**Supplemental Information: Appendix II**

Frequency occurrence of Odonata species with more than two records in central Ñeembucú by ecosystem, aquatic habitat, terrestrial habitat, season and behaviour. For ecosystem NE = Ñeembucú Wetlands, PY = Paraguay River. For aquatic habitat: RB = Riverbank, EM = Emergent Meadow, = P Large Permanent Wetlands, sW = Small Temporary Wooded Wetlands, fW = Flooded Woodland, sG = Small Temporary Grassy Wetlands, and fG = Flooded Grassland. For terrestrial habitat: F = Forest, G = Grassland, M = Mosaic (forest and grassland), S = Savannah, U = Urban). For season: Au = Autumn, Wi = Winter, Sp = Spring, and Su = Summer. For behaviour: F = Flying, and R = Resting. Below the frequency values for each entry, we provide the results of the chi-squared test of independence (χ2 value, degrees of freedom, and p-value). Bold numbers indicate frequencies that differ from the expected frequencies with a probability of 95 %.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **N** | **Basin** | | **Aquatic Habitat** | | | | |  |  | **Terrestrial Habitat** | | | | | **Season** | | | | **Behaviour** | |
|  |  | NE | PY | R | EM | P | sW | fW | sG | fG | F | G | Mo | S | U | Sp | Su | Au | Wi | F | R |
| **ANISOPTERA** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **AESHNIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Coryphaeschna adnexa* | 14 | 43 | 57 | 10 | 0 | 10 | 20 | 20 | 0 | 40 | 7 | 14 | 0 | 64 | 14 | 7 | 21 | 57 | 14 | **83** | **17** |
|  |  | (0.3, 1, 0.6) | | (6.1, 6, 0.42) | | | | | | | (8.1, 4, 0.09) | | | | | (3.2, 2, 0.2) | | | | **(8.1, 1, 0)** | |
| *Coryphaeschna perrensi* | 18 | 33 | 67 | 50 | 0 | 19 | 13 | 6 | 6 | 6 | **28** | **11** | **22** | **39** | **0** | **0** | **89** | **11** | **0** | **67** | **33** |
|  |  | (2.1, 1, 0.15) | | (10.6, 6, 0.1) | | | | | | | **(42.2, 4, 0)** | | | | | **(37.4, 2, 0)** | | | | **(4.4, 1, 0.04)** | |
| *Rhionaeschna bonariensis* | 10 | **10** | **90** | 38 | 25 | 13 | 25 | 0 | 0 | 0 | 0 | 30 | 0 | 20 | 50 | **0** | **0** | **60** | **40** | 80 | 20 |
|  |  | **(6.4, 1, 0.01)** | | (10.4, 6, 0.11) | | | | | | | (7.8, 4, 0.1) | | | | | **(9.4, 2, 0.01)** | | | | (2.9, 1, 0.09) | |
| **GOMPHIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Aphylla distinguenda* | 4 | 25 | 75 | **25** | **0** | **0** | **50** | **25** | **0** | **0** | 0 | 0 | 0 | 75 | 25 | 0 | 75 | 25 | 0 | 50 | 50 |
|  |  | (1, 1, 0.32) | | **(15.1, 6, 0.02)** | | | | | | | (3.9, 4, 0.42) | | | | | (5.3, 2, 0.07) | | | | (0.1, 1, 0.77) | |
| *Aphylla theodorina* | 3 | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 33 | 33 | 33 | 0 | **0** | **100** | **0** | **0** | 50 | 50 |
|  |  | (3, 1, 0.08) | | (5.5, 6, 0.48) | | | | | | | (1.1, 4, 0.9) | | | | | **(8.5, 2, 0.01)** | | | | (0, 1, 0.84) | |
| **LIBELLULIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Brachymesia herbida* | 7 | 43 | 57 | 43 | 0 | 29 | 0 | 0 | 0 | 29 | 0 | 29 | 29 | 29 | 14 | **0** | **71** | **29** | **0** | 17 | 83 |
