THE TERRESTRIAL HERPETOFAUNA OF THE ATLANTIC RIDGE PRESERVE STATE PARK

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ABSTRACT: *The Atlantic Ridge Preserve State Park (ARPSP) in east central Martin County, Florida was surveyed for terrestrial amphibian and reptile species from December of 2001 to October 2003. The survey was conducted through drift fence arrays and opportunistic captures resulting in 328 animals captured representing 31 species (29 native, 2 introduced). The survey had a total of 1302 array days and was conducted in the park's predominant wet flatwoods plant community. The ARPSP contains many of the terrestrial species known to inhabit Martin County and shares most (82%) of the same species as are found in the wet flatwoods of nearby Jonathan Dickinson State Park.*

Key Words: Atlantic Ridge Preserve State Park, herpetofauna, wet flatwoods

THE natural communities of South Florida are unique and disappearing. These areas are under intense pressure from a ballooning population and rapid development (Meshaka and Babbit, 2005; Wilson and Porras, 1983). The shrinking and fragmentation of these natural areas are causing persistent pressure on South Florida's distinctive floral and faunal communities. To prevent elimination of these increasingly rare habitats, the local, state and federal agencies manage to the best of their abilities the few remaining natural areas. In 1998, the Trustees of the Internal Improvement Trust Fund of the State of Florida and the South Florida Water Management District acquired a former ranch in Martin County from the Westerra Corporation (Fig. 1). In 2000, management of the property was leased to the Florida Park Service (FPS) to create the Atlantic Ridge Preserve State Park (ARPSP) with the goal of protecting and restoring the natural and cultural values of the property and providing the greatest benefits to the citizens of the state (Florida Department of Environmental Protection, 2005).

The Atlantic Ridge Preserve State Park is located in east central Martin County, Florida between the Florida Turnpike and U.S. Highway One (Fig. 1). The 2326 hectare property is dominated by wet flatwoods (1322 hectrares - 57%) and wet prairie (437 hectares - 19%). Split by a small area of hydric hammock and pond apple slough near the center of the property, the wet flatwoods and wet prairie communities are divided into northern and southern areas. Previous to acquisition as public lands, the property was managed as a cattle ranch and hunting preserve and then proposed for development. Modification of the property was concentrated in the northern portion with a number of water control structures and extensive ditching.

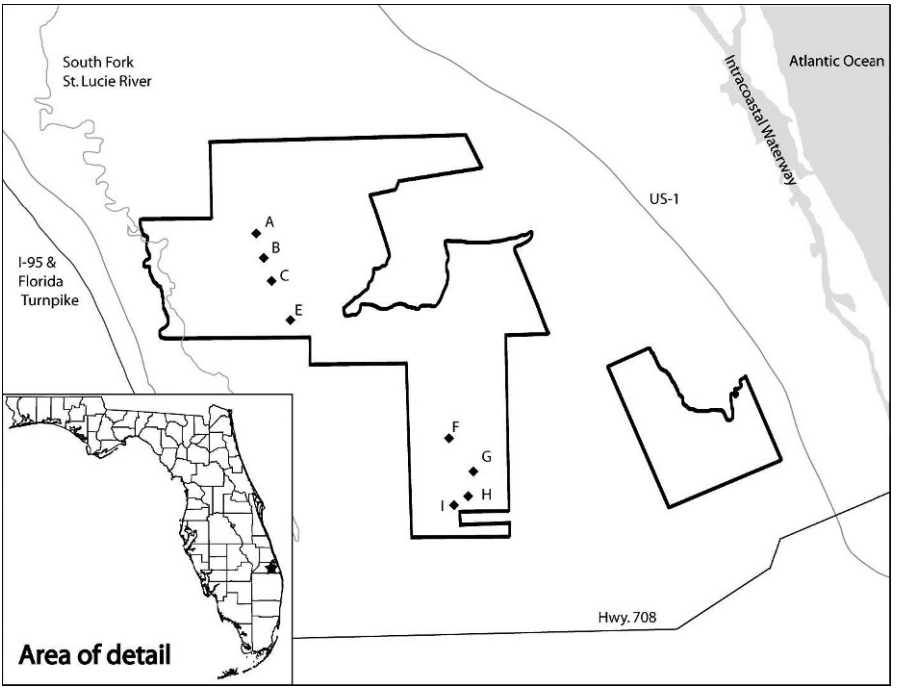

FIG. 1. Geographic location of the Atlantic Ridge Preserve State Park. The location of arrays are identified by diamonds and labeled A,B,C,E for the northern group and F,G,H,I for the southern group.

