JOURNAL OF LIMNOLOGY

DOI: 10.4081/jlimnol.2014.1173

Supplementary Material

Morphology-based classification of functional groups for potamoplankton

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Tab. 1. A profile of the studied rivers. The values of altitude has been converted according to WGS-84 ellipsoid as datum level.

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Subpolar	Lena	4400	2,490,000	17,000	71.514645-70.805169	127.332542-127.651145	7.4-15	Plain river mainly for navigation and fisheries, ice period of 8 months, massive suspended sediment	4
	Yana	872	238,000	1000	70.924818-70.711847	136.416626-135.460816	10-11	Plain river mainly for navigation ice period of 8 months	5
Temperate	Heilongjiang	3420	1,620,170	8600	50.275797-50.229349	127.464682-127.61646	122.33-159.24	Plain river, ice period of 6 months	4
	*Xun	400	50,000	400	49.435221-49.325613	128.568287-128.884491	206.67-240.34	Plain river, ice period of 6 months, clear, original ecology	3
	Huma	500	80,000	500	51.739951-51.660641	126.430752-126.652669	165.54-336.29	Plain river, ice period of 7 months, clear	3
	*Songhua	1927	545,000	2530	45.833139-45.746261	126.714059-126.444998	112.03-116.46	Plain river through cities, ice period of 5 month	3
	Hulan	400	50,000	250	45.967946-45.925834	126.663128-126.74764	114.56-123.95	Plain river, ice period of 4 months, massive suspended sediment	5
	Lalin	400	51,000	260	45.48943-45.210518	125.671055-125.979209	122.14-145.16	Plain river, ice period of 4 months	3
	Nenjiang	1089	283,000	824	47.557212-47.293456	124.055273-123.885098	145-148.57	Plain river, ice period of 4 months, massive suspended sediment	3
	*Nuomin	500	25,000	80	48.416927-48.331125	124.340183-124.512658	178.92-195.79	Plain river mainly for agriculture, ice period of 4 months	4
	*Anlun	380	18,000	50	47.017043-46.951336	123.354774-123.500228	139.91-149.29	Plain river through forest, mainly for agriculture, ice period of 4 months, clear	3
	Wusuli	890	187,000	2000	46.001382-45.579872	133.69286-133.396203	57.75-60.35	Plain river through forest steppe, ice period of 4 months, original ecology	3
	Yinma	260	10,000	50	44.094553-44.072174	125.767028-125.783629	172.14-175.02	Plain river, ice period, clear	2
	Wuyuer	600	30,000	80	47.721742-47.571385	124.588678-124.430576	155.28-159	Endorheic river in plain, ice period	5
Temperate	*Suifen	254	10,004	60	44.407258-44.415294	131.149492-131.184778	494.8-524.68	Mountain river mainly for fisheries, ice	3

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
								period	
	Tumen	520	33,168	268	42.975168-42.931246	129.918182-129.881388	87.36-381.1	Mountain river mainly for tourism, ice period of 3 months	3
	Yalu	795	63,788	1005	41.798607-41.812372	126.897641-126.955132	332.01-488.31	Mountain river, ice period	4
	Mudan	1000	273,600	1300	44.629181-44.551121	129.696572-129.571815	235.15-245.96	Mountain river mainly for tourism, ice period of 3 months	4
	*Liao	1430	164,104	302	42.356604-42.301144	123.888626-123.767894	58.25-61.5	Plain river mainly for water projects, ice period of 3 months	3
	Taizi	400	30,000	100	41.321932-41.255801	123.208063-123.247444	16.2-76.86	Plain river mainly for agriculture and tourism, ice period	4
	*Hun	415	11,400	97	41.893956-41.874622	123.849624-124.061768	115.13-181.45	Plain river through cities, ice period of 3 month	4
	Laoha	426	33,076	100	42.309168-41.703696	119.229778-119.376957	569.93-680.29	Plain river mainly for water projects, ice period	3
	Luan	877	44,945	149	40.040773-39.966493	118.645705-118.740566	49.59-58.67	Plain river mainly for water projects, massive suspended sediment, ice period	3
	*Hai	1090	264,617	717	39.083374-39.148318	117.291703-117.201154	4.7-5.17	Plain river, ice period of 3 months, massive suspended sediment	5
	Chaobai	90	19,500	80	40.015323-39.746897	116.753537-117.036395	10.93-28.29	Plain river through cities, mainly for water projects, ice period	2
	*Yongding	680	50,800	500	40.37773-40.146049	115.461126-115.714089	489.37-1198.9	Mountain river mainly for water projects, massive suspended sediment, ice period	3
	*Dahei	274	13,679	5.7	40.170754-39.993216	111.189064-111.425929	1031.52-1078.34	Plain river mainly for agriculture, ice period	4

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Subtropical	*Daqing	483	45,131	600	39.064895-39.035531	116.833956-116.996944	3.31-4.39	Plain river mainly for fisheries	4
	Hutuo	513	27,300	70	38.222778-38.059312	114.808286-115.284316	37-54.18	Plain river mainly for water projects, massive suspended sediment	4
	Ziya	730	78,700	10	38.841045-38.485835	116.735606-116.460796	5.9-10.78	Plain river through cities, often drying	4
	*Yellow	5500	752,443	1820	36.866283-36.594164	117.163963-116.697132	24.55-32	Plain river through cities, mainly for water projects, ice jam flood, massive suspended sediment	5
	*Bai	630	12,500	105	32.902821-32.786341	109.976873-110.328721	258.86-482.71	Mountain river mainly for water projects, atmospheric depression	5
	Zuli	224	10,700	4.8	36.507902-36.072242	104.639374-105.028017	1696.02-1820.27	Plain river, hypersaline water	3
	*Fen	716	39,000	84	37.904648-37.916449	112.539813-112.277032	798.12-1084.42	Mountain river mainly for water projects, agriculture and navigation	4
	Wei	818	134,300	171	34.449622-34.300887	106.98745-107.445083	549.81-902.72	Mountain river mainly for agriculture and navigation, massive suspended sediment	3
	*Huang	374	32,863	147	36.691539-36.6202	101.611279-101.81135	2219.87-2378.61	Mountain river mainly for agriculture and water projects	3
	Tao	669	31,400	172	35.74135-34.967003	103.640655-103.849924	1823.03-2529.17	Mountain river mainly for water projects	3
	Yi	322	11,555	122	35.892384-35.576431	118.551292-118.531744	104.42-203.72	Mountain river mainly for water projects, massive suspended sediment	3
	Huai	1000	185,700	1110	32.961737-32.985483	117.265381-117.539616	13.03-17.58	Plain river mainly for water projects, agriculture, navigation and fisheries, grievous pollution	4
	Chi	245	5015	30	32.658881-32.498724	117.955659-117.949335	33.81-40.45	Plain river mainly for water projects and navigation	4

