

# 2009 Progress Report on Surveys of Bees and Some Wasps of Carolina Sandhills National Wildlife Refuge

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Theoretically this was the last year of collecting on the Carolina Sandhills National Wildlife Refuge prior to the publication of a complete paper on the bees of this wonderful refuge. However, I may stop in on my way down to Florida in May (with your permission) and do a bit more collecting...its just to interesting a place to miss such opportunities.

In 2009 collections were made on 3 days in March to round out the surveys made in other years at different time periods. Weather was a bit cool, but at least 2 good collecting days with warm enough temperatures were available and surveys using bowl traps were remarkably productive, despite apparent low number of blooming plants.

While not all specimens have been identified, at least 68 species of bees were collected with several new state records of *Andrena* made for the state. I now have to go through and double check all the records and verify some tricky specimens, but it is likely that the list will go over 200 species of bees, perhaps by quite a bit ...about 100 or those will be new state records.

Have I mentioned this before? What a fabulous place for bees and other sand dwelling creatures. You guys are doing an excellent job via your burns and open forest management.

Figure 1 shows the location of sampling sites ... to date.

Table 1 shows the number of spring records of bees, wasps, and other insects collected in 2009. Please ignore the scattered spelling mistakes...that's a next step for me.

Table 2 shows the complete number of specimens collected to date.

**Figure 1.** Sampling localities for bees and wasps in and around Carolina Sandhills National Wildlife Refuge.



**Table 1.** 2009 Totals. Collections of Bees and Wasps made on 21-23 of March on Carolina Sandhills National Wildlife Refuge.

| Species                               | 21 | 22 | 23 | Grand Total |
|---------------------------------------|----|----|----|-------------|
| <i>Acmaeodera tubulus</i>             | 3  | 2  |    | 5           |
| <i>Agapostemon</i> species            | 1  |    |    | 1           |
| <i>Agapostemon splendens</i>          | 4  | 8  |    | 12          |
| <i>Andrena violae</i>                 |    | 1  |    | 1           |
| <i>Andrena banksi</i>                 |    | 6  |    | 6           |
| <i>Andrena barbara</i>                | 12 | 42 | 9  | 63          |
| <i>Andrena bisalicensis</i>           | 4  | 8  |    | 12          |
| <i>Andrena bradleyi</i>               |    | 2  |    | 2           |
| <i>Andrena cressonii</i>              |    |    | 1  | 1           |
| <i>Andrena erigeniae</i>              | 2  | 3  |    | 5           |
| <i>Andrena erigeriae</i>              | 1  |    |    | 1           |
| <i>Andrena fenningeri</i>             |    | 4  |    | 4           |
| <i>Andrena gardineri</i>              |    | 1  |    | 1           |
| <i>Andrena hilaris</i>                |    | 1  |    | 1           |
| <i>Andrena illini</i>                 |    | 7  | 6  | 13          |
| <i>Andrena krigiana</i>               |    | 1  |    | 1           |
| <i>Andrena miserabilis</i>            | 6  | 42 | 13 | 61          |
| <i>Andrena</i> nr. <i>Miserabilis</i> |    |    | 1  | 1           |
| <i>Andrena nuda</i>                   |    |    | 1  | 1           |
| <i>Andrena perplexa</i>               | 3  | 6  | 4  | 13          |
| <i>Andrena trachandrena</i>           |    | 4  | 1  | 5           |
| <i>Andrena violae</i>                 | 2  | 1  |    | 3           |
| <i>Apis mellifera</i>                 | 2  | 13 | 2  | 17          |
| <i>Augochlora pura</i>                | 1  | 1  |    | 2           |
| <i>Augochlorella aurata</i>           | 1  |    |    | 1           |
| Bee Lost                              |    | 1  |    | 1           |
| Bee unknown                           | 3  |    | 1  | 4           |

