

## REFERENCES AND ADDITIONAL READING

- Allen, R B, *RECCE: An Inventory Method for Describing New Zealand Vegetation*, FRI Bulletin No 181 (1992)
- Allen, R B, *A permanent plot method for monitoring change in indigenous forests*, Landcare Research New Zealand Ltd (1993)
- Allen, R B, Payton, I J and Knowlton, J E, *Effects of Ungulates on Structure and Species Composition in the Urewera Forests as Shown by Exclosures*, NZ J Ecology 7 (1984), pp. 119-130
- Allen, R B, Fitzgerald, A E and Efford, M G, *Long-Term Changes and Seasonal Patterns in Possum (*Trichosurus vulpecula*) Leaf Diet, Orongorongo Valley, Wellington, New Zealand*, NZ Journal of Ecology 21(2) (1997), pp. 181-186
- Allen, R B and Alan, Cathy, *Mountain beech forest dynamics in the Kaueka Range and the influence of browsing animals*, Department of Conservation, Science for Conservation No 44 (1997)
- Atkinson, A I E, Campbell, D J, Fitzgerald, B M, Flux, J E C and Meads, M J, *Possums and possum control, effects on lowland forest ecosystems*, Department of Conservation, Science for Conservation No 1 (1995)
- Atkinson, A I E, *Effects of Possums on the Vegetation of Kapiti Island and Changes Following Possum Eradication: Investigation No 1001*, DSIR Land Resources, Contract Report No 92/52 (1992)
- Baddeley, C J, *Assessments of Wild Animal Abundance*, Forest Research Institute, FRI Bulletin 106 (1985)
- Batcheler, C L and Cowan, P E, *Review of the Status of the Possum (*Trichosurus vulpecula*) in New Zealand*, Contract Report Commissioned by the Technical Advisory Committee (animal Pests)
- Bellingham, P J, Wisler, S K, Hall, G M H, Alley, J C, Allen, R B and Suisted, P A, *Impacts of possum browsing on the long-term maintenance of forest biodiversity*, Department of Conservation, Science for Conservation No 103 (1999)
- Bellingham, P J, *Surveys and Monitoring of Vegetation*, Landcare Research Contract Report: LC9596/026, For Department of Conservation, Conservation Sciences Centre (1996)
- Blaschke, Paul M, *Measuring the Impact of Goats and Possums on Vegetation Composition, Growth and Regeneration, from Exclosure Plot Data, Matemateanga Ecological District. Investigation No 1004*, DSIR Land Resources, Contract Report No 92/53 (1992)
- Brockie, Robert, *A Living New Zealand Forest: A community of plants and animals*, David Bateman Ltd (1992)
- Brown, J A and Miller, C J, *Monitoring Stoat (*Mustela erminea*) Control Operations: power analysis and design*, Department of Conservation, Science for Conservation No 44 (1998)
- Brown, K P, Moller, H, Innes, J and Alterio N, *Calibration of Tunnel Tracking Rates to Estimate Relative Abundance of Ship Rats (*Rattus Rattus*) and Mice (*Mus Musculus*) in a New Zealand Forest*, NZ J Ecology 20(2) (1996), pp. 271-275
- Brown, Jenifer and Manly, Bryan, *Dept of Conservation Statistics Workshop Notes*, University of Canterbury/ Dept. of Conservation (1999)
- Buckland, S T, Anderson, D R, Burnham, K P and Laake, J L, *Distance Sampling: Estimating abundance of biological populations*, Chapman Hall (1993)
- Bull, P C; Gaze, P D; and Robertson C J R. "The Atlas of Bird Distribution in New Zealand". Ecology Division DSIR, NZ Wildlife Service, Ornithological Society of NZ, Wellington (1985)
- Burns, B R, *Environmental Correlates of Species Richness at Waipoua Forest Sanctuary, New Zealand*, NZ Journal of Ecology 19(2) (1995), pp. 153-162
- Burns, B R, Sweetapple, P J, Thomson, C and Parkes, J P A, *A Method to Assess the Impact of Feral Goats on Forest Understoreys*, Landcare Research NZ Ltd Report for the Department of Conservation (1995)
- Burrows, C J, *Seed Trapping in Aburiri summit Bush Scenic Reserve, Port Hills, western Banks Peninsula, 1985-86*, NZ Journal of Botany 32 (1994), pp. 183-215
- Butler, David, *Birdlife of Nelson Lakes National Park, South Island, New Zealand*, Science & Research Series No 24, Department of Conservation
- Campbell, D J, *Changes in Structure and Composition of a New Zealand Lowland Forest Inhabited by Brushtail Possums*, Pacific Science 44(3) (1990), pp. 277-296
- Cassey, Phillip and Craig, John L, *New Zealand Bird Counts: How can they assist management*, School of Environmental & Marine Sciences, Auckland University, Draft paper submitted to NZ Journal of Ecology (1998)
- Cassey, Phillip, Craig, John L, McArdle and Brian H, *Comparison of Distance Sampling Techniques for Estimating Saddleback Densities.*, School of Environmental & Marine Sciences, Auckland University, Draft paper submitted to Journal of Wildlife Management (1998)
- Castro, Isabel and Robertson, Alastair W, *Honeyeaters and the New Zealand Flora: The Utilisation and Profitability of Small Flowers*, NZ Journal of Ecology 21(2) (1997), pp. 169-179

