MĀORI VALUES AND WETLAND ENHANCEMENT

LANDCARE RESEARCH MANAAKI WHENUA

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2.MĀORI ENVIRONMENTAL MONITORING – PROCESS AND INDICATORS

Māori indicators are based on:

- Mātauranga Māori and values (understanding, use, and availability of knowledge)
- Tikanga (Māori methodology, approaches)
- Concepts developed by and meaningful to tangata whenua

They need to be:

- Cost effective
- Assessed and interpreted by Māori communities
- Consistent in method and repeatable
- Used in a wide range of wetland environments – generic
- Able to show environmental change through time
- Able to show incremental change and trends

And…

- Complement scientific and community indicators
- Inform on wetland state or condition
- Used for reporting

Methods/steps

- Define cultural aspirations and goals
- Develop taonga lists and inventories (grouped into plants, animals, birds, fish, invertebrates, and micro-organisms) as at 1840–1880 and at present
- Record the introduced animal pests and plants in and around wetlands
- Develop a consistent methodology for assessing "mauri" (e.g. for each kaitiaki group)
- Assess all land-uses and discharges surrounding the wetland
- Assess how modified the wetland is
- Assess whether culturally significant taonga species are present or absent

Results (Harmsworth 2002)

Māori wetland indicators (key indicators in bold):

1. % area of land uses/riparian factors affecting cultural values
2. Number of point (sites) sources of pollution degrading te mauri
3. Degree of modification (draining, water table, in-flows, out-flows) degrading te mauri
4. **Number of (and change of) unwanted (e.g. exotic, introduced, foreign) plants, algae, animals, fish, and birds (pest types) affecting cultural values (*)**
5. **Number of (and change of) taonga species within wetland**
6. **% area of (and change in area of) taonga plants within total wetland**
7. **% area of (and change in area of) unwanted (e.g. exotic, introduced, foreign) plants covering total wetland**
8. **Assessment of, and change in te mauri (scale)**
9. Number of cultural sites protected within or adjacent to wetland

* Assessment of Mauri
A large combination of factors are used to assess mauri and each kaitiaki group will have their own method for assessment.

Māori wetland indicators can be organised into three main categories:

1) What's causing the problems, issues?
2) Taonga and mauri, what is present?
3) Trends, getting better or worse (from a cultural perspective)
   Doing something about it – actions?

Cultural sensitivity

The monitoring methods and assessment takes into account cultural sensitivity of knowledge and information and should assign intellectual property rights and acknowledgement to source.

For example information on taonga.

A Māori wetlands assessment sheet

Name of wetland:
Date:
People involved in monitoring:

Kia kaha te mahi! Please write actual numbers, percentages or description beside each before giving a score (under heading assessment):

WHAT'S CAUSING THE PROBLEMS?
Pressure indicators
No. of point (sites) sources of pollution degrading te mauri (*)
No. of exotic (introduced, foreign) plants, algae, animals, fish, and birds (pest types) affecting cultural values (*)
% area of land uses/riparian factors affecting cultural values (#)
Degree of modification (draining, water table, in-flows, out-flows) degrading te mauri (@)

TAONGA AND MAURI? (Māori information about the wetland, its attributes)
State indicators
No. of taonga species within wetland (*)
No. of cultural sites within or adjacent to wetland (*)
% area of taonga plant species within total wetland (#)
% area of exotic (introduced, foreign) plants covering total wetland (#)
Assessment of te mauri (Mauri scale)

TRENDS/WETLAND GETTING BETTER OR WORSE? (2nd and subsequent assessments)
Response indicators
No. of cultural sites protected within or adjacent to wetland (*)
Change in No. of taonga species within wetland (i.e. more, same, less) (*)
Change in % area of taonga plant species within total wetland area (i.e. more, same, less) (#)
% area of exotic (introduced, foreign) plants covering total wetland (i.e. more, same, less) (#)
Assessment of change in te mauri (e.g. worse, same, improvement) (Mauri scale)

ASSESSMENT METHOD (SCORES)
- (*): 0 (0); 1 (1–2); 2 (3–5); 3 (6–9); 4 (10–14); 5 (>15)
- (#): 0 (0%); 1 (1–20%); 2 (21–40%); 3 (41–60%); 4 (61–80%); 5 (81–100%)
- (@): 1 = low; 2 = moderate; 3 = high; 4 = very high; 5 = extreme
- Mauri scale: 1 = weak/low; 2 = average/moderate; 3 = strong/high

Other comments:
(e.g. use of wetland, customary access, customary rights, fitness for traditional cultural usage)

Complementary monitoring approaches

Mātauranga Māori knowledge based indicators	Community–scientific based indicators	Scientific based indicators
Requires in-depth Māori understanding and knowledge of particular environments. Understanding of Māori values, goals, and aspirations required. Examples: • Taonga lists • Key sensitive taonga indicators • Te Mauri • Knowledge on uses and preparation of taonga • Land uses, point discharges, modification, impacting on cultural values and uses	Requires moderate levels of technical input and skill but scientifically robust and part-value based. Cost effective, relatively simple and short duration. Examples: • Change in hydrological integrity (impact of man-made structures; water table depth) • Change in physico-chemical parameters (fire damage; degree of sedimentation/erosion; nutrient levels; Von Post index) • Change in ecosystem intactness (loss in area of original wetland; connectivity barriers) • Change in browsing, predation and harvesting regimes (damage by domestic stock; damage by feral animals; introduced predator impact on wildlife; harvesting levels) • Change in dominance of native plants (introduced plant canopy cover; introduced plant under-storey cover)	Requires higher levels of technical input and skill, robust sampling strategies, analysis and interpretation. May be time-consuming. Examples: • Chemistry, water quality nutrients • Hydrology • Water table modeling • Botanical mapping, classification of plants • pH • Bacterial counts • Giardia • Cryptosporidium • GIS applications • Satellite imagery • Studies of fish, macro-invertebrates and macrophytes