Aside from these modifications, the property was well managed by previous landowners with regular prescribed burning. The property has few exotic plant species, however there is widespread bahia grass (*Paspalum notatum*), Old World climbing fern (*Lygodium microphyllum*), downy rose myrtle (*Rhodomyrtus tomentosa*), punk tree (*Melaleuca quinquenevia*) and Brazilian pepper (*Schinus terebinthifolius*).

As a new unit of Florida's state park system and as required by Florida Statutes, an initial management plan was developed to serve as a basic statement of policy and direction for this property. The resource management component of this plan provides a detailed inventory and assessment of the natural and cultural resources of the park. To that end, the ARPSP Herpetological Survey (Herp Survey) was conducted from December of 2001 to October 2003 to catalog the terrestrial amphibian and reptile species.

There is significant literature detailing the herpetofauna of the Everglades (Dalrymple, 1980; Meshaka et al., 2000; O'Hare and Dalrymple, 1997), as well as the central Lake Wales Ridge (Meshaka and Layne, 2002; Branch and Hokit, 2000). With the notable exception of the herpetofaunal survey of Jonathan Dickinson State Park (JDSP) by Timmerman and colleagues (1994a), comparatively little work has been done investigating the herpetofauna of this

area of the state, the Atlantic Coastal Ridge. The ARPSP lies at the boundary of the two of Auffenberg's Herpetological Biotic Communties (1982); the Volusian (the southern extent of the mixed hardwood and pine herpetofauna, including many caudates) and the more depauperate Miamian. As such, the ARPSP should exhibit portions of both herpetofaunas. In addition to assisting the FPS in the management of the ARPSP, the survey of the species on the property should serve as a catalog of species present in this habitat, as well as providing a framework from which novel ecological and management questions can be ascertained.

Materials and Methods—A total of eight drift fence arrays were created for the study. Sites for the arrays were selected by first identifying areas in both the northern and southern portions of the property, all being approximately the same elevation (around 4.6 m above sea level) and accessible from the main park road running from the north to the south. After identifying possible sites using topographic maps, an onsite inspection led to the identification of 4 sites on each the north (heavily ditched) and south (unditched) sides of the property. Arrays were placed approximately 0.5 km apart in wet flatwoods habitat. An analysis of the species composition, richness and abundance of the herpetofaunas in these two areas identified significant shifts in community structure possibly due to this ditching (Geneva and Roberts, in *prep*.).

The arrays used in this survey were drift fence-style layout in a Y formation (Gibbons and Semlitsch, 1981) (Fig. 2). For the barrier, metal roof flashing 8 m long and 0.5 m tall was used. The three arms of the array were arranged with one pointing north from the center and the remaining two angled at 120 degrees east and west of the north arm. At the center of the Y and at the end of each arm, a 19 L bucket was buried so that the upper lip lay flush with the surrounding ground surface. Small holes were drilled in the bottoms of the buckets to allow for fluctuation in the groundwater table and to prevent the buckets from rising out of the ground. Bricks were also placed in the buckets for additional weight and to serve as islands when water was present in the buckets. Shade covers made of plywood were positioned over the buckets to prevent captured specimens from desiccating with spacers used to keep the shade covers off the ground. On each side of each arm of the array, double-ended funnel traps were positioned. These traps, constructed by Timmerman and colleagues (1994b) during the JDSP Herpetological Survey, were constructed using window screening with inverted funnels on each end. Shade covers made of masonite were used to shade the funnel traps. They were leaned against the flashing drift fence over a portion of the funnel trap. All traps (buckets and funnel traps) contained a sponge that was rehydrated as needed to provide a moisture island within the trap. This arrangement, with large pitfall buckets and many funnel traps, was used to maximize the number of species encountered as certain species are more likely to be captured by one trap type over the other (Enge, 2001).

