Marine and Freshwater Research **66**, 233-246
http://dx.doi.org/10.1071/MF13142

Supplementary material

Organic carbon reservoirs in five small rivers across a land-use gradient

V. Vyšná[A,B], *F. Dyer*[A], *W. Maher*[A] *and R. Norris*[A]

[A]Institute for Applied Ecology, University of Canberra, Bruce, ACT 2617, Australia.

[B]Corresponding author. Email: vika.vysna@gmail.com

Representativeness of measurement

TOC concentrations along the Paddys River were measured on eight occasions throughout March–December 2012. The range of TOC concentrations was 1.80–6.15 mg L^{-1}, site-specific coefficients of variation (CV) of TOC concentrations varied from 20 to 35% and a similar longitudinal pattern as presented in results presented in the main text (i.e. lowest concentration at site P1, concentrations increasing in the downstream direction and levelling off at P3–P6) was found on every sampling occasion. Suspended OC concentration along the Paddys River was measured on eight occasions. Although, the range of suspended OC concentrations was 1.4–35.6 mg L^{-1} and the site-specific CV of concentrations of suspended OC along the river varied from 27 to 70%, the longitudinal patterns were identical with the one presented in results in the main text, except for concentrations at sites P2–P3 being an order of magnitude higher than at other sites on some sampling occasions. Drift OC was determined on six occasions. The longitudinal pattern in drift OC was different on every occasion, but, in general, lower values for drift OC were recorded at downstream sites. The mass of drift OC (grams (DW) corrected for flow velocity and the duration of drift-net deployment) varied longitudinally from 12.6 to 144.5 in March, from 4.0 to 30.7 in May, from 5.9 to 28.7 in July, from 11.2 to 82.7 in September, from 1.7 to 20.5 in November and between 2.6 and 28.5 in December. The variability of the mass of drift OC at a site, determined from three drift-nets deployed at the same time at sites P1 and P6, was 11.7 and 31.1% respectively (results not shown). The above suggested a very consistent longitudinal pattern of TOC concentration (excluding condition during and immediately after rainfall events when we did not sample); large within-site variability in suspended OC concentrations but little variability in the overall longitudinal patterns of suspended OC; and a large within-site variability in drift OC mass and the longitudinal pattern in drift OC throughout the year (Fig. S1).

