

Vegetation survey and monitoring in Whakatane Field Centre

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1. Introduction

The Department of Conservation administers a large number of land areas, including c.400 in the Bay of Plenty Conservancy and 74 in the Whakatane Field Centre. These areas include a wide variety of ecosystems, habitats, and species.

It is important for departmental staff to have good information and a sound understanding of the resources in each of the areas, the ecological context within which they are located, and the processes which ensure healthy functioning ecosystems and sustainable management of habitats and species. Much of this information is obtained from survey and monitoring. However, there is little point in undertaking any ecological survey or monitoring if these activities cannot be related to management objectives. Cropper (1990) suggests that it is essential for any manager to know what the management objectives are, to provide a clear focus on which to measure the success or otherwise of management. It is also important to have good records of past, present and likely future management. Survey is an essential tool for determining the biodiversity assets in a management area, and provides a framework for determining priorities for monitoring. Monitoring provides feedback on whether management is having a desired effect.

2. Ecological context

The following ecological regions and districts are relevant to Whakatane Field Centre:

<u>Ecological Region</u>	<u>Ecological District</u>
Whakatane	Te Teko Taneatua
Eastern Volcanic Plateau	Kaingaroa
Northern Volcanic Plateau	Otanewainuku Rotorua Lakes White Island

The field centre includes offshore islands (Whakaari, Moutohora, Rurima), coastal sand dunes, alluvial plains, Ohiwa Harbour, low rolling hills between Ohiwa and the northern fringes of Te Urewera National Park, the northern part of the Kaingaroa Plateau, and the rolling hills in the Manawahe-Matata area.

Coastal, semi-coastal, and lowland bioclimatic zones are included, and the landscapes are of sedimentary and volcanic origins.

Vegetation and habitats include riverine systems, duneland, saltmarsh, freshwater wetlands, shrubland, geothermal, and secondary and primary forest.

3. Protected areas managed by the department

A list of areas managed by the department is provided in Appendix 2. Extracts from Beadel (1995) on the vegetation and flora of each area, and related conservation evaluations, are provided in a longer version of this report (contract report no. 188).

A summary of all areas that contain indigenous vegetation with a botanical rank of high, very high, and exceptional (as per Shaw 1994) is provided in Table 1.

4. Survey programme

4.1 SURVEY INFORMATION REQUIRED

The type and level of information required on vegetation varies depending on the area under consideration and its ecological context.

Department of Conservation managers require the following information:

- Where is it (land and other natural resources)?
- What is there (what natural and historic resources are on the land)?
- How important is it (conservation value)?
- What management work is required, or what opportunities are present?

(Gibb et al. 1992)

For vegetation, the information required for most areas is: a map of vegetation pattern, brief descriptions of vegetation types, a list of vascular species (and prominent non-vascular species), an assessment of relative conservation value/significance, and identification of main management requirements (related to an assessment of threats and vulnerability).

For many areas in Whakatane Field Centre, particularly those with limited or poor quality indigenous vegetation, the information presented in Beadel (1995) is adequate for most departmental management purposes.

4.2 ONGOING SURVEY PROGRAMME

Protected Areas

The Department of Conservation maintains an active survey programme in the field centre, to gather baseline information on the vegetation of all protected areas. This work has built on Beadel & Shaw (1988) and Clarkson & Regnier (1989), and includes a series of stand-alone reports that describe the vegetation and flora of each area surveyed. A vegetation map is generally provided. All of this work is summarised in Beadel (1995), with the following reports compiled since 1995: Anon (1997), Beadel (1996), Beadel & Shaw (1996), Beadel et al. (1996a,b,c,d).

Table 2 provides a summary of the information currently available for each of the protected areas in the field centre that contain indigenous vegetation with a conservation rank of high - exceptional.

4.3 UNPROTECTED AREAS

The department, other agencies, and some landowners have promoted and undertaken an active programme of survey of unprotected indigenous vegetation and habitats. Since 1990 there have been Protected Natural Area Programme surveys undertaken for the following ecological districts:

- Otanewainuku (1994)
- Taneatua (1996)
- Rotorua Lakes (1997)
- Te Teko (1997)

Much of the Kaingaroa Ecological District has been surveyed in projects undertaken for Whakatane District Council (Beadel et al. 1996) and a separate project undertaken for Fletcher Challenge Forests Ltd. All of the terrestrial areas in White Island Ecological District have a protected status.

4.4 PRIORITIES FOR FURTHER VEGETATION SURVEY

Protected Areas

The information presented in Section 4.2 can be used to provide priorities for further survey of protected areas. Most areas have a comprehensive level of information available on vegetation and vascular flora. Little is documented for three sites, Keepa Road, Whangakopikopiko, and Ohinekoao, but these are small areas and this can be rectified with little effort or cost.