|  |  | (0.1, 1, 0.71) | | (3.8, 6, 0.71) | | | | | | | (0.8, 4, 0.94) | | | | | **(8.2, 2, 0.02)** | | | | (1.7, 1, 0.2) | |
| *Diastatops intensa* | 7 | 43 | 57 | 67 | 0 | 17 | 0 | 17 | 0 | 0 | 0 | 0 | 29 | 29 | 43 | 43 | 29 | 29 | 0 | 14 | 86 |
|  |  | (0.1, 1, 0.71) | | (7.7, 6, 0.26) | | | | | | | (3.9, 4, 0.42) | | | | | (2.9, 2, 0.23) | | | | (2.4, 1, 0.12) | |
| *Edonis helena* | 7 | 86 | 14 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | **0** | **100** | **0** | **0** | **0** | **57** | **43** | **0** | **0** | 0 | 100 |
|  |  | (3.6, 1, 0.06) | | (2.8, 6, 0.84) | | | | | | | **(24.8, 4, 0)** | | | | | **(8.8, 2, 0.01)** | | | | (3.1, 1, 0.08) | |
| *Erythemis attala* | 6 | 67 | 33 | 25 | 0 | 50 | 25 | 0 | 0 | 0 | 17 | 0 | 50 | 33 | 0 | 33 | 50 | 17 | 0 | 0 | 100 |
|  |  | (0.7, 1, 0.4) | | (4.4, 6, 0.62) | | | | | | | (8.8, 4, 0.07) | | | | | (3.4, 2, 0.19) | | | | (2.3, 1, 0.13) | |
| *Erythemis carmelita* | 3 | 100 | 0 | 0 | 0 | 67 | 0 | 33 | 0 | 0 | **33** | **0** | **33** | **33** | **0** | 0 | 0 | 100 | 0 | 0 | 100 |
|  |  | (3, 1, 0.08) | | (4.2, 6, 0.64) | | | | | | | **(10.5, 4, 0.03)** | | | | | (5.3, 2, 0.07) | | | | (1.5, 1, 0.22) | |
| *Erythemis credula* | 13 | 69 | 31 | 0 | 0 | 38 | 8 | 0 | 38 | 15 | 0 | 31 | 46 | 23 | 0 | **54** | **46** | **0** | **0** | **0** | **100** |
|  |  | (1.9, 1, 0.17) | | (6.3, 6, 0.39) | | | | | | | (7.8, 4, 0.1) | | | | | **(15.6, 2, 0)** | | | | **(7.7, 1, 0.01)** | |
| *Erythemis mithroides* | 14 | **93** | **7** | **0** | **9** | **45** | **0** | **45** | **0** | **0** | **29** | **0** | **29** | **36** | **7** | **7** | **57** | **36** | **0** | **0** | **100** |
|  |  | **(10.4, 1, 0)** | | **(14.6, 6, 0.02)** | | | | | | | **(36.3, 4, 0)** | | | | | **(8.9, 2, 0.01)** | | | | **(9.2, 1, 0)** | |
| *Erythemis peruviana* | 39 | 64 | 36 | 18 | 11 | 21 | 5 | 21 | 3 | 21 | 0 | 13 | 18 | 49 | 21 | **49** | **36** | **15** | **0** | 36 | 64 |
|  |  | (3.1, 1, 0.08) | | (2.9, 6, 0.82) | | | | | | | (5.4, 4, 0.25) | | | | | **(27.5, 2, 0)** | | | | (0.6, 1, 0.45) | |
| *Erythemis plebeja* | 13 | 69 | 31 | 9 | 0 | 27 | 9 | 36 | 0 | 18 | **0** | **0** | **23** | **77** | **0** | 0 | 46 | 38 | 15 | 36 | 64 |
|  |  | (1.9, 1, 0.17) | | (7, 6, 0.32) | | | | | | | **(12.9, 4, 0.01)** | | | | | (4.8, 2, 0.09) | | | | (0.2, 1, 0.64) | |
| *Erythemis vesiculosa* | 20 | 50 | 50 | 26 | 5 | 21 | 11 | 21 | 0 | 16 | 0 | 10 | 20 | 60 | 10 | **55** | **35** | **10** | **0** | **86** | **14** |
|  |  | (0, 1, 1) | | (2.6, 6, 0.86) | | | | | | | (6.9, 4, 0.14) | | | | | **(18.8, 2, 0)** | | | | **(10.9, 1, 0)** | |
| *Erythrodiplax nigricans* | 24 | **17** | **83** | **9** | **27** | **9** | **0** | **0** | **18** | **36** | **0** | **46** | **17** | **4** | **33** | **4** | **25** | **71** | **0** | 27 | 73 |
|  |  | **(10.5, 1, 0)** | | **(17, 6, 0.01)** | | | | | | | **(15.6, 4, 0)** | | | | | **(15.6, 2, 0)** | | | | (1.6, 1, 0.21) | |