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Subtropical	Shu	400	6400	50	35.165292-34.847397	118.655944-118.558209	51.81-70	Plain river mainly for water projects and navigation	4
	*Si	159	2361	30	35.686462-35.636726	117.107798-117.381457	89.97-134.25	Plain river often drying, grievous pollution	3
	*Bailu	150	2400	10	31.778701-31.74149	115.142045-115.1935,3	108.14-109.19	Plain river	3
	*Yangzi	6300	1,807,199	31060	31.837813-32.200296	118.507824-119.338002	0-6.33	Plain river mainly for navigation and agriculture	5
	Xinyanggang	69.8	2478	540	33.540608-33.405694	120.383153-120.157786	0.16-1.9	Plain river mainly for drainage	4
	Beiliutang	60	1800	30	34.082776-33.967885	119.158206-119.044372	5-5.73	Plain river mainly for drinking water sources	5
	*Great Canal	1794	40,000	30	33.855715-33.722259	118.383219-118.643081	16-18.78	Artificial plain canal through cities, mainly for navigation	10
	*Qinhuai	110	2630	15	32.083012-31.808479	118.744266-118.906393	6.26-16.89	Plain river through cities, mainly for agriculture	6
	*Tongyu	415	1000	100	33.431285-32.932352	120.142273-120.319347	0.09-1.22	Plain river mainly for navigation and agriculture	8
	*Dasha	61	1700	20	34.9221-34.475746	116.83306-116.552501	31.91-50.03	Plain river mainly for agriculture and forestry	3
	*Jiuweigang	40	500	5	32.214947-32.214947	120.940555-120.940555	4.34-5.09	Artificial plain river for agriculture	3
	*Zhangjiagang	106.5	800	10	31.799852-31.762035	120.45478-120.59046,	4.64-4.82	Plain river mainly for navigation	4
	Yalong	1500	129,930	1800	26.576198-26.602044	101.669818-101.79055,	1112.79-1127.12	Mountain river mainly for water projects and navigation, massive suspended sediment, recharge of melting snow	3
	Xianshui	541	19,338	202	30.853883-30.213978	101.078945-101.012719	3317.16-3348.77	Mountain river mainly for water projects and navigation	4

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Subtropical	*Litang	516	19,114	268	28.702283-28.12483	100.884036-100.92543,	2325.15-3215.34	Mountain river, original ecology	4
	Dadu	1070	90,700	2033	29.27795-29.221478	102.478533-102.840729	1145.38-1299.87	Mountain river mainly for water projects, recharge of melting snow	4
	Min	735	135,788	2752	30.699073-30.656832	104.066342-104.094657	493.22-506.68	Plain river mainly for water projects and agriculture, massive suspended sediment	3
	Heishui	180	7222	140	22.787748-22.729495	106.917244-107.021615	178.62-248.72	Mountain river mainly for water projects	4
	Mabian	192	3540	138	29.137202-28.728529	103.737853-103.452695	701.7-1228.74	Mountain river through forest, mainly for water projects	5
	Jialing	1119	159,710	2165	30.893481-30.700906	106.182305-106.124239	287.42-366.73	Mountain river mainly for water projects, massive suspended sediment	3
	*Wu	1018	86,815	1650	28.794303-28.39342	108.394267-108.301131	552.14-584.05	Mountain river mainly for water projects and tourism	3
	*Li	372	18,872	553	29.592534-29.610622	111.416222-111.808314	33.18-54.71	Plain river mainly for navigation and water projects	3
	Xie	165	3201	120	29.942434-29.721445	110.771787-110.975721	234.13-394.74	Mountain river mainly for water projects, clear	3
	Dan	60	350	50	29.627368-29.671229	111.745740-111.929761	34-37.17	Plain river mainly for fisheries	4
	Yuangjiang	1060	88,815	2158	28.71987-8.865734	110.775961-111.492306	95.65-190.31	Plain river mainly for water projects and navigation	4
	Lixian	974	38,732	2764	22.966431-22.755967	101.776226-101.879136	1002.33-1313.39	Mountain river through tropical rain forest, mainly for water projects	4
	*Tengtiao	168	4854	1000	23.338526-23.137689	102.57367-103.072697	337.06-507.9	Mountain river mainly for water projects, clear except rainy season	3
	Zi	590	28,899	797	28.508336-28.620006	111.807066-112.317591	35.67-74.07	Mountain river mainly for water projects and tourism	3

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Subtropical	Xiang	817	96,738	2288	27.576658-28.673543	113.13415-112.878887	27-131.3	Plain river mainly for water projects and tourism	4
	Mishui	296	10,305	241	26.882923-26.59503	113.406896-113.650764	106.6-166.38	Plain river mainly for water projects and tourism	4
	Xiaoshui	354	12,099	329	26.272682-25.65112	111.616449-111.715088	136.06-416.35	Mountain river mainly for tourism, clear	5
	Han	1532	150,710	1792	30.596676-30.596676	113.697201-113.697201	22.17-26.08	Plain river mainly for water projects and navigation	4
	Lushui	152	5675	138	27.680419-27.651752	113.203683-113.532534	62.27-110.79	Plain river	4
	Ganjiang	744	82,068	2054	28.191159-28.648622	115.767445-115.857132	15-19.8	Plain river mainly for navigation, water projects and fisheries, grievous pollution	3
	Qiangtang	494	54,349	1484	30.007866-30.282698	119.939906-120.259559	3-12.82	Plain river mainly for water projects, navigation and tourism	3
	Oujiang	338	17,543	615	28.033962-28.14104	120.715356-120.527934	0-15.38	Plain river through wet land, mainly for fisheries and tourism	2
	*Minjiang	577	60,992	1980	26.110302-26.066691	119.177-119.528848	5-11.35	Plain river mainly for water projects and navigation	4
	Jiulong	258	14,741	446	24.662028-24.490098	117.636366-117.783545	3.02-26.54	Plain river mainly for water projects and navigation, hypersaline water, massive suspended sediment	4
	Zhuoshui	186	3155	176	23.906648-23.70457	120.711689-120.544963	57.22-223.34	Mountain river in island, mainly for water projects and tourism, massive suspended sediment	4
	*Beipan	456	26,357	390	25.82808-25.195312	105.386861-105.885996	470.94-900.85	Mountain river with many falls, mainly for agriculture	3
	*Liu	751	58,270	1280	25.195312-24.199782	105.885996-109.584388	77.28-87.35	Plain river mainly for water projects and navigation	3