There is relatively little documentation available for Moutoki and Rurima although the information has been collected but not written up (W.B.S. records).

However, many of the field surveys were undertaken in the early-mid 1980s and the information is becoming dated. It is a high priority over the next 5 years or so, to instigate a systematic programme of checking to ensure that the information available is still accurate. It is likely to be accurate for the vegetation maps, type descriptions, and species lists. Conservation rankings are also likely to remain unchanged for most areas. However, the management assessments are likely to require updating. Exceptions will be any areas that have undergone rapid change. Such areas are likely to include Moutohora, where the vegetation has been developing rapidly following the removal of introduced pest animals, and the Ohinekoao Recreation Reserve following the removal of grazing and the implementation of a planting programme for pohutukawa.

Unprotected areas

Most of all of the ecological districts relevant to Whakatane Field Centre have been covered by comprehensive field survey since 1994. The only area where survey is justified is the northern sector of the Kaingaroa Ecological District.

5. Monitoring programme

5.1 WHY MONITOR?

The following extracts from Cropper (1990) provide a rationale for monitoring:

Monitoring is an essential component of management. It allows a manager to assess whether an asset is being successfully managed and if more work is required. If an asset is manipulated without monitoring the effect on the condition of the asset the manager does not know if the desired objective has been met.

In the context of this report Environmental Monitoring is defined as the purposeful reassessment of the condition of an item throughout time.

Environmental Monitoring can be split into two main types: Monitoring in relation to Management and Monitoring per se. Monitoring in relation to management aims at recording the change in condition of an asset that is being actively managed; trends in established indicators allow a manager to ascertain if the management has been successful and if the desired objectives are being met. Monitoring per se aims at monitoring the change in condition of an asset not being actively managed.

The greatest value of monitoring an asset is the ability to predict change or react to change at the earliest possible opportunity. Through identification of a potential problem before it becomes established, work in-

involved with control of threats and the protection of assets can be significantly reduced.

Monitoring therefore needs to function on 2 levels;

- (a) Periodic assessments with a level of resolution sufficient to detect the unusual or extraordinary.
- (b) Provide answers to specific questions; e.g. what is the extent of mangero dieback in the conservancy; is the condition of a kahikatea stand changing due to changes to the drainage regime.

5.2 CURRENT VEGETATION MONITORING IN WHAKATANE FIELD CENTRE

A summary of existing monitoring projects is listed below, including vegetation monitoring related to impacts of pest plant and browsing animals.

LOCATION	SITE(S)	METHOD	REASON FOR MONITORING
Ohiwa Harbour	Kutarere	Transects	Monitor vegetation recovery following removal of grazing.
Moutohora	McEwan's Bay Boulder Bay	Plots	Monitor pohutukawa regeneration and stand dynamics.
Moutohora	Throughout	Photopoints	Monitor vegetation recovery following removal of pest animals.
Rurima	Throughout	Walk through in conjunction with rodent inspections	Weed invasion.
Taneatua ED	Melville Property Old Ohope Road Stanley Road	Annual inspections (Feb/Mar)	Monitor <i>Syzygium maire</i> populations.
Ohope	Tauwhare Pa	Tagged trees	Pohutukawa - recovery following fire.
Kawerau	Parimahana Scenic Reserve	Photopoints Belt transects	Monitor geothermal vegetation.

Vegetation Monitoring Related to Pest Plant Impacts or Control

LOCATION	SITE(S)	METHOD	REASON FOR MONITORING
Matata Scenic Reserve	Above subway	Photopoints	Monitor extent of <i>Lonicera japonica</i>
Ohiwa Harbour	Kutarere	Plots	Monitor success of <i>Spartina</i> control
Ohiwa Harbour	Uretara Is	Photopoints	Monitor pohutukawa recovery following possum control

Vegetation Monitoring Related to Pest Animal Impacts or Control

LOCATION	SITE(S)	METHOD	REASON FOR MONITORING
Coastline/Ohiwa Harbour	Entire coastal margin	Annual aerial inspection	Survey pohutukawa health/possum browsing.

Various threatened plant monitoring projects have also been undertaken in the field centre, and these are reviewed in Shaw & Beadel (1997). Some monitoring was also undertaken previously on Pataua Island and Motuotu Island (Daniel & Rasmussen 1985 in Meurk & Buxton 1991).

5.3 WHAT TO MONITOR?

The first and arguably the most important step for land managers is to identify what needs to be monitored and managed. This can be achieved by collating a detailed inventory of all the items occurring in the area then prioritising these items and identifying the key assets. The two main criteria for ranking natural and cultural assets are significance and susceptibility to change, although in reality some managers may not be able to work on some assets due to the inaccessibility of some sites or the lack of knowledge on an organism's biology. In areas where assets are unevenly distributed it may be better to collate a list of assets for a geographical or political region (to be split up later) so ranking occurs at an administrative level and regional resources allocated to particularly significant areas.

