A

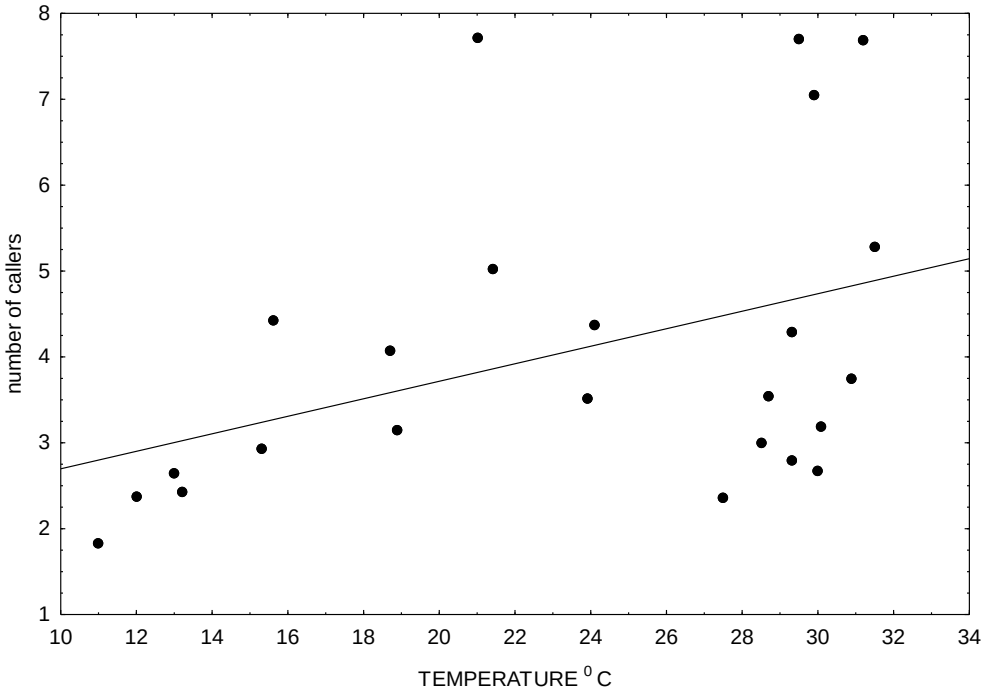
Male Female

B

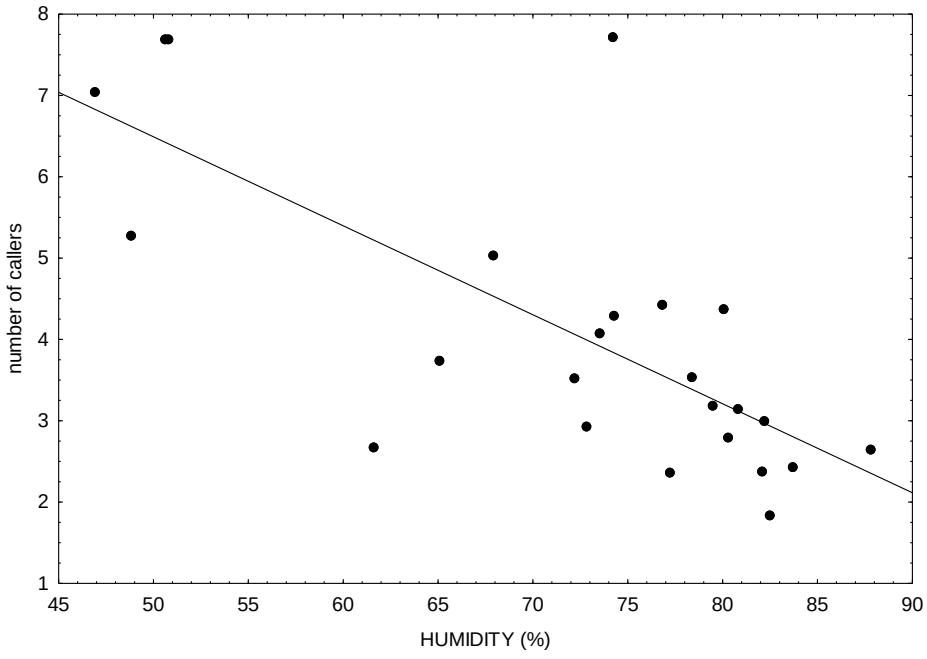
C

	NIGHT 1	NIGHT 2	NIGHT 3	NIGHT 4
Time slots	Habitat1	Habitat 2	Habitat 3	Habitat 1
18:00-19:00	*			
19:00-20:00	*	*		
20:00-21:00	*	*	*	
21:00-22:00		*	*	*
22:00-23:00			*	*
23:00-24:00				*
24:00-1:00	*			
1:00-2:00	*	*		
2:00-3:00	*	*	*	
3:00-4:00		*	*	*
4:00-5:00			*	*
5:00-6:00				*

