

ECOLOGICAL NOTES ON  
LOWER RÍO GRANDE VALLEY SPHECINI<sup>1,2</sup>CHARLES C. PORTER<sup>3</sup>Department of Biological Sciences  
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## ABSTRACT

Notes on phaenology, distribution, and flower preferences are given for the 10 species of *Sphex*, *Isodontia*, and *Prionyx* collected by the author since 1973 in Hidalgo County, Texas. *Isodontia fuscipennis* (Fabricius) is recorded as new for the United States, and the first completely documented United States records of *Sphex servillei* Lepeletier are adduced.

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Since 1973 I have been surveying Hymenoptera in the Lower Río Grande Valley of Texas. This work has produced studies of the ichneumonid genus *Thyreodon* (Porter 1976) and the eumenid genus *Zethus* (Porter 1975), as well as a monograph of the ichneumonid tribe Mesostenini (Porter 1977). I now add observations on the sphecid tribe Sphecini, whose taxonomy has been elucidated by Bohart and Menke (1963, 1976) but whose ecology is as yet poorly documented.

Sphecines are large wasps, strong of flight, and resistant to desiccation. They frequent open areas in bright sun, abound in thorn scrub and deserts, and, unlike many other Hymenoptera, reach maximum abundance during the hottest months of the year. Sphecines stock their nests with Orthoptera, and each genus normally chooses a specific prey family. For example, of the south Texas genera, *Sphex* provisions subterranean nests with Tettigoniidae, *Prionyx* is also fossorial but hunts Acrididae, and *Isodontia* stores oecanthine gryllids in hollow plant stems.

Although at the northern limit of the Neotropics, the Lower Río Grande Valley has a biota surprisingly similar to that of other subtropical semi-arid habitats in Middle and South America. Furthermore, it is not far from the warm-temperate deserts of western North America nor from the humid Austroriparian Pine-Oak forests of the northeast Gulf strip. The Valley thus has a zoogeographically complex sphecine fauna of both Sonoran and Neotropical derivation, and its Neotropical element comprises forms of South, Middle and southeastern North American affinities.

My principal collecting localities in the Valley have been the Bentsen Río Grande Valley State Park near Mission and the Valley Botanical Garden at McAllen. These are designated "Bentsen Park" and "Botanical Garden" in the accounts of each species given below.

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<sup>2</sup> Hymenoptera: Sphecidae.

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1. *Sphex (S.) ashmeadi* (Fernald)

MATERIAL EXAMINED. 4 females, 2 males: BENTSEN PARK, 1 female, 5-VI-73; 1 male, 25-VIII-77; 3 females, 1 male, 31-VIII-77.

FIELD NOTES. Collected in bright sun from flowers of *Cissus incisa* Nuttall.

PHAENOLOGY. 1 female in June, 3 females and 2 males in August; taken only in 1973 and 1977.

2. *Sphex (S.) dorsalis* Lepeletier

MATERIAL EXAMINED. 7 females, 32 males: BENTSEN PARK, 1 male, 29-VIII-77; 2 males, 31-VIII-77; BOTANICAL GARDEN, 1 male, 21-V-77; 1 female, 1-VI-76; 1 male, 3-VI-76; 5 males, 11-VI-77; 1 female, 4 males, 12-VI-77; 2 males, 2-IX-76; 1 male, 3-IX-77; 1 male, 4-IX-75; 5 males, 4-IX-76; 1 male, 5-IX-76; 1 female, 5 males, 11-IX-76; 1 male, 5-IX-76; 1 female, 5 males, 11-IX-76; 4 females, 2 males, 12-IX-76; 1 male, 27-VIII to 8-IX-73.

FIELD NOTES. Collected on *Cissus incisa*, *Melilotus alba* Desrousseau, *Pluchea camphorata* Linnaeus, and *Serjania* sp. Twenty specimens (5 females, 15 males) were taken during September 1976 from flowers of *Pluchea camphorata* L. in a low and often flooded part of the Valley Botanical Garden.

