

POPULATION STATUS AND MANAGEMENT OF THE GOPHER TORTOISE ON THE FITZHUGH CARTER TRACT OF ECONFINA CREEK WILDLIFE MANAGEMENT AREA

2016 PROGRESS REPORT



Prepared by:
Aubrey Pawlikowski, Wildlife Technician
Patrick McElhone, Wildlife Biologist
Division of Habitat and Species Conservation
Wildlife and Habitat Management Section



September 2016

TABLE OF CONTENTS

LIST OF FIGURES	3
LIST OF TABLES	4
INTRODUCTION	5
AREA DESCRIPTION.....	5
Overview.....	5
PROJECT GOALS	6
GOPHER TORTOISE SURVEY METHODOLOGY	6
RESULTS AND DISCUSSION.....	8
Activity Status.....	8
Cluster Use.....	9
Burrow Size Classes	11
MANAGEMENT RECOMMENDATIONS	12
Overview.....	12
Cluster 1	14
Cluster 2	14
Cluster 3	14
Cluster 4.....	14
Cluster 5A	14
Cluster 5B	15
LITERATURE CITED	16

LIST OF FIGURES

Figure 1. Distribution of gopher tortoise survey Clusters 1 – 5B and burrows with activity status located via visual searches using systematic transects across suitable habitat on the Carter Tract of Econfina Creek WMA, Washington County, Florida, May 2016.	7
Figure 2. Activity status of gopher tortoise burrows (n=439) located during 2016 surveys on the Carter Tract of Econfina Creek WMA, Washington County, Florida.	8
Figure 3. Annual change in activity status of gopher tortoise burrows from 2008-2016 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.	9
Figure 4. Distribution of gopher tortoise burrows by cluster on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2016.	10
Figure 5. Activity status by cluster of burrows on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2016.	10
Figure 6. Potential reproductive status of gopher tortoises determined by burrow width of active and possibly active burrows found on the Carter Tract of Econfina Creek WMA, Washington County, Florida, from 2012 to 2016.	12
Figure 7. Land management activities implemented by NFWFMD from 2015-2016 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.	13

LIST OF TABLES

Table 1. Size class distribution of active (n=133) and possibly active (n=42) gopher tortoise burrows surveyed May 2016 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.....	11
--	----

INTRODUCTION

The gopher tortoise is considered a keystone species for sandhill communities of the southeastern U.S. coastal plain. Gopher tortoise burrows have been known to support hundreds of obligate and non-obligate species (Jackson and Milstrey 1989; Cox et al. 1987). They are commonly found in upland areas with well-drained, sandy soils and are associated with longleaf pine (*Pinus palustris*) and xeric oak (*Quercus spp.*) communities. Ideal foraging habitat are areas of open canopy where plants have ample access to sunlight (Ashton and Ashton 2008).

The legal status of the gopher tortoise across the southeastern coastal plain varies by region. In 1979, it was listed as a Species of Special Concern (SSC) in the state of Florida, but it was not until 1988 that the harvest of tortoises was prohibited statewide. In November 2007, the state of Florida uplisted the species from a SSC to a state threatened species. The primary threat to the gopher tortoise population in Florida is habitat loss due to development and habitat degradation owing predominantly to fire suppression and incompatible forestry practices (Auffenberg and Franz 1982; McCoy and Mushinsky 2002).

AREA DESCRIPTION

Overview

The Fitzhugh Carter Tract (the Carter Tract) is a 2,175 acre independent parcel of Econfina Creek Wildlife Management Area located in south-central Washington County, approximately five miles north of State Road 20 and one mile west of State Road 77. The Northwest Florida Water Management District (NFWFMD) purchased the property in October 2003, and in June 2005 entered into a cost-share agreement with the Florida Fish and Wildlife Conservation Commission (FWC) to develop and implement a comprehensive fish and wildlife management program.

The physiographic region in which the Carter Tract is located is classified by the Florida Natural Areas Inventory (FNAI) as xeric upland sandhill (FNAI 2010). The site is characterized by relatively high, rolling topography with sandy soils overlaying limestone and containing numerous small solution ponds.

Interspersed within the 1,150 acres of uplands are approximately 875 acres of mesic and hydric habitats. The remaining 150 acres are natural sinkholes and sinkhole lakes. Lakeland and

Blanton soil types dominate the upland habitat of the Carter Tract. For more information on soil types see Martin and McElhone 2014.

