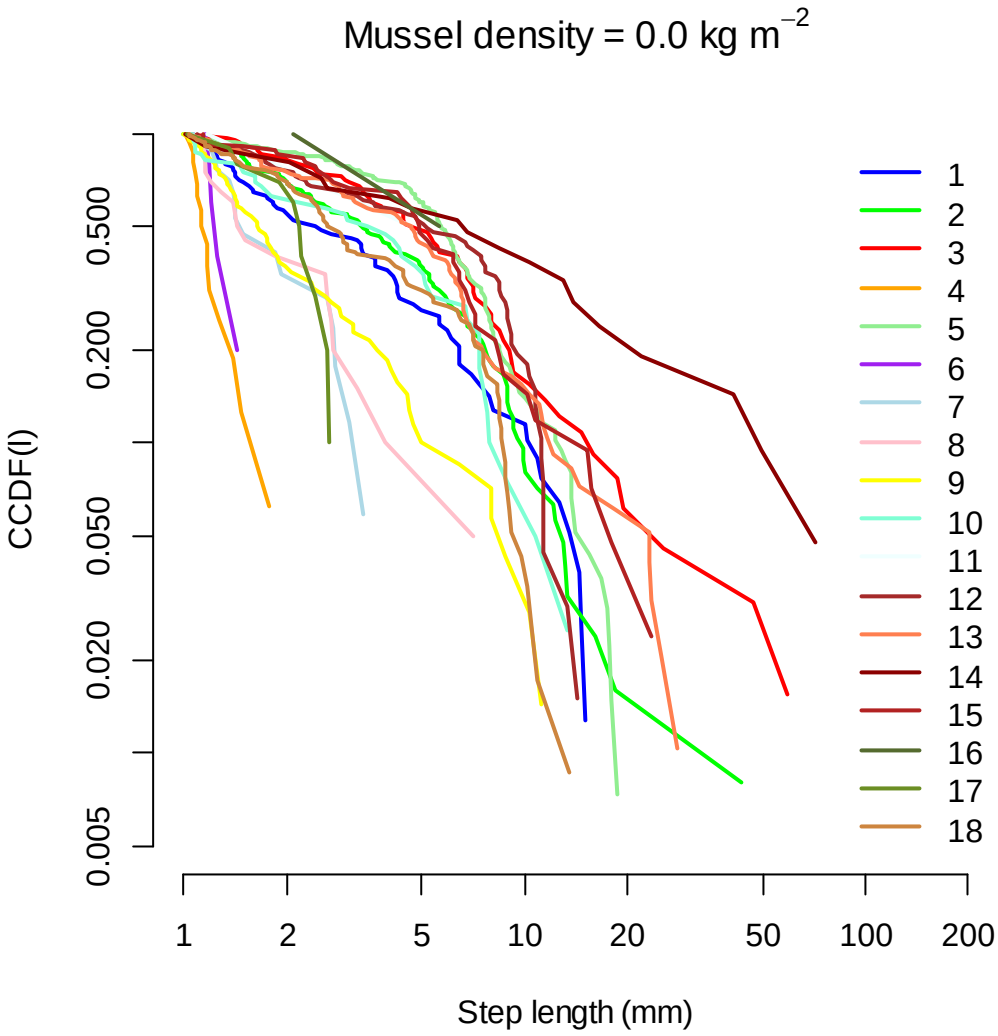
How superdiffusion gets arrested: Ecological encounters explain shift from Lévy to Brownian movement

