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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER



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ORIGIN OF A MAORI SOIL AT KAURI POINT

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Introduction

In the course of archaeological excavations at Kauri Point, about 20 miles north west of Tauranga (Golson, 1961), a question arose as to the origin of a shallow soil overlying a thin shell layer associated with Maori occupation (see Golson figure P.28). At that time two suggestions were offered:

- (a) that the soil was gradually built up by earthworms transporting material from below the shell layer and,
- (b) that it was formed from spill spread either by the Maori or by European farmers.

The problem was approached in two ways (a), in the field by comparing the soil profile at Kauri Point with a similar one in a private garden in Elizabeth Street, Tauranga where the land had been levelled by the spreading of soil and shell by the European within the last 50 years and (b), in the laboratory by examining soil aggregates under the microscope; this latter procedure proved necessary because worm cast granules in a soil of sandy loam texture were exceedingly difficult to identify in the field.

For the purpose of this account, the soil at Kauri Point is described as a Maori soil and that at Tauranga as a garden soil. Parent material of both soils is most likely derived from the natural soil, Katikati sandy loam, itself formed from fine rhyolitic Waihi ash, along with small amounts of reddish brown clay associated with much older weathered ash.

Sampling and method

The Maori soil was sampled at 0 - 1 in. and 2 - 3 in. horizons above the shell layer in pit square I26 and at another horizon immediately below the shell layer; the garden soil at 0 - 3 in. above the shell layer; and the natural soil near Kauri Point at the 0 - 3 in. level. Soil aggregates (peds) were examined microscopically both by incident light at magnifications of approximately x20 and x40 and in thin sections prepared by embedding the peds in plastic resin and grinding to a thickness of 0.03mm. Thin sections were examined with a petrological microscope. The laboratory study was undertaken by Dr Beryl C. Barratt of the N.Z. Soil Bureau.

Results

The detailed report is couched in highly specialised terms and so is not presented here. Also it will not be published, but for reference, has been lodged with the Soil Survey Office, Whakatane.

Conclusions

(1) With all this work, however, the results proved inconclusive and so the problems could not be resolved. Microscopic examination showed that most peds in both the Maori and garden soils are worm cast granules indicating a high degree of earth worm activity; but the absence of a marker bed underneath the shell layer at both sites prevented clear evidence being obtained as to the movement of material from below the shell layer to the surface.

(2) Though the Maori soil and the garden soil have a similar profile they have a different mineralogy; the garden soil at Tauranga was noted for the presence of basalt and the minerals olivine and augite, but none of these occur in the Maori soil nor in the natural soil, Katikati sandy loam. Basalt is out of character with the superficial deposits of rhyolitic ash and its presence would appear to be adventitious. In arriving at a conclusion, however, mineralogical differences would have been set aside as unimportant.

(3) Though the garden soil is known to have been formed from spread material, this mode of deposition could not be confirmed from Laboratory examination - nor is it likely to be so. For example, in the 2 - 3in. horizon of the Maori soil an admixture of beach sand was suggested from field observation, but laboratory examination of the same horizon under incident light merely revealed ... "groundmass rather powdery from higher content of very fine, pale coloured skeletal mineral grains ... " Similarity of profile with the garden soil along with beach sands in the shallow soil above the shell layer are highly suggestive of spreading at Kauri Point but we still lack certainty on this point.

While the conclusions are somewhat negative, this article can be considered as part of the collection of papers about the Kauri Point investigations.

Bibliography

- Bolton, J. 1961 "Investigations at Kauri Point, Western Bay of Plenty". N.Z. Archaeological Association News Letter. Vol. 4, No.2.