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Site Damage and Destruction in a Rural New Zealand Landscape

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ABSTRACT

The nature and extent of damage to pre-European Maori fortifications (pa) in rural landscapes is described from a sample of 95 sites in the Omata, Oakura, Tataraimaka and Okato districts, Taranaki. Attention is focussed on damage resulting from farming practices. The effects on sites of bulldozer work, exotic plantations, stock damage, cultivation and other forms of farming damage are discussed. Estimates of site loss are made. Damage observed at the time of the field survey, 1979-81, is compared with damage observable in the 1950 series of aerial photographs. The rate of site destruction is shown to be increasing.

Keywords: MAORI, FORTIFICATIONS, TARANAKI, SITE DAMAGE.

INTRODUCTION

Between November 1979 and December 1981, in five separate field periods totalling fourteen weeks, more than ninety pre-European Maori fortifications were mapped or otherwise recorded in the districts between New Plymouth and Stoney River in Taranaki (Fig. 1). The object was to record an important part of a very rich historic landscape, to describe this, and to see what it told us about the past. The sites are described in a series of articles in the *Records of the Auckland Institute and Museum* (Prickett 1980, 1982, 1983).

During fieldwork it became clear that all sites had suffered a degree of damage: some were still largely intact, while others were apparently destroyed. Since the survey was as complete as possible, and full notes, photographs and site plans recorded damage at each site, it is possible to use the record, in addition to its primary purpose, to examine the nature and extent of site loss in the surveyed districts. The results and conclusions have more general interest, however, in that site loss in New Zealand is not confined to any one region, and Maori fortifications, or pa, are among the most important of all sites for their marked historical, archaeological and landscape qualities.

In New Zealand, pioneering work on the subject of site damage was carried out by D.W. Robinson (1961). In 1960 he surveyed Best's (1975:223) old study area in the Urenui district of north Taranaki. He looked at 42 pa in the area (compared to Best's 16) and assessed their 1960 condition as good/fair/poor/bad. Where possible he compared this with the condition in Best's day. Robinson also made brief notes on the nature of damage to some of the pa.

In Taranaki almost all historic sites are to be found in the narrow strip of country which lies, two to ten kilometres wide, along the coast. The same strip of land has seen the most intensive farming since the coming of the Pakeha. In some parts of the province land has been under the plough for almost 150 years. It should be remembered that for much of the nineteenth century Taranaki was a grain producing area and the rich soil was ploughed year after year. It was only late in the century that Taranaki became a predominantly dairying area. In recent years there has been an as yet limited movement into horticulture.

The main interest here is the effect of traditional Taranaki livestock farming on earthwork sites—in this instance, pa. A few sites are in areas of recent horticultural

native shrubs and trees breaks up subsurface remains and ultimately, as trees fall, may uproot and destroy large parts of sites. Sites situated in light or sandy soils may be blown away.

In the present survey area, as everywhere in New Zealand, much natural damage is occurring to sites. Perhaps the most important site of the whole region, the great pa Koru on the Oakura River, is now an Historic Reserve under regenerating broadleaf forest. While the bush adds greatly to the character of the place and, rightly in my view, will be retained under present management proposals, there can be little doubt that the trees are damaging the site including its superb stone revetted scarps. Other sites are under regenerating bush in the Egmont National Park or private ownership. On many sites the degree of erosion of platform scarps is apparent from trees planted along the margins now being suspended in mid-air on their root systems. Figure 2 gives an example of scarp erosion taking place. North of the township of Oakura cliff-top sites may be reduced by erosion. N108/118 may have suffered most; others backed against sea-cliffs are Kekeorangi and Omuna in the Oakura district.