Supplementary table and figures

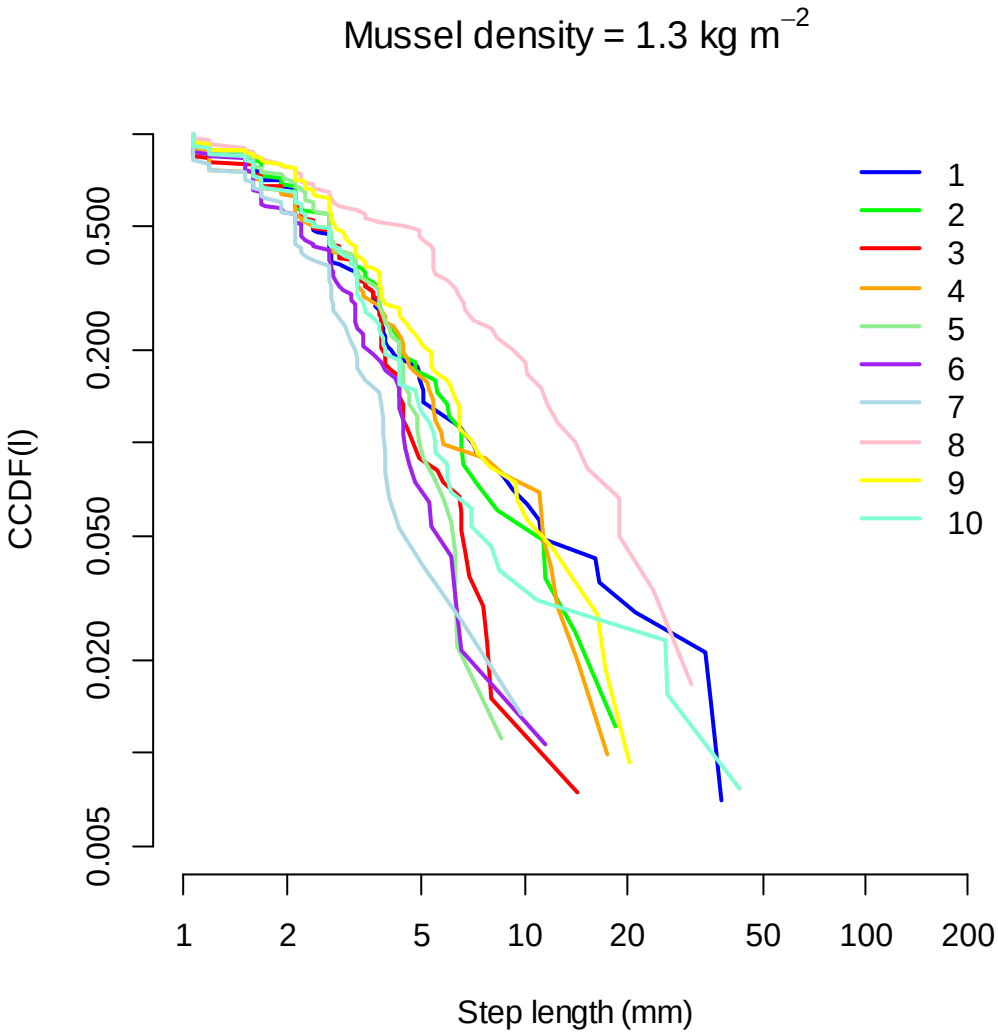
Suppl. Table 1: Best fits of exponential distributions (e.g. Brownian walks) and Pareto distributions (e.g. Lévy walks) to individual movement trajectories. The last column indicates whether a Brownian walk better represents the observed step length distribution than a Lévy walk (0 = LW fits better than BW; 1 = BW fits better than LW). Here, we used variable lower boundary estimates (l_{min}) and corrected for sample size in order to compare Akaike Information Criterions (AIC).

Density (kg m^{-2})	Mussel nr	Brownian walk			Lévy walk			Brownian walk fits best?
		l_{min}	lambda	AIC	l_{min}	mu	AIC	
0	1	0.10	1.57	113.29	0.10	1.83	19.93	0
0	2	0.10	0.58	313.33	0.10	1.56	217.65	0
0	3	0.05	0.59	309.22	0.10	1.57	208.16	0
0	4	0.95	6.99	-183.09	0.95	8.72	-187.19	0
0	5	0.05	0.89	226.23	0.05	1.55	88.24	0
0	6	0.15	8.66	-227.78	0.15	3.10	-228.12	0
0	7	0.10	5.33	-130.63	0.10	2.20	-126.66	1
0	8	0.15	5.53	-137.87	0.15	2.55	-133.99	1
0	9	0.05	3.88	-67.40	0.05	1.87	-139.78	0
0	10	0.20	1.52	120.85	0.20	1.98	90.12	0
0	11	0.10	11.09	-277.17	0.05	2.35	-307.42	0
0	12	0.05	1.23	162.13	0.05	1.77	-85.90	0
0	13	0.05	0.47	357.08	0.05	1.44	219.35	0
0	14	0.05	0.18	549.22	0.05	1.38	330.15	0
0	15	0.05	0.99	205.15	0.05	1.68	-24.44	0
0	16	0.05	20.17	-396.88	0.10	3.74	-385.31	1
0	17	0.10	11.60	-286.20	0.10	3.19	-322.56	0
0	18	0.05	1.28	154.34	0.05	1.59	45.46	0
Average	**18**	**0.13**	**4.59**	**44.66**	**0.14**	**2.45**	**-40.13**	**0.17**
1.3	1	1.05	0.37	404.29	2.10	2.64	374.86	0
1.3	2	2.65	0.46	357.43	2.65	3.12	340.23	0
1.3	3	3.70	0.71	268.58	3.70	4.76	251.28	0
1.3	4	0.50	0.43	373.52	1.05	2.11	374.15	1
1.3	5	3.15	0.77	252.67	3.15	4.15	264.69	1
1.3	6	2.65	0.80	246.31	2.65	3.99	244.23	0
1.3	7	2.10	1.02	198.75	2.10	4.06	192.39	0
1.3	9	2.35	0.40	388.00	2.65	2.92	373.05	0
1.3	10	2.10	0.43	373.62	2.10	2.87	334.09	0
Average	**9**	**2.25**	**0.60**	**318.13**	**2.46**	**3.40**	**305.44**	**0.22**

