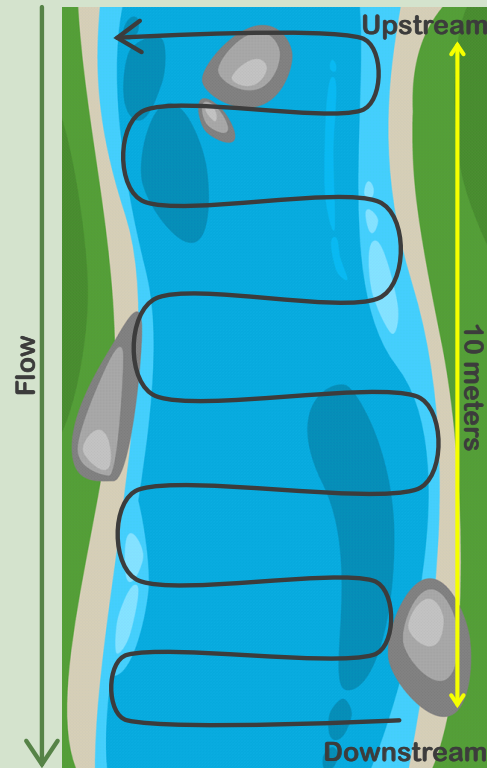


Rapid Assessment of PeriPhyton Ecology in Rivers (RAPPER)

How to conduct a RAPPER survey?

1. Measure out a 10m transect along the bank.
2. Record any necessary supporting data e.g. date, time, GPS, photos, river width/ depth, composition of the river bed material, extent of shading
3. Start downstream, and zig-zag back and forth across the channel looking for algal growths. Using a bathyscope will help you see under the water.
4. When you find an algal growth remove a small portion and examine it in your hand. Study the sample's growth form, colour, texture and the presence of any branching. Use this guide to identify whether your sample is a "Good guy" or "Bad guy". If it's easier, samples can be placed in a white tray and identified on the bank-side. Not all types of algae are included in this method. If you cannot identify your specimen using this guide, assume that it is not included, and disregard it.
5. When you reach the end of the transect, make an estimate of how much of the stream bed is covered by "Bad guys": 0% (absent), <5% (low), 5<25% (moderate) or >25% (high).
6. Record the different types of algae that you have identified and the percentage cover of "Bad guys".
7. Refer to the RAPPER table to assess the condition of the river.



What do your results mean?

To interpret your results you need two pieces of information.

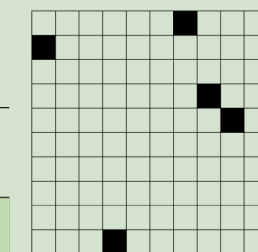
1. The presence or absence of the "Good guys"
2. The percentage cover of the "Bad Guys"

Cover	Percent cover of stream bed
Absent	0%
Low	< 5
Moderate	5 < 25
High	≥ 25

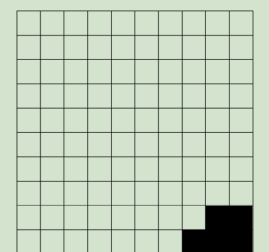
Using this information, refer to the table below to draw a conclusion:

Good guys	Bad guys	Conclusion
Present	Absent or low cover	Looks good
Present	Moderate or high cover	Ho hum: we need to know more before we reach a decision
Absent	Absent, low or moderate cover	Ho hum: we need to know more before we reach a decision
Absent	Moderate or high cover	We've got a problem ...

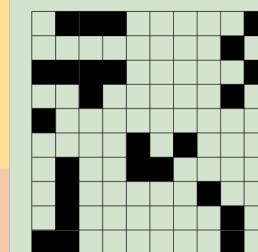
5% cover (random)



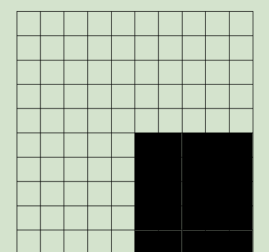
5% cover (clumped)



25% cover (random)



25% cover (clumped)



What growth form does your specimen have?

Bad guys

Good Guys

Uncertain

These groups of algae grow across a range of different conditions

Crusts



Organisms that are tightly attached to river bed material. You cannot lift the crust in a single piece.

Mats, flocs and films



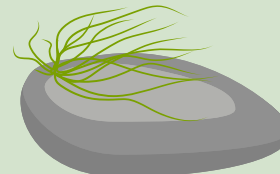
Loosely attached organisms which lie flat across the river bed material. They lack the distinct outlines of colonies.

