

Supplementary Material

Appendix S1. R packages used in the analyses.

Library	Version	Citation
<i>General wrangling</i>		
tidyverse	2.0.0	Wickham H, Averick M, Bryan J, Chang W, McGowan LD, François R, Grolemund G, Hayes A, Henry L, Hester J, Kuhn M, Pedersen TL, Miller E, Bache SM, Müller K, Ooms J, Robinson D, Seidel DP, Spinu V, Takahashi K, Vaughan D, Wilke C, Woo K, Yutani H (2019). Welcome to the tidyverse. <i>Journal of Open Source Software</i> , 4, 1686. < https://doi.org/10.21105/joss.01686 >.
widyr	0.1.5	Robinson D, Silge J (2022). widyr: Widen, Process, then Re-Tidy Data. R package version 0.1.5, < https://CRAN.R-project.org/package=widyr >.
<i>Scopus API</i>		
rscopus	0.7.1	Muschelli J (2023). rscopus: Scopus Database 'API' Interface. https://dev.elsevier.com/sc_apis.html , https://github.com/muschellij2/rscopus .
<i>Networks</i>		
circlize	0.4.15	Gu Z, Gu L, Eils R, Schlesner M, Brors B (2014). circlize Implements and enhances circular visualization in R. <i>Bioinformatics</i> 30(19): 2811–2812.
igraph	1.5.1	Csardi, G., & Nepusz, T. (2006). The igraph software package for complex network research. <i>InterJournal, Complex Systems</i> , 1695.
network	1.18.1	Butts C (2008). network: a package for managing relational data in R. <i>Journal of Statistical Software</i> , 24(2). < https://doi.org/10.18637/jss.v024.i02 >.
RCy3	2.20.2	Gustavsen, J. A., Pai, S., Isserlin, R., Demchak, B., & Pico, A. R. (2019). RCy3: Network biology using Cytoscape from within R. <i>F1000Research</i> , 8, 1774. https://doi.org/10.12688/f1000research.20887.3

ggraph	2.1.0	Pedersen T (2022). <i>_ggraph: An Implementation of Grammar of Graphics for Graphs and Networks_</i> . R package version 2.1.0, < https://CRAN.R-project.org/package=ggraph >.
tnet	3.0.16	Opsahl, T., 2009. Structure and evolution of weighted networks. University of London (Queen Mary College), London, UK, pp. 104-122. Available at http://toreopsahl.com/publications/thesis/ ; http://toreopsahl.com/tnet/
<i>Text handling & modelling</i>		
tidytext	0.4.1	Silge, J., & Robinson, D. (2016). Tidytext: Text mining and analysis using tidy data principles in R. <i>The Journal of Open Source Software</i> , 1(3), 37. < https://doi.org/10/gfwcjt >
stm	1.3.6.1	Roberts, M. E., Stewart, B. M., & Tingley, D. (2019). stm: An R package for structural topic models. <i>Journal of Statistical Software</i> , 91(2). < https://doi.org/10.18637/jss.v091.i02 >
SnowballC	0.7.1	Bouchet-Valat M (2023). SnowballC: Snowball Stemmers Based on the C 'libstemmer' UTF-8 Library. R package version 0.7.1, < https://CRAN.R-project.org/package=SnowballC >.
tm	0.7.11	Feinerer I, Hornik K, Meyer D (2008). Text mining infrastructure in R. <i>Journal of Statistical Software</i> 25 (5), 1-54. < https://doi.org/10.18637/jss.v025.i05 >.
franc	1.14	Csardi G, Wormer T, Ceglowski M, Rideout JR, Johnson AKS (2021). franc: Detect the Language of Text. R package version 1.1.4, < https://CRAN.R-project.org/package=franc >.
word2vec	0.3.4	Wijffels J (2021). <i>_word2vec: Distributed Representations of Words</i> . R package version 0.3.4, < https://CRAN.R-project.org/package=word2vec >.

textstem	0.1.4	Rinker, T. W. (2018). textstem: Tools for stemming and lemmatizing text version 0.1.4. Buffalo, New York. http://github.com/trinker/textstem
wordcloud		Fellows I (2018). _wordcloud: word clouds_. R package version 2.6, < https://CRAN.R-project.org/package=wordcloud >.
textclean	0.9.3	Rinker, T. W. (2018). textclean: Text Cleaning Tools version 0.9.3. Buffalo, New York. https://github.com/trinker/textclean
<i>Other</i>		
densityClust	0.3.2	Pedersen T, Hughes S, Qiu X (2022). densityClust: clustering by fast search and find of density peaks. R package version 0.3.2, < https://CRAN.R-project.org/package=densityClust >.