PROJECT GOALS

The goal of the gopher tortoise survey project is the continuation of monitoring and assessing the status of the gopher tortoise population on the Carter Tract. Equally important is our commitment to providing management recommendations to the NFWFMD for the species. Changes in gopher tortoise population status can be an indicator of the health of xeric plant communities in this region. Therefore, monitoring the status of such populations can aid land managers in gauging the efficacy of management and restoration efforts.

GOPHER TORTOISE SURVEY METHODOLOGY

Comprehensive burrow counts were used to determine the relative abundance of tortoise populations. Surveys were conducted during May 2016, corresponding with a warmer month of the year when tortoises are known to exit their burrows more frequently, leaving tracks and disturbed sand. Survey methods followed those outlined in Martin and McElhone 2014, however, abandoned burrows that were noted as stake only or depression only in 2015 were not visited in 2016. Burrow clusters were defined by boundaries around mapped concentrations of tortoises (Figure 1).

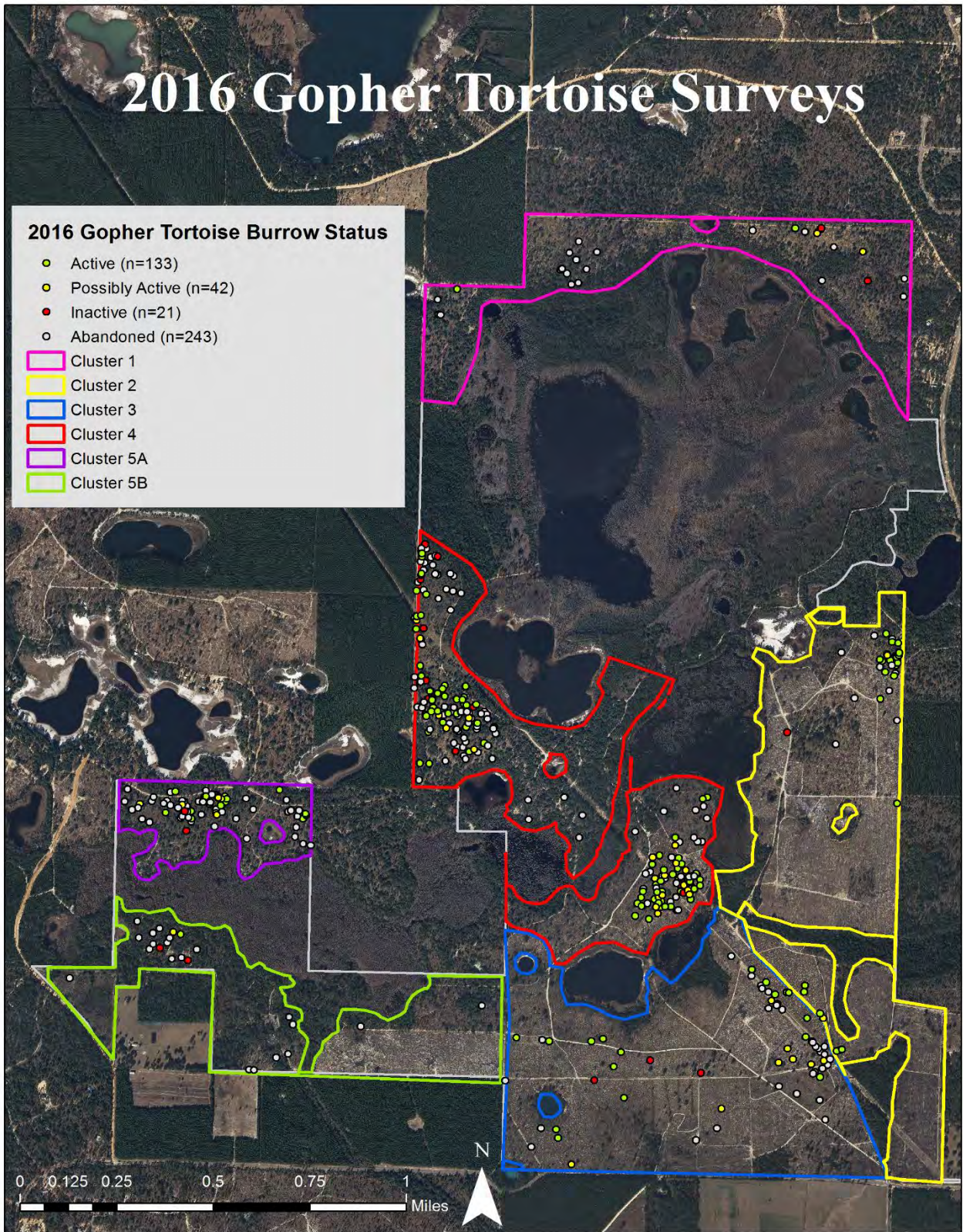


Figure 1. Distribution of gopher tortoise survey Clusters 1 – 5B and burrows with activity status located via visual searches using systematic transects across suitable habitat on the Carter Tract of Econfinia Creek WMA, Washington County, Florida, May 2016.

RESULTS AND DISCUSSION

Activity Status

A total of 439 burrows were documented across Carter Tract during the 2016 sampling season. Thirty percent (n=133) of burrows were found to be active, 10% (n=42) were possibly active, 5% (n=21) were inactive, and 55% (n=243) were old or abandoned (Figure 2).

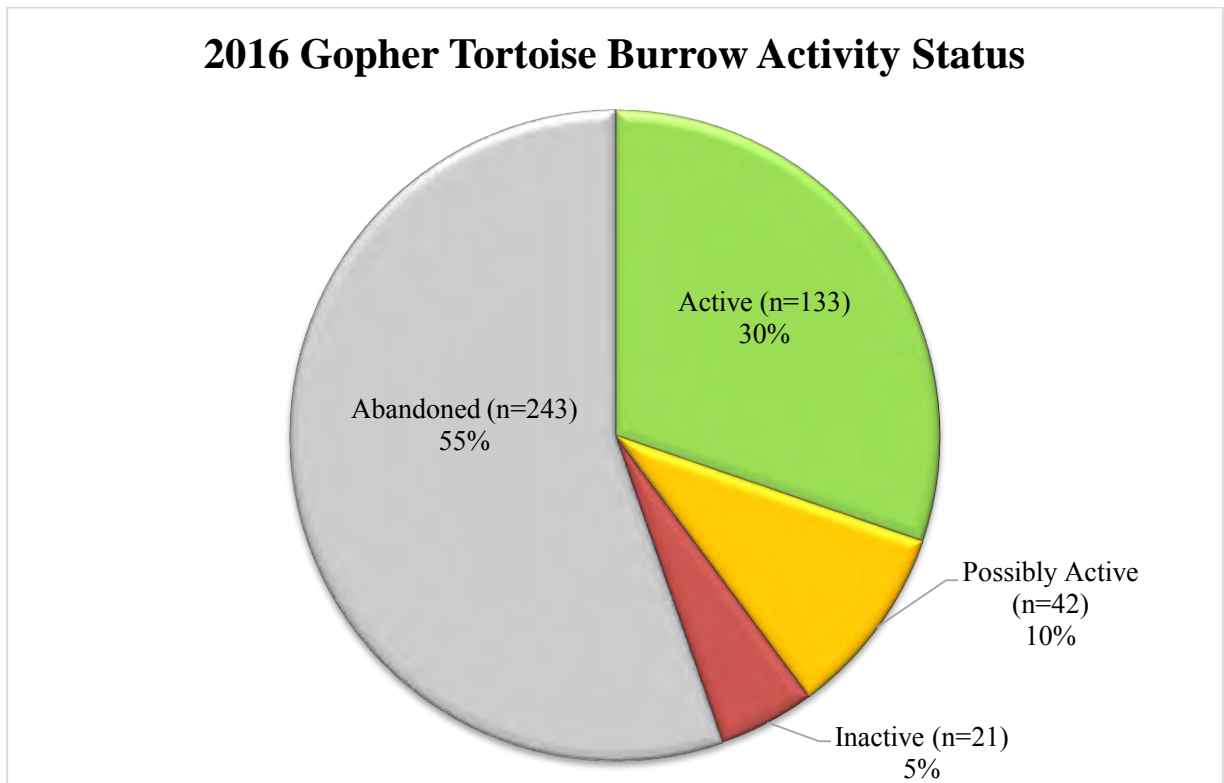


Figure 2. Activity status of gopher tortoise burrows (n=439) located during 2016 surveys on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

The total number of active and possibly active burrows increased by 13 in 2016. Since 2008, the number of active and possibly active burrows increased by 411% (Figure 3). Frequent burrow status changes are natural and expected (Mushinsky and Esman 1994). Burrow occupancy rates vary over time and space (Nomani et al. 2008) and burrow creation and abandonment is highly dynamic.