Fig S1. A. Male and female of *Acanthogryllus asiaticus*. B. Habitat of *A. asiaticus*. C. Staggered sampling protocol (shaded cells are the sampling hours). Every habitat was visited thrice in given sampling hour. Observations were carried out by sampling one natural habitat in a night followed by subsequent sampling in other habitats.



temperature:number of callers: r = 0.4023, p = 0.0513; r^2 = 0.1618



HUMIDITY:number of callers: r = -0.7288, p = 0.00005; r^2 = 0.5312

Fig S2. Relationship of calling activity with temperature and humidity

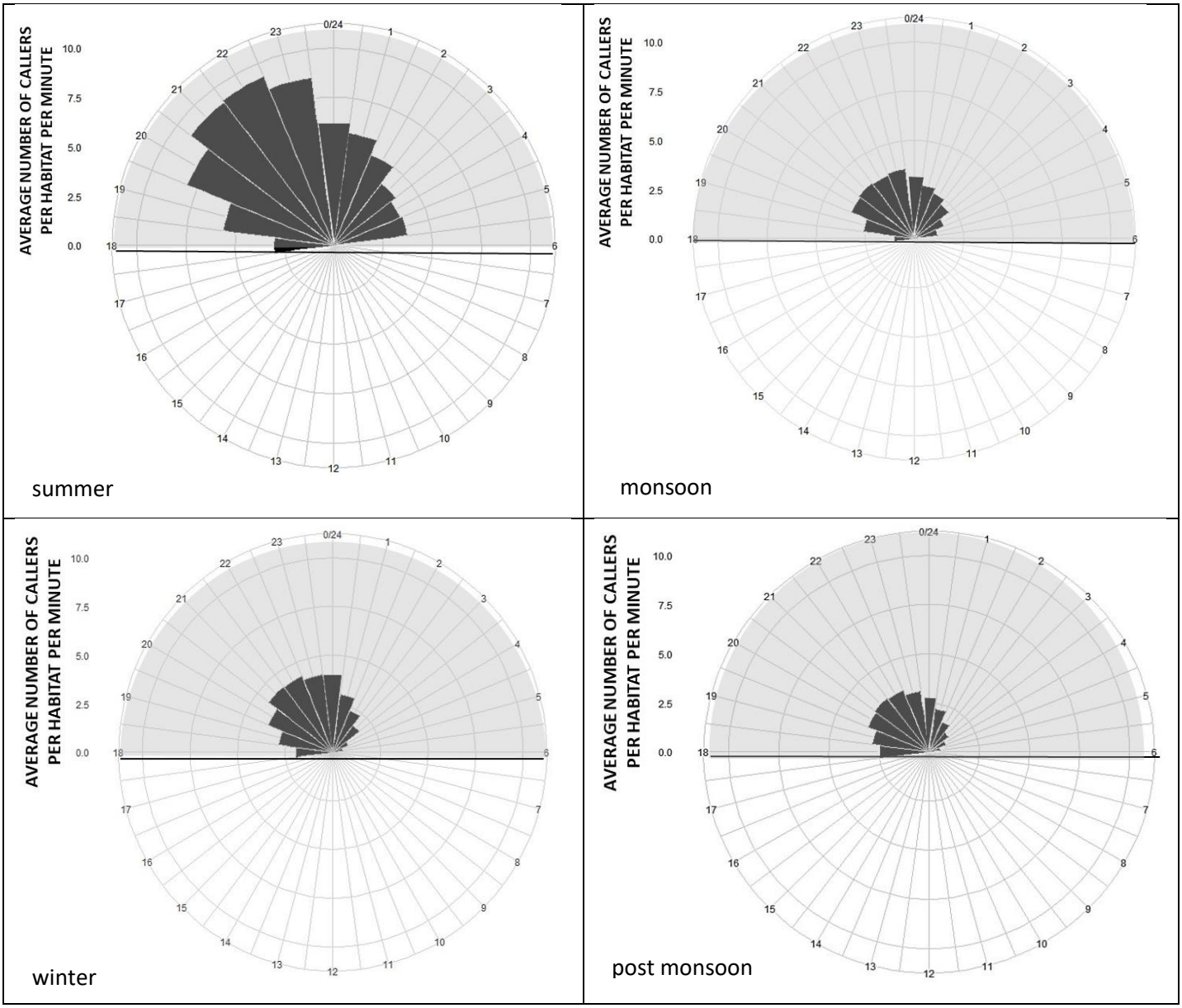


Fig S3. Seasonal variation in the diel calling activity of *A. asiaticus*. Polar plots showing diel calling activity for 12 hours (1800-0600 hrs) for the four seasons. Radius of the polar plot shows frequency of calling males and circumference shows 24 hours-time period.

