Habitat Quantification Tool Development for Sandhill and the Florida Pine Snake

Final Report to the

Florida Fish and Wildlife

Conservation Commission

June 2019

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Cover Photographs:

top:	Florida pine snake (*Pituophis melanoluecus mugitus*), FNAI
center:	Sandhill at Gold Head Branch State Park (Dan Hipes, FNAI); this site provides excellent habitat for the Florida pine snake.
bottom:	Long unburned sandhill (Dan Hipes, FNAI); this site is currently unsuitable for the Florida Pine Snake.

Recommended citation: Florida Natural Areas Inventory and NatureServe. 2019. Habitat Quantification Tool Development for Sandhill and the Florida Pine Snake. Report to the Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.

ABSTRACT

NatureServe and Florida Natural Areas Inventory (FNAI), in collaboration with Environmental Defense Fund's (EDF) Habitat Team, have been developing Habitat Quantification Tools (HQTs) to evaluate habitat quality for a core group of animal species that are characteristic of open pine systems. The tools compare site data characterizing canopy, mid-story, shrub, and ground cover vegetation, collected through on-the-ground rapid assessment. Reference values were based on species habitat needs and derived from sites in reference condition. The result is a set of values that reflect the ecosystem's composition, structure, function, and landscape context. The goals of this project were refinement of a Sandhill HQT, development of a Florida Pine Snake HQT, and production of a user manual for employment of these tools. During initial periods of this project FNAI led a series of field tests to refine and get feedback on the Sandhill HQT metrics and scoring. The recommended refinements were reviewed, considered, and incorporated into version 2.0 of the Sandhill HQT, which is the foundation of the Florida Pine Snake HQT with the addition of metrics that specifically address habitat features that support essential behaviors of the species. In order to develop a list of potential metrics for Florida pine snake habitat, FNAI contacted species experts within FWC and reviewed publications describing habitat needs and use. We developed a series of metrics (parameters) addressing soil suitability, above-ground cover, and below ground refuges. We then requested feedback from the species expert team. Adjustments were made to create version 2.4 of the Florida Pine Snake HQT. User manuals were produced for both the Sandhill HQT and the Florida Pine Snake HQT

ACKNOWLEDGMENTS

Environmental Defense Fund provided funding and coordination for the initial phase (prior to this project) of Habitat Quantification Tool (HQT) development; Paxton Ramsdell (EDF Southeast Habitat Program Manager) was instrumental in securing funding for this project and remains interested in practical implementation of the tools. We thank Joe Prenger (USFWS) for his interest and support of this project. Joe was always willing to share his time and ideas throughout the project. We thank Jennifer Goff (FWC Conservation Planning Services) for her initial thoughts on use of the HQTs and managing the contract for this project. We thank Dan Sullivan for agreeing to have this work done as a Task under the master contract administered by his office within FWC's Division of Habitat and Species Conservation. NatureServe was a sub-recipient of this Task; their work on Rapid Assessments is the foundation of the HQT effort. Michael Lee (NatureServe) was the programmer for the HQT; his ecological knowledge was essential to the details of habitat scoring. Finally, we thank Susan Carr (Northeast Florida Land Trust), Glenn Bartolotti (FWC field technician), and Blair Hayman (FWC Regional Species Conservation Biologist) for their participation in field tests and helpful comments for improvement of the HQTs

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BACKGROUND

NatureServe and Florida Natural Areas Inventory (FNAI), in collaboration with (Environmental Defense Fund's (EDF's) Habitat Team, initiated development of Habitat Quantification Tools (HQTs) to evaluate habitat quality for a core group of animal species that are characteristic of open pine systems. The tools compare site data characterizing canopy, mid-story, shrub, and ground cover vegetation, collected through on-the-ground rapid assessment. Reference values were based on species habitat needs and derived from sites in reference condition. The result is a set of values that reflect the ecosystem's composition, structure, function, and landscape context. HQT output values include a numeric score and a categorical excellent, good, fair, or poor score for the overall assessment as well as the individual strata and landscape scores.

The goal of this project was to continue to refine the quantification tool for rapid assessment of longleaf pine systems and to provide utility for a wide range of landowners, land managers, wildlife technicians, and other natural resource practitioners who are interested in habitat or system evaluations. The tools are not designed to accommodate detailed habitat monitoring data, but are rapid assessment tools expected to provide a score or measure of habitat quality and possibly guidance for improvement. Florida Fish and Wildlife Conservation Commission (FWC) with support from U.S. Fish and Wildlife Service has agreed to fund continued development of the HQT for possible use with landowner assistance programs. This work is being done as a Task Assignment under an existing FWC contract with FNAI. Leading up to this Task, NatureServe developed a prototype Sandhill HQT and, with assistance from FNAI, conducted an initial field test in north-central Florida. Revisions to several of the value ranges were proposed and then revised under this Task with additional field testing.

Specific items in this Task are refinement of a Sandhill HQT, development of a Florida Pine Snake HQT, and production of a user manual for employment of these tools. The Sandhill HQT is the foundation of the Pine Snake HQT with the addition of a few metrics that specifically address habitat features that support essential behaviors of the species. Although there is a great deal of overlap, a user manuals was produced for both the Sandhill and Florida pine snake HQT.

WORK UNDER THIS TASK

First Interim Period (August-September 2018)

Initial work under this task focused on the refinement of the sandhill HQT. New field forms with proposed changes to the value ranges were created for further field testing. A field trip was conducted September 4 through 6 in Clay County, Florida. Participants included staff from FNAI, NatureServe, and North Florida Land Trust with assistance from the staff at Gold Head Branch State Park and Camp Blanding Training Site. The team identified field sites of known quality and developed consensus on the perceived condition of specific strata. We then recorded the various habitat variables (metrics) describing vegetative structure and composition of each site. The values were translated to ratings of excellent, good, fair and poor (later revised to A, B, C, and D); which were evaluated against our initial judgment for each metric. Notes from the team are summarized for each metric in Appendix A. Copies of the field forms completed during the September field trip also are included in Appendix A.

Second Interim Period (October-December)

The recommended refinements from the September field test were reviewed, considered, and incorporated into version 2.0 of the Sandhill HQT. In order to test these refinements we conducted a one-day field test in Nassau County at Ralph E. Simmons State Forest. Participants included staff from FNAI (Dan Hipes), North Florida Land Trust (Susan Carr), and USFWS (Joe Prenger). Data was recorded at three sites of varying quality. Summarized notes from the October test are provided below along with follow-up consensus from the FNAI/NatureServe/EDF team. Many of these ideas were considered previously, but are included here for completeness.

Field comments from Dan Hipes, Joe Prenger and Susan Carr, October 17, 2018:

1. Regarding recording values for longleaf pine only in the canopy metrics it was mentioned in the field that although longleaf pine is characteristic of the sandhill system, other southern yellow pine provide a similar ecological role, or at least some benefit to the system.

   Response: Although we recognize some benefit of other pine species, we want the tool to reflect the importance of longleaf pine to the sandhill system. This may encourage longleaf pine planting in restoration areas or sites receiving funds for wildlife habitat improvements. A reviewer also noted that "other pine species have difficulty regenerating under an appropriate prescribed burning regime needed to maintain habitat quality, making the other pines much less sustainable in providing long-term canopy benefits"

2. Consider adding canopy hardwood cover instead of or in addition to canopy hardwood basal area.

   Response: Recording of canopy hardwood basal area along with the other basal area measurements is efficient. Goals of America's Longleaf (http://www.americaslongleaf.org/) specifically address canopy hardwood basal area.

3. Consider using a stem count (rather than cover estimate) for hardwood and pine midstory.

   Response: Although stem counts are a reasonable approach to documenting the level of midstory components, the cover estimate method was chosen to be consistent with America's Longleaf.

