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# COMPOSITION OF THE ANT FAUNA OF THREE BAHAMIAN ISLANDS

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## ABSTRACT

Collecting expeditions and literature surveys produce a list of 91 species of ants known from the combined fauna of San Salvador (44 species), New Providence (69 species), and Andros (71 species). There are 36 introduced species; the largest number of which (31) occur on New Providence. The two large islands of the Great Bahama Bank, New Providence and Andros, have the most similar ant fauna. The large number of native Bahamian species (53) is encouraging because it suggests, among other things, that the biota of the Bahamas is already adjusted to a wide variety of ants. The large number of introduced species (36) suggests that the islands are highly vulnerable to invasion by exotic ants.

## INTRODUCTION

Ants are of tremendous ecological importance in tropical ecosystems, and the ecology of tropical islands is therefore strongly affected by the patterns of ant occupation. If one could present an omniscient geographic information system of the ants of the Bahamas, one set of layers of information would show the movements of ants during the Pleistocene as they colonized the newly emergent land, one set of layers would show the current habitats on the islands with their ant associations, and a stack of information layers would show the recent invasions of exotic species. Such a GIS would allow us to predict and manage an enormous number of ecological events by controlling the

movement of certain ant species.

We are a long way from this omniscience, but we are fumbling toward a crude understanding of Bahamian ants by sampling three relatively large and ecologically diverse islands. North Andros Island is a remnant of the Great Bahama Bank landmass that was emergent at the time of the Wisconsin Glaciation of the Pleistocene (Carew and Mylroie 1995), and was in a good position to receive ants from Cuba. North Andros also has large areas of relatively undisturbed natural habitat. New Providence, also part of the Great Bahama Bank, has long been the center of commerce for the Bahamas, with large areas of disturbed habitat and many opportunities for the accidental importation and establishment of non-native species. San Salvador is not on a bank and has probably never been attached to other islands. It was briefly partially cleared for sugar plantations, and it is small enough that its entire area is likely to be affected if the island is hit by a hurricane. Most of the island is now natural habitat (Gottfried et al. 1992). Our paper presents the results of surveys of these three islands, including a list of the species and comparisons of the ant fauna.

## METHODS

### Sources of Records

There have been several ant surveys in the Bahamas. The results of the early surveys are summarized by Wheeler (1905) and Mann (1920). The ants of New Providence (abbreviated NP in the list) were

studied in a week-long Deyrup-Buckner expedition in September of 1'95 (DB '95) and the ants of North Andros (NA) were studied in a week-long Deyrup-Davis expedition in November of 1'96 (DD '96). San Salvador (SS) has been the site of several brief surveys by Deyrup, beginning in 1991; the longest visit was in June, 1'93, the results of which are compiled in the proceedings of the Fifth Symposium on the Natural History of the Bahamas (Deyrup 1'94).

Our surveys were designed to yield as many species as possible, and our methodology therefore differed from the replicable sampling techniques of a quantitative ecological study. Our sampling employed every conceivable bias, in the sense that it was informed by a rough knowledge of the different kinds of habitats available, the history of land use and Pleistocene biogeography, a list of the species of ants that might be expected, and the nesting habits of these ants. Our ant-hunting techniques included sifting of leaf litter, Tullgren extraction of leaf litter, baiting with crumbs or tuna fish, looking under rocks, opening dead twigs (both twigs on live trees and those on the ground), and scanning the ground and the trunks of trees by day and night.

#### Identification of Specimens

In the early days of ant collecting in the Bahamas and other islands of the West Indies, the frenzy of naming of new species seemed to suggest that each island had its own ant species, which would be amazing, were it not so unlikely. The region has never recovered from this exuberant proliferation of names. There has never been a serious attempt to correlate the species in the larger genera, and we do not intend to tackle so formidable a task in this paper. For this reason, we list a number of species whose identification is provisional, or whose identity is unknown. This does not affect our comparisons of the fauna of the three islands that are the subject of this paper, but we would not want to extend the comparisons to other islands. If, for example, one were to compare our list with the list of ants from Cuba (Alayo 1974) or Puerto Rico (Smith '936), one might get the erroneous impression that a good number of ant species occur only in the Bahamas.