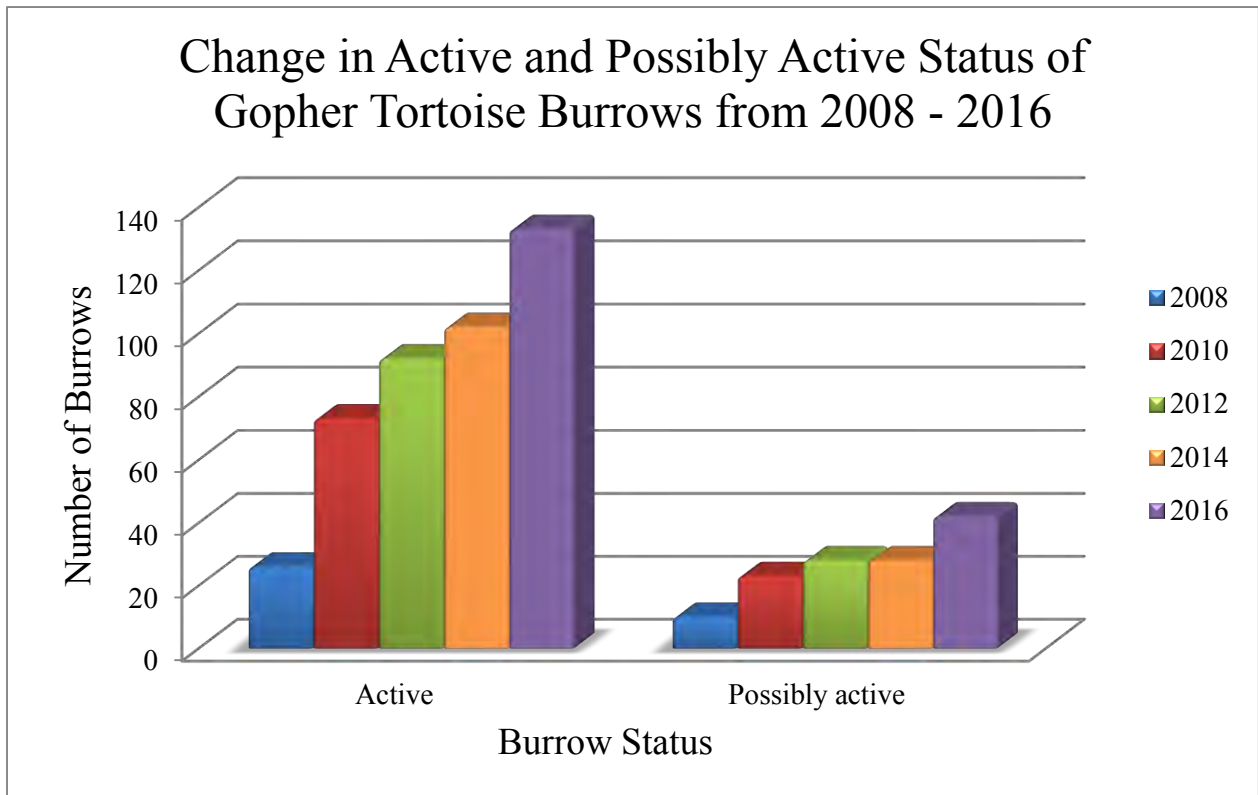


Figure 3. Annual change in activity status of gopher tortoise burrows from 2008-2016 on the Carter Tract of Econfinia Creek WMA, Washington County, Florida.

Cluster Use

Survey results from 2016 found the majority of burrows were located in Cluster 4 (50% of total burrows; Figure 4), which is consistent with previous years findings. The greatest number of active and possibly active burrows were also located in Cluster 4 (n=98; Figure 5). Cluster 4 saw a 36% increase in active and possibly active burrows from 2015 to 2016.

