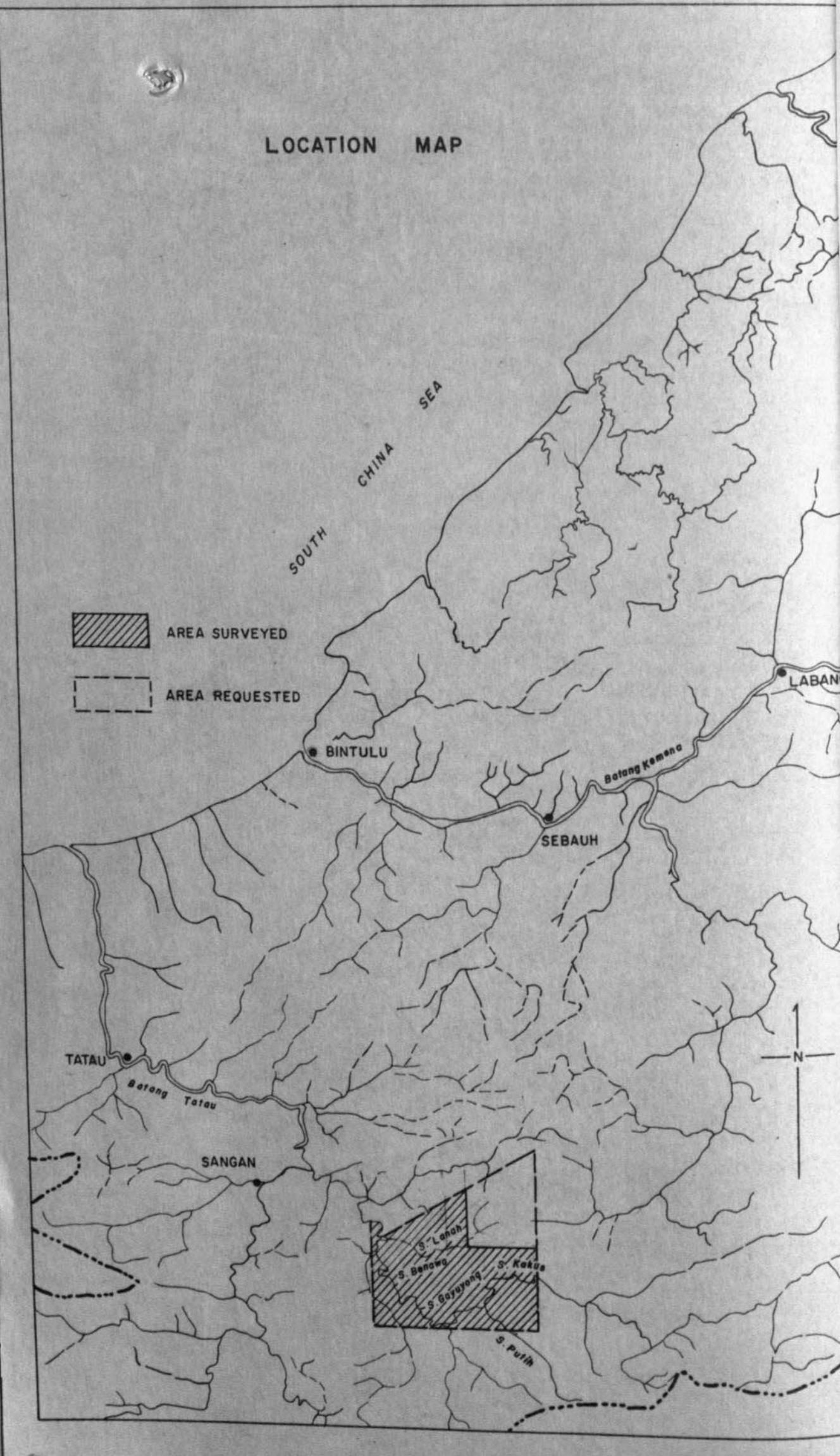
Sarawak


LOCATION MAP
SOUTH CHINA SEA
AREA SURVEYED
AREA REQUESTED
BINTULU
LABAN
Batang Kemena
SEBAUH
TATAU
Batang Tatau
SANGAN
N
S. Lanah
S. Bengwo
S. Bayuyong
S. Kakus
S. Putih

CONTENTS

INTRODUCTION

The soil survey of this area was requested by the Divisional Development Committee of the Fourth Division. Information available from this investigation would be useful to the Committee for planning any future development programme in the Division.

The area under survey was originally given the name of "West Tatau Area" covering an area of approximately 93,750* acres (to the nearest 50 acres) but the present name "Middle Kakus" is more appropriate to its geographical position. Due to the poor means of communication, only 61,700 acres of the area were covered by the survey. (Figure 1 shows the area originally earmarked for the survey and the area covered by the survey). The area is located in the Ulu Sungei Kakus, south/of Tatau a small town in a sub-district of Bintulu in the Fourth Division.