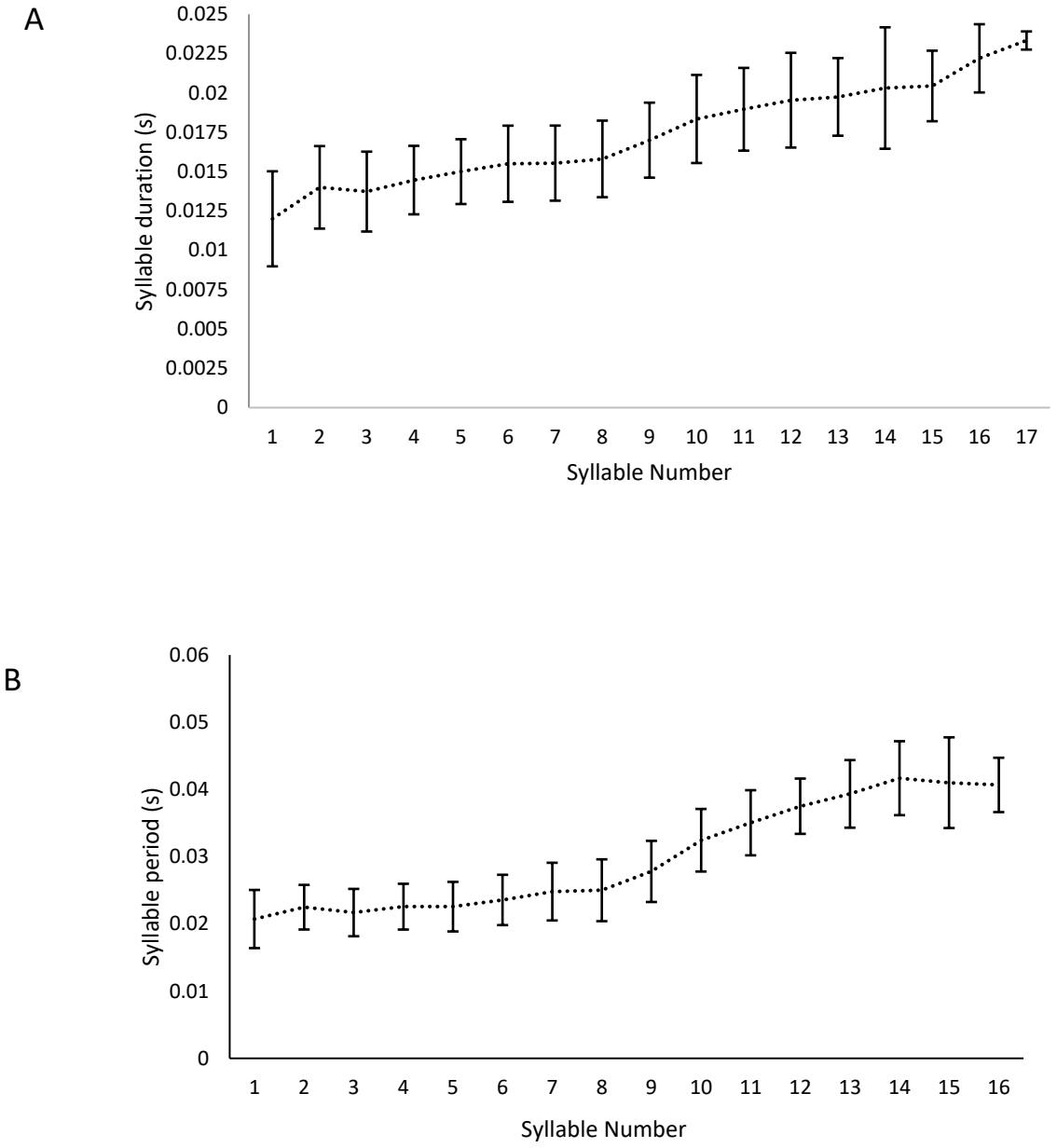


Fig S4. Syllable duration and syllable period gradually increases in a chirp of LDMC of *A. asiaticus*. (A) Syllable duration increased from the first syllable to the