(Cropper 1990)

5.4 CRITERIA FOR MONITORING

The Department has limited resources available to invest in monitoring programmes. Because of this, priorities for monitoring need to be established using a consistent set of criteria.

Four primary criteria could be used:

- conservation value
- threat(s)
- vulnerability (to threats)
- urgency

Conservation value can be derived from assessment of factors such as:

- representativeness
- past versus present extent
- landscape diversity
- naturalness
- size
- shape of area
- surrounding landscape
- habitat value

Identification of representative or special vegetation classes/types requires analysis using the following frameworks:

- bioclimatic zones or climate
- land types or physiography
- vegetation pattern

The botanical conservation rankings for each area administered by the Department in the Field Centre are listed in Appendix 2 and a summary of those areas ranked high - exceptional is provided in Table 1. These rankings are based on vegetation types or special/rare features, and often several rankings have been assigned within a protected area. The highest rank applied within an area has been used to assign it to a single category in the table.

An assessment of the characteristics of the vegetation or special feature that have been ranked highly (i.e. high, very high, exceptional), and their vulnerability to likely threats can be used to determine priorities for monitoring, other than generalist overview monitoring.

Threat

Likely threats to the vegetation or flora within a protected area and the highest ranked vegetation type/special feature are listed.

Vulnerability

Relative vulnerability to threats can be assessed and ranked; e.g. low, moderate, high.

Urgency is a function of threat and vulnerability and assists in determining the relative priority for management action and can also be ranked; e.g. low, moderate, high.

5.5. JURISDICTION

The Department needs to consider other natural areas, protected and unprotected, when assessing its monitoring programme. The conservation value of lands administered by the Department reflects their relative significance in the matrix of natural areas that remain in an ecological district. Primarily the Department's monitoring priorities relate to land it administers. There may be a case, however, for the Department to carry out broad-scale overview monitoring in conjunction with other agencies and landowners, or to carry out monitoring that is complementary to the monitoring being undertaken by other agencies. For example, Whakatane District Council administers significant and sizeable protected areas in the Taneatua and Te Teko ecological districts. Also Environment BOP and the district councils will need to establish their requirements for state of the environment monitoring and reporting, which may include the condition and trend of vegetation in protected areas.

5.6 MONITORING PRIORITIES

The highest priorities for monitoring include the following categories:

- general monitoring to detect observable change that might indicate a possible threat or problem
- representative examples of the vegetation and wildlife habitat with high threat and vulnerability levels
- special or rare features with high levels of threat and vulnerability.

Priorities for monitoring can be assigned to significant conservation resources and/or threats to those features. Monitoring priorities related to conservation values and threats are presented separately below.

Priorities related to conservation values

Each protected area in the field centre with a conservation rank of high to exceptional has been assessed for monitoring requirements for vegetation with a significant conservation value and known or likely threats to those features (Table 3).

Priorities related to threats

Monitoring priorities may be related to specific threats to significant conservation resources (e.g. pest animals, weeds, domestic stock) or measures designed to protect significant resources from specific threat agencies (e.g. fences to exclude domestic stock). Table 4 is a summary of known threats, the vulnerability of significant resources to key threats, monitoring required, and an urgency rating for monitoring. Urgency is a function of threat and vulnerability and is based on the likelihood of a resource undergoing significant damage within the immediate future. The highest rating is applied to resources that are likely to experience irreversible change.

Field Centre priorities

Using Tables 3 and 4, monitoring priorities can be determined from separate but related assessments based on conservation values and the consideration of conservation values, threats, and vulnerability to particular threats. There may be other reasons for undertaking monitoring at a particular site such as potential usefulness for advocacy, local disturbance (e.g. fire or windthrow), or the information may be more widely applicable, even though the conservation values of the site involved may be relatively low. Also, some threats may be located outside an area of significant conservation value, but monitoring may be justified to see if the threat is increasing or if a control programme has been successful.

The highest priority for monitoring is a systematic aerial or ground-based overview of all areas administered by the Department. This could be done from a fixed-wing aircraft, using a map showing protected area boundaries and a standard recording form. An example is attached - Appendix 1. All areas in the field centre should be inspected every 1-2 years.

Other priorities relate to the best examples of particular vegetation or habitat types or populations of threatened species:

Threatened wetland plants	Tumurau.
Indigenous forest	Waiohau, Ohope, Matata SR, White Pine Bush, Waiotane.
Saltmarsh vegetation	Motuotu, Pataua, Nukohou.
Duneland	Port Ohope.
Geothermal	Parimahana.
Islands	Whakaari, Moutoki and Rurima, Moutohora.

Monitoring is already under way in Ohope, Parimahana, Whakaari (Landcare Research plots), and Moutohora.

