SUPPORTING INFORMATION

Not only a listener: frog-biting midges (Corethrellidae) also distinguish the shape of frogs

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Figure S1. *Boana albomarginata* (Spix, 1824) attacked by Corethrellidae in the Brazilian Atlantic Forest (credits of C.P.B. Breviglieri).

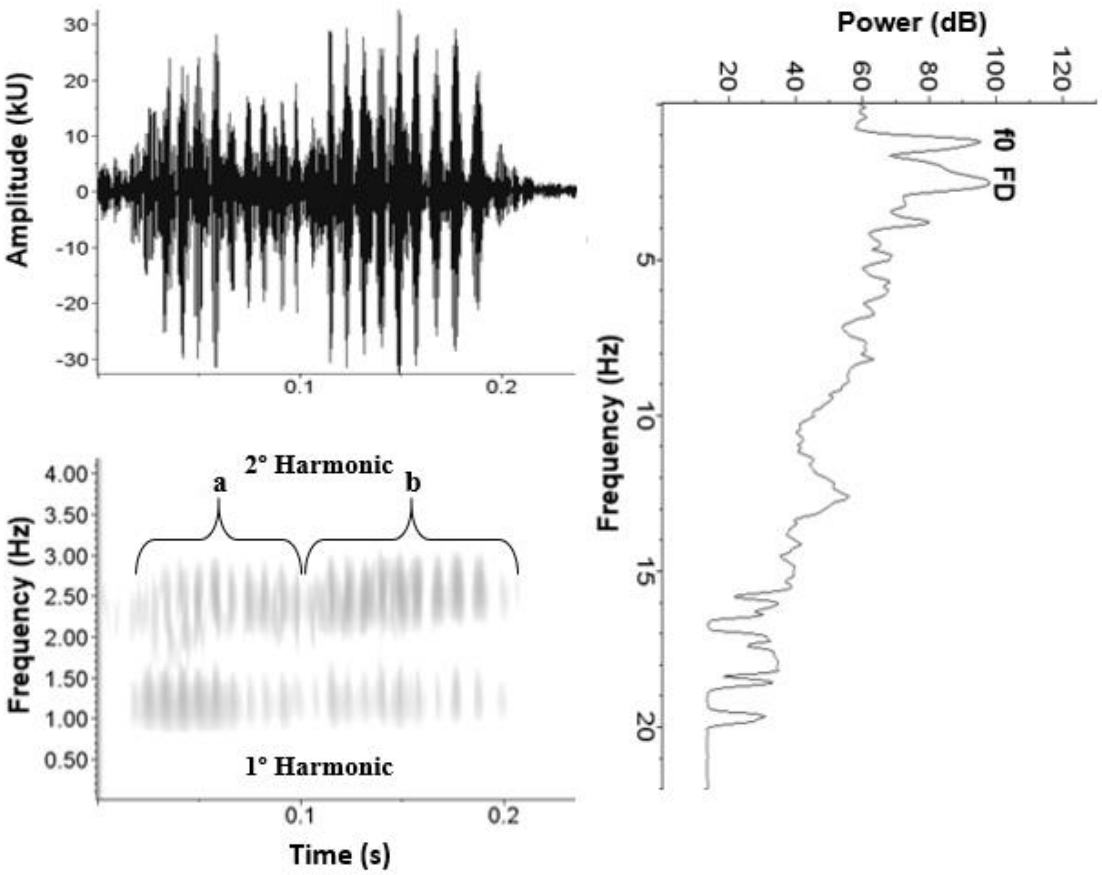


Figure S2. Illustrations of the advertisement call parameters of *B. albomarginata* used in the field playback experiment for the attraction of *Corethrella*. Oscillogram (kU at top-left corner) and spectrogram (Hz at bottom-left corner) indicating harmonics and the subunits "a" and "b" (i.e., second harmonic) over time (seconds), and power spectra (dB at right side) showing fundamental (f0) and dominant frequency (FD).