Distribution of Gopher Tortoise Burrows by Cluster in 2016

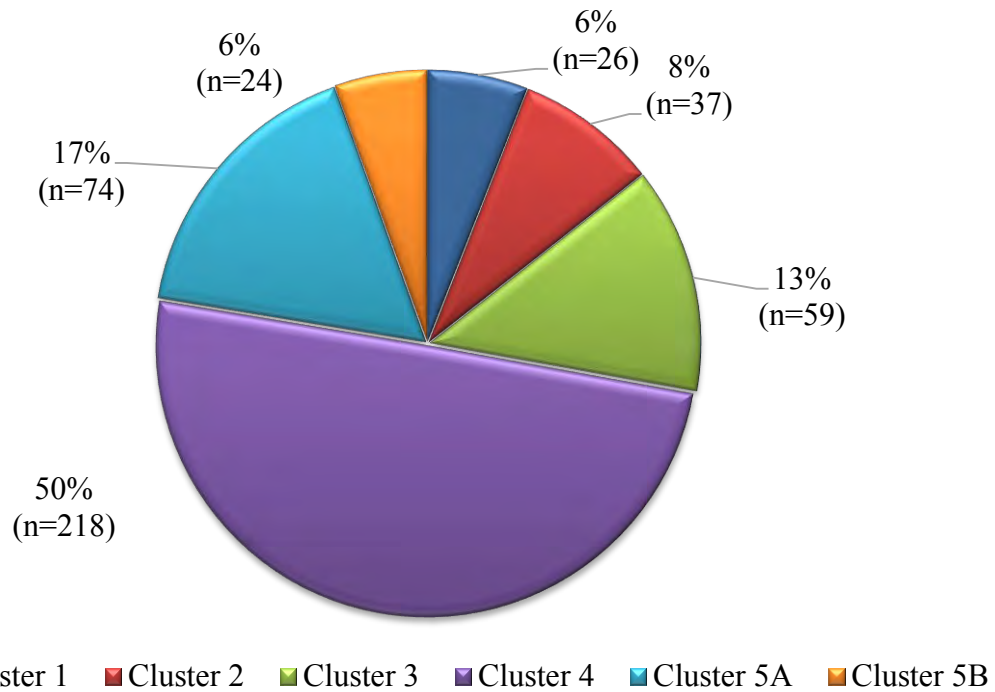


Figure 4. Distribution of gopher tortoise burrows by cluster on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2016.

2016 Activity Status By Cluster

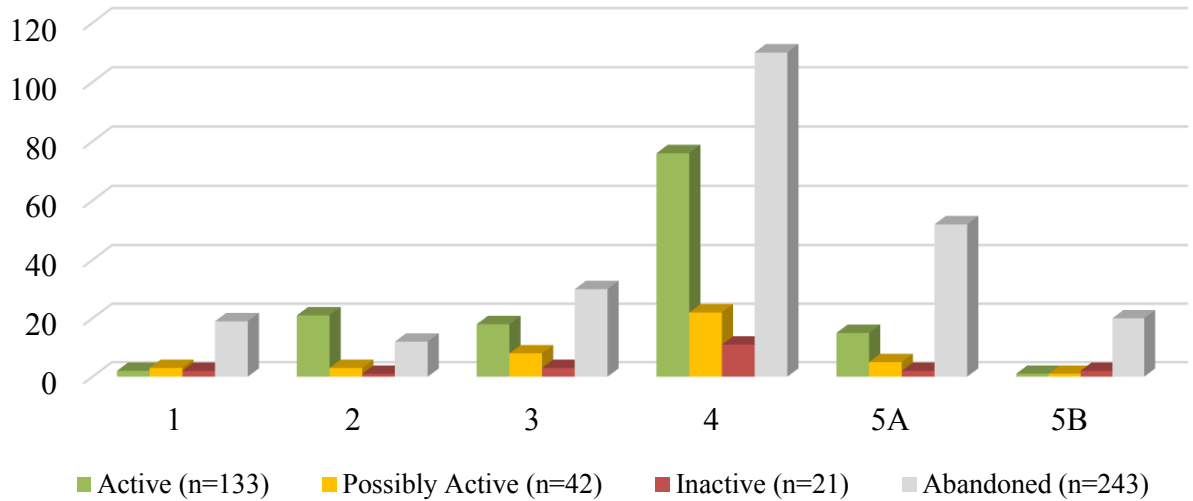


Figure 5. Activity status by cluster of burrows on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2016.

Cluster 5A remains the second most productive cluster with seventeen percent (n=74) of total burrows. Cluster 3 supports 13% (n=59) of tortoise burrows with 26 active or possibly active burrows in 2016. Cluster 2 contained eight percent (n=37) of total tortoise burrows on Carter Tract. Cluster 1 has consistently been one of the least robust areas for gopher tortoise burrows with only six percent (n=26) of total burrows detected. Cluster 5B was found to be the least productive cluster containing only five percent (n=24) of total burrows.

