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APPENDIX

Harmonious coexistence of hispine beetles on Heliconia in experimental
and natural communities

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APPENDIX 1

Host species, sites and dates of samples. L = number of rolled leaves in sample. E = empty leaves = number of leaves in sample that contained no beetles of any species. C = complete leaves = number of leaves in sample that contained all species of beetles at that site. n_i = number of beetles of particular species in sample. e_i = number of leaves in sample that did not contain any individuals of that particular beetle species. Heliconia taxonomy from Daniels and Stiles (1979).

No. leaves			n_i	e_i
L	E	C		

Heliconia wagneriana

1. Rincon, Osa Peninsula, C. R., XI, '72

21 8 0

C. vicina 33 9C. puncticollis 1 20Ch. bicolor 2 19

2. Finca La Selva, C. R., IX, '72

20 5 4

C. vicina 38 5C. puncticollis 7 16

3. Hillsborough Reservoir, Tobago, VI, '73

48 27 5

X. monoceros 13 30C. neglecta 140 40

L E C n_i e_i

4. Arima, Trinidad, VI, '73

77 58 0

X. monoceros 16 69

C. neglecta 11 66

5. Arima, Trinidad, II, '70

101 45 10

X. monoceros 68 85

C. neglecta 19 51

6. Arima, Trinidad, VIII, '7

87 53 1

X. monoceros 43 79

C. neglecta 10 60

Heliconia platystachys

7. Ft. Clayton, C. Z., XII, '72 (sample 1)

27 4 0

C. vicina 84 12

C. puncticollis 10 23

C. nigripicta 16 17

C. instabilis 18 20

8. Ft. Clayton, C. Z., XII, '72 (sample 2)

29 2 0

C. vicina 196 3

C. puncticollis 22 16

C. nigripicta 3 27

C. instabilis 34 3

L E C n_i e_i

9. Ft. Clayton, C. Z., VII, '73

23 8 0

C. vicina 31 10

C. puncticollis 4 20

C. instabilis 1 22

Ch. bicolor 7 18

10. Bayano Reservoir, Panama, VII, '73

19 9 1

C. vicina 10 10

C. puncticollis 1 18

Ch. bicolor 4 15

Heliconia curtispatha

11. Rincon, Osa Peninsula, C. R., XII, '72

15 0 0

C. vicina 26 6

C. puncticollis 13 9

C. curtispatha 232 3

Ch. bicolor 1 14

C. instabilis 5 11

L E C n_i e_iHeliconia imbricata

12. Rincon, Osa Peninsula, C. R., XII, '72

55 28 1

C. vicina 12 50C. puncticollis 21 50C. consanguinea 89 32Ch. bicolor 6 49

13. Finca La Selva, C. R., V, '72

73 18 1

C. vicina 7 69C. puncticollis 13 65C. consanguinea 63 40Ch. perplexa 67 37

14. Finca La Selva, C. R., XII, '72

31 4 1

C. vicina 8 24C. puncticollis 16 20C. consanguinea 60 11Ch. perplexa 6 26

15. Finca La Selva, C. R., VIII, '73

7 0 2

C. vicina 8 4C. puncticollis 9 2C. consanguinea 16 3Ch. perplexa 6 1

L E C n_i e_i

16. Finca La Selva, C. R., VII, '75

28 6 1

C. vicina 11 24

C. consanguinea 87 7

Ch. perplexa 9 20

17. Finca La Selva, C. R., VII, '76

138 24 10

C. vicina 62 108

C. consanguinea 370 47

Ch. perplexa 141 68

18. Finca La Selva, C. R., II, '77

20 1 7

C. vicina 24 8

C. puncticollis 36 7

C. consanguinea 45 7

Ch. perplexa 39 5

19. Finca La Selva, C. R., VI, '77

50 9 0

C. vicina 26 37

C. puncticollis 1 49

C. consanguinea 96 16

Ch. perplexa 54 24

L E C u_i e_i

20. Finca La Selva, C. R., I, '78

51 4 8

<u>C. vicina</u>	22	33
<u>C. puncticollis</u>	87	19
<u>C. consanguinea</u>	146	19
<u>Ch. perplexa</u>	92	17

Heliconia latispatha

21. Rincon, Osa Peninsula, C. R., VII, '71

12 0 0

<u>C. vicina</u>	47	3
<u>C. puncticollis</u>	6	8
<u>C. instabilis</u>	3	8
<u>Ch. bicolor</u>	7	11

22. Rincon, Osa Peninsula, C. R., XII, '72

15 3 1

<u>C. vicina</u>	116	3
<u>C. puncticollis</u>	29	8
<u>C. instabilis</u>	5	11
<u>Ch. bicolor</u>	5	11