In December 2001, six arrays were installed and surveying began with two additional arrays installed in March 2002. For seven consecutive days of each month the traps were checked early each morning. Captured animals were identified, measured, individually marked and released onsite on the opposite side of the array they were captured on, presumably in the direction they were traveling. Lizards, frogs and toads were marked using toe clipping, snakes were marked using a small surgical cauterizer and turtles and tortoises were marked using a power drill on the edges of the carapace following Ferner (1979; 2007). Data were recorded in the field using field sheets and then entered into a Microsoft Access database. At the end of the seventh day the pitfall traps were sealed and the funnel traps as well as all the shade covers were moved to storage. All native species were released after marking pursuant to the project permit issued by the Florida Fish and Wildlife Conservation Commission (Permit # WX01607). Non-native species were humanely euthanized following FPS resource management policy. In June 2002, three frogs captured in pitfalls were found dead and covered in fire ants (*Solenopsis invicta*). In each instance, there was adequate moisture available for the trapped animals leading to the conclusion that the ants themselves might

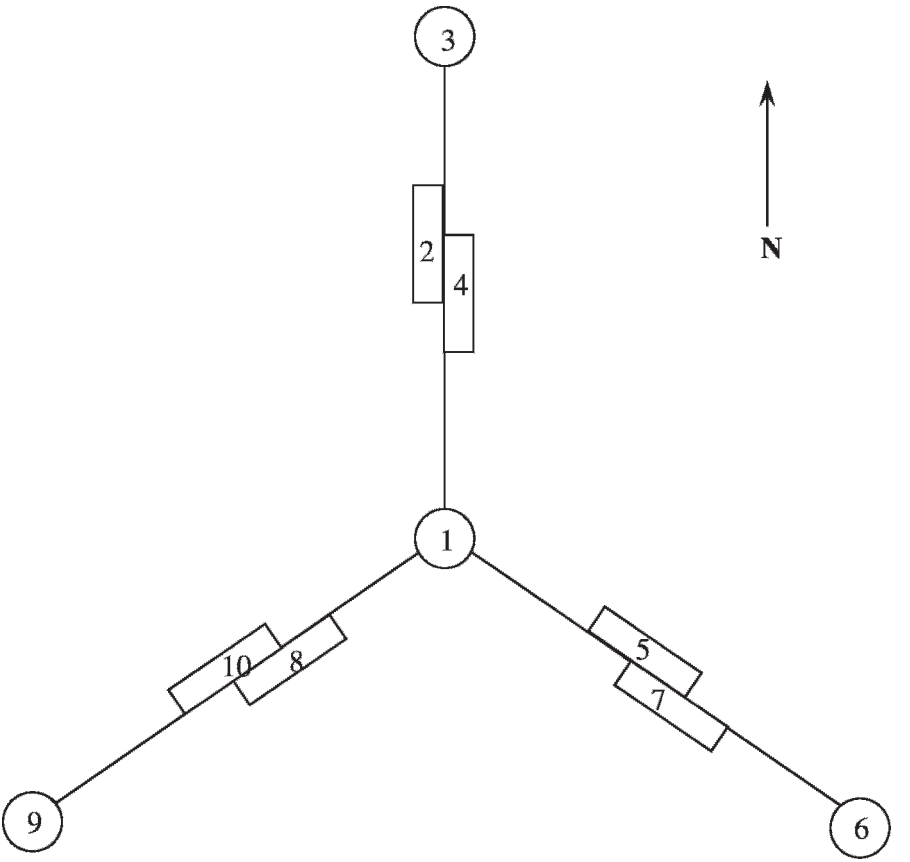

FIG. 2. Drift fence array Y-shaped layout. Double-sided funnel traps were placed midway down each arm on either side. Pitfall traps were placed at the tips of each arm and the center of the array. Traps were numbered to allow tracking of the capture rate for each trap type.

be responsible for the deaths of these animals. To prevent the recurrence of such deaths, the hydramethylnon based insecticide Amdro® was applied in the vicinity of all arrays.

Any animals encountered opportunistically while checking traps were captured, measured, marked and released at their capture point. General weather data (maximum and minimum temperature and humidity, and total 24-hour rainfall) was also recorded on each survey day.

Literature and collections database searches were conducted to produce a list of potential species present in the study area; additionally, data collected by Timmerman and colleagues (1994b) were reviewed in order to compare the results of this study with a survey of nearby JDSP (14 km south of ARPSP).

