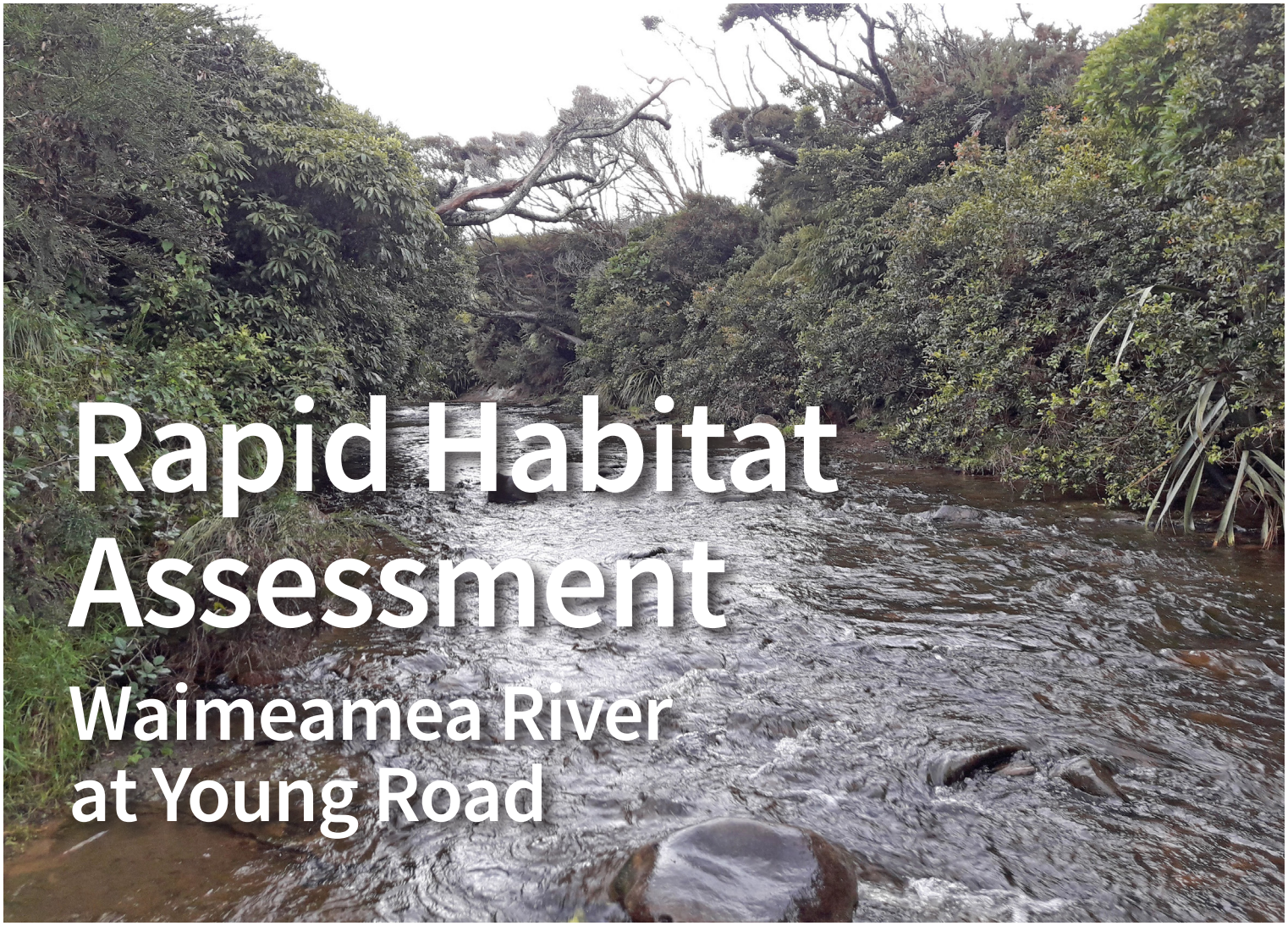


Rapid Habitat Assessment

Waimeamea River at Young Road

Waimeamea River

Rapid Habitat Assessment

A Rapid Habitat Assessment (RHA) is used to provide a quick assessment of the stream habitat of a specific section/reach of the waterway. It provides a 'habitat quality score' for a river reach which indicates general stream habitat condition for the physical aspect, such as the structure of the stream banks or the nature of the stream bed.