#### List of Species from New Providence, Andros, and San Salvador

*Anochetus emarginatus* (Fabricius). Found on NP by

Wheeler (1905), DB '95. This species occurs with several variants through the Caribbean (Brown 1978), which suggests long residence in the islands. It is nocturnal and likely to be overlooked. Presumed native, on NP, expected on NA.

*Anochetus inermis* Andre. Found on NP (DB '95). This species is common on NP and occurs in both natural and disturbed habitats. It would not have been overlooked by Wheeler if it had been present in similar numbers during his survey. Not found on NA in '96. Presumed introduced on NP from South America or the Lesser Antilles.

*Anochetus mayri* Emery. Found on NP (DB '95) and NA (DD '96). This species is common in various habitats on both islands and would not have been overlooked by Wheeler if it had been present in similar numbers during his survey. Presumed introduced on NP and NA from South America or the Greater Antilles.

*Brachymyrmex depilis* Emery. Found once on NP (DB '95) in a disturbed site. Presumed introduced from the southeastern U.S.

*Brachymyrmex minutus* Forel. Common on NP (DB '95) and NA (Wheeler 1905), (DD '96) and SS (D '94). Presumed native.

*Brachymyrmex obscurior* Forel. Common on NP (Wheeler 1905), (DB '95) and NA (Wheeler 1905), (DD '96) and SS (Wheeler '934a), (D '94). This is a species of open disturbed areas, including beaches. Queens were observed stowing away on a small plane going from Ft. Lauderdale to SS (D '94), and it could have been introduced throughout the Bahamas. Provisionally considered native.

*Brachymyrmex* species. A relatively, large, yellow subterranean species found once on NA (DD '96). Presumed native.

*Camponotus bermudezei* (Aguayo). Specimens provisionally identified as this species found on NP (DB '95) and NA (DD '96). Presumed native.

*Camponotus conspicuus* (Smith). Found on NP (Wheeler '934a). Specimens provisionally identified as this species found on NP (DB '95) and NA (DD '96). Presumed native. *Camponotus impressus* (Roger). Found on NP (DB

'95) and NA (DD '96). It is probable that *C. culmicola* Wheeler, described from NA (Wheeler 1905) is a color variant of *impressus* (Stefan Cover, 1997, pers. comm.). Presumed native.

*Camponotus lucayanus* Wheeler. Found on NP and S. Andros (Wheeler 1905). Specimens provisionally identified as this species found on NP (DB '95) and NA (DD '96). Presumed native.

*Camponotus ramulorum* Wheeler. Found on NP (Wheeler), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '93). Presumed native.

*Camponotus sexguttatus* (Fabricius). Found on NP (DB '95). Presumed introduced from South America.

*Camponotus triton* Wheeler. Found on NA (Wheeler '934b), (DD '96). Presumed native.

*Cardiocondyla emeryi* Forel. Found on NP (Wheeler 1905), (DB '95) and NA (DD '96) and SS (D '94). Introduced from Old World tropics.

*Cardiocondyla nuda* (Mayr). Found on SS (D '94). Introduced from Old World tropics.

*Crematogaster ashmeadi* Mayr. Found on S. Andros (Wheeler 1905). *Crematogaster ashmeadi* appears to be a small complex of species that includes at least two undescribed species; more specimens are needed from the Bahamas to be sure of the identity of Wheeler's specimens, but they are certainly different from the other three members of the genus listed below. Presumed native.

*Crematogaster lucayana* Wheeler. Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96). Presumed native.

*Crematogaster sanguinea* Roger. Found on NP (DB '95) and NA (DD '96). Presumed native.

*Crematogaster steinheili* Forel. Found on NP (Wheeler 1905), (DB '95) and South Andros (Wheeler 1905) and NA (DD '95) and SS (D '94). Presumed native.

*Cyphomyrmex minutus* Mayr. Found on NP (Wheeler 1905), (DB '95) and NA (DD '96) and SS (D '94).

Presumed native.

