



CAM 7

Special Report



East Fork Lewis River Lewisville Park

Battle Ground

Water Quality

- **DO:** Dissolved O₂ in the water.
- **pH:** A scale from 0-14, which measures acidity or alkalinity, with 7 as neutral; anything below being acidic, and anything above being basic.
- **Turbidity:** The amount of particulates in the water.



East Fork Lewis River macroinvertebrates

OWEB Level 2 Assessment of Water Quality*

The Level 2 assessment is based on family level identifications. The number of organisms in each family are counted and recorded. The family-level metrics and scoring criteria are:

Metric	Raw Score	5	3	1	Score (circle one)
Taxa Richness	23	>18	10 – 18	<10	5 3 1
Mayfly Richness	5	>4	2 – 4	<2	5 3 1
Stonefly Richness	4	>3	1 – 3	<1	5 3 1
Caddisfly Richness	6	>4	2 – 4	<2	5 3 1
% Diptera (diptera/total X 100)	3%	<15	15 – 30	> 30	5 3 1
% Dominance (sum top 3/total X 100)	74%	<30	30 – 50	> 50	5 3 1
				Sum the Score =	26

Score Range	Stream Condition
> 23	No Impairment: passes Level 2 assessment. Indicates good diversity of invertebrates and stream conditions with little disturbance. Further sampling will help confirm the site's condition as unimpaired.
17 – 23	Moderate Impairment: Evidence of some water quality impairment exists. Requires further study and more detailed analysis.
<17	Severe Impairment: Fails Level 2 assessment. Evidence of stream disturbance exists. Further study may be warranted to confirm level of impairment and potential causes.

* OWEB Level 2 Assessment as presented to Clark County educators by the Environmental Information Cooperative, Fall 2005