23. Barranca Forest,* C. R., XII, '72

5 0 1

<u>C. vicina</u>	130	0
<u>C. puncticollis</u>	1	4

L E C ni ei

24. Tilaran, C. R., XII, '72 (sample 1)

10 0 8

C. vicina 54 0

C. puncticollis 19 2

25. Tilaran, C. R., XII, '72 (sample 2)

3 0 2

C. vicina 141 0

C. puncticollis 4 1

26. Tilaran, C. R., VII, '73

7 3 4

C. vicina 11 3

27. Finca La Selva, C. R., XII, '72 (sample 1)

20 2 0

C. vicina 83 2

C. puncticollis 6 17

C. nigripicta 8 15

Ch. perplexa 2 19

28. Finca La Selva, C. R., XII, '72 (sample 2)

20 0 0

C. vicina 162 1

C. puncticollis 10 11

C. nigripicta 2 18

Ch. perplexa 9 12

L E C ni ei

29. Finca La Selva, C. R., XII, '72 (sample 3)

23 11 0

C. vicina 37 7C. puncticollis 2 22C. nigripicta 27 9

30. Finca La Selva, C. R., VIII, '73

6 2 1

C. vicina 23 2C. puncticollis 1 5

31. Ft. Clayton, C. Z., VII, '73

12 6 2

C. vicina 8 8C. puncticollis 7 8

32. Las Cruces Rd., C. Z., VII, '73

64 28 2

C. vicina 35 43C. puncticollis 19 30Ch. bicolor 18 50

33. Bayano Reservoir, Panama, VII, '73

21 9 0

C. vicina 7 14C. puncticollis 5 16Ch. bicolor 1 20

L E C n_i e_i

34. Finca La Selva, C. R., II, '77

32 5 0

C. vicina 71 9

C. puncticollis 1 31

C. nigripicta 18 22

Ch. perplexa 3 29

35. Barranca Forest,* C. R., II, '77

52 33 19

C. vicina 67 33

36. Esquinas Forest,** C. R., II, '77

37 9 0

C. vicina 108 9

C. puncticollis 11 30

C. sp. nov. 2 35

C. instabilis 2 36

37. Rio Claro Airstrip, Golfito, C. R., II, '77

30 12 18

C. vicina 71 12

Heliconia mariae

38. Gatun Locks, C. Z., VII, '73

13 1 1

C. vicina 5 10

C. puncticollis 4 10

N. separatus 46 2

L E C ni ei

Heliconia pogonantha

39. Finca La Selva, C. R., V, '72 (young plants)

24 15 0

C. vicina 12 18

C. ornatrix 5 20

C. nigripicta 3 22

40. Finca La Selva, C. R., V, '72 (sample 2)

28 8 1

C. puncticollis 1 27

C. ornatrix 17 21

N. separatus 26 12

41. Finca La Selva, C. R., XII, '72

20 7 0

C. vicina 2 19

C. puncticollis 2 18

C. ornatrix 24 10

N. separatus 14 12

42. Finca La Selva, C. R., VIII, '73

8 0 0

C. vicina 11 4

C. puncticollis 1 7

C. ornatrix 20 3

N. separatus 11 2

I. E C n_i e_iHeliconia irrasa var. undulata

43. Finca La Selva, C. R., XII, '72

44 16 6

C. vicina 61 19Ch. bicolor 12 35

44. Finca La Selva, C. R., VIII, '73

16 0 3

C. vicina 38 3Ch. bicolor 8 10Heliconia metallica

45. Bayano Reservoir, Panama, XII, '72 (sample 1)

37 15 0

C. vicina 67 18C. puncticollis 3 34C. nigripicta 2 35Ch. bicolor 1 36

46. Bayano Reservoir, Panama, XII, '72 (sample 2)

48 11 0

C. vicina 97 12C. puncticollis 6 42C. nigripicta 4 45

L E C n_i e_i

47. Bayano Reservoir, Panama, VII, '73

18 9 0

C. vicina 6 14

C. puncticollis 1 17

Ch. bicolor 10 12

Heliconia osaensis

48. Barranca Forest,* C. R., VII, '71

16 12 4

C. vicina 12

L E C n_i e_i

49. Barranca Forest,* C. R., III, '72

62 26 36

C. vicina 97

50. Barranca Forest,* C. R., II, '77

11 1 10

C. vicina 46

51. Pipeline Road,*** C. Z., VII, '73

6 4 2

C. vicina 3

L E C n_i e_iHeliconia vellerigera

52. Rincon, Osa Peninsula, C. R., VII, '71

7 0 7

<u>C. vicina</u>	19	3
<u>C. puncticollis</u>	7	4
<u>C. curtispatha</u>	118	2
<u>C. instabilis</u>	6	3
<u>Ch. bicolor</u>	6	3

53. Golfito, II, '77

7 4 3

<u>C. vicina</u>	12	6
<u>C. puncticollis</u>	13	5
<u>C. curtispatha</u>	4	5

Experiments, Heliconia imbricata, Finca La Selva, VII, '76

54. Experiment C24

19 1 1

<u>C. vicina</u>	4	15
<u>C. consanguinea</u>	11	1
<u>Ch. perplexa</u>	77	14

55. Experiment P24

31 5 1

<u>C. vicina</u>	1	30
<u>C. consanguinea</u>	11	28
<u>Ch. perplexa</u>	70	5

L E C n_i e_i

56. Experiment C48

11 2 0

C. vicina 1 10

C. consanguinea 48 3

Ch. perplexa 4 8

57. Experiment P48

25 1 0

C. vicina 5 22

C. consanguinea 55 10

Ch. perplexa 62 2

*Barranca Forest is a small plot of uncut forest on the southwest side of the InterAmerican highway, 1 km north of the road to Miramar. The road to Miramar intersects the InterAmerican highway approximately 4 km north of where the road to Puntarenas intersects the highway. This region is being modified rapidly and this plot will likely be cut down soon.

**The Esquinas Forest is the site of Paul Allen's homestead (Allen, 1956), on the northwest side of the InterAmerican highway, 4 km north of the Rio Piedras Blancas. The Rio Piedras Blancas is 15 km north of the town of Rio Claro, which is where the road to Golfito intersects the highway.

***Determination of this Heliconia population is in question. F. G. Stiles (pers. comm.) infers this species to be near H. vaginalis.