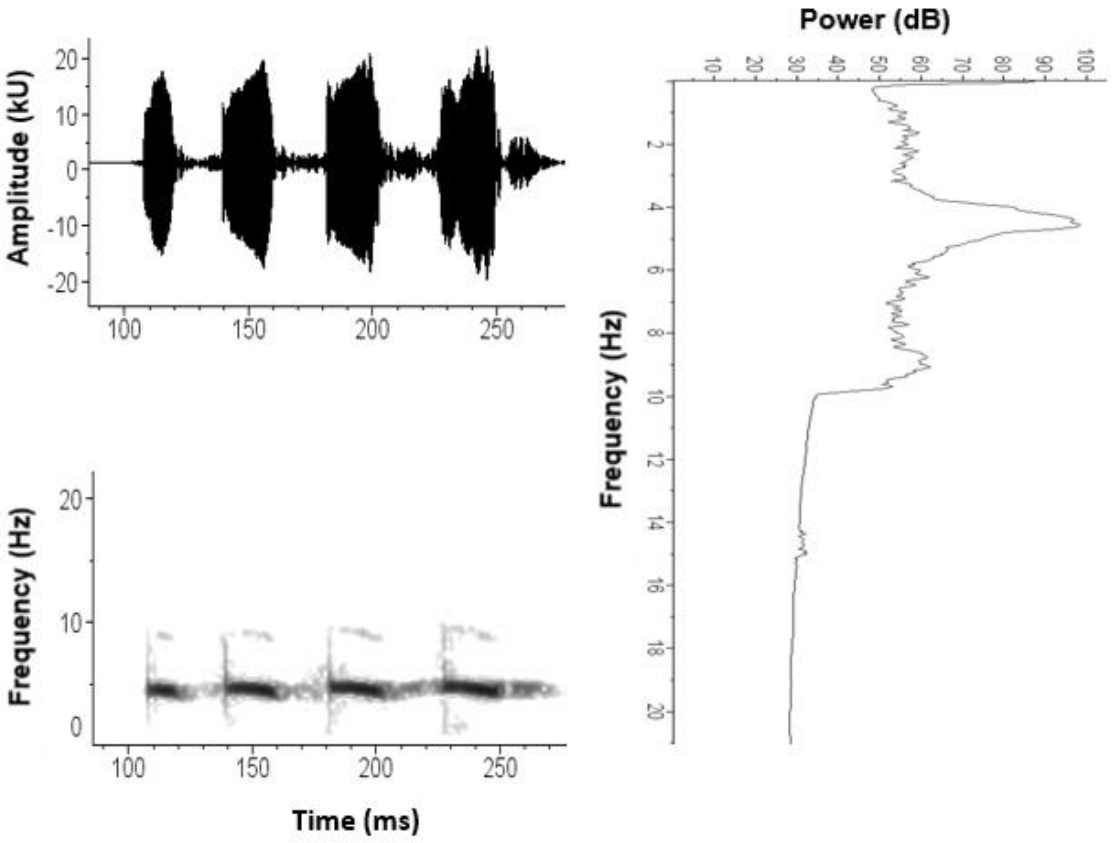


Figure S3. Illustrations of the mating call parameters of *G. assimilis* used in the field playback experiment for the attraction of *Corethrella*. Oscillogram (kU at top-left corner) and spectrogram (kHz at bottom-left corner) indicating four pulses of the chirps over time (milliseconds), and power spectra (dB at right side).

Table S1. Physical parameters for advertisement calls of *Boana albomarginata* and mating call of *G. assimilis*. Data are shown as mean ± SD. For *B. albomarginata* we presents the two harmonics (H1 = fundamental, H2 = second harmonic) and values of each unit (a = first unit and b = second unit) of the second harmonic. For *G. assimilis* we present the corresponding values for each parameter. The interval between calls for each playback was only one second. Data were obtained from recordings of six males for each species.