*Dorisidris nitens* (Santschi). Found on NA (DD '96). Presumed native.

*Dorymyrmex* species. This species, which has no available name, was listed as *Dorymyrmex pyramicus niger* Pergande by Wheeler. Roy Snelling and Juan Torres are working the taxonomy of this species (pers. comm. 1'93). It occurs on NP (Wheeler 1905), (DB '95) and NA (Wheeler 1905), (DD '96) and SS (D '94).

*Forelius pruinosus* (Roger). Found on S. Andros (Wheeler 1905). Presumed native.

*Hypoponera opaciceps* (Mayr). Found on NP (Wheeler 1905) and NA (DD '96) and SS (D '94). Presumed native.

*Hypoponera opacior* (Forel). Found on NP (DB '95) and NA (DD '96) and SS (D '94). Presumed native.

*Hypoponera punctatissima* (Roger). Found on NA (DD '96). Introduced from Old World tropics.

*Hypoponera* species 1. A very small yellowish brown species found on NP (DB '95) and NA (DD '96). Probably introduced, since it has not been reported from the Greater Antilles and was found in disturbed areas on both NP and NA.

*Hypoponera* species 2. A large species (as large or larger than *opaciceps*) found on NP (DB '95). Presumed introduced, since it has not been reported from the Greater Antilles, nor Andros; this is a common conspicuous species that would not have been overlooked by Wheeler if it had been present in similar numbers during his survey.

*Leptogenys pubiceps* Emery. Found on NP (DB '95). Presumed native, as this species also occurs on Cuba (Alayo 1974) and is a nocturnal, easily overlooked species.

*Leptothorax allardycei* Mann. Found on NP (Mann 1920) and NA (DD '96). Presumed native.

*Leptothorax androsanus* Wheeler. Found on S. Andros (Wheeler 1905) and NA (D '94). Presumed native.

*Leptothorax pastinifer* Emery. Found on S. Andros (Wheeler 1905) and NA (DD '96). Presumed native.

*Leptothorax splendens* Wheeler. Found on NP (Wheeler 1905). Presumed native.

*Leptothorax torrei* Aguayo. Found on NA (DD '96). Presumed native.

*Leptothorax* species. A small yellow species whose brood was in small hollowed-out seeds below a rock overhang near the entrance of Major's Cave on SS; collected in 1997. This species does not appear to be in Baroni Urbani's 1978 revision of the group.

*Monomorium ebeninum* Forel. Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94).

*Monomorium floricola* (Jerdon). Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Introduced from Old World tropics.

*Monomorium pharaonis* (Linnaeus). Found on NP (Wheeler 1905), (DB '95) and NA (DD '96). Introduced from Old World tropics.

*Monomorium salomonis* (Linnaeus). Found on NP (Wheeler 1905). Introduced from Old World tropics.

*Myrmelachista ramulorum* Wheeler. Found on NP (DB '95). Probably native.

*Odontomachus insularis* Guerin. Found on NP (Wheeler 1905), (DB '95) and NA (Wheeler 1905), (DD '96). Presumed native.

*Odontomachus ruginodis* Smith. Found on NP (Wheeler 1905), (DB '95) and NA (DD '96) and SS (D '94). Presumed native.

*Pachycondyla stigma* (Fabricius). Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96). Probably introduced, origin unknown.

*Paratrechina bourbonica* (Forel). Found on NP (DB '95) and NA (DD '96) and SS (collected in 1997). Introduced from Old World tropics.

*Paratrechina guatemalensis* (Forel). Found on NP (DB '95). These specimens are identical to specimens of *guatemalensis* from Florida identified by James Trager in the course of his revision of the group in the continental U.S. (1984). Introduced from Florida or Central America.

*Paratrechina longicornis* (Latreille). Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Introduced from Old World tropics.

*Paratrechina* species 1. Found on NA (DD '96) and SS (D '95). This is probably the species that Wheeler (1905) listed as *Prenolepis guatemalensis antillana* Forel, from NP and S. Andros. Forel later designated this form as a subspecies of *vividula*: *Prenolepis vividula antillana*. It does not strongly resemble either *guatemalensis* or *vividula* or another West Indian species, *Paratrechina steinheili* (Forel). We will not try to assign a name to this species at this time. Presumed native.