4. Consider adding the 5 inch rule for differentiating between midstory and canopy rather than just the minimum height of 10 ft. Differentiating midstory and canopy oaks continues to be problematic.

Response: Field assessors have the option to use the 5 inch rule if it seems suitable for a site, but not explicitly requiring it allows flexibility needed for varying sites.

5. The B range (formerly good) for Midstory Fire-Tolerant Hardwood Cover may allow too much hardwood midstory. The C range is comparatively narrow.

   Response: Addressed; see also # 6

6. There is a mistake on the field form in the A range for Midstory Fire-Tolerant Cover; the value conflicts with the field guide. The values in the field guide are 2 to <10%, 10 to 20% or <2%; <20 to 25%; >25% which compresses the c (fair) range. Field team recommends the following: Midstory Fire-Tolerant Hardwood Cover (suggested cutoffs): 2 to 5%; 5 to 15% or <2%; 15 to 25; >25. The cuttoffs for Midstory Fire-Intolerant look fine.

   Response: The discrepancy was corrected by accepting the field team recommended cutoffs. The changes are reflected in the latest version of the Xeric Longleaf Pine (Sandhill) HQT field forms, field guide, and web tool as well as the prototype for the Florida Pine Snake HQT.

7. Time since fire has a substantial effect on herbaceous ground cover (percent). We visited otherwise similar sites with vastly different estimates for cover resulting from a recent (6 months) fire (How is this accounted for?).

   Response: We've considered adding a check box on the field form to indicate if a site has burned in the last 6 months. It has been proposed that this would bump the score up one category but has not been implemented pending additional field data to support the change.

8. We had difficulty in consistently estimating herbaceous groundcover using the "canopy" technique. It is particularly difficult for wiregrass, which can have a broad indistinct "canopy", but a very low cover. The idea of using a series of (virtual) subplots was brought up. We also talked about training examples (photos/figures).

   Response: The "canopy" technique of estimating cover is a generally accepted and employed method and is consistent with Americas Longleaf based on the goal cover value ranges. We recognize that there is difficulty in assessing cover in a large plot but believe it takes into account heterogeneity within the plot and overall site.

9. Consider a check box for planted stands.

   Response: A planted stand check box has been considered previously. We presume the structural data will "tell the story", but will continue to consider the value of this information.

In order to develop a list of potential metrics to evaluate Florida pine snake habitat we contacted Kevin Enge and Anna Farmer. Kevin provided the Status Assessments of the Southern Hog-nosed snake, Florida Pinesnake, Short-tailed Kingsnake and eastern Diamondback Rattlesnake in Florida (Enge et al. 2016). We also reviewed the Range-wide Habitat Suitability Models for At-Risk Species in the Longleaf Pine System (Crawford Maerz 2018), and the Species Action Plan for the Florida Pine Snake (FWC 2013). Although these documents provide some information on general habitat needs, their focus is on large-scale conservation and lacked the level of detail desired for development of site-specific metrics. The most useful reference was a study conducted at the Joseph W Jones Ecological Research Center in Baker County (southern) Georgia, where Miller et. al. (2012) described home range size and habitat use by Florida pine snake. That study showed that while at the surface, pine snakes selected sites with more shrub cover and less bare ground than generally available. It appears that grasses also were important in their study area, but the result was not significant. Southeastern pocket gopher burrows accounted for more than 60 percent of the below ground observations. Kevin Enge also recommended that we talk to Glenn Bartolotti, who is/was working for FWC on a Florida pine snake telemetry project at two sites in northern Florida and has insights on microhabitat use.

FNAI (Dan Hipes) contacted Blair Hayman, Glenn's supervisor, who is conducting research on habitat use by pine snakes. Blair provided a raw dataset that included a series of parameters recorded at specific sites where pine snakes were observed. Although the data were collected using a different protocol the parameters are very similar to those included in the sandhill HQT, emphasizing the importance of using the sandhill HQT as the foundation of the Florida pine snake HQT. Three parameters addressed in Blair's project that are not included in the sandhill HQT are bareground cover, litter cover, and coarse woody cover. These were given consideration for inclusion in the pine snake HQT, but Blair's initial analyses as well as the Miller et al. (2012) mentioned above showed no correlation with use.

FNAI (Dan Hipes) and USFWS (Joe Prenger) staff met with Glenn at Suwannee Ridge WEA to discuss and consider additional habitat features that are essential to Florida pine snakes. We tracked the location of 9 pine snakes. Most of them were underground in pocket gopher burrows (reinforcing their importance at sites that support pocket gophers), or gopher tortoise burrows. One pine snake was in an unidentified mammal burrow; one was presumed to be in a stump hole (rotted root cavity); and two were above ground under the cover of resprouting oak trees at separate locations. Glenn emphasized the importance of these tree resprouts (subsequent to prescribed fire) and dense wiregrass and bluestem patches, which has become apparent to him based on the high percentage of individuals observed in these situations. Glenn's observations are consistent with Miller et al (2012; mentioned above).

Following the field trip, taking into account the information presented in the recent documents mentioned above and insights from the field we developed the following list of parameters to include in Florida pine snake HQT:

<u>Soil Suitability (based on USDA soil drainage class)</u>

- Excessively drained to well drained soils cover more than 500 acres.
- Excessively drained to well drained soils cover 200 to 500 acres.
- Excessively drained to well drained soils cover 100 to 200 acres.

- Excessively drained to well drained soils cover 1 to 100 acres
- Excessively drained to well drained soils absent

Woody above-ground thermoregulation cover

- Two or more coppiced tree resprouts per acre
- Coppiced tree resprouts present, but less than two per acre
- Coppiced tree resprouts absent

Herbaceous above-ground thermoregulation cover

- Bunch grasses covering more than 10 percent of the ground
- Bunch grasses present but less than 10 percent of the ground
- Bunch grasses absent

Refugia (The below items are y/n check boxes in the prototype; we are considering how to further quantify these items.)

- Pocket gopher burrows
- Other mammal burrows
- Gopher tortoise burrows
- Stump holes (as indicated by remaining cut stumps and/or standing snags)

These parameters were added to the Sandhill HQT to produce the prototype Florida pine snake HQT, with the overall site score being calculated by multiplying the combined essential behaviors score (0 to 1) by the other overall habitat metric score (i.e. the pine snake HQT score cannot be better than the stand-alone sandhill score).

Third Interim Period (January-March 2019)

Following the delivery of the second interim report we once again requested feedback from Kevin Enge, who we felt had the most experience among our partners with pine snake habitat needs. Kevin confirmed that our selected parameters were important with some uncertainty about the relative importance of coppiced shrubs across the range of pine snakes. The tool's score calculations were adjusted to reflect the equal importance of bunch grasses for above-ground cover.

We also met with Tony Grossman (FWC, Office of Conservation Planning Services) to get his insights on the Pine Snake HQT as well as discuss considerations for implementation of the tool as part of a landowner incentive/assistance program. Tony's comments helped refine names and definitions of the metrics; he also provided helpful thoughts on scoring.

FNAI staff met with Joe Prenger, Blair Hayman and Glenn Bartolotti at Fort White Wildlife and Environmental Area to once again look at specific locations used by pine snakes and discuss habitat characteristics that are apparently important based on telemetry data and specific locations where pine snakes have been observed. We tracked a radioed pine snake to a gopher tortoise burrow and another to a small shrub under which it was "thermoregulating" (basking), again, reinforcing the need for this kind of structure. Some cursory data was collected to

complete the Florida pine snake HQT field form to make sure the parameter values could be determined in the field.