Aquatic life is dependent on various features of stream habitat and riparian areas. Knowing what types of habitats are present, in what amounts and how these habitats might be changing over time is vital to understanding overall stream health. Using the RHA protocol to help track the impact of stream restoration efforts such as fencing and planting along waterways over time can help measure improvements.

An RHA can be carried out by experts, or community groups and individuals. The assessment is carried out against 10 variables scored from 1 to 10 with a total possible score of 100. The variables are shown on the left hand-side of the table on page 3.

The results of the data will vary for a range of reasons. Recent weather events play a big part, as can development such as stream works or riparian projects. The person undertaking the assessment and their interpretation of the stream health characteristics will also affect numbers, though it has been shown to be not as much as you may think. It is the trend over time that paints the most reliable picture.

The table on page 3 gives the RHA results for the Waimeamea River at the Young Road site between 2017-2021. There is a significant change in results shown for 2020 and 2021. There is an opportunity to try to identify what the impact is and reduce or mitigate it in the future.

During the stream walk today we will work through each of the variables. You can help us score these using the field recording sheet at the back of this information brochure.

environment SOUTHLAND REGIONAL COUNCIL
Te Taiao Tonga

Stream Health Monitoring and Assessment Kit

NIWA's Stream Health Monitoring Assessment Kit (SHMAK) provides a scientifically-sound resource to monitor the ecological health of New Zealand's streams. First released in 1998, SHMAK was developed as a joint project between Federated Farmers and NIWA.

Stream health is the condition (or state) of the whole stream ecosystem, including water quality, physical features of the stream and its banks, and the plants and animals living there. It also includes aspects that affect human health, safety and enjoyment.

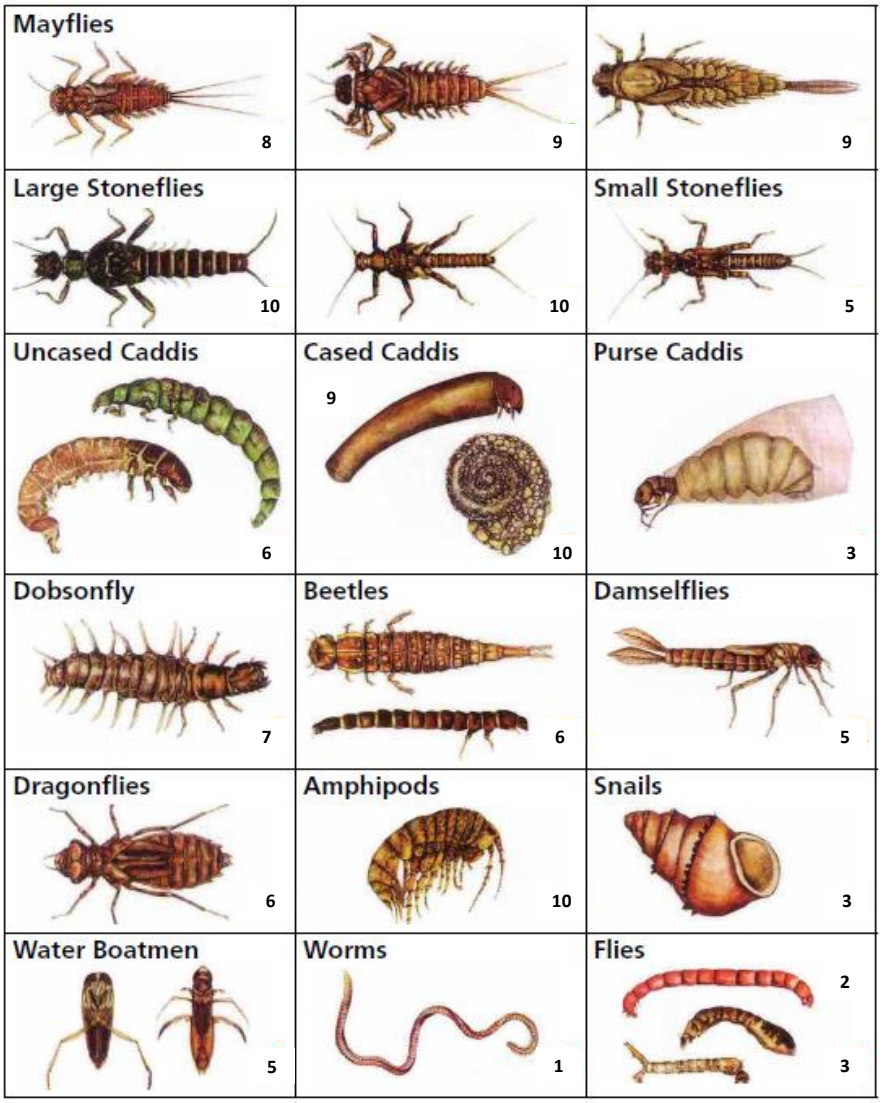
During the stream walk we will use part of the SHMAK kit including the clarity tube, temperature, macroinvertebrates, periphyton (algae), nitrates and PH.

