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SIBLING RIVALRY IN FLORIDA: THE DISPLACEMENT OF *PYRGUS COMMUNIS* BY *PYRGUS ALBESCENS* (HESPERIIDAE)

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ABSTRACT. A total of 204 specimens were collected during a field survey of *Pyrgus* conducted in Florida during 1989–2001. Identification of males was based on genitalic examination. Males of *Pyrgus albescens* were recorded from 32 Florida counties. Males of *Pyrgus communis* were recorded from only 6 counties. Based on the results of this survey, as well as a review of 86 male specimens in public and private collections dating 1895–2001, it can be concluded that only *P. communis* originally occurred in Florida, but has recently been displaced by *P. albescens*. *Pyrgus albescens* was also found in Alabama and Georgia, and may be approaching South Carolina. Presented are details of the field survey, as well as a listing of all specimens used in this study. Also provided is information on habitats and hostplants of *P. communis* and *P albescens* in Florida.

Additional key words: Alabama, distribution, drought, Georgia, habitats, hostplants.

Burns (2000) clarified the status of the sibling species *Pyrgus communis* (Grote) and *Pyrgus albescens* Plötz (common checkered skipper and white checkered skipper, respectively). There is no known reliable method to separate these species based on wing pattern, but male genitalia exhibit consistent differences in the shape of the distal end of the left valve (Burns 2000). As a result of this study, *P. albescens* was shown to be much more widespread than previously believed. This species was once thought to be limited to the southwestern United States and Mexico, but is now known to range eastward across the Gulf Coast states to Florida. The Florida distribution of *P. albescens* revealed by Burns (2000) is largely the result of a continuing survey of *Pyrgus* I have conducted since 1989.

In September 1989, I captured what appeared to be two male *P. communis* in Calhoun County of the Florida panhandle. Astonished by the scarcity of recent reports of *P. communis* in Florida, I decided to obtain voucher specimens whenever the species was encountered. In October of that year, I located a sizable population of *P. communis* in Pasco County of central Florida. Upon learning that John M. Burns (pers. com.) had found *P. albescens* in the extreme western Florida panhandle five years earlier, I decided to examine my specimens more closely. While the Pasco County individuals were clearly *P. communis*, the genitalia of those from Calhoun County were surprisingly consistent with *P. albescens*. Further intrigued, I continued to scrutinize the genitalia of all "*P. communis*" I obtained.

Nine additional male *P. albescens* were captured in late 1994 and early 1995 in Calhoun, Columbia, Hamilton, Jackson, and Liberty counties of northern Florida. Most of these specimens were forwarded to J. M. Burns who confirmed their identity. These records suggested that *P. albescens* was even more widely distributed in Florida. Since that time, I have continued to sample *Pyrgus* at every opportunity. As a result, I have found that *P. albescens* is expanding in Florida and has displaced *P. communis* in the process. Presented here are details of this survey, a review of historical specimens, and information on the habitat and hostplants of *P. albescens* in Florida.

MATERIALS AND METHODS

Field surveys for *P. communis* and *P. albescens* were conducted in Florida during 1989–1992, 1994–1997, 1999–2001. They included trips expressly to locate *Pyrgus*, as well as opportunistic sampling during other research projects. Suitable habitats were identified via automobile and investigated on foot. Site visits were typically one hour or less in duration, depending upon site size (some were little more than narrow roadsides, others were multi-hectare pastures) and abundance of adults (fewer adults required more search time). If adults were not found, searches were discontinued after 30 minutes. When populations were located, males were randomly collected and the genitalia examined by brushing away the scales from the left valves under a stereomicroscope. Females were also obtained, but they cannot reliably be separated (Burns 2000). Most females were tentatively determined by association with identified males. The remaining females were not assigned to either species. Because females are inseparable, none were considered when evaluating the distributions of *P. albescens* and *P. communis* in Florida.

Also examined were Florida specimens deposited in various public and private collections. Male were determined through genitalic examination as follows: specimens in the National Museum of Natural History, American Museum of Natural History, and Florida State Collection of Arthropods were identified by J. M. Burns, specimens in The Natural History Museum (London) were identified by Kim Goodger; the single 1978 specimen in the Allyn Museum of Entomology was identified by J. Y. Miller; T. M. Neal and A. D.