RESULTS—The survey generated 308 captures representing 27 species in 1302 array-days with a trap success of 0.24 captures per array-day. An additional 20 animals representing 8 species, including 4 not captured by the arrays, were encountered opportunistically during the course of the survey. A total of 31 species (29 native, 2 introduced) were identified in the ARPSP: 12

species of anurans, 5 species of lizard, 11 snake species, 2 chelonian species and 1 crocodilian (Table 1). For consistency in nomenclature, scientific and common names follow Collins and Taggart (2002).

Pitfalls were responsible for the majority of captures (214, 70%) with the remaining 94 captures (30%) generated by funnel traps. This is counter to the pattern observed by Enge (2001) in a review of Florida drift array surveys, where in most instances funnel traps performed significantly better than pitfalls. In fact, the materials used in this study were taken directly from one of the studies included in the review (Timmerman et al., 1994b) where funnels were significantly better at capturing anuarans, lizards and snakes (Enge, 2001). Nine species were captured only by the funnel traps: *Elaphe guttata guttata*, *Sistrurus miliarius barbouri*, *Storeria dekayi victa*, *Nerodia fasciata pictiventris*, *Coluber contrictor priapus*, *Osteopilus septentrionalis*, *Hyla cinerea*, *Hyla squirella*, and *Eumeces inexpectatus*. With the exception of *Eumeces inexpectatus* each of these species could have temporarily been trapped in pitfalls but are capable of escaping these traps by climbing or jumping. A review of five other Florida herpetological studies (Enge, 2001) found similar biases in efficacy of funnel traps for capturing large snakes and strong jumping anurans. A rarefaction curve (Figure 3) plotting the accumulation of new species over time indicates that the drift fence array system as designed was unlikely to identify many additional species.

Throughout the course of this study three animals were recaptured. Each of these recaptures involved *Bufo quercicus* individuals. For two of these, the animal was recaptured the day after it had first been encountered and was found at the same array as its initial discovery. The remaining recapture involved a female captured in March 2002 and recaptured in June 2002. During this time, this animal grew 3 mm and increased in mass by 0.35 grams. These two capture events occurred in separate, non-adjacent arrays spaced 730 m from one another. Unfortunately, there is some degree of uncertainty surrounding the authenticity of this recapture as the identification number assigned to that individual was 40, which required only a single toe to be clipped, and may have been lost by some other means on the individual captured in June. For this to be the case though, a number of factors would have had to aligned themselves, i.e. the animal captured in June matched the species and gender of the earlier capture and was slightly larger in length and mass than the earlier animal and it lost only the 4th digit on its right front foot.

The searches of the Florida Museum of Natural History (FLMNH) online collections database (www.flmnh.ufl.edu/scripts/dbs/herps_pub.asp) recovered 272 accessioned specimens, representing 63 species (50 native and 13 introduced) with "Martin County, FL" locality data. HerpNET (HerpNET.org), a centralized database of herpetofauna collections of participating natural history museums, was also searched and identified 83 additional "Martin County, FL" specimens held in 5 collections. This search yielded two additional species (both native) for a total of 65 species (52 native, 13

TABLE 1. Summary of capture data from this study and records of species presence in Martin County from other cited sources.

Group	Family	Genus	Species	Subspecies	Common Name	This Study	Timmerman et al., 1994	Meshaka & Babbit, 2005	FLMNH & HerpNET
Native Species									
Anurans	Bufonidae	*Bufo*	*quercicus*		Oak toad	X	X	X	X
		Bufo	*terrestris*		Southern toad	X	X	X	X
	Hylidae	*Acris*	*gryllus*	*dorsalis*	Florida cricket frog	X	X	X	X
		Hyla	*cinerea*		Green treefrog	X	X	X	
		Hyla	*femoralis*		Pinewoods treefrog	X	X	X	X
		Hyla	*gratiosa*		Barking treefrog		X	X	
		Hyla	*squirella*		Squirrel treefrog	X	X	X	X[a]
		Pseudacris	*nigrita*	*verrucosa*	Florida chorus frog	X	X	X	X
		Pseudacris	*ocularis*		Little grass frog	X	X	X	X
	Microhylidae	*Gastrophryne*	*carolinensis*		Eastern narrowmouth toad	X	X		X
	Pelobatidae	*Scaphiopus*	*holbrookii*		Eastern spadefoot toad		X	X	X
	Ranidae	*Rana*	*areolata*		Crawfish frog				X
		Rana	*capito*	*aesopus*	Florida gopher frog		X		
		Rana	*grylio*		Pig frog		X		X
		Rana	*sphenocephala*		Southern leopard frog	X	X		X
Caudates	Amphiumidae	*Amphiuma*	*means*		Two-toed amphiuma		X		X
	Plethodontidae	*Eurycea*	*quadridigitata*		Dwarf salamander			X	
	Salamandridae	*Notophthalmus*	*viridescens*	*piarapicola*	Peninsula newt		X		
	Sirenidae	*Pseudobranchus*	*axanthus*	*belli*	Everglades dwarf siren			X	
		Siren	*intermedia*		Eastern lesser siren		X		X
Crocodilians	Alligatoridae	*Alligator*	*mississippiensis*		American alligator	X	X		
Lizards	Anguidae	*Ophisaurus*	*compressus*		Island glass lizard	X	X		X
		Ophisaurus	*ventralis*		Eastern glass lizard	X		X	X
	Iguanidae	*Anolis*	*carolinensis*		Green anole	X	X	X	X
		Sceloporus	*woodi*		Southern fence lizard		X		X