Parameters *Boana albomarginata*	Advertisement calls		
	Harmonics		
	H1	H2 (a)	H2 (b)
Frequency band (Hz) - Higher limit	1425 ± 43	2414 ± 471	2772 ± 455
Frequency band (Hz) - Lower limit	1079 ± 102	2019 ± 490	2287 ± 371
Number of pulses by note or unit (no.)	17.6 ± 3	8.5 ± 2	6.7 ± 2
Notes duration (Milliseconds)	153 ± 11	168 ± 23	155 ± 22
Parameters *Gryllus assimilis*	Attraction calls		
Pulse duration (Milliseconds)	8.3 ± 0.73		
Pulse rate (Hz)	83.6 ± 4.9		
Interchirp interval (Seconds)	1.5 ± 0.28		
Pulses/chirp (no.)	8.9 ± 0.6		
Dominant frequency (kHz)	3.66 ± 0.18		

TABLE S2. All data recorded in the field playback experiment and used in the statistical analyses. CORETHRELLA – number of *Corethrella* female midges recorded in each sample unit; SOUND – sound stimuli: Anuran - advertisement calls of *B. albomarginata*; Cricket - mating call of *Gryllus assimilis*; and Silent - no sound, with only models of anurans and a caterpillar on top of the speaker; SHAPE – shape of anurans or caterpillar; COLOR – brown or green; ROUND – the sequence in which the sound stimuli were arranged each night; NIGHT – the number of the nights (of the three) in which the experiments were carried out.

CORETHRELLA	SOUND	SHAPE	COLOR	ROUND	NIGHT
0	Silent	Anuran	green	1	1
0	Cricket	Anuran	green	2	1
2	Anuran	Anuran	green	3	1
0	Silent	Anuran	brown	1	1
0	Cricket	Anuran	brown	2	1
3	Anuran	Anuran	brown	3	1
0	Silent	Caterpillar	green	1	1
0	Cricket	Caterpillar	green	2	1
0	Anuran	Caterpillar	green	3	1
0	Silent	Anuran	green	3	1
0	Cricket	Anuran	green	1	1
3	Anuran	Anuran	green	2	1
0	Silent	Anuran	brown	3	1
0	Cricket	Anuran	brown	1	1
3	Anuran	Anuran	brown	2	1
0	Silent	Caterpillar	green	3	1
0	Cricket	Caterpillar	green	1	1
0	Anuran	Caterpillar	green	2	1
0	Silent	Anuran	green	2	2
0	Cricket	Anuran	green	3	2
1	Anuran	Anuran	green	1	2
0	Silent	Anuran	brown	2	2
0	Cricket	Anuran	brown	3	2
1	Anuran	Anuran	brown	1	2
0	Silent	Caterpillar	green	2	2
0	Cricket	Caterpillar	green	3	2
0	Anuran	Caterpillar	green	1	2
0	Silent	Anuran	green	1	2

0	Cricket	Anuran	green	2	2
2	Anuran	Anuran	green	3	2
0	Silent	Anuran	brown	1	2
0	Cricket	Anuran	brown	2	2
0	Anuran	Anuran	brown	3	2
0	Silent	Caterpillar	green	1	2
0	Cricket	Caterpillar	green	2	2
0	Anuran	Caterpillar	green	3	2
0	Silent	Anuran	green	3	3
0	Cricket	Anuran	green	1	3
1	Anuran	Anuran	green	2	3
0	Silent	Anuran	brown	3	3
0	Cricket	Anuran	brown	1	3
1	Anuran	Anuran	brown	2	3
0	Silent	Caterpillar	green	3	3
0	Cricket	Caterpillar	green	1	3
0	Anuran	Caterpillar	green	2	3
0	Silent	Anuran	green	1	3
0	Cricket	Anuran	green	2	3
3	Anuran	Anuran	green	3	3
0	Silent	Anuran	brown	2	3
0	Cricket	Anuran	brown	1	3
3	Anuran	Anuran	brown	3	3
0	Silent	Caterpillar	green	2	3
0	Cricket	Caterpillar	green	2	3
0	Anuran	Caterpillar	green	1	3

```r
## Loanding packages
###################
library(glmmTMB)
library(bbmle)
library(ggplot2)

## Loading data
## Remember to save Table S1 in .csv format
########################################
data_corethrella  <- read.csv("data.csv", header = T, sep = ",")

## Creating the Generalized Linear Mixed Models with Zero Inflated Poisson
## distribution
#############################################################
M1 = glmmTMB(CORETHRELLA ~ SHAPE + COLOR + SOUND + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M2 = glmmTMB(CORETHRELLA ~ SHAPE + SOUND + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M3 = glmmTMB(CORETHRELLA ~ COLOR + SOUND + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M4 = glmmTMB(CORETHRELLA ~ COLOR + SHAPE + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M5 = glmmTMB(CORETHRELLA ~ COLOR + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M6 = glmmTMB(CORETHRELLA ~ SHAPE + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M7 = glmmTMB(CORETHRELLA ~ SOUND + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

M8 = glmmTMB(CORETHRELLA ~ 1 + (1 | NIGHT) + (1|ROUND),
             data = data_corethrella, ziformula = ~1, family = poisson)

## Calculating AICc and Weight of models
################################################
AICc.models <- ICtab(M1, M2, M3, M4, M5, M6, M7, M8,  type = c("AICc"),
                     weights = TRUE, delta = TRUE, sort = TRUE, logLik = TRUE)
AICc.models
```