last. (B) Syllable period increased from the first syllable to the last. Each bar for every syllable position represents Mean ± SD.

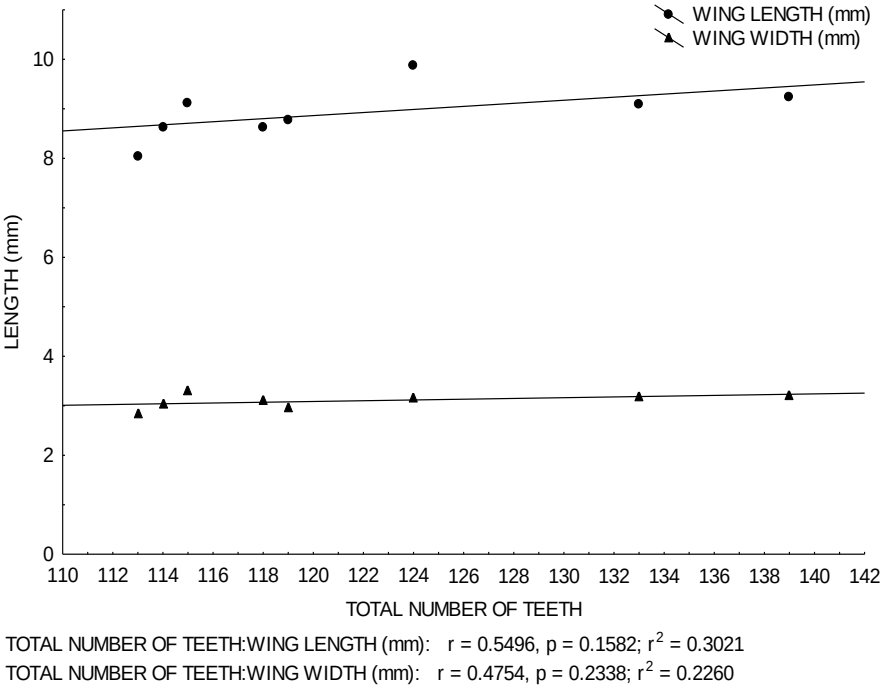
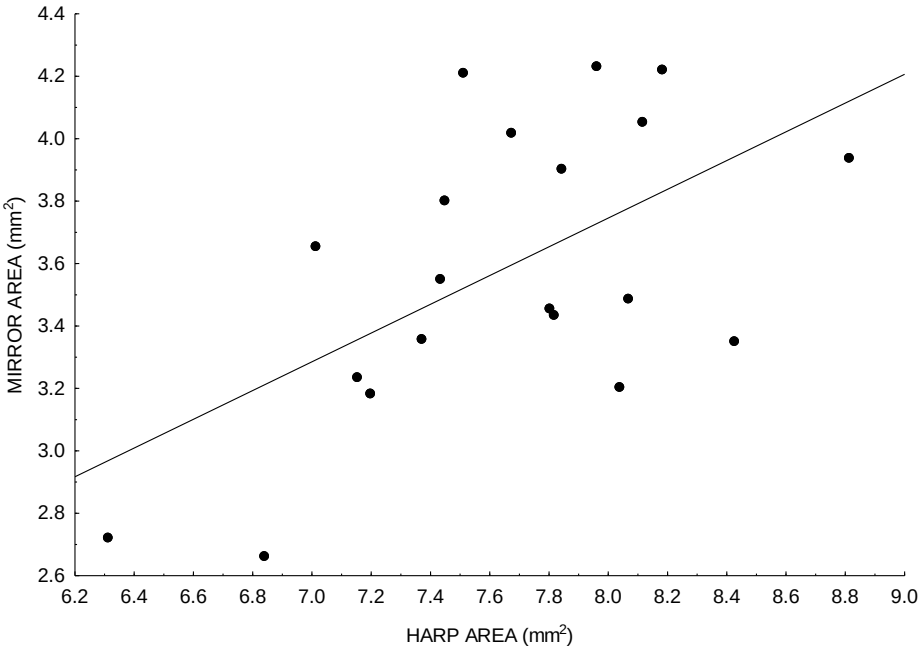