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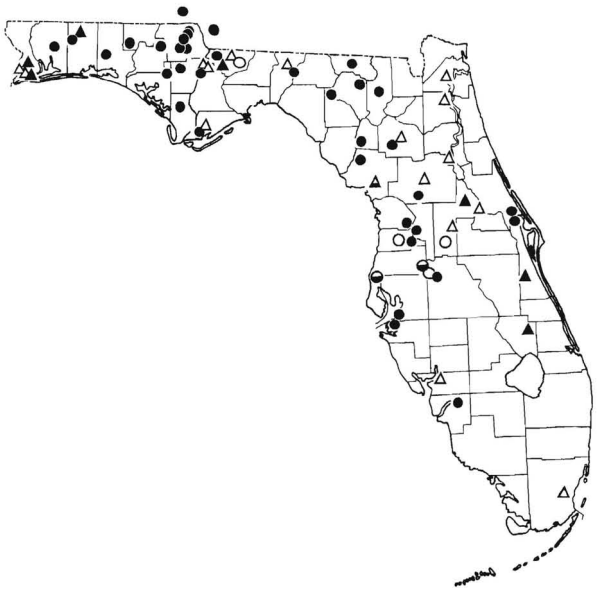

FIG. 1. Locations of male *Pyrgus* captures during the period 1895–2001, where circles represent the 1989–2001 field survey and triangles are specimens in public and private collections. Solid circles and triangles, *P. albescens;* open circles and triangles, *P. communis*; half-solid circles and triangle, both species. Solid circles outside Florida represent survey specimens of *P. albescens* from Houston Co., Alabama, and Seminole Co., Georgia (USNM).

Warren identified specimens in their personal collections; all other specimens were identified by J. V. Calhoun (JVC).

RESULTS

The field survey yielded a total of 204 specimens, obtained from 45 locations in 33 Florida counties (Fig. 1, Table 1). Males of *P. albescens* (n = 138) were recorded at 36 locations in 32 counties. Extreme collection dates range from 8 April–16 November. Males of *P. albescens* were also captured on 15 October 1995 near Grangeburg in Houston Co., Alabama (n = 1) and near Riverturn in Seminole Co., Georgia (n = 3). In contrast, males of *P. communis* (n = 15) were only obtained from 6 locations in 6 Florida counties. Extreme collection dates range from 16 July–31 December. Females tentatively assigned to *P. albescens* (n = 31) were recorded at 12 locations in 12 counties. Females tentatively assigned to *P. communis* (n = 8) were recorded at 3 locations in 3 counties. Unassigned females (n = 12) were recorded at 8 locations in 7 counties. One hundred and thirteen male and 11 female specimens collected between 1989 and 1999 were provided to J. M. Burns at the National Museum of Natural History (USNM), Washington, D.C. Most of the remaining specimens are deposited in my personal collection.

Due to the general apathy exhibited by lepidopterists toward anything resembling the "common" *P. communis*, relatively few Florida specimens exist in public and private collections. Nonetheless, 86 male specimens from Florida were ultimately located (Table 2). The majority of these specimens represent *P. communis* (n = 56), collected in 15 counties between 1895 and 1998. The remaining male specimens are *P. albescens* (n = 30), more recently collected in 7 counties during the period 1976–2001.