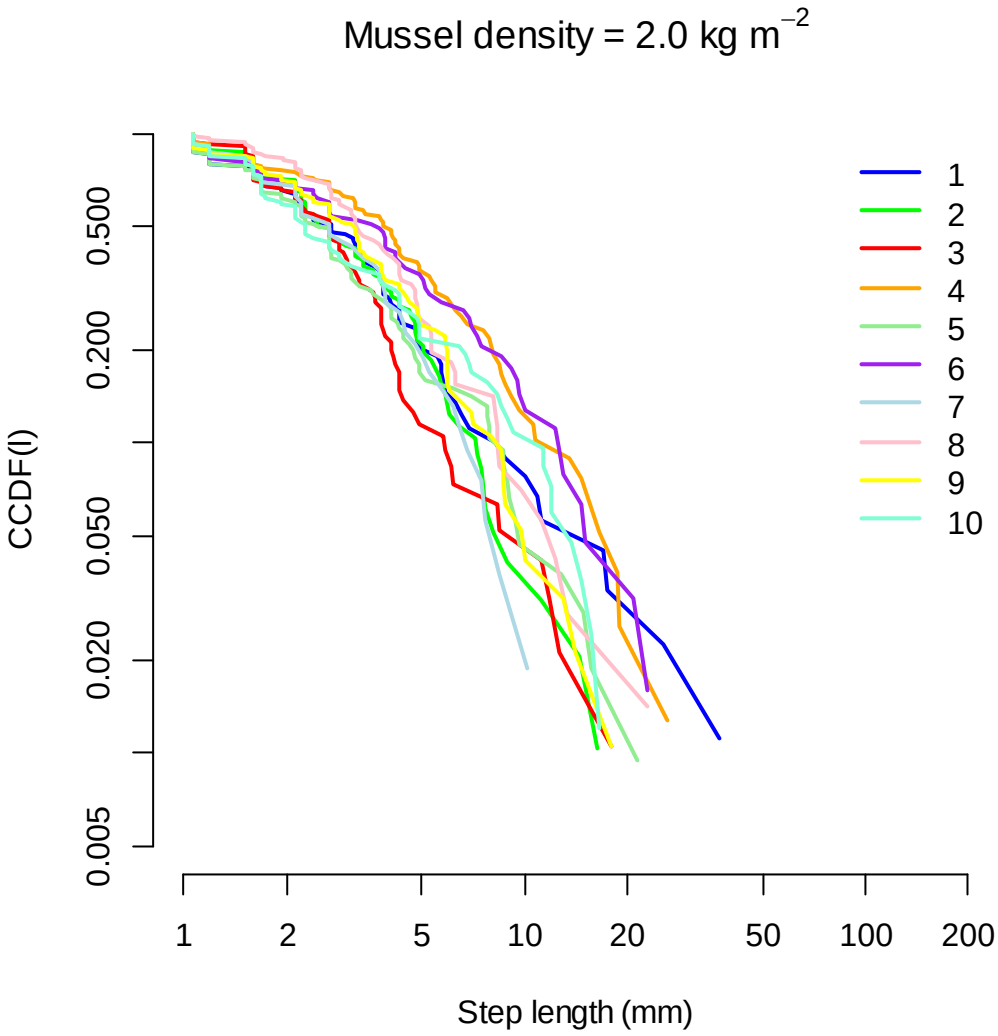
Density (kg m^{-2})	Mussel nr	Brownian walk			Lévy walk			Brownian walk fits best?
		l_{min}	lambda	AIC	l_{min}	mu	AIC	
2	1	0.75	0.33	427.68	1.05	1.98	422.09	0
2	2	2.15	0.44	369.44	2.15	2.68	372.77	1
2	3	2.65	0.53	327.30	2.65	3.29	317.86	0
2	4	2.85	0.26	469.67	2.40	2.28	481.10	1
2	7	2.10	0.48	348.91	2.10	2.70	359.88	1
2	8	3.10	0.37	400.85	3.10	2.93	397.65	0
2	10	1.05	0.35	416.77	1.50	2.26	397.66	0
Average	**7**	**2.09**	**0.39**	**394.37**	**2.14**	**2.59**	**392.72**	**0.43**
3.3	1	1.50	0.60	305.88	2.10	3.08	302.72	0
3.3	2	2.65	0.52	336.43	2.65	3.14	339.95	1
3.3	3	1.60	0.44	369.10	1.60	2.49	351.46	0
3.3	5	3.15	1.20	165.97	3.15	5.58	171.03	1
3.3	6	2.65	0.88	228.29	2.65	4.13	232.45	1
3.3	8	2.10	0.61	302.65	2.65	3.63	281.23	0
3.3	10	2.10	0.60	302.02	2.10	3.13	292.17	0
Average	**7**	**2.25**	**0.69**	**287.19**	**2.41**	**3.60**	**281.57**	**0.43**
5.2	1	1.05	1.25	157.25	1.05	3.18	148.01	0
5.2	2	2.10	0.88	228.71	2.10	3.63	234.94	1
5.2	3	3.00	0.89	227.34	3.00	4.53	227.91	1
5.2	4	3.15	0.76	257.64	3.15	4.19	261.18	1
5.2	5	3.70	1.12	180.00	3.70	5.99	182.54	1
5.2	7	3.15	0.78	251.06	3.15	4.28	254.33	1
5.2	9	3.70	1.00	201.04	3.70	5.60	201.87	1
5.2	10	2.65	0.75	261.99	2.65	3.86	258.35	0
Average	**8**	**2.81**	**0.93**	**220.63**	**2.81**	**4.41**	**221.14**	**0.75**