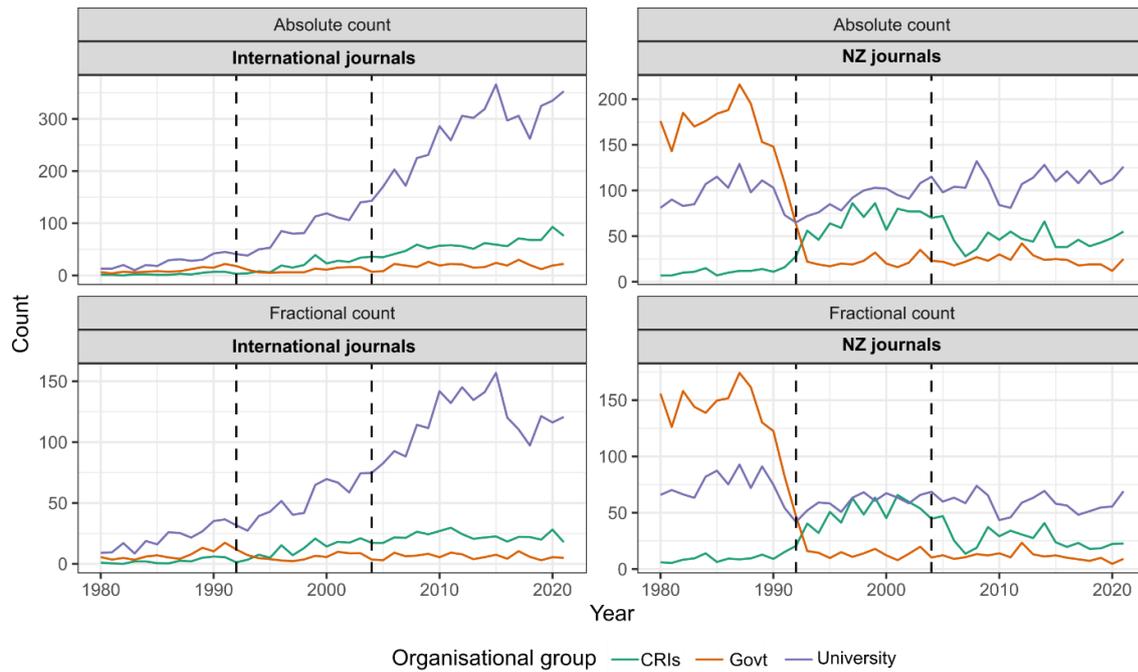
Appendix S2. Custom stopwords

For the STMs we used the Snowball stopwords: "new", "zealand", "zealand's", "south", "north", "australia", "australian", "copyright", "sp", "sp.", "nov.", "found", "increase", "suggest", "low", "ii", "iii", "iv", "NA", "time", "female", "male", "study", "studied", "studies", "result", "size", "species", "rate", "difference", "effect", "effects", "differences", "females", "males", "significant", "significantly", "results", "test", "increase", "sample", "tests", "tested", "samples", "sampled", "increases", "increased", "similar", "occur", "site", "suggest", "include"