TABLE 1. Continued.

Group	Family	Genus	Species	Subspecies	Common Name	This Study	Timmerman et al., 1994	Meshaka & Babbit, 2005	FLMNH & HerpNET
	Scincidae	*Eumeces*	*egregius*	*onocrepis*	Peninsula mole skink		X	X	X
		Eumeces	*inexpectatus*		Southeastern five-lined skink	X	X	X	X
		Scincella	*lateralis*		Ground skink	X	X	X	X
	Teiidae	*Cnemidophorus*	*sexlineatus*	*sexlineatus*	Six-lined racerunner		X	X	X
Snakes	Colubridae	*Cemophora*	*coccinea*		Florida scarlet snake		X	X	X
		Coluber	*constrictor*	*priapus*	Southern black racer	X	X	X	X
		Diadophis	*punctatus*	*punctatus*	Southern ringneck snake	X		X	X
		Drymarchon	*corais*	*couperi*	Eastern indigo snake		X	X	X
		Elaphe	*guttata*	*guttata*	Corn snake	X	X	X	X
		Elaphe	*obsoleta*		Rat snake		X	X	X
		Farancia	*abacura*	*abacura*	Eastern mud snake		X		X
		Heterodon	*platirhinos*		Eastern hognose snake			X	
		Lampropeltis	*triangulum*	*elapsoides*	Scarlet kingsnake		X	X	X
		Masticophis	*flagellum*	*flagellum*	Eastern coachwhip		X	X	X
		Nerodia	*fasciata*	*pictiventris*	Florida watersnake	X	X	X	X
		Nerodia	*floridana*		Florida green watersnake		X	X	X
		Nerodia	*sipedon*		Midland watersnake				X
		Opheodrys	*aestivus*	*carinatus*	Florida rough green snake		X	X	X
		Pituophis	*melanoleucus*	*mugitis*	Florida pine snake		X		X
		Regina	*alleni*		Striped crayfish snake		X		X
		Rhadinaea	*flavilata*		Pine woods snake		X		X
		Seminatrix	*pygaea*	*cyclas*	South Florida swamp snake	X	X	X	X
		Storeria	*dekayi*	*victa*	Florida brown snake	X		X	X
		Tantilla	*relicta*	*pamlica*	Florida crowned snake		X	X	X
		Thamnophis	*sauritus*	*sackeni*	Peninsula ribbon snake	X	X	X	X
		Thamnophis	*sirtalis*	*sirtalis*	Eastern garter snake	X	X	X	X

TABLE 1. Continued.