FNAI staff also visited a location at Jennings State Forest that has multiple records for pine snake observations to complete the field form and later consider the appropriateness of the site score. We also revisited test locations for the sandhill HQT at Gold Head Branch State Park and Camp Blanding Training Site to record data for the essential behaviors section of the pine snake HQT and again consider how well the scores match the apparent habitat

With the series of revisions to the sandhill HQT and the Florida pine snake metrics, the scores seem to be appropriate for the sites that have been visited. The Pine Snake Habitat Quantification Tool (HQT) summarizes individual metric scores into 5 categories:

1. Essential Behaviors (required)
2. Canopy
3. Midstory
4. Ground
5. Landscape

The individual metrics that comprise each category are averaged by a simple arithmetic mean [sum(Scores)/count(Scores)]. The Essential Behaviors category requires the presence of each sub metric in order to be scored, so if any metric receives a score of zero, the overall score is also zero. The latter 4 category scores are averaged together via arithmetic mean to calculate a Vegetation/Landscape score. This is then averaged with the essential behaviors score via a geometric mean:

$$\sqrt{(VegLandScapeScore \times EssentialBehaviorScore)}$$

The geometric mean is a widely accepted mathematic summarization technique when all components are necessary in the final answer, or when one category's shortfall can't be addressed by increases in another category.

Because there is high variability (seasonal and spatial) in sites that support Florida pine snake, additional scrutiny is warranted in atypical or anthropogenic habitats. We expect the tool to be useful in atypical habitat, but testing focused on natural areas of varying quality and apparent suitability. An improvement may be needed for marginally suitable sites. Our incomplete knowledge of specific values representing pine snake essential behaviors prevented more than three categories for several of the metrics and a yes or no for refugia parameters. The result is a low level of discrimination toward the unsuitable end of the spectrum, with the score defaulting to 'poor' and an overall score of 0 (as described above). The final results of Blair Hayman's current project (or some follow-up research) may inform some additional refinement that would produce scores in a "fair" category.

A second focus of the third quarter was to produce draft of the user manuals for the sandhill and Florida pine snake HQTs. The document for use with sandhill is designed to be used with other system HQT's that may be developed (an early prototype mesic flatwoods HQT has been

developed and others may follow pending funding). Draft documents were submitted with the third interim report along with the revised prototype Florida Pine Snake HQT field form.

Final Interim period (April – June 2019)

The focus for the final period of this Task was finalizing the HQT user manuals and upload of all of the Florida pine snake test site data onto the HQT web site for review and reference. Revisions were made to the manuals based on comments received from FWC as well as internal review. The user manual for the sandhill HQT is provided as Appendix B. The user manual for the Florida pine snake HQT along with the revised prototype Florida Pine Snake HQT field form is provided as Appendix C. Summarized output scores for all of the pine snake test sites are included in Appendix D. These test data can be viewed in the Florida pine snake HQT by selecting one of the sites in the "select example site" menu. Users can add or adjust the "dummy data" for the essential behaviors to see the current functionality. This is the best way to learn and help further evaluate the tool. Although this current project is ending, further refinement of the essential behavior section would improve the utility of the tool. Future desired use of the tool may help direct refinement. As stated previously, additional metrics or modifications to existing metrics will be considered. We expect the tool to evolve and improve with use.

Appendix A: Summarized notes and field forms from September 4-6, 2018 Sandhill HQT field test:

A field trip was conducted September 4 through 6 in Clay County, Florida to evaluate the scoring of the Sandhill HQT. Locations for testing are shown in Figure 1 below. Participants included staff from FNAI, NatureServe, and North Florida Land Trust with assistance from the staff at Gold Head Branch State Park and Camp Blanding Training Site.

Summarized Notes and metric score cutoffs (from the field forms):

Basal Area of Southern Yellow Pine includes only longleaf pine in in the sandhill HQT. The ranges are consistent with recommendations for red-cockaded woodpecker. Our field scores generally were in the good range for most of our sites. We could see that most were lacking trees in the moderate to high DBH range, and thus had room for improvement. There was some concern that an excellent site (in terms of canopy tree size and age structure) might only score good, but no change is recommended at this time.

Basal Area of Southern Yellow Pine Canopy Trees	*Xeric Longleaf Pine Barrens* **Rating Points**	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4):
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	
readings		

Southern Yellow Pine Canopy Cover scores were similar to the basal area scores and seemed appropriate for the sites. No recommended change.

Southern Yellow Pine Canopy Cover	*Xeric Longleaf Pine Barrens* **Rating Points**	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4):
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	

Based on field data during the August field test (not included in this Task) we revised (reduced) the threshold for Canopy Hardwood Basal Area: initial draft values were as follows: poor = >35; fair = >25-35; good = >20-25; excellent = up to 20. The revised values are shown below. They seem to work as long as the trees were turkey oak or some other fire tolerant hardwood characteristic of sandhill. There was some concern that fire-intolerant hardwoods could make up all or part of this cover, so an additional metric was added to capture that data (see next).

Canopy Hardwood Basal Area	*Xeric Longleaf Pine Barrens* **Rating Points**	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4):
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	
readings		

The draft ranges for fire-intolerant hardwood basal area are shown below. There is concern that this allows too much fire-intolerant hardwoods in the good and excellent ranges. This was not a problem with most of our sites, but may be at other locations. We should address this in future field tests.

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4):
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	
readings		

Based on field data during the August field test (again, not included in this Task) we revised the Midstory Fire-tolerant hardwood metric to account for the fact that some fire-tolerant hardwoods are desirable and should be present in sandhill midstory; we revised the excellent category so that if there was <2% cover the score dropped to good.

We also added a mid-story fire intolerant hardwood cover metric with the value ranges shown below. These seem to allow too much fire-intolerant hardwoods in the midstory, which is detrimental sandhill. Based on values recorded during the September field test, The FNAI recommendation for this metric is excellent = 0; good = <5%, fair = 5-15%, poor = >15%.

Based on field data from the August field test we revised (reduced) the cover values for overall woody cover. Rather than allowing an additional 10% for each category, we allow 5%. This still needs further consideration.

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4):
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4):
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4):
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	

Based on field data during the September field test, the team recommended that we should consider reducing the cover ranges for good and excellent tall shrubs to better reflect our general assessment of the sites. The team also mentioned that we should considered weighting tall shrub more than short because it is more indicative of fire history than short shrub cover.

The field team further noted that high mid-story and canopy covers can shade the shrub cover and lead to good or excellent scores. This may not be a problem, because the undesirable site conditions will be reflected in other metrics.

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points	
Shrubs 3-10 feet in height average <10% cover.	4	Rating (1-4):
Shrubs 3-10 feet in height average 10 to <20% cover.	3	
Shrubs 3-10 feet in height average 20 to 30% cover.	2	Raw Value:
Shrubs 3-10 feet in height average >30% cover.	1	

Based on field data during the September field test the team noted high variability in the short shrub covers that did not reflect the site quality (e.g. moderate to high cover of gopher apple). This nevertheless seems to be accounted for in the wide ranges in the values for scoring (see below).

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points	
Shrubs < 3 feet in height average <25% cover in the assessment area	4	Rating (1-4):
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3	
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2	Raw Value:
Shrubs < 3 feet in height average >45% cover in the assessment area	1	

The longleaf pine regeneration value ranges and corresponding scores were consistent with our field judgment. No recommended changes.

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points	
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4	Rating (1-4):
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3	
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2	Raw Value:
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1	

>10" DBH or cone-producing longleaf present ☐

The Overall Native Herbaceous Ground Cover value ranges and corresponding scores were consistent with our field judgment. No recommended changes for the field scoring, but because of the importance of herbaceous ground cover the team recommends a higher weighting in the HQT for at least one of the components.

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points	
40-100% herbaceous cover	4	Rating (1-4):
>25 to <40% herbaceous cover	3	
>15 to 25% herbaceous cover	2	Raw Value:
0-15% herbaceous cover	1	

No changes were recommended for Native Warm Season Grass Cover

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4):
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value:
<10% cover of all native warm season grasses	1	

Based on field data during the August field test we revised the threshold covers for wiry graminoid: The previous score ranges were as follows: poor = <5%; fair = 5-<15%; good = 15-<25%, or >95%; excellent =

20-95%. The revised value ranges provided below were consistent with our field determination of site conditions. No further changes were recommended.