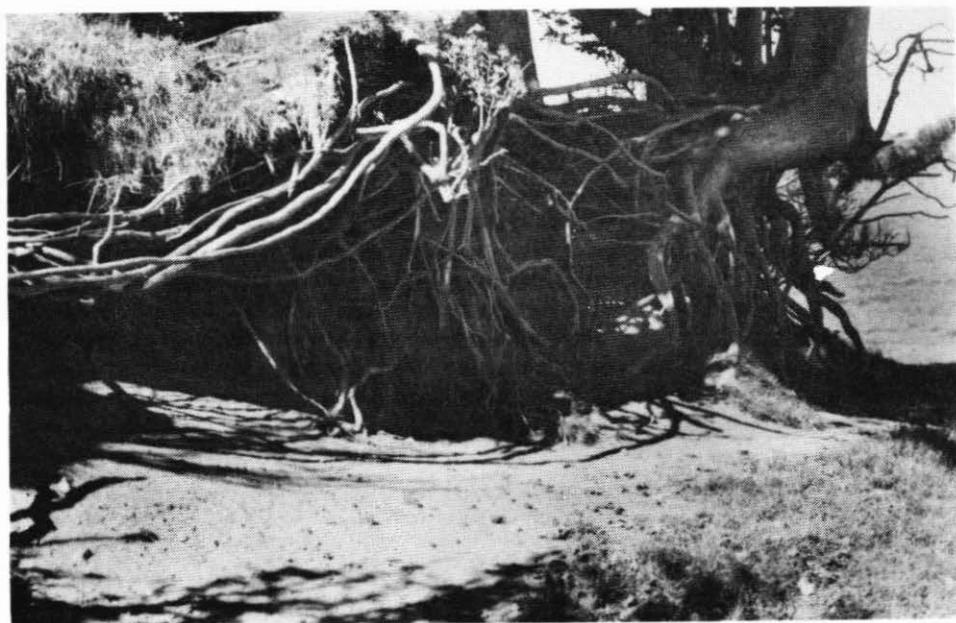


Figure 2: Erosion of platform scarp under remnant native bush (N108/102).

FARMING DAMAGE

BULLDOZER DAMAGE

Bulldozing of sites or parts of sites for farm purposes is very widespread. At least 55 of the 95 sites in the survey region have been damaged to some degree by bulldozing (Table 1). Damage ranges from minor nibbling for farm access tracks or fence lines, to total destruction.

Much the most common purpose behind bulldozer damage is farm access—32 sites have suffered some damage as a result. Usually use is made of defences on one

side of a pa to give access along the spur: the ditch and bank provide a ready made basis for a farm track, with a little trimming of the bank and filling of the ditch. In other cases, especially at sites with shallow transverse ditches and minimal or non-existent lateral ditches, the bulldozer simply cuts through the shallow defences down the centre of the site. The important Katikara River pa, Pouteau, gives an unusual example where access has been prepared down the lateral ditch and bank as well as cutting successive defences through the middle of the site (Fig.3). At Manawapo, a large and complex site on Timaru River, there has been extensive bulldozing throughout, to provide access to the various defended areas of the pa as well as along the ridge itself; this eases access for stock as well as vehicles.