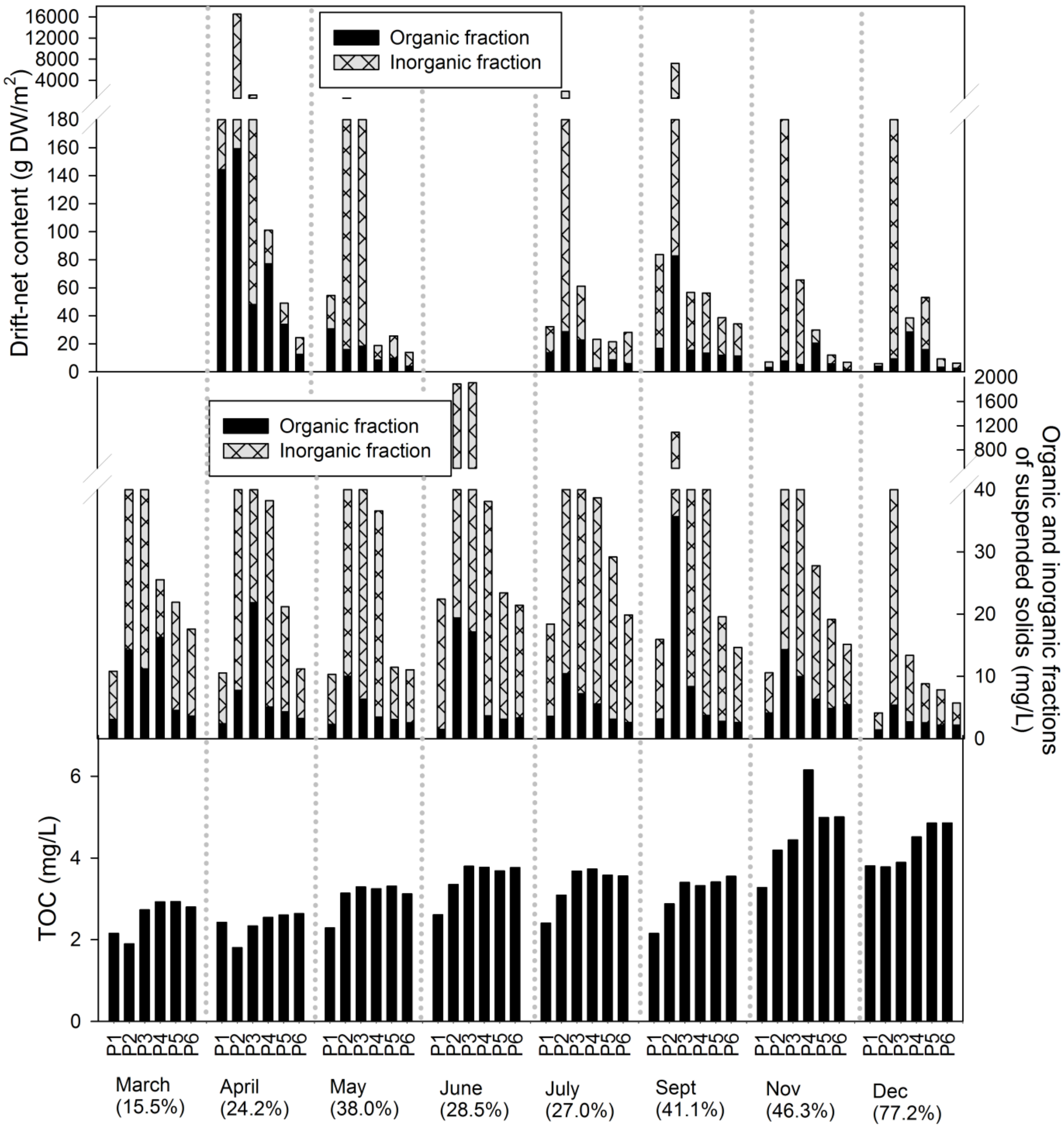

Fig. S1. Temporal variability of the longitudinal pattern in organic and inorganic fractions of the drift-net content (top), fractions of suspended solids (middle) and water column TOC concentration (bottom) in the Paddys River throughout 2012. The mass of drift-net content was normalised for flow and the duration of deployment. Data for TOC concentration for November represent data for sampling day 1 (i.e. drift-net deployment).

Table S1. Characteristics of study subcatchments

River	Dominant landforms	Elevation range	Dominant native vegetation
Naas	Moderately steep (10–32%) and steep (32–56%) hills	~680–1800 m	Dry grass forest or shrub forest (lower section), montane tableland forest (upper section)
Yass	Plains (<10%) and undulating hills (10–32%)	~520–950 m	Dry grass/shrub forest
Paddys	Moderately steep (10–32%) and steep (32–56%) hills (upper section), plains (<10%) and low undulating (10–32%) hills (lower section)	~470–1600 m	Montane tableland forest and dry grass/shrub forest
Goodradigbee	Moderately steep (10–32%) and steep (32–56%) hills	~570–1900 m	Montane tableland forest and sub-alpine low forest (upper section), montane tableland forest, wet sclerophyll forest and dry grass/shrub forests (lower section)
Queanbeyan	Plains and gently (<10%) undulating hills (upper section), moderately steep (10–32%) hills	~680–1600 m	Montane tableland forest (upper section), dry grass/shrub forest (lower section)

http://dx.doi.org/10.1071/MF13142

Table S2. Site characteristics

The number in the site code indicates the position of the site in the downstream direction. 'Percentage native cover' refers to an area of 1 km laterally from the river channel and 5 km upstream from a site

