

Review 1

Comments and Suggestions for Authors

In the manuscript, the authors examined the fine morphology of the antennae of *Coeloides qinglingensis*, as well as the type, shape, and distribution of antennal sensilla. The manuscript is clearly structured. I have only some small suggestions for the manuscript.

Question 1: Can you provide some pictures showed the morphology of adults of *C. qinglingensis*?

Author responses: I have added some diagnostic characteristics of the adult *C. qinlingensis* in the material and method section. Please check it. Of course, we believed these pictures could provide the base knowledge for the scientific community of wasp study since there were only some diagrams in the published references or on the web. Thanks a lot.

Question 2: Line 13: the larval parasitoid *Coeloides qinglingensis*, larvae or adults, which one?

Author responses: According to the known biology, the adults of *C. qinlingensis* mainly parasitize on the larvae of several scolytid pine pests. Here, misunderstandings have arisen because of the inappropriate description, and we have corrected it in the text.

Question 3: Line 313: The sentence “whether St, Sch1 or Sch2, these had no significant differences” needs to revise.

Author responses: Yes, some different meanings have arisen. We have re-described this sentence to eliminate the ambiguity. Please check it in the revised manuscript. Thanks.

Question 4: Line 314: What does “significantly greater” mean?

Author responses: According to the result in table 3, there were a much larger number of St, Sch1, Sp1, and Ds on male’s antennal flagellum than that of females based on Mann–Whitney U test. Here, we have eliminated the different meanings in the revised manuscript.

Question 5: Line 544: The parentheses is needless.

Author responses: We have deleted it, thanks.

Question 6: In Table 2: Please check the different letters following the same column.

Author responses: I am very sorry for our negligence regarding the acronyms and abbreviations in the previous manuscript. We have redesigned them in the text. Thanks a lot.

Question 7: In Figure 12A, if there are significant differences of Sb and Sco between both sexes, the differences may also be in the remaining sensilla between both sexes. Please check the raw data.

Author responses: We rechecked the raw data and operated the R code to test the data difference between both sexes. All results were consistent with the previous ones in the manuscript. These values of significant difference were labelled with red / blue color. The R code and statistical results were as follow.

Statistical reports

1. Sensilla width

```
> wilcox_test(St~gender_1, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: St by gender_1 (1, 2)

Z = 0.81262, p-value = 0.4174

alternative hypothesis: true mu is not equal to 0

```
> FI_data$gender_2<-as.factor(FI_data$gender_2)
```

```
> wilcox_test(Chs1~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Chs1 by gender_2 (1, 2)

Z = -3.0023, p-value = 0.002396

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Chs2~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Chs2 by gender_2 (1, 2)

Z = -1.1551, p-value = 0.2505

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sb~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sb by gender_2 (1, 2)

Z = 0.37531, p-value = 0.7107

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sco~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sco by gender_2 (1, 2)

Z = -3.1226, p-value = 0.001563

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sp1~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sp1 by gender_2 (1, 2)

Z = 0.4619, p-value = 0.6476

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sp2~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sp2 by gender_2 (1, 2)

Z = -2.0303, p-value = 0.04237

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Ds~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Ds by gender_2 (1, 2)

Z = -1.4146, p-value = 0.1587

alternative hypothesis: true mu is not equal to 0

2. sensilla length

```
> wilcox_test(St~gender_1, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: St by gender_1 (1, 2)

Z = -1.4448, p-value = 0.1489

alternative hypothesis: true mu is not equal to 0

```
wilcox_test(Chs1~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Chs1 by gender_2 (1, 2)

Z = -4.3013, p-value = 8.937e-06

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Chs2~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Chs2 by gender_2 (1, 2)

Z = -1.1551, p-value = 0.2505

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sb~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sb by gender_2 (1, 2)

Z = -2.0881, p-value = 0.03673

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sco~gender_2, data = FI_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sco by gender_2 (1, 2)

Z = 2.0303, p-value = 0.04237

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sp1~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sp1 by gender_2 (1, 2)

Z = -1.3279, p-value = 0.1869

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Sp2~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Sp2 by gender_2 (1, 2)

Z = 0.50037, p-value = 0.6203

alternative hypothesis: true mu is not equal to 0

```
> wilcox_test(Ds~gender_2, data = Fl_data, distribution = "exact")
```

Exact Wilcoxon-Mann-Whitney Test

data: Ds by gender_2 (1, 2)

Z = -0.64481, p-value = 0.5227

alternative hypothesis: true mu is not equal to 0

Question 8: In the tables and figures, you should point out the sample number and standard deviation or standard error when you conducted variation analysis.

Author responses: Ok, data were presented as mean $\pm$ SD. We have added the tables and figures in the revised manuscript.