- Clout, M N, Denyer, Karen, James, R E and McFadden, I G, *Breeding Success of New Zealand Pigeons (Hemiphaga novaeseelandiae) in Relation to Control of Introduced Mammals*, NZ Journal of Ecology 19(2) (1995), pp. 209-212
- Clout, M N and Gaze, P D, *Effects of Plantation Forestry on Birds in New Zealand*, Journal of Applied Ecology 21 (1984), pp. 795-815
- Clout, M N and Hay, J R, *The Importance of Birds as Browsers, Pollinators and Seed Dispersers in New Zealand Forests*, NZ Journal of Ecology 12 (supplement) (1989), pp. 27-33
- Coleman, J D, Green, W Q and Polson, J G, *Diet of Brushtail Possums Over a Pasture - Alpine Gradient in Westland, New Zealand*, NZ Journal of Ecology 8, (1985), pp. 21-35
- Cowan, P E, Waddington, D C, Daniel, M J and Bell, B D, *Aspects of litter production in a lowland podocarp/broadleaf forest*, NZ Journal of Botany 23 (1985), pp. 191-199
- Cowan, P E, *Fruits, seeds, and flowers in the diet of brushtail possums, Trichosurus vulpecula, in lowland podocarp/mixed hardwood forest, Orongorongo Valley, New Zealand*, NZ Journal of Zoology 17 (1990), pp. 549-566
- Cowan, P E, *Effects of introduced Australian brushtail possums (Trichosurus vulpecula) on the fruiting of the endemic New Zealand nikau palm (Rhopalostylis sapida)*, NZ Journal of Botany 29 (1991), pp. 91-23
- Cowan, P E, Chilvers, B L, Efford, M G and McElrea, G J, *Effects of possum browsing on northern rata, Orongorongo Valley, Wellington, New Zealand*, Journal of the Royal Society of New Zealand, Volume 27 (1997)
- Cowan, P E and Waddington, D C, *Suppression of fruit production of the endemic forest tree, Elaeocarpus dentatus, by introduced marsupial brushtail possums Trichosurus vulpecula*, NZ Journal of Botany 28 (1990), pp. 217-224
- Cowan, P E and Waddington, D C, *Litterfall under binau, Elaeocarpus dentatus, in lowland podocarp/mixed hardwood forest, and the impact of brushtail possums, Trichosurus vulpecula*, NZ Journal of Botany 29 (1991), pp. 385-394
- Craig, John L, Steward, Anne M and Douglas, Murray E, *The foraging of New Zealand boneeaters*, NZ Journal of Zoology 8 (1981), pp. 87-91
- Cunningham, D M; Moors, P J "A guide to the identification and collection of New Zealand Rodents." *NZ Wildlife Services Occasional Publication No. 4* Dept of Internal Affairs, Wellington, (1983)
- Dawson, David G, *Experimental Design When Counting Birds*, Studies in Avian Biology No 6 (1981), pp. 392-398
- Dawson, David G and Bull, P C, *Counting Birds in New Zealand Forests*, Notornis 22 (1975), pp. 101-109
- Denyer, Karen, *Suitability of a Possum Damage Assessment Technique for Use by Community Volunteers*, Research Project in Partial Fulfillment of a Diploma in Environmental Science (1997)
- Department of Conservation, *Measuring Conservation Management Projects - Definitions, Principles and Guidelines (2nd Edition)*, Department of Conservation (1999)
- Department of Conservation, *Ecosystem Monitoring - Flora*, Northern Te Urewera Ecosystem Restoration Project - Te Urewera National Park, (July 1996 - June 1997)
- Department of Conservation, *Weed Surveillance Standard Operating Procedure (SOP)*, Department of Conservation (1999).
- Department of Conservation, *Standard Operating Procedure for Monitoring Weed Control*, QD Code: NH 1234. Department of Conservation (2000).
- Dijkgraaf, Astrid, *Fruiting and flowering patterns of major food plants for native birds*, Report to World Wide Fund For Nature (WWF) from School of Biological Sciences, University of Auckland (1998)
- Dilks, Peter J, O'Donnell, Colin F J, Elliot, Graeme P and Phillipson, Stephen M, *The effect of bait type, tunnel design, and trap position on stoat control operations for conservation management*, NZ Journal of Zoology 23 (1996), pp. 295-306
- Dunn, Paul H, *Forest Health Monitoring, Field Methods Guide*, USDA Forest Service, National Forest Health Monitoring Program (1999)
- Efford, Murray and Morrison, Kim, *Counts of Forest Birds in the Hollyford and Eglington Valleys, Fiordland: the possible effects of stoat trapping*, DSIR Land Resources Scientific Report No 20 (1991)
- Elliott, Graeme, *Monitoring yellow-crowned parakeets*, Department of Conservation, Science for Conservation No 75 (1998)
- Elwood, Shaun, *Photopoint Monitoring Guidelines - Southland Conservancy Visitor Use and Impact Management Programme*, Department of Conservation, Southland Conservancy. (1997)
- Ferris-Kaan R and Patterson, G S, *Monitoring Vegetation Changes in Conservation Management of Forests*, UK Forestry Commission, Bulletin 108 (1992)
- Fitzgerald, Alice E, *Diet of the opossum Trichosurus vulpecula (Kerr) in the Orongorongo Valley, Wellington, New Zealand, in relation to food plant availability*, NZ Journal of Zoology 3 (1976), pp. 399-419
- Fitzgerald, B M, *Population Ecology of Mice in New Zealand*, In the ecology and control of rodents in New Zealand Nature Reserves Dept of Lands & Survey. Information Series 4, pp. 163-171 (1978)

- Fitzgerald, B M, *House Cat*, In King, C M (ed) *The Handbook of New Zealand of Mammals*, Oxford University Press (1990), pp. 330-349
- Goulding, C J and Lawrence, M E, *Inventory Practice for Managed Forests*, Forest Research Institute, FRI Bulletin 171 (1992)
- Grant, Patrick J, *A Hydrologist's Contribution to the Debate on Wild Animal Management*, NZ Journal of Ecology 12 (supplement) (1989), pp. 165-169
- Handford, P A, *Vegetation Changes Occurring between 1980 and 1986 in the Haurangi Forest Park and the Effect of Introduced Browsing Animals*, Unpublished report for the Department of Conservation, Wellington Conservancy (1992)
- Hay, Rod, Robertson, Hugh, Clout, Mick and Eford, Murray, *Monitoring Native Landbirds*, in Craig, B (ed), *Proceedings of a Symposium on Environmental Monitoring in New Zealand With Emphasis on Protected Natural Areas*, (1989), pp. 225-234
- Henderson, R and Nugent, G, *Monitoring The Hunting System for Red Deer in the Oxford RHA*, Investigation No: S7010/287 Corporate Objective A2, FAE 2.14.2. Report for Conservation Sciences Centre, Department of Conservation by Forest & Wildland Ecosystems Division, Forest Research Institute (1989)
- Hunt, Maree, Sherley, Greg and Wakelin, Mike, *Results of a pilot study to detect benefits to large bodied invertebrates from sustained regular poisoning of rodents and possums at Karioi, Ohakune*, Department of Conservation, Science for Conservation No 102 (1998)
- Hutcheson, J, Walsh, P, Given, D, *Potential value of indicator species for conservation and management of New Zealand terrestrial communities*, Department of Conservation, Science for Conservation No 109 (1999)
- Innes, J D, *Ship Rat*, In King, C M (ed) *The Handbook of New Zealand of Mammals*, Oxford University Press (1990), pp. 206-225
- Innes, John, Warburton, Bruce, Williams, Dale, Speed, Hazel and Bradfield, Philip, *Large Scale Poisoning of Ship Rats (Rattus Rattus) in Indigenous Forests of the North Island, New Zealand*, NZ Journal of Ecology 19(1) (1995), pp. 5-17
- Johnson, D H "Estimating nest success: The Mayfield method and an alternative' *The Auk* 96: 651-661 (1979)
- King, Carolyn M (Ed), *The Handbook of NZ Mammals*, Oxford University Press in association with The Mammal Society, New Zealand Branch (1990)
- King, Carolyn M and Edgar, R L, *Techniques for trapping and tracking stoats (Mustela erminea), a review, and a new system*, NZ Journal of Zoology Vol 4 (1977), pp. 193-212
- Leathwick, J R, *Phenology of some common trees, shrubs, and lianes in central North Island forests*, Forest Research Institute, Bulletin No 72 (1984)
- Lovegrove, Tim, *Counts of Forest Birds on Kapiti Island: 1982-1988*, Report to the Wellington Regional Office, Department of Conservation, Wanganui (July 1988)
- Marden, M and Rowan, D, *A Preliminary Assessment: Protection Value of Different Vegetation Types in the East Coast Region After Cyclone Bola*, Forest Research Institute, Gisborne, unpublished report (1988)
- Marsh, Helene, *The Limits of Detectable Change, in Conservation Through Sustainable Use of Wildlife*, Centre for Conservation Biology, Grigg, G C, Hale, P T and Lunnley, D (eds) The University of Queensland (1995), pp. 122-130
- Mayfield, H "Nesting success calculated from exposure" *The Wilson Bulletin* 73 255-261 (1961)
- Mayfield, H "Suggestions for calculating nest success" *The Wilson Bulletin* 87 456-466 (1975)
- McEwen, W Mary, *Food of the New Zealand Pigeon (Hemiphaga novaeseelandiae novaeseelandiae)*, NZ Journal of Ecology 1 (1978), pp. 99-108
- Meads, M J, *Effects of opossum browsing on northern rata trees in the Orongorongo Valley, Wellington, New Zealand*, NZ Journal of Zoology Vol 3 (1976), pp. 127-139
- Ministry for the Environment, *Environmental Performance Indicators - Proposals for Terrestrial and freshwater biodiversity*, Ministry for the Environment (1998)
- Ministry of Forestry, New Zealand Farm Forestry Association Inc, *Indigenous Forestry Sustainable Management*, Ministry of Forestry, New Zealand Farm Forestry Association Inc (1998)
- Mitchell, R J, Fordham, R A and John, A, *The annual diet of feral goats (Capra hircus L) in lowland rimu-rata-kamahi forest on eastern Mount Taranaki (Mt Egmont)*, NZ Journal of Zoology 14 (1987), pp. 179-192
- Morgan, D R, *Faecal Pellet Counts for Monitoring Possum Control Operations: Investigation No: S7005/283, Corporate Objective No: A2, FAE 1.24*, Report for Department of Conservation by Forest Animal Ecology Section, FRI (1990)
- Murphy, Elaine C and Dowding, John E, *Ecology of the Stoat in Notofagus Forest: Home Range, Habitat Use, and Diet at Different Stages of the Beech Mast Cycle*, NZ Journal of Ecology 19(2) (1995), pp. 97-109
- New Zealand Biodiversity Strategy: Our Chance to Turn the Tide. A Draft Strategy for Public Consultation*, NZ Government (1998)
- NPCA, *National Trap Catch Monitoring Protocol*, National Possum Co-ordination Agencies (2000)