Colonies



Three dimensional patches attached to the river bed material. Range from just visible to several centimetres across

Filaments



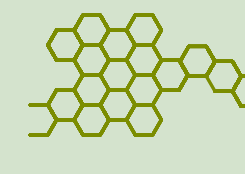
Organism is made up of slender, threadlike structures. Filaments can be short (millimetres) or long (meters).

Thalloid

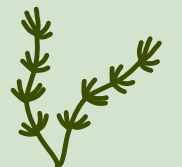


Simple organisms which resemble seaweed. Sheets of cells form thin membranes or tubes.

Other



Net-like structure: can look like filaments, mats or flocs but, on close inspection, they can be seen to be composed of a mesh of cells



Plant-like structure: A single stem, from which circles of branches arise at intervals.

Filaments

Mats, flocs and films



Other



Slimy, green, filamentous



Field identification:

- Filamentous growths of green algae which are slimy to the touch
- Branching may or may not be present
- Filaments can be very fine

Potential genera:

Spirogyra, Ulothrix, Mougeotia ... and more!

Lemanea



Field identification:

- Olive green, coarse, wiry filaments
- Thickened nodes (bumps) at intervals along the filaments

Potential genera:

Lemanea or Paralemanea

Audouinella



Field identification:

- Tufts or mats of short pink or red filaments
- Can be overgrown with diatoms giving the growths a darker brown hue

Potential genera:

Audouinella, or the simple filamentous stage of other red algae.

Batrachospermum



Field identification:

- Slimy, branched filaments which have a beaded appearance
- Filaments run through fingers easily and may feel like frogspawn

Potential genera:

Batrachospermum or Sirodotia

Hydrodictyon



Field identification:

- Net-like structure
- Cells often form pentagonal or hexagonal groups which can be seen with the naked eye
- Free-floating growths can be seen at the water's surface

Cladophora



Field identification:

- Green, branched filaments are rough to the touch (branching can be extensive, or sparse)
- Filaments are attached horizontally to the river bed material
- Filament length ranges from a few centimetres to a meter+

Vaucheria



Field identification:

- Short, branched, green filaments that are rough to the touch
- Filaments are attached vertically to the river bed material
- Filaments grow in dark green mats which can feel a bit like wet felt or tough wool

Melosira



Field identification:

- Fine, delicate brown filaments with no visible branching
- Filaments will easily disintegrate when touched

Characeae

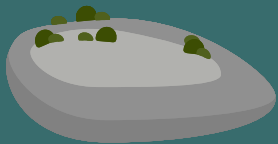


Field identification:

- Plant-like structure
- Filaments have a single "stem" from which circles of "branches" arise at intervals
- Rough to the touch

TYPE

Colonies



Nostoc



Field identification:

- Irregularly shaped colony with a distinct outer layer
- Gleatinous, rubbery or leathery texture
- Brown or dark green in colour
- Also found in terrestrial environments

Brown cyanobacterial colony



Field identification:

- Dark brown, olive green or yellow-brown hemispherical or almost hemispherical colonies.
- Colonies may join together to form a mat-like growth?

Potential genera:

Dichothrix, Rivularia, Scytonema

Green gelatinous Growths



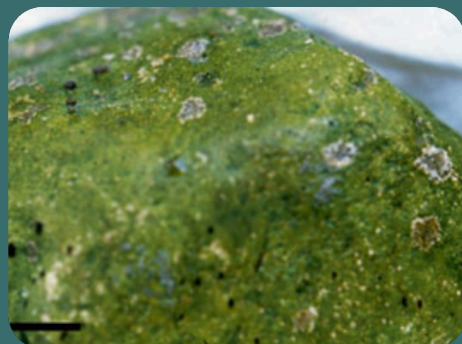
Field identification:

- Gelatinous or jelly-like, green colonies/ growths

Potential genera:

Aphanocapsa, Aphanothece, Chaetophora, Tetraspora

Gongrosira



Field identification:

- Green crust which is hard or cushion-like
- Patches range from 2mm to several cm in diameter

Ulva

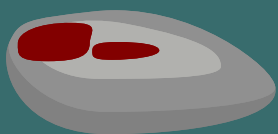


Field identification:

- Bright green filaments are tubular, like an empty sausage skin
- Filaments can be various thicknesses
- Filaments are usually branched
- Algae may be attached or free floating

TYPE

Crusts



TYPE

Thalloid

