

5.3.3 Sub-group 2a: Lowveld: Foothill-cobble Bed and Rejuvenated Cascade sub-regions, with > 60% boulder/cobble substratum type

Sites in this sub-group generally fall within the Lowveld ecoregion and are in the Foothill-cobble Bed or Rejuvenated Cascade sub-regions. Substratum type is boulder/cobble with > 60% generally present.

5.3.3.1 Characterisation of Sub-group 2a in terms of environmental variables

- Channel pattern: variable with all three channel pattern types represented, namely single thread: low sinuosity; single thread: high sinuosity-stable-sinuosity and multiple thread: anastomosing/anabranching.
- Altitude: between 500 and 900 m.
- Distance from source: variable, between 20 km and 120 km.
- Stream order: 3rd or 4th.
- Stream width: between 5 m and 25 m.
- Shallow-water habitat: median (25th and 75th percentile) depth of 0.40 m (0.37 and 0.43 m), mostly cobble riffle, some bedrock rapid.
- Deep-water habitat: median depth of 0.45 m (0.40 and 0.50 m).
- Substratum: No bedrock present, dominated by cobble/pebble (50%) with boulder (25%) and gravel/sand/mud (25%).
- Biotopes: generally have all three biotope-groups present, with SIC/SOOC the most common (75%), then GSM (20%) and AQV/MV (5%).
- Water chemistry: median, 25th and 75th percentile values are tabulated below (Table 5.10).

Table 5.10 Median, 25th (Q25) and 75th (Q75) percentile values for selected water chemistry variables in sub-group 2a (n = 15).

Variable	Unit	Median	Q25	Q75
pH		7.85	7.8	7.87
Temperature	°C	15.1	14.9	15.9
Conductivity	mS m ⁻¹	11	9.1	11.8
Total Dissolved Solids	mg l ⁻¹	76	65	82
Turbidity	NTU	1	1	1
Dissolved Oxygen	mg l ⁻¹	9.04	8.74	9.29
Alkalinity	as meq l ⁻¹ CaCO ₃	0.807	0.72	0.827
Total Phosphorus	mg P l ⁻¹	0.022	0.022	0.041
Soluble Reactive Phosphorus	mg P l ⁻¹	0.017	0.014	0.018
Kjeldahl Nitrogen	mg N l ⁻¹	0.125	0.09	0.147
Nitrite+Nitrate	mg N l ⁻¹	0.245	0.213	0.287
Ammonium	mg N l ⁻¹	0.04	0.04	0.04
Silica	mg l ⁻¹	5.9	4.9	6.5

5.3.3.2 Composite SASS Scores

Expected median values and O/E ratios in each band have been calculated for sub-group 2a (Table 5.11) based on multiple-season, combined-biotope sampling, corrected for season. See section 5.3.1.2 for an explanation of interpreting monitoring site data using this table.

Table 5.11 Sub-group 2a: Band ranges for O/E SASS4 Scores, O/E taxa and O/E ASPT. Expected median values for calculating O/E ratios are given for multiple-season, autumn, winter and spring for each indice.

Expected median values for calculating O/E	SASS4 Score	Number of Taxa	ASPT
Autumn	139	19	7.36
Winter	152	21	7.26
Spring	154	20	7.36
Band	O/E SASS4 Score	O/E Taxa	O/E ASPT
X	> 1.3	> 1.3	> 1.1
A	> 0.7-1.3	> 0.8-1.3	> 0.9-1.1
B	> 0.4-0.7	> 0.6-0.8	> 0.8-0.9
C	> 0.1-0.4	> 0.4-0.6	> 0.7-0.8
D	< 0.1	< 0.4	< 0.7

5.3.3.3 Expected SASS taxa

Expected taxa for Reference Group 2a are presented in Table 5.12. The frequency of occurrence amongst sites, expressed as a percentage, and biotope and seasonal trends are indicated.

Table 5.12 Expected SASS taxa (present at > 75% of sites within the Reference Group) for sub-group 2a, indicating taxa more commonly recorded in a particular biotope-group (S = SIC/SOOC; V = AQV/MV and G = GSM) or season (W = winter and S = spring).

Order	Taxon	%	Biotope	Season
Plecoptera	Perlidae	100	S	
Ephemeroptera	Baetidae (3 types)	100		
	Caenidae	80		
	Heptageniidae	100	S	
	Leptophlebiidae	80	S	
	Tricorythidae	100	S	
Coleoptera	Elmidae/Dryopidae	100	S	
	Gyrinidae	100	V	
Trichoptera	Philopotamidae	80	S	
Diptera	Athericidae	100	S	
	Chironomidae	100		
	Simuliidae	100	S+V	
	Tabanidae	80	S	
	Tipulidae	100	S	
Hemiptera	Corixidae	80		
	Veliidae	80	V	
Odonata	Chlorocyphidae	100		
	Gomphidae	100	G	
Annelida	Oligochaeta	100	S+G	
	Hydrachnellae	80	S	S
Crustacea	Brachyura (Crabs)	80	S	
Platyhelminthes	Planariidae	100	S	

5.3.3.4 Biotope considerations

Expected median values for each biotope-group in each season, together with biological band ranges for O/E ASPT are given in Table 5.13. Because the number of sites in this sub-group are limited, the median values are per biotope-group, and not per season. See section 5.3.1.4 for an explanation of interpreting monitoring site data using this table.

Table 5.13 Sub-group 2a: Expected median values for calculating O/E ratios for each season and biotope-group combination. Band ranges (excluding Band X) for O/E ASPT are given for each biotope-group.

Biotope-group	Season	Expected median values for calculating O/E		
		SASS4 Score	Number of Taxa	ASPT
SIC/SOOC	All	119	16	7.50
AQV/MV	All	74	10	7.39
GSM	All	32	7	4.96
Band		O/E ASPT-SIC/SOOC	O/E ASPT-AQV/MV	O/E ASPT-GSM
A		≥ 0.9	≥ 0.9	≥ 0.9
B		> 0.8-0.9	> 0.8-0.9	> 0.8-0.9
C		> 0.7-0.8	> 0.7-0.8	> 0.6-0.8
D		≤ 0.7	≤ 0.7	≤ 0.6