- Norton, David A, *Monitoring biodiversity in New Zealand's terrestrial ecosystems*, McFadgen, B and Simpson, P (comp) (1996). Biodiversity: Papers from a Seminar Series on Biodiversity, hosted by Science and Research Division, Dept of Conservation, Wellington, (14 June - 26 July 1996), pp. 19-41
- Nugent, G, Fraser, K W and Sweetapple, P J, *Comparison of red deer and possum diets and impacts in podocarp-hardwood forest, Waibaba Catchment, Pureora Conservation Park*, Department of Conservation, Science for Conservation No 50 (1997)
- Nugent, G and Sweetapple, P, *The Impact of Three Deer Hunting Regimes on Northeastern Fiordland*, NZ J Ecology 12 (1989)
- O'Donnell, Colin F J, *Monitoring mobua (yellowhead) populations in the South Island, New Zealand, 1983-93*, NZ Journal of Zoology 23 (1996), pp. 221-228
- O'Donnell, Colin F J, *Predators and the decline of New Zealand birds: an introduction to the hole-nesting bird and predator programme*, NZ Journal of Zoology 23 (1996), pp. 213-219
- O'Donnell, Colin F J, Dilks, Peter J and Elliot, Graeme P, *Control of Stoat (Mustela erminea) population irruption to enhance mobua (yellowhead) (Moboua ochrocephala) breeding success in New Zealand*, NZ Journal of Zoology 23 (1996), pp. 279-286
- O'Donnell, Colin F J and Dilks, Peter J, *Foods and Foraging of Forest Birds in Temperate Rainforest, South Westland, New Zealand*, NZ J Ecology 18(2) (1994), pp. 87-107
- O'Donnell, Colin F J and Phillipson, Stephen M, *Predicting the incidence of mobua predation from the seedfall, mouse, and predator fluctuations in beech forests*, NZ Journal of Zoology 23 (1996), pp. 287-293
- Owen, S J, *Ecological Weeds on Conservation Land in New Zealand: A Database - January 1997 - Working Draft*, Department of Conservation (1997)
- Payton, I J, *Methodology for Vegetation Monitoring in Relation to Possum Control*, Report for Department of Conservation by Forest and Grassland Ecology Section, Forest & Wildland Ecosystems Division, FRI (1990)
- Payton, I J, Pekelharing, C J, Frampton, C M, *Foliar Browse Index: A Method for Monitoring Possum (Trichosurus vulpecula) Damage to Plant Species and Forests Communities*, Landcare Research NZ Ltd (1999)
- Pekelharing, C J, *Impact of Possums on the Canopy of Some Indicator Plant Species in the Hunua Ranges, June 1994*, Landcare Research NZ Ltd Contract Report: LC9495/26, Prepared for Regional Parks Service, Auckland Regional Council (1994)
- Pekelharing, C J, Batcheler, C L, *The Effect of Control of Brushtail Possums (Trichosurus vulpecula) on Condition of a Southern Rata/Kamahi (Metro-siderous umbellata/Weinmania racemosa) Forest Canopy In Westland, New Zealand*, NZ Journal of Ecology 13 (1990)
- Pekelharing, C J, *Fluctuation in Opossum Populations Along the North Bank of the Taramakau Catchment and Its Effect on the Forest Canopy*, NZ Journal of Forestry Science 9(2) (1979), pp. 212-224
- Pekelharing, C J and Reynolds, R N, *Distribution and Abundance of Browsing Mammals in Westland National Park in 1978, and Some Observations on Their Impact on the Vegetation*, NZ Journal of Forestry Science (13)3 (1983), pp. 247-267
- Pollock, Kenneth H, *The challenges of measuring change in wildlife populations: a biometricians perspective*, in *Conservation Through Sustainable Use of Wildlife*, Centre for Conservation Biology, Grigg, G C, Hale, P T, Lunnley, D (eds) The University of Queensland (1995), pp. 117-121
- Porteous, Tim, *Native Forest Restoration*, QEII National Trust (1993)
- Powlesland, R G, *Protocols for monitoring New Zealand Robins (Petroica australis)*, Department of Conservation Technical Series No 13 (1997)
- Powlesland, Ralph, Knegtman, Jap and Marshal, Ian, *Evaluating the impacts of 1080 possum control operations on North Island robins, tomtits and moreporks at Pureora - preliminary results*, Science for Conservation: 74, Department of Conservation, Wellington, (1998)
- Rogers, Geoff, *Trends in Health of Pabautea and Hall's totara in relation to possum control in central North Island*, Department of Conservation, Science for Conservation No 52 (1997)
- Rose, A B and Pekelharing, C J, *The Impact of Controlled and Uncontrolled Possum Populations on Susceptible Plant Species, South Westland*, Department of Conservation, Science for Conservation No 10 (1995)
- Roxburgh, Jason R and Kelly, Dave, *Uses and Limitations of Hemispherical Photography for Estimating Forest Light Environments*, NZ J Ecology 12(2) (1995), pp. 213-217
- Smale, M C, Rose, A B, Frampton, C M and Owen, H J, *The Efficacy of Possum Control in Reducing Forest Dieback in the Otira and Deception Catchments, Central Westland*, Department of Conservation, Science for Conservation No 13 (1995)

- Spellerberg, Ian F and Sawyer, John W D, *Standards for biodiversity: a proposal based on biodiversity standards for forest plantations*, Biodiversity and Conservation 5 (1996), pp. 447-459
- Spellerberg, Ian F and Sawyer, John W D, *Biological diversity in plantation forests*, Conservation Outside Nature Reserves (1997), Centre for Conservation Biology, The University of Queensland
- Spurr, E B and Warburton, B, *Methods of Measuring the Proportions of Plant Species Present in Forest and Their Effect on Estimates of Bird Preferences for Plant Species*, NZ J Ecology 15(2) (1991), pp. 171-175
- Spurr, E B, Warburton, B and Drew, K W, *Bird Abundance in Different Aged Stands of Rimu (Dacrydium cupressinum) - Implications for Coupe Logging*, NZ Journal of Ecology 16(2) (1992), pp. 109-118
- Spurr, E B, *Evaluation of Non-Toxic Bait Interference for Indexing Brushtail Possum Density*, NZ Journal of Ecology 19(2) (1995), pp. 123-130
- Stephens, Theo and Barnett, Shaun, *A review of possum monitoring in Waikato Conservancy*, Conservation Advisory Science Notes: 171, Department of Conservation
- Stewart, G H and Burrows, L E, *Assessment of Animal Effects on Forest Regeneration in Stewart Island*, Contract Report for the Department of Conservation by Forest and Grassland Ecology Section, Forest Research Centre, FRI (1988)
- Stewart, Glen H and Allen, Rob, *The importance of woody debris in New Zealand's indigenous forests*, NZ Forestry 43(3) (1998), pp. 31-33
- Velben and Stewart
- Waikato Conservation Board, *Monitoring the Health of Your Bush*, Information sheet prepared by Waikato Conservation Board, Private Bag 3072, Hamilton (1997)
- Warburton, B, *The Effect of a Routine Aerial 1080 Poison Operation on Rat Numbers*, Investigation No: 5020/191 Corporate Objective No FAE 89/4. Report for Conservation Sciences Centre, Department of Conservation by Forest & Wildland Ecosystems Division, Forest Research Institute (1989)
- Warburton, B and Cullen, R, *Cost Effectiveness of Different Possum Control Methods*, Science for Conservation: 4, Department of Conservation, Wellington (1995)
- Warburton, B, Kingsford, S J, Lewitt, D W and Spurr, E B, *Plant Species Preferences of Birds in Lowland Rimu (Dacrydium cupressinum) Forest - Implications for Selective-Logging*, NZ Journal of Ecology 16(2) (1992), pp. 119-126
- Wardle, John, *The New Zealand Beeches: Ecology, Utilisation and Management* NZ Forest Service (1984)
- West, Carol J, *Population Ecology of Beilschmiedia Tawa at Pureora Forest*, Phd Thesis, Auckland University (1986)
- Williams, Peter A, *Ecology and management of invasive weeds*, Department of Conservation, Conservation Sciences Publication No 7 (1997)
- Williams, Peter A and Karl, Brian J, *Fleshy Fruits of Indigenous and Adventive Plants in the Diet of Birds in Forest Remnants, Nelson, New Zealand*, NZ J Ecology 20(2) (1996), pp. 127-145
- Williams, Steve E, *Measuring and monitoring wildlife communities: the problem of bias*, in *Conservation Through Sustainable Use of Wildlife*, Centre for Conservation Biology, Grigg, G C, Hale, PT and Lunnley, D (eds) The University of Queensland (1995), pp. 140-144