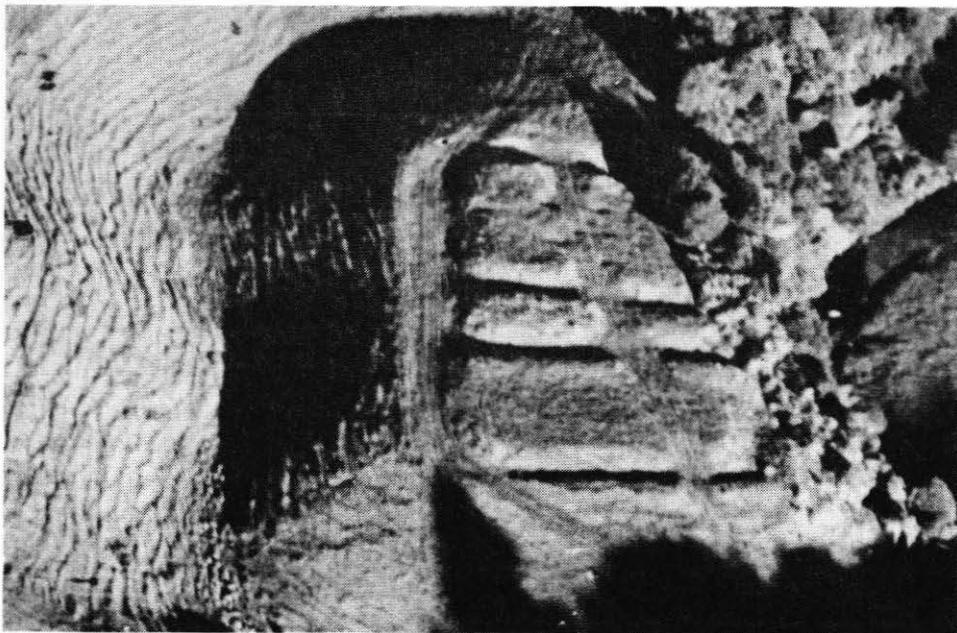


Figure 3: Farm access down the spur uses lateral defences as well as cutting through the centre of the site (Pouteau).

A minor reason for bulldozer damage to pa in the survey area is the preparation of fence lines. Koru itself has had an outer ditch badly knocked about for this reason (Prickett 1980:33). A very small pa, N108/115, on the seaward slope south of Waireka Stream in the Omata district may have lost half its total area.

At least 23 sites have suffered from a degree of "general levelling" by bulldozer. These include sites that are totally destroyed and those which have had parts of defences or platforms levelled for various reasons.

In a number of cases farm access takes the form of general levelling of a site. At N108/195 a bulldozed track can be seen making use of the ditch and bank down one side in the 1950 aerial photograph; the rest of the site is intact under gorse. Since then the site has been substantially destroyed in clearing the gorse and cutting down the pa to allow stock movement along the full width of the ridge. On a big bend

TABLE 1
BULLDOZER DAMAGE TO PA IN SURVEY AREA

District	Totals	Purpose of bulldozing:				Bulldozer damage:		total
		general levelling	farm access	fence line	other*	minor	major	
Omata and Oakura	34	4	15	2	1	13	7	1
Tataraimaka	34	11	8			5	10	4
Okato	27	8	9	1		7	5	3
Total	95	23	32	3	1	25	22	8

55 sites have suffered some damage (some for more than one purpose). "Major damage" is defined as more than 25% destroyed. *Preparation of stock pond.

of the Oakura River, Puketapu survived in good order under bush until the early 1950s when it was completely destroyed to give access to a low lying river flat which was otherwise inaccessible to stock or vehicles. Puketapu is said to have had unusually massive defences and was clearly a large and important site. N108/168, in the Tataraimaka district, shows up under gorse and scrub in the 1950 aerial photograph: an access track is bulldozed down one side. Since then 90 percent of the platform has been cut down as much as 4 m (Fig. 4).

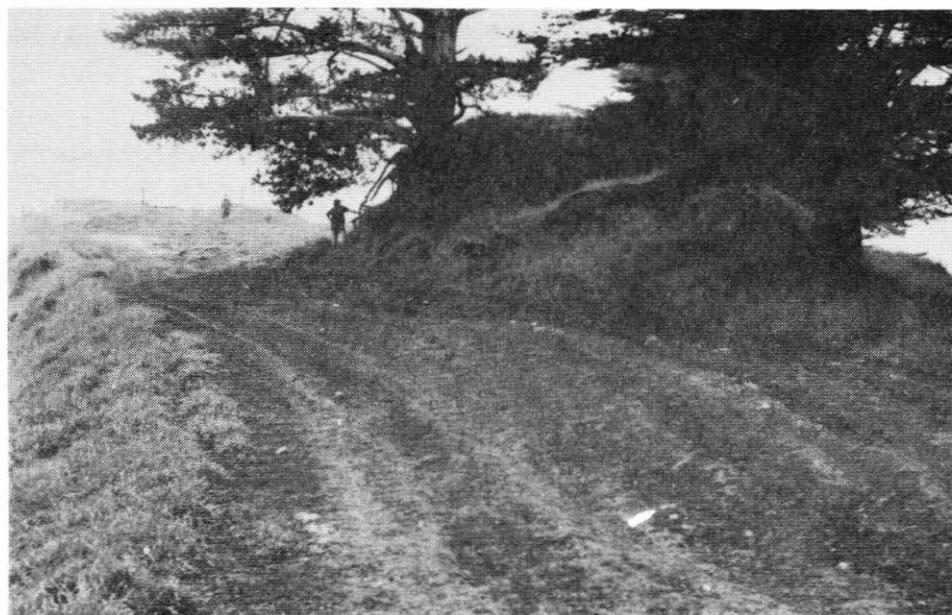


Figure 4: Remnant ditch and bank defences can be seen between the two trees. The pa itself extended between the two figures at centre left, but is now almost entirely destroyed (N108/168).