*Paratrechina* species 2. Found on NA (DD '96). A pale species with relatively small eyes (but not resembling *P. myops* Mann); probably an undescribed species. Presumed native.

*Pheidole androsana* Wheeler. Found on S. Andros (Wheeler 1905) and on NA (DD '96). Presumed native.

*Pheidole fallax* Mayr. Found on NP (Wheeler 1905), (DB '95) and NA (DD '96). Although this species has been widespread in the West Indies for a long time, we provisionally consider it as an introduced species in the Bahamas. Our experience is that this species is restricted to agricultural fields and lawns, open mesic areas with few natural analogs in the Bahamas. It would be worth looking for this species in the extensive natural savannah areas on the west side of Andros.

*Pheidole flavens* Roger. Found on NP (Wheeler 1905), (DB '95) and NA (Wheeler 1905), (DD '96) and SS (D '94). Presumed native.

*Pheidole megacephala* (Fabricius). Found on NP (DB '95) and NA (DD '96) and SS (Wheeler '934), (D '94). Introduced, probably from Africa.

*Pheidole moerens* Wheeler. Found on NP (DB '95) and NA (DD '96). Presumed introduced from elsewhere in

the Neotropics.

*Pheidole punctatissima* Mayr. Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96). Presumed native.

*Pheidole subarmata* Mayr. Found on NP (Wheeler 1905), (DB '95). Presumed introduced, perhaps from islands of the West Indies or from the Caribbean mainland.

*Pheidole* species 1. Found on SS (D '94). Probably undescribed (Stefan Cover, 1'96, pers. comm.). Presumed native.

*Pheidole* species 2. Found on NA (D '93). Probably undescribed (Stefan Cover, 1'96, pers. comm.). Presumed native.

*Platythyrea punctata* (Smith). Found on NP (Wheeler 1905), (DB '95) and NA (DD '94). Presumed native.

*Pseudomyrmex cubaensis* (Forel). Found on NP (Ward 1985) and identified from S. Andros as *P. elongatus* by Wheeler (1905). specimens seen and identified as *cubaensis* by Ward (1985). Found on NA (DD '96) and SS (D '94). Presumed native.

*Pseudomyrmex pallidus* (Smith). Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (Wheeler 1934a), (D '94). Presumed native.

*Pseudomyrmex seminole* Ward. Found on NP, specimens seen and identified by Ward (1985) from a mixed series identified by Wheeler as *pallidus*. Found on SS (D '94).

*Pseudomyrmex simplex* (Smith). Found on NP (Ward 1985) and NA (Ward 1985), (DD '96) and SS (D '94). Presumed native.

*Pseudomyrmex subater* (Wheeler). Found on NP and S. Andros by Wheeler (1905), but listed as "mixed" colonies of *elongatus* and *pallidus*; situation clarified by Ward (1985). Found on NP (DB '95) and NA (DD '96) and SS (D '94). Presumed native.

*Quadristruma emmae* (Emery). Found on NP (DB '95) and NA (Mann 1920), (DD '96) and SS (D '94).

Introduced from Old World tropics.

*Rogeria brunnea* Santschi. Found on NP (Kugler 1'94), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Listed by Wheeler as *curvipubens* Emery (specimens seen by Kugler 1'94; also listed as *curvipubens* in D '94). Presumed native.

*Smithistruma margaritae* (Forel). Found on NP (Mann 1920). Presumed introduced from South or Central America.

*Solenopsis abdita* Thompson. Found on NP (DB '95) and NA (DD '96) and SS (D '94). Origin unknown, but possibly native in the Bahamas.

*Solenopsis corticalis* Forel. Found on SS (D '94). Presumed native.

*Solenopsis geminata* (Fabricius). Found on NP (Wheeler 1905), (DB '95) and NA (DD '96) and SS (Wheeler '934a), (D '94). Introduced from South America.

*Solenopsis globularia* (Smith). Found on NP (DB '95) and NA (Wheeler 1905) and SS (D '94). Presumed native.