PHAENOLOGY. 1 male in May, 2 females and 10 males in June, 3 males in August, and 5 females and 17 males in September; 2 males in 1973, absent in 1974, 1 male in 1975, 6 females and 16 males in 1976, and 1 female and 14 males in 1977.

Willink (1951:170-1) reported *dorsalis* as active in northern Argentina from November to May.

3. *Sphex (S.) habenus* Say

MATERIAL EXAMINED. 2 females, 8 males: BENTSEN PARK, 1 male, 31-VIII-77; BOTANICAL GARDEN, 1 male, 12-VI-77; 2 females, 3 males, 11-IX-77; 3 males, 12-IX-76.

FIELD NOTES. Collected on flowers of *Cissus incisa* and occasionally of *Pluchea camphorata*, in tall grass at the edge of *Celtis* woods, and on *Serjania* vines in bright sun.

PHAENOLOGY. 1 male in June, 1 male in August, 2 females and 6 males in September; absent from 1973-1975, 3 males in 1976, 2 females and 5 males in 1977.

4. *Sphex (S.) servillei* Lepeletier

MATERIAL EXAMINED. 2 males: BENTSEN PARK, 30-VIII-77; 8-IX-76.

FIELD NOTES. Collected on flowers of *Baccharis* sp. and of *Cissus incisa*.

PHAENOLOGY. In south Texas appears limited to late summer; no records for 1973-1975.

Willink (1951:138) indicated that *servillei* flies from January to April in northern Argentina.

TAXONOMY. Bohart and Menke omitted *servillei* from their 1963 revision of the Nearctic Sphecini but cited it, without more specific data, for "south Texas" in their 1976 checklist (p. 116).

The following diagnosis will separate *servillei* from other *Sphex (S.)*

occurring in the Lower Río Grande Valley: body and legs opaque black with rather inconspicuous areas of silvery white pubescence on part of front, most of clypeus, pronotal collar dorsally, apicad on pronotal lobe, narrowly on apical half of lateral margin of mesoscutum, on part of postscutellum, more or less of propodeal apex, mesopleuron behind and below pronotal lobe and again above mid-coxal base, and elongately on metapleuron from base of hind coxa dorsad along stigmal groove about halfway to spiracle; male wings moderately darkened apicad but otherwise more or less hyaline; female with yellowish or amber-tinged wings; male 7th sternite with a dense tuft of setae on each side and apically emarginate but without a rounded median projection; male 8th sternite without a median spine, its apical margin a little acutely rounded.

5. *Sphex* (*S.*) *texanus* Cresson

MATERIAL EXAMINED. 2 females, 7 males: BENTSEN PARK, 2 males, 30-VIII-77; 1 male, 31-VIII-77; BOTANICAL GARDEN, 1 male, 21-V-77; 1 female, 5-VI-76; 1 female, 1 male, 11-IX-76; 2 males, 12-IX-76.

FIELD NOTES. Collected from flowers of *Cissus incisa* and from *Serjania* vines in bright sun.

PHAENOLOGY. 1 male in May, 1 female in June, 3 males in August, 1 female and 3 males in September; absent in 1973-1975, 2 females and 3 males in 1976, 4 males in 1977.

6. *Sphex* (*Fernaldina*) *lucae* (Saussure)

MATERIAL EXAMINED. 3 females, 10 males: BOTANICAL GARDEN, 1 male, 17-24-III-74; 1 female, 20-III-76; 1 female, 16-30-V-74; 1 male, 28-V-75; 1 male, 29-V-75; 1 male, 1-VI-76; 1 female, 1 male, 2-VI-76; 1 male, 4-VI-76; 2 males, 5-VI-75; 1 male, 9-VI-73; 1 male, 8-IX-74.

FIELD NOTES. Collected mainly on flowers of *Melilotus alba*. *S. lucae* is more sluggish and easily captured than the Valley species of *Sphex* (*S.*).

PHAENOLOGY. 1 female and 1 male in March, 1 female and 2 males in May, 1 female and 6 males in June, and 1 male in September; 1 male in 1973, 2 males and 1 female in 1974, 4 males in 1975, 2 females and 3 males in 1976, absent in 1977.