East Fork Lewis River @ Lewisville Park Macroinvertebrate Totals

Location: E. Fork Lewis R. at Lewisville Park Date: November 2005 - April 2013 Sample #/ID: CAM Jr. High - 7th gr. Science			FFG*** Functional Feeding Group		Nov 2005	Mar 2006	Sep 2006	Nov 2006	Mar 2007	Sep 2007	Nov 2007	Apr 2008	Sep 2008	Nov 2008	May 2009	Oct 2009	Nov 2009	Apr 2010	Sep 2010	Nov 2010	Apr 2011	Sep 2011	Nov 2011	Apr 2012	Oct 2012	Apr 2013	TOTAL
Mayflies (Ephemeroptera)																											
	ameletid minnow mayfly*	collector-gatherer	2	3	2	4	77	2	7	34		3	19	3		4	3	26	31	1	1	75	2	9		308	
	small minnow mayfly	collector-gatherer	50	98	27	23	58	48	82	122	37	96	86	80	9	58	88	20	110	45	70	112	51	92		1462	
	flatheaded mayfly	scraper	185	277	92	74	78	205	109	460	116	121	281	187	38	433	54	2	354	48	31	215	73	330		3763	
	spiny crawler mayfly	collector-gatherer	13	22	23	16	73	23	32	295	22	51	243	29	4	349	32	4	149	44	19	186	50	304		1983	
	pronggilled mayfly	collector-gatherer	1	1	6	20	21	8	2	1	18	2	7	7	1		14			2	5		11	8		135	
																										0	
Stoneflies (Plecoptera)																											
	golden stonefly	predator	5	7	12	10	21	16	10	25	18	45	38	18			31	20		22	32	11	28	18	46	433	
	yellow stonefly	predator	20	11	16	10	8	6	18	15	16	36	25	30	6	21	10	2	19	21	10	10	16	10		336	
	little green stonefly*	predator	7	15	1	9	5	1	15	15	4	4	6	3	6	4			3	3	9	19	17	14		166	
	little brown stonefly*	shredder	2	5	2	5	6		5	4	4	7		3	1		4				5	1	3	5		62	
	slender winter stonefly*	shredder			1	4	1	1	33					2	5		3	1				20				71	
	giant stonefly*	shredder	1		1						1						1		1							5	
	rolled-winged stonefly	shredder		1	1																					2	
																										0	
Caddisflies (Trichoptera)																											
	northern case-maker caddisfly	shredder	2	32	21	29	79	10		150	24	34	64	6	2	35	15	4	98	14	7	45	9	54		734	
	saddle case-maker caddisfly*	scraper	3	2	2	5		2		2		4	1			1	4			1			1	2		30	
	net-spinner caddisfly	collector-filterer	9	5	48	5	3	21	5	11	28	38	17	33	1	16	13	1	7	10	4	3	52	8		338	
	free-living caddisfly*	predator	1	1	8	1	3			2		9	6		2	2	9	1	1	2		1	4	4		57	
	finger-net caddisfly*	collector-filterer	1		5	3	3	3	1	1		1		2		2	4							1		27	
	lepidostomatid/humpless	shredder	4		1	27	2	2	8	22	7	27	7	5	4	29	12		27	14	58	13	8	27		304	
																										0	
Dobsonfly and Alderfly (Megaloptera)																											
	dobsonfly/hellgrammite*	predator																								0	
	alderfly*	predator											1													1	
Dragonflies & Damselflies (Odonata)																											
	dragonfly*	predator				2																				2	
	damselfly*	predator																								0	
True Bugs (Hemiptera)																											
	water boatman	collector-gatherer**				1					1	1											1			4	
	water strider	predator**				2	1	2	1	2	3				3			1				1				16	
																										0	
Water Beetles (Coleoptera)																											
	rifle beetle - larva	collector-gatherer	2	1	16	4	3	15	4	1	10	6	2	19		8	16		3	4	6	4	8	7		139	
	rifle beetle - adult	collector-gatherer	1		22	7	1	29			15	10	4	28		3	5	3	1	14	1	3	1	2		150	
	predaceous beetle*	predator		1	1		1								1		3	1								8	
	water penny*	scraper																								0	
																										0	
True Flies (Diptera)																											
	midge	collector/predator	8	162	43	6	63	41	18	68	42	43	44	24	21	31	45	7	27	55	73	28	33	31		913	
	black fly	collector-filterer	2	5	9	6	13	22	2	8	34	13	9	9		7	15		1	5	4	12	5	1		182	
	crane fly	shredder/predator		4	5	4	2	7	4	7	5	14	1	8	7	5	14		3	4	5	4	3	2		108	
	horse fly/deer fly	predator									1															1	
Other Aquatic Macroinvertebrates																											
	flatworm (Platyhelminthes)	predator/collector	1		7	3	5	12		3	12	4		2	2		5	1		3		2	2	2		66	
	aquatic earthworm (Annelida)	collector-gatherer	35	13	54	31	13	78	20	20	58	19	15	26	19	82	32	24	32	46	10	21	6	17		671	
	gilled snail (Mollusca) - right-side opening	scraper	1		3	2	1	1	1	1	9	12	1	3	6	1	7	18	3	5	6	4	6	1		92	
	pouch snail (Mollusca) - left-side opening*	scraper								1							1									2	
	snail (other - limpet, coiled shell ...)	scraper								1		1						2								4	
	clam/mussel (Mollusca)	collector-filterer																								0	
	water mite (Arachnida)	predator/scavenger	13	13	42	22	26	67	12	5	20	30	10	53	4	4	25		6	24	1	13	21	2		413	
	scud (Crustacea)*	collector-gatherer	1															2								3	
	aquatic sowbug (Crustacea)*	collector-gatherer																								0	
	crayfish (Crustacea)	collector-gatherer						1	1	1	2	13	3	1						1						23	
	aquatic moth larva	shredder/scraper												1						1			2			4	
	brachiopod/dellid worm	collector											1		2											3	
		Total Macros	370	679	471	335	567	623	390	1277	507	646	889	590	136	1128	459	119	898	399	357	799	403	979		13021	
		Cumulative Totals	370	1049	1520	1855	2422	3045	3435	4712	5219	5865	6754	7344	7480	8608	9067	9186	10084	10483	10840	11639	12042	13021			
*show macroinvertebrate to teacher																											
***FFG from: Freshwater Invertebrates (Voshell/McDonald & Woodward)																											
***FFG from: Macroinvertebrates of the Pacific Northwest (Jeff Adams/Xerces Society)																											