Threat-related monitoring priorities have been assigned for each protected area, as follows:

Water levels in freshwater wetlands	Matata WR, Tumurau, Awaiti, Tarawera Cut, Bregman, Lake Tamurenu
Weeds	Ohope SR, Pataua, Uretara, White Pine Bush, Matata SR, Rotoma CA, Parimahana, Moutohora
Grazing	Tumurau, Awaiti, Keepa Road, Waiohau, Kotare, Matekerepu, Nukohou, Pataua, White Pine Bush, Awakeri, Matata SR, Rotoma CA.
Possoms	Ohope SR, Waiohau, Pataua, Uretara, Matata SR, Ohinekoao.
Goats	Waiohau, Kotare, Matekerepu, Ohope SR, Waiotane, Matata SR.
Rubbish dumping	Ohope
Geothermal extraction	Parimahana.
Recreational activity	Moutohora.

6. Conclusions

Ongoing survey and monitoring should be a fundamental part of conservation management, to ensure that managers have up-to-date information to set priorities and allocate resources. Information obtained from survey and monitoring provides a link between all management issues.

All survey and monitoring needs to be driven by management requirements, and integrated with other related disciplines. For example, survey and monitoring of vegetation composition, species distribution and abundance, and threats should be considered as closely related management issues.

Threat-related monitoring is based on a sound understanding of threats and their effects. This requires up-to-date information on each area of interest, which can only be obtained from a systematic programme of inspections and information collection.

Information management is a fundamental requirement related to survey and monitoring. All information collected needs to be held in easily accessible secure storage, and requires periodic review and update to ensure that it is still accurate and relevant.

The Whakatane Field Centre has a particularly well-developed ongoing survey and monitoring programme. This programme requires relatively little amendment to address the survey priorities outlined above. The monitoring priorities outlined above are consistent with work in progress but will require some additional resources to address the suggested priorities.

7. Acknowledgments

This project was initiated by Derek Gosling, Department of Conservation, Whakatane. Derek provided useful feedback on draft versions of this report. Sarah Beadel (Wildland Consultants Ltd) provided considerable assistance with assessments of survey and monitoring work undertaken to date in the field centre.

8. References

- Beadel, S.M. (In press): Otanewainuku ecological district. Survey report for the Protected Natural Areas Programme. Department of Conservation, Rotorua.
- Beadel, S.M. and Shaw, W B. 1988: Scenic and Allied Reserves of the Taneatua Ecological District, Eastern Bay of Plenty. *Biological Survey of Reserves Report No. 12*. Department of Conservation, Wellington. 138 p.
- Beadel, S.M. 1993: Ohiwa Harbour indigenous vegetation. Bay of Plenty Regional Council. 95 p plus maps.
- Beadel, S.M. 1994: Significant indigenous vegetation of the Bay of Plenty coastal zone. Bay of Plenty Regional Council. 412 p.
- Beadel, S.M. 1995: Vegetation and flora of land administered by Bay of Plenty Conservancy. Wildland Consultants Contract Report No. 130. Prepared for the Department of Conservation. 556 p.
- Clarkson, B.R. and Regnier, C.E. 1989: West Gisborne. *Biological Survey of Reserves Series Report No. 16*. Department of Conservation, Wellington. 176 p.
- Cropper, S. 1990: The Resource Evaluation and Monitoring System. The Parks Branch, National Parks and Public Lands Division, Department of Conservation and Environment, Victoria, Australia.
- Daniel, L.J. and Rasmussen, N.F. 1985: Vegetation assessment methodology. Methods for monitoring ecological change. Unpublished report, Department of Lands and Survey, Gisborne.
- Fastier, M.; Burrows, L.; Hall, G.; Payton, I.; Andreason, S. 1991: National indigenous vegetation survey database. Rotorua dataset directory. Forest Research Institute Contract Report: FWE 91/38, prepared for Department of Conservation, Wellington. 39 p.
- Gibb, J.G.; Daniel, L.J.; Kemper, R.V.R.; Nicol, E.R. and Shaw, W.B. 1992: Review of the information requirements of the Department of Conservation. Report 11. Executive Summary. Department of Conservation, Wellington. 33 p.
- Meurk, C.D. and Buxton, R.P. 1991: A New Zealand register of permanent vegetation plots. DSIR Land Resources Contract Report No. 91/35, prepared for Department of Conservation. 239 p.

- Shaw, W.B. 1988: Botanical conservation assessment of crown lands in the Urewera-Raukumara planning study. *Forest Research Institute Project Record No. 2035*, Rotorua. 140 p.
- Shaw, W B. 1994: Botanical ranking for nature conservation. *Science and Research Series No. 72. Department of Conservation, Wellington*. 17 p.
- Smale, M.C. 1990: Ecology, succession and conservation of coastal kanuka communities in Eastern Bay of Plenty. Forest Research Institute Contract Report; FEW 90/28 prepared for Department of Conservation, Wellington.
- Smale, M.C. 1993: Forest regeneration on Uretara Island, Ohiwa Harbour, Bay of Plenty. *Tane*, 34: 145-153.