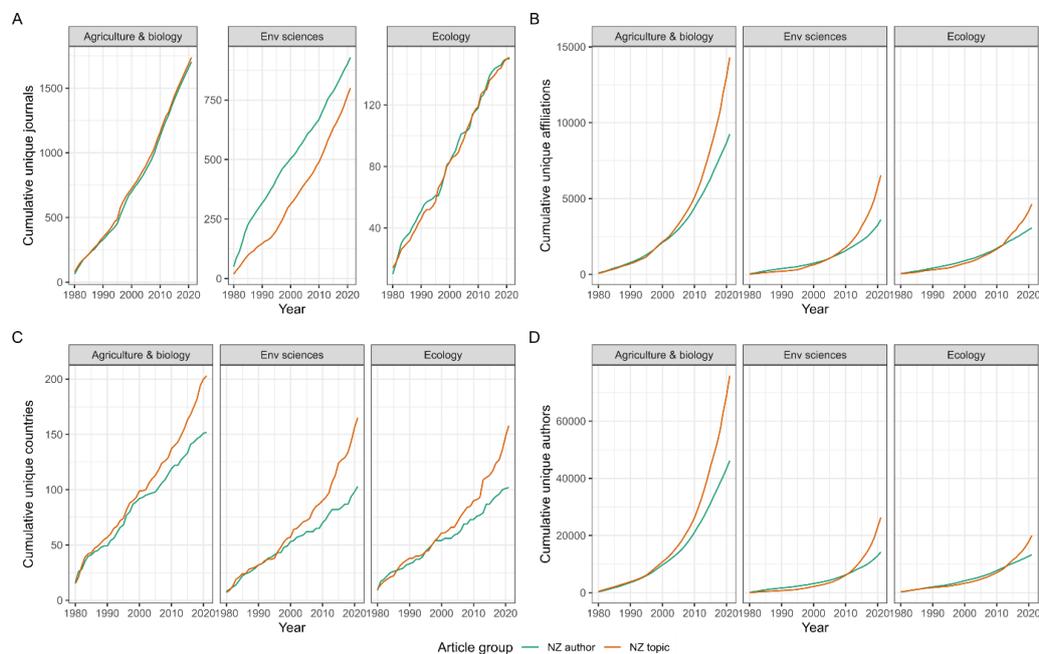
Appendix 3. Interactive network figures

Interactive versions of some of the network figures (Figs. 4,5, and 7) are available as follows. Note that these interactive versions include more information than those in the printed version although the underlying data are the same; in other words, they are not intended to be exact replicas. The interactive versions were made using Cytoscape and the rcytoscape packages (Shannon et al. 2003).