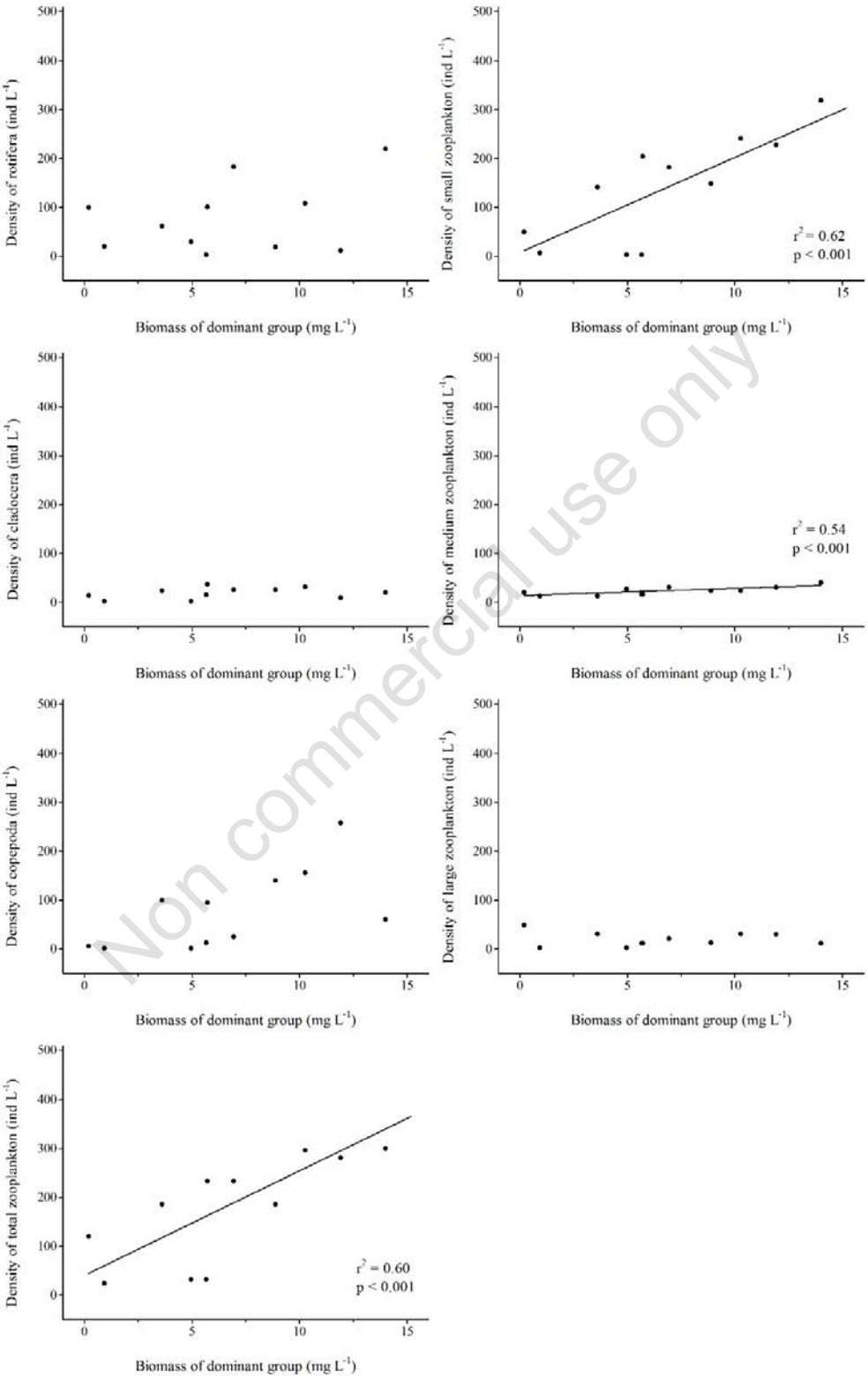
Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Tropical	He	352	11,536	194	24.268701-23.826634	111.722527-111.807748	59.21-184.67	Plain river mainly for water projects and navigation	2
	Nu	2013	124,830	2000	26.303188-25.019284	99.141815-99.712131	1887.56-1978.13	Mountain river through virgin forest	3
	*Hanjiang	325	34,314	942	23.799433-23.43707	116.574597-116.806863	4.88-187.26	Plain river mainly for water projects and navigation	4
	Xiatanshui	159	3257	228	22.755238-22.565146	120.453571-120.446018	7.68-18.85	Mountain river in island, short flow path, water-rich	4
	Pearl	2210	452,616	11070	23.095376-23.122499	113.445906-113.236062	3.83-11.35	Plain river mainly for water projects, navigation and tourism	4
	*Xi	2075	353,100	1220	23.088707-23.141887	112.139862-112.776869	3.22-24.76	Plain river mainly for water projects and navigation	3
	Yu	1157	89,677	1511	23.229982-22.802091	109.996027-109.451008	43.79-51.01	Plain river mainly for water projects, navigation and agriculture	4
	*Gui	437	19,025	569	23.434832-23.470902	111.022967-111.303526	3-7	Plain river mainly for water projects, agriculture and tourism, clear	3
	Bei	468	38,362	1260	23.845304-23.470341	113.266328-112.906431	8-241.06	Mountain river mainly for water projects, navigation and tourism	5
	Xunjiang	172	308,271	7271	23.586701-23.453097	110.220243-110.691674	32.27-36.45	Plain river mainly for navigation and tourism	4
	Qian	122	2210	1000	23.752961-23.57926	109.589298-109.689333	60.03-93.49	Mountain river through virgin forest, mainly for tourism	3
	Dong	523	25,325	700	23.148603-22.961855	113.871231-113.67346	2.62-15.54	Plain river mainly for water projects	3
	Jian	211	9433	270	21.676719-21.487428	110.955976-110.828344	4.42-30.97	Plain river mainly for water projects, massive suspended sediment	5

Temperature band	Rivers	Length (km)	Drainage area (km^2)	Mean discharge ($m^3 s^{-1}$)	Investigated reaches			Description of investigated reaches	N. of samples
					North latitude	East longitude	Altitude (m)		
Tropical	Nandu	340	6841	180	20.879083-20.862331	110.0287-110.148283	0.49-2.99	Plain river mainly for water projects and navigation, massive suspended sediment	1
	Yuan	640	39,840	634	24.061538-23.290543	101.591114-102.688053	250.8-817.22	Mountain river in limestone karst landscape, serious seepage, massive suspended sediment	5
	Lansang	2153	161,430	2354	24.74414-22.660475	100.177373-100.425736	1003.43-1366.74	Mountain river mainly for fisheries and water projects	2
	Weiyuan	290	8800	193	23.749004-23.048533	100.859345-100.587985	1276.11-1408.42	Mountain river through virgin forest	3
	*Liusha	65	1170	22	21.991341-21.993754	100.816166-100.775921	534.99-540.46	Plain river mainly for agriculture and water projects, massive suspended sediment	4
	Changhua	232	5150	136	19.113511-19.259915	109.028261-108.7615	23.68-84.38	Plain river mainly for sand mining, grievous pollution	4
	*Wanquan	162	3693	185	19.251724-19.15806	110.525916-110.344175	26.46-32.68	Plain river mainly for tourism, clear	4

