

PRELIMINARY STUDY ON WATER QUALITY AND FRESHWATER BIODIVERSITY IN RIVERS OF MUNNAR, KERALA.



PRELIMINARY STUDY ON WATER QUALITY AND FRESHWATER BIODIVERSITY IN RIVERS OF MUNNAR, KERALA.

Based on field studies conducted in
Munnar Territorial Division,
Kerala Forest Department.

In collaboration with:
Department of Forests & Wildlife, Government of Kerala.
Conducted by:
TIES



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MUNNAR WATER & ODONATE STUDY, 2023.

LOCATION WISE ODONATE DIVERSITY

Location	Dragonfly	Damselfly
Moonukulam kalungu		Blue bush dart
Mamalakandam	Greater crimson glider	Stram ruby
	Ground skimmer	River helidor
	Ruddy marsh skimmer	
	Wandering glider	
	Black stream glider	
	Blue darner	
	Amber winged marsh glider	
	Scarlet marsh hawk	
	Common clubtail	
	Brown backed marsh hawk	
Valara	Green darner	Safron faced grass dart
	Rufus marsh hawk	
	Wandering glider	
	Brown backed marsh hawk	
	Crimson marsh glider	
10th mile	Common hook tail	Yellow bush dart
	Rufas backed marsh hawk	
	Brown backed marsh hawk	
	Crimson marsh glider	
	Stellate river hawk	
	Common torrent hawk	
	Black stram glider	
Machiplavu	Pied paddy skimmer	Stream ruby
	Crimson marsh glider	Yellow bush dart
	Brown backed marsh hawk	Lined forest skimmer
Ambalapady	Crimson marsh glider	Stream ruby
	Brown backed marsh hawk	Yellow bush dart
	Black stream glider	
Kallarkutty	Wandering glider	Yellow bush dart
	Brown backed marsh hawk	
Panam kutty	Pied paddy skimmer	
	Wandering glider	
	Crimson marsh glider	
Neriyamangalam	Rufas backed marsh hawk	Plain forest glory
		Blue bush dart
		Stream ruby

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LOCATION WISE ODONATE DIVERSITY

Location	Dragonfly	Damselfly
Coloumbe swamp	Brown backed marsh hawk	Blue banded longtail
	Crimson tailed marsh hawk	Black tipped forest glory
	Pied paddy skimmer	
	Crimson marsh glider	
	Wandering glider	
	Greater crimson glider	
	Ditch jewel	
	Black stream glider	
	Rufas backed marsh hawk	
	Coral tailed cloud wing	
Kuthupara thodu	Wandering glider	Safron reed tail
Aliveena kuth	Pied paddy skimmer	Wayanad bambootail
	Fulvous forest skimmer	
	Brown backed marsh hawk	
	Black stream glider	
	Little blue marsh hawk	
	Asiatic bloodtail	
	Granite ghost	
	Wandering glider	
	Common picture wing	
	Crimson marsh glider	
Chembankuzhy	Fulvous forest skimmer	
	River Heliodor	
	Wandering glider	
Neendapara		Wayanad bambootail
Thattekani	Wandering glider	
	Crimson marsh glider	
Lower periyar	Wandering glider	Blue grass dart
Onnam block	Crimson tailed marsh hawk	Blue banded long tail
	Pied paddy skimmer	clear winged forest glory
	Ditch jewel	
	Common clubtail	
	Rufus backed marsh hawk	
	Common picture wing	
	Coral tailed cloud wing	
	Crimson marsh glider	
Tri colored marsh hawk		
Uppukuzhithodu	Brown backed marsh hawk	Stram ruby
	Ashy Marsh hawk	Stream glory
	Black stream glider	
	Crimson marsh glider	