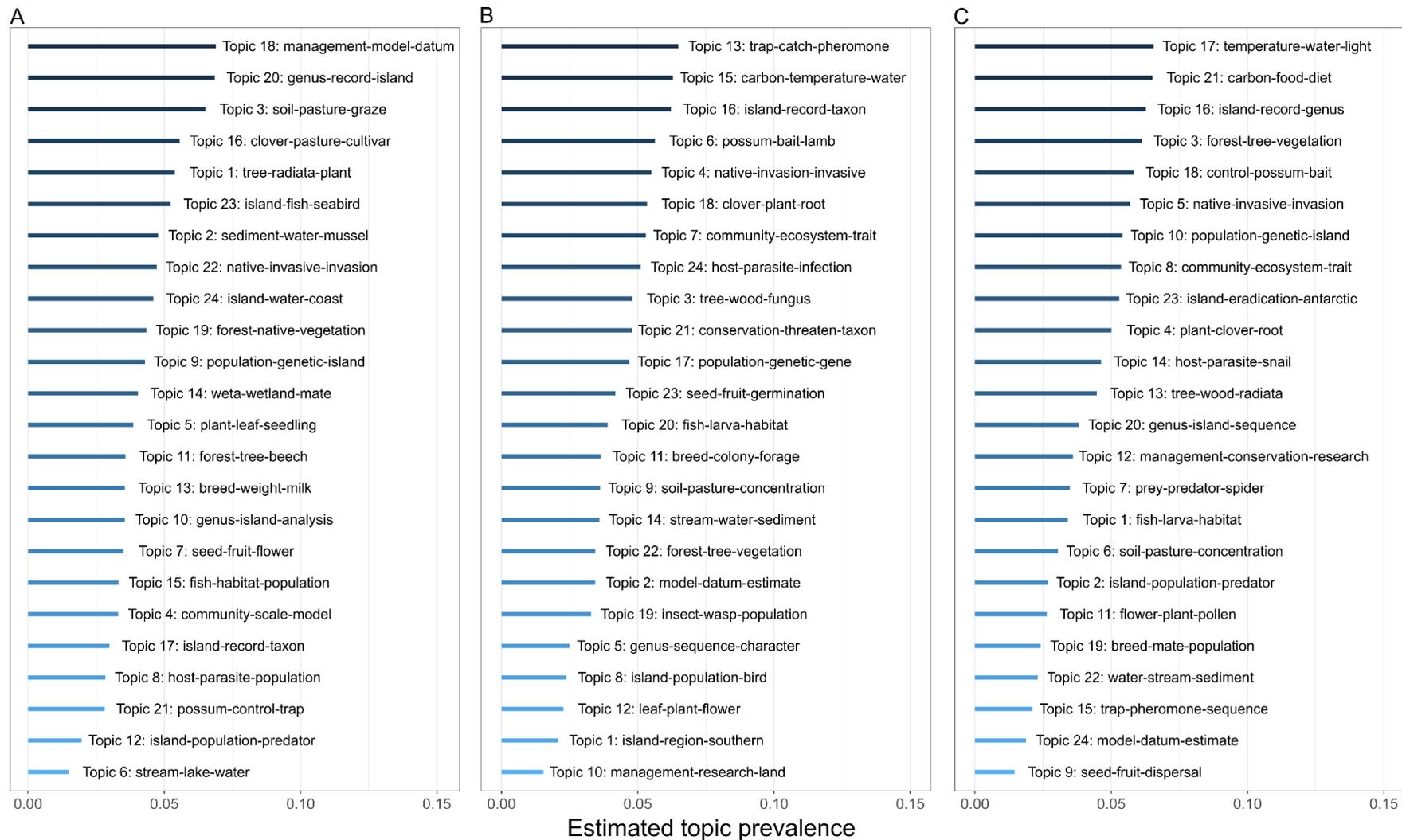
- Figure 4 – affiliations networks are available at [<https://spatialecol.com/presentations/cyto/affiliations/web_session/index.html#/>](https://spatialecol.com/presentations/cyto/affiliations/web_session/index.html#/), set the visual style on the tab to **AffiliationsCirc**
- Figure 5 – co-author networks are available at [<https://spatialecol.com/presentations/cyto/coauthors/web_session/index.html#/>](https://spatialecol.com/presentations/cyto/coauthors/web_session/index.html#/), set the visual style on the tab to **Coauthors**
- Figure 7 – keyword co-occurrence networks are available at [<https://spatialecol.com/presentations/cyto/keywords/web_session/index.html#/>](https://spatialecol.com/presentations/cyto/keywords/web_session/index.html#/), set the visual style on the tab to **Keywords**



Appendix S4. Number of records associated with universities, CRIs, and central government in NZ. Upper columns show the absolute count (each author on a paper gets a score of 1) while the lower show the fractional count (each author on a paper gets a score of $1/n$, where n is the number of co-authors). Vertical lines are the formation of CRIs in 1992 and the start of the PBRF in 2004



Appendix S5. Cumulative plots of (A) number of unique journals published in over time, (B) number of unique author affiliations, (C) number of unique countries, and (D) number of unique authors.



Appendix S6. Summary of the topics from the $k = 24$ structural topic models with year, NZ journal, and their covariates for (A) publications with NZ-affiliated authors (B) publications on a NZ topic, and (C) all publications (A and B combined). Colours denote topic prevalence across the period 1980–2020, labels are the top ranked terms based on probability (b) for each topic.