# APPENDICES

## 1. PLANT NAMES USED IN THE TEXT Scientific names, six letter codes & common names

SCIENTIFIC NAME	6-LETTER CODE	MAORI NAME	OTHER COMMON NAME
<i>Agathis australis</i>	AGAAUS	kauri	
<i>Alectryon excelsus</i>	ALEEXC	titoki	
<i>Alepis flavida</i>	ALEFLA		mistletoe
<i>Alseuosmia species</i>	ALSEUO		
<i>Aristotelia serrata</i>	ARISER	makomako	wineberry
<i>Ascarina lucida</i>	ASCLUC	hutu	
<i>Asplenium bulbiferum</i>	ASPBUL	mauku	hen & chickens fern
<i>Asplenium flaccidum</i>	ASPFLA	raukatauri	drooping spleenwort
<i>Asplenium oblongifolium</i>	ASBOBL		shining spleenwort
<i>Astelia species</i>	ASTELI		
<i>Beilschmiedia species</i>			
<i>Beilschmiedia tarairi</i>	BEITAR	taraire	
<i>Beilschmiedia tawa</i>	BEITAW	tawa	
<i>Blechnum fluviatile</i>	BLEFLU	kiwakiwa	ray water fern
<i>Blechnum chambersii</i>	BLECHA		lance fern
<i>Brachyglottis repanda</i>	BRAREP	rangiora	bushmans friend
<i>Carpodetus seratus</i>	CARSEP	putaputaweta	marble leaf
<i>Cassinia leptophylla</i>	CASLEP	tauhiu	cottonwood
<i>Clematis paniculata</i>	CLEPAN	puawananga	white clematis
<i>Clianthus species</i>			kaka beak
<i>Coprosma ciliata</i>	COPCIL		
<i>Coprosma foetidissima</i>	COPFOE	hupiro	stinkwood
<i>Coprosma grandifolia</i>	COPGRA	kanono	
<i>Coprosma lucida</i>	COPLUC	karamu	
<i>Coprosma pseudocuneata</i>	COPPSE		
<i>Coprosma repens</i>	COPREP	taupata	
<i>Coprosma rhamnoides</i>	COPRHA		
<i>Coprosma robusta</i>	COPROB	karamu	
<i>Coprosma rotundifolia</i>	COPROT		round leaved coprosma
<i>Coprosma species</i>	COPROS		
<i>Coprosma tenuifolia</i>	COPTEN		
<i>Cordyline species</i>	CORDYL		cabbage tree
<i>Coriaria aborea</i>	CORARB	tutu	
<i>Corynocarpus laevigatus</i>	CORLAE	karaka	
<i>Cyathea dealbata</i>	CYADEA	ponga	silver tree fern
<i>Cyathea medullaris</i>	CYAMED	mamaku	
<i>Cyathea smithii</i>	CYASMI	katote	soft tree fern
<i>Dacrydium dacrydioides</i>	DACCAC	kahikatea	white pine
<i>Dacrydium cupressinum</i>	DACCUP	rimu	red pine
<i>Dicksonia fibrosa</i>	DICFIB	wheki ponga	
<i>Dicksonia squarrosa</i>	DICSQU	wheki	rough tree fern
<i>Dysoxylum spectabile</i>	DYSSPE	kohekohe	
<i>Earina autumnalis</i>	EARAUT	raupeka	easter orchid
<i>Elaeocarpus dentatus</i>	ELADEN	hinau	
<i>Elaeocarpus hookerianus</i>	ELAHOO	pokaka	
<i>Elaeocarpus species</i>			
<i>Fuchsia excorticata</i>	FUCEXC	kotukutuku	tree fuchsia
<i>Fuchsia species</i>			
<i>Geniostoma rupestre</i>	GENRUP	hangehange	
<i>Griselinia littoralis</i>	GRILIT	papauma	broadleaf
<i>Griselinia species</i>			
<i>Hebe stricta</i>	HEBSTR		
<i>Hedycarya arborea</i>	HEDARB	porokaiwhiri	pigeonwood
<i>Histiopteris incisa</i>	HISINC	mata	water fern
<i>Hoheria species</i>			lacebark, ribbonwood
<i>Ileostylus micranthus</i>	ILEMIC		small flowered mistletoe
<i>Knightia excelsa</i>	KNIEXC	rewarewa	
<i>Kunzea ericoides</i>	KUNERI	kanuka	
<i>Laurelia novae-zelandiae</i>	LAUNOV	pukatea	
<i>Leucopogon fasciculatus</i>	LEUFAS	mingmingi	
<i>Libocedrus bidwillii</i>	LIBBID	kaikawaka	