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The fieldwork was completed in late September, 1966 by a party comprised of the surveyor and two Agricultural Assistants, Basmawi bin Mahli and Johdi bin Juko.

The method of survey adopted was standard reconnaissance survey for Sarawak. Airphotos were studied in the laboratory in conjunction with the geological map. Broad soil types were delimited between the alluvial, peat and residual soils. The fieldwork was aimed at checking and amending the soil boundaries. Final interpretation of the airphotos was made with the help of all available information. In areas where the soil boundaries do not cross the line of investigation, the boundaries have been interpolated by means of airphotograph interpretation.

The geological information on this area is extracted from the study made by Kirk who recorded the information in his Memoir 8 pages 50-51. The hilly area is underlain by Miocene Marine sediments of the Setap Group. In the lower Kakus, arenaceous sediments predominate and these are probably more than 9,000 feet thick. In the lower part of the succession, thick beds of hard, dark, silty shale and claystone which, due to the geological movement, came close to the surface to give rise to heavy medium texture of soil mainly belonging to the Merit Family. The sediments in the higher part of the succession consist mainly of thick alternations of dark laminated friable clay and light blue-grey sandstone which contributes largely to the formation of Nyalau Family soil or an association of Nyalau/Merit Family soils. Part of the Geological succession can be seen in the road cuttings of the old timber-track running almost parallel with Sungei Mina.

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* the area is measured by a planimeter from a map of 1:50,000. Figures are therefore most accurate on flatland and less accurate on most rugged and dissected country, where errors up to 20% are probable and errors exceeding 100% are theoretically possible.

Topographically this area is very hilly. Map 2 illustrates the classification of the hills in the area. The information for the compilation of this map is derived from the interpretation of the aerial photographs combined with the field information. The terrain classification is based on the gradients of the slopes and the altitude of hills above the adjacent flatland. A key to the classification is provided on the map.

From the information of the soils and the terrain, possible land development area and present land use map (see Map 3) is produced. This map can be superimposed on Map 1 and Map 2.

The area is devoid of population except for two small groups of people, the Punans at Rh. Keseng and the Ibans at the old timber camp at the mouth of Sungei Mina. This could be the main reason for the absence of tracks and paths in the area thus leaving the rivers as the only means of communication.

Like most ulu rivers, Sungei Kakus can be dangerous for travel. During high tide travelling up river is quite safe but at low water it is dangerous because of the presence of submerged billian logs, which are plenty in number.

Agricultural activity in the area is almost nil, except for small patches of flatland along the Kakus and the low hills in the vicinity of the two small settlements where padi and rubber have been planted respectively. There is a substantial stretch of alluvial land in the upper part of the river that would be ideal for padi but the seasonal flooding prevents its use.

SOILS

The soils are described under the heading of soil associations, mapping units which can be easily be recognised in the field and in airphotograph interpretation. At reconnaissance level though some soils can easily be recognised at Series and Family levels but due to the scale of mapping, they are seldom mapped. (see Map 1).

Each mapping unit by definition contains at least 85% of the soil Family naming the unit.

RESIDUAL SOILS:

Merit Association (14,400 acres) and Merit/Bako Association (2,400 acres).

The Merit Association derives its name from the Merit Family and is found dominant on the low to medium lying hills. On the eastern part of the area, Bako soils are found to occur with the Merit soils and due to the scale of mapping these soils are mapped as Merit/Bako Association.

.../3

Merit soils are weakly to moderately structured having common characteristics of moderately deep to deep yellowish brown to brownish clay loam top and reddish yellow to yellowish red clay below. Strong brown and yellow mottles commonly occur at deep level. In some areas occurrence of shale fragments are found at lower depths.

The soils drainage range from good to moderately good. It should be possible to establish rubber over almost all this association provided appropriate manurial and cultivation measures are taken. Terracing is recommended on slopes more than 15°.

The Bako Association comprises of Bako Family and it occurs very closely together with Merit Family soils on the hills towards the western part of the area. It is a podsolised soil having brown to reddish brown loam topsoil of various thickness overlying pale yellow to white loamy sand to sandy loam. A hard, dark horizon of B2h are found at 18" - 24" deep.

This type of soil is unfertile and it is not recommended for agriculture.

Bekenu Association (750 acres) and Merit/Bekenu Association (900 acres).

Bekenu Family soils form the bulk of the Bekenu Association, hence the name is adopted. This Association is found on the high slopes of the hills south of Sungei Berian. The association of Bekenu and Merit soils is found on the hills northwest of Rumah Keseng.