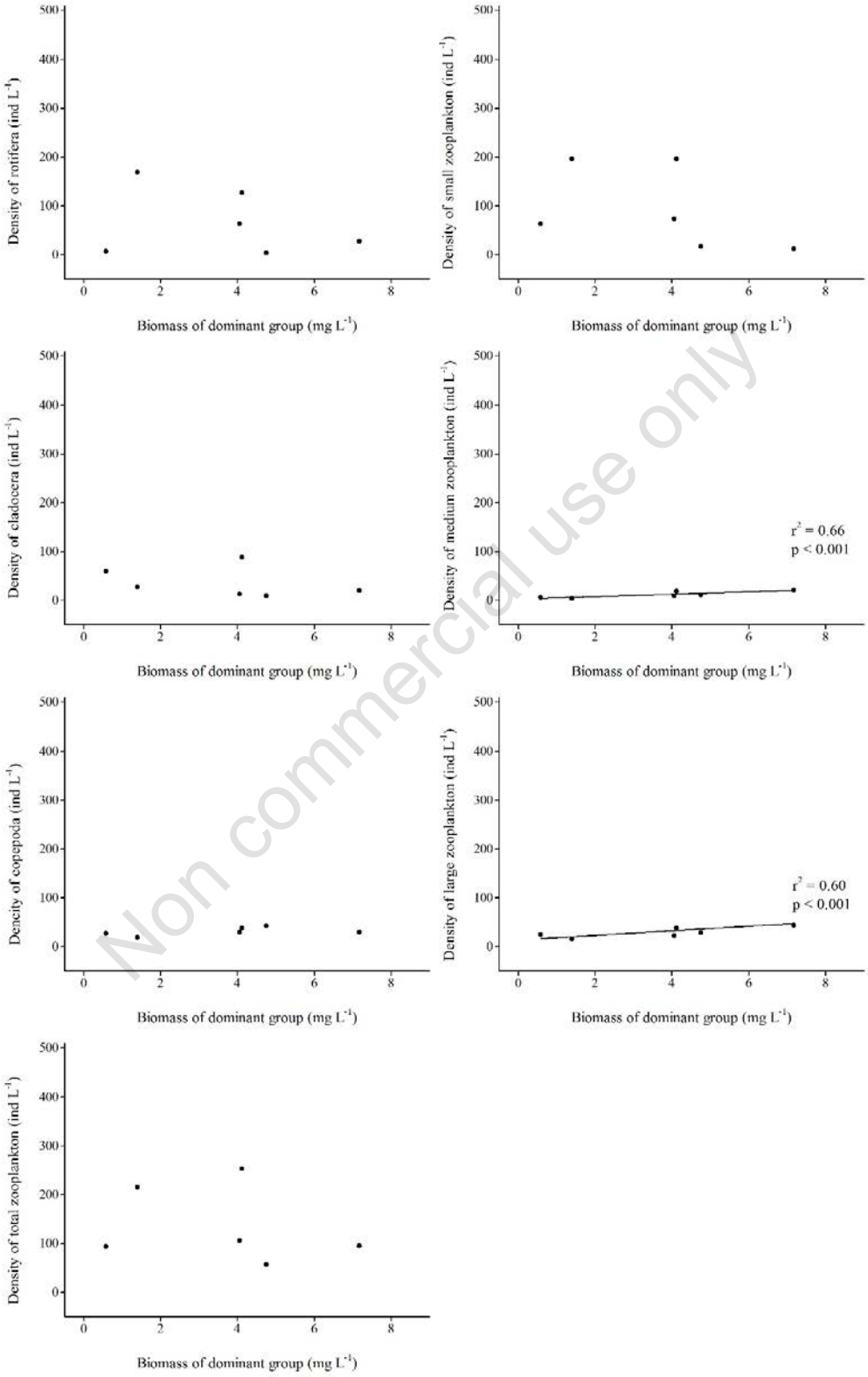
*Rivers sampled seasonally.

Fig. 1. Scatter diagram of zooplankton and potamoplankton. Density of predator class (rotifer, cladocera, copepoda and total zooplankton) and individual core body length (small: <330 μm, medium: 330-1000 μm and large: >1000 μm) with biomass of dominant $MBFG_R$ group (where dominance >75%), plotted as a function of zooplankton and potamoplankton for rivers. Least-squares linear regression are included and summarized in Tab. 5 of the manuscript.