|                              |     |     |    |      |
|------------------------------|-----|-----|----|------|
| Bombus bimaculatus           |     |     | 2  | 2    |
| Bombus griseocollis          |     | 3   |    | 3    |
| Bombus impatiens             | 1   | 2   |    | 3    |
| Campomeris plumipes          | 592 | 955 |    | 1547 |
| Ceratina calcarata           | 4   | 2   | 1  | 7    |
| Ceratina cockerelli          | 1   |     |    | 1    |
| Ceratina floridana           | 2   |     |    | 2    |
| Colletes distinctus          |     |     | 1  | 1    |
| Colletes inaequalis          | 4   | 12  | 14 | 30   |
| Colletes validus             |     | 3   |    | 3    |
| Destroyed                    | 2   | 2   | 4  | 8    |
| Habropoda laboriosa          | 100 | 144 | 4  | 248  |
| Halictus rubicundus          |     | 1   |    | 1    |
| Lasioglossum bruneri         | 4   |     |    | 4    |
| Lasioglossum imitatum        |     |     | 25 | 25   |
| Lasioglossum nelumbonis      |     | 2   |    | 2    |
| Lasioglossum nymphale        |     | 8   |    | 8    |
| Lasioglossum p               |     | 1   |    | 1    |
| Lasioglossum pilosum         | 343 | 264 |    | 607  |
| Lasioglossum vierecki        | 26  | 10  |    | 36   |
| Lasioglossum apokense        | 30  | 23  | 1  | 54   |
| Lasioglossum atlanticum      | 19  | 12  |    | 31   |
| Lasioglossum bruneri         | 3   |     |    | 3    |
| Lasioglossum callidum        | 38  | 70  |    | 108  |
| Lasioglossum coreopsis       | 4   |     |    | 4    |
| Lasioglossum creberrimum     | 1   |     |    | 1    |
| Lasioglossum cressonii       |     | 1   |    | 1    |
| Lasioglossum illinoense      | 3   | 5   |    | 8    |
| Lasioglossum imitatum        | 46  | 20  |    | 66   |
| Lasioglossum interesting     | 2   | 3   |    | 5    |
| Lasioglossum nelumbonis      | 4   | 2   |    | 6    |
| Lasioglossum nymphale        | 13  | 20  |    | 33   |
| Lasioglossum oblongum        | 1   | 1   |    | 2    |
| Lasioglossum pectorale       | 1   |     |    | 1    |
| Lasioglossum pilosum         | 15  | 16  |    | 31   |
| Lasioglossum puteulanum      | 38  | 23  |    | 61   |
| Lasioglossum raleighense     | 2   | 6   |    | 8    |
| Lasioglossum releighense     | 2   |     |    | 2    |
| Lasioglossum robertsonellum  | 6   | 3   |    | 9    |
| Lasioglossum tegulare        | 7   | 8   |    | 15   |
| Lasioglossum unknown         | 3   |     |    | 3    |
| Lasioglossum versatum        | 1   | 2   |    | 3    |
| Lasioglossum vierecki        | 5   | 5   |    | 10   |
| Lasioglossum viridatum group | 5   | 4   |    | 9    |
| Lasioglossum zephyrum        |     | 1   |    | 1    |
| Nomada bidentate             | 1   | 2   | 2  | 5    |
| Nomada interesting           | 1   | 1   |    | 2    |
| Nomada white setae           | 1   | 2   | 1  | 4    |
| Nonbee                       | 38  | 50  | 4  | 92   |
| Osmia atriventris            | 12  | 9   | 1  | 22   |

|                          |             |             |            |             |
|--------------------------|-------------|-------------|------------|-------------|
| Osmia interesting        |             | 1           |            | 1           |
| Osmia lignaria           | 3           | 1           |            | 4           |
| Osmia pumila             | 1           | 5           | 3          | 9           |
| Osmia sandersoneae       | 24          | 9           |            | 33          |
| Osmia sandhousea         | 36          | 63          |            | 99          |
| Osmia sandhouseae        | 32          | 70          | 2          | 104         |
| Podalonia violaceipennis |             | 1           |            | 1           |
| Podalonia violaeipennis  |             | 1           |            | 1           |
| Sphecodes species        | 5           | 3           |            | 8           |
| Xylocopa virginica       | 1           | 1           | 1          | 3           |
| <b>Grand Total</b>       | <b>1528</b> | <b>2007</b> | <b>105</b> | <b>3640</b> |