Group	Family	Genus	Species	Subspecies	Common Name	This Study	Timmerman et al., 1994	Meshaka & Babbit, 2005	FLMNH & HerpNET
	Elapidae	*Micrurus*	*fulvius*	*fulvius*	Eastern coral snake	X	X		X
	Viperidae	*Agkistrodon*	*piscivorus*	*conanti*	Florida cottonmouth		X		
		Crotalus	*adamanteus*		Eastern diamondback rattlesnake	X	X	X	X
		Sistrurus	*miliarius*	*barbouri*	Dusky pygmy rattlesnake	X	X		X
Turtles	Cheloniidae	*Caretta*	*caretta*		Loggerhead sea turtle			X	X
		Chelonia	*mydas*		Atlantic green turtle			X	X
		Eretmochelys	*imbricata*		Atlantic hawksbill turtle			X	X
	Chelydridae	*Chelydra*	*serpentina*	*osceola*	Florida snapping turtle		X		
	Dermochelyidae	*Dermochelys*	*coriacea*		Leatherback sea turtle			X	
	Emydidae	*Pseudemys*	*floridana*	*peninsularis*	Peninsula cooter		X		
Turtles	Emydidae	*Pseudemys*	*nelsoni*		Florida redbelly turtle		X		
		Terrapene	*carolina*	*bauri*	Florida box turtle	X	X	X	
	Testudinidae	*Gopherus*	*polyphemus*		Gopher tortoise	X	X	X	X
	Trionychidae	*Apalone*	*ferox*		Florida softshell turtle		X	X	X[b]
Non Native Species									
Anurans	Bufonidae	*Bufo*	*marinus*		Cane toad		X		X
	Hylidae	*Osteopilus*	*septentrionalis*		Cuban treefrog	X	X		X

TABLE 1. Continued.

Group	Family	Genus	Species	Subspecies	Common Name	This Study	Timmerman et al., 1994	Meshaka & Babbit, 2005	FLMNH & HerpNET
Lizards	Agamidae	*Agama*	*agama*	*africana*	African redhead agama				X
	Gekkonidae	*Hemidactylus*	*garnotii*		Indo-Pacific gecko		X		X
		Hemidactylus	*mabouia*		House gecko				X
	Iguanidae	*Anolis*	*cybotes*		Large-headed anole				X
		Anolis	*equestris*		Knight anole				X
		Anolis	*sagrei*	*sagrei*	Cuban brown anole		X		X
		Ctenosaura	*similis*		Black spinytail iguana				X
		Iguana	*iguana*		Green iguana				X
		Leiocephalus	*carinatus*		Northern curly-tailed lizard				X
	Leptodactylidae	*Eleutherodactylus*	*planirostris*		Greenhouse frog	X	X		X
	Tropiduridae	*Tropidurus*	*hispidus*		Guyana collared lizard				X
					Total Species	31	59	44	65

[a] = accessioned in UIMNH
[b] = accessioned in TNHC

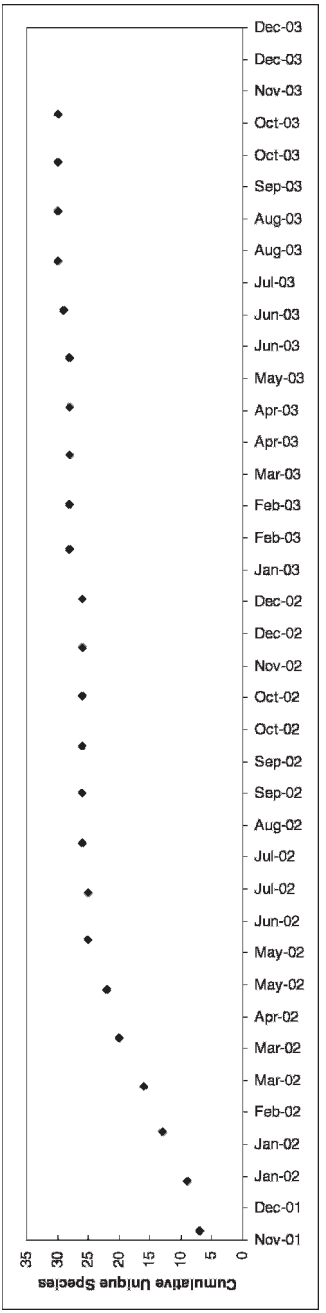

FIG. 3. Rarefaction curve plotting accumulated unique species encountered by the ARPSP Herpetological Study over time.

introduced). Meshaka and Babbitt (2005) list 44 native amphibian and reptile species for Martin County (Table 1).

This study recovered 58% of the native species identified by the museum catalog search, and 64% of the species listed if predominantly aquatic turtles and fully aquatic amphibians are excluded. The study identified three species absent from the database search, *Alligator mississippiensis*, *Hyla cinerea*, *Terrapene carolina bauri* each a relatively common species and not constituting a new county record. The following species are those found by this study not listed by Meshaka and Babbitt (2005): *Gastrophryne carolinensis*, *Micrurus fulvius fulvius*, *Ophisaurus compressus*, *Rana utricularia*, *Sistrurus miliarius barbouri*, and *Alligator mississippiensis* (Table 1).