7. *Isodontia fuscipennis* (Fabricius)

MATERIAL EXAMINED. 1 female: BENTSEN PARK, 1-13-VI-73.

TAXONOMY. Bohart and Menke described and keyed *I. fuscipennis* in their revision of the Nearctic Sphecini (1963:133, 135-7) but cited no records from the United States.

PHAENOLOGY. Willink (1951:82) reported that this species flies in northern Argentina from December to May.

8. *Isodontia elegans* (Smith)

MATERIAL EXAMINED. 1 female: BOTANICAL GARDEN, 5-VI-75.

FIELD NOTES. Collected while flying in tall grass at the edge of *Celtis* woods.

9. *Isodontia mexicana* (Saussure)

MATERIAL EXAMINED. 10 females, 22 males: BENTSEN PARK, 2 males, 30-VIII-77; BOTANICAL GARDEN, 1 female, 17-24-III-74; 4 females, 4 males, 16-30-V-74; 2 males, 21-V-77; 1 female, 5 males, 22-V-77; 2 males, 1-VI-76;

1 male, 2-VI-76; 1 male, 3-VI-76; 1 female, 6-VI-76; 1 male, 11-VI-77; 1 female, 12-VI-77; 1 female, 18-VI-77; 1 female, 22-VIII-77; 1 male, 3-IX-77; 1 male, 4-IX-77; 1 male, 11-I-76.

FIELD NOTES. Usually found in grassy areas and often on flowers of *Melilotus alba*.

PHAENOLOGY. 1 female in March, 5 females and 11 males in May, 3 females and 5 males in June, 1 female and 3 males in August, and 3 males in September; absent in 1973, 5 females and 4 males in 1974, absent in 1975, 1 female and 6 males in 1976, and 4 females and 12 males in 1977.

#### 10. *Prionyx parkeri* Bohart and Menke

MATERIAL EXAMINED. 14 females, 32 males: BENTSEN PARK, 1 female, 3 males, 1-13-VI-73; BOTANICAL GARDEN, 1 male, 16-III-74; 3 males, 22-III-74; 2 males, 17-24-III-74; 1 male, 20-III-76; 5 females, 12 males, 16-30-V-74; 1 female, 2 males, 25-V-75; 2 males, 28-V-75; 1 female, 29-V-75; 5 males, 1-13-VI-73; 1 female, 5-VI-75; 1 female, 2 males, 7-VI-75; 2 females, 1-VI-76; 2 females, 2-VI-76; 1 female, 6-VI-76; 1 female, 12-VI-76; 1 male, 1-IX-75.

FIELD NOTES. Collected in tall weeds and overgrown fields, sometimes on flowers of small herbs, and occasionally on *Pluchea camphorata*.

PHAENOLOGY. 7 males in March, 7 females and 16 males in May, 7 females and 11 males in June, and 1 male in September; 8 females in 1973, 5 females and 12 males in 1974, 4 females and 6 males in 1975, 5 females and 2 males in 1976, and absent in 1977.

### CONCLUSIONS

ZOOGEOGRAPHY. The sphecine genera represented in the Valley have essentially cosmopolitan ranges. *Sphex* is most diverse in the Neotropics with large radiations also in warmer parts of the Old World but with fewer species in temperate regions. *Isodontia* is best developed in the Neotropical and Oriental Realms but has a few species in the temperate Northern Hemisphere and 2 in Australia. The more xerophile *Prionyx* occurs almost everywhere but is best represented in southwest Asia and the Mediterranean zone and has an important radiation in the semiarid Andean and Chaco regions of South America.

At the specific level, Valley sphecines show either Neotropical or Sonoran affinities. The Neotropical element includes *S. servillei*, *S. habenus* and *S. dorsalis*, *I. fuscipennis*, and *P. parkeri*; while the Sonoran element is represented by *S. ashmeadi*, *S. texanus*, *S. lucae*, *I. mexicana*, and *I. elegans*.