Much general levelling of sites has been carried out to clear gorse or bush, or consequent to tree felling. Puketotara on the Katikara River was destroyed in 1965 during bush clearance operations, as was Waimoku on a northern spur of the Kaitake Range about five years before. N108/120, 172 and 190 have been substantially or completely destroyed as a result of gorse clearance. Bulldozer damage related to the felling of pine or macrocarpa trees is discussed separately below.

In some cases, general levelling of sites has occurred for reasons unconnected with clearance of bush or gorse or for access. The important pa, Pukeporoporo, on the Katikara River, was probably smoothed out some time before 1950. In the Okato district, N108/87 and 88 were totally destroyed in the early 1960s when already in pasture and offering no apparent problem for farming operations—the 1950 aerial photograph shows what was lost (Prickett 1983:23). The large fortification N108/60, at the Timaru River mouth, was similarly levelled some time since 1950 when it shows clearly under grass in the aerial photographs. Close to Oakura beach, N108/108 was completely destroyed in late 1977, apparently to prepare for a residential subdivision that has not yet eventuated. Another Oakura site, N108/151, was totally levelled in 1970 to prepare for the present house and garden on the site.

In many instances general levelling of a site can serve more than one farming purpose. For example, at N108/195, mentioned above, the bulldozing served the dual purpose of getting rid of gorse and improving access along the ridge. Similarly, at Puketapu, bush was cleared and access secured at one and the same time. In the case of farm plantations, wood lots or shelter belts, the bulldozer is generally on the spot when trees are felled and, beyond the immediate need of access and removal of felled trees, the opportunity is often taken to level troublesome banks and hollows.

EXOTIC PLANTATIONS

The location of a pa is very often signalled by a clump of pines or macrocarpas (Fig. 5). These plantations are often designed to deal with an otherwise unmanageable and bumpy corner of a paddock, but sometimes have no apparent farm management or other advantage. In the survey area covered here, 27 pa have suffered some planting in the two exotic species (Table 2). Pines and macrocarpas grow quickly to a very great size and do considerable damage to sites long before they are felled. Their extensive root systems break up archaeological remains and appear to hasten the erosion of scarps (Fig. 6). Macrocarpas in particular make attractive shelter for stock which “camp” under the trees causing great damage to sites.

The greatest threat to sites planted in pines or macrocarpas occurs when the trees are felled. In the surveyed districts exotic trees on 10 pa have been felled causing damage to the sites, in 17 other instances they are yet to be felled. As shown in Table 2, six sites have suffered major damage (that is, are 25 percent or more destroyed), and four are assessed as having suffered minor damage. In the case of five sites (Aeromaoa, N108/89 (Fig. 7), 161, 179, 180) damage has been very severe indeed, with the opportunity taken during felling operations and after to level the site or at least a major part of the defensive works.

The 17 sites which remain under trees may be divided into those with intensive planting on the platform itself and those with a plantation extending on to a corner or margin of the site. These are listed in Table 2 as facing major or minor threats during future tree felling and removal. There is, however, no predicting damage that

might occur when a bulldozer is brought in to help clear trees, even from only the margin of a site. "Minor threats" can result in major destruction.



Figure 5: Pine plantation on the important double ring ditch pa N108/99.