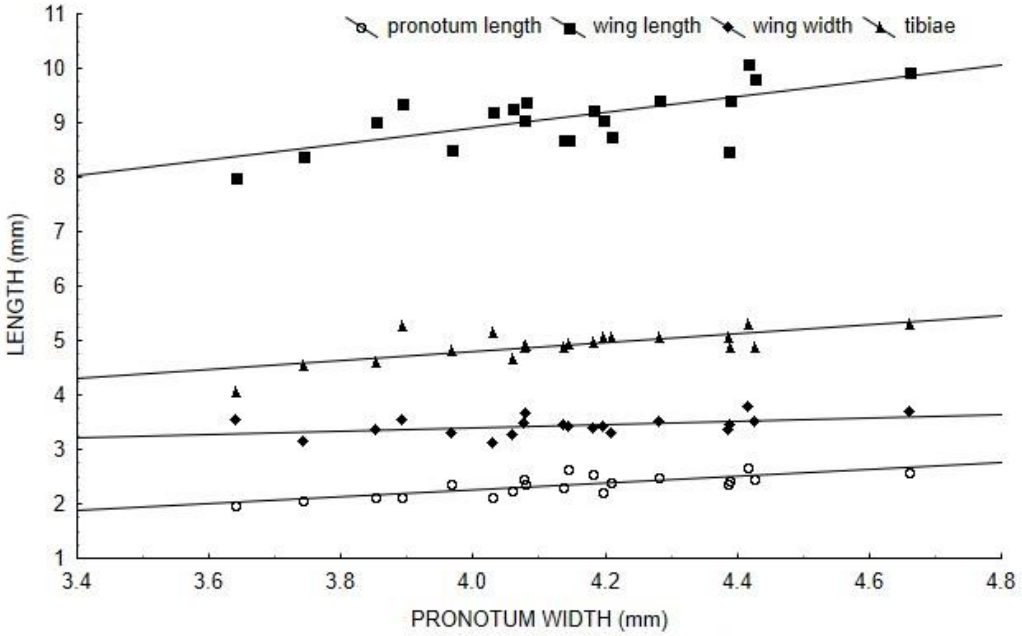
Fig S5. Relationship of wing morphology with number of teeth in stridulatory file.

A



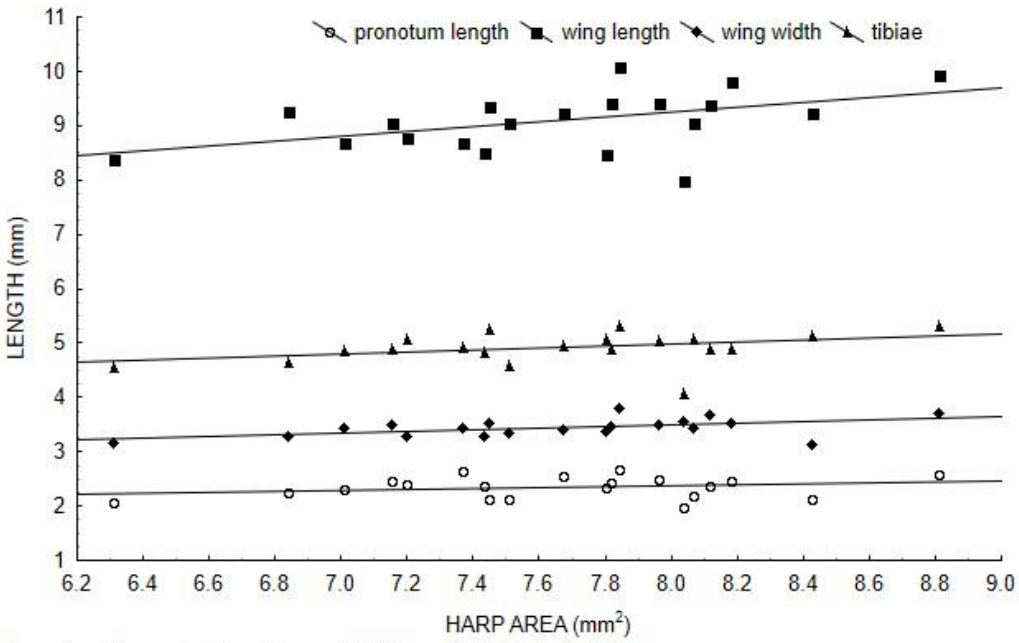
harp (mm2):mirror (mm2): r = 0.5796, p = 0.0074; r^2 = 0.3359