Native Wiry Graminoid Cover	*Xeric Longleaf Pine Barrens* Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4):
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value:
<2% cover of all wiry graminoids	1	

Although we observed essentially no invasive plants in our field test sites, the value ranges for Invasive Plant Presence/Distribution and corresponding scores seem appropriate. No recommended changes.

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4):
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value:
Invasive nonnative plant species in any stratum common (>10% cover)	1	

Based on field data during the August field test we added a metric for indicators of soil disturbance. The value ranges and corresponding scores seem appropriate. No recommended changes.

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4):
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value:
Total cover for herbaceous indicators of soil disturbance >10%	1	

These notes and ideas for changes to HQT value ranges were discussed during multiple meetings between FNAI and NatureServe staff ecologist (Carl Nordman) and programmer (Michael Lee). The results of these discussions were shared with EDF staff on Sept 20, 2018 during a regularly scheduled (biweekly) update. All of the specific recommendations from the field team for changes to the cutoff values were implemented and are reflected in version 2.0 of the field forms (datasheets). Copies of the field forms completed during the September field trip, including notes from which the above was transcribed, are included below.

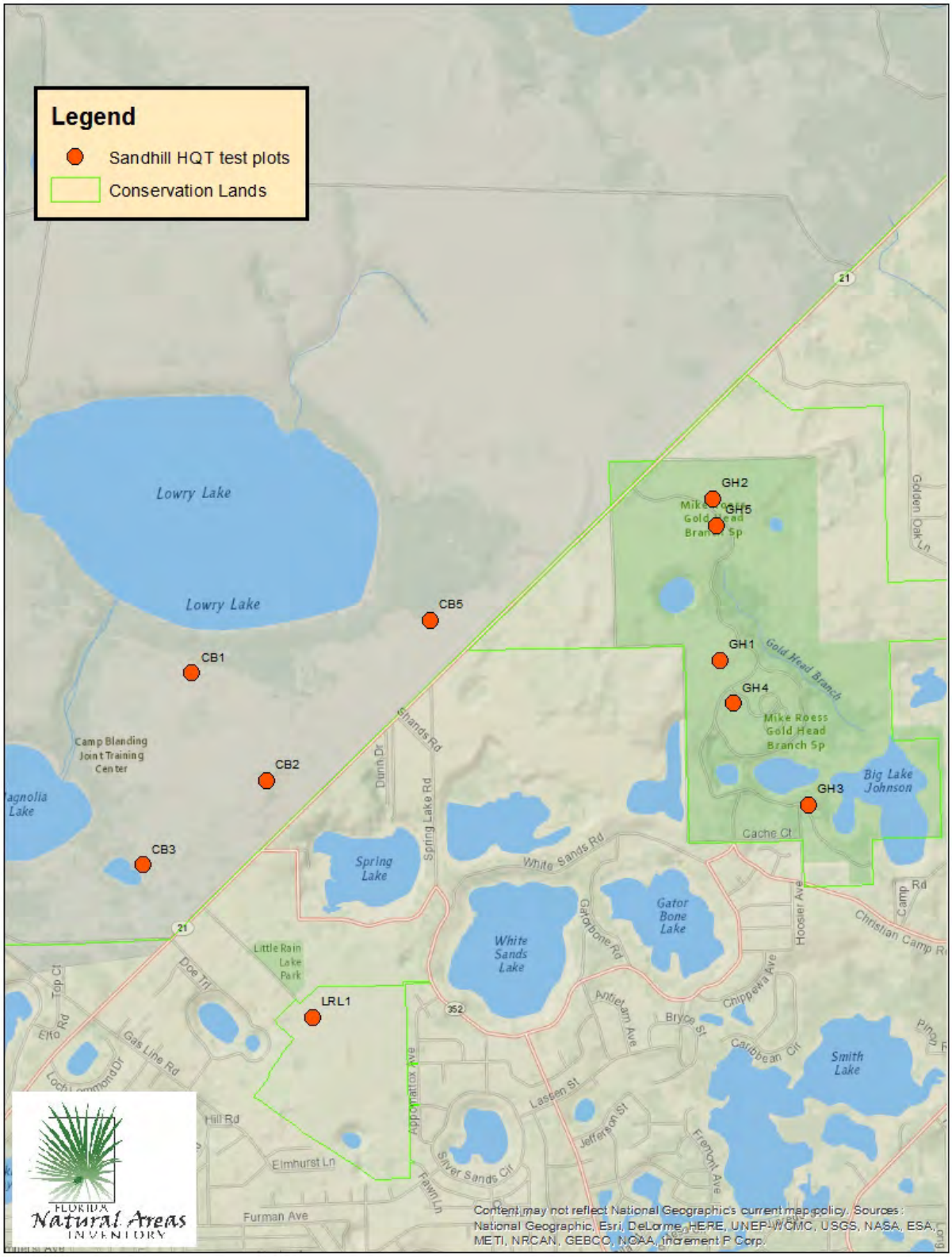

Figure 1. Locations of sample plots for the September 4-6, 2018 Sandhill HQT field test.

State/Prov: FL **Site:** Gold Head Branch State Park **ObsArea Code:** GH1
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/04 **ObsID:** 9936
Observers: Dan Hipes, Michael Lee, Susan Carr, Tracy Sleek

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.61	A-
Rank Factor: CONDITION	0.7			3.61	A-
MEF: VEGETATION	0.55			3.53	A-
Basal Area of Southern Yellow Pine Canopy Trees	1	C	2		
Southern Yellow Pine Canopy Cover	1	C	2		
rating 4 too high!					
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	C	2		
flat-top present					
Canopy Hardwood Basal Area	1	A	4		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
there was a comment regarding the high end being too high of a BA; can have excellent quality sandhill with BA of 20 of cover of 15%					
Midstory Fire-Tolerant Hardwood Cover	1	A	4		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
rating 4 too high					
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
see note					
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	A	4		
>10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	B	3		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		
<1%					

Note: Needle drop add?

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 1 Date: 9/4/2018

Event details

Site Name: Guldhead State Park Team: Dan Hipes, Susan Carr, Tracey Sleeth, Michael Lee

GPS Unit: Trimble

Datum: WGS84

UTM-E: 29°55'03.06" Lat meters DMS

UTM-N: -81°57'15.50" Long meters DMS

PDOP:

Number of Satellites:

accuracy 40cm

Ecological System: Sandhill (North Central FL)

Assessment Area/Site Description: Sandhill with in tact native groundcover - burned 18 months prior

Directions to plot: In the park west of the ravine NW of Camping Loop

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 2
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	12.5
readings: 10 | 20 | 0 | 20		

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris) TOO HIGH!	4	Rating (1-4): 2
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	13%

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 2
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	2.5
readings: 10 | 0 | 6 | 0		flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 4
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	2.5
readings: 0 | 10 | 0 | 0		

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 1 Date: 9/4/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points
≤5 ft2/acre basal area of fire intolerant hardwood trees	4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2
>20 ft2/acre basal area of fire intolerant hardwood trees	1

Rating (1-4): 4

Raw Value: 0

readings: 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1

Rating (1-4):

Raw Value:

list of DBHs

There was a comment re. regarding the high end being too high of a BA. Can have excellent quality Sandhill with BA of 20 or cover of 15%

Canopy Overall Ecological Assessment

comments

Also some concern regarding the number of fire-intolerant hardwoods allowed

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
2 to 10% cover of midstory fire-tolerant hardwoods	4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3
>20 to 25% cover of midstory fire-tolerant hardwoods	2
>25% cover of midstory fire-tolerant hardwoods	1