At no time have both *P. albescens* and *P. communis* been encountered together at the same location in Florida. However, *P. oileus* (Linnaeus) shares many locations (and hostplants) with its congeners. Habitats for these species in Florida include vacant lots, weedy pastures, fallow cropland, farmyards, edges of cultivated fields, open roadsides and citrus groves. These habitats are generally characterized by low-growing vegetation and an abundance of nectar sources, interspersed with patches of bare ground. Favorite flowers of both species are mostly white and include *Bidens alba* (L.) DC (Asteraceae), *Phyla nodiflora* (L.) Greene (Verbenaceae), *Melilotus albus* Medik. (Fabaceae), *Richardia brasiliensis* Gomez (Rubiaceae) and *Sida* spp. (Malvaceae). In Jackson County, Florida, I observed *P. albescens* ovipositing on *Sida rhombifolia* L., which also serves as a host of *P. albescens* and *P. communis* in Texas (Kendall 1965, Neck 1996, Burns 2000), as well as *P. oileus* in Texas and Florida (Kendall 1976, Minno & Emmel 1993). In 1997 and 1999, Marc C. Minno reared *P. albescens* from larvae found on *S. rhombifolia* in Okaloosa and Brevard counties of Florida (adults det. by JVC). In Brevard County, I also found *P. albescens* in association with another, unidentified *Sida* species. It should be noted that some (or all) of the eight larval and two pupal specimens from Alachua County that Minno (1994) attributed to *P. communis* could actually represent *P. albescens* (no differences in the early stages of these species have yet been documented).

Although Smith et. al (1994) observed that *P. oileus* and *P. communis* are indistinguishable on the wing, males of *P. oileus* appear whiter in color and both sexes of this species have a more sluggish, bobbing flight. *Pyrgus oileus* also tends to frequent semi-shaded situations, whereas *P. communis* and *P. albescens* rarely stray from direct sunlight. Flight behavior of *P. communis* and *P. albescens* does not appear to differ. Both species fly rapidly near the ground and pause often to visit flowers. Males spend much time flying low circuitous routes in search of females and will investigate virtually any movement, including other male *Pyrgus*, grasshoppers, and even falling leaves. This pugnacious behavior can become frustrating to anyone attempting to approach resting males, especially if grasshoppers

TABLE 1. *Pyrgus albescens and P. communis* records documented in Florida during 1989–2001 field survey. AME, Allyn Museum of Entomology, JVC, John V. Calhoun; USNM, National Museum of Natural History.