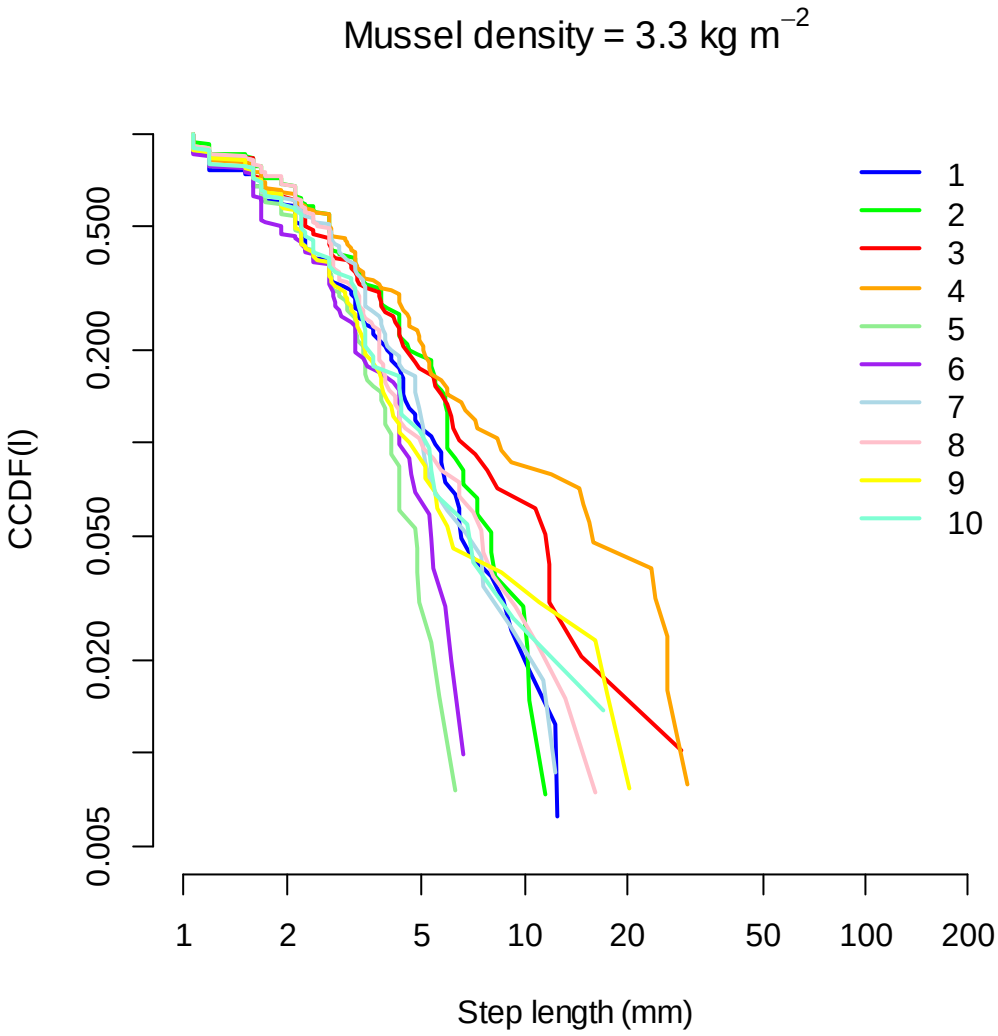
Suppl. Figure 1: Individual movement trajectories of 18 mussels in solitary treatment.