*S. servillei* and *I. fuscipennis*, which range from the Valley to Argentina, appear to be warm-adapted, originally South American species which have been prevented by diminishing temperatures from spreading far north into the United States along the Gulf Arc during the present interglacial period. However, *I. exornata* of the southeastern states is intimately related to *fuscipennis*. This suggests that a common ancestor of the *fuscipennis-ornata* pair may have occupied the whole Gulf region during warmer Tertiary times. Later, this ancestor was fragmented by Pleistocene glaciation into eastern (Florida) and western (Middle America) isolates. The isolates have never reestablished contact because *exornata* has adapted to the humid Austroriparian Pine-Oak forest and so does not enter the semiarid thorn scrub that

begins southwest of Houston, Texas, while *fuscipennis*, although hygrially more versatile, requires subtropical temperatures with at most light and occasional winter frost.

Similar to the above mentioned, but more cold tolerant, is *S. dorsalis*, which extends from Maryland and California to Argentina. *S. dorsalis* has not been cited previously from north of Georgia on the Atlantic seaboard, but I collected it regularly during late summer in 1967-72 at Hudson near Cambridge, Maryland, on the Delmarva Peninsula. Here it often visited flowers of *Asclepias*. Such immense intercontinental distributions are not uncommon among euryhygric, vagile Neotropical insects. For example, the mesostenine ichneumonids *Acerastes pertinax* Cresson and *Pachysomoides stupidus* Cresson or such diurnal Lepidoptera as *Battus polydamas* Linnaeus, *Eurema nicippe* Cramer, *Phoebis philea* Linnaeus, *P. sennae* Linnaeus, *Danaus gilippus* Cramer, *Heliconius charitonius* Linnaeus, and *Agraulis vanillae* Linnaeus have ranges more or less comparable to that of *S. dorsalis*. As pointed out in my review of Valley Mesostenini (Porter 1977:78), few Neotropical insects are "tropical" in the sense of requiring frost-free winters, so that those which can cross the arid zones of northern México and the southwestern United States often attain 35 to 40° N. Lat.

Although the Neotropical biota originated in South America, it also now flourishes almost intact in most of Middle America. The huge Middle American Neotropical element obviously is the product of multiple invasions, which occurred at various times throughout the Tertiary and warmer periods of the Pleistocene, so that it consists not only of species like *S. servillei* and *I. fuscipennis*, which extend uniformly to southern South America, but also of many species that have evolved locally from South American ancestors and in response to the orogeny and severe climatic changes that affected the region during later Tertiary and Pleistocene times. *Prionyx parkeri* seems to fit this latter category. It belongs to the *Thomae* group, which is centered in the semiarid Andean and Chaco regions of South America (6 endemic species and 2 more that reach northward into the United States), with *P. parkeri* in most of the United States and México south to the Isthmus of Tehuantepec, 1 species generally distributed over the United States and northern México, 1 well represented in the western United States with scattered records from the east, and another confined to the west. The *Thomae* group in North America consequently shows a Sonoran facies—i.e., species centered in drier parts of the west. However, true Sonoran elements are most diverse in the North and Middle American semiarid zones, with secondary invasions of South America (e.g., the mesostenine ichneumonid genus *Compsocryptus*, Porter 1977:80), while the *Thomae* group predominates in semiarid southern South America and has a subsidiary radiation in México and western North America. We may thus regard this group as part of a genuinely xerophile Neotropical biota, in contrast to the main hygrophile Neotropical element that consists of such forest insects as Ichneumonidae, social Vespidae, etc. This assemblage is analogous to the Sonoran but arose in South America, probably, as envisioned by Solbrig (1976:36), starting in the early Tertiary and "at middle latitudes, particularly in the western part of the continent" where a "flora adapted to a seasonally dry climate" has long existed. Xerothermic episodes later in the Tertiary and in the Pleistocene allowed northward movement of

this element, just as they permitted some Sonoran genera to reach South America. The nyssonine sphecid tribe Bembicini also largely corresponds to this distributional pattern, as do such bee genera as *Caupolicana*, *Diasia*, and *Centris*, and even a few ichneumonids, such as the *Planosae* group of *Trachysphyrus* (Porter 1977:81).