The soils are characterised by yellowish brown to brownish yellow loam to sandy loam gradually increasing at depth to yellowish brown to reddish brown clay loam to clay. It is generally moderately well drained. Where it occurs with the Merit soils, small fragments of shale are commonly found at 15 inches plus. Rubber could be established on this soil but slopes more than 25° render the soil unsuitable for cultivation.

Nyalau Association (2,950 acres) and Nyalau/Merit Association (10,000 acres).

Nyalau Association obtains its name from the Nyalau Family soils. They are found mainly on low to high hills of moderate steep slopes. They are commonly found in association with the Merit soils.

Nyalau soils have yellowish brown to brownish yellow sandy loam to brownish to reddish yellow sandy clay at depth. Another characteristic of the soil is the occurrence of reddish brown mottles in the lower part of the profile.

The soils are moderately well drained. Like Merit and Bekenu, Nyalau soils could be used for rubber cultivation but steep slopes (more than 20°) should be avoided.

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ALLUVIAL SOILS:

Malang Association (6,800 acres) and Malang/Bijat Association (850 acres).

The soils of this association occur on either side of the high banks of the upper Kakus and on the banks of many small tributaries which drain into the main river. Along Sungei Mina, the Malang soils are found to occur in association with the Bijat Family soils. The possibility of such an association occurring in other low lying areas cannot be ruled out.

The characteristics of these soils are deep, yellowish brown clay loam to clay mottles with reddish brown and light grey below 18 inches. The light grey colour increases with depth thus indicating the influence of water logging.

Internal drainage is imperfect. Perennial crops (including rubber) and annual crops can be grown on these soils.

Bijat Association (1,150 acres) and Bijat/Sebandi Association (1,550 acres).

Bijat Association comes from Bijat Family soils which are commonly found along the rivers either backing the Malang or are found to form the river bank soils. Bijat soils are also found in association with the Sebandi or with the Malang as is described above.

Bijat soils are mineral soils consisting of brownish grey to light grey loam, clay loam or clay with many to abundant reddish brown mottles which are observed to occur in the upper subsoils, and less in the lower subsoils. The organic topsoils are practically absent.

The drainage conditions are poor to very poor. The soils of this alluvial can support wet rice, fruit crops and rubber if drainage conditions are improved.

Sebandi Association (2,800 acres) Sebandi/Mukah (2,450 acres).

This association derives its name from Sebandi Family soils, which are found in most of the floodplain. In this area they are found backing the Malang and Bijat Family soils.

The characteristics of these soils are similar to those of the Bijat except that Sebandi soils have peaty topsoils up to 10 inches. Only very fine dark brown mottles are observed in these soils and they seem to occur only along old root channels.

The drainage condition is regarded as very poor. They are ideal soils for wet rice and off-season crops, if the drainage is improved.

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Mukah Association (2,700 acres) Mukah/Anderson Association (2,650 acres).

Mukah Family soils which form the basis of the Mukah Association, occupy the marginal area between the other alluvial soils and the Anderson soils.

The soils consist of light grey clay overlain by 10 to 40 inches of surface peat.

These soils are poorly drained. Wet rice and off-season crops with proper management would grow very well.

Anderson Association (9,350 acres).

The main component of this association is the Anderson Family soils. They are commonly found in swampy areas and in this area most of the flat areas south of Sungei Kakus with a few patches in the north, comprise the Anderson soils.

The characteristics of these soils are the deep accumulations of dark brown to brown woody peat. The peat is shallow at the edges of the swamp but deep towards the centre. The depth ranges from 40 to well over 120 inches.

The drainage of these soils is very poor.

As it is, it is regarded as unsuitable for agriculture.

AREAS SUITABLE FOR FUTURE DEVELOPMENT

Two large blocks marked Area A (27,100 acres) and Area B (11,450 acres) on Map 3 have been earmarked as the possible areas for future land development projects. Area C (15,000 acres) comprises very steep hilly land while Area D (8,150 acres) is mainly deep peat, both of which are unsuitable for agricultural development.

Area A has large areas of suitable topography for agriculture. If land development was proposed for the district a semi-detailed survey of this area would be warranted.

Area B is less suitable than Area A, because of the scarcity of good agricultural land with suitable topography. A substantial peat swamp area is found between the hills and the rivers.

CONCLUSIONS

Out of the 61,700 acres, approximately 10,200 acres are deep peat and 3,900 acres are too steep for any form of agriculture. Of the remaining 47,600 acres, 28,300 acres is hill land and 19,300 acres is flatland, and these are where land for agriculture can be selected.

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1. KIRK, H.J.C. The Geology and Mineral Resources of the Upper Rajang and Adjacent Areas, Sarawak.

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