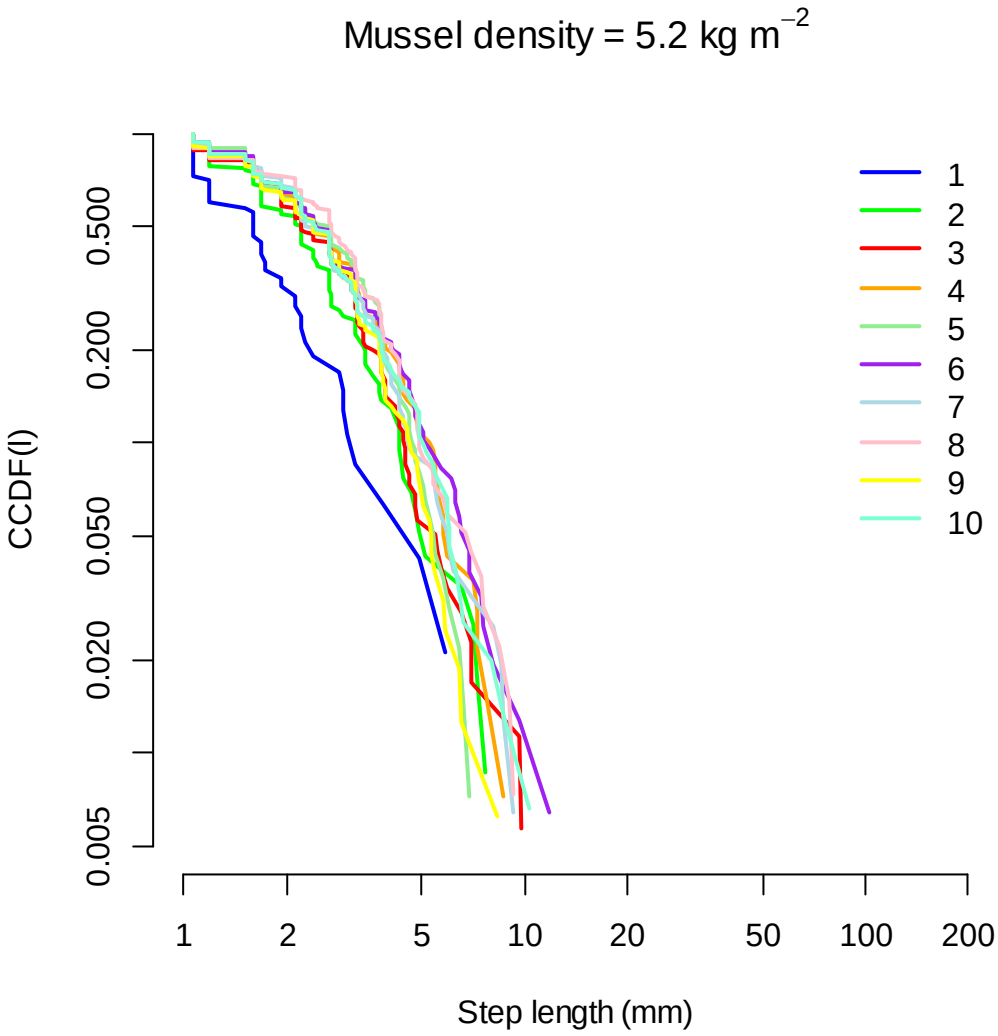
Suppl. Figure 2: Individual movement trajectories of 10 mussels in low density treatment (1.3 kg m^{-2}).



Suppl. Figure 3: Individual movement trajectories of 10 mussels in intermediate density treatment (2.0 kg m^{-2}).



Suppl. Figure 4: Individual movement trajectories of 10 mussels in high density treatment (3.3 kg m^{-2}).



Suppl. Figure 5: Individual movement trajectories of 10 mussels in high density treatment (5.2 kg m^{-2}).