Finally, *S. habenus* appears to be a northeast North American Neotropical element which became distinct from originally South American ancestors while isolated during Pleistocene glacial maxima in Florida or the Gulf states and which in the present interglacial has moved southwest again as far as México. In this regard, it resembles many ichneumonids, such as the mesostenines *Diapetimorpha macula* Cameron, *D. introita* Cresson, *D. acadia* Cushman, and *Lymeon orbis* Say (Porter 1977:77).

As pointed out by Halffter (1976:28-29), the more or less xeric Mexican and western North American Sonoran fauna seems composed of some elements that evolved from ancient South American ancestors which moved north in the late Cretaceous and early Tertiary and of others stemming from equally old predecessors that crossed the Bering land bridge from Asia in those same climatically benign times. These taxa now are centered in the Sonoran geographic area but many have invaded Central or South America while others have reached the southeastern United States or even the West Indies. Some of these wider-ranging Sonoran forms have remained xerophilic and show disjunct distributions in peripheral areas now under relatively humid climates (e.g., the ichneumonid genus *Compsocryptus* and the snake genus *Pituophis*), while others have evolved a few widely distributed forms adapted to conditions wetter and/or cooler than those prevailing in the place of origin (e.g., the mesostenine genus *Joppidium* and the snake genus *Crotalus*). All the above distributional types are found among the Valley Sonoran sphecines. *Sphex ashmeadi* and *S. texanus*, both confined to the western United States and northern México, seem, like the other North American *Sphex* (S.), to be of ultimate South American derivation. On the other hand, *Sphex (Fernaldina) lucae*, of general distribution in the western United States and México as far south as Guadalajara and with some isolated records in the southeastern United States also, has only 1 close relative, *S. (F.) melanocnemis* of the eastern Mediterranean area. This disjunct pattern may suggest early Tertiary dispersal around the Northern Hemisphere with subsequent extinction in many areas and survival by adaptation to aridity. At any rate, the subgenus *Fernaldina* is absent from South America. Finally, *I. elegans* (western United States and northern México) and *I. mexicana* (eastern United States to Wyoming, Arizona, and all of Middle America) belongs to a group also represented by 1 species that is restricted to the eastern United States and 1 found only in Cuba (Bohart and Menke 1976:120). None of this assemblage reaches South America, and its closest relatives are in the Oriental and eastern Palaearctic areas. These facts may indicate a trans-Bering movement in the early Tertiary with subsequent mid to late Tertiary differentiation in the arid and mountainous parts of western North America, southward movement into Middle America during Pleistocene glacial maxima, and various northward and eastward pulses in glacial minima.

The Lower Río Grande Valley sphecine fauna treated in this study thus is made up of 5 Neotropical and 5 Sonoran species belonging to cosmopolitan genera. The species all are widely distributed, and none is endemic to the

Valley. Four of them (*S. ashmeadi*, *S. texanus*, *S. lucae*, and *I. elegans*) are shared principally with the rest of the western United States and northern México, 1 (*S. habenus*) with the southeastern United States and northern México, 2 (*I. mexicana* and *P. parkeri*) are widely distributed in the United States and Middle America, 2 (*S. servillei* and *I. fuscipennis*) extend from the Valley to Argentina, and 1 (*S. dorsalis*) from Maryland to Argentina.

PHAENOLOGY. I have collected in the Valley both with hand nets and Malaise traps but have taken sphecines there only by hand. Periods available for hand collecting each year since 1973 have included approximately 30 days in December and January, 1 week in March, 2 weeks in May, 2 weeks in June, 1 week in August, and 1 week in September, as well as 1 week each in April (1975) and November (1977). Sphecines were collected only in March, May, June, August, and September, and these records are summarized in Table 1.

Valley sphecines thus fly mostly from late spring to early fall, with 1-15 June being the optimum period sampled (9 species, 47 specimens). Their numbers and diversity build up steadily from March to June but have diminished by the last part of August only to increase dramatically again during the first week of September. On the other hand, intensive collecting in December and January has failed to obtain any Sphecini.