*Solenopsis invicta* Buren. Found on NP (DB '95) and NA (DD '96) and SS (D '94). Introduced, native to South America.

*Solenopsis* species 1. Found on NP (BD '95) and NA (DD '96) and SS (D '94). A soil-dwelling species resembling *S. tennesseensis* Smith. Insufficient evidence to speculate on origin.

*Solenopsis* species 2. Found on NP (BD '95) and NA (DD '96). A blackish soil-dwelling species somewhat similar to *corticalis*. Insufficient evidence to speculate on origin.

*Solenopsis* species 3. Found on SS (D '94). A relatively large species for its subgenus (*Diplorhoptrum*), a distinctive yellow orange when alive. This species is subterranean on dry, rocky hillsides covered with scrub vegetation. From its habitat preference, we suspect that this species is native.

(*Solenopsis laeviceps* Mayr). This species was listed by

Mann (1920) from NP. We have a bad feeling about this identification. The state of *Solenopsis* taxonomy in 1920 was about the same as today, except that we now have a much clearer idea of the appalling difficulty of the group. Until the NP specimens can be located and compared with securely identified specimens of *laeviceps*, we are reluctant to perpetuate this record.

*Strumigenys eggersi* Emery. Found on NP (DB '95) and NA (DD '96) and SS (D '94). Introduced from Central or South America, possibly through Florida.

*Strumigenys gundlachi* (Roger). Found on NP (DB '95) and NA (DD '96) and SS (D '94). Introduced from Central or South America.

*Strumigenys lanuginosa* Wheeler. Found on NP (Wheeler 1905), (DB '95) and NA (DD '96). This species was originally described from the Bahamas, but was probably introduced into the islands from Central America or southern Mexico (Brown '961).

*Strumigenys louisianae* Roger. Found on NP (DB '95) and NA (DD '96). Probably introduced from the mainland Neotropics.

*Strumigenys rogeri* Emery. Found on NA (DD '96). Introduced from Africa.

*Strumigenys silvestrii* Emery. Found on NP (DB '95). Introduced from the mainland Neotropics.

*Tapinoma litorale* Wheeler. Found on NP (Wheeler 1905), (DB '95) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Presumed native.

*Tapinoma melanocephalum* (Fabricius). Found on NP (DB '95) and NA (Wheeler 1905), (DD '96) and SS (D '94). Introduced from Old World tropics.

*Tetramorium bicarinatum* (Nylander). Found on S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Introduced from Africa.

*Tetramorium lucayanum* Wheeler. Found on NP (Wheeler 1905). Although described from NP, this species is apparently introduced from Africa (Bolton 1979).

*Tetramorium simillimum* (Smith). Found on NP Wheeler

1905), (DB '95) and NA (Wheeler 1905), (DD '96) and SS (D '94). Introduced from Africa.

*Trachymyrmex jamaicensis* (Andre). Found on NP (Wheeler 1905) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Presumed native.

*Trichoscapa membranifera* (Emery). Found on NA (DD '96) and SS (D '94). Introduced from Old World tropics.

*Wasmannia auropunctata* (Roger). Found on NP (DB '95) and NA (DD '96). Introduced, probably from South America.

*Xenomyrmex floridanus* Emery. Found on S. Andros (Wheeler 1905) and NA (DD '96) and SS (D'94). Presumed native.

*Zacryptocerus varians* (Smith). Found on NP (Mann 1920) and S. Andros (Wheeler 1905) and NA (DD '96) and SS (D '94). Presumed native.