River	Site	Elevation (m)	Catchment area (km^2)	Geomorphology	Dominant lithology	Percentage native cover
Naas	N1	1090	82.9	moderately open valley	adamellite	100.0
	N2	1058	121.5	moderately open valley	adamellite, sandstone	100.0
	N3	900	141.7	narrow valley	granodiorite	100.0
	N4	844	165.8	narrow valley	granodiorite	100.0
	N5	748	196.4	narrow valley	granodiorite	100.0
	N6	679	229.3	narrow valley	granodiorite	100.0
Yass	Y1	641	89.9	open valley	sandstone	5.0
	Y2	586	258.8	open valley	sandstone	0.0
	Y3	543	351.4	plain	sandstone	5.0
	Y4	527	679.1	plain	sandstone	5.0
Paddys	P1	841	30.2	narrow valley	adamellite, leucogranite	100.0
	P2	758	54.7	moderately open valley	adamellite, leucogranite	50.0
	P3	692	81.9	moderately open valley	adamellite, leucogranite	0.0
	P4	635	124.9	moderately open valley	adamellite	0.0
	P5	617	226.7	gorge	adamellite, siltsone	0.0
	P6	493	246.3	gorge	adamellite, siltsone	30.0
Goodradigbee	G1	1242	15.0	moderately open valley	adamellite	100.0
	G2	1095	36.5	narrow valley	dacite, sandstone	100.0
	G3	681	292.7	narrow valley	dacite, conglomerate	100.0
	G4	608	368.7	moderately open valley	dacite, conglomerate	80
	G5	571	464.5	moderately open valley	dacite, conglomerate	50
Queanbeyan	Q1	999	80.1	open valley	granodiorite	10.0
	Q2	912	173.4	gorge	adamellite, sandstone	10.0
	Q3	888	343.9	open valley	granodiorite, adamellite	20.0
	Q4	790	580.5	gorge	sandstone	80.0
	Q5	756	629.3	narrow valley	shale, sandstone	60.0
	Q6	688	694.9	gorge	sandstone, granite, shale	50.0

http://dx.doi.org/10.1071/MF13142

Table S3. Site physicochemical characteristics

The number in the site code indicates the position of the site in the downstream direction

River	Site	Dominant substrate type	Daily min. temperature (˚C)	Daily temperature range (˚C)	EC (µS cm^{-1})	Turbidity (NTU)	pH	Total nitrogen (mg L^{-1})	Total phosphorus (mg L^{-1})
Naas	N1	cobble	11.2	7.8	40	5.6	7.7	0.43	0.04
	N2	cobble	12.7	5.3	50	7.1	8.1	0.42	0.04
	N3	cobble, pebble, gravel	13.7	6.9	57	3.1	7.9	0.35	0.04
	N4	cobble, pebble, gravel	13.1	8.7	73	4.1	8.2	0.37	0.04
	N5	pebble	14.0	5.9	85	2.6	8.2	0.37	0.04
	N6	cobble, boulder, gravel	14.1	6.9	91	5.7	7.5	0.34	0.04
Yass	Y1	bedrock, pebble, cobble	17.7	7.0	800	3.2	7.7	0.38	0.02
	Y2	bedrock	18.1	4.5	641	6.8	7.6	0.44	0.02
	Y3	silt, pebble	18.9	5.6	497	12.8	7.5	0.44	0.03
	Y4	silt	18.6	2.8	604	22.8	7.4	0.51	0.04
Paddys	P1	cobble	11.9	6.5	39	0.0	7.3	0.08	0.02
	P2	gravel, sand	12.7	11.3	42	55.2	7.2	0.21	0.04
	P3	gravel, pebble	13.7	12.9	51	41.2	7.6	0.21	0.05
	P4	cobble, pebble	15.5	9.1	63	22.3	7.9	0.21	0.04
	P5	pebble	15.6	12.7	76	8.9	7.9	0.17	0.04
	P6	cobble, boulder, pebble	17.6	6.6	78	10	8.5	0.18	0.04
Goodradigbee	G1	cobble, boulder, pebble	7.6	4.6	10	8.0	6.4	0.11	0.04
	G2	boulder, cobble, pebble	8.1	7.5	18	8.0	7.4	0.10	0.03
	G3	cobble, pebble	12.6	5.8	89	1.4	7.9	0.07	0.02
	G4	cobble, pebble, boulder	13.5	9.2	85	1.1	7.6	0.07	0.02
	G5	boulder, cobble, pebble	15.1	4.7	85	2.1	7.7	0.05	0.02
Queanbeyan	Q1	bedrock, gravel, sand	16.2	4.2	92	9.0	7.6	0.28	0.04
	Q2	bedrock, gravel, cobble	16.6	3.4	104	3.4	7.9	0.35	0.05
	Q3	pebble, boulder, gravel	16.7	4.1	90	6.0	7.6	0.23	0.04
	Q4	cobble, pebble, gravel	18.6	3.9	100	4.1	8.0	0.19	0.03
	Q5	cobble, bedrock, pebble	19.2	3.7	102	2.0	7.9	0.19	0.03
	Q6	cobble, bedrock, pebble	18.5	6.3	105	2.0	7.8	0.20	0.03