This monthly phaenology is approximated by numerous Valley Hymenoptera and in particular by almost all the Sphecidae. However, most other Valley warm season Hymenoptera show an even more pronounced summer hiatus than the Sphecini. On the other hand, the only sphecids abundant in winter are several species of *Liris*, although occasional specimens of *Cerceris* spp., *Ochloptera bipunctata* Say, *Trachypus mexicanus* Cameron, and *Trypoxylon* spp. appear as late as December or January and a large sphecid fauna still may be active toward the end of November.

TABLE 1. MONTHLY PHAENOLOGY OF LOWER RÍO GRANDE VALLEY SPHECINI.

	Mar.	May	June	Aug.	Sept.	Tot. Sp.
1. <i>S. ashmeadi</i>	-	-	1	5	-	6
2. <i>S. dorsalis</i>	-	1	12	3	22	38
3. <i>S. habenus</i>	-	-	1	1	8	10
4. <i>S. servillei</i>	-	-	-	1	1	2
5. <i>S. texanus</i>	-	1	1	3	4	9
6. <i>S. lucae</i>	2	3	7	-	1	13
7. <i>I. fuscipennis</i>	-	-	1	-	-	1
8. <i>I. elegans</i>	-	-	1	-	-	1
9. <i>I. mexicana</i>	1	16	8	4	3	32
10. <i>P. parkeri</i>	7	23	15	-	1	46
Total species/ month	3	5	9	6	7	
Total specimens/ month	10	44	47	15	40	
Total specimens collected: 156						

In contrast, many Valley Hymenoptera remain active throughout the benign winters, and some of the parasitic groups attain maximum abundance and diversity in December and January. For example, mesostenines peak in December-January but become rare in summer (Porter 1977:82-83), and the same is true for most other Ichneumonidae and for certain Chalcidoidea, particularly the genus *Spilochalcis*. The winter fauna also includes numerous braconids; the scoliid *Campsomeris tolteca* Saussure; *Zethus*, *Pachodynerus*, *Hypalastoroides*, *Leptochilus*, *Stenodynerus*, and *Eumenes* among the Eumenidae; the vespids *Mischocyttarus*, *Brachygastra*, and *Polistes*; such pompilids as *Ageniella*, *Anoplius*, *Auplopus*, *Calicurgus*, *Cryptocheilus*, *Minagenia*, and *Priocnessus*; and diverse bees, including *Hylaeus*, *Agapostemon*, *Augochlora*, *Temnosoma*, *Halictus*, *Dialictus*, *Megachile*, *Coelioxys*, *Exomalopsis*, *Xylocopa*, and *Bombus*.

We have no evidence as to why some Valley Hymenoptera are adult principally in winter and others mainly from March to November or as to why so many of the warm season taxa decline in summer. Probably, in most cases the reason is trophic rather than climatic. Large orthopterans hunted by sphecines are most abundant during the warm season, whereas the holometabolous immatures utilized by parasitoids, scoliids, eumenids, and many vespids tend to be most available in winter, and the spiders caught by Pompilidae on the flowers visited by bees are present in the Valley at any season. On the other hand, extreme summer heat, droughts, and occasional winter frosts also could be important population controls, but experimental evidence is needed for their evaluation. Certainly, climatic factors often must act in complex, subtle ways, and phaenology cannot be predicted from zoogeographic affinities. For example, the mainly South and Middle American *S. servillei* and *I. fuscipennis* fly, as might be expected, during summer, but many other "tropical" Hymenoptera of similar distribution (ichneumonids such as *Coccygomimus caeruleus* Brullé, *Lymeon leucosoma* Cameron, *Bicristella texana* Porter, *Cryptanura lamentaria* Cameron, *C. vallis* Porter, and *Conopyge conica* Brullé; the eumenid *Zethus montezuma* Saussure; and the halictid *Temnosoma* sp.) in the Valley peak or occur exclusively in winter.

