

**Table S3.** Suitable area and changes of Papilionidae butterflies in the Hengduan Mountains (HDMs) under different climatic scenarios.

Species	Suitable area (km <sup>2</sup> ) Percentage of suitable area change (%)						
	Current	2050s RCP2.6	2050s RCP4.5	2050s RCP8.5	2070s RCP2.6	2070s RCP4.5	2070s RCP8.5
<i>Parnassius acco</i>	47334	27248 -42.43	20109 -57.52	16624 -64.88	23880 -49.55	19137 -59.57	8436 -82.18
<i>Parnassius acdestis</i>	65093	77713 19.39	18869 -71.01	30334 -53.40	75134 15.43	55070 -15.40	48081 -26.13
<i>Parnassius cephalus</i>	42652	33424 -21.64	36954 -13.36	42597 -0.13	39893 -6.47	43208 1.30	24642 -42.23
<i>Parnassius epaphus</i>	111058	85787 -22.75	58183 -47.61	51481 -53.64	103943 -6.41	56404 -49.21	47042 -57.64
<i>Parnassius hide</i>	37221	15841 -57.44	13267 -64.36	382 -98.97	12456 -66.54	0 -100	0 -100
<i>Parnassius imperator</i>	75971	94339 24.18	120058 58.03	182304 139.97	153614 102.20	93394 22.93	204969 169.80
<i>Parnassius labeyriei</i>	8984	753 -91.62	6 -99.93	0 -100	985 -89.04	1 -99.99	0 -100
<i>Parnassius mercurius</i>	84203	77259 -8.25	70079 -16.77	840 -99.00	48119 -42.85	36517 -56.63	33545 -60.16
<i>Parnassius orleans</i>	95108	123826 30.20	127679 34.25	121512 27.76	143347 50.72	86493 -9.06	173990 82.94
<i>Parnassius simo</i>	60759	47189 -22.33	22505 -62.96	17250 -71.61	45495 -25.12	30702 -49.47	7865 -87.06
<i>Parnassius szechenyi</i>	64004	26977 -57.85	12656 -80.23	7495 -88.29	30295 -52.67	20154 -68.51	4451 -93.05
<i>Bhutanitis lidderdalii</i>	13174	278 -97.89	2742 -79.19	7973 -39.48	11878 -9.84	19343 46.83	7313 -44.49
<i>Bhutanitis mansfieldi</i>	28761	50415 75.29	41559 44.50	25011 -13.04	36983 28.59	40486 40.77	19223 -33.16
<i>Bhutanitis thaidina</i>	17778	33641 89.23	18351 3.22	3643 -79.51	18333 3.12	10136 -42.99	4134 -76.75
<i>Lamproptera curius</i>	4594	10820 135.52	8102 76.36	6474 40.92	8392 82.67	4098 -10.80	5407 17.70
<i>Lamproptera meges</i>	2773	3491 25.89	2568 -7.39	35 -98.74	8094 191.89	10870 291.99	17910 545.87
<i>Iphiclides podalirinus</i>	7461	19381 159.76	25006 235.16	29360 293.51	15849 112.42	23301 212.30	54719 633.40
<i>Graphium chironides</i>	4259	8917 109.37	3793 -10.94	4450 4.48	7648 79.57	5676 33.27	2616 -38.58
<i>Graphium cloanthus</i>	11340	37970 234.83	18780 65.61	7550 -33.42	21883 92.97	18483 62.99	34124 200.92
<i>Graphium confucius</i>	64906	73636 13.45	88604 36.51	93053 43.37	69632 7.28	92890 43.11	92961 43.22
<i>Graphium doson</i>	4753	1170 -75.38	1035 -78.22	5752 21.02	8075 69.89	12735 167.94	5848 23.04