AERIAL MONITORING RECORDING FORM (DRAFT)

Recorder(s)		Date	
Protected Area/Location		Grid Reference	
Notes on Vegetation Condition			Photograph Taken
			Y
			N
Threats (e.g. possums, grazing)			
Actions Required			

APPENDIX 2

PROTECTED AREAS IN WHAKATANE FIELD CENTRE, DEPARTMENT OF CONSERVATION

Protected Area	Area (ha)	Ecological District	No.	Classification
Awaiti Wildlife Management Res.	68.8400	Te Teko	V15038	RAGPWM
Bregman Wildlife Management Res	8.6350	Te Teko	V15037	RAGPWL
Lake Tamarenuui Wildlife Management Res.	16.9500	Te Teko	V 15027	RAGPWM
Matata Recreation Res.	11.1211	Te Teko	V 15029	-
Matata Wildlife Refuge	110.1756	Te Teko	V15031	RAGPWR
Old Rangitaiki River Bed Cons. Area	0.5919	Te Teko	V15040	CAST62
Piripai Spit Conservation Area	-	Te Teko	-	-
Tarawera Cut Wildlife Management Res.	14.0000	Te Teko	V15036	RAGPWM
Thornton Lagoon Wildlife Management Res.	97.0000	Te Teko	W15005	RAGPWM
Tumurau Lagoon (Privately Owned)	139.5459	Te Teko	V15116	RACC77
*Western Whk Coastal Recreation Res.	209.5433	Te Teko	V15041	-
Whakatane River Cons. Area	5.3340	Te Teko	W16007	CAST62
*Pukaahu Springs Recreation Res.	15.5934	Te Teko/ Taneatua	W15063	-
Awakeri Conservation Area	404.6856	Taneatua	V15051	CAST07
*Kapu Te Rangi Historic Res.	4.9321	Taneatua	W15014	-
*Kohi Point Scenic Res.	153.9323	Taneatua	W15071	-
Kotare Scenic Res.	17.3039	Taneatua	W15072	RASR
Kutarere Recreation	7.7902	Taneatua	W15065	RARR
Lathams Conservation Area	2.1000	Taneatua	W15087	RACC77
Matekerepu Historic Res.	23.4515	Taneatua	W15066	RAHR
Matahina Conservation Area	279.5040	Taneatua	V16028	CAST62
*Mokorua Scenic Res.	237.5505	Taneatua	W15020	-
Motuotu Island Nature Res.	70.2600	Taneatua	W15061	RANT
Nukuhou Conservation Area	15.0000	Taneatua	W15051	CAST62
Ohineteraraku Scenic Res.	10.5321	Taneatua	W15044	RASR
Ohiwa Sandspit Conservation Area	2.0878	Taneatua	W15056	CAST62
Ohiwa Conservation Area	1.8110	Taneatua	W15067	WARFD
**Ohiwa Recreation Reserve	23.9385	Taneatua	W15068	-
Ohiwa Scenic Res.	4.3706	Taneatua	W15060	RASR
Ohope Scenic Res.	489.2231	Taneatua	W15035	RASR
*Ohope Recreation Res.	22.5750	Taneatua	W15036	-