## DISCUSSION

### General Comments on the Fauna

Our list of 91 species includes all the ants known from the Bahamas, except for four species: *Camponotus planatus*, recorded from Grand Bahama by Wheeler (1934a) (introduced); *Smithistruma nigrescens*, found in the Bimini Islands by Smith (1954) (presumed native); *Tetramorium caldarium*, recorded from Staniel Cay by Lloyd Morrison (ms. in prep.) (introduced), and *Leptothorax* sp. from Long Island (see appendix). This is not surprising, since most of the earlier work was on Andros and New Providence. Moreover, since Andros is large and diverse, and New Providence is the likely port of debarkation for introduced species, one would expect most Bahamian ants to occur on one or both of these islands. It is probable, however, that some other islands have species that do not occur on Andros or New Providence. Several sizeable islands, especially Great Inagua, have not been surveyed. A recent study of Bahamian wasps (Elliott and Elliott 1996) showed that the southeastern Bahamas have species of Hymenoptera that are absent from the Great Bahama Bank islands. Even small islands could have relict species that have been spared in the invasions of aggressive exotics, such as *Solenopsis geminata* and *Pheidole megacephala*, that



conquered many of the larger islands two or three centuries ago.

There are several reasons to believe that our knowledge of ant diversity on New Providence, Andros and San Salvador is far from complete. Our brief surveys of these three islands produced about fifteen species not previously recorded from the Bahamas. We missed five species previously found on Andros or New Providence.

A number of species were found on only one occasion or in one small area; several species are represented by single individuals. There are habitat types on the west side of Andros that we did not visit. We did not find several south Florida species that are likely to have been introduced onto New Providence by the flourishing trade in ornamental plants from the mainland, or onto San Salvador along with the 1,000 palm trees recently imported from Miami for the new Club Med. We guess that there might be as many as 25 additional species to be found on New Providence and Andros, perhaps 10 on San Salvador.

### Comparisons of the Three Islands

#### 1. Numbers of Species

New Providence: 69  
Andros: 71  
San Salvador: 44

The much smaller number of species on San Salvador is the result of less diverse habitat and greater isolation. For example, species that are characteristic of freshwater marshes, such as *Crematogaster lucayana*, or old, mesic forest, such as *Leptothorax pastinifer*, are unlikely to find suitable habitat on San Salvador. Some species that are found in disturbed habitats in association with humans all over the Caribbean are absent (for now) from San Salvador, probably because there is less trade to the island. Examples of such missing species include *Pheidole moerens*, *Monomorium pharaonis*, and *Wasmannia auropunctata*-- it is hard to imagine that these species will be missing for long, now that there is increasing air transport of all kinds of goods from other islands and Florida. Some species that occur in dry, open habitats on other Bahamian islands are absent from San Salvador, probably because of the long-term isolation of San Salvador from the islands of the Great Bahama Bank. Examples of such species are *Camponotus lucayanus*, *Leptothorax torrei*, and *Odontomachus*

*insularis*. It seems simpler to assume that the relatively small ant fauna of San Salvador is the result of isolation and less diverse habitat than to suggest that species have gone extinct because of the small size of the island. It is possible, however, that some habitats, especially the more mesic forest areas, may have completely disappeared temporarily, taking with them a series of ants.

The almost identical numbers of species on New Providence and Andros are, to some extent, the result of coincidence. Each island of this pair has numerous species not recorded from the other, and any additional survey work is likely to change the balance of recorded species.

#### 2. Introduced Species

All three islands: 36 introduced species (41%)  
New Providence: 31 introduced species (46%)  
Andros: 25 introduced species (35 %)  
San Salvador: 15 introduced species (34%)

As might be expected, New Providence has both the largest number and percentage of introduced species. A comparison of the proportion of introduced species on Andros and San Salvador suggests that the factors that have limited the ant fauna on San Salvador limit the numbers of introduced species to just the same extent that they limit the numbers of native species.

#### 3. Overlap in Species Composition

Species found on New Providence only: 14 species, including 10 introduced

Species found on Andros only: 13 species, including 2 introduced

Species found on San Salvador only: 5 species, including 1 introduced

Species found on New Providence and Andros only: 20 species, including 9 introduced

Species found on all three islands: 34 species, 12 introduced

Species found on New Providence and San Salvador only: 1 species, none introduced

Species found on Andros and San Salvador only: 4 species, 2 introduced

As might be expected, most of the species found only on New Providence are believed to be introduced, while most of the species found only on Andros are believed to be native. The two islands of the Great Bahama Bank are more similar to each other than they are to San Salvador.