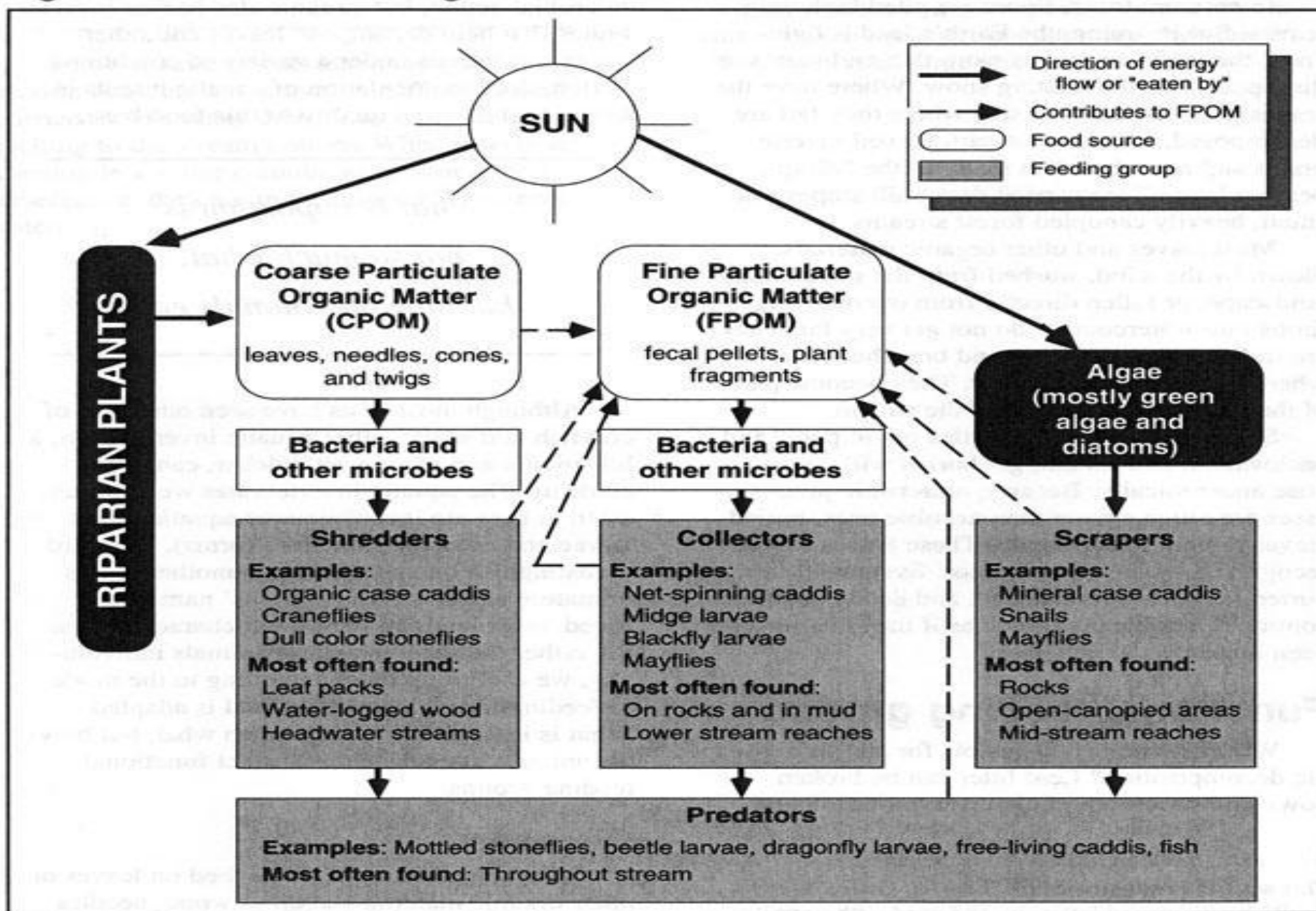
*show macroinvertebrate to teacher

**FFG from: Freshwater Invertebrates (Voshell/McDonald & Woodward)

***FFG from: Macroinvertebrates of the Pacific Northwest (Jeff Adams/Xerxes Society)

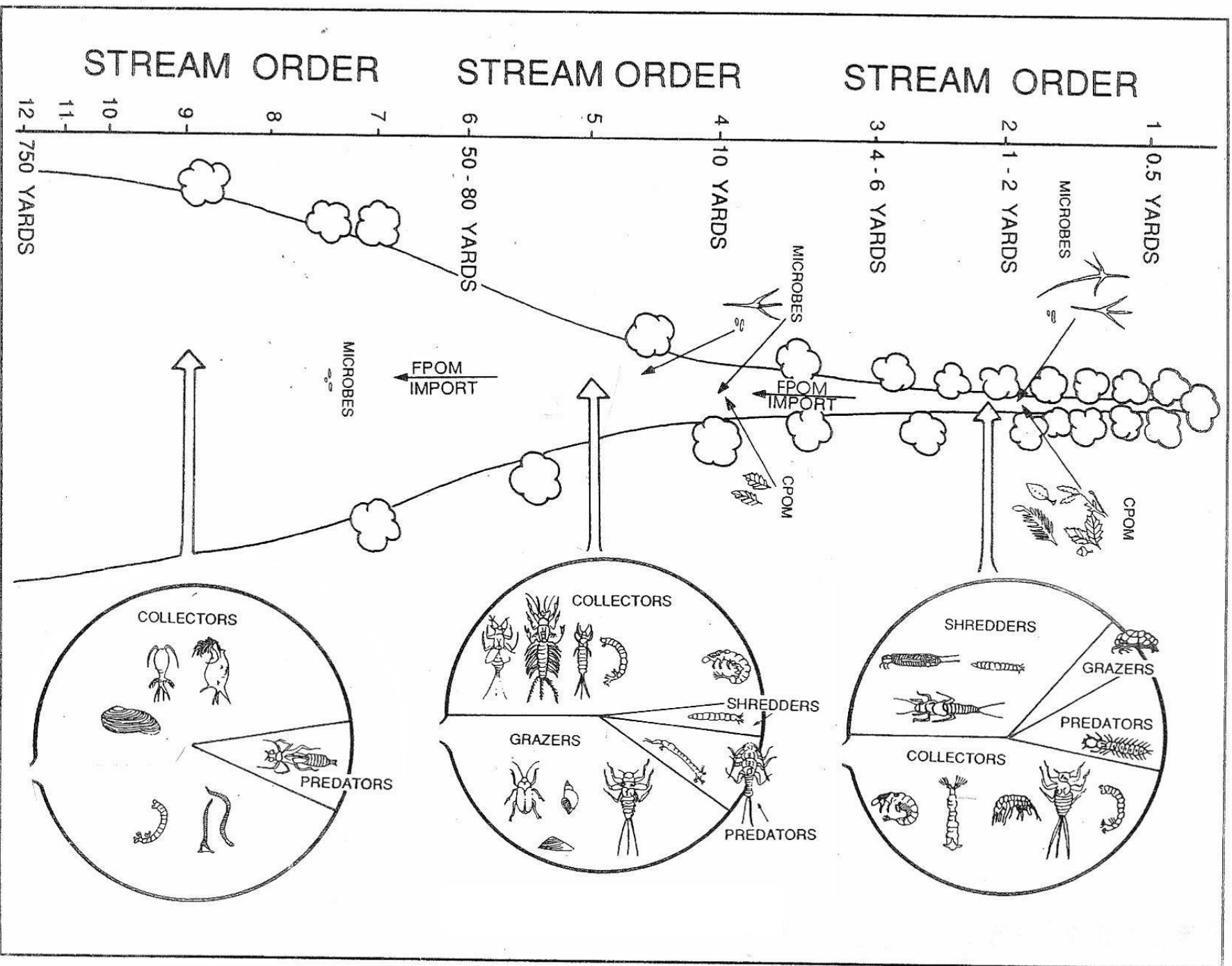


Figure 13. Food Processing in Streams