Date	County	Nearest town/city	Specimens	Collection
1. *Pyrgus albescens* (males)				
4.viii.94	Columbia	Lake City	2	USNM
4.viii.94	Hamilton	Jasper	1	JVC
8.iv.95	Calhoun	Altha	2	USNM
8.iv.95	Jackson	Oakdale	3	USNM
8.iv.95	Liberty	Bristol	1	USNM
15.x.95	Calhoun	Altha	5	USNM
15.x.95	Jackson	Malone	1	USNM
15.x.95	Jackson	Oakdale	15	USNM
30.x.95	Hamilton	Jasper	4	(lost in post)
30.x.95	Suwannee	Pouchers Corner	1	(lost in post)
5.ix.96	Jackson	Marianna	1	JVC
12.x.96	Gadsden	Rosedale	1	USNM
12.x.96	Jackson	Oakdale	4	JVC
13.x.96	Jackson	Marianna	2	JVC
29.vi.97	Jackson	Greenwood	1	JVC
3.ix.99	Alachua	Alachua	2	USNM/JVC
23.ix.99	Brevard	Scottsmoor	6	USNM
23.ix.99	Volusia	Scottsmoor	5	USNM
1.x.99	Gilchrist	Wilcox	7	USNM
1.x.99	Levy	Chiefland	5	USNM
1.x.99	Jefferson	Lamont	5	USNM
1.x.99	Holmes	Ponce de Leon	4	USNM
2.x.99	Okaloosa	Cotton Bridge	7	USNM
2.x.99	Santa Rosa	Harold	4	USNM
2.x.99	Walton	Mossy Head	3	USNM
3.x.99	Bay	Saunders	5	USNM
3.x.99	Franklin	Apalachicola	2	USNM
3.x.99	Gulf	Wewahitchka	3	USNM
3.x.99	Washington	Orange Hill Corners	1	USNM
11.x.99	Pasco	Dade City	12	USNM
8.ix.00	Hillsborough	Gulf City	1	JVC
11.v.01	Lafayette	Grady	1	JVC
16.ix.01	Manatee	Piney Point	3	JVC
16.ix.01	Lee	Alva	2	JVC
20.ix.01	Pinellas	Tarpon Springs	7	JVC
7.xi.01	Citrus	Bay Hill	1	JVC
7.xi.01	Hernando	Rital	3	JVC
7.xi.01	Polk	Kathleen	1	JVC
7.xi.01	Sumter	Nobleton	2	JVC
16.xi.01	Marion	Marion Oaks	2	JVC
Total			138	
2. *P. communis* (males)				
30.ix.89	Gadsden	Concord	1	USNM
29.x.89	Pasco	Dade City	2	USNM
1.ix.90	Pasco	Dade City	2	USNM
8.ix.90	Polk	Branchborough	2	USNM
30.ix.90	Pinellas	Tarpon Springs	2	USNM/JVC
23.xi.90	Pasco	Dade City	2	USNM/AME
31.xii.90	Pasco	Dade City	2	USNM
16.vii.94	Hernando	Brooksville	1	USNM
27.viii.95	Lake	Clermont	1	USNM
Total			15	
3. *P. albescens* (assigned females)				
4.viii.94	Columbia	Lake City	2	JVC
15.x.95	Jackson	Oakdale	6	USNM
12.x.96	Jackson	Oakdale	3	JVC
13.x.96	Jackson	Oakdale	2	JVC
3.ix.99	Alachua	Alachua	1	JVC
23.ix.99	Brevard	Scottsmoor	2	JVC
23.ix.99	Volusia	Scottsmoor	2	JVC
1.x.99	Jefferson	Lamont	2	JVC
2.x.99	Santa Rosa	Harold	3	JVC
8.xi.00	Hillsborough	Piney Point	2	JVC
16.ix.01	Lee	Alva	2	JVC
7.xi.01	Hernando	Rital	1	JVC
7.xi.01	Polk	Kathleen	1	JVC
16.xi.01	Marion	Marion Oaks	2	JVC
Total			31	
4. *P. communis* (assigned females)				
29.x.89	Pasco	Dade City	1	JVC
1.ix.90	Pasco	Dade City	1	JVC
8.ix.90	Polk	Branchborough	1	JVC
30.ix.90	Pinellas	Tarpon Springs	1	JVC
1.x.90	Pinellas	Tarpon Springs	2	JVC
23.xi.90	Pasco	Dade City	1	JVC
29.ix.91	Pinellas	Tarpon Springs	1	JVC
Total			8	
5. *Pyrgus* (unassigned females)				
23.ix.90	Citrus	Chassahowitzka	1	USNM
27.viii.91	Pasco	Dade City	2	JVC
30.viii.92	Pasco	Dade City	1	JVC
23.ix.92	Levy	Yankeetown	1	JVC
8.ix.94	Pasco	Dade City	1	JVC
16.x.94	Volusia	Scottsborough	2	USNM/JVC
13.xi.94	Hernando	Dixie	1	USNM
14.x.95	Jefferson	Lamont	2	USNM
12.x.96	Gadsden	Chatahootchee	1	JVC
Total			12	

are flushed with every footstep. Males also perch on taller vegetation, permitting them to observe and examine passing objects easily. Adults of *P. albescens* and *P. oileus* have been seen roosting for the night on exposed herbaceous growth with wings tightly closed. This posture probably provides maximum solar exposure the following morning. *Pyrgus albescens* and *P. communis* reach maximum abundance during September–November, when *Sida* hosts are plentiful. Although *P. albescens* and *P. communis* can be locally common where found, abundance can vary considerably between sites. Few adults were observed at many locations, accounting for the numerous single-specimen records documented during my survey.

DISCUSSION

Pyrgus communis has been reported from 41 Florida counties, but many records are based on observations and literature where specimens are unavailable or lost (unpublished obs.). A number of literature reports are referable to *P. oileus*, especially females. For example, Grossbeck (1917) and Kimball (1965) listed *P. communis* specimens of W. T. Davis from Key West (Monroe Co.), Lakeland (Polk Co.) and Jacksonville (Duval Co.) that are now deposited in the Staten Island Institute of Arts and Sciences (det. by JVC). The two Key West specimens (16.ix.1913) are female *P. oileus*, confirming the suspicions of Minno and Emmel (1993). The two specimens from Lakeland (8.xi.1913) and Jacksonville (7.xi.1913) are likely female *P. communis*. Brewer (1982) listed *P. communis*, but not *P. oileus*, from Sanibel Island, Lee County. However, her local collection deposited at the Sanibel-Captiva Conservation Foundation contains just the opposite (*P. oileus*, but no *P. communis*).