More information

- Further information, including short videos can be found on the Environment Southland website – www.es.govt.nz/environment/education/backyard-activities.
- Go to the Cawthron website to find out how to carry out a Rapid Habitat Assessment – www.cawthron.org.nz/research/our-projects/rapid-habitat-assessment-protocol.
- For water quality and ecological monitoring sites in the Otautau Stream Catchment go to: www.lawa.org.nz/explore-data/southland-region/river-quality/aparima-river/
- For real-time water level and rainfall data from Environment Southland's monitoring sites in the Waimeamea River catchment , go to www.es.govt.nz/maps and data

Critter Identification Card

greater WELLINGTON REGIONAL COUNCIL Te Pane Matua Taiao



To calculate Macroinvertebrate Community Index

Add all scores of all invertebrates observed together.

Divide this by number of different invertebrates.

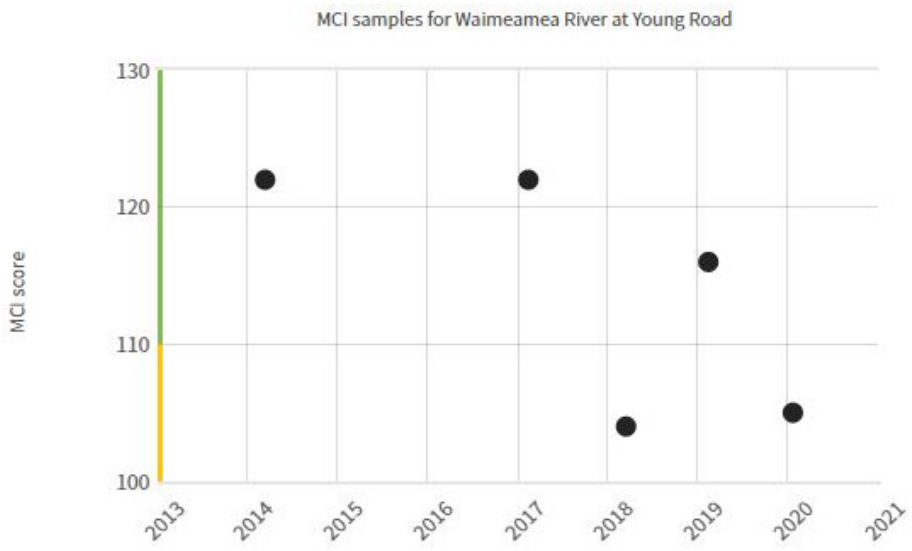
Multiply this number by 20.