WATER QUALITY AND LOCATION WISE ODONATE DATA

SL.1	LOCATIO N	SAMPLE CODE	pH	COND.	TDS	SALINI TY	CHLO RINITY	ACIDI TY	ALKALINI TY	TH	Ca+	Mg+	FL UORIDE	SUL P.	NITRA TE	CHL ORIDE	PHOS PHATE	MPN	DO	BOD	Oil Conten t	IRON	OC	
		Desirable Limits	6.5 - 8.5	1476 µs	500 mg/L	3 ppt	250 mg/l as CaCO ₃	200 mg/l as CaCO ₃	200 mg/l as CaCO ₃	300 mg/l as CaCO ₃	75 mg/l as Ca+	80 mg/l as Mg+	1 mg/l as F	200 mg/l as SO ₄	45mg/l as NO ₃	250 mg/l as Cl	0.1 mg/l	0/10 0ml	5.0 mg /l	3.0 mg/l	0.5 mg/l	0.3 mg/l as Fe	4.0 mg/l	
1	Aliveenaku thu	II1A	6.02	17.88	35.9	0.016	29.6	2	40	30	12	18	0.2	0	0.5	14	0.05	1100	4.2	3.45	0	0	39	Pied paddy skimmer -2 Fulvous forest skimmer Brown backed marsh h 5
2	Aliveenakuthu	II1B	6.06	17.2	11.23	0.012	23.9	2	36	36	6	30	0.1	0	0.5	14	0.07	1100	NIL	NIL	0	0	38.4	Black stream glider -3 Little blue marsh hawk Asiatic bloodtail Granite ghost Wandering glider -50 + Common picture wing Crimson marsh glider
3	Kathuparatho du	II2A	6.46	21.7	14.13	0.016	30.13	2	26	26	6	20	0.9	18	0.12	16	0.04	9	4.7	2.45	0	0	44	Wandering glider - 1
4	Kathuparatho du	II2B	6.7	26.9	17.44	0.02	37.37	2	30	20	4	16	0.2	19	0.1	16	0.05	11	NIL	NIL	0	0	38	Safron reed tail -1
5	Neriamangala m	II3A	6.47	61.9	33.4	0.38	71.59	2	124	40	12	28	0.2	9	0.2	12	0.05	2400	1	3.55	2.5	0	24.8	Rufas backed marsh ha -2
6	Neriyamangal am	II3B	6.53	53.3	34.7	0.04	74	2	78	22	4	18	0.2	12	0.01	10	0.08	39	NIL	NIL	1.5	0	14.2	plain forest glory - 1 Blue bush dart -2 Stream ruby -3
7	Inchathotty	II4A	5.94	17.4	11.32	0.013	24.14	2	86	40	10	30	0.1	12	0.01	10	0.025	43	4	3	0	0	17.4	Brown backed marsh hawk -2
8	Inchathotty	II4B	5.87	15.58	10.13	0.011	21.6	2	8	14	2	12	0.1	12	0.5	20	0.03	43	nil	nil	0	0	14.2	Ashy marsh hawk -1 Black stream glider -5 Stream glory -1 Iridescent stram glider Crimson marsh glider 2 Wandering glider 3 Reed tail spp -1 Stream ruby Brown backed marsh h +
9	upukuzhithod u	II5A	6.18	22	14.33	0.01653	30.58	2	20	14	4	10	0.1	12	0.5	18	0.012	9	nil	nil	0	0	12.6	Stream backed marsh h +
10	upukuzhithod u	II5B	6.56	22.7	14.18	0.0176	31.56	2	28	20	6	14	0.1	0	0.01	6	0.05	4	3.4	1.5	0	0	10.6	Ashy Marsh hawk - 10 Black stream glider - 5 Crimson marsh glider - Stream ruby 10 + Stream glory - 3 male
11	Onnam Block- Periyar	II6A	6.54	52.1	34.2	0.0402	75.37	2	60	24	6	18	0.1	0	0.5	6	0.05	0	6.2	1.4	0	0	11.4	Crimson tailed marsh h Pied paddy skimmer - Ditch jewel - 1 male
12	Onnam Block- Periyar	II6B	6.53	56.1	36.5	0.0424	70.44	2	70	22	8	14	0.1	0	0.3	14	0.05	0	nil	nil	0	0.1	13.8	Common clubtail - 1 hr.