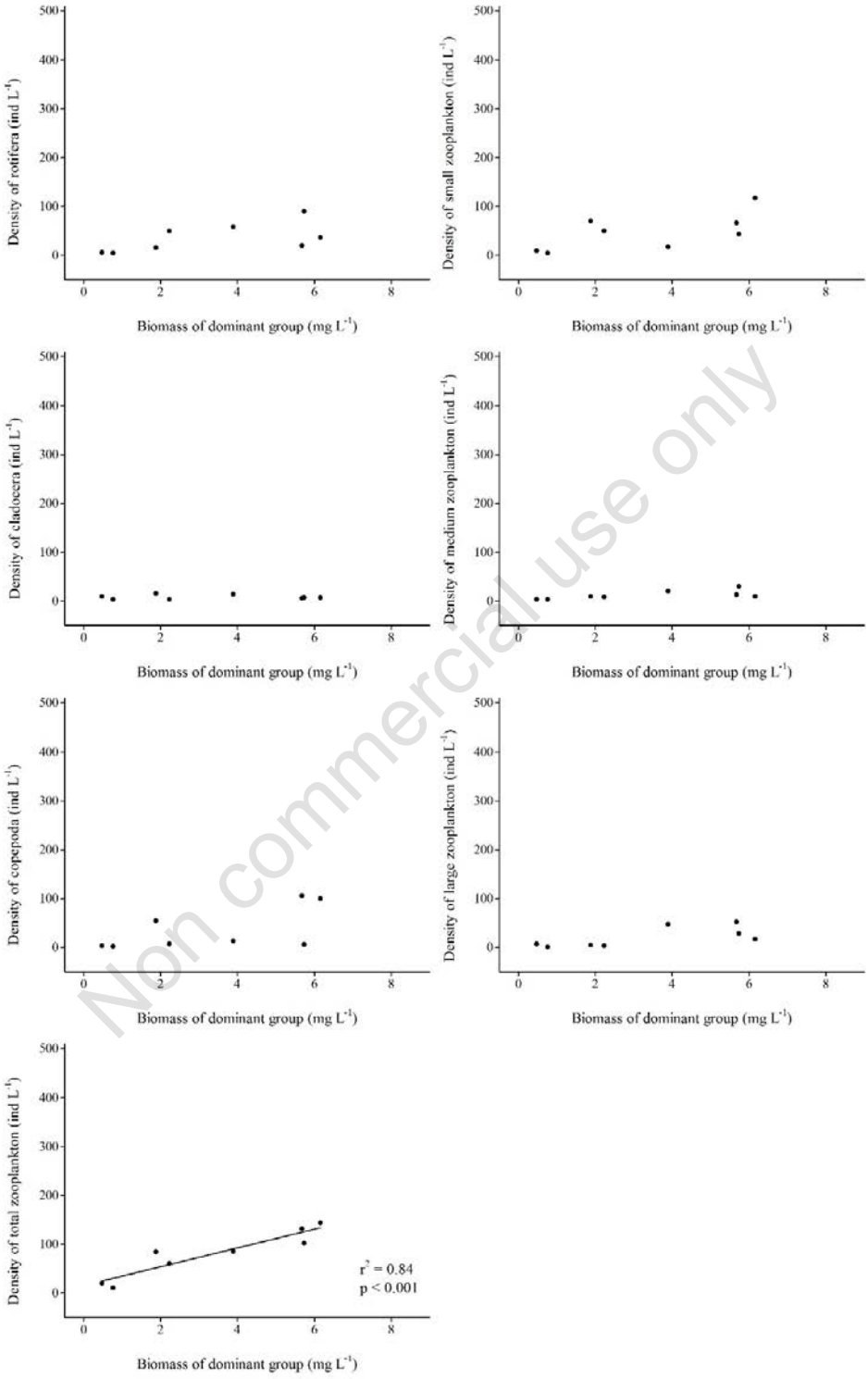
Dominant group: RIa



Dominant group: RIb



Dominant group: RIIa