Stream health assessment using MCI

Excellent	**>120**
Good	>100 to 120
Average	80 to 100
Poor	<80

Macroinvertebrate Community Index (MCI) scores

The MCI uses the type and number of bugs in the water an as an indicator of stream health. Higher MCI scores indicate better stream conditions. The MCI samples gathered from the Waimeamea River at Young Road sampling site between 2013 and 2020 give an averaged score of '114'. This tells us that the Waimeamea River is sitting in the B or green 'band' for stream health.This indicates there are still good numbers of pollution sensitive bugs, however the waterway shows signs of nutrient enrichment. The national bottom line score for MCI is '90'.



For more detail about MCI see: www.lawa.org.nz/explore-data/southland-region/river-quality/waimeamea-river/waimeamea-river-at-young-road/

Rapid Habitat Assessment Results – Waimeamea River at Young Road, 2017–2021

VARIABLES	13/02/2017	16/03/2018	13/02/2019	22/01/2020	1/03/2021
Deposited sediment	9	9	9	9	9
Invertebrate habitat diversity	9	8	10	10	8
Invertebrate habitat abundance	7	5	8	9	6
Fish cover diversity	8	8	7	7	5
Fish cover abundance	6	7	7	8	5
Hydraulic heterogeneity	7	8	7	5	5
Bank erosion	7	9	10	9	9
Bank vegetation	7	8	7	7	7
Riparian width	6	7	6	6	5
Riparian shade	4	9	8	6	5
Total score	**70**	**78**	**79**	**76**	**64**

River Habitat Assessment – field recording sheet (Cawthron, 2020)

HABITAT PARAMETER	CONDITION										SCORE
Deposited sediment	*The percentage of the streambed covered by fine sediment.*										
	0	≤ 5	5	15	25	35	50	65	75	>75	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Invertebrate habitat diversity	*The number of different substrate types such as boulders, cobbles, gravel, sand, wood, leaves, root mats, macrophytes, periphyton. Presence of interstitial space score higher.*										
	≥5	5	5	4	4	3	3	2	2	1	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Invertebrate habitat abundance	*The percentage of substrate favourable for EPT colonisation such as flowing water over gravel-cobbles clear of filamentous algae/macrophytes.*										
	95	75	70	60	50	40	30	25	15	5	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Fish cover diversity	*The number of different substrate types such as woody debris, root mats, undercut banks, overhanging/encroaching vegetation, macrophytes, boulders cobbles. Presence of substrates providing spatial complexity score higher.*										
	≥5	5	5	4	4	3	3	2	2	1	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Fish cover abundance	*The percentage of fish cover available.*										
	95	75	60	50	40	30	20	10	5	0	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Hydraulic heterogeneity	*The number of hydraulic components such as pool, riffle, fast run, slow run, rapid, cascade/waterfall, turbulance, backwater. Presence of deep pools score higher.*										
	≥5	5	4	4	3	3	2	2	2	1	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Bank erosion	*The percentage of the streambank recently/actively eroding due to scouring at the waterline, slumping of the bank or stock pugging.*										
Left bank	0	≤ 5	5	15	25	35	50	65	75	>75	
Right bank	0	≤ 5	5	1525		35	50	65	75	>75	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Bank vegetation (left bank **and** right bank)	*The maturity, diversity and naturalness of bank vegetation.*										
	Mature native trees with diverse and intact understorey		Regenerating native or flaxes/sedges/tussock > dense exotic			Mature shrubs, sparse tree cover > young exotic, long grass			Heavily grazed or mown grass > bare impervious ground		
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Riparian width	*The width (m) of the riparian buffer contrained by vegetation, fences or other structures*										
Left bank	≥30	15	10	7	5	4	3	2	1	>0	
Right bank	≥30	15	10	7	5	4	3	2	1	>0	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
Riparian shade	*The percentage of shading of the streambed throughout the day due to vegetation, banks or other structures*										
	≥90	80	70	60	50	40	25	15	10	≤ 5	
SCORE	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
TOTAL											