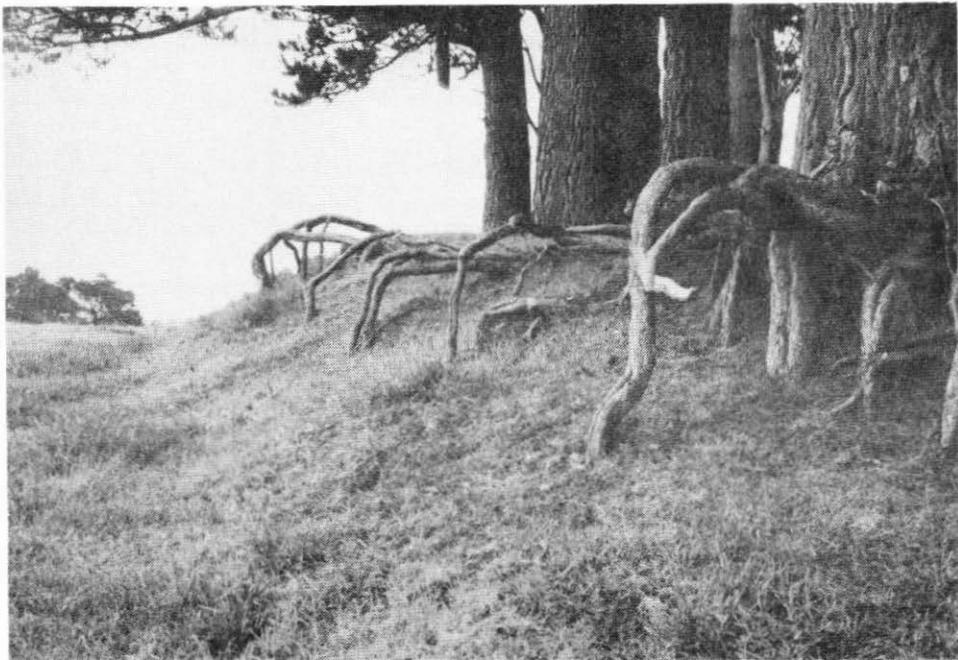


Figure 6: Pukekohe: aerial roots show extent of platform loss.

TABLE 2
DAMAGE TO PA IN SURVEY AREA FROM PINE OR MACROCARPA PLANTING

District	Totals	Pines and/or macrocarpas			
		already removed minor damage	with: major damage (25% or more destroyed)	to be removed: minor threat	major threat
Omata and Oakura	34	3	1	3	2
Tataraimaka	34	1	4	3	4
Okato	27	—	1	2	3
Total	95	4	6 (10)	8	9 (17)

STOCK DAMAGE

Almost all sites have suffered some stock damage. Since this has occurred to some degree for upwards of one hundred years it is now very difficult to tell just how much earthworks owe their present shape to stock and how much to natural erosion. In Table 3 an assessment is made of the number of sites undergoing stock damage at present. It must be remembered, however, that above this figure almost every site in the region is affected to some degree. Even Koru, which is now in a fenced-off reserve, was suffering from cattle damage before being gifted to the Crown in 1927.

TABLE 3
STOCK, CULTIVATION AND QUARRYING DAMAGE

District	Totals	Stock damage:			Cultivation*	Quarrying damage:	
		minor	moderate	severe		minor	major
Omata and Oakura	34	3	4	6	(2?)	1	
Tataraimaka	34	3	2	7		2	
Okato	27	3	—	2	13	1	1
Total	95	9	6	15	13 (2?)	3	2

*May include bulldozer levelling

Stock cause damage in several ways: most severely by breaking down steep scarps, but also by making tracks up scarps and through defences, by rubbing at banks where they can, and by "camping" at selected places on platforms. Because of their weight cattle are most damaging. At some sites large areas of defensive scarp are actively breaking up and collapsing as a result of cattle. The preponderance of dairy farming in the region has major effects on the historical landscape.

Among sites being badly broken up by stock is N108/97, in the Okato district. Very active erosion of the scarp is occurring almost the whole way around the platform, with features such as the defensive bank at the platform rim and *rua* (underground storage pits) at the edge of the platform threatened with complete elimination (Fig. 8). Presumably the rapidly collapsing scarp will at some future date establish a comfortable angle and a grass sward will develop to protect what remains

of the site. At most sites this kind of damage to scarps is localised; but it probably occurs in different places as time passes, finally reducing sites to a gentle grass-covered topography.



Figure 7: Two or three defensive ditches have been destroyed between the photographer and the remaining platform (N108/89).