Only 55% of the non-aquatic species encountered in JDSP were found at the Atlantic Ridge Property. The JDSP study surveyed a broader range of habitats than we did with arrays placed in scrub, scrubby flatwoods, mesic flatwoods, wet flatwoods, wet prairie plant communities and also included culvert traps for fully aquatic amphibians. As this study focused on the wet flatwoods of the ARPSP a more suitable comparison would be between this study and those animals found in the wet flatwoods of JDSP. When compared in this manner 82% of the species in the wet flatwoods survey portion of the JDSP survey were found on the ARPSP as well.

This study identified three species not captured in JDSP (Timmerman et al., 1994b) *Diadophis punctatus punctatus*, *Ophisaurus ventralis*, *Storeria dekayi victa* (Table 1). As 1,983 hectares of wet flatwoods habitat similar to that of ARPSP exists at JDSP (Roberts et al., 2006) it is possible that these species may be present and undetected at JDSP.

Discussion—We acknowledge the capture biases generated by the use of pitfall and drift array fences (Enge, 2001). The defined purpose of this study was to identify species presence. The exclusion of a species from the list generated does not necessarily indicate its absence from the ARPSP. The study was successful in verifying all amphibian and reptile species currently on the biotic inventory of the park (excepting aquatic turtles) plus it identified seven species not previously listed on the ARPSP Unit Management Plan. This information assists resource managers in preserving and maintaining the park's natural communities. The list is still growing and in order to best represent the full herpetological communities of the ARPSP, surveys must be conducted in the park's other communities particularly in wet prairie, scrub and aquatic habitats.

The capture rate of 0.24 per array day for this study is lower than the success rate of 0.74 seen in wet flatwoods of JDSP by Timmerman (1994b) but greater than that found for Long Pine Key (0.18) – which used only funnel traps (Dalrymple, 1980). This may be indicative of JDSP containing a more diverse habitat, thus harboring larger densities of amphibians and reptiles. JDSP is nearly three times the size of the ARPSP and positive correlations between preserve area and species richness, abundance and the presence of rare species have been identified (reviewed in Lovett-Doust et al., 2003).

The range of many of Florida's introduced amphibian and reptile species is growing (Enge et al., 2004; Meshaka et al., 2004; Smith and Engeman, 2004). Of those currently found in Martin County, few have been successful in establishing populations in natural areas. Based on the evidence collected in this study, the wet flatwoods of the ARPSP contain at least two of these invasive species: *Eleutherodactylus planirostris* and *Osteopilus septentrionalis*. The developed portion of the park was not surveyed but is likely to harbor many of the introduced species found in association with buildings and other disturbed habitats elsewhere in Martin County such as *Hemidactylus garnotti* and *H. mabouia* (Meshaka et al., 2005), *Anolis sagrei* and *Leiocephalus carinatus*.

The wet flatwoods of the ARPSP support the typical herpetofauna associated with this type of habitat (Auffenberg, 1981; Enge, 1997). We captured all but two of the dominant and indicator herpetofauna species for this flatwoods habitat type (*Lampropeltis triangulum elapsoides* and *Rhineura floridana* (of which only *Lampropeltis* could have been captured by our arrays) listed by Auffenberg (1982) in his review of Florida herpetofauna by community. A more extensive review of Florida herpetofauna was performed by Enge (1997) where species were identified as either common, uncommon or rare for Florida's natural communities divided into panhandle, northern and southern peninsula geographic regions. The ARPSP contains all of the common anuran and lizard species expected for southern peninsula wet flatwoods as well as 7 of the 10 common snake species. This survey also found 1 of 3 rare or uncommon anurans, 1 of 2 uncommon lizards, and 4 of ten uncommon and rare snake species. A further measure of the importance of this property is that it harbors 68% of the terrestrial amphibian and reptile species known to inhabit Martin County but encompasses less than 2% of the total area of the county.

In an area of explosive population growth it is essential to maintain this and other natural areas to ensure the persistence of the diverse communities and unique species that reside there.

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LITERATURE CITED

Auffenberg, W. 1981. Florida environments and their herpetofaunas. Part I. Environmental characteristics. Florida Herpet. 2:1–36.