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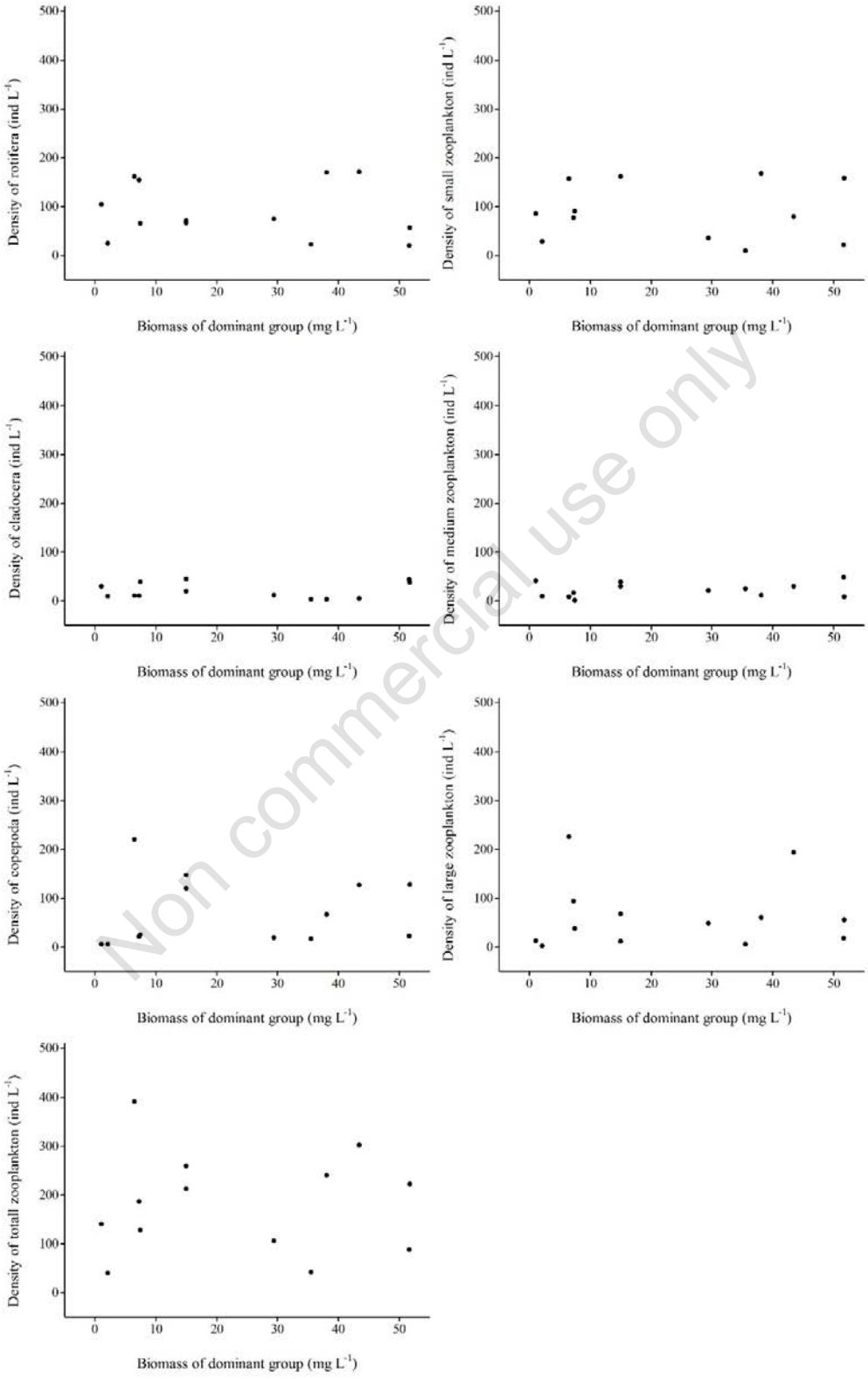
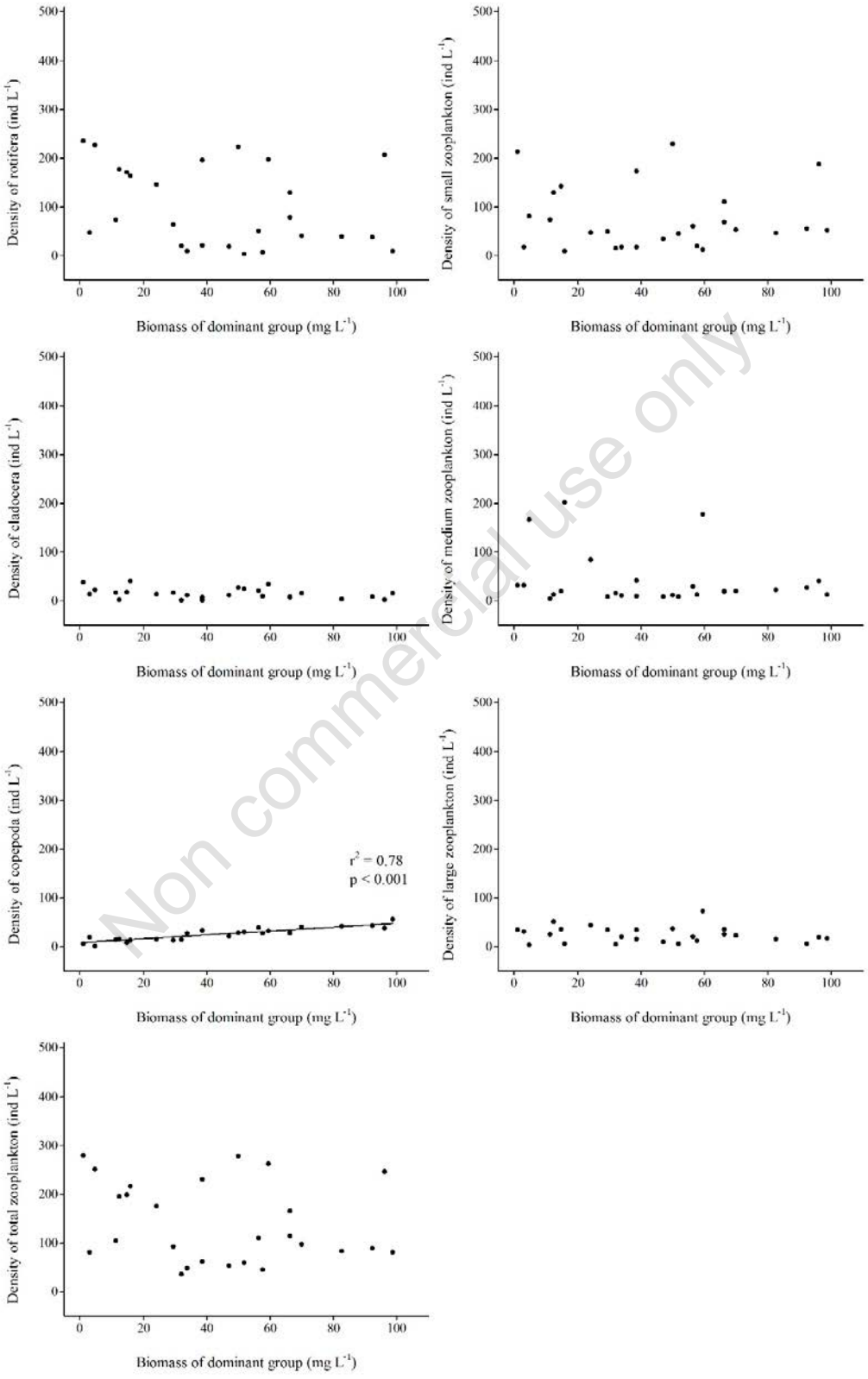