**Table 2.** All species totals for Carolina Sandhills National Wildlife Refuge.

| Species               | Total |
|-----------------------|-------|
| Acmaeodera ornata     | 3     |
| Acmaeodera pulchella  | 12    |
| Acmaeodera tubulus    | 24    |
| Agapostemon species   | 1     |
| Agapostemon splendens | 39    |
| Agapostemon unknown   | 3     |
| Ammophila aureonotata | 1     |
| Ammophila conditor    | 3     |
| Ammophila nigricans   | 8     |
| Ammophila pictipennis | 2     |
| Ammophila procera     | 13    |
| Ammophila urnaria     | 7     |
| Andrena violae        | 1     |
| Andrena andreoides    | 1     |
| Andrena atlantica     | 12    |
| Andrena banksi        | 6     |
| Andrena barbara       | 63    |
| Andrena bisalicyis    | 15    |
| Andrena bradleyi      | 2     |
| Andrena confederata   | 3     |
| Andrena crataegi      | 4     |
| Andrena cressonii     | 2     |
| Andrena erigeniae     | 5     |
| Andrena erigeriae     | 1     |
| Andrena fenningeri    | 4     |
| Andrena fulvipennis   | 19    |
| Andrena gardineri     | 1     |
| Andrena hiliaris      | 1     |
| Andrena illini        | 13    |

|                                 |      |
|---------------------------------|------|
| <i>Andrena krigiana</i>         | 3    |
| <i>Andrena macoupinensis</i>    | 3    |
| <i>Andrena miserabilis</i>      | 75   |
| <i>Andrena nasonii</i>          | 1    |
| <i>Andrena nigrae</i>           | 6    |
| <i>Andrena nr. Miserabilis</i>  | 1    |
| <i>Andrena nuda</i>             | 1    |
| <i>Andrena perplexa</i>         | 13   |
| <i>Andrena trach</i>            | 2    |
| <i>Andrena trachandrena</i>     | 5    |
| <i>Andrena unknown</i>          | 3    |
| <i>Andrena violae</i>           | 11   |
| <i>Anoplius americanus</i>      | 1    |
| <i>Anoplius brevihirta</i>      | 1    |
| <i>Anoplius semicinctus</i>     | 2    |
| <i>Anoplius semirufus</i>       | 1    |
| <i>Anoplius species</i>         | 1    |
| <i>Anthidiellum notatum</i>     | 7    |
| <i>Anthidiellum perplexum</i>   | 10   |
| <i>Anthidium maculifrons</i>    | 1    |
| <i>Apis mellifera</i>           | 26   |
| <i>Aporinellus completus</i>    | 2    |
| <i>Aporinellus fasciatus</i>    | 2    |
| <i>Aporinellus medianus</i>     | 4    |
| <i>Aporinellus taeniolatus</i>  | 1    |
| <i>Aporinellus yucatanensis</i> | 21   |
| <i>Ashmeadiella floridana</i>   | 2    |
| <i>Augochlora pura</i>          | 9    |
| <i>Augochlorella aurata</i>     | 14   |
| <i>Augochloropsis metallica</i> | 7    |
| <i>Augochloropsis sumptuosa</i> | 1    |
| Bee Lost                        | 1    |
| Bee unknown                     | 5    |
| <i>Bicyrtes capnoptera</i>      | 3    |
| <i>Bicyrtes ventralis</i>       | 3    |
| <i>Bombus bimaculatus</i>       | 2    |
| <i>Bombus fervidus</i>          | 1    |
| <i>Bombus griseocollis</i>      | 14   |
| <i>Bombus impatiens</i>         | 40   |
| <i>Bombus pensylvanicus</i>     | 2    |
| <i>Calliopsis andreniformis</i> | 4    |
| <i>Campsomems plumipes</i>      | 6    |
| <i>Campsomeris plumipes</i>     | 1590 |
| <i>Ceratina calcarata</i>       | 28   |
| <i>Ceratina cockerelli</i>      | 6    |
| <i>Ceratina dupla</i>           | 4    |
| <i>Ceratina floridana</i>       | 4    |
| <i>Ceratina strenua</i>         | 18   |
| <i>Ceratina unknown</i>         | 1    |
| <i>Cerceris bicornuta</i>       | 1    |

