BMS FIELD BOOKLET · MAURI COMPASS

HUATOKI AWA FIELD SURVEY

Biodiversity Monitoring Survey

10 Survey Methods

General Obs · Bird Count · Seedling / Pellet

RTC · Stream · Fish · Frog

Pest Threats · FAMS · Photo Points

Station: _____

Assessor: _____

Date: _____

Organisation: _____

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HOW TO USE THIS BOOKLET

Welcome to the Huatoki Awa Field Survey. This booklet guides you through 10 survey methods used to assess the biodiversity health of a site. You do not need prior experience — just follow each section in order and record what you observe.

BEFORE YOU START

- ☐ Fill in the cover page (Station, Assessor, Date, Organisation)
- ☐ Check the weather and record it on Page 13
- ☐ Note your GPS coordinates at the site entrance
- ☐ Allow 2–3 hours for a full survey, or 45 min for a quick survey (Bird Count + Stream + Score only)

THE 10 METHODS — WHAT, WHY, HOW LONG

METHOD	PAGE	WHAT YOU ARE MEASURING	TIME
Bird Count	4	Which birds are present — heard or seen in 5 minutes	10 min
Seedling / Pellet	6–7	Is the forest regenerating? Are pest animals present?	20 min
RTC	8	Residual Trap Catch — how many pests are being caught	5 min
Stream Habitat	9	Stream substrate, bank stability, riparian vegetation	15 min
Fish Survey	10	Which fish species are present	20 min
Frog Survey	11	Native frog presence along a 50m transect	15 min
Pest Plants	11	Invasive plant species — abundance and location	10 min
FAMS	12	Fence condition — is the boundary protecting the site?	10 min
Photo Points	13	4 photos at N/E/S/W bearings for repeat monitoring	5 min
General Obs	13–14	Weather, access, land use context, key findings	5 min

ABOUT THE HUATOKI AWA

The Huatoki rises in the Pouākai Range foothills and flows 3.1km through native bush, suburban reserves, and the New Plymouth city centre before reaching the coast. The stream is currently being **daylighted through the CBD** (Metro Plaza site, 2026) — restoring a waterway that has flowed underground for generations. LAWA monitoring since 1996 shows an MCI of 107.5 (Band C — Fair) with an ASPM trend of **Likely Degrading**. This survey is your chance to contribute real data to the restoration story.

SCORING — WHAT DOES IT MEAN?

At the end of the survey (Page 8) you will calculate a **Composite Biodiversity Health Score** out of 100. Five components are weighted and combined:

<40 Red — Critical	40–69 Amber — Fair	≥70 Green — Good

The Huatoki Domain entrance currently sits in the **Amber** band based on LAWA data. Your survey data will help track whether this is improving.

WHAT TO BRING

- [ ] This booklet and a pencil (pencils work in the rain)
- [ ] Smartphone with GPS or a handheld GPS unit
- [ ] Camera or phone for photo points
- [ ] Torch for fish and frog surveys (night surveys)
- [ ] Waterproof jacket and sturdy footwear
- [ ] 5-minute timer (phone stopwatch works fine)
- [ ] 50m tape measure for frog transect and cruciform arms

SCORE INTERPRETATION GUIDE

SCORE BAND	RATING	WHAT IT MEANS
<40	Critical	Significant threats present. Urgent management action needed.
40–69	Fair	Some biodiversity present but under pressure. Monitoring and intervention required.
≥70	Good	Healthy biodiversity indicators. Continue current management.

QUICK SURVEY GUIDE (45 MIN)

> If you only have 45 minutes, complete these three methods in order. They give the most useful data for tracking biodiversity change over time.

#	METHOD	PAGE	TIME	WHAT TO RECORD
1	**Bird Count**	4	10 min	All species heard or seen in 5 minutes at your station
2	**Stream Habitat**	9	20 min	Substrate, bank stability, clarity, riparian vegetation
3	**Composite Score**	13	5 min	Fill in the score table with your estimates for each component

DATA SUBMISSION

After your survey, please submit your data to help build the Huatoki monitoring record:

- [ ] Photograph each completed page
- [ ] Email to: **info@mauricompass.biz** with subject “Huatoki Survey — [Date] — [Station]”
- [ ] Or upload via the Mauri Compass portal at **mauricompass.biz**
- [ ] Include your GPS coordinates and any photos from your photo points

SITE INFORMATION

SITE INFORMATION

Station: _____ **Code:** _____

GPS: _____ **Covenant:** _____

Organisation: _____ **Area (ha):** _____

Date: _____ **Alt (m):** _____

Time: _____ **Land:** _____

Methods completed: ☐ GenObs ☐ Bird ☐ Seed/Pel ☐ RTC ☐ Stream ☐ Fish ☐ Frog ☐ Pest ☐ FAMS ☐ Photo