WATER QUALITY AND LOCATION WISE ODONATE DATA

13	Colombe swamp	II7A	6.92	34.5	22.3	0.026	48.1	2	40	18	2	16	0.1	0	0.5	16	0.07	23	2.4	1.4	0	0	22.8	Rufus backed marsh ha male
14	Colombe swamp	II7B	6.63	78.1	50.9	0.058	108.78	2	56	24	8	16	0.1	19	0.3	10	0.3	0	nil	nil	0	0	11.4	Common picture wing Coral tailed cloud wing Crimson marsh glider - Tri colored marsh hawk Blue banded long tail - clear winged forest glider Brown backed marsh hawk male Crimson tailed marsh hawk Pied paddy skimmer Crimson marsh glider Wandering glider -50 + Greater crimson glider Ditch Jewel Black stream glider - 2 Rufas backed marsh hawk Coral tailed cloud wing Blue banded longtail 1 : Black tipped forest glider
15	Chembankuzhi thodu	II8A	6.62	21.9	14.23	0.01638	30.303	2	76	16	2	14	0.1	12	0.5	8	0.013	4	7.8	6.8	0	0	9.6	Fulvous forest skimmer
16	Chembankuzhi thodu	II8B	6.96	21.7	14.08	0.01624	30.04	2	72	20	2	18	0.1	0	0.01	6	0.015	0	nil	nil	0	0	9.8	River Heliodor Wandering glider - 20+
17	Neendapara Stream	II9A	7.12	42.5	18.88	0.0213	39.405	2	86	20	2	18	0.1	0	0.01	4	0.05	20	2.5	0.75	0	0	12.8	Wayanad bambootail
18	Neendapara Stream	II9B	6.34	46.4	30.2	0.0347	64.19	2	98	16	20	14	0.1	0		8	0.013	210	nil	nil	0	0	7.6	
19	Thattakkanni Stream	II10A	6.57	18.4	11.95	0.01471	27.213	2	64	22	12	10	0.1	0	0.4	12	0.05	21	nil	nil	0	0	14.2	Wandering glider
20	Thattakkanni Stream	II10B	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	NIL	nil	nil	NIL		nil	nil	nil	nil	0	nil	Crimson marsh glider
21	Pambla dam sight	II11A	6.8	55.2	20.1	0.0416	76.96	2	90	22	8	18	0.1	0	0.2	8	0.15	21	nil	nil	0	0	15.2	Wandering glider Blue grass dart
22	Pambla dam sight	II11B	6.77	54.6	35.6	0.0411	76.03	2	102	56	24	32	0.1	12	0.2	12	0.04	210	nil	nil	0	0	12.2	
																								Blue bush dart -1
1	Moonukalingu thodu	5A	6.22	14.13	9.18	0.0106	19.62	2	48	28	8	20	0.4	18	0.01	20	0.14	210	NIL	NIL	0	0	2	
2	Moonukalingu thodu	5B	6.33	14.09	9.81	0.01054	19.49	2	36	18	2	16	0.1	17	1.1	28	0.12	210	NIL	NIL	0	0	10.8	
3	Mamamakand	6A	6.46	14.5	9.43	0.0108	20.12	2	44	20	8	12	0.9	12	1	8	0.012	1100	1.5	0.9	1	0	11	Greater crimson glider

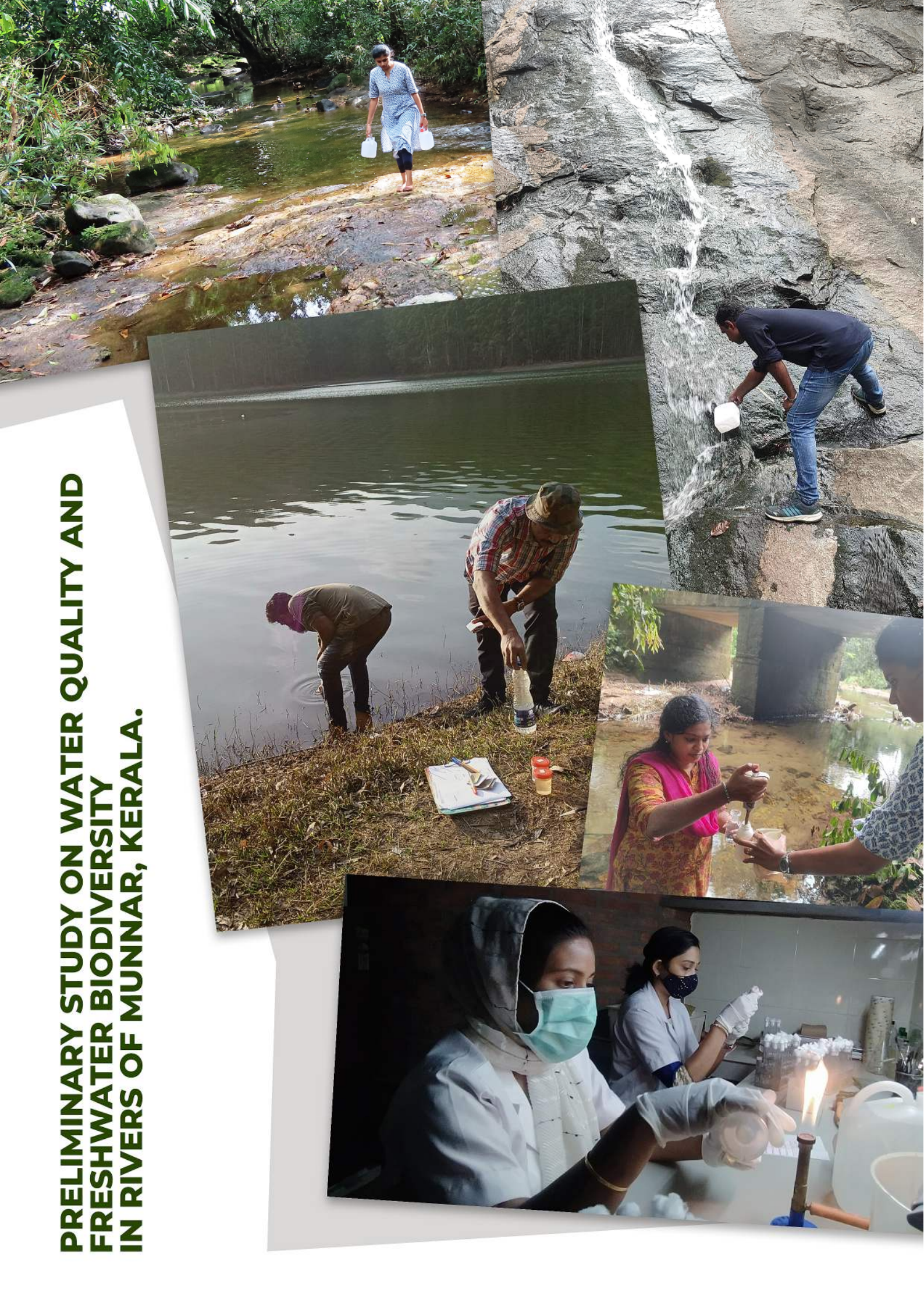
WATER QUALITY AND LOCATION WISE ODONATE DATA