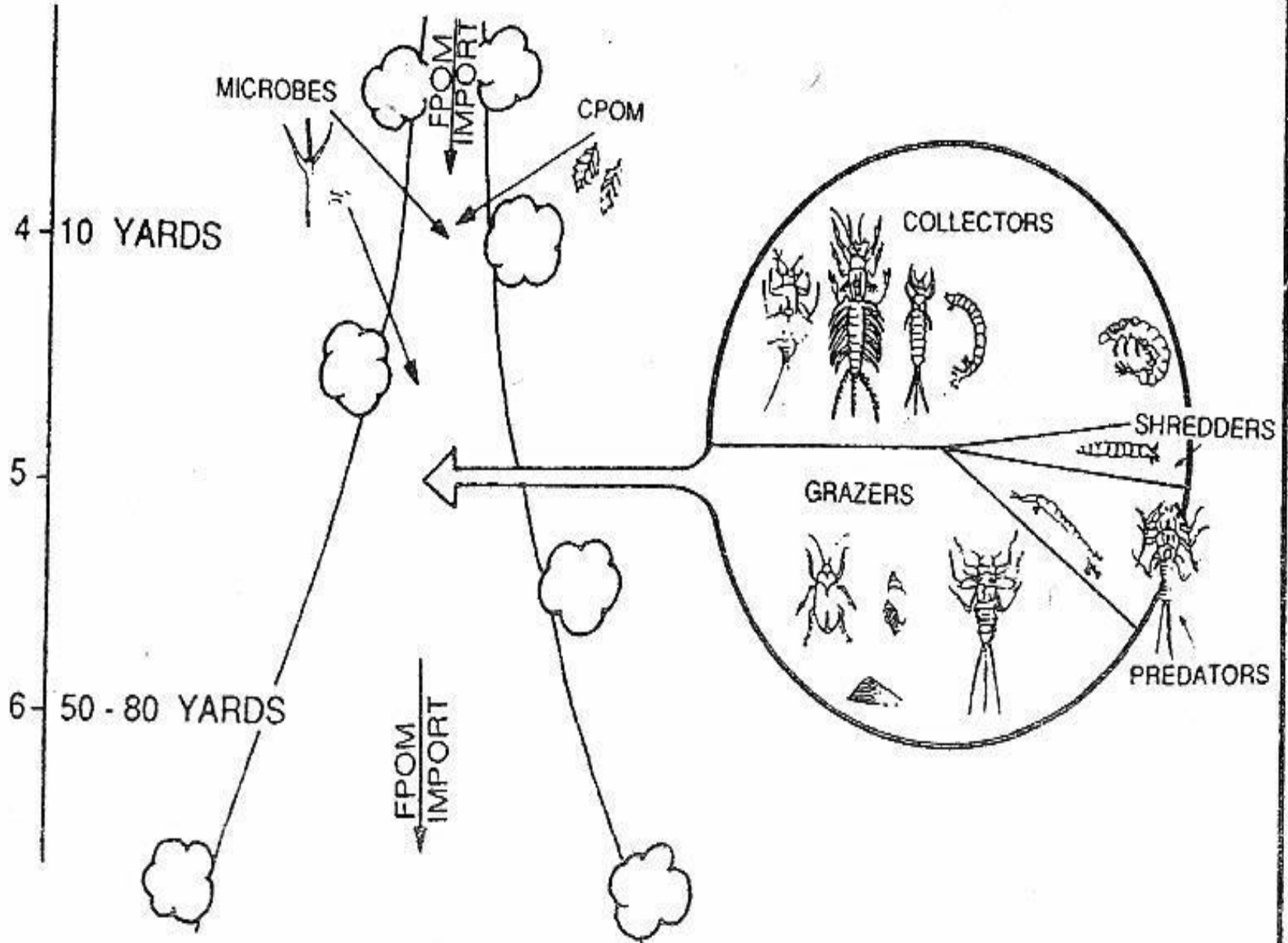
Adapted from: Ken Cummins, "From Headwater Streams to Rivers," *American Biology Teacher*, May 1977, p. 307.