Topic 1	Topic 2	Topic 3	Topic 4
<p>pmax bait hook hypoliths desiccation prone rosshavet upper shade sunshade</p> <p>temperature lichen photosynthesis photosynthetic coral irradiance alga</p> <p>bacterial community conductance photosynthetic rate fucoid spin-dry valley elevate temperature galloway</p>	<p>simco trossulus ocean biogeochemical downscales bcasts tariff carbohydratefat</p> <p>carbon food diet mussel energy isotope acid</p> <p>carbon mussel lipid fatty fatty acid isotope stable isotope isotope analysis mytilus galloprovincialis discount rate stable carbon</p>	<p>horak jacaena urvilliana linatella triton obconica mordella</p> <p>island record genus taxon endemic plant distribution</p> <p>naturalise subsp genus kermadec island name comb synonymy ngen basionyms nomenclatural status electronic flora name database tipu tipu aotearoa</p>	<p>tree line silver beech natural seedling goshawk wildlings aranuaian maquis</p> <p>forest tree vegetation native plant cover site</p> <p>forest fire vegetation seedling beech canopy tree litterfall mountain beech tree line silver beech charcoal weinmannia racemosa forest structure</p>
Topic 5	Topic 6	Topic 7	Topic 8
<p>pindone oxide technique clover stag leaf allowance lean liveweight winter lean weight line</p> <p>lamb possum liveweight milk bait wean heifer</p> <p>control possum bait lamb weight treatment milk</p>	<p>polyphylla channel catfish machair pest risk archaeophytes native deer propagule size</p> <p>invasion alien native invasive alien species invasive species native range lamb native range biological invasion alien plant invasive plant introduce range plant invasion</p>	<p>hfcs grassy community fernandez firecrown avsc versus river capture otsclock1b ots5a5nwisc</p> <p>population genetic island diversity gene variation structure</p> <p>genetic haplotype locus genetic diversity allele microsatellite mitochondrial haplotype genetic diversity allele genetic variation genetic structure mtdna genetic differentiation</p>	<p>hyena multilayer network technological progress metalophytes mountain lion ecosystem size kowaro</p> <p>community ecosystem trait diversity scale functional environmental</p> <p>community richness ecosystem species richness ecosystem service trait stressor functional richness natural capital social ecological stressor effect assembly process ecosystem size alternative stable</p>
Topic 9	Topic 10	Topic 11	Topic 12
<p>eradication effort eradication success eradication campaign astrolabe pseudoeconesus gracilipes cadophora</p> <p>eradication antarctic ross rodent gracilipes expedition rodent eradication</p> <p>island eradication antarctic rodent ross antarctica bait</p> <p>rodent eradication eradication program rena grandis antarctic treaty invasive rodent</p>	<p>node appearance pitaui sugar yield maku regenerants scheuchzeri unattacked</p> <p>plant clover root growth yield ryegrass leaf</p> <p>clover ryegrass white clover cultivar sward tiller herbage tiller clover trifolium lotus trifolium repens stolon tall fescue seed yield</p>	<p>sphenodonti metacercariae gnathiid shoal size gallinarum cobble size arboreal plant</p> <p>host parasite snail population infection transmission individual</p> <p>parasite host white clover trematode snail antipodarum parasite species host species parasite trematode flea parasite species host parasite flea species intermediate host</p>	<p>sclerotia tuki grain angle holopsis cinnamomi simile stem wood</p> <p>tree wood radiata fungus plant stand growth</p> <p>endophyte radiata fungus mycorrhizal pinus radiata pinus wood mycorrhizal phytophthora ddon radiata ddon wood property fusarium mycorrhizal fungus</p>