Rating (1-4): 4

Raw Value: 4

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
<5% cover of fire-intolerant hardwood midstory	4
5 to 10% cover of fire-intolerant hardwood midstory	3
>10 to 20% cover of fire-intolerant hardwood midstory	2
>20% cover of fire-intolerant hardwood midstory	1

Too High

Rating (1-4): 4

Raw Value: 0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points
2 to <15% cover of woody midstory	4
15 – 25%, or <2% cover of woody midstory	3
>25 to 35% cover of woody midstory	2
>35% cover of woody midstory	1

Rating (1-4): 4

Raw Value: 4

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH1 Date: 9/4/18

Midstory Overall Ecological Assessment

comments

See note under fire-intolerant

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 4

Raw Value: 16

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 2

Shrub Overall Ecological Assessment

comments

exceptional

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4):

Raw Value: 45

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 4

Raw Value: 1

>10" DBH or cone-producing longleaf present ☑

"Seems really good here"

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH1 Date: 9/4/18

Longleaf Pine Regeneration (Stand Level)	Rating Points
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1

Rating (1-4): Raw Value:

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover (Xeric Longleaf Pine Barrens)	Rating Points
25-95% cover of all native warm season grasses	4
15 to <25% or >95% cover of all native warm season grasses	3
10 to <15% cover of all native warm season grasses	2
<10% cover of all native warm season grasses	1

Rating (1-4): 4 Raw Value: 26

Native Wiry Graminoid Cover (Xeric Longleaf Pine Barrens)	Rating Points
20-95% cover of all wiry graminoids	4
10 to <20% or >95% cover of all wiry graminoids	3
2 to <10% cover of all wiry graminoids	2
<2% cover of all wiry graminoids	1

Rating (1-4): 3 Raw Value: 19

Invasive Plant Presence/Distribution	Rating Points
Invasive nonnative plant species absent	4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2
Invasive nonnative plant species in any stratum common (>10% cover)	1

Rating (1-4): Raw Value: 0

Herbaceous Indicators of Soil Disturbance	Rating Points
Total cover for herbaceous indicators of soil disturbance <2%	4
Total cover for herbaceous indicators of soil disturbance 2-5%	3
Total cover for herbaceous indicators of soil disturbance >5-10%	2
Total cover for herbaceous indicators of soil disturbance >10%	1

Rating (1-4): 4 Raw Value: <1

Groundcover Overall Ecological Assessment

comments: somewhat sparse because of relatively recent fire

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


GH1_1_090418

State/Prov: FL **Site:** Gold Head Branch State Park **ObsArea Code:** GH2
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/04 **ObsID:** 9937
Observers: Dan Hipes, Michael Lee, Susan Carr

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.45	B+
Rank Factor: CONDITION	0.7			3.45	B+
MEF: VEGETATION	0.55			3.53	A-
Basal Area of Southern Yellow Pine Canopy Trees	1	A	4		
Southern Yellow Pine Canopy Cover	1	B	3		
18+					
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	C	2		
flat-top present					
Canopy Hardwood Basal Area	1	A	4		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	B	3		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	B	3		
Midstory Overall Ecological Assessment	1				
Short Shrub (<3 feet tall) Cover	1	C	2		
45+					
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
is 5% tall shrub good or excellent					
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	A	4		
>1; >10" dbh or cone-producing longleaf present; arguably too much regeneration at this location but easily remedied by fire					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
Eupatorium					
MEF: SOIL	0.1			3.00	B+
Herbaceous Indicators of Soil Disturbance	1	B	3		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH2 Date: 9/4/18

Event details

Site Name: Cold Heart Branch SP Team: Hines, Lee, Car

GPS Unit: Trimble Geo 7X

Datum: WGS 84

UTM-E: 29 58 48.97 ~~meters~~ ft

UTM-N: 81 57 17.12 ~~meters~~ m

PDOP:

Number of Satellites:

Ecological System: Sandhill (North Central FL)

Assessment Area/Site Description: Good sandhill a few older trees, but missing an age class

Directions to plot: north side of entrance rd .4 miles from gate

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 4
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value: 25
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	

readings: 30 | 30 | 20 | 20

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value: 18+
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 2
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value: 5
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	

readings: 0 | 0 | 10 | 0 flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 4
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value: 2.5
>25 ft2/acre basal area of hardwood trees	1	

readings: 10 | 0 | 0 | 0

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GA2 Date: 9/4/14

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4): 4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	0

readings: 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points	
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4	Rating (1-4):
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3	
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2	Raw Value:
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1	

list of DBHs: —

Canopy Overall Ecological Assessment

comments: "Good" Missing large trees

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4): 3
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	1 %

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4): 4
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4): 3
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	1

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 2 Date: 7/4/18

Midstory Overall Ecological Assessment

comments: Sparse midstory. One more turkey oak would have moved it to "excellent"

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 2

Raw Value: 45+

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4):

Raw Value: 5

Shrub Overall Ecological Assessment

comments: is 5% good or excellent tall shrub

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 4

Raw Value: 58

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 4

Raw Value: >1

>10" DBH or cone-producing longleaf present ☑

arguably too much regen at this location, but easily remedied by fire

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CH2 Date: 9/4/18

Longleaf Pine Regeneration (Stand Level)	Rating Points
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1

Rating (1-4): Raw Value:

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover (Xeric Longleaf Pine Barrens)	Rating Points
25-95% cover of all native warm season grasses	4
15 to <25% or >95% cover of all native warm season grasses	3
10 to <15% cover of all native warm season grasses	2
<10% cover of all native warm season grasses	1

Rating (1-4): 4 Raw Value: 50

Native Wiry Graminoid Cover (Xeric Longleof Pine Barrens)	Rating Points
20-95% cover of all wiry graminoids	4
10 to <20% or >95% cover of all wiry graminoids	3
2 to <10% cover of all wiry graminoids	2
<2% cover of all wiry graminoids	1

Rating (1-4): ~~3~~ 4 Raw Value: 45

Invasive Plant Presence/Distribution	Rating Points
Invasive nonnative plant species absent	4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2
Invasive nonnative plant species in any stratum common (>10% cover)	1

Rating (1-4): 4 Raw Value: 0

Herbaceous Indicators of Soil Disturbance	Rating Points
Total cover for herbaceous indicators of soil disturbance <2%	4
Total cover for herbaceous indicators of soil disturbance 2-5%	3
Total cover for herbaceous indicators of soil disturbance >5-10%	2
Total cover for herbaceous indicators of soil disturbance >10%	1

Rating (1-4): 3 Raw Value: 2

Groundcover Overall Ecological Assessment

comments: Eupatorium a little high; otherwise would be excellent.

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


GH2_1_090418

State/Prov: FL **Site:** Gold Head Branch State Park **ObsArea Code:** GH3
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/06 **ObsID:** 9938
Observers: Dan Hipes

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				2.42	C+
Rank Factor: CONDITION	0.7			2.42	C+
MEF: VEGETATION	0.55			2.13	C+
Basal Area of Southern Yellow Pine Canopy Trees	1	C	2		
Southern Yellow Pine Canopy Cover	1	B	3		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	B	3		
flat-top present					
Canopy Hardwood Basal Area	1	D	1		
Canopy Hardwood Basal Area - Fire-Intolerant	1	D	1		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	B	3		
Midstory Fire-Intolerant Hardwood Cover	1	C	2		
Midstory Overall Woody Cover	1	B	3		
Midstory Overall Ecological Assessment	1				
addition fire-tolerant & intolerant covers problematic; site scores good but is not					
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
site scores excellent but because shrubs are suppressed by canopy					
Overall Native Herbaceous Ground Cover	1	D	1		
Longleaf Pine Regeneration	1	C	2		
>10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	D	1		
Native Wiry Graminoid Cover	1	D	1		
Invasive Plant Presence/Distribution	1	D	1		
Groundcover Overall Ecological Assessment	1				
score for lack of ground cover should be weighted high to reflect its importance to the system					
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 3 Date: 9/6/18