Burrow Size Classes

Since burrow widths correlate strongly with carapace lengths (CL) of the tortoise inhabiting them (Alford 1980; Martin and Layne 1987), the size distribution of burrow widths may reflect the size distribution of resident gopher tortoises. Still, smaller tortoises have been known to utilize burrows abandoned by larger individuals, thus some bias is inherent in our relative estimate and this data should only be used as an estimation of age class distribution (Ashton and Ashton 2008).

Table 1. Size class distribution of active (n=133) and possibly active (n=42) gopher tortoise burrows surveyed May 2016 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Burrow Width (cm)	Predicted Carapace Length (cm)	Age Class	Number of Burrows	% of Active and Possibly Active Burrows
5	5.80	Juvenile	31	18
10	10.67	Sub-adult	38	22
15	15.23	Sub-adult	42	24
20	19.62	Sub-adult	26	15
25	23.87	Adult	22	13
30	28.01	Adult	14	8
35	32.08	Adult	1	1
40	36.08	Adult	0	0

Among active and possibly active burrows measured on the Carter Tract this year, 21% (n=37) resulted in a CL corresponding to sexual maturity (CL \geq 19.62 cm) or potential breeders (Figure 6).

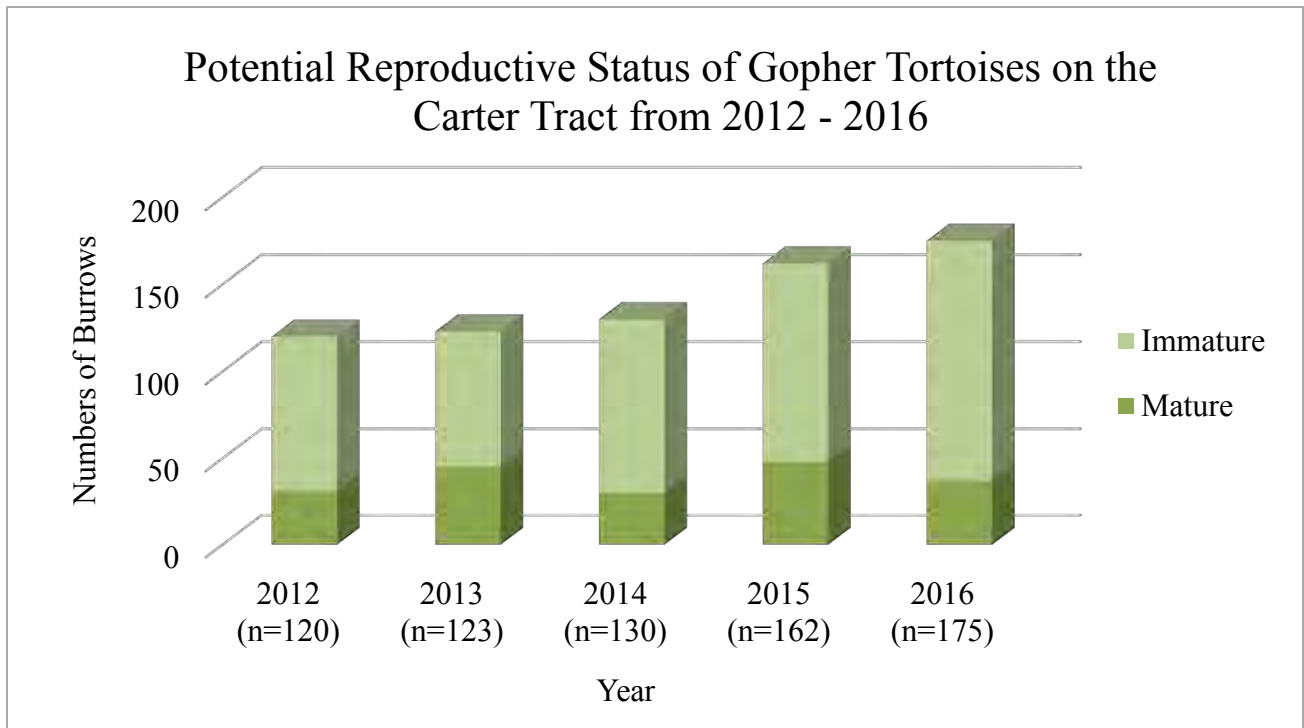


Figure 6. Potential reproductive status of gopher tortoises determined by burrow width of active and possibly active burrows found on the Carter Tract of Econfina Creek WMA, Washington County, Florida, from 2012 to 2016.