|                                     |     |
|-------------------------------------|-----|
| Chrysidid Wasp                      | 1   |
| Chrysis pellucidula                 | 1   |
| Chrysis propria                     | 1   |
| Coelioxys galactiae                 | 1   |
| Coelioxys germana                   | 1   |
| Coelioxys immaculata                | 1   |
| Coelioxys octodentata               | 2   |
| Coelioxys sayi                      | 2   |
| Colletes brevicornis                | 2   |
| Colletes brimleyi                   | 1   |
| Colletes distinctus                 | 1   |
| Colletes inaequalis                 | 30  |
| Colletes mitchelli                  | 7   |
| Colletes nudus                      | 18  |
| Colletes productus                  | 3   |
| Colletes simulans                   | 2   |
| Colletes thoracicus                 | 4   |
| Colletes thysanellae                | 2   |
| Colletes unknown                    | 1   |
| Colletes validus                    | 3   |
| Dasymutilla lepeletierii            | 1   |
| Destroyed                           | 20  |
| Dianthidium curvatum                | 2   |
| Epeolus australis                   | 1   |
| Epeolus lectoides                   | 1   |
| Epeolus pusillus                    | 2   |
| Ephuta eurygnathus                  | 1   |
| Epinysson basilaris                 | 4   |
| Epinysson basilaris or tramosericus | 1   |
| Episyron conterminus posterus       | 2   |
| Eremnophila aureonotata             | 8   |
| Eucera hamata                       | 7   |
| Euodynerus crypticus                | 1   |
| Euodynerus hidalgo                  | 3   |
| Evagetes sp.                        | 1   |
| Habropoda laboriosa                 | 256 |
| Halictus ligatus/poeyi              | 25  |
| Halictus parallelus                 | 3   |
| Halictus poeyi                      | 8   |
| Halictus rubicundus                 | 1   |
| Heriades leavitti                   | 1   |
| Holopyga ventralis                  | 1   |
| Hoplisoides placidus pergandei      | 1   |
| Hoplitis micheneri                  | 1   |
| Hoplitis pilosifrons                | 31  |
| Hoplitis producta                   | 13  |
| Hoplitis spoliata                   | 8   |
| Hoplitis truncata                   | 3   |
| Hylaeus modestus                    | 2   |
| Hylaeus modestus/affinus            | 1   |