Pyrgus albescens may have been present in Florida for some time, sustaining small, highly localized (i.e., easily overlooked) populations that suddenly expanded due to unknown reasons. Alternatively, the species spread eastward around the Gulf of Mexico into Florida where it rapidly dispersed across the panhandle, then southward through the peninsula. Historical specimens further support the more likely scenario that *P. albescens* has only recently invaded the state.

Based on specimens obtained during my field survey (Table 1), as well as those from other collections (Table 2), it can be concluded that only *P. communis* originally occurred in Florida. The first known male *P. albescens* specimen from Florida was collected in 1976 in Escambia County in the extreme western panhandle. All 54 male specimens collected during the 90 years prior to 1976 are *P. communis*. In 1984, J. M. Burns found additional *P. albescens* at another location in Escambia County. By 1992, this species had reached Gadsden County in the eastern panhandle. The last *P. communis* collected in the panhandle was in 1989. All 72 males collected after 1989 at 20 locations in 13 counties throughout the panhandle are *P. albescens*, thus this species has probably dominated that region since at least the late 1980's or early 1990's. By 1994, *P. albescens* had reached eastward in northern Florida to Columbia County and southward in the peninsula to Lake County. In 2001, *P. albescens* was found as far south as Lee and Okeechobee counties. The last confirmed *P. communis* recorded in Florida was in 1998 in Levy County of the northwestern peninsula. Since that time, all 72 males collected at 21 locations in 17 counties of the peninsula (including Levy Co.) represent *P. albescens*. The paucity of *P. communis* populations found during my field survey suggests that the expansion of *P. albescens* in Florida had begun prior to 1989.

The southward progression of *P. albescens* through peninsular Florida, and associated displacement of *P. communis*, is reflected by several records. In 1994 and 1995, I collected single males of *P. communis* (no *P. albescens*) in Hernando and Lake counties of the central peninsula. Also in 1994, D. R. Fine captured a single male *P. albescens* (no *P. communis*) at a more northern location in Lake County, suggesting this species was just invading that region. Evidence of direct displacement of *P. communis* by *P. albescens* was documented at three locations in northern and central Florida. In 1999, I captured only *P. albescens* in an agricultural field in Pasco County where only *P. communis* was recorded in 1989–1990. Likewise, in 2001, I found only *P. albescens* in a Pinellas County pasture where only *P. communis* had been collected in 1990. Unfortunately, dates of capture at these locations are nine or ten years apart, making the actual time of displacement difficult to determine. However, additional records from Levy County ostensibly limit displacement at one location to within six months.

On 4 October 1998, Ron Hirzel collected 2 male *P. communis*, but no *P. albescens*, at the crossroads town of Gulf Hammock in southern Levy County (Table 2). On 15 April 1999, and 20 March 2000, D. R. Fine captured 4 male *P. albescens*, but no *P. communis*, in the same area of Gulf Hammock. In 2001, Richard A. Anderson obtained another male *P. albescens* (no *P. communis*) at the same Gulf Hammock location. In October 1999, I found only *P. albescens* at a site in Levy County approximately 27 km north of Gulf Hammock (Table 1). Although *P. albescens* already occurred much further southward at that time, small peripheral populations of *P. communis* like that at Gulf Hammock may not have been as quickly impacted.