———. 1982. Florida environments and their herpetofaunas. Part III. Herpetogeography. Florida Herpet. 4:1–34.

Branch, L. C. and D. G. Hokit. 2000. A comparison of scrub herpetofauna on two Central Florida sand ridges. Florida Scient. 63:108–117.

Collins, J. T. and T. W. Taggart. 2002. Standard common and current scientific names for North American amphibians, turtles, reptiles, and crocodilians. 8th Ed. The Center for North American Herpetology, Lawrence, KS.

Dalrymple, G. H. 1980. The herpetofauna of Long Pine Key, Everglades National Park, in relation to vegetation and hydrology. Pp. 72–86. *In*: Szaro, R. C., K. E. Stevenson, and D. R. Patton (eds.), The Management of Amphibians, Reptiles and Small Mammals in North America. U.S. Forest Service Gen. Tech. Rept. RM-166., Flagstaff, AZ.

Enge, K. M. 1997. Habitat occurrence of Florida's native amphibians and reptiles, Tech. Rept 16. Florida Game and Fresh Water Fish Commission, Tallahassee.

———. 2001. The pitfalls of pitfalls. Journal of Herpet. 35:467–478.

———, K. L. Krysko, and B. L. Talley. 2004. Distribution and Ecology of the Introduced African Rainbow Lizard, *Agama agama africana* (Sauria: Agamidae), in Florida. Florida Scient. 67:303–310.

Ferner, J. W. 1979. A review of marking and individual recognition techniques for amphibians and reptiles. Society for the Study of Amphibians and Reptiles, Herpetological Circular No. 9.

———. 2007. A review of marking and individual recognition techniques for amphibians and reptiles, 2nd Ed. Society for the Study of Amphibians and Reptiles, Herpetological Circular No. 35.

Florida Department of Environmental Protection. 2005. Atlantic Ridge Preserve State Park unit management plan. DEP, Tallahassee, FL.

Gibbons, J. W. and R. D. Semlitsch. 1981. Terrestrial drift fences with pitfall traps. Brimleyana. 1:1–16.

Lovett-Doust, J., M. Biernacki, R. Page, M. Chan, R. Natgunarajah, and G. Timis. 2003. Effects of land ownership and landscape-level factors on rare-species richness in natural areas of southern Ontario, Canada. Landscape Ecol. 18:621–633.

Meshaka, W. E., Jr. and K. Babbit. 2005. Amphibians and Reptiles: Status and Conservation in Florida. Krieger Publishing Company, Malabar, Fl.

Meshaka, W. E. Jr, B. P. Butterfield, and J. B. Hauge. 2004. The Exotic Amphibians and Reptiles of Florida. Krieger Publishing, Melbourne, FL.

——— and J. N. Layne. 2002. Herpetofauna of a long-unburned sandhill habitat in South Central Florida. Florida Scient. 65:35–50.

———, W. F. Loftus, and T. Steiner. 2000. The herpetofauna of Everglades National Park. Florida Scient. 63:84–104.

———, H. T. Smith, R. Severson, and M. A. Severson. 2005. Spatial picture of a gecko assemblage in flux. Florida Scient. 68:53–55.

O'Hare, N. K. and G. H. Dalrymple. 1997. Wildlife in Southern Everglades wetlands invaded by Melaleuca (*Melaleuca quinquenervia*). Bulletin of the Florida Mus. of Nat. Hist. 41:1–68.

Roberts, R. E., R. O. Woodbury, and J. Popenoe. 2006. Vascular plants of Jonathan Dickinson State Park. Florida Scient. 69:288–327.

Smith, H. T. and R. Engeman. 2004. A review of the colonization dynamics of the Northern Curly-Tailed Lizard (*Leiocephalus carinatus armouri*) in Florida. Florida Field Natur. 32:107–113.

Timmerman, W., J. B. Miller, and C. Tamborski. 1994a. Herpetofauna of Jonathan Dickinson State Park. Resource Management Notes. 6:11.

———. 1994b. Herpetofauna of Jonathan Dickinson State Park, Martin County, FL.Florida DEP, Division of Recreation and Parks, Tallahassee, FL.

Wilson, L. D. and L. Porras. 1983. The Ecological Impact of Man on the South Florida Herpetofauna. Univ. of Kansas, Mus. of Nat. Hist. Special Publication No. 9, Lawrence, KS.

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