SITE ACCESS & CONDITIONS

Access route: _____

Parking: _____

Weather: _____ **Wind:** _____ **Temp (°C):** _____

Hazards: _____

SURVEY TEAM

Lead assessor: _____ **Role:** _____

Team member 2: _____ **Role:** _____

Team member 3: _____ **Role:** _____

Team member 4: _____ **Role:** _____

GENERAL SITE OBSERVATIONS

> **First impressions:** Note what you see, hear, and smell as you arrive. What is the dominant vegetation? Is there evidence of recent disturbance? What is the light level and canopy cover?

Arrival notes / sketch:

5-MINUTE BIRD COUNT

5-MINUTE BIRD COUNT (DAWSON & BULL 1975)

> **How to do it:** Stand still at your station for exactly 5 minutes. Record every bird you **Hear (H)** or **See (S)** by tallying in the columns. Count each individual separately. Start the timer only when you are ready and quiet.

Station: _____ **GPS:** _____ **Habitat:** _____ **Start:** _____

SPECIES	TE REO	ST	H	S
Tūī	Tūī	E		
Bellbird	Korimako	E		
Grey Warbler	Riroriro	E		
Tomtit	Miromiro	E		
Kākā	Kākā	E		
NZ Robin	Toutouwai	E		
Kererū	Kererū	E		
Fantail	Pīwakawaka	N		
Silvereye	Tauhou	N		
Whitehead	Pōpokotea	E		
Morepork	Ruru	N		
Kingfisher	Kōtare	N		
Shining Cuckoo	Pīpīwharauroa	N		
Long-tailed Cuckoo	Koekoeā	N		
Blackbird	—	I		
Chaffinch	—	I		
Other: _____				
Other: _____				

ENDEMIC (E) TOTAL	NATIVE (N) TOTAL	INTRODUCED (I) TOTAL	SPECIES RICHNESS
_____	_____	_____	_____

E = Endemic **N = Native** **I = Introduced** H = Heard (tally) S = Seen (tally) Highlighted = confirmed Huatoki species

BIRD COUNT NOTES

Most common species heard: _____

Most common species seen: _____

Any unexpected species? _____

Huatoki target species detected? _____

Overall bird diversity (Low / Medium / High): _____ **Species richness total:** _____

SEEDLING / PELLET

SEEDLING CRUCIFORM (NWR PROTOCOL)

How to do it: Walk out from a central point in 4 directions (N, E, S, W). Every 5m, record any seedlings of palatable species you find. Note the species and which height class it falls into. Browsed seedlings (Br) have been eaten — mark with ✓. The ideal pyramid is 40% in the shortest class, tapering to 5% in the tallest.

Cruciform: _____ **GPS:** _____ **Arms:** _____ **Length (m):** _____

Spacing (m): _____

SPECIES	ARM	0–15 CM	15–45 CM	45–75 CM	75–135 CM	135+ CM	BR

Height classes in cm · Br = Browsed (✓ / ×) · **Ideal pyramid: 40% / 25% / 20% / 10% / 5%**

KEY PALATABLE SPECIES — HUATOKI AWA

HIGH palatability (most vulnerable to browsing): Hangehange · Kanono · Karamū · Māhoe · Patē · Whauwhaupaku · Porokaiwhiri · Tōtara · Mangeao · Maire · Puka · Māpou · **Kōtukutuku** (Tree Fuchsia — key Huatoki bird food)
MOD palatability: Tawa · Rewarewa · Kāmahi · Kohekohe · Pūriri · Hīnau · Mataī · Kahikatea · Rimu
LOW palatability: Ponga · Whekī · Kiokio · Pikopiko · Nīkau · Rātā · Kauri

SEEDLING SURVEY NOTES

Most common species found: _____

Most browsed species: _____

Pyramid shape: Good Flat Inverted

(Good = 40/25/20/10/5 · Flat = even spread · Inverted = more tall than short)

Overall regeneration rating (1–5): _____

PELLET COUNTS

PELLET COUNTS (NWR PROTOCOL)

How to do it: Walk the same cruciform arms as your seedling survey. Count any animal pellets/droppings you find. Record the species, which arm, how many, and whether they are Fresh (F), Old (O), or Very Old (V). Possum and deer are the most common in the Huatoki catchment.