Ohope Beach Holiday Park Lease	3.1565	Taneatua	W15053	CAST62
Oscar Reeve Scenic Res.	6.3576	Taneatua	W15070	RASR
*Otao Domain	19.4401	Taneatua	W15041	-
Paparoa Pa Historic Res.	1.5985	Taneatua	W15043	RAHR
Pataua Island Scientific Res.	22.0523	Taneatua	W15063	RASI
Port Ohope Recreation Res.	206.7100	Taneatua	W15052	RARR
Soda Springs Conservation Area	1.0117	Taneatua	W15075	CAST62
Stanley Falls Scenic Res.	24.2031	Taneatua	W16001	RASR
Tauwhare Pa Scenic Res.	11.3800	Taneatua	W15040	RASR
Te Pari Kawakawa Private Historic Res.	0.7505	Taneatua	W15045	-
Te Paripari Pa Historic Reserve	1.0451	Taneatua	W15038	RAHR
Tern Island Wildlife Refuge Res.	11.6700	Taneatua	W15057	RAGPWR
Uretara Island	73.2481	Taneatua	W15054	RASR
Waimana Gore Scenic Res.	156.1624	Taneatua	W16002	RASR
*Waimana Recreation Res.	5.3400	Taneatua	W16007	-
Waiotane Scenic Res.	254.8400	Taneatua	W15046	RASR
*Wairere Falls Scenic Res.	0.7114	Taneatua	W15013	RASR
White Pine Bush Scenic Bush	4.4970	Taneatua	W15033	RASR
Waiohau Conservation Area	1342.4773	Taneatua/ Kain roa	V 16027	CAST07
Matata Scenic Res.	491.4176	Otanewainuku	V 15 022	RASR
Ohinekoao Recreation Res.	17.8061	Otanewainuku	V15019	RARR
Ohinekoao Scenic Res.	51.6550	Otanewainuku	V15020	RASR
Mangaone Scenic Res.	579.7954	Rotorua Lakes	V15015	RASR
Parimahana Scenic Res.	50.1500	Rotorua Lakes	V15018	RASR
Parimahana Covenant	3.2200	Rotorua Lakes	V15080	RACC77
Lake Rotoma Scenic Res (Part)	875.3842	Rotorua	V15010	RASR
Rotoma Conservation Area	1300.5176	Rotorua	V15052	CAST07
Moutohora Wildlife Management Res.	143.2586	White Island	W15073	RAGPWM
Rurima Islands Wildlife Refuge (Private Owners)	15.8839	White Island	W15001	WARFP
Whale Island Wildlife Management Res.	143.2586	White Island	W15073	WARFD
Whakaari Private Scenic Res.	237.9552	White Island	W15074	RAPPL
Awakaponga Hall Local Purposes Res.	0.1745	?	V15024	RALPHL
Motuore Conservation Area	0.6500	?	-	-
Titi Tangi Ao QEII Covenant	3.3902	?	-	-

* Administered by Whakatane District Council

** Administered by Opotiki District Council

PROTECTED AREA CLASSIFICATION CODES

Land Vested in and Administered by the Department of Conservation

Legislative Status Code	Legislative Description
CACP18	Conservation Park, Section 18, Conservation Act 1987
CACP61	Conservation Park, Section 61, Conservation Act 1987
CAMS24	Marginal Strip, Section 24, Conservation Act 1987
CAST07	Stewardship Area, Section 7, Conservation Act 1987 (land acquired and held for conservation purposes since the enactment of the Conservation Act 1987).
CASR62	Stewardship Area, Section 62, Conservation Act 1987
MRMR	Marine Reserve, Marine Reserves Act 1971
RAGP	Government Purpose, Reserves Act 1977
RAGPWM	Wildlife Management, Government Purpose, Reserves Act 1977
RAGPWR	Wildlife Refuge Reserve, Reserves Act 1977
RAGPWS	Wildlife Sanctuary, Government Purpose, Reserves Act 1977
RAHR	Historic Reserve, Government Purpose, Reserves Act 1977
RALPCM	Cemetery Reserve, Local Purpose, Reserves Act 1977
RALPHL	Hall Reserve, Local Purpose, Reserves Act 1977
RANT	Nature Reserve, Reserves Act 1977
RARR	Recreation Reserve, Reserves Act 1977
RASI	Scientific Reserve, Reserves Act 1977
RASR	Scenic Reserve, Reserves Act 1977

Lands status that can overlay land administered by the Department

CAEA61	Ecological Area, Section 61, Conservation Act 1987 (over land administered by the Department).
CASA61	Sanctuary Area, Section 61, Conservation Act 1987 (over land administered by the Department).
WARFD	Wildlife Refuge, Wildlife Act 1953 (over land administered by the Department).

Crown lands OTHER than Departmental lands in which the Department has an interest

RACC77 Conservation Covenants, Section 77, Reserves Act 1977

WARFC Wildlife Refuge, Wildlife Act 1953 (over land administered by the Crown that is NOT administered by the Department).

Private lands in which the Department has an interest

CAEA07 Easements in favour of the Department, Section 15, Conservation Act 1987.

RAPPL Protected Private land administered as a Scenic Reserve, Reserves Act 1987.

WARFP Wildlife Refuge, Wild life Act 1953 (over private land).

- Historic resources are not included in this report.

TABLE 1: Summary of Protected Areas Botanical Conservation Rankings in Whakatane Field Centre

Ecological District	BOTANICAL CONSERVATION RANKING (from Beadel 1995)				
	Exceptional ¹	Very High ¹	High ¹	Moderate ¹	Low-Potential ²
Te Teko	Matata Wildlife Refuge Tumurau Lagoon (Private Conservation Covenant)	Awaiti WMR Thornton Lagoon WMR	Bregman WMR Lake Tamurenui WMR Tarawera Cut WMR Kee a Road CA		
Taneatua	Waiohau CA* Kotare SR Matekerepu HR Motuotu Nature Reserve Nukohou CA Ohope Scientific Reserve Pataua SR Uretara SR White Pine Bush SR	Awakeri CA Waiotane SR Waimana Gorge SR	Ohineteraraku SR Oscar Reeve SR Port Ohope RR Stanley Falls SR Whangakopikopiko WR		16
Kain aroa	Waiohau CA*			8	13
Otanewainuku	Matata SR		Ohinekoao SR		
Rotorua Lakes	Rotoma SR/CA	Parimahana SR		3	
White Island	Whakaari (private Scenic Reserve)	Moutoki & Rurima Is Moutohora WMR	Te Paepae Aotea Volkner Rocks)		
Totals:	15	8	11	11	29

1. The highest ranked vegetation type in each land unit
 2. Numbers of land units are with this rank provided rather than individual names.
- * In 2 ecological districts.