| *Erythrodiplax ochracea* | 20 | 40 | 60 | 30 | 15 | 25 | 10 | 5 | 5 | 10 | 0 | 10 | 20 | 45 | 25 | 15 | 35 | 40 | 10 | **11** | **89** |
|  |  | (0.8, 1, 0.37) | | (3.6, 6, 0.74) | | | | | | | (2.9, 4, 0.58) | | | | | (1.6, 2, 0.44) | | | | **(7.6, 1, 0.01)** | |
| *Erythrodiplax paraguayensis* | 80 | 49 | 51 | 8 | 6 | 22 | 5 | 6 | 27 | 26 | **0** | **39** | **20** | **30** | **11** | **33** | **19** | **20** | **29** | 38 | 63 |
|  |  | (0, 1, 0.86) | | (8.7, 6, 0.19) | | | | | | | **(16.6, 4, 0)** | | | | | **(19.5, 2, 0)** | | | | (0.9, 1, 0.34) | |
| *Erythrodiplax umbrata* | 44 | **23** | **77** | 24 | 14 | 10 | 10 | 10 | 17 | 17 | 0 | 34 | 9 | 30 | 27 | **36** | **41** | **23** | **0** | 36 | 64 |
|  |  | **(12.8, 1, 0)** | | (7.3, 6, 0.3) | | | | | | | (8.5, 4, 0.07) | | | | | **(18.1, 2, 0)** | | | | (0.7, 1, 0.4) | |
| *Idiataphe longipes* | 3 | 67 | 33 | 33 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 33 | 0 | 67 | 33 | 0 | 0 | 0 | 100 |
|  |  | (0.3, 1, 0.56) | | (3.2, 6, 0.78) | | | | | | | (4.1, 4, 0.39) | | | | | (4.7, 2, 0.1) | | | | (2.3, 1, 0.13) | |
| *Macrothemis lauriana* | 5 | **0** | **100** | 75 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 20 | 20 | 0 | 80 | 0 | 67 | 33 |
|  |  | **(5, 1, 0.03)** | | (10.4, 6, 0.11) | | | | | | | (5.4, 4, 0.25) | | | | | (4.8, 2, 0.09) | | | | (0.7, 1, 0.39) | |
| *Miathyria marcella* | 57 | 46 | 54 | 30 | 11 | 22 | 2 | 13 | 6 | 17 | 0 | 14 | 21 | 39 | 26 | 26 | 25 | 37 | 12 | **90** | **10** |
|  |  | (0.4, 1, 0.55) | | (4.8, 6, 0.57) | | | | | | | (4.8, 4, 0.31) | | | | | (1.6, 2, 0.46) | | | | **(39.8, 1, 0)** | |
| *Micrathyria hypodidyma* | 5 | 80 | 20 | **0** | **0** | **20** | **20** | **60** | **0** | **0** | 0 | 0 | 20 | 80 | 0 | 0 | 0 | 80 | 20 | 50 | 50 |
|  |  | (1.8, 1, 0.18) | | **(12.4, 6, 0.05)** | | | | | | | (5.4, 4, 0.25) | | | | | (5.1, 2, 0.08) | | | | (0, 1, 0.84) | |
| *Micrathyria longifasciata* | 25 | 44 | 56 | 32 | 0 | 23 | 14 | 14 | 5 | 14 | 4 | 8 | 16 | 56 | 16 | **4** | **16** | **52** | **28** | **18** | **82** |
|  |  | (0.4, 1, 0.55) | | (5.7, 6, 0.45) | | | | | | | (6.4, 4, 0.17) | | | | | **(8, 2, 0.02)** | | | | **(4.6, 1, 0.03)** | |
| *Micrathyria spuria* | 18 | **89** | **11** | 0 | 6 | 50 | 0 | 0 | 11 | 33 | **0** | **33** | **50** | **11** | **6** | **6** | **44** | **11** | **39** | 29 | 71 |
|  |  | **(11, 1, 0)** | | (11.7, 6, 0.07) | | | | | | | **(13.3, 4, 0.01)** | | | | | **(12.4, 2, 0)** | | | | (1.1, 1, 0.29) | |
| *Micrathyria tibialis* | 17 | **76** | **24** | **0** | **6** | **13** | **13** | **69** | **0** | **0** | **6** | **0** | **6** | **76** | **12** | 6 | 47 | 35 | 12 | 30 | 70 |
|  |  | **(4.6, 1, 0.03)** | | **(47, 6, 0)** | | | | | | | **(15.4, 4, 0)** | | | | | (5, 2, 0.08) | | | | (0.7, 1, 0.41) | |
| *Oligoclada rubribasalis* | 5 | **0** | **100** | **100** | **0** | **0** | **0** | **0** | **0** | **0** | 0 | 0 | 0 | 60 | 40 | 20 | 0 | 80 | 0 | **0** | **100** |