SCIENTIFIC NAME	6-LETTER CODE	MAORI NAME	OTHER COMMON NAME
<i>Litsea calicaris</i>	LITCAL	mangeao	
<i>Lophomyrtus bullata</i>	LOPBUL	ramarama	
<i>Macropiper excelsum</i>	MACEXC	kawakawa	
<i>Melicope ternata</i>	MELTER	wharangi	
<i>Meliclytus ramiflorus</i>	MELRAM	mahoe	
<i>Metrosideros diffusa</i>	METDIF	akatea	white climbing rata
<i>Metrosideros excelsa</i>	METEXC	pohutukawa	
<i>Metrosideros fulgens</i>	METFUL		scarlet climbing rata
<i>Metrosideros robusta</i>	METROB	rata	northern rata
<i>Metrosideros species</i>	METROS		
<i>Metrosideros umbellata</i>	METUMB		southern rata
<i>Microlaena avenacea</i>	MICAVE		bush rice grass
<i>Muehlenbeckia australis</i>	MUEAUS	pohuehue	
<i>Myoporum species</i>			
<i>Myrsine australis</i>	MYRAUS	mapou	red matipo
<i>Myrsine divaricata</i>	MYRDIV		weeping matipo
<i>Myrsine salicina</i>	MYRSAL	toro	
<i>Neomyrtus pedunculata</i>	NEOPED	rohutu	
<i>Nestegis cunninghamii</i>	NECUN	maire	black maire
<i>Nestegis lanceolata</i>	NESLAN		white maire
<i>Nothofagus menziesii</i>	NOTMEN	tawhai	silver beech
<i>Nothofagus solandri var cliffortioides</i>	NOTCLI	tawhairauriki	mountain beech
<i>Nothofagus species</i>			beech
<i>Olearia rani</i>	OLERAN	heketara	
<i>Pennantia corymbosa</i>	PENCOR	kaiikomako	
<i>Peraxilla colensoi</i>	PERCOL	korukoru	mistletoe
<i>Peraxilla species</i>			mistletoe
<i>Peraxilla tetrapetala</i>	PERTET	pirirangi	mistletoe
<i>Phormium species</i>			flax
<i>Phyllocladus spp</i>			
<i>Pittosporum crassifolium</i>	PITCRA	karo	
<i>Pittosporum eugenioides</i>	PITEUG	tarata	lemonwood
<i>Pittosporum species</i>	PITPOS		
<i>Pittosporum tenuifolium</i>	PITTEN		
<i>Pittosporum umbellatum</i>	PITUMB	haekaro	
<i>Planchonella costata</i>	PLACOS	tawapou	
<i>Podocarpus hallii</i>	PODHAL		halls totara
<i>Podocarpus totara</i>	PODTOT	totara	lowland totara
<i>Polystichum vestitum</i>	POLVES		prickly shield fern
<i>Prumnopitys ferruginea</i>	PRUFER	miro	brown pine
<i>Prumnopitys taxifolia</i>	PRUTAX	matai	black pine
<i>Pseudopanax arboreus</i>	PSEARB		five finger
<i>Pseudopanax colensoi</i>	NEOCOL		mountain five finger
<i>Pseudopanax crassifolius</i>	PSECRA		lancewood
<i>Pseudopanax edgerleyi</i>	PSEEDG	rauakawa	
<i>Pseudopanax simplex</i>	PSESIM	haumakarua	seven finger
<i>Pseudowintera axillaris</i>	PSEAXI	horopito	lowland pepper tree
<i>Pseudowintera colorata</i>	PSECOL	horopito	alpine pepper tree
<i>Quintinia serrata</i>	QUISER	tawherowhero	
<i>Rhopalostylis sapida</i>	RHOSAP	nikau	
<i>Ripogonum scandens</i>	RIPSCA		supplejack
<i>Rubus cissoides</i>	RUBCIS		bush lawyer
<i>Rubus species</i>	RUBUS		bush lawyer
<i>Schefflera digitata</i>	SCHDIG	pate	
<i>Sophora species</i>		kowhai	
<i>Syzygium maire</i>	SYZMAI		swamp maire
<i>Tradescantia fluminensis</i>			wandering jew/willie
<i>Uncinia species</i>	UNCINI		hook grass
<i>Vitex lucens</i>	VITLUC	puriri	
<i>Weinmannia racemosa</i>	WEIRAC	kamahi	
<i>Weinmannia silvicola</i>	WEISIL	towai	

## 2. PLANT SPECIES BROWSED BY ANIMAL PESTS

The following lists are not exhaustive, but are based on information in the references listed.

The browse preference given below is indicative only as preference will vary with location & other species available.

### Plants identified as palatable to possums

SCIENTIFIC NAME	COMMON NAME	BROWSE PREFERENCE	REFERENCE
<i>Alectryon excelsum</i>	titoki	High	(2), (4),(7)
<i>Aristotelia serrata</i>	wineberry	Med – High	(5), (12), (11)
<i>Asplenium bulbiferum</i>	hen & chicken fern	Low	(12)
<i>Beilschmiedia tawa</i>	tawa	Med – High	(2), (4), (3), (7),(8)
<i>Blechnum fluviatile</i>		Low	(12)
<i>Blechnum chambersii</i>		Low	(12)
<i>Brachyglottis repanda</i>	rangiora	Med	(7)
<i>Carpodetus seratus</i>	putaputaweta	Low	(12), (11)
<i>Clematis paniculata</i>		Low	(12)
<i>Coprosma foetidissima</i>		High	(9)
<i>Coprosma lucida</i>	karamu	Low – High	(5), (12)
<i>Coprosma repens</i>	taupata	High	(4), (5)
<i>Coprosma species</i>	large leaved coprosma	High	(11)
<i>Coriaria aborea</i>	tutu	Med	(7), (4)
<i>Cyathea medullaris</i>	mamaku	High	(3), (5), (8)
<i>Dacrydium cupressinum</i>	rimu	Low	(12)
<i>Dicksonia squarrosa</i>		Low	(12)
<i>Dysoxylum spectabile</i>	kohekohe		(3), (4), (5)
<i>Elaeocarpus dentata</i>	hinau	low	(7), (4)
<i>Elaeocarpus hookerianus</i>	pokaka	Med – High	(3), (5), (12),(11)
<i>Fuchsia excorticata</i>	tree fuchsia	High	(2), (4), (3), (5), (12), (7), (9),(11)
<i>Griselinia littoralis</i>	broadleaf	Low	(12)
<i>Hoheria species</i>	ribbonwood	High	(5)
<i>Libocedrus bidwillii</i>	kaikawaka	Low – High	(5), (12)
<i>Melicope ternata</i>	wharangi	High	(5)
<i>Melicytus ramiflorus</i>	mahoe	Med	(2), (5), (7), (9), (11)
<i>Metrosideros diffusa</i>	pohutukawa	Low	(12)

SCIENTIFIC NAME	COMMON NAME	BROWSE PREFERENCE	REFERENCE
<i>Metrosideros excelsa</i>	pohutukawa	High	(4), (5)
<i>Metrosideros fulgens</i>	scarlet rata vine	Med	(2), (7)
<i>Metrosideros robusta</i>	northern rata	High	(2), (8), (4), (7), (3)
<i>Metrosideros umbellata</i>	southern rata		(4), (5), (12), (9)
<i>Muehlenbeckia australis</i>			(7)
<i>Myrsine australis</i>		Low	(12)
<i>Myrsine salicina</i>	toro	High	(2)
<i>Nestegis cunninghamii</i>	black maire	Low	(11)
<i>Nestegis lanceolata</i>	white maire		(4)
<i>Nothofagus species</i>		Low	(5), (12)
<i>Peraxilla species</i>	mistletoe	High	(5)
<i>Pittosporum umbellatum</i>		High	(5)
<i>Podocarpus hallii</i>	Hall's totara	High	(4), (5), (12), (9), (11)
<i>Polystichum vestitum</i>	prickly shield fern	Low	(12)
<i>Pseudopanax arboreus</i>	five finger	High	(4), (5), (12), (7), (2)
<i>Pseudopanax colensoi</i>	mountain five finger	Med	(12)
<i>Pseudopanax crassifolius</i>	lancewood	Med	(12)
<i>Pseudopanax edgerleyi</i>	raukawa	High	(5)
<i>Pseudopanax simplex</i>	haumakaroa, seven finger	High	(9), (12), (11)
<i>Pseudopanax species</i>		High	(9)
<i>Ripogonum scandens</i>	supplejack	Med	(2)
<i>Rubus cissoides</i>	bush lawyer	Med	(12)
<i>Rubus species</i>	bush lawyer	Med – High	(7), (9), (11)
<i>Schefflera digitata</i>	pate	Med – High	(5), (12)
<i>Syzygium maire</i>	swamp maire		(4)
<i>Uncinia species</i>	hook grass	Low	(12)
<i>Weinmannia racemosa</i>	kamahi	High	(2), (4), (5), (12), (7), (8), (9), (11)

### Plants identified as unpalatable to possums

SCIENTIFIC NAME	COMMON NAME	REFERENCE
<i>Agathis australis</i>	kauri	(5)
<i>Beilschmiedia tarairi</i>	tarairi	(5)
<i>Cyathea dealbata</i>	silver tree fern	(8)
<i>Cyathea smithii</i>	smiths tree fern	(8)
<i>Dacrydium cupressinum</i>	rimu	(11)
<i>Griselinia littoralis</i>	broadleaf	(11)
<i>Hedycarya arborea</i>	pigeonwood	(8)
<i>Laurelia novae-zelandiae</i>	pukatea	Brockie 1993, (8)
<i>Phyllocladus spp</i>		(11)
<i>Pseudowintera colorata</i>	pepper tree	(11)
<i>Quintinia serrata</i>		(11)
<i>Prumnopitys taxifolia</i>	matai	(11)