Table 2: Vegetation Survey Information Available for Protected Areas in Whakatane Field Centre

Ecological District	Area	VEGETATION INFORMATION AVAILABLE					
		Map	Type Description(s)	Species List	Conservation Ranking	Management Assessment	Age < 10yrs
Te Teko	Matata WR	✓	✓	✓	✓	✓	✓
	Tumurau	✓	✓	✓	✓	✓	✓
	Awaiti	✓	✓	✓	✓	✓	✓
	Thornton Lagoon	✓	✓	✓	✓	✓	✓
	Bregman	✓	✓	✓	✓	✓	✓
	Lake Tamurenuī	✓	✓	✓	✓	✓	✓
	Tarawera Cut	✓	✓	✓	✓	✓	✓
	Keepa Road	✓			✓*		
Taneatua	Waiohau*	✓	✓	✓	✓	✓	✓
	Kotare	✓	✓	✓	✓*	✓	✓
	Matekerepu	✓	✓	✓	✓*	✓	✓
	Motuotu	✓*	✓	✓	✓*	✓	✓
	Nukohou	✓*	✓	✓	✓*	✓	✓
	Ohope	✓	✓	✓	✓*	✓	✓
	Pataua	✓*	✓	✓	✓*	✓	✓
	Uretara	✓*	✓	✓	✓*	✓	✓
	White Pine Bush	✓	✓	✓	✓*	✓	
	Awakeri	✓	✓	✓	✓*	✓	✓
	Waiotane	✓	✓	✓	✓*	✓	
	Waimana Gorge	✓	✓	✓	✓*	✓	
		Ohineteraraku	✓	✓	✓	✓*	✓
Oscar Reeve		✓	✓	✓	✓*	✓	
Port Ohope		✓	✓	✓	✓*	✓	
Stanely Falls		✓	✓	✓	✓	✓	
Whanga-kopikopiko		✓*			✓*		
Kaingaroa	Waiohau*	✓	✓	✓	✓	✓	✓
Otane-wainuku	Matata SR	✓	✓	✓	✓	✓	✓
	Ohinekoao			✓*	✓*		
Rotorua Lakes	Rotoma SR	✓	✓	✓	✓	✓	✓
	Rotoma CA	✓	✓	✓	✓	✓	✓
	Mangaone	✓	✓	✓	✓	✓	✓
	Parimahana	✓	✓	✓	✓	✓	✓
White Island	Whakaari	✓	✓	✓	✓	✓	✓
	Moutoki Rurima				✓		
	Moutohora	✓	✓	✓	✓	✓*	

* = refer to Beadel (1995)

Table 3: Summary of Monitoring Requirements for Significant Vegetation in Protected Areas in Whakatane Field Centre

Ecological District	Protected Area	Significant Features	Significant Feature Monitoring	
			Monitoring Required	Priority*
Te Teko	Matata WR	Wetland vegetation	photo points	2
	Tumurau	Wetland rare plants	photopoints inspection	2 1
	Awaiti	Wetland vegetation	inspection	3
		Cyclosorus	counts	3
	Thornton Lagoon	dunelands	inspection	2
	Bregman	rare plants	counts	3
	Lake Tamurenuī	wetland	inspection	2
	Tarawera Cut	rare plants	counts	2
Keepa Road	?	?		
Taneatua	Waiohau*	lowland forest	inspection	1
	Kotare	semi-coastal forest	inspection	2
	Matekerepu	forest	inspection	2
	Motuotu	saltmarsh, mangroves	photo points	1
	Nukohou	saltmarsh	aerial inspections	1
	Ohope	coastal forest	aerial inspections	1
	Pataua	saltmarsh, forest	photo points	1
	Uretara	Secondary forest Saltmarsh	photo points	1
	White Pine Bush	Kahikatea forest	photo points	1
	Awaked	forest	inspection	2
	Waiotane	semi-coastal forest	inspections	1
	Waimana Gore	Tawa forest	inspections	2
	Ohineterraraku	secondary forest	inspections	3
	Oscar Reeve	black beech	inspections	2
	Port Ohope	duneland	inspections	1
	Stanley Falls	tawa forest	inspections	3
Whangapikopiko	duneland, estuarine	inspections	2	
Kaingaroa	Waiohau*	see above		
Otanewainuku	Matata SR	coastal forest (hard beech-ohutukawa)	photo points	1
	Ohinekoao	secondary forest	inspections	3
Rotorua Lakes	Rotoma SR	tawa forest	inspections	2
	Rotoma CA	tawa forest	inspections	2
	Mangaone	tawa forest	inspections	2
	Parimahana	geothermal	photo points, plots	1
White Island	Whakaari	ohutukawa	plots	1
	Moutoki & Rurima	coastal forest	photo points	1
	Mouthohora	regenerating forest	photo points, lots	1