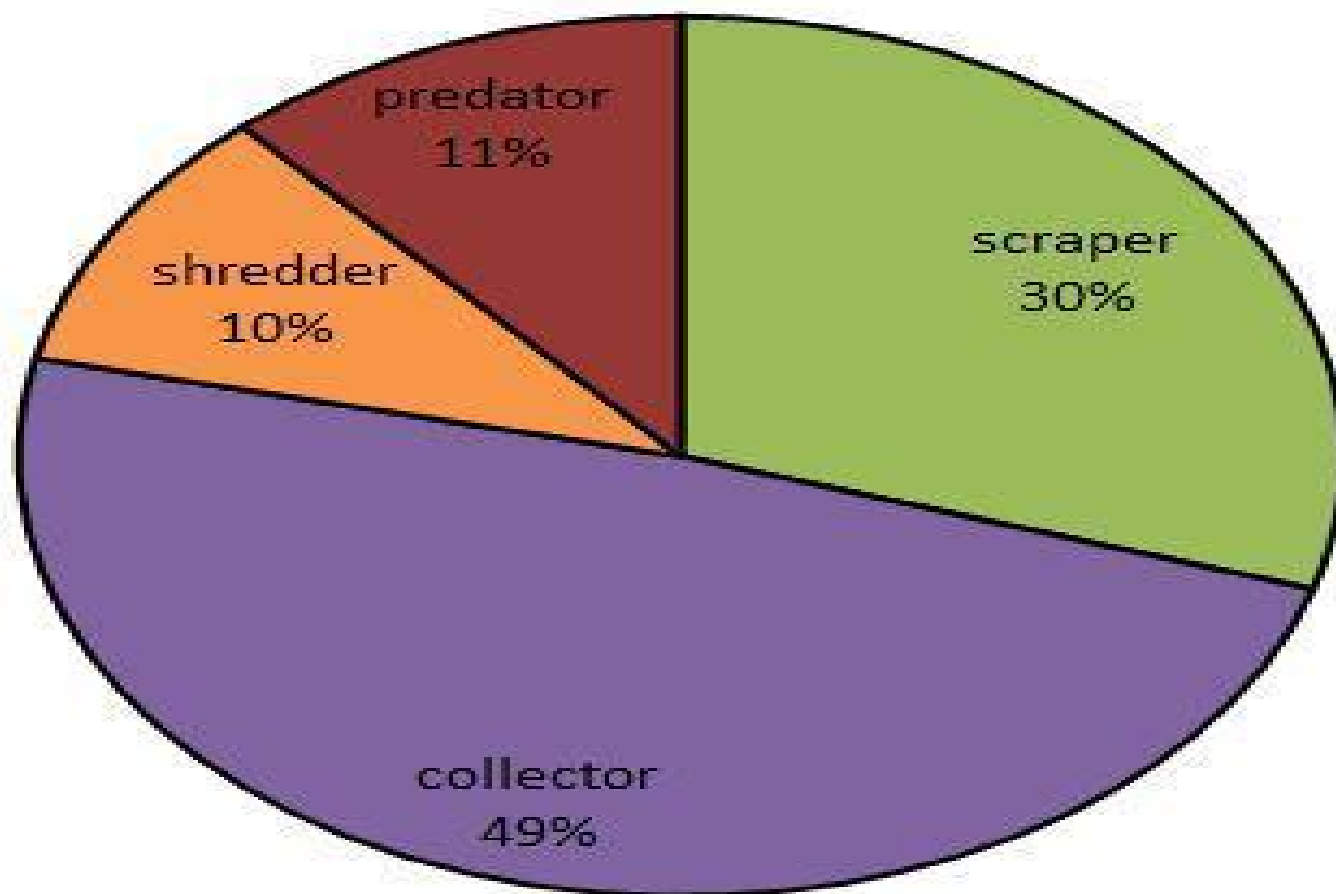
Figure 14. The River Continuum



Source: Ken Cummins, "From Headwater Streams to Rivers," *The American Biology Teacher*, May 1977, p. 306.

STREAM ORDER





Functional Feeding Groups:

scraper	3891
collector	6341
shredder	1290
predator	1499
Total	13021



**East Fork Lewis River --
A most excellent stream!**



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