#### REFERENCES

- 1 Allen et al 1984
- 2 Allen et al 1997
- 3 Atkinson 1992
- 4 Atkinson et al 1995
- 5 Batcheler & Cowan 1988
- 6 Blaschke 1992
- 7 Brockie 1992
- 8 Campbell 1990
- 9 Coleman et al 1985
- 10 Mitchell et al 1987
- 11 Nugent et al 1997
- 12 Wardle 1984

## Plants identified as palatable to deer and goats

SCIENTIFIC NAME	COMMON NAME	PALATABLE TO	BROWSE PREFERENCE	REFERENCE
<i>Aseuomia macrophylla</i>		Goat		(6)
<i>Aristolelia serrata</i>	wineberry	Deer	Med	(11)
<i>Asplenium bulbiferum</i>	hen & chicken fern	Deer & Goat	High	(1), (12), (7), (10)
<i>Astelia species</i>		Deer	Med	(12)
<i>Beilschmiedia tawa</i>	tawa	Deer	Med	(1)
<i>Carpodetus seratus</i>	putaputaweta	Deer & Goat	Med-High	(1), (7), (11)
<i>Coprosma ciliata</i>		Deer	Med	(12)
<i>Coprosma foetidissima</i>		Deer	Med	(12)
<i>Coprosma grandifolia</i>		Deer & Goat	High	(1), (6), (10)
<i>Coprosma lucida</i>	karamu	Deer & Goat	High	(12), (6)
<i>Coprosma pseudocuneata</i>		Deer	Med	(12)
<i>Coprosma rhamnoides</i>		Deer	Med	(12)
<i>Coprosma robusta</i>		Goat	High	(6)
<i>Coprosma species</i>	large leaved coprosma species	Deer & Goat	High	(12), (7), (11)
<i>Coprosma tenuifolia</i>		Goat	High	(10)
<i>Dicksonia squarrosa</i>		Goat	High	(10)
<i>Elaeocarpus dentata</i>	hinau	Goat	Med	(6)
<i>Elaeocarpus hookerianus</i>	pokaka	Deer	Med	(11)
<i>Fuchsia excorticata</i>	tree fuchsia	Deer & Goat	High	(12), (6), (11)
<i>Geniostoma rupestre</i>	hangehange	Deer & Goat	High	(1), (6)
<i>Griselinia littoralis</i>	broadleaf	Deer & Goat	High	(7), (10), (11), (12)
<i>Hebe stricta</i>		Goat	Med	(6)
<i>Hedycarya arborea</i>	pigeonwood	Goat	High	(6)
<i>Hoheria</i>	ribbonwood	Goat	High	(7)
<i>Macropiper excelsum</i>	kawakawa	Goat	High	(7)
<i>Melicotys ramiflorus</i>	mahoe	Deer & Goat	High	(1), (6), (7), (10), (11)
<i>Metrosideros fulgens</i>	scarlet rata vine	Goat	High	(7)
<i>Myrsine australis</i>		Deer & Goat	Med	(12), (6)
<i>Myrsine divaricata</i>		Deer	High	(12)
<i>Nestegis cunninghamii</i>	black maire	Deer	Low	(11)
<i>Nothofagus menziesii</i>	silver beech	Deer	Med	(12)
<i>Nothofagus solandri var cliffortioides</i>	mountain beech	Deer	Med	(12)
<i>Nothofagus species</i>		Deer	Low	(1)
<i>Pittosporum tenuifolium</i>		Deer	Med	(1)
<i>Polystichum vestitum</i>	prickly shield fern	Deer & Goat	Med - High	(12), (7)
<i>Pumnpitys ferruginea</i>	miro	Deer	low	(11)
<i>Pumnpitys taxifolia</i>	matai	Deer	low	(11)
<i>Pseudopanax arboreus</i>	five finger	Deer	High	(1), (12), (7), (11)
<i>Pseudopanax colensoi</i>	mountain five finger	Deer	High	(12)
<i>Pseudopanax crassifolius</i>	lancewood	Deer	Med-High	(12), (11)
<i>Pseudopanax edgerleyi</i>	raukawa	Goat	High	(7)
<i>Pseudopanax simplex</i>	haumakaroa, seven finger	Deer & Goat	High	(1), (7), (11)
<i>Pseudopanax species</i>		Deer	High	(12)
<i>Quintinia serrata</i>		Deer	low	(11)
<i>Ripogonum scandens</i>	supplejack	Deer & Goat	High	(1), (10)
<i>Rubus species</i>	bush lawyer	Deer	Med	(11)
<i>Schefflera digitata</i>	pate	Deer & Goat	Med-High	(12), (7), (10)
<i>Weinmannia racemosa</i>	kamaha	Deer & Goat	High	(12), (6), (7), (10), (11)
	drooping & shining spleenworts	Goat	High	(7)

## Plants identified as unpalatable to deer or goats

SCIENTIFIC NAME	COMMON NAME	UNPALATABLE TO	REFERENCE
<i>Blechnum fluviatile</i>		Goat	(10)
<i>Cassinia leptophylla</i>	tauhinu	Goat	(7)
<i>Cyathea dealbata</i>	silver tree fern	Goat	(7)
<i>Cyathea smithii</i>	Smith's tree fern	Goat	(7), (10)
<i>Cyathodes fasciculata</i>		Deer	(1)
<i>Dacrydium cupressinum</i>	rimu	Deer	(11)
<i>Dicksonia fibrosa</i>	wheki tree fern	Goat	(7)
<i>Histiopteris incisa</i>		Goat	(7)
<i>Kunzea ericoides</i>	kanuka	Goat	(7)
<i>Microlaena avenacea</i>	bush rice grass	Goat	(10)
<i>Phyllocladus spp</i>		Deer	(11)
<i>Podocarpus hallii</i>	Hall's totara	Deer	(11)
<i>Pseudowintera axillaris</i>	horopito	Goat	(7)
<i>Pseudowintera colorata</i>	pepperwood, horopito	Deer & Goat	(1), (7), (11)
<i>Uncinia species</i>	hook grass	Deer & Goat	(1), (10)

## REFERENCES

- 1 Allen et al 1984
- 2 Allen et al 1997
- 3 Atkinson 1992
- 4 Atkinson et al 1995
- 5 Batcheler & Cowan 1988
- 6 Blaschke 1992
- 7 Brockie 1992
- 8 Campbell 1990
- 9 Coleman et al 1985
- 10 Mitchell et al 1987
- 11 Nugent et al 1997
- 12 Wardle 1984

### 3. FRUITING AND FLOWERING NATIVE PLANT SPECIES USED BY NATIVE BIRDS

#### Flowers

PLANT SPECIES	bellbird	brown creeper	brown kiwi	fantail	grey warbler	kaka	kea	kereru	kokako	rifleman	silvereye	tomtit	tui	weka	yellow crowned parakeet	yellowhead	REFERENCE
<i>Aleusosmia species</i>	x												x				(3)
<i>Aristolelia serrata</i>								x									(4)
<i>Beilschmiedia species</i>	x													x			(3)
<i>Clianthus species</i>	x													x			(3)
<i>Coprosma foetidissima</i>								x			x						(5)
<i>Coprosma rotundifolia</i>				x													(5)
<i>Cordyline species</i>	x												x				(3)
<i>Dysoxylum spectabile</i>	x													x			(1), (3)
<i>Earina autumnalis</i>						x											(5)
<i>Elaeocarpus dentatus</i>	x												x				(1), (3)
<i>Fuchsia excorticata</i>	x					x	x	x			x		x				(1),(3), (5), (4)
<i>Geniostoma rupestre</i>	x												x				(1)
<i>Knightia excelsa</i>	x												x				(1), (3)
<i>Kunzea ericoides</i>	x																(1)
<i>Metrosideros excelsa</i>	x												x				(1)
<i>Metrosideros fulgens</i>	x												x				(1)
<i>Metrosideros robusta</i>	x												x				(1)
<i>Metrosideros species</i>	x												x				(3)
<i>Metrosideros umbellata</i>	x					x	x				x		x				(5)
<i>Myoporum species</i>	x												x				(3)
<i>Nothofagus menziesii</i>						x					x						(5)
<i>Peraxilla species</i>	x					x		x			x		x				(5), (3)
<i>Phormium species</i>	x												x				(1), (3)
<i>Pittosporum crassifolium</i>	x												x				(1)
<i>Pittosporum eugenoides</i>	x												x				(1)
<i>Pittosporum species</i>	x												x				(3)
<i>Pittosporum tenuifolium</i>	x												x				(1)
<i>Pseudopanax arboreus</i>	x												x				(1)
<i>Pseudopanax species</i>	x												x				(3)
<i>Sophora species</i>	x												x				(1), (3)
<i>Vitex lucens</i>	x												x				(1), (3)
<i>Weinmannia racemosa</i>	x					x					x		x				(1), (5)