* Priority Rating: 1 High; 2 Moderate; 3 Low

Table 4: Summary of Threat-Based Vegetation Monitoring Priorities for Protected Areas in Whakatane Field Centre

Ecological District	Protected Area	Threats	Vulnerability*	Monitoring Required	Urgency**
Te Teko	Matata WR	water level	1	annual check	1
		weeds	1	exotic species	1
	Tumurau	water level	1	annual check	1
		weeds	1	exotic species	1
		grazing	1	fences	
	Awaiti	water level	1	annual check	1
		weeds	1	exotic species	1
		grazing	1	fences	1
	Thornton Lagoon	vehicles	1	check, 3-6mths	2
		weeds	1	annual check	2
	Bregman	grazing	2	check	2
		water level	1	annual check	1
		weed invasion	3	exotic species	3
		grazing	2	fence	2
	Lake Tamarenuui	water level	1	annual check	2
		grazing	2	fences	2
		weeds	2	check	2
		Tarawera Cut	water level	1	annual check
weed invasion			2	check	2
grazing			2	fences	1
Keepa Road		grazing	1	fences	1
		weeds	2	check	2
Taneatua	Waiohau	weeds	1-2	check	3
		grazing	1-2	check	3
		possums	1-2	aerial inspection	1-2
		deer	2	check	3
		pigs	2	check	3
		goats	1		3
	Kotare	grazing	1-2	check	3 low risk
		possums	3	aerial inspection	3
		goats	1	walk through	1
	Matekerepu	grazing	1	fences	1
		possums	3	aerial inspection	2
		goats	1	walk through	1
	Motuotu	humans	2	annual check	2
		weeds	2	check	2
	Nukohou	grazing	1	fences	1
		weeds	2	check	2
		vehicles	1	check	1
	Ohope SR	possums	1	aerial inspection	1
		goats	1	walk through	1
		weeds	1	ginger	1
		rubbish dumping	1	signs	1
	Pataua	possums	1	aerial inspection	1
		weeds	1	check	1
		grazing	1	check	1
	Uretara	possums	1	aerial inspection walk through	1
		weeds	1	check	1

	White Pine Bush	weeds	1	check	1
		grazing	1	fences	1
	Awakeri	grazing	1	fences	2
		weeds	2	check	2
	Waiotane	grazing	1	fences	2
		deer	2	walk through	2
		goats	1	walk through	1
		possums	1	aerial inspection	1
	Waimana Gorge	grazing	1	fences	2
		possums	2	aerial inspection	2
	Ohineteraraku	grazing	1	fences	2
		possums	2	aerial inspection	2
	Oscar Reeve	grazing	1	fences	1
		possums	1	aerial inspection	1
		weeds	1	annual check	1
	Port Ohope	weeds	1	annual check	1
		vehicles	1	check	2
	Stanley Falls	possums	2	aerial inspection	2
		grazing	1	fences	2
	Whangako-pikopiko	weeds	1	check	2
		humans	1	check	2
Kaingaroa	Waiohau	✓	✓	✓	✓
Otane-wainuku	Matata SR	grazing	1	fences	1
		goats	1	walk through	1
		possums	1	aerial	1
		deer	2	walk through	2
		weeds	2	check	1
	Ohinekoao	grazing	1	fences	3
		weeds	1	check	2
		possums	1	aerial inspection	1
Rotorua Lakes	Rotoma SR	grazing	1	fences	2
		possums	2	aerial	2
		weeds	2	check	2
	Rotoma CA	grazing	1	fences	1
		possums	2	aerial	2
		weeds	1	road margins	1
	Mangaone	grazing	1	fences	2
		possums	2	aerial	2
		weeds	2	check	2
	Parimahana	humans	1	check	1
		grazing	1	fences	2
		possums	2	aerial	2
		weeds	1	check	1
		geothermal extraction	1	vegetation	1
White Island	Whakaari	humans	2-3	check	2-3
		weeds	2	check	2-3
	Moutoki & Rurima	weeds	2	check	2
		humans	1	check	2
	Moutohora	weeds	1	check	1
		humans	1	check	1

*Vulnerability Rating

- 1 High
2 Moderate
3 Low

**Urgency Rating

- 1 High
2 Moderate
3 Low