TYPE	ARM	COUNT	FRESH	TYPE	ARM	COUNT	FRESH
Possum				Pig			
Deer				Hare			
Goat				Rabbit			
Stoat/Weasel				Cat			
Other: _____				Other: _____			

F = Fresh · O = Old · V = Very Old

PELLET NOTES

Huatoki context: Possum sign is most common in the bush valley section near Vogeltown. Deer occasionally enter from the Pouākai Range. High pellet counts in an area suggest trapping effort should be increased there.

Most common species found: _____

Area of highest activity: _____

Evidence of recent trapping? _____

Additional notes / sketch:

RTC — RESIDUAL TRAP CATCH

WHAT IS RTC?

Residual Trap Catch (RTC) measures how many pests are caught per 100 trap-nights. It is the standard New Zealand method for assessing pest pressure. A lower RTC means fewer pests and a healthier ecosystem. The Huatoki catchment has an active NPDC trapping programme with 2,500+ traps and 100+ volunteers.

HUATOKI PEST CONTEXT

The Predator-Free Taranaki urban programme is active across the Huatoki catchment. Common species: possum, ship rat, stoat, weasel, ferret, hedgehog. The Huatoki Conservation Group runs regular trap checks — your RTC data contributes to the wider programme.

RTC — RESIDUAL TRAP CATCH (NPCA 2020)

Line: _____ **GPS:** _____ **Bearing:** _____ **Spacing (m):** _____ **Start:** _____

TRAP	1	2	3	4	5	6	7	8	9	10	TOTAL
Night 1											
Night 2											
Night 3											

Formula: RTC% = (total catches ÷ trap-nights) × 100

Trap-nights = number of traps × number of nights (e.g., 10 traps × 3 nights = 30 trap-nights)

My RTC%: ____ ÷ ____ × 100 = _____%

≤2% V.Low	≤5% Low	≤10% Moderate	≤20% High	>20% V.High

≤2% V.Low · ≤5% Low · ≤10% Moderate · ≤20% High · >20% Very High

RTC NOTES

My RTC band (circle): V.Low Low Moderate High V.High

Dominant species caught: _____

Trap line condition: _____

Recommended action: _____

Additional notes / trap map sketch:

STREAM & FISH

HUATOKI STREAM BASELINE (LAWA — HUATOKI DOMAIN ENTRANCE, MONITORED SINCE 1996)

MCI: **107.5 (Band C — Fair)** · ASPM: **0.470 (Band B)** · Trend: **Likely Degrading** · EPT richness: **48%** · Taxonomic richness: **24 taxa**. Compare your observations against this baseline.

STREAM HABITAT (CLAPCOTT ET AL. 2011)

How to do it: Choose a 50–100m reach of stream. Walk the reach and estimate the percentage of each substrate type visible on the stream bed. Score bank stability on each side (1 = very unstable, 5 = very stable). Note riparian vegetation and adjacent land use.

Stream: _____ **Start GPS:** _____ **End GPS:** _____

Length (m): _____ **Width (m):** _____ **Depth (m):** _____ **Canopy (%):**

CLARITY				ALGAE PRESENT?		OVERALL HABITAT (1–5)
☐ Clear	☐ Sl.Turb	☐ Turb	☐ V.Turb	☐ Yes	☐ No	

SUBSTRATE (%)				BANK STABILITY (1–5) & RIPARIAN		
Bedrock: %	Gravel: %	Boulder >256mm: %	Sand: %	Left bank: Right bank: 1=Unstable · 5=Stable	Riparian Veg:	Adjacent Land: NatFor · NatScrub · ExoTree · Pasture
Cobble 64–256mm: %	Silt/ Mud: %					

Fish Barriers: _____

Habitat rating (1–5): _____ **Dominant substrate:** _____

Main threats: _____

STREAM HABITAT NOTES

Stream condition summary (1–5): _____ **Compared to baseline (better/same/worse):**

Key habitat issue: _____

Evidence of restoration work? _____

Stream sketch / cross-section / additional notes:

FISH SURVEY

FISH SURVEY (NIGHT SPOTLIGHTING)

> **How to do it:** Walk a set reach of stream at night with a torch. Record every fish species you see, the number, and an estimated size. Note the water temperature if you have a thermometer.