#### Fruit

<i>Alectryon excelsus</i>							x	x					x				(6), (2), (4)
<i>Aristolelia fruticosa</i>	x												x				(6)
<i>Aristolelia serrata</i>	x						x			x							(5), (4)
<i>Ascarina lucida</i>	x		x							x	x						(5)
<i>Beilschmiedia tarairi</i>							x										(2), (4)
<i>Beilschmiedia tawa</i>							x										(2), (4)

**Fruit**

PLANT SPECIES	bellbird	brown creeper	brown kiwi	fantail	grey warbler	kaka	kea	kereru	kokako	rifleman	silveryeye	tomtit	tui	weka	yellow crowned parakeet	yellowhead	REFERENCE
<i>Carpodetus serratus</i>	x				x						x		x				(5)
<i>Coprosma foetidissima</i>	x		x		x			x			x				x		(5)
<i>Coprosma grandifolia</i>	x							x					x				(6), (4)
<i>Coprosma lucida</i>	x							x					x				(5), (4)
<i>Coprosma robusta</i>	x							x					x				(6), (4)
<i>Coprosma rotundifolia</i>											x						(6), (5)
<i>Coprosma species</i>	x	x						x			x	x					(5), (4)
<i>Coriaria aborea</i>	x							x			x						(6), (5)
<i>Corynocarpus laevigatus</i>								x									(2), (4)
<i>Dacrycarpus dacrydioides</i>	x							x			x		x				(6), (5), (4)
<i>Dacrydium cupressinum</i>	x					x		x		x	x	x			x		(5), (4)
<i>Dysoxylum spectabile</i>								x	x								(2), (4)
<i>Elaeocarpus dentatus</i>			x					x	x					x			(2), (4)
<i>Elaeocarpus hookerianus</i>	x							x									(4), (5)
<i>Fuchsia excorticata</i>	x			x				x			x						(6), (5), (4)
<i>Geniostoma rupestre</i>								x									(4)
<i>Griselinia littoralis</i>					x			x								x	(5)
<i>Griselinia species</i>								x									(4)
<i>Hedycarya arborea</i>	x					x		x	x				x	x			(5), (2), (4)
<i>Ileostylus micranthus</i>	x												x				(6)
<i>Litsea calicaris</i>								x	x								(2), (4)
<i>Lophomyrtus bullata</i>								x									(4)
<i>Macropiper excelsum</i>	x							x					x				(6), (4)
<i>Melicytus ramiflorus</i>	x							x					x				(6), (4)
<i>Muehlenbeckia australis</i>	x												x				(6)
<i>Myrsine australis</i>	x							x			x						(5)
<i>Myrsine divaricata</i>	x										x						(5)
<i>Neomyrtus pedunculata</i>	x										x						(5)
<i>Nestegis cunninghamii</i>								x	x				x				(2)
<i>Pennantia corymbosa</i>								x									(5)
<i>Peraxilla species</i>	x					x					x						(5)
<i>Planchonella costata</i>								x									(2)
<i>Podocarpus hallii</i>	x					x					x		x		x		(6), (5)
<i>Prumnopitys ferruginea</i>	x					x		x	x				x	x			(5), (2), (4)
<i>Prumnopitys taxifolia</i>								x	x				x	x			(6), (2)
<i>Pseudopanax arboreus</i>	x												x				(6)
<i>Pseudopanax colensoi</i>													x				(5)
<i>Pseudopanax crassifolius</i>	x	x			x	x		x			x	x					(5)
<i>Pseudopanax edgerleyi</i>	x			x		x				x	x	x	x				(5)
<i>Pseudopanax simplex</i>	x	x			x			x		x	x	x					(5)
<i>Pseudowintera colorata</i>	x							x			x						(5)
<i>Rhopalostylis sapida</i>				x				x	x								(2)
<i>Ripogonum scandens</i>	x					x		x	x		x		x				(6), (5), (2)
<i>Schefflera digitata</i>								x			x		x				(5)
<i>Syzygium maire</i>								x									(2)
<i>Vitex lucens</i>								x									(2)

**REFERENCES**

- 1 Castro & Robertson 1997
- 2 Clout & Hay 1989
- 3 Craig et al 1981
- 4 McEwen 1978
- 5 O'Donnell & Dilks 1994
- 6 Williams & Karl 1996

#### 4. FLOWERING & FRUITING PERIODS FOR SOME PLANT SPECIES

from Payton et al 1999

SPECIES	AREA & INFORMATION SOURCE									
		NZ	NZ	North-land	Central North Island	Welling- ton	Canter- bury	West- land	Stewart Island	
	(a)	1	3,(b)	4	5	6	7	8	9	
<b>EMERGENT TREES</b>										
<i>Metrosideros robusta</i>	Northern rata	Fl Fr	Nov-Jan Dec-Jan	Nov-Jan	Dec-Feb Jan-Apr	Dec-Jan	May			
<i>Podocarpus totara</i> & <i>P. hallii</i>	Lowland totara & Hall's totara	(c) (d)		Sep-Oct Apr-May	Jan-Dec	Dec Jan-Dec	Oct-Dec Feb-May	Jan-Jun	Feb-Aug	
<b>CANOPY TREES</b>										
<i>Alectro excelsus</i>	Titoki	Fl Fr	Oct-Dec Oct-Dec	Oct-Nov						
<i>Beilschmiedia tawa</i>	Tawa	Fl Fr	Sep-Dec Oct-Feb	Sep-Nov	Nov-Dec Jan-Dec	Dec-Feb Dec-May				
<i>Dysoxylum spectabile</i>	Kohekohe	Fl Fr	Mar-Jun Apr-Aug	Apr-May Jul-Aug	May-Jul Jan-Dec	Apr-Jul Aug-Feb				
<i>Elaeocarpus dentatus</i>	Hinau	Fl Fr	Oct-Feb Dec-May	Oct-Feb	Nov-Dec Jan-Jul	Oct-Jan Dec-Jun	Nov-Apr Mar-Aug			
<i>Elaeocarpus hookerianus</i>	Pokaka	Fl Fr	Oct-Jan Nov-Mar						Feb-Jun	Jan Mar
<i>Melicytus ramiflorus</i>	Mahoe	Fl Fr	Nov-Feb Nov-Mar	Sep-Apr Feb-Jun	Oct-Mar	Oct-Mar Nov-Jun	Oct-Apr Nov-Jul	Dec-Jan Jan-Jul	Feb-Aug	
<i>Metrosideros excelsa</i>	Pohutukawa	Fl Fr	Dec-Jan Jan-Feb	Dec-Jan						
<i>Metrosideros umbellata</i>	Southern rata	Fl Fr	Nov-Mar Dec-Apr	Nov-Jan					Oct-Feb	Nov-Feb Mar-May
<i>Weinmannia racemosa</i>	Kamaha	Fl Fr	Dec-Jan Jan-Apr	Nov-Jan		Oct-Jan Dec-Mar	Sep-May		Sep-Feb	Oct-Dec Jan-Apr
<i>Weinmannia silvicola</i>	Towai	Fl Fr	Sep-Dec Nov-Feb	Sep-Dec	Jan-Aug Dec-Oct					
<b>SUBCANOPY TREES &amp; SHRUBS</b>										
<i>Aristotelia serrata</i>	Wineberry	Fl Fr	Sep-Dec Nov-Jan	Sep-Dec Jan-Feb	Oct-Nov Nov-Mar	Oct-Dec Nov-May	Oct-Nov	Nov-Dec Dec-Mar	Sep-Dec Jan-Apr	Nov Jan-Mar
<i>Fuchsia excorticata</i>	Fuchsia	Fl Fr	Aug-Dec Sep-Feb	Aug-Dec Dec-Mar	Jun-Nov Jul-Feb	Sep-Apr Oct-May		Sep-Jan Dec-Aug	Jul-Dec Dec-Feb	Jul-Dec Dec-Apr
<i>Myrsine salicina</i>	Toro	Fl Fr	Aug-Jan Sep-May		Jul-Sept Oct					
<i>Olearia rani</i>	Heketara	Fl Fr	Aug-Nov Nov-Jan	Sep-Oct	Sep-Nov Nov-Dec	Nov-Dec Jan-Feb	Oct-Apr Jan			
<i>Pennantia corymbosa</i>	Kaikomako	Fl Fr	Nov-Feb Jan-May	Sep-Oct Feb-May		Nov-Feb Jan-May	Nov-Dec Mar	Dec-Jan Jan-Apr	Nov-Dec Feb-Apr	Dec-Jan
<i>Pseudopanax aboreus</i>	Five finger	Fl Fr	Jun-Aug Aug-Feb	Jun-Aug	Feb-Sep Jan-Dec	Jul-Dec Jan-Dec	Dec-Feb	Jul-Nov Jan-Dec		
<i>Pseudopanax colensoi</i>	Mountain five finger	Fl Fr	Jan-Mar Jun-Mar						Sep-Dec Dec-Oct	Jan-Dec Jan-Dec
<i>Pseudopanax crassifolius</i>	Lancewood	Fl Fr	Jan-Apr Jan-Apr	Jan-Apr	Mar-May Mar-Oct	Mar Mar-Jan		Dec-Feb Jan-Oct	Jan-Feb Apr-Oct	Feb Jan-Dec