Dominant group: RIII



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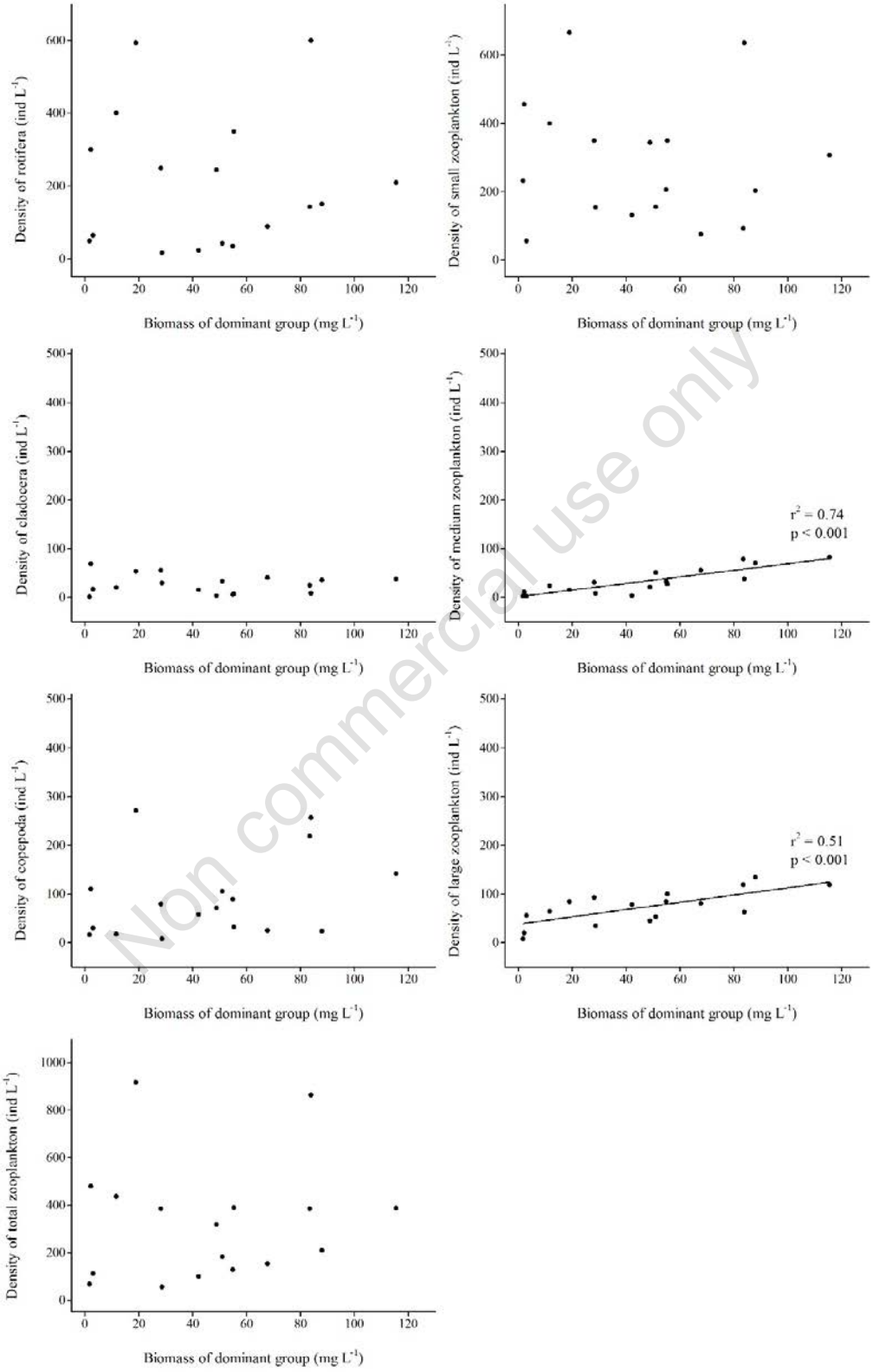
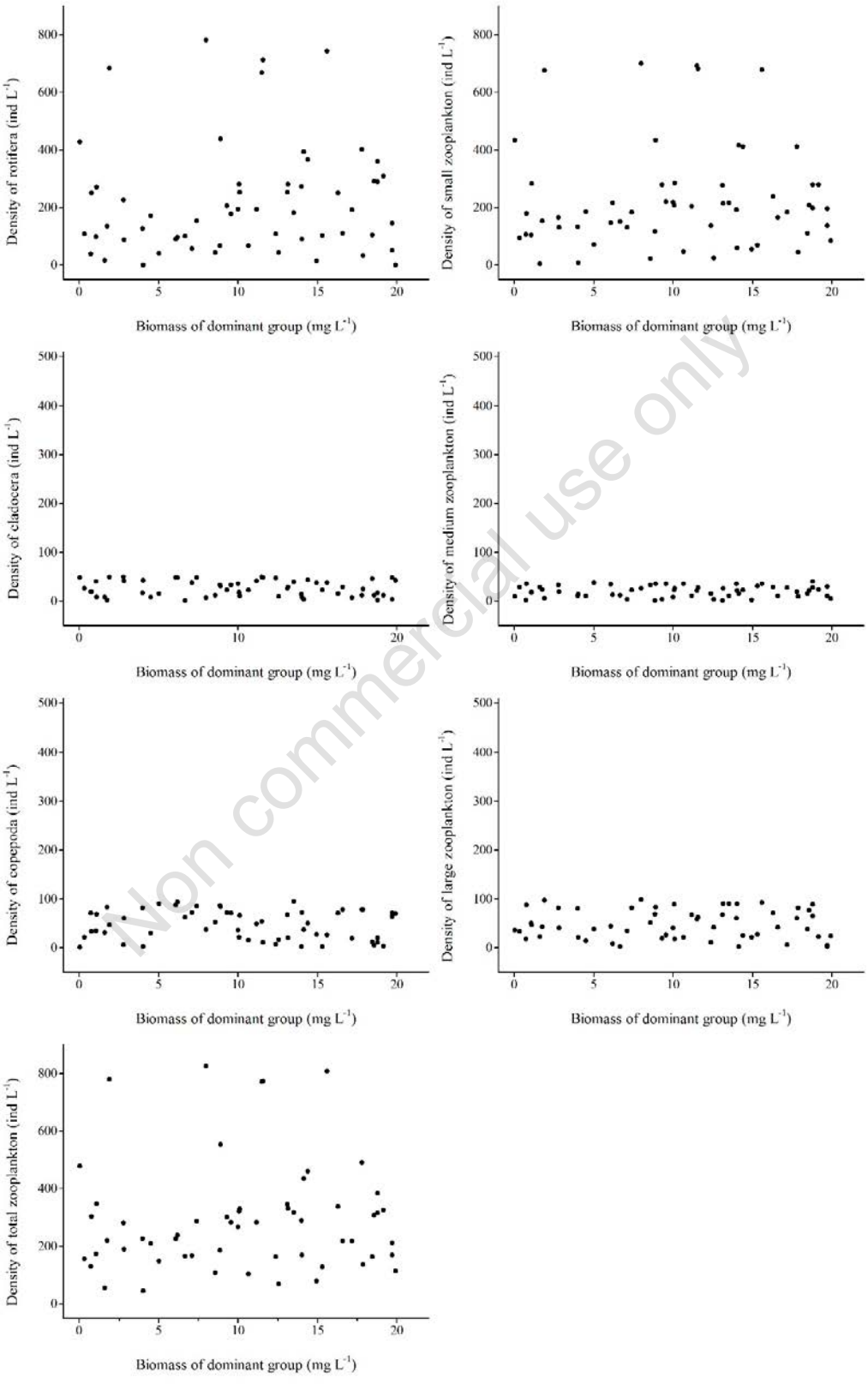
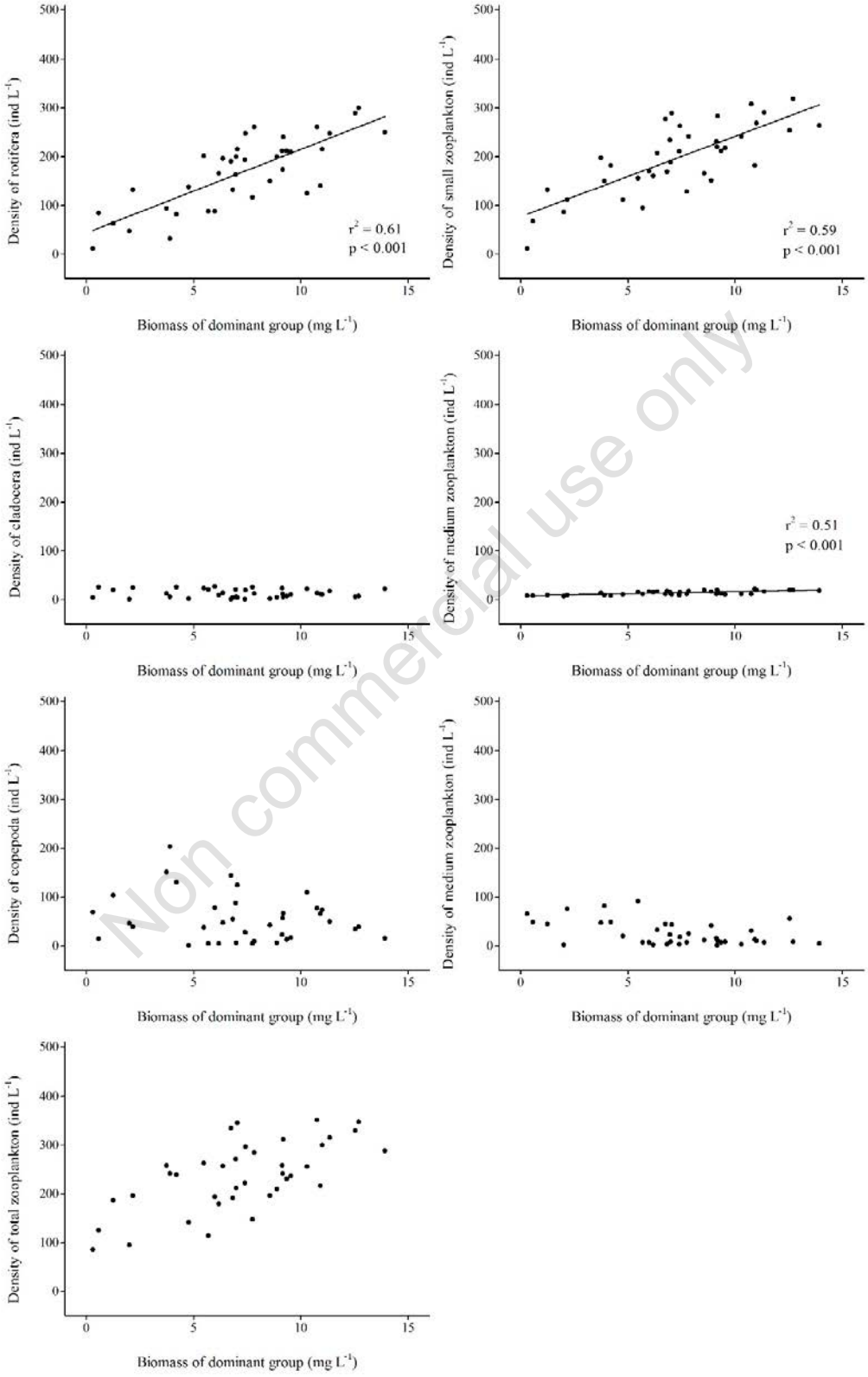