Event details

Site Name: Goldhead Branch SP Team: Hypes

GPS Unit:

Datum:

UTM-E: 29 49 21.45 meters

UTM-N: 81 56 47.82 meters

PDOP:

Number of Satellites:

Ecological System: Successional Hardwood forest on former Sandhill

Assessment Area/Site Description: Long unburned sandhill

Directions to plot: South of campground cabins

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 2
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	10

readings: 20 | 10 | 0 | 10

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	16

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 3
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	10

readings: 20 | 10 | 0 | 10 flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 1
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	37.5

readings: 30 | 40 | 60 | 20

37.5

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH3 Date: 9/6/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4): 1
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	27.50

readings 30 40 40 20

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points	
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4	Rating (1-4):
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3	
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2	Raw Value:
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1	

list of DBHs

Canopy Overall Ecological Assessment

comments: Low Canopy Cover - Score appropriate For old trees above hardwood Canopy mid story

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4): 3
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	0

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4): 2
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	18

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4): 3
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	18

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: Clt 3 Date: 9/6/18

Midstory Overall Ecological Assessment

comments: additive fire tolerant + ~~fire~~ intolerant covers problematic. Site scores good but is not.

Short Shrub (<3 feet tall) Cover	*Xeric Longleaf Pine Barrens* **Rating Points**	
Shrubs < 3 feet in height average <25% cover in the assessment area	4	Rating (1-4): 4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3	
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2	Raw Value:
Shrubs < 3 feet in height average >45% cover in the assessment area	1	7

Tall Shrub (3-10 feet tall) Cover	*Xeric Longleaf Pine Barrens* **Rating Points**	
Shrubs 3-10 feet in height average <10% cover.	4	Rating (1-4): 4
Shrubs 3-10 feet in height average 10 to <20% cover.	3	
Shrubs 3-10 feet in height average 20 to 30% cover.	2	Raw Value:
Shrubs 3-10 feet in height average >30% cover.	1	8

Shrub Overall Ecological Assessment

comments: Sites scores excellent, but because shrubs are suppressed by canopy

Overall Native Herbaceous Ground Cover	*Xeric Longleaf Pine Barrens* **Rating Points**	
40-100% herbaceous cover	4	Rating (1-4): 1
>25 to <40% herbaceous cover	3	
>15 to 25% herbaceous cover	2	Raw Value:
0-15% herbaceous cover	1	1

Longleaf Pine Regeneration	*Rapid Assessment Location* **Rating Points**	
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4	Rating (1-4): 2
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3	
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2	Raw Value:
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1	Ø2

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH3 Date: 9/6/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 1
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value: 0
<10% cover of all native warm season grasses	1	

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 1
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value: 0
<2% cover of all wiry graminoids	1	

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 1
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value: 0
Invasive nonnative plant species in any stratum common (>10% cover)	1	

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value: 0
Total cover for herbaceous indicators of soil disturbance >10%	1	

Groundcover Overall Ecological Assessment

comments

Lack of ground cover should be weighted high. to reflect its importance to the system

Score for

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


GH3_1_090618

State/Prov: FL **Site:** Gold Head Branch State Park **ObsArea Code:** GH4
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/06 **ObsID:** 9939
Observers: Dan Hipes

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.61	A-
Rank Factor: CONDITION	0.7			3.61	A-
MEF: VEGETATION	0.55			3.53	A-
Basal Area of Southern Yellow Pine Canopy Trees	1	B	3		
Southern Yellow Pine Canopy Cover	1	B	3		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	C	2		
flat-top present					
Canopy Hardwood Basal Area	1	B	3		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
could have a couple more older/larger pine trees; canopy hardwood is about right					
Midstory Fire-Tolerant Hardwood Cover	1	A	4		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
works because no fire-intolerant					
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
expect to see a few tall shrubs (turkey oak) again; 10% would be too much for excellent					
Overall Native Herbaceous Ground Cover	1	B	3		
Longleaf Pine Regeneration	1	B	3		
<1%; >10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
works even for this recently burned site					
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 4 Date: 9/6/18

Event details

Site Name: Goldhead Brm SP Team: H.Ipes

GPS Unit: Geo 7

Datum: WGS 84

UTM-E: 29 49 51.20 meters

UTM-N: 81 57 11.64 meters

PDOP: ± 45cm

Number of Satellites: 11

Ecological System: SH Sandhill (North-central FL)

Assessment Area/Site Description: 4 months since growing season burn excellent wiregrass cover

Directions to plot: west of day use area "Campground Loop"

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	20

readings 20 | 10 | 30 | 20

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	20

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 2
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	7.5

readings 10 | 0 | 20 | 0 flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 3
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	10

readings 10 | 10 | 10 | 10

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: 644 Date: 9/6/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points
≤5 ft2/acre basal area of fire intolerant hardwood trees	4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2
>20 ft2/acre basal area of fire intolerant hardwood trees	1

Rating (1-4): 4 ✓

Raw Value: 0

readings: 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1

Rating (1-4):

Raw Value:

list of DBHs

Canopy Overall Ecological Assessment

comments: Could have a couple more older/larger pine trees. Canopy hard wood is about right

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
2 to 10% cover of midstory fire-tolerant hardwoods	4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3
>20 to 25% cover of midstory fire-tolerant hardwoods	2
>25% cover of midstory fire-tolerant hardwoods	1

Rating (1-4): 4

Raw Value: 4

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
<5% cover of fire-intolerant hardwood midstory	4
5 to 10% cover of fire-intolerant hardwood midstory	3
>10 to 20% cover of fire-intolerant hardwood midstory	2
>20% cover of fire-intolerant hardwood midstory	1

Rating (1-4): 4

Raw Value: 0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points
2 to <15% cover of woody midstory	4
15 – 25%, or <2% cover of woody midstory	3
>25 to 35% cover of woody midstory	2
>35% cover of woody midstory	1

Rating (1-4): 4

Raw Value: 4

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CH 4 Date: 9/6/18

Midstory Overall Ecological Assessment

comments: works because no interfering

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens **Rating Points**	
Shrubs < 3 feet in height average <25% cover in the assessment area	4	Rating (1-4): 4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3	
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2	Raw Value: 20
Shrubs < 3 feet in height average >45% cover in the assessment area	1	

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens **Rating Points**	
Shrubs 3-10 feet in height average <10% cover.	4	Rating (1-4): 4
Shrubs 3-10 feet in height average 10 to <20% cover.	3	
Shrubs 3-10 feet in height average 20 to 30% cover.	2	Raw Value: 0
Shrubs 3-10 feet in height average >30% cover.	1	

Shrub Overall Ecological Assessment

comments: expect to see a few tall shrubs (turkey oak) again, 10% would be too much for excellent.