#### 4. Historical Changes

##### New Providence

Native species found only by Wheeler or Mann: 7 species

Native species found only by Deyrup and Buckner: 6 species

Introduced species found only by Wheeler or Mann: 3 species

Introduced species found only by Deyrup and Buckner: 18 species

##### Andros

Native species found only by Wheeler or Mann: 3 species  
Native species found only by Deyrup and Davis: 13 species

Introduced species found only by Wheeler or Mann: none

Introduced species found only by Deyrup and Davis: 19 species

One of the attractions of this project was that there was a good historical baseline of species, established by Wheeler and Mann on New Providence and Andros. There is some evidence that our study was somewhat more effective in collecting cryptic, soil-dwelling species, and this explains most of the presumed native species that were apparently overlooked on New Providence. There was clearly an increase in the number of introduced species on both islands since 1920; the exact number is uncertain since some species could have been overlooked in the early surveys. Based on some slightly fuzzy case-by-case estimations of the apparency of the recently recorded introduced species, there are

probably 10 - 12 introduced species on each island that are unlikely to have been overlooked in the early surveys.

This number of introductions over a period of more than 75 years is not particularly alarming. The great abundance of a few of these species, such as *Wasmannia auropunctata*, *Solenopsis invicta*, and *Strumigenys eggersi* is much more disturbing.

There is some evidence of reduction in populations or, less probably, extinction of a few species on New Providence. Seven native species were not found in the Deyrup and Buckner survey. Five of these live in dead twigs or hollow stems of herbs or grasses. We noticed a very conspicuous scarcity of all ant species living in these habitats on New Providence relative to Andros or San Salvador. Our preliminary hypothesis is that periodic spraying for mosquitos on New Providence may depress the populations of species that spend all their time foraging on foliage.

#### CONCLUSIONS

Our findings so far are both encouraging and alarming. The encouraging feature is that the native ant fauna of these three islands of the Bahamas is larger than expected, with 53 species recorded, and the expectation that more species will be discovered. This is heartening, not only because any richness of native fauna is an obvious good, but also because it suggests that the native organisms of the Bahamas have already accommodated to a diversity of ants, unlike, for example, the organisms of Hawaii or the Galapagos. The alarming feature is that the exotic ant fauna is also large, with 36 species and counting. Even worse, many of these species are not confined to disturbed areas, but also occur in relatively natural habitats. This means that the Bahamas are unusually vulnerable to ant invasions compared to many mainland sites, and there must already be insidious effects of exotics on some islands. There are practical reactions to this situation. Our next task should be to make a list of the most pervasive invaders that are present or impending. We can then consider ways to limit their expansion or ameliorate their impacts.

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## APPENDIX

### Ants Found on Long Island, 17 June, 1997

Following the 1997 Symposium, Thomas Wilson lead a field trip to Long Island. Since there are no published records of ants from Long Island, it is worth listing the ants found on this short trip, even though the survey was not nearly thorough enough to allow analysis of the fauna in the main body of this paper. The nomenclature is the same as that used above. The "*Leptothorax* species" is represented by a single specimen, strongly resembling a small, dark *Crematogaster* in the field. It is probably an undescribed species.

<i>Brachymyrmex obscurior</i>	<i>Rogeria brunnea</i>
<i>Camponotus lucayanus</i>	<i>Smithistruma nigrescens</i>
<i>Camponotus ramulorum</i>	<i>Solenopsis abdita</i>
<i>Crematogaster sanguinea</i>	<i>Solenopsis geminata</i>
<i>Crematogaster steinheili</i>	<i>Strumigenys gundlachi</i>
<i>Cyphomyrmex minutus</i>	<i>Tapinoma melanocephalum</i>
<i>Dorymyrmex</i> species	<i>Tetramorium simillimum</i>
<i>Hypoponera opacior</i>	<i>Trachymyrmex jamaicensis</i>
<i>Leptothorax</i> species	<i>Wasmannia auropunctata</i>
<i>Odontomachus insularis</i>	
<i>Paratrechina longicornis</i>	
<i>Paratrechina</i> species 1	
<i>Pheidole flavens</i>	