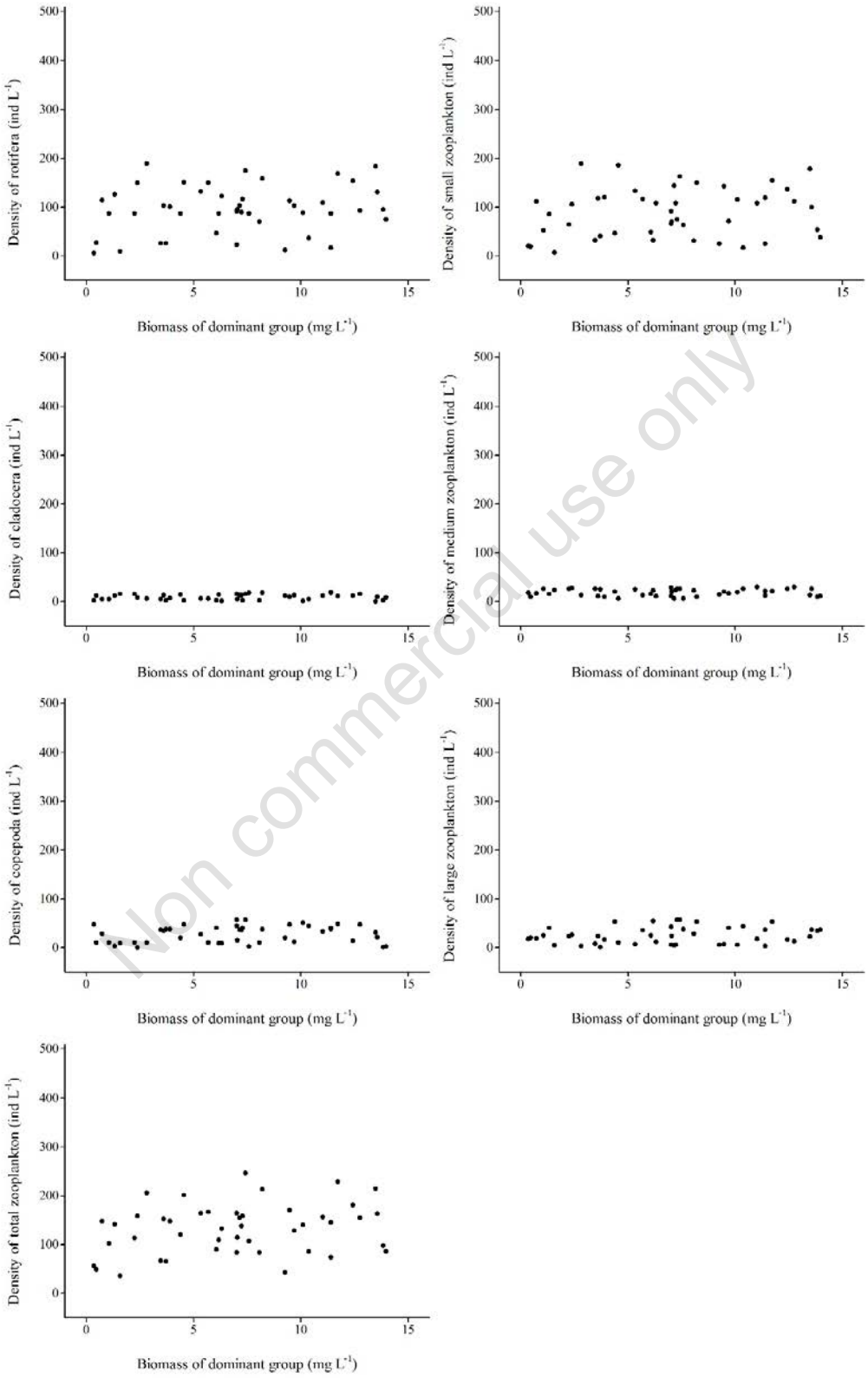
Dominant group: RV



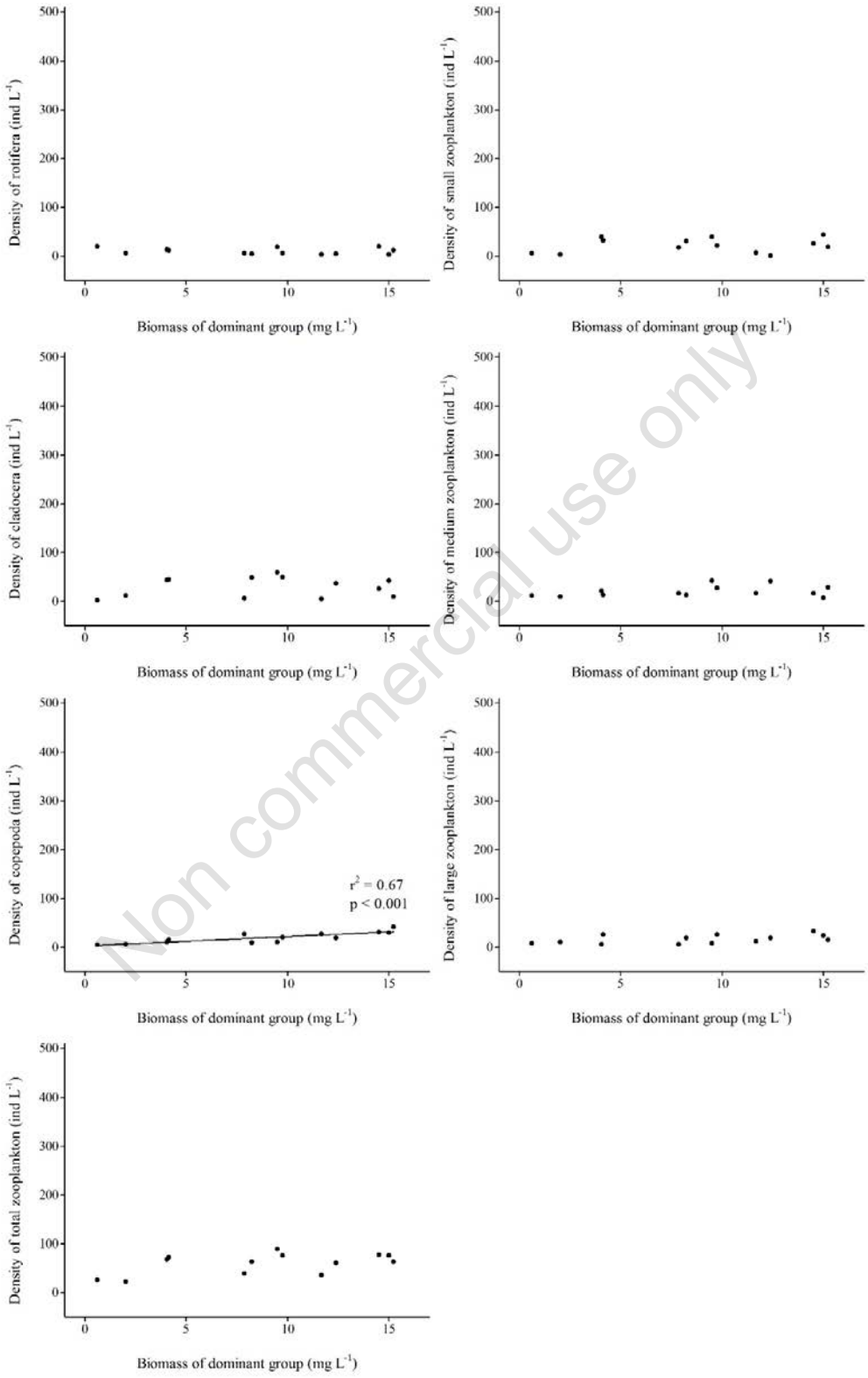
Dominant group: RVIa



Dominant group: RVIb



Dominant group: RVIc



Dominant group: RVII