|                              |     |
|------------------------------|-----|
| Ipisura                      | 1   |
| Ipsiura neplateralis         | 2   |
| Isodontia philadelphica      | 1   |
| Lasioglossum                 | 25  |
| Lasioglossum bruneri         | 4   |
| Lasioglossum imitatum        | 25  |
| Lasioglossum nelumbonis      | 2   |
| Lasioglossum nymphale        | 8   |
| Lasioglossum p               | 1   |
| Lasioglossum pilosum         | 607 |
| Lasioglossum vierecki        | 36  |
| Lasioglossum admirandum      | 6   |
| Lasioglossum apokense        | 111 |
| Lasioglossum atlanticum      | 32  |
| Lasioglossum bruneri         | 42  |
| Lasioglossum callidum        | 116 |
| Lasioglossum cinctipes       | 1   |
| Lasioglossum coreopsis       | 19  |
| Lasioglossum creberrimum     | 6   |
| Lasioglossum cressonii       | 1   |
| Lasioglossum fuscipenne      | 2   |
| Lasioglossum illinoense      | 470 |
| Lasioglossum imitatum        | 89  |
| Lasioglossum interesting     | 7   |
| Lasioglossum longiceps       | 9   |
| Lasioglossum lustrans        | 3   |
| Lasioglossum near cinctipes  | 1   |
| Lasioglossum near rohweri    | 1   |
| Lasioglossum near zephyrum   | 1   |
| Lasioglossum nelumbonis      | 23  |
| Lasioglossum nymphale        | 209 |
| Lasioglossum oblongum        | 2   |
| Lasioglossum para            | 1   |
| Lasioglossum pectorale       | 63  |
| Lasioglossum petulanum       | 1   |
| Lasioglossum pilosum         | 561 |
| Lasioglossum puteulanum      | 67  |
| Lasioglossum raleighense     | 13  |
| Lasioglossum releighense     | 2   |
| Lasioglossum robertsonellum  | 18  |
| Lasioglossum rohweri         | 24  |
| Lasioglossum sopinci         | 27  |
| Lasioglossum species         | 3   |
| Lasioglossum tegulare        | 123 |
| Lasioglossum unknown         | 10  |
| Lasioglossum versatum        | 42  |
| Lasioglossum vierecki        | 60  |
| Lasioglossum viridatum group | 9   |
| Lasioglossum weird pilosum   | 1   |
| Lasioglossum zephyrum        | 1   |

|                           |     |
|---------------------------|-----|
| Lasioglossum zophops      | 1   |
| Liris argentatus          | 2   |
| Lithurgus gibbosus        | 2   |
| Megachile addenda         | 11  |
| Megachile brevis          | 56  |
| Megachile exilis          | 5   |
| Megachile georgica        | 68  |
| Megachile inimica         | 2   |
| Megachile integra         | 1   |
| Megachile mendica         | 70  |
| Megachile montivaga       | 1   |
| Megachile mucida          | 2   |
| Megachile near brevis     | 3   |
| Megachile petulans        | 19  |
| Megachile pruina          | 10  |
| Megachile rubi            | 13  |
| Megachile texana          | 20  |
| Megachile xylocopoides    | 2   |
| Melissodes bimaculata     | 5   |
| Melissodes boltoniae      | 22  |
| Melissodes communis       | 1   |
| Melissodes comptoides     | 19  |
| Melissodes desponsa       | 1   |
| Melissodes druriella      | 3   |
| Melissodes fumosa         | 1   |
| Melissodes mitchelli      | 2   |
| Melissodes near boltoniae | 1   |
| Melissodes species        | 2   |
| Melissodes tepaneca       | 1   |
| Microbembex monodonta     | 1   |
| Muesebeckidium obsoletum  | 2   |
| Myzinum berlyi patei      | 2   |
| Myzinum maculatum         | 7   |
| Myzinum obscurum          | 1   |
| Myzinum species           | 9   |
| Nomada australis          | 9   |
| Nomada bidentate          | 5   |
| Nomada Form K             | 1   |
| Nomada interesting        | 2   |
| Nomada luteola            | 4   |
| Nomada parva              | 2   |
| Nomada rubicunda          | 8   |
| Nomada rubicundus         | 3   |
| Nomada white setae        | 4   |
| Nomia maneei              | 7   |
| Nomia nortoni             | 10  |
| Non Bee                   | 30  |
| Nonbee                    | 661 |
| Non-bee                   | 26  |
| Nonbee neplateralis       | 1   |