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens **Rating Points**	
40-100% herbaceous cover	4	Rating (1-4): 3
>25 to <40% herbaceous cover	3	
>15 to 25% herbaceous cover	2	Raw Value: 25
0-15% herbaceous cover	1	

Longleaf Pine Regeneration	Rapid Assessment Location **Rating Points**	
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4	Rating (1-4): 3
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3	
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2	Raw Value: <1%
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1	

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 4 Date: 9/6/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 4
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value:
<10% cover of all native warm season grasses	1	25

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 4
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value:
<2% cover of all wiry graminoids	1	34 25

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value:
Invasive nonnative plant species in any stratum common (>10% cover)	1	0

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value:
Total cover for herbaceous indicators of soil disturbance >10%	1	0

Groundcover Overall Ecological Assessment

comments: works ova for this recently burn site

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


GH4_1_090618

State/Prov: FL **Site:** Gold Head Branch State Park **ObsArea Code:** GH5

ObsArea Name: **Analysis Obs Code:**

Project: FL **County:** **ObsDate:** 2018/09/06 **ObsID:** 9940

Observers: Dan Hipes

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.83	A+
Rank Factor: CONDITION	0.7			3.83	A+
MEF: VEGETATION	0.55			3.80	A+
Basal Area of Southern Yellow Pine Canopy Trees	1	B	3		
Southern Yellow Pine Canopy Cover	1	A	4		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	B	3		
flat-top present					
Canopy Hardwood Basal Area	1	A	4		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	A	4		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	B	3		
<1; >10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		

Plot ID: GH5 Date: 9/6/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points
≤5 ft2/acre basal area of fire intolerant hardwood trees	4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2
>20 ft2/acre basal area of fire intolerant hardwood trees	1

Rating (1-4): 4

Raw Value: 0

readings: 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1

Rating (1-4):

Raw Value:

list of DBHs: -

Canopy Overall Ecological Assessment

comments: Could be improved by addition large trees

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
2 to 10% cover of midstory fire-tolerant hardwoods	4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3
>20 to 25% cover of midstory fire-tolerant hardwoods	2
>25% cover of midstory fire-tolerant hardwoods	1

Rating (1-4): 4

Raw Value: 4

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
<5% cover of fire-intolerant hardwood midstory	4
5 to 10% cover of fire-intolerant hardwood midstory	3
>10 to 20% cover of fire-intolerant hardwood midstory	2
>20% cover of fire-intolerant hardwood midstory	1

Rating (1-4): 4

Raw Value: 0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points
2 to <15% cover of woody midstory	4
15 – 25%, or <2% cover of woody midstory	3
>25 to 35% cover of woody midstory	2
>35% cover of woody midstory	1

Rating (1-4): 4

Raw Value: 4

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH 5 Date: 9/6/18

Event details

Site Name: Gold Head Branch SP Team: Hipes

GPS Unit: Geo 7

Datum: WGS 84

UTM-E: 29 52 41.35 meters

UTM-N: 81 57 16.24 meters

PDOP: ± 60 cm

Number of Satellites: 14

Ecological System: Sandhill FMAI reference site

Assessment Area/Site Description: Reference condition Sandhill

Directions to plot:

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	20

readings 40 | 10 | 10 | 20

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 4
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	22

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 3
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	10

readings 10 | 10 | 10 | 10 flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 4
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	0

readings 0 | 0 | 0 | 0

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: GH5 Date: 9/6/18

Midstory Overall Ecological Assessment

comments: excellent - scores are appropriate ✓

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 4

Raw Value: 17

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 1

Shrub Overall Ecological Assessment

comments: scores appropriate ✓

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 4

Raw Value: 70

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 3

Raw Value: <1

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CH 5 Date: 9/6/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 4
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value: 68
<10% cover of all native warm season grasses	1	

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 4
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value: 68
<2% cover of all wiry graminoids	1	

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value: 0
Invasive nonnative plant species in any stratum common (>10% cover)	1	

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value: 0
Total cover for herbaceous indicators of soil disturbance >10%	1	

Groundcover Overall Ecological Assessment

comments: Scores appropriate

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


GH5_1_090618

State/Prov: FL **Site:** Camp Blanding Joint Training Center **ObsArea Code:** CB1
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/05 **ObsID:** 9941
Observers: Dan Hipes, Michael Lee, Susan Carr

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.77	A-
Rank Factor: CONDITION	0.7			3.77	A-
MEF: VEGETATION	0.55			3.73	A-
Basal Area of Southern Yellow Pine Canopy Trees	1	A	4		
Southern Yellow Pine Canopy Cover	1	B	3		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	A	4		
flat-top present					
Canopy Hardwood Basal Area	1	B	3		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	A	4		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
2x3 = 1%; too many turkey oak					
Short Shrub (<3 feet tall) Cover	1	B	3		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
"too many turkey oak" (Susan Carr and Dan)					
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	B	3		
<1%; >10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		
<2%					

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB1 Date: 9/5/18

Event details

Site Name: Camp Blanding Team: Hipes, Lee, Carr

GPS Unit:

Datum:

UTM-E: 29 50 02.05 meters

UTM-N: 82 00 07.70 meters

PDOP: ± 45 cm

Number of Satellites:

Ecological System: Sandhill

Assessment Area/Site Description: Pretty good sandhill

Directions to plot: South side of Gable Rd

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 4
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value: 30
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	

readings: 30 | 30 | 20 | 40

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value: 14
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4):
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value: 0
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	

readings: 0 | 0 | 0 | 0 flat-top pine present ☑

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 2 3
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value: ~~12.50~~ 15
>25 ft2/acre basal area of hardwood trees	1	

readings: 0 | 30 | 0 | 30

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB01 Date: 9/5/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4): 4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	0

readings 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points	
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4	Rating (1-4):
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3	
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2	Raw Value:
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1	

list of DBHs

Canopy Overall Ecological Assessment

comments

No large trees (>12" dbh) pine scores seem appropriate

High cover of canopy Hardwoods borderline fair

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4): 4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	3

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4): 4
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4): 4
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	3

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CD 01 Date: 9/5/18

Midstory Overall Ecological Assessment

comments

2 @ 3" = 1%

"Too many turkey oak" ~~Too many turkey oak~~ Seems OK-good

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 3

Raw Value: 35

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 4

Shrub Overall Ecological Assessment

comments

"Too many turkey oak" (Susan Carr) and Dan suggest to reduce the excellent + good value ranges

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 4

Raw Value: 65

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 3

Raw Value: <1%

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: cb01 Date: 9/5/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 4
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value:
<10% cover of all native warm season grasses	1	63

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 4
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value:
<2% cover of all wiry graminoids	1	60

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value:
Invasive nonnative plant species in any stratum common (>10% cover)	1	0

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value:
Total cover for herbaceous indicators of soil disturbance >10%	1	<2

Groundcover Overall Ecological Assessment

comments: good groundcover scores appropriate

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


CB1_1_090518

State/Prov: FL **Site:** Camp Blanding Joint Training Center **ObsArea Code:** CB2
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/05 **ObsID:** 9942
Observers: Dan Hipes

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.61	A-
Rank Factor: CONDITION	0.7			3.61	A-
MEF: VEGETATION	0.55			3.53	A-
Basal Area of Southern Yellow Pine Canopy Trees	1	B	3		
Southern Yellow Pine Canopy Cover	1	C	2		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	B	3		
Canopy Hardwood Basal Area	1	A	4		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	B	3		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
some concern regarding amount of oak needed or allowed; maybe 1% is excellent					
Short Shrub (<3 feet tall) Cover	1	B	3		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	B	3		
<1%; >10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		
<2%					

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB 2 Date: 9/5/18

Event details

Site Name: Camp Blanding Team:

GPS Unit: Trimble Geo 7

Datum: WGS 84

UTM-E: 29 49 31.31 ~~meters~~

UTM-N: 81 59 43.90 ~~meters~~

PDOP: 1 60 cm

Number of Satellites: 7

Ecological System: Sand hill

Kestrel

Bachmans sparrow

Assessment Area/Site Description:

Directions to plot: South of Cable Rd

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 3
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	20

readings 10 | 20 | 30 | 20

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 2
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	6

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 3
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	7.5

readings 0 | 20 | 0 | 10 flat-top pine present ☐

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 4
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	0

readings 0 | 0 | 0 | 0

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: C13 2 Date: 9/5/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points
≤5 ft2/acre basal area of fire intolerant hardwood trees	4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2
>20 ft2/acre basal area of fire intolerant hardwood trees	1

Rating (1-4): 4

Raw Value:

readings 0 0 0 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1

Rating (1-4):

Raw Value:

list of DBHs

Canopy Overall Ecological Assessment

comments need more large or at least mature pines

Scores appropriate

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
2 to 10% cover of midstory fire-tolerant hardwoods	4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3
>20 to 25% cover of midstory fire-tolerant hardwoods	2
>25% cover of midstory fire-tolerant hardwoods	1

Rating (1-4): 3

Raw Value: 1

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
<5% cover of fire-intolerant hardwood midstory	4
5 to 10% cover of fire-intolerant hardwood midstory	3
>10 to 20% cover of fire-intolerant hardwood midstory	2
>20% cover of fire-intolerant hardwood midstory	1

Rating (1-4): 4

Raw Value: 0

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points
2 to <15% cover of woody midstory	4
15 – 25%, or <2% cover of woody midstory	3
>25 to 35% cover of woody midstory	2
>35% cover of woody midstory	1

Rating (1-4): 4

Raw Value: 1

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB 2 Date: 9/5/18

Midstory Overall Ecological Assessment

comments: Some concern regarding amount of oak needed or allowed. maybe 1% is excellent.