B



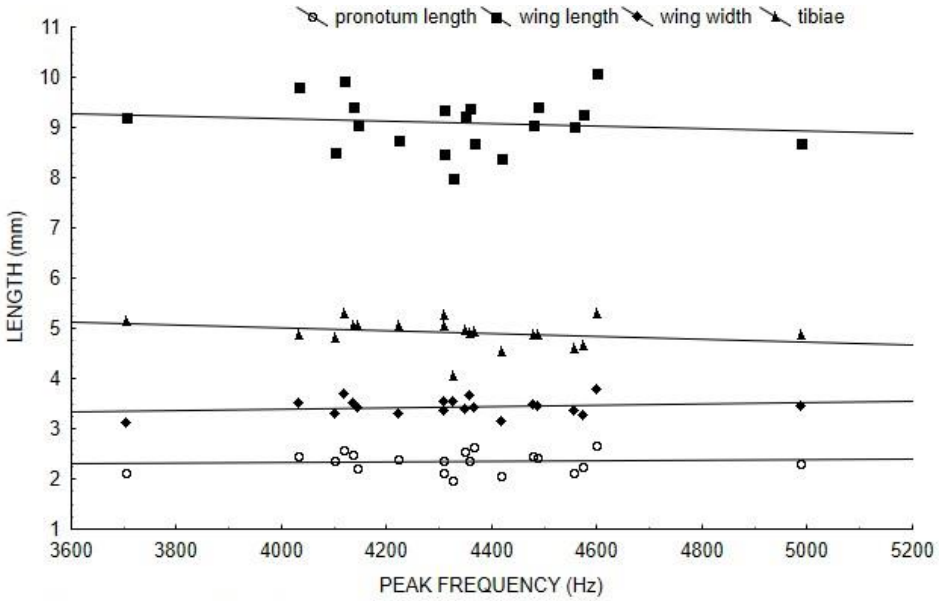
Pronotum width (mm):pronotum length: r = 0.7722, p = 0.00007; r^2 = 0.5962
Pronotum width (mm):wing length: r = 0.6684, p = 0.0013; r^2 = 0.4468
Pronotum width (mm):wing width: r = 0.4386, p = 0.0530; r^2 = 0.1924
Pronotum width (mm):tibiae: r = 0.7002, p = 0.0006; r^2 = 0.4903

C



harp (mm2):pronotum length: r = 0.2275, p = 0.3347; r^2 = 0.0518
harp (mm2):wing length: r = 0.4735, p = 0.0350; r^2 = 0.2242
harp (mm2):wing width: r = 0.4849, p = 0.0302; r^2 = 0.2351
harp (mm2):tibiae: r = 0.3552, p = 0.1244; r^2 = 0.1262