|                                    |     |
|------------------------------------|-----|
| <i>Nysson daeckei</i>              | 1   |
| <i>Osmia atriventris</i>           | 24  |
| <i>Osmia collinsiae</i>            | 7   |
| <i>Osmia georgica</i>              | 30  |
| <i>Osmia inspergens</i>            | 16  |
| <i>Osmia interesting</i>           | 1   |
| <i>Osmia lignaria</i>              | 4   |
| <i>Osmia pumila</i>                | 27  |
| <i>Osmia sandersoneae</i>          | 33  |
| <i>Osmia sandhousea</i>            | 99  |
| <i>Osmia sandhouseae</i>           | 133 |
| <i>Osmia unknown</i>               | 4   |
| <i>Oxybelus emarginatus</i>        | 12  |
| <i>Oxybelus packardii</i>          | 1   |
| <i>Oxybelus subulatus</i>          | 1   |
| <i>Panurginus polytrichus</i>      | 1   |
| <i>Paracyphononyx funereus</i>     | 10  |
| <i>Parancistrocerus salcularis</i> | 1   |
| <i>Perdita bishoppi</i>            | 7   |
| <i>Perdita boltoniae</i>           | 6   |
| <i>Perdita consobrina</i>          | 27  |
| <i>Perdita discreta</i>            | 2   |
| <i>Perdita georgica</i>            | 6   |
| <i>Perdita geradiae</i>            | 23  |
| <i>Perdita gerardiae</i>           | 22  |
| <i>Perdita near collinsiae</i>     | 1   |
| <i>Perdita near floridensis</i>    | 1   |
| <i>Perdita novaeangliae</i>        | 1   |
| <i>Perdita nr. Boltoniae</i>       | 1   |
| <i>Philanthus gibbosus</i>         | 1   |
| <i>Philanthus ventilabris</i>      | 3   |
| <i>Pluto tibialis</i>              | 1   |
| <i>Podalonia violaceioennis</i>    | 1   |
| <i>Podalonia violaceipennis</i>    | 7   |
| <i>Podalonia violaeipennis</i>     | 1   |
| <i>Polistes carolina</i>           | 1   |
| <i>Polistes dorsalis</i>           | 4   |
| <i>Polistes fuscatus</i>           | 4   |
| <i>Polistes metricus</i>           | 2   |
| <i>Prionyx parkeri</i>             | 10  |
| <i>Pseudopanurgus solidaginis</i>  | 1   |
| <i>Psorthaspis legata</i>          | 1   |
| <i>Sapyga centrata</i>             | 1   |
| <i>Scolia bicincta</i>             | 1   |
| <i>Scolia dubia</i>                | 1   |
| <i>Sericopompilus apicalis</i>     | 2   |
| <i>Sphecodes</i>                   | 3   |
| <i>Sphecodes species</i>           | 10  |
| <i>Sphecodes unknown</i>           | 21  |
| <i>Sphex ichneumoneus</i>          | 1   |

|                                     |             |
|-------------------------------------|-------------|
| <i>Sphex nudus</i>                  | 2           |
| <i>Sphex pensylvanicus</i>          | 1           |
| <i>Stelis australis</i>             | 2           |
| <i>Stenodynerus fundatiformis</i>   | 2           |
| <i>Stenodynerus histrionalis</i>    | 1           |
| <i>Stenodynerus krombeini</i>       | 2           |
| <i>Stictiella serrata</i>           | 1           |
| <i>Svastra aegis</i>                | 6           |
| <i>Svastra atripes</i>              | 7           |
| <i>Synnevrus aequalis</i>           | 1           |
| <i>Tachypompilus ferrugineus</i>    | 1           |
| <i>Tachysphex krombeini</i>         | 4           |
| <i>Tachysphex mundus</i>            | 3           |
| <i>Tachysphex punctifrons</i>       | 1           |
| <i>Tachysphex similis</i>           | 1           |
| <i>Tachysphex texanus</i>           | 2           |
| <i>Tachytes chrysopyga obscurus</i> | 2           |
| <i>Tachytes floridanus</i>          | 1           |
| <i>Tachytes guatemalensi</i>        | 2           |
| <i>Tachytes guatemalensis</i>       | 18          |
| <i>Tiphiinae species</i>            | 5           |
| <i>Trachusa ridingsii</i>           | 1           |
| <i>Trielis octomaculata</i>         | 4           |
| <i>Triepeolus obliterated</i>       | 1           |
| Vespidae                            | 1           |
| <i>Vespula squamosa</i>             | 1           |
| <i>Xylocopa micans</i>              | 5           |
| <i>Xylocopa virginica</i>           | 7           |
| <b>Grand Total</b>                  | <b>7427</b> |