SPECIES		AREA & INFORMATION SOURCE								
			NZ	NZ	North-land	Central North Island	Wellington	Canterbury	West-land	Stewart Island
		(a)	1	3,(b)	4	5	6	7	8	9
<i>Pseudopanax edgerleyi</i>	Raukawa	Fl Fr	Nov-Mar Nov-Mar		Nov-Dec Jan-Mar	Dec-Feb Jan-Dec			Feb-Oct	Nov-Feb Feb-Mar
<i>Pseudopanax simplex</i>	Haumakaroa	Fl Fr	Jun-Mar Jun-Mar						Dec-Feb Apr-Dec	Dec-Feb Jan-Dec
<i>Schefflera digitata</i>	Pate	Fl Fr	Feb-Mar Feb-Mar	Jan-Mar	Mar-Apr Mar-Aug	Dec-Mar Jan-Oct	Mar-Aug	Dec-Jan Jan-Sep	Jan-Dec	Feb-Mar Mar
<b>LIANES (VINES)</b>										
<i>Metrosideros fulgens</i>	Scarlet climbing rata	Fl Fr	Feb-Jun Oct-Dec	Feb-Jun	Mar-Aug Mar-Feb		Jan-Dec Jan-Oct		Jan-Dec	
<i>Ripogonum scandens</i>	Supplejack	Fl Fr	Dec-Jan (2) Jan-Dec (2)	Oct-Nov Jan-Dec	Oct-Dec Jan-Dec	Nov-Feb Jan-Dec	Dec-Apr Jan-Dec		Jan-Dec	Dec-Feb Jan-Dec
<b>EPIPHYTES</b>										
<i>Alepis flavida</i>	Mistletoe	Fl Fr	Dec-Feb Jan-Jun							
<i>Peraxilla colensoi</i>	Mistletoe/ korukoru	Fl Fr	Nov-Feb Dec-Mar	Oct-Jan					Nov-Mar Feb-Aug	
<i>Peraxilla tetrapetala</i>	Mistletoe/ pirirangi	Fl Fr	Oct-Jan Dec-Feb	Oct-Jan					Nov-Feb Feb-Jun	

Fl = flowers

Fr = Fruit (unripe & ripe)

b ripe fruit only

c male cones

d female cones

1 Allan 1961

2 Moore & Edgar 1970

3 Salmon 1967

4 Best & Bellingham 1991

5 Leathwick 1984

6 Brockie 1992

7 Burrows 1994

8 O'Donnell & Dilks 1994

9 Wilson 1982.

## 5. EXPECTED VALUES FOR SOME INDICATOR MEASUREMENTS

The following table provides a general guide on the levels of measurement that may be provided by some indicators in forest ecosystems. Actual measurements can vary widely in relation to the features of a particular forest ecosystem.

These figures must not be used to imply what are appropriate levels for a particular forest area. That is something that will depend on factors such as conservation values, carrying capacity and management objectives.

VARIABLE	LOW	MODERATE	HIGH	MEASUREMENT METHOD
Possum trap catch (% trap catch)	5	10-15	30 –50	NPCA trap catch protocol
Possum density (no / ha)	1	4-6	8-12	Trap to extinction
Deer density (no / km <sup>2</sup> )	2	5	15	Population estimates from pellet survey and population modelling.
Goat kill / man day	0.5	1	4-5	Professional hunter results.
Mouse tracking frequency (%)	5	25	40	Tracking tunnel lines
Rat tracking frequency (%)	30	60	90	Tracking tunnel lines
Stoat tracking frequency (%)	0	5-10	15	Tracking tunnel lines
Bird density (number of individuals/ha – all species)	1	5-10	20-40	From slow walk transects and territory mapping studies.

## 6. RANDOM NUMBERS

91	30	23	34	33	02	13	62	28	14	64	25	40	41	55	99	63	79
50	19	30	38	66	05	91	92	69	66	91	61	45	97	29	86	61	89
76	22	73	86	70	40	48	41	16	72	54	68	60	88	60	07	47	13
68	73	47	88	35	94	12	49	88	44	47	59	56	52	39	89	30	02
30	02	29	95	13	68	94	34	51	12	08	99	44	79	85	83	91	04
28	05	96	40	36	78	82	95	78	77	23	46	39	70	78	79	55	42
85	23	22	91	40	60	30	08	36	44	60	83	74	94	86	77	06	55
27	89	45	44	99	44	24	67	05	16	59	74	58	03	04	21	41	50
91	23	91	98	68	39	27	79	77	27	36	83	82	25	92	33	06	13
49	03	19	87	98	06	24	46	98	81	49	55	79	11	29	39	58	28
04	07	34	24	80	82	42	56	99	94	87	12	24	41	82	06	88	04
60	04	47	80	40	19	91	39	27	97	42	51	07	13	77	55	68	38
83	38	93	07	01	22	80	36	25	79	30	77	72	88	75	77	59	39
50	54	04	54	02	94	52	03	84	58	32	91	41	70	15	11	02	05
67	49	39	71	53	74	07	38	01	64	32	27	46	41	18	64	73	28
49	56	66	62	47	08	43	58	19	10	89	43	90	15	64	98	33	59
31	58	39	43	67	47	70	73	01	28	11	55	00	87	35	77	01	36
63	14	85	71	76	32	99	69	04	14	03	74	29	54	24	58	92	20
43	20	73	35	84	94	46	69	84	42	70	39	42	21	54	60	36	58
12	89	93	45	49	34	56	41	94	97	14	50	51	46	14	44	53	25
43	50	13	00	81	09	95	28	39	31	66	46	95	08	55	91	52	84
71	72	38	05	54	29	37	19	04	49	50	94	47	51	32	40	39	48
19	70	39	73	31	79	78	98	89	57	57	02	68	81				

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