4	am	Mamamakand am	6B	6.2	15.44	9.9	0.01142	21.12	2	38	18	4	14	0.5	19	0.41	20	0.14	93	NIL	NIL	0	0	18	Ground skimmer 1 Ruddy marsh skimmer Wandering glider 50+ Black stream glider Blue darner Amber winged marsh glider - 1 Scarlet marsh hawk Common clubtail - 2 Brown backed marsh hawk - 10+ Stram ruby - 10+ River helidor - 2
5		Cheeyapara	7A	6.49	17.55	11.41	0.1315	24.23	2	58	18	2	16	0	0	0.5	8	0.25	2400	2	11.78	0	0	10.6	
6		Cheeyapara	7B	6.51	17.03	11.08	0.01276	23.6	2	56	16	2	14	0.1	0	1.1	26	0.3	28	nil	nil	0	0.1	10.2	
7		Valra	8A	6.01	15.03	9.81	0.01131	20.92	2	136	110	44	66	0.8	18	0.21	18	0.17	9	nil	nil	0	0	10.2	Green darner - 1
8		Valra	8B	6.38	14.79	9.61	0.011	20.53	2	28	6	2	4	1	20	0.23	18	0.05	0	nil	nil	0	0.04	10.2	Rufus marsh hawk Wandering glider - 100 Brown backed marsh h Crimson marsh glider - Safron faced grass dart
9		10th mile	9A																					Common hook tail - 1	
10		10th mile	9B																					Rufas backed marsh ha - 2+ Brown backed marsh hawk Crimson marsh glider - Stellate river hawk - 1 Common torrent hawk Black stram glider - 5+ Yellow bush dart - 1	
11		Machiplavu	13A	6.47	51.9	33.4	0.0387	71.59	2	124	40	12	28	1	0	1	6	0.05	2400	1.5	0.75	0	0.11	10	Pied paddy skimmer - 3 Crimson marsh glider - Brown backed marsh h Stream ruby - 5+ Yellow bush dart - 1
12		Machiplavu	13B	6.53	53.3	34.7	0.04	74	2	78	22	4	18	1	0	1.21	10	0.25	39	nil	nil	0	0.026	10	Crimson marsh glider - Brown backed marsh h Stream ruby - 5+ Yellow bush dart - 1
13		Ambalapadi	46A	6.26	68.1	44.3	0.0508	93.98	2	110	20	8	12	1	0	0.71	6	0.012	210	3	2	0	0.12	0.6	Lined forest skimmer Crimson marsh glider - Brown backed marsh h 3+
14		Ambalapadi	46B	6.88	67.6	43.9	0.0509	94.16	2	102	32	14	18	1	0	0.2	6	0.012	240	nil	nil	0	0.006	2.6	Brown backed marsh h 3+ Black stream glider - 5 Stream ruby - 5 Yellow bush dart - 1
15		Ambazhachalt hodu	15A	6.87	34.4	22.6	0.0259	47.91	2	62	62	2	60	1	19	0.31	6	0.04	0	nil	nil	0	0	2.8	
16		Ambazhachalt hodu	15B	6.61	35.2	22.9	0.024	48.84	2	54	16	4	12	1	10	0.41	12	0.012	9	nil	nil	0	0.024	2.8	
17		Kallorkutty dam	47A	6.41	46.9	32.1	0.0374	69.19	2	102	34	10	24	0.9	0	1.12	6	0.29	14	2	0.25	0	0.1	2.2	Wandering glider - 50 Brown backed marsh hawk - 1 yellow bush dart
18		Kallorkutty dam	47B	6.38	52	33.8	0.039	72.15	2	80	12	2	10	0.8	20	0.32	6	0.012	1100	nil	nil	0	0.12	2.4	
19		Panamkutty	31A	7.04	59.9	38.9	0.045	83.25	2	108	16	6	10	1	20	0.41	8	0.014	1100	nil	nil	0	0.11	0.6	Pied paddy skimmer - 3
20		Panamkutty	31B	71.09	58.7	38.2	0.0438	81.03	2	102	28	4	24	1	0		8	0.05	2400	nil	nil	0	0.12	7.6	Wandering glider -