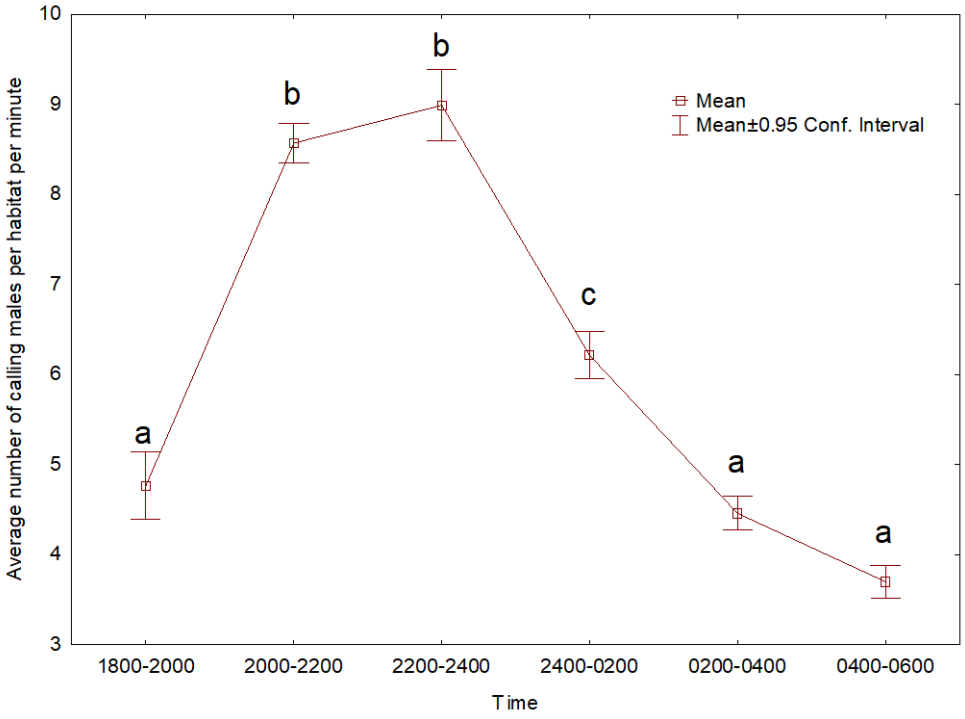
D



Peak freq (hz):pronotum length: r = 0.0555, p = 0.8161; r^2 = 0.0031
Peak freq (hz):wing length: r = -0.1213, p = 0.6103; r^2 = 0.0147
Peak freq (hz):wing width: r = 0.2140, p = 0.3650; r^2 = 0.0458
Peak freq (hz):tibiae: r = -0.2551, p = 0.2776; r^2 = 0.0651

Fig S6. Relationship between body morphology, sound producing structure and call characteristics. (A) Relationship between harp area and mirror area. (B) Relationship of pronotum width with pronotum length, wing length, wing width and tibia length. (C) Relationship of harp area with pronotum length, pronotum width, wing length, wing width and tibia length. (D) Relationship of peak frequency with pronotum length, wing length, wing width and tibia length.

A



B

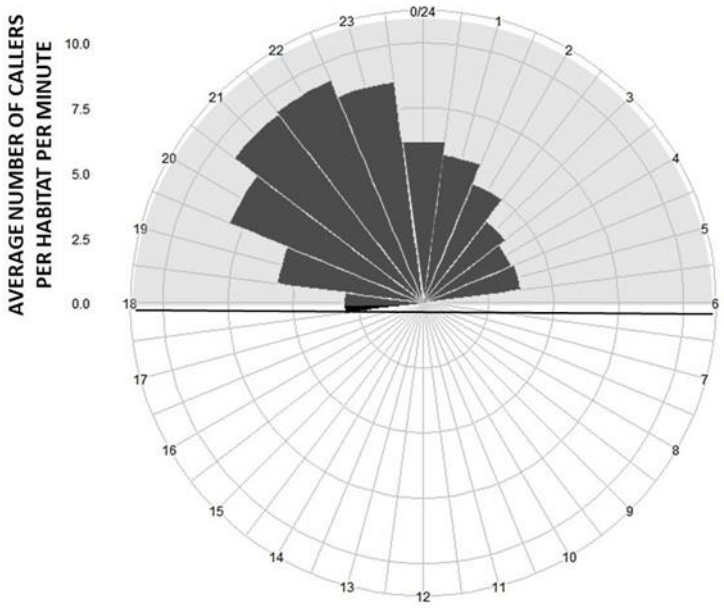


Fig S7. A. 2-hourly diel pattern for calling activity. Fig. B. One hourly diel pattern for calling activity.

TABLE S1. Comparison of temporal variation in calling activity on seasonal and diel scale. ns represents no significant difference.

	P value
Seasonal variation	
SEP-NOV vs DEC-FEB	<0.01
SEP-NOV vs MAR-MAY	<0.01
SEP-NOV vs JUN-AUG	ns
DEC-FEB vs MAR-MAY	<0.01
DEC-FEB vs JUN-AUG	0.02
MAR-MAY vs JUN-AUG	<0.01
Diel variation	
18:00-21:00 vs 21:00-24:00	<0.01
18:00-21:00 vs 24:00-03:00	ns
18:00-21:00 vs 03:00-6:00	<0.01
21:00-24:00 vs 24:00-3:00	<0.01
21:00-24:00 vs 3:00-6:00	<0.01
24:00-3:00 vs 3:00-6:00	<0.01