|  |  | **(5, 1, 0.03)** | | **(18.8, 6, 0)** | | | | | |  | (4.3, 4, 0.37) | | | | | (4.8, 2, 0.09) | | | | **(3.8, 1, 0.05)** | |
| *Orthemis nodiplaga* | 7 | 86 | 14 | 0 | 0 | 33 | 0 | 17 | 17 | 33 | 0 | 14 | 29 | 57 | 0 | **0** | **14** | **86** | **0** | 67 | 33 |
|  |  | (3.6, 1, 0.06) | | (2.3, 6, 0.89) | | | | | | | (3.1, 4, 0.54) | | | | | **(7.9, 2, 0.02)** | | | | (0.7, 1, 0.39) | |
| *Pantala flavescens* | 10 | 60 | 40 | 40 | 0 | 30 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 40 | 30 | **0** | **40** | **60** | **0** | **78** | **22** |
|  |  | (0.4, 1, 0.53) | | (4.8, 6, 0.57) | | | | | | | (3.5, 4, 0.48) | | | | | **(6.2, 2, 0.05)** | | | | **(4.6, 1, 0.03)** | |
| *Perithemis mooma* | 8 | **0** | **100** | 63 | 13 | 0 | 0 | 0 | 0 | 25 | **0** | **25** | **0** | **13** | **63** | 13 | 25 | 63 | 0 | **0** | **100** |
|  |  | **(8, 1, 0)** | | (10.9, 6, 0.09) | | | | | | | **(10.4, 4, 0.03)** | | | | | (3.2, 2, 0.2) | | | | **(5.4, 1, 0.02)** | |
| *Tauriphila argo* | 11 | 36 | 64 | 25 | 0 | 38 | 0 | 13 | 0 | 25 | 0 | 30 | 30 | 30 | 10 | 9 | 27 | 64 | 0 | **80** | **20** |
|  |  | (0.9, 1, 0.35) | | (1.8, 6, 0.94) | | | | | | | (1.5, 4, 0.82) | | | | | (5, 2, 0.08) | | | | **(5.8, 1, 0.02)** | |
| *Tauriphila xiphea* | 10 | 60 | 40 | 25 | 13 | 25 | 0 | 25 | 0 | 13 | 0 | 0 | 20 | 40 | 40 | **50** | **40** | **10** | **0** | **86** | **14** |
|  |  | (0.4, 1, 0.53) | | (1.8, 6, 0.94) | | | | | | | (4.6, 4, 0.33) | | | | | **(8.3, 2, 0.02)** | | | | **(5.4, 1, 0.02)** | |
| *Tholymis citrina* | 3 | 0 | 100 | **0** | **0** | **0** | **100** | **0** | **0** | **0** | 0 | 0 | 0 | 100 | 0 | 33 | 67 | 0 | 0 | **100** | **0** |
|  |  | (3, 1, 0.08) | | **(47.1, 6, 0)** | | | | | | | (5.8, 4, 0.21) | | | | | (3.7, 2, 0.15) | | | | **(4.1, 1, 0.04)** | |
| *Tramea cophysa* | 26 | 46 | 54 | 35 | 13 | 22 | 0 | 13 | 0 | 17 | 0 | 23 | 19 | 31 | 27 | **4** | **23** | **65** | **8** | 68 | 32 |
|  |  | (0.2, 2, 0.92) | | (4.7, 6, 0.59) | | | | | | | (1.5, 5, 0.91) | | | | | **(11, 3, 0.01)** | | | | (5.3, 2, 0.07) | |
| **ZYGOPTERA** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **CALYOPTERYGIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **COENAGRIONIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Acanthagrion ascendens* | 5 | 40 | 60 | **0** | **0** | **0** | **60** | **40** | **0** | **0** | **0** | **0** | **0** | **100** | **0** | 20 | 40 | 40 | 0 | 75 | 25 |
|  |  | (0.2, 1, 0.65) | | **(30.7, 6, 0)** | | | | | | | **(9.7, 4, 0.05)** | | | | | (1.3, 2, 0.53) | | | | (1.7, 1, 0.19) | |
| *Acanthagrion lancea* | 18 | 72 | 28 | 12 | 0 | 47 | 6 | 18 | 6 | 12 | 0 | 11 | 44 | 33 | 11 | **6** | **6** | **61** | **28** | 64 | 36 |
|  |  | (3.5, 1, 0.06) | | (5.8, 6, 0.44) | | | | | | | (6.8, 4, 0.15) | | | | | **(9.1, 2, 0.01)** | | | | (2.6, 1, 0.11) | |
| *Aeolagrion philipi* | 3 | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | **100** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **100** | NA | NA |