Although *P. communis* is considered rare in southern Florida, *P. albescens* may prove more successful at colonizing this region. The only known specimens of *P. communis* from southern Florida are a single old male from Punta Gorda (Charlotte County, ca. 1930) and another male collected in Miami (Miami-Dade County) in 1946 (Table II). The late John L. Heinrich (*in litt*. 30 November 1988) reported *P. communis* from Lee County, but only *P. oileus* are currently deposited in his collection at the Calusa Nature Center and Planetarium in Fort Myers, Florida. In 2001, I found *P. albescens*, but no *P. communis*, in Lee County where I had encountered only *P. oileus* between 1976

TABLE 2. Male *P. albescens and P. communis* specimens from Florida in public and private collections. AME, Allyn Museum of Entomology; AMNH, American Museum of Natural History; BMNH, The Natural History Museum (London); CMNH, Carnegie Museum of Natural History; DRF, David R. Fine; FSCA, Florida State Collection of Arthropods; JVC, John V. Calhoun; MCM, Marc C. Minno; RLB, Robert L. Beiriger, USNM, National Museum of Natural History.

Date	County	Location	Specimens	Collection
1. *Pyrgus communis* (males)				
v.&vi.1895	Seminole	Sanford	1	BMNH
19??	Alachua	Gainesville	2	FSCA
18.iv.19??	Charlotte	Punta Gorda	1	USNM
26.ix–2.x.14	Alachua	Gainesville	1	AMNH
4–8.x.14	Jefferson	Monticello	1	AMNH
?.xi.17	Marion	Ocala	2	CMNH
≤1919	?	"Florida"	2	BMNH
<1939	?	"Florida"	1	BMNH
3.v.42	Alachua	Gainesville	1	FSCA
7.vi.43	Alachua	Gainesville	1	FSCA
11.vi.43	Alachua	Gainesville	1	FSCA
17.vi.43	Alachua	Gainesville	1	FSCA
6.vii.43	Alachua	Gainesville	1	FSCA
4.viii.43	Alachua	Gainesville	1	FSCA
25.iv.44	Alachua	Gainesville	1	FSCA
2.v.44	Alachua	Gainesville	1	FSCA
8.v.46	Miami-Dade	Miami	1	AME
28.iii.49	Escambia	Pensicola Nav. Air. Sta.	1	USNM
24.ix.49	Escambia	Perdido Bay	1	USNM
4.vii.59	Duval	Jacksonville	1	FSCA
23.viii.59	Duval	Jacksonville	1	FSCA
22.xi.60	Duval	Jacksonville	1	FSCA
9.v.62	Clay	Orange Park	1	FSCA
31.viii.63	Duval	Jacksonville	2	FSCA
19.x.63	Duval	Jacksonville	5	FSCA
14.ii.64	Duval	Jacksonville	1	FSCA
20.x.64	Duval	Jacksonville	1	FSCA
20.x.64	Clay	Orange Park	1	FSCA
1.i.68	Duval	Jacksonville	1	FSCA
15.viii.68	Liberty	Torreya State Park	1	FSCA
18.ix.68	Liberty	Sweetwater Creek	2	FSCA
5.iv.69	Alachua	Gainesville	2	FSCA
6.iv.69	Alachua	Gainesville	1	FSCA
15.viii.73	Gadsden	Quincy	1	TMN
19.viii.73	Gadsden	Quincy	3	TMN
20.x.73	Duval	Jacksonville	1	FSCA
25.vii.74	Alachua	Gainesville	1	TMN
31.x.77	Duval	Jacksonville	2	FSCA
28.iv.78	Franklin	Apalachicola	1	AME
13.vii.87	Lake	Sugarloaf Mtn.	1	MCM
9.ii.96	Putnam	Caravelle Ranch WMA	1	MCM
4.x.98	Levy	Gulf Hammock	2	ADW
Total			56	
2. *P. albescens* (males)				
22.v.76	Escambia	Pensacola Beach	1	USNM
7.ix.84	Escambia	Cantonment	12	USNM
26.viii.92	Gadsden	SW of Quincy	1	RLB
?.vii.94	Lake	Paisley	1	DRF
5.x.97	Okaloosa	Blackwater Riv. St. For.	1	MCM
15.iv.99	Levy	Gulf Hammock	2	DRF
14.x.99	Brevard	Moccasin Is. WMA	6	MCM
20.iii.00	Levy	Gulf Hammock	2	DRF
1.iv.01	Lake	Paisley	1	DRF
7.viii.01	Okeechobee	Hilolo	1	DRF
2.ix.01	Levy	Gulf Hammock	2	JVC
Total			30	