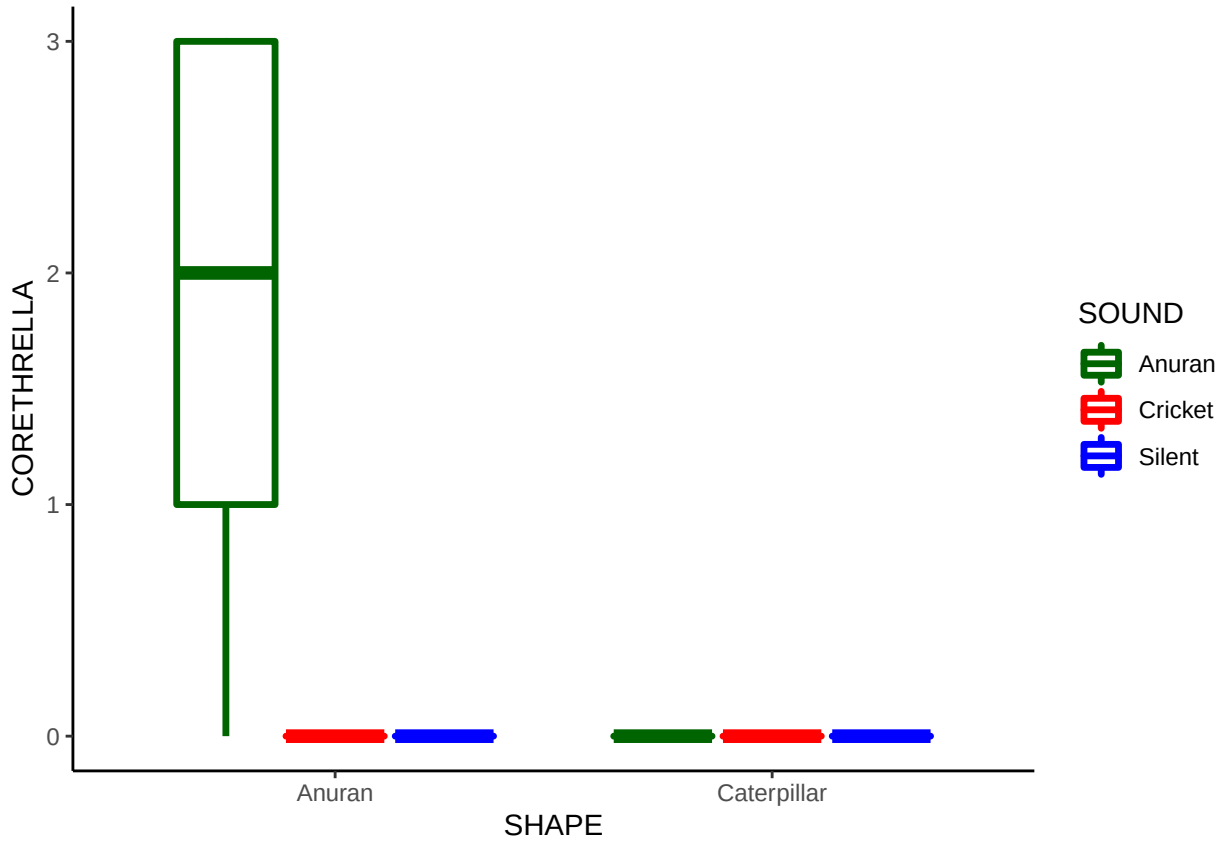
```
##    dLogLik dAICc df weight
## M2 23.5     0.0  7  0.8
## M1 23.5     2.7  8  0.2
## M7 15.2    13.9  6  <0.001
## M6  5.2    31.5  5  <0.001
## M4  5.2    34.0  6  <0.001
## M8  0.0    39.3  4  <0.001
## M5  0.2    41.3  5  <0.001
## M3   NA      NA  7  NA
```