MANAGEMENT RECOMMENDATIONS

Overview

The continuation of management activities is imperative to the restoration and health of the Carter Tract landscape. Prescribed burning is the most important habitat enhancing element in sandhill communities, improving and increasing the herbaceous food supply and decreasing woody species. During 2015-2016, aggressive habitat enhancement techniques yielded a total of 52 acres of dormant season prescribed burns, 713 acres of prescribed growing season prescribed burns, and 83 acres of bahia and centipede grass removal across the property (Figure 7).

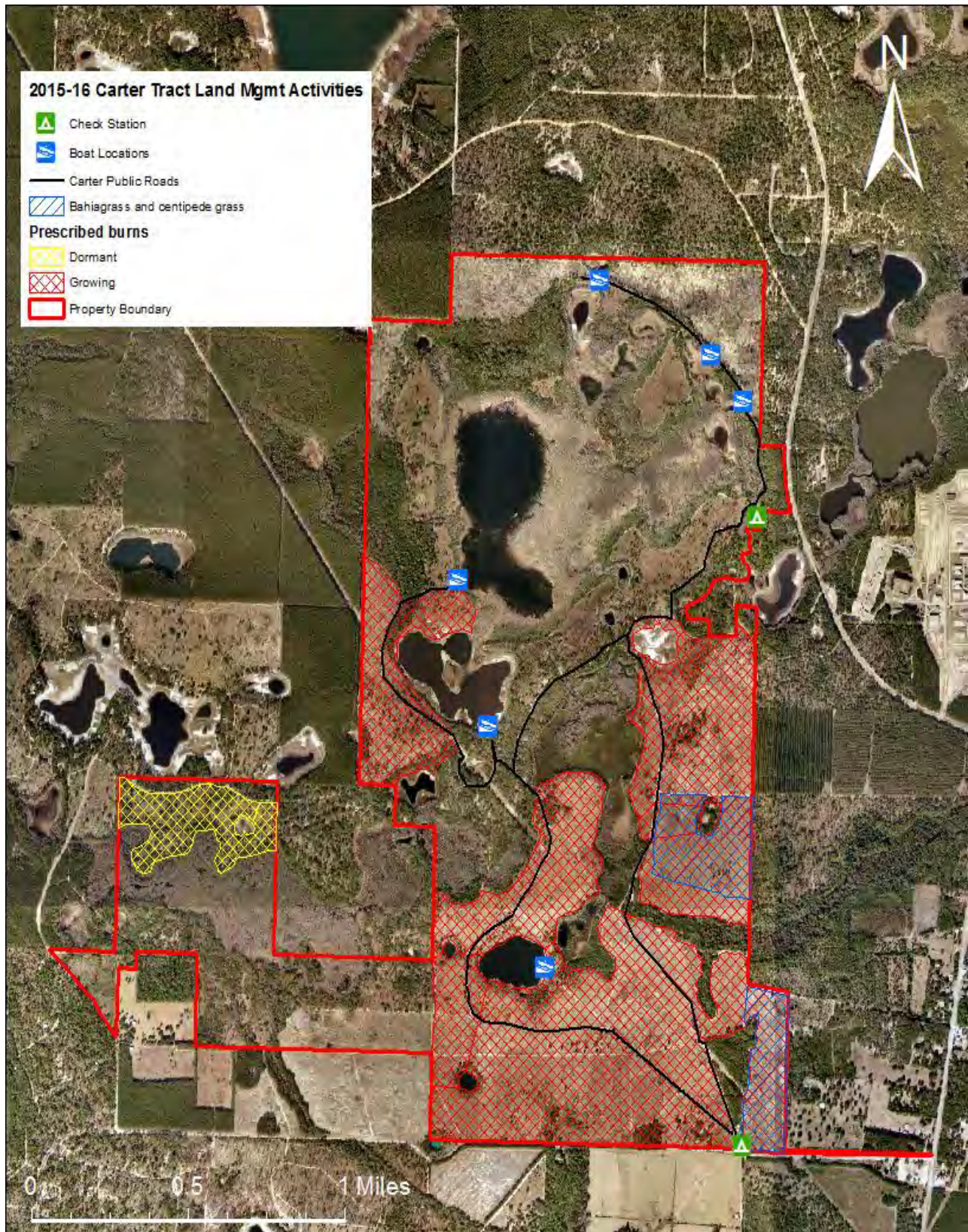


Figure 7. Land management activities implemented by NFWMD from 2015-2016 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Cluster 1