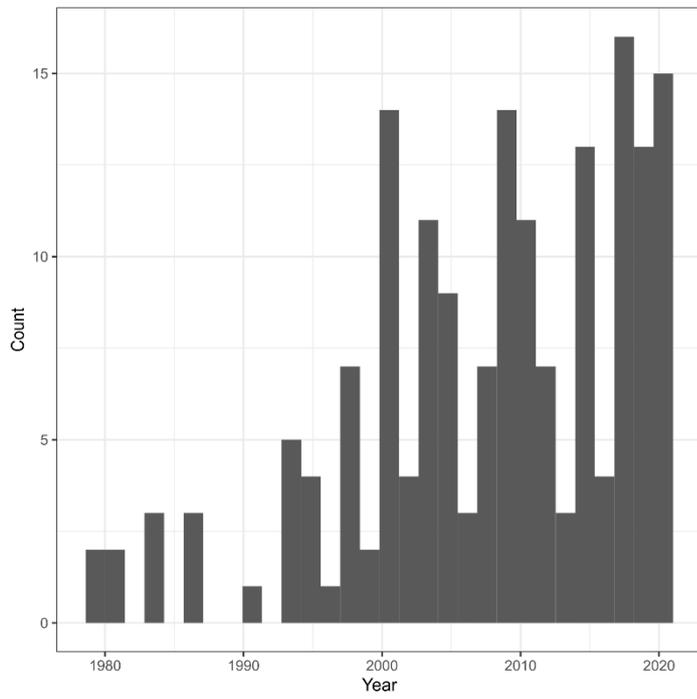
Metric a FREX a Lift a Prob (β) a Score

Appendix S7. Labels for 1–12 of the 24 topics identified by the STM. The purple boxes show the terms with the highest probability in the identification of the topics (b). The other metrics are FREX (terms that are frequent and exclusive), the term-lift metric (Taddy 2012), and the score metric (Chang 2015).

Topic 13	Topic 14	Topic 15	Topic 16
crambina nabkha diadema herbertus awaous hamuii afro genus island sequence analysis taxon southern region	clade lineage genus seta vicariance gondwana monophyletic electron microscope rygmodus axial parenchyma nrDNA species delimitation nabkha tree topology	freshwater megafauna management badge buckwheat cage clump wood rise cache space theft management conservation research impact risk approach biodiversity	prey spider salticid salticid portia predator courtship salticid salticid portia jump spider vibratory salticidae silk
world country ladder gelotia icdd display posture dawn chorus insect biomass prey predator spider behaviour display response nest	conservation action policy people decision maker conservation management stakeholder	lobster inanga trout salmo jasus edwardsii salmo trutta trout metamorphosis fish larva habitat adult larval juvenile density	fish trout spawn lobster reef otoolith galaxias trout lobster otoolith reef fish kokopu brown trout rainbow trout
Topic 17	Topic 18	Topic 19	Topic 20
sorption irrigator biochar post confluence hawkweed cover application depth effluent irrigation soil pasture concentration water graze fertiliser application	soil fertiliser pasture urine lime olsen superphosphate lime pasture production potassium olsen soil water leach loss lysimeter	ecosanctuaries beech mast wasp vespula common wasp vespula laysan mahout island population predator nest bird habitat density	stout dolphin skink rattus prey wasp home range vespula common wasp german wasp bottlenose bottlenose dolphin mohua artificial nest
mistletoe pollination service alepis enantiostryly kamohatua sunbird herkogamy flower plant pollen pollination fruit pollinator seed	flower pollinator pollen pollination seed fruit mistletoe tetrapetala sigma peraxilla ovule pollination service alepis	thief fast sperm parental effort food input input ratio hare wallaby host coral breed mate population colony individual condition forage	penguin mate chick sperm breed fledge colony nestle extrapair sperm competition skua ejaculate foal harem
Topic 21	Topic 22	Topic 23	Topic 24
vbnc sediment concentration terrestrial sediment cdom calamoecia froude aphanizomenon water stream sediment lake river flow community	sediment stream lake periphyton phytoplankton benthic macroinvertebrate sediment macrophyte periphyton fine sediment macroinvertebrate community suspend sediment periphyton biomass	vertical object pheromone titre paludosa dead seed asubunit isoform hypanthial zeac trap pheromone sequence compound method extract identify	pheromone acetate apple trap edna moth volatile acetate polymerase postvittana chain reaction polymerase chain trap bait ctenopseustis
final sweep enfa model unweighted regression temporary migration bien database master sample gcgms model datum estimate method predict analysis scale	simulation model spatial error accuracy sdms prediction sdms tree model monte carlo sensitivity analysis monte carlo neural network	germination brugalow subtorquata seed bank tetrapathaea bilge scatterhoarders seed fruit dispersal germination plant bird seedling	seed germination fruit germinate seedling dispersal broom germination seed dispersal broom seed bank kereru frugivore frugivores

Metric a FREX a Lift a Prob (β) a Score

Appendix S8. Labels for 13–24 of the 24 topics identified by the STM. The purple boxes show the probability weight used to identify the topics (b). The other metrics are FREX (terms that are frequent and exclusive), the term-lift metric (Taddy 2012), and the score metric (Chang 2015).



Appendix S9. Number of abstracts with either of the terms Māori or mātauranga appearing in them over time.