It is interesting that N108/97 and other sites where scarps are now actively breaking up from major stock damage (such as N108/29, Oakura, and N108/170, Tataraimaka) are shown as being under gorse or scrub in the 1950 aerial photograph series. These sites may be only recently cleared for the first time to come under pressure from stock: or they were clear in the past when stocking rates were comparatively low. Fifty years ago dairy farms commonly ran one cow to two or three acres, now farmers run a cow to the acre, or more. It is easy to see what effect this has on sites: cows must now be much more efficient foragers for grass, and farmers are not happy to leave patches of bracken, gorse or rank grass on their land which might protect sites but which do not help in milk production.

Stock like to rub against dirt or clay banks. The results of this habit are very clear on a number of sites where bulldozed scarps or eroding banks are adopted as rubbing places. At sites such as N108/102 and 166, both in the Tataraimaka district, extensive rubbing is occurring at scarps under platforms which are topped by trees. These trees hold the scarps almost vertical under their root systems so that animals can, after a time, develop a nicely dished rubbing area and have the added attraction of handy tree roots for the same purpose. Clearly these overhanging banks will collapse at some stage.

Stock "camps" can result in severe damage where tree cover makes a warm and dry area for cattle, especially, to shelter. At N108/147, on the northern flank of the



Figure 8: Stock can bring about rapid collapse of steep banks (N108/97).



Figure 9: Cattle shelter under macrocarpa trees, greatly damaging archaeological remains (N108/147).

Kaitake Range, macrocarpas have been planted over the site: with no groundcover vegetation, cattle have very badly damaged the site as they gather in numbers under the sheltering trees (Fig. 9). N108/64, in the Tataraimaka district, is under remnant native trees which also attract cattle looking for shelter; here too the site is being badly damaged as a result.

CULTIVATION

Damage to pa by cultivation is particularly bad in the Okato district where the natural landscape is made up of large flat terraces separated by steeply cut river and stream valleys. Without easily defensible hills and spurs, pa builders in the district have turned to using massive ditch and bank systems to cut off corners of terraces above river valleys or the sea scarp. These are now invariably ploughed. Among these sites are the largest pa in the survey region: Mounu Kahawai, Haurapari (Fig. 10) N108/94, 137, 181 and 186.



Figure 10: The massive double ditch and bank of Haurapari has been filled in and ploughed over.

In addition to destruction of pa, cultivation has badly damaged or destroyed numerous undefended sites in the region. Historic landscapes which gave the pa their setting are now quite unattainable. Farmers report patches of shells or oven stones, sand added to soil, and *rua* discovered while ploughing. Ironically, at Pukeporoporo where an almost unique living area adjacent to the fortification has been preserved, the pa itself has suffered from general levelling by bulldozer.

OTHER FORMS OF FARMING DAMAGE

Five pa have been damaged to some degree by quarrying. In three cases this clearly has been a farming operation. Small quarries have been dug into the flank of Puketi in the Okato district and N108/177 (Fig. 11) on the north bank of Katikara River. A quarry on the hillside below Pukewaranga, Okato, has caused an unknown amount of damage to external living quarters of this important pa.



Figure 11: Farm quarry at N108/177.

Otete, on the sea face in the Omata district, has been substantially damaged in preparation of a nearby (unsuccessful) stock dam. N108/119, across the river from the old Patuha dairy factory at Tataraimaka, has been cut away in the past, apparently to provide a storage area for oats when working horses were on the farm. *Rua* on Potikitaua, in the Omata district, have been filled to forestall stock losses (in other parts of Taranaki this is a far more common reason behind site damage).

NON-FARMING DAMAGE

In addition to damage by traditional farming operations, a number of sites have suffered from other human causes. The important Omata pa, Te Ngahoro, has had the greater part of one of its two platforms removed in quarrying, of a scale which suggests more than simply a farming operation. Pukekuri, within Okato township, is destroyed by a commercial quarry.

Four pa are cut by public roads. Weld Road on the north bank of Timaru River cuts through N108/60 and 173. Most of the latter can be seen on both sides of the road in the 1950 aerial photograph, but has since been destroyed in the levelling of adjacent paddocks. At the mouth of Pitone Stream in the Tataraimaka district, N108/106 is about one-third destroyed by the road which cuts through the centre. Nearby, Tataraimaka pa itself has its outer defences destroyed by the coast road.