GPS from: _____ **to:** _____ **Length (m):** _____ **Temp (°C):** _____

Method: Spot Net Trap **Time:** _____

Species richness (total): _____ **Native species:** _____ **At Risk observed?**

_____

Most abundant species: _____

SPECIES	TE REO	ST	CONSERVATION	#	SIZE	NOTES
Longfin eel	Tuna	E	At Risk–Dec			
Shortfin eel	Tuna	N	Not Threatened			
Banded kōkopu	Kōkopu	E	Not Threatened			
Giant kōkopu	Kōkopu	E	At Risk–Dec			
Shortjaw kōkopu	Kōkopu	E	Nat Vulnerable			
Koaro	Kōaro	N	At Risk–Dec			
Inanga	Inanga	N	At Risk–Dec			
Redfin bully	Toitoi	E	Not Threatened			
Giant bully	Toitoi	E	Not Threatened			
Common bully	Toitoi	E	Not Threatened			
Kōura (crayfish)	Kōura	E	At Risk–Dec			
Brown trout	—	I	Introduced			
Rainbow trout	—	I	Introduced			
Mosquitofish	—	I	Introduced			
Other: _____						

E = Endemic N = Native I = Introduced

FISH SURVEY NOTES

Total species observed: _____ **At Risk species detected?** _____

Habitat quality for fish (1–5): _____ **Key limiting factor:** _____

Recommended follow-up: _____

FROG · PEST PLANTS · PEST ANIMALS · FAMS

FROG SURVEY (BELL 2010)

How to do it: Walk a 50m transect along the stream edge at night. Stop at 6 points (0m, 10m, 20m, 30m, 40m, 50m). At each point, listen and look for 2 minutes. Record any frogs seen or heard — species, number, and habitat description.

Transect: _____ **Stream:** _____ **GPS:** _____ **Weather:** _____

PT	DIST	SPECIES	#	HABITAT NOTES
1	0m			
2	10m			
3	20m			
4	30m			
5	40m			
6	50m			

NZ frogs: **Archey's** (Nat Critical) · **Hochstetter's** (At Risk) · **Hamilton's** (Nat Critical) · **Maud Is** (Nat Vuln)

PEST PLANTS

How to do it: Walk the site and record any invasive plant species you find. Note the abundance (Rare/Occasional/Frequent/Dominant) and location. Common Huatoki pest plants are listed below.

SPECIES	ABUNDANCE	LOCATION	GPS

Common Huatoki pest plants: Tradescantia · Wild ginger · Woolly nightshade · Climbing asparagus · Honeysuckle · Old man's beard · Privet · Wilding pine · Gorse · Blackberry

Most dominant pest plant: _____ **Priority for control:** _____

Coverage estimate (%): _____ **Control method recommended:** _____

PEST ANIMALS · FAMS

PEST ANIMALS

SPECIES	EVIDENCE	#	LOCATION

Evidence: S=Seen · H=Heard · D=Droppings · T=Tracks · B=Browse · Den · Kill · Trap | Common: Possum · Ship rat · Stoat · Weasel · Ferret · Cat · Hedgehog · Deer · Goat · Pig

FAMS — FENCE SEGMENTS

> **How to do it:** Walk the boundary fence and divide it into up to 5 segments. For each segment, record the fence type, length, condition, and priority for repair.

SEG	TYPE	LENGTH (M)	COND	PRI	ISSUE
1					
2					
3					
4					
5					

Cond: G=Good · F=Fair · P=Poor · D=Derelict · M=Missing | Pri: U=Urgent · H=High · M=Medium · L=Low | Total fence: _____ km · Repair est: $_____

PEST ANIMALS & FAMS NOTES

Most common pest animal evidence: _____

Overall fence condition (G/F/P/D): _____

Priority repair segment: _____

Additional notes / sketch:

PHOTO POINTS · SCORING · NOTES

PHOTO POINTS

How to do it: Choose up to 4 permanent photo points. At each point, take 4 photos — one facing North, East, South, and West. Record the GPS and a brief description. Return to the same spot on future surveys to track change over time.

N	E	S	W
North	East	South	West

PT#	NAME / LOCATION	GPS	N°	E°	S°	W°	DESCRIPTION
1							
2							
3							
4							

4 photos per point: N/E/S/W bearings · Record date installed

COMPOSITE BIODIVERSITY HEALTH SCORE

COMPONENT	WEIGHT	SCORE / 100	NOTES
Pest Pressure (inv RTC)	**25%**	/100	
Forest Regeneration	**25%**	/100	
Avian Diversity	**20%**	/100	
Aquatic Health	**15%**	/100	
Boundary Integrity	**15%**	/100	
OVERALL	**100%**	**/100**	

<40 Red — Critical	40–69 Amber — Fair	≥70 Green — Good

GENERAL OBSERVATIONS

Weather: _____ **Wind:** _____ **Access:** _____

Huatoki prompts: Is the stream clear or discoloured? Can you see or hear the daylighting works? What evidence of restoration can you see? Are there signs of community trapping activity?

KEY FINDINGS & RECOMMENDATIONS

Prompts: What was the most significant finding? What is the biggest threat to biodiversity at this site? What one action would make the most difference? How does this site compare to the LAWA baseline (MCI 107.5, Band C)?

FIELD NOTES / SKETCH