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21	Chillithodu	1	6.32	19.63	12.81	0.0149	27.65	2	40	12	2	10	0.8	19	0.7	10	0.025	210	nil	nil	0.5	0.15	4.6	20+
22	Chillithodu	2	6.24	19.33	13.75	0.0158	29.37	2	48	18	2	16	0.6	0	0.21	16	0.098	14	nil	nil	0	0.262	3.8	
23	Kattamudi	1	5.96	20.9	10.66	0.012	22.58	2	62	20	2	18	0.2	0	1.2	16	0.025	210	nil	nil	0	0.148	2.6	
24	Kattamudi	2	6.48	23.1	15.18	0.0175	33.39	2	74	18	4	14	0.9	0	0.2	16	0.013	20	nil	nil	0	0.122	2.8	
25	Padikappu	1	6.18	20.5	13.68	0.015	28.7	2	38	10	2	8	0.5	12	0.01	6	0.05	2400	nil	nil	0	0.074	5.2	
26	Padikappu	2	6.11	19.42	12.65	0.0149	27.25	2	20	40	18	22	1	0	0.01	12	0.05	4	nil	nil	0	0.1	4.4	
27	Avarukutty	1	6.34	25.1	15.42	0.01726	31.93	2	20	18	6	12	0.1	0	1.22	16	0.05	210	nil	nil	0.5	0.16	2	
28	Avarukutty	2	6.33	22.7	14.77	0.0175	31.52	2	62	18	2	16	0.1	0	1.22	10	0.05	210	nil	nil	0.4	0.16	3.2	
1	Nallatheni	1	6.18	20.2	13.13	0.01511	27.95	2	18	14	2	12	0.5	0	0.4	18	0.04	9	nil	nil	0	0.08	4.6	
2	Nallatheni	2	6.3	19.82	12.88	0.0148	27.4	2	30	8	2	6	0.5	19	0.4	14	0.025	11	nil	nil	0	0.081	5	
3	Peechad river	1	6.5	23.1	14.84	0.0166	30.82	2	60	16	4	2	0.8	17	0.03	10	0.014		nil	nil	0	0.12	4.2	
4	Peechad river	2	6.81	21.7	14.08	0.01624	30.34	2	60	34	8	26	0.7	0	1.2	8	0.04		nil	nil	0	0.1	3.2	
5	Perumbankunj	1	6.53	19.53	12.69	0.01463	27.06	2	50	68	4	64	0.8	0	1	12	0.014		nil	nil	0	0.11	2.4	
6	Perumbankunj	2	6.27	20.2	13.29	0.01514	28.00	2	94	16	2	14	0.8	0	1.21	14	0.025		nil	nil	0	0.13	3.6	
7	Koonthrapuzh	1	6.51	18.94	12.31	0.01418	26.23	2	54	20	2	18	0.6	0	1	10	0.014		nil	nil	0	0	3.6	
8	Koonthrapuzh	2	6.57	21	13.68	0.0161	29.78	2	16	32	6	26	0.9	0	0.41	10	0.05		nil	nil	0	0	2.6	

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TROPICAL INSTITUTE OF ECOLOGICAL SCIENCES

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