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<i>Graphium eurous</i>	5763	36584 534.81	15943 176.64	16001 177.65	8899 54.42	10953 90.06	22602 292.19
<i>Graphium mandarinus</i>	7664	27996 265.29	8750 14.17	2295 -70.05	24729 222.66	32699 326.66	42338 452.43
<i>Graphium parus</i>	6960	13552 94.71	20055 188.15	28303 306.65	12036 72.93	15798 126.98	36686 427.10
<i>Graphium sarpedon</i>	8504	15134 77.96	10119 18.99	13298 56.37	12794 50.45	8771 3.14	9586 12.72
<i>Graphium sichuanica</i>	4547	4903 7.83	4442 -2.31	8056 77.17	4737 4.18	3337 -26.61	5924 30.28
<i>Graphium tamerlanus</i>	2888	3439 19.08	3253 12.64	5687 96.92	3151 9.11	2272 -21.33	4468 54.71
<i>Teinopalpus imperialis</i>	4004	6099 52.32	9047 125.95	18368 358.74	8927 122.95	27426 584.97	46051 1050.12
<i>Pachliopta aristolochiae</i>	4618	31722 586.92	8465 83.30	0 -100	5468 18.41	1494 -67.65	2287 -50.48
<i>Troides aeacus</i>	8195	8350 1.89	5515 -32.70	9809 19.69	13139 60.33	14397 75.68	5848 -28.64
<i>Byasa confusus</i>	6007	6184 2.95	6220 3.55	7885 31.26	6304 4.94	5530 -7.94	6643 10.59
<i>Byasa daemonius</i>	14670	47674 224.98	43513 196.61	34298 133.80	28137 91.80	38122 159.86	62277 324.52
<i>Byasa dasarada</i>	6261	11604 85.34	6527 4.25	288 -95.40	9207 47.05	4082 -34.80	480 -92.33
<i>Byasa genestieri</i>	3245	4732 45.82	7625 134.98	2428 -25.18	7580 133.59	15932 390.97	37260 1048.23
<i>Byasa hedistus</i>	15092	51069 238.38	56189 272.31	12516 -17.07	35090 132.51	38169 152.91	56325 273.21
<i>Byasa latreillei</i>	1172	879 -25	103 -91.21	181 -84.56	2453 109.30	2083 77.73	731 -37.63
<i>Byasa nevillei</i>	8901	36806 313.50	25675 188.45	17005 91.05	20815 133.85	19094 114.52	34042 282.45
<i>Byasa plutonius</i>	11916	40885 243.11	30186 153.32	19920 67.17	23314 95.65	30333 154.56	35927 201.50
<i>Byasa polyeuctes</i>	13201	50927 285.78	34251 159.46	19445 47.30	31355 137.52	36898 179.51	46598 252.99
<i>Byasa rhadinus</i>	6242	0-100	7830 25.44	1709 -72.62	3 -99.95	11418 82.92	8467 35.65
<i>Meandrusa lachinus</i>	6576	0 -100	0 -100	3003 -54.33	6583 0.11	25391 286.12	433 -93.42
<i>Meandrusa sciron</i>	3802	4722 24.20	4749 24.91	7923 108.39	4369 14.91	3622 -4.73	6379 67.78
<i>Papilio agestor</i>	5288	9240 74.74	5540 4.77	0 -100	9506 79.77	9919 87.58	19265 264.32

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<i>Papilio alcmenor</i>	8024	22927 185.73	10373 29.27	14183 76.76	13482 68.02	10700 33.35	13771 71.62
<i>Papilio arcturus</i>	7252	21042 190.15	9283 28.01	11058 52.48	12155 67.61	9301 28.25	8702 19.99
<i>Papilio bianor</i>	9806	48932 399.00	40332 311.30	27730 182.79	27318 178.58	30883 214.94	52800 438.45
<i>Papilio bootes</i>	8842	31154 252.34	12427 40.55	10593 19.80	14962 69.22	8713 -1.46	9467 7.07
<i>Papilio epycides</i>	8733	38027 335.44	25057 186.92	1602 -81.66	15343 75.69	10066 15.26	30793 252.61
<i>Papilio helenus</i>	9042	22518 149.04	15339 69.64	22608 150.03	17143 89.59	17472 93.23	36255 300.96
<i>Papilio krishna</i>	9281	27290 194.04	23475 152.94	30681 230.58	19343 108.42	20614 122.11	51754 457.63
<i>Papilio maackii</i>	15659	53042 238.73	43995 180.96	44910 186.80	33249 112.33	46626 197.76	58662 274.62
<i>Papilio machaon</i>	15561	57868 271.88	44036 182.99	34381 120.94	33838 117.45	39679 154.99	73916 375.01
<i>Papilio macilentus</i>	6244	6366 1.95	6111 -2.13	10200 63.36	6148 -1.54	4520 -27.61	7577 21.35
<i>Papilio memnon</i>	4528	11955 164.02	4899 8.19	7385 63.10	8540 88.60	6193 36.77	4818 6.40
<i>Papilio nephelus</i>	6043	10834 79.28	5125 -15.19	7270 20.30	9749 61.33	7901 30.75	3811 -36.94
<i>Papilio paris</i>	5653	13436 137.68	8450 49.48	12777 126.02	11888 110.30	13839 144.81	17269 205.48
<i>Papilio polytes</i>	13325	48352 262.87	31844 138.98	16528 24.04	33070 148.18	36782 176.04	56759 325.96
<i>Papilio protenor</i>	8305	29844 259.35	17109 106.01	17276 108.02	19145 130.52	18670 124.80	29554 255.86
<i>Papilio xuthus</i>	14358	49910 247.61	33499 133.31	17508 21.94	36172 151.93	39124 172.49	59355 313.39