During World War II, rifle pits were dug on the platforms of N108/98 and 119 which together command the main road bridge at the Patuha dairy factory. Elsewhere in the region rifle pits of this period can be confused for older remains—such as along the sea face north of Otete in the Omata district. Earlier military modifications to pa have occurred at Ngaturi, now better known as Omata Stockade, Pahitere in the Oakura district, transformed into a European redoubt in 1864, and Tataraimaka which had the topmost platform modified as a military signal station in 1863.

N108/35, close to Manawapo in the Tataraimaka district, has a history of devastation. A pine plantation, which completely obscures the pa in the 1950 aerial photograph was felled in the late sixties or early seventies with moderate damage to the site. A fence line was then put through the centre with bulldozer preparation across the defences. In 1976, earthworks for the Maui gas pipe-line resulted in a large part of the spur being cut down 4-5 m and half what remained of the site totally destroyed. Ironically, the pipeline route had been shifted with the very purpose of missing, and thus preserving, the pa.

DISCUSSION

Table 4 is an attempt to assess the degree of damage to sites in the surveyed districts. The loss suffered by each site is assessed individually and sites are placed in one of six loss classes according to the proportion (percentage) of the site destroyed. The figures in brackets are sites which are difficult to assign to any particular group, but which, from general experience, may belong as indicated. Percentages given in the bottom line are made up from definitely assigned sites only.

TABLE 4
PROPORTIONS OF SITES IN SURVEY AREA DESTROYED BY HUMAN AGENCY (FARMING OR OTHERS)

District Index	Intact 0	Extent of damage:					Destroyed 5	Total
		0-25% 1	25-50% 2	50-75% 3	75-100% 4			
Omata and Oakura	6	14 (1?)	6	—	4 (1?)	1 (1?)	31 (3)	
Tataraimaka	4 (1?)	10	5	2 (1?)	6	5	32 (2)	
Okato	1	7	3	3	8 (1?)	4	26 (1)	
Totals	11 (1?)	31 (1?)	14	5 (1?)	18 (2?)	10 (1?)	89 (6)	
Percentage	12.4	34.8	15.7	5.6	20.2	11.2	100	

The various loss classes are placed on a 0-5 scale to provide a basic "loss index"—thus "intact" = 0, 0-25 percent destroyed = 1, and so on. This allows straightforward reference to the various loss classes in discussion, and easy calculation and clear illustration of the overall loss.

There will be no "intact" sites that are indeed intact. If erosion or its effects are not visible now it does not follow that it has not occurred in the past. As a general rule all sites will have suffered more damage than is now apparent; assessments of damage given in Table 4 must be regarded as conservative. There is a definite tendency for sites to be largely intact or largely destroyed: 80 percent of sites fall in loss classes 0-1 and 4-5.

It will be seen from Table 4 that Omata and Oakura sites have not suffered as much as those of Tataraimaka and Okato. Among Omata and Oakura sites, total or 75-100 percent destruction is rare. To the south, however, 34 percent of sites in Tataraimaka fall into loss classes 4 and 5, while in the Okato district the figure is 46 percent. In the latter district many of the destroyed or nearly destroyed sites are on the edge of terraces where, once defensive ditch and bank systems are broken down, the whole site is open to cultivation. In the Omata and Oakura districts the relatively hilly topography acts against wholesale destruction of sites.

In Table 5 the damage or loss outlined in Table 4 is combined to give an overall assessment of site loss by district and in the survey region as a whole. In the second column the loss index is derived by adding the 0-5 loss index totals from Table 4 and dividing the total by the number of sites in the district sample. This gives an overall assessment of site loss by district. The percentage figure in column three is derived directly from the loss index figure. (e.g. $1.52/5.0=30.4\%$).