Within their observed activity period, some Valley sphecines are most common toward late summer and others in spring. The 5 species of *Sphex* (*S.*) all peak in August or September, and none occurs earlier than May. On the other hand, *S. (F.) lucae*, *I. mexicana*, and *P. parkeri* peak in May or June, emerge in March, and have become rare by September, while *I. fuscipennis* and *I. elegans* are known only for June. There seems to be no obvious relationship between this temporal differentiation and any trophic or habitat factors by which it would reduce competition among the species affected.

Although collecting was done each year at approximately the same times and in the same localities, numbers and diversity of species varied strikingly from year to year. These data are summarized in Table 2.

It is noteworthy that none of the species was collected every year, that *I. fuscipennis* and *I. elegans* appeared only once, and that 1976 and 1977 yielded by far the greatest numbers and diversity. As explained elsewhere (Porter 1977:85), the Valley enjoys a subtropical climate that is violently altered at intervals by protracted droughts, short periods of torrential rain and flooding, and occasional killing frosts. These density independent



TABLE 2. ANNUAL PHAENOLOGY OF LOWER RÍO GRANDE VALLEY SPHECINI.

	1973	1974	1975	1976	1977
1. <i>S. ashmeadi</i>	1	-	-	-	5
2. <i>S. dorsalis</i>	2	-	1	22	15
3. <i>S. habenus</i>	-	-	-	3	7
4. <i>S. servillei</i>	-	-	-	1	1
5. <i>S. texanus</i>	-	-	-	5	4
6. <i>S. lucae</i>	1	3	4	5	-
7. <i>I. fuscipennis</i>	1	-	-	-	-
8. <i>I. elegans</i>	-	-	1	-	-
9. <i>I. mexicana</i>	-	9	-	7	16
10. <i>P. parkeri</i>	8	17	10	7	-
Total species/year	5	3	4	7	6
Total specimens/year	13	28	16	48	48

factors probably explain most of the fluctuations recorded in Table 2. For example, the productive summer of 1976 was unusually wet and followed a rather wet winter. In 1977, almost equally productive, the winter was one of the wettest on record and led into a particularly verdant spring followed by almost 3 months of drought and then a short period of abundant rain in September, when vegetation and insects revived dramatically. Most sphecines thus seem favored by more humid periods in the Valley's erratic pluvial spectrum. However, *S. (F.) lucae* and *P. parkeri* were absent for the first time in 1977, perhaps because these more xerophile species suffered disproportionately in the damp, cool winter of 1976-1977.

**FLOWER PREFERENCES.** Adult sphecines regularly drink nectar of flowers. Available data, although incomplete, suggest considerable differentiation in flower preference among Valley species.

*Cissus incisa* (Vitaceae) is the best plant for *Sphex (Sphex)* and attracts all 5 Valley species, including fair numbers of *ashmeadi*, *dorsalis*, *habenus*, and *texanus*.

*Melilotus alba* (Leguminosae) is visited by a few *S. dorsalis* and by many *S. lucae* and *I. mexicana*.

*Pluchea camphorata* (Compositae) yields large quantities of *S. dorsalis*, an occasional *S. habenus*, and some *P. parkeri*.

*Baccharis* spp. (Compositae), although especially productive for most anthophilous Hymenoptera, have produced only *S. servillei*.

#### COLLECTIONS

Material used in this study has been divided between the Florida State Collection of Arthropods (Division of Plant Industry, P.O. Box 1269, Gainesville, Florida 32602) and the author's private collection (301 N. 39th St., McAllen, Texas 78501).

#### ACKNOWLEDGMENTS

My Valley fieldwork has been supported in 1976-1977 by United States National Science Foundation Grant DEB-75-22426 and during 1973-1975 by

grants from the Committee for Research and Exploration of the National Geographic Society. The Texas Parks and Wildlife Department has issued permits for insect collecting in the Bentsen Río Grande Valley State Park (current permit number 1-78), and Mrs. Vivian Thacker and Mr. A. R. Baker of McAllen, Texas, have facilitated fieldwork in the Valley Botanical Garden. Mr. Anthony F. Cerbone of Fordham University has assisted me during some of the fieldwork involved in this study.

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