and 1987 (Calhoun 1987). Smith et. al (1994) sought *P. communis* in southern Florida without success, stating "the failure of this Nearctic butterfly to enter the 'tropical' zone of the peninsula is remarkable." On 30 August 2001, 23 adults of the "common checkered skipper" were observed near Flamingo, at the very southern tip of Florida, within Everglades National Park (Miami-Dade County) (Linda & Buck Cooper pers. com.). On 13 November 2001, another individual was observed in extreme southwestern Florida within Fakahatchee Strand State Preserve in Collier County (R. L. Emmitt pers. com.). Future research may confirm the suspicion that these populations represent *P. albescens*, thus confirming its complete penetration of Florida.

Credible observations and photographs of "common checkered skippers" in Florida have become much more frequent within the past two years. It seems likely that these reports represent *P. albescens* and the species is successfully colonizing areas not previously occupied by *P. communis*. I personally encounter *P. albescens* in many habitats where only *P. oileus* was formerly observed. *Pyrgus albescens* also appears to be spreading northward. On 4 June 2000, D. R. Fine collected two males and one suspected female of this species (det. by JVC) at Darien along the Altamaha River in McIntosh County of eastern Georgia. This record, along with my 1995 specimens of *P. albescens* from Houston County, Alabama and Seminole County Georgia, may show this species is expanding throughout the southeast and may reach South Carolina in the near future (or has already done so).

No other species of butterfly in Florida has so deftly displaced another. Recent invasions of Florida by *Urbanus dorantes* Stoll (Hesperiidae) and *Danaus eresimus* (Cramer) (Nymphalidae) are excellent examples of successful widespread colonization (Knudson 1974, Calhoun 1996). However, neither of these exotic species has noticeably impacted its resident congeners, *Urbanus proteus* (L.) (Hesperiidae) and *Danaus gilippus* (Cramer) (Nymphalidae). The reasons behind the

incursion of *P. albescens* into Florida are baffling, but changes in precipitation levels may offer an enticing explanation.

Tilden (1965) and subsequent authors (e.g., MacNeill 1975, Orsak 1978) associated *P. albescens* with hot, arid lowland climates. In Texas, Neck (1996) similarly associated *P. communis* with "cooler, moister northern habitats" and *P. albescens* with "warmer, drier, southern habitats." Although Florida can scarcely be described as "arid," much of the state experienced moderate to extreme drought during the last decade, especially in 1989–1990 and 1998–2000 (NCDC 2001). These conditions, more pronounced in the peninsula, continued into 2001. Drought has been defined as "a condition of moisture deficit sufficient to have an adverse effect on vegetation, animals, and man over a sizeable area" (Warwick 1975). While Burns (2000) doubted the strict affinity of *P. albescens* to drier climates, the rapid expansion of this species in Florida during the 1990's may, at least in part, be a consequence of these drought conditions. Burns and Kendall (1969) suspected humidity to be a limiting factor in the distributions of closely related *Pyrgus philetas* Edwards and *P. oileus* in southwestern North America.

Pyrgus communis and *P. albescens* do not appear to coexist at any location in Florida, but they do occur together in many areas of the southwestern United States (Tilden 1965, Austin 1986, Burns 2000). The expansion of each species in that region seems to be inhibited by the other species (Burns 2000). However, competitive pressures and other limiting factors may differ in the southeastern United States where *P. communis* may not have historically interacted with *P. albescens*. The dynamics of these species within regions of sympatry are obscure and unpredictable. Over time, *P. communis* may rebound in Florida. Shifts in dominance between these species at a single site in Arizona occurred over periods as short as 26 days (J. Burns pers. com.). It is also plausible that *P. albescens* was once abundant in the southeast during the more distant past, but *P. communis* reasserted its dominance until recently. Continued monitoring of *Pyrgus* may reveal more about the intriguing relationship between these sibling species and the factors responsible for this extraordinary displacement.

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