TABLE 5
LOSS OF ARCHAEOLOGICAL REMAINS OF MAORI FORTIFICATIONS IN THE SURVEY AREA - 1979-81 AND 1950

District	Sample	Site loss from: 1979-81 survey		1950 aerial photograph		1950/1979-81 difference	
		index	%	index	%	index	%
Omata and Oakura	31	1.52	30.4	0.32	6.4	1.20	24.0
Tataraimaka	32	2.34	46.8	0.84	16.8	1.50	30.0
Okato	26	2.85	57.0	1.31	26.2	1.54	30.8
Totals	89	2.20	44.0	0.80	16.0	1.40	28.0

Sample includes only those sites for which extent of destruction is known.

In addition to its summary of site loss established from the 1979-81 survey, Table 5 presents comparable estimates of site loss of thirty years before, which are derived from the 1950 aerial photograph series. These are also presented by district as both 0-5 loss index (column 4) and percentage (column 5). In the final columns the differences in site loss over the thirty year period is given. What the 1950 columns do not show is sites completely vanished before that date. Thus, damage already suffered in 1950 is doubtless greater than given—as is the degree of loss observed in 1979-81. Whatever the unknown pre-1950 loss, however, it seems likely that most site loss has occurred in the past thirty years.

Tables 4 and 5 assign equal value to each site. If site areas are allowed for, then a much higher rate of destruction would be apparent. How does one compare the almost total destruction of Mounu Kahawai, an historically important site of 60,000 sq.m, with the survival of, for example, N108/171, which defends an area of perhaps 90 sq.m and which is historically unknown?

From knowledge of the sites and the 1950 aerial photographs, 28 sites (of the total of 95) can be described as having suffered substantial direct (i.e. human) damage since 1950. This is a rate of almost one a year. Since the 1975 Historic Places Amendment Act came into force, however, only two sites, N108/35 and 108, are known to have suffered substantial destruction. This apparent improvement in the rate may be unreal, however, since half the post-1950 destruction is not accurately dated (some may have taken place in recent years), and general attrition of sites is

certainly on the increase. Taken at face value the figures in Table 5 show that 28 percent of known archaeological remains of pa in the survey region have been destroyed in the thirty years between 1950 and 1979-81, whereas only 16 percent of those remains were destroyed up to 1950.

CONCLUSIONS

It is in the nature of historic landscapes that they undergo change as later generations and technologies make their impacts. Site loss is related to changing economic, social, agricultural or technological factors—in short to changing landscapes. We need to understand the factors behind these changes if we wish to anticipate and cope with future threats.

There is a widespread appreciation today of the enormity of site loss. The optimism which followed passage of the 1975 Historic Places Amendment Act protecting archaeological sites more than 100 years old, has been replaced by a more realistic attitude. It was probably no accident that legislation protecting historic sites was passed at the very time these sites were to come under unprecedented attack. The greater part of many districts are being transformed very rapidly by forestry, horticulture, hydro-electric projects and other agricultural, industrial and urban development. In many districts most sites are being destroyed. Characteristic and unique historic places and shapes in the New Zealand landscape are being replaced by new shapes and by land use of a more universal nature.

We would mislead ourselves if we did not recognise that activity and episodes similarly destructive of earlier historic landscapes have occurred before. The clearing of the bush, first ploughing of virgin land, intensification of livestock farming and the nineteenth and early twentieth century mining industry - especially for gold—all had a great impact on the older landscape and its sites. Many of these activities have left rich historic landscapes of their own for later study, interest and appreciation.

Nonetheless, historic places of Maori origin are of particular importance—to the Maori and wider New Zealand community, as well as to archaeologists. Their protection is not assured by the legislation. Increasing pressures on land are threatening enormous numbers of sites. It is not that landowners are invariably indifferent to the importance of historic sites, but that the interest which is often present is seldom translated into an informed care. The practical measures which can help preserve sites rather than damage or destroy them are simply not understood or put into effect.

To preserve the sites it is of no use simply telling landowners that an act of parliament says they are not to destroy them. Their active support needs to be enlisted. They need to know how best they can look after sites. They need also to know that these places can—through archaeology and the study of historical events related to them—actually tell them something about the past they will be interested to hear. Landowners and the community at large must learn to relate to historic sites of Maori and Pakeha origin, and feel proud of them. Is it too much to hope that the Pakeha community and landowners will develop a sense of continuity and of belonging? Until the signs of our indigenous past become central in our ideal and familiar landscape then those signs will always be under threat.

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