ANALYSIS EXCLUDING DATA OF GREEN FROG (GF)

```
data_without_GF <- data_corethrella [c(-1,-2,-3,-10,-11,-12,
                                       -19,-20,-21,-28,-29,-30,
                                       -37, -38, -39,-46,-47,-48),]

## Creating the Generalized Linear Mixed Models with Zero Inflated Poisson
## distribution
############################################################
# We removed (1 | ROUND) due to convergence problem

M1_WGF = glmmTMB(CORETHRELLA ~ SHAPE + SOUND + (1 | NIGHT),
             data = data_without_GF, ziformula = ~ 1, family = poisson)

M2_WGF = glmmTMB(CORETHRELLA ~ SOUND + (1 | NIGHT),
             data = data_without_GF, ziformula = ~1, family = poisson)

M3_WGF = glmmTMB(CORETHRELLA ~ SHAPE + (1 | NIGHT),
             data = data_without_GF, ziformula = ~1, family = poisson)

M4_WGF = glmmTMB(CORETHRELLA ~ 1 + (1 | NIGHT),
             data = data_without_GF, ziformula = ~1, family = poisson)

## Calculating AICc and Weight of models
#####################################################
AICc.models_WGF <- ICtab(M1_WGF, M2_WGF, M3_WGF, M4_WGF, type = c("AICc"),
                     weights = TRUE, delta = TRUE, sort = TRUE, logLik = TRUE)
AICc.models_WGF
```

```
##        dLogLik dAICc df weight
## M1_WGF 11.8     0.0  6  0.9763
## M2_WGF  6.4     8.0  5  0.0176
## M3_WGF  3.9    10.3  4  0.0057
## M4_WGF  0.0    15.5  3  <0.001
```

```
## Graphic
ggplot(data = data_without_GF, aes(y = CORETHRELLA, x = SHAPE, color = SOUND)) +
  geom_boxplot(lwd = 1.2) +
  scale_color_manual(values=c("darkgreen", "red", "blue")) +
  theme_classic()
```



ANALYSIS EXCLUDING DATA OF BRONW FROG (BF)

```
data_without_BF <- subset (data_corethrella, COLOR == "green")

## Creating the Generalized Linear Mixed Models with Zero Inflated Poisson
## distribution
##############################################################
# We removed (1 | ROUND) due to convergence problem

M1_WBF = glmmTMB(CORETHRELLA ~ SHAPE + SOUND + (1 | NIGHT),
                 data = data_without_BF, ziformula = ~ 1, family = poisson)

M2_WBF = glmmTMB(CORETHRELLA ~ SOUND + (1 | NIGHT),
                 data = data_without_BF, ziformula = ~1, family = poisson)

M3_WBF = glmmTMB(CORETHRELLA ~ SHAPE + (1 | NIGHT),
                 data = data_without_BF, ziformula = ~1, family = poisson)

M4_WBF = glmmTMB(CORETHRELLA ~ 1 + (1 | NIGHT),
                 data = data_without_BF, ziformula = ~1, family = poisson)

## Calculating AICc and Weight of models
#################################################
AICc.models_WBF <- ICtab(M1_WBF, M2_WBF, M3_WBF, M4_WBF, type = c("AICc"),
                         weights = TRUE, delta = TRUE, sort = TRUE, logLik = TRUE)
AICc.models_WBF
```

```
##         dLogLik dAICc df weight
## M1_WBF 15.1     0.0  6  0.996
## M2_WBF  7.9    11.6  5  0.003
## M3_WBF  4.8    15.2  4  <0.001
## M4_WBF  0.0    22.1  3  <0.001
```

```r
## Graphic
ggplot(data = data_without_BF, aes(y = CORETHRELLA, x = SHAPE, color = SOUND)) +
  geom_boxplot(lwd = 1.2) +
  scale_color_manual(values=c("darkgreen", "red", "blue")) +
  theme_classic()
```