We suggest continuation of growing season burns on a two year rotation in an effort to maintain hardwood suppression and continue to promote native groundcover. Cluster 1 was last burned in May 2015, and following a two year interval, would be due to burn again in Spring of 2017. This strategy may help to promote immigration of offsite tortoises north of the Carter Tract into this cluster and will encourage expansion across the cluster by the current population. Tortoise dispersal to this cluster from within the property is difficult given its separation from other clusters by a mix of wet hardwoods and hydric pine flatwood habitats.

Cluster 2

We recommend the continuation of a two year burn regime throughout this cluster until sufficient herbaceous groundcover is established, at which time extending intervals between burns could be entertained. As a result of the successful 253 acre growing season burn in June 2016, this cluster will not need any active management in 2017.

Cluster 3

It is recommended that a two year burn regime is maintained throughout this cluster. As a result of the successful 296 acre growing season burn in June 2016, this cluster will not need any active management in 2017.

Cluster 4

We recommend a two-year burn regime to maintain groundcover levels and consume residual brush debris. As a result of the successful 164 acre growing season burn in June 2016, this cluster will not need any active management in 2017.

Cluster 5A

We suggest continuing this cluster on a two-year burn rotation. These efforts should facilitate movement of dispersing tortoises from adjacent offsite sandhills habitat into this cluster. As a result of the successful 52 acre dormant season burn in January 2016, this cluster will not need any active management in 2017.

Cluster 5B

We also suggest maintaining a two-year burn regime to further consume logging debris and promote the flowering and spread of planted wiregrass and other native groundcover species in this cluster. Therefore, a dormant burn is recommended in 2017.

LITERATURE CITED

- Alford, R.A. 1980. Population structure of *Gopherus polyphemus* in northern Florida. *Journal of Herpetology* 14:177-182.
- Ashton, P.S. and R.E. Ashton. 2008. *The Natural History and Management of the Gopher Tortoise (Gopherus polyphemus Daudin)*. Krieger Publishing Company, Malabar, FL.
- Auffenberg, W. and R. Franz. 1982. The status and distribution of the gopher tortoise (*Gopherus polyphemus*). Pp. 95-126 *In* R.B. Bury, ed. *North American tortoises: conservation and ecology*. USDI Fish and Wildlife Serv. Res. Rep. 12.
- Cox, J., D. Inkley and R. Kautz. 1987. Ecology and Habitat protection needs of gopher tortoise (*Gopherus polyphemus*) populations found on land slated for large scale development in Florida. Nongame Wildlife Program Technical Report No. 4. Florida Game and Fresh Water Fish Comm., Tallahassee, FL.
- Florida Natural Areas Inventory and Florida Department of Natural Resources (FNAI). 2010. *Guide to the Natural Communities of Florida*.
- Jackson, D.R. and E.G. Milstrey. 1989. The fauna of gopher tortoise burrows. Pp. 86-89 *In* Gopher tortoise relocation symposium proceedings (Diemer, J.E., D. R. Jackson, J.L. Landers, J.N. Layne and D.A. Wood, eds.). Florida Game and Fresh Water Fish Commission Nongame Wildlife Program Technical Report No. 5, Tallahassee.
- Martin, A.L. and P.M. McElhone. 2014. Population status and management of the gopher tortoise on the Fitzhugh Carter Tract of Econfina Creek Wildlife Management Area 2014 Status Report. Florida Fish and Wildlife Conservation Commission.
- Martin, P.L. and J.N. Layne. 1987. Relationship of gopher tortoise body size to burrow size in a southcentral Florida population. *Florida Scientist* 50:264-267.
- McCoy, E. D. and H. R. Mushinsky. 2002. Measuring the Success of Wildlife Community Restoration. *Ecological Applications* 12:1861-1871.
- Mushinsky, H.R. and L.A. Esman. 1994. Perceptions of gopher tortoise burrows over time. *Florida Field Naturalist* 22(1):1-7.
- Nomani, S. Z., R.R. Carthy and M.K. Oli. 2008. Comparison of Methods for Estimating Abundance of Gopher Tortoises. *Applied Herpetology* 5:13-31.