|  |  | (3, 1, 0.08) | | (8.3, 6, 0.22) | | | | | | | **(97, 4, 0)** | | | | | **(14.6, 2, 0)** | | | | - | |
| *Argentagrion ambiguum* | 36 | 42 | 58 | 24 | 3 | 18 | 0 | 0 | 9 | 45 | 0 | 31 | 14 | 31 | 25 | **8** | **6** | **58** | **28** | 43 | 57 |
|  |  | (0.9, 1, 0.34) | | (8, 6, 0.24) | | | | | | | (3.8, 4, 0.44) | | | | | **(15.8, 2, 0)** | | | | (0, 1, 0.9) | |
| *Homeoura lindneri* | 31 | **19** | **81** | **62** | **7** | **7** | **3** | **3** | **7** | **10** | **3** | **10** | **3** | **28** | **55** | **26** | **6** | **52** | **16** | 36 | 64 |
|  |  | **(11.9, 1, 0)** | | **(32, 6, 0)** | | | | | | | **(24.4, 4, 0)** | | | | | **(7.4, 2, 0.03)** | | | | (0.5, 1, 0.48) | |
| *Homeoura nepos* | 16 | 63 | 38 | 19 | 19 | 31 | 0 | 6 | 6 | 19 | 0 | 0 | 38 | 25 | 38 | 25 | 13 | 44 | 19 | 23 | 77 |
|  |  | (1, 1, 0.32) | | (3.8, 6, 0.7) | | | | | | | (9.2, 4, 0.06) | | | | | (1.5, 2, 0.48) | | | | (2.1, 1, 0.14) | |
| *Ischnura capreolus* | 16 | **75** | **25** | 0 | 13 | 44 | 0 | 13 | 0 | 31 | 0 | 25 | 44 | 19 | 13 | **25** | **19** | **13** | **44** | 25 | 75 |
|  |  | **(4, 1, 0.05)** | | (6.8, 6, 0.34) | | | | | | | (6, 4, 0.2) | | | | | **(9.6, 2, 0.01)** | | | | (1.7, 1, 0.19) | |
| *Ischnura fluviatilis* | 81 | 47 | 53 | **11** | **16** | **27** | **4** | **1** | **10** | **31** | **0** | **41** | **25** | **14** | **21** | **19** | **16** | **33** | **32** | 43 | 57 |
|  |  | (0.3, 1, 0.59) | | **(17.8, 6, 0.01)** | | | | | | | **(25.9, 4, 0)** | | | | | **(14.2, 2, 0)** | | | | (0, 1, 0.87) | |
| *Telebasis obsoleta* | 25 | **80** | **20** | **5** | **0** | **45** | **5** | **41** | **0** | **5** | **0** | **0** | **40** | **44** | **16** | 28 | 16 | 32 | 24 | 53 | 47 |
|  |  | **(9, 1, 0)** | | **(23, 6, 0)** | | | | | | | **(11.5, 4, 0.02)** | | | | | (2.4, 2, 0.3) | | | | (0.7, 1, 0.41) | |
| *Telebasis willinki* | 24 | **86** | **14** | 9 | 5 | 41 | 0 | 27 | 0 | 18 | **9** | **0** | **32** | **45** | **14** | **23** | **23** | **14** | **41** | **11** | **89** |
|  |  | **(11.4, 1, 0)** | | (9.3, 6, 0.16) | | | | | | | **(9.9, 4, 0.04)** | | | | | **(10.5, 2, 0.01)** | | | | **(7.6, 1, 0.01)** | |
| **LESTIDAE** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Lestes minutus* | 10 | 30 | 70 | 0 | 0 | 20 | 0 | 0 | 40 | 40 | **0** | **90** | **10** | **0** | **0** | **20** | **0** | **20** | **60** | 40 | 60 |
|  |  | (1.6, 1, 0.21) | | (4.7, 6, 0.58) | | | | | | | **(27.3, 4, 0)** | | | | | **(14.2, 2, 0)** | | | | (0, 1, 0.89) | |
| *Lestes spatula* | 5 | **0** | **100** | 0 | 0 | 0 | 0 | 0 | 60 | 40 | **0** | **100** | **0** | **0** | **0** | 0 | 0 | 80 | 20 | 67 | 33 |
|  |  | **(5, 1, 0.03)** | | (3.5, 6, 0.74) | | | | | | | **(17.7, 4, 0)** | | | | | (5.1, 2, 0.08) | | | | (0.7, 1, 0.39) | |
| **Total** | 846 | 50 | 50 | 20 | 8 | 25 | 6 | 12 | 9 | 20 | 3 | 22 | 21 | 34 | 20 | 21 | 26 | 36 | 17 | 42 | 56 |