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 3

Raw Value: 30 -

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 1

Shrub Overall Ecological Assessment

comments: good - excellent scores appropriate

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 4

Raw Value: 75

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 3

Raw Value: <1

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB2 Date: 9/5/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 4
15 to <25% or >95% cover of all native warm season grasses	3	Raw Value:
10 to <15% cover of all native warm season grasses	2	
<10% cover of all native warm season grasses	1	70

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 4
10 to <20% or >95% cover of all wiry graminoids	3	Raw Value:
2 to <10% cover of all wiry graminoids	2	
<2% cover of all wiry graminoids	1	60

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	Raw Value:
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	
Invasive nonnative plant species in any stratum common (>10% cover)	1	0

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	Raw Value:
Total cover for herbaceous indicators of soil disturbance >5-10%	2	
Total cover for herbaceous indicators of soil disturbance >10%	1	<2

Groundcover Overall Ecological Assessment

comments: Overall groundcover - scores appropriate

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


CB2_1_090518

State/Prov: FL **Site:** Camp Blanding Joint Training Center **ObsArea Code:** CB3
ObsArea Name: **Analysis Obs Code:**
Project: FL **County:** **ObsDate:** 2018/09/05 **ObsID:** 9943
Observers: Dan Hipes, Michael Lee, Susan Carr

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				2.87	B-
Rank Factor: CONDITION	0.7			2.87	B-
MEF: VEGETATION	0.55			2.67	B-
Basal Area of Southern Yellow Pine Canopy Trees	1	D	1		
Southern Yellow Pine Canopy Cover	1	C	2		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	B	3		
Canopy Hardwood Basal Area	1	D	1		
Canopy Hardwood Basal Area - Fire-Intolerant	1	D	1		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
some concern that it scores too low and that it might score similar to a site with sand pine					
Midstory Fire-Tolerant Hardwood Cover	1	B	3		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
fire killed most of midstory; score seems right					
Short Shrub (<3 feet tall) Cover	1	B	3		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
may be too high for tall shrubs					
Overall Native Herbaceous Ground Cover	1	C	2		
Longleaf Pine Regeneration	1	C	2		
>10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	B	3		
Native Wiry Graminoid Cover	1	B	3		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB 3 Date: 9/5/18

Event details

Site Name:	Camp Blanding
GPS Unit:	Trimble Geo 7
Datum:	WGS 84
UTM-E:	29 49 10.26 meters
UTM-N:	81 59 57.70 meters
PDOP:	± 57 cm
Number of Satellites:	4

Team: Hays, Lee, Carr

Ecological System: Sand hill

Assessment Area/Site Description: Oaky sh: High cover of Sand live oak

Directions to plot: South of treble rd near lost road

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees

Xeric Longleaf Pine Barrens	Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 1
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	7.5

readings: 0 | 10 | 10 | 10

Southern Yellow Pine Canopy Cover

Xeric Longleaf Pine Barrens	Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 2 ✓
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	9

Southern Yellow Pine Stand Age Structure (12" cutoff)

Xeric Longleaf Pine Barrens	Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 3
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	~~[illegible]~~5 5

readings: 0 | 10 | 0 | 10 flat-top pine present ☐

Canopy Hardwood Basal Area

Xeric Longleaf Pine Barrens	Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 1
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	40

readings: 80 | 10 | 60 | 10

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB3 Date: 9/5/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4): 1
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	40

readings: 60 | 10 | 60 | 10

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points	
SDI = 80 – 120 (13-30% of Maximum SDI of 400)	4	Rating (1-4):
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3	
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2	Raw Value:
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1	

list of DBHs: —

Canopy Overall Ecological Assessment

comments: Some concern that it scores too low and that it might score similar to a site with Scrub pine

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleof Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4): 3
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	1

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleof Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4): 4
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	3

Midstory Overall Woody Cover	Xeric Longleof Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4): 4
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	4

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CD 3 Date: 9/5/18

Midstory Overall Ecological Assessment

comments: Fire killed most of midstory ~~trees~~ Score seem right.

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 3

Raw Value: 35

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 1

Shrub Overall Ecological Assessment

comments: no may be too high for tall shrubs

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 2

Raw Value: 15

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 2

Raw Value: 2

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB 3 Date: 9/5/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 3
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value:
<10% cover of all native warm season grasses	1	15

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4):
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value:
<2% cover of all wiry graminoids	1	13

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value:
Invasive nonnative plant species in any stratum common (>10% cover)	1	0

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value:
Total cover for herbaceous indicators of soil disturbance >10%	1	0

Groundcover Overall Ecological Assessment

comments: needs improvement ~~=~~ scores appropriate for site

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


CB3_1_090518

State/Prov: FL **Site:** Camp Blanding Joint Training Center **ObsArea Code:** CB5

ObsArea Name: **Analysis Obs Code:**

Project: FL **County:** **ObsDate:** 2018/09/05 **ObsID:** 9944

Observers: Dan Hipes, Michael Lee

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				3.07	B+
Rank Factor: CONDITION	0.7			3.07	B+
MEF: VEGETATION	0.55			3.27	B+
Basal Area of Southern Yellow Pine Canopy Trees	1	D	1		
Southern Yellow Pine Canopy Cover	1	C	2		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	C	2		
Canopy Hardwood Basal Area	1	A	4		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	A	4		
Midstory Fire-Intolerant Hardwood Cover	1	A	4		
Midstory Overall Woody Cover	1	A	4		
Midstory Overall Ecological Assessment	1				
maybe not allow any or 2% for excellent and use the same cutoffs in midstory overall as fire-tolerant					
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	D	1		
Shrub Overall Ecological Assessment	1				
Overall Native Herbaceous Ground Cover	1	A	4		
Longleaf Pine Regeneration	1	B	3		
<1%; >10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	A	4		
Native Wiry Graminoid Cover	1	A	4		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			2.00	C+
Herbaceous Indicators of Soil Disturbance	1	C	2		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: C-B 5 Date: 9/5/18

Event details

Site Name: Camp Blanding Team: Hipes, Lee

GPS Unit: Trimble Geo 7

Datum: WGS 84

UTM-E: 29 50 15.80 ~~meters~~

UTM-N: 81 58 49.79 ~~meters~~

PDOP:

Number of Satellites:

Ecological System: Sandhill

Assessment Area/Site Description: Shrubby sandhill - unburned planted LLP under old trees

Directions to plot: North of Grable Rd

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 1
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value:
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	7.5

readings: 10 | 10 | 10 | 0

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 2
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	7

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 2
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	5

readings: 10 | 10 | 0 | 0 flat-top pine present ☐

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4):
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	0

readings: 0 | 0 | 0 | 0

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB5 Date: 9/5/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of fire intolerant hardwood trees	4	Rating (1-4): 4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3	
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2	Raw Value:
>20 ft2/acre basal area of fire intolerant hardwood trees	1	0

readings 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points	
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4	Rating (1-4):
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3	
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2	Raw Value:
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1	

list of DBHs

Canopy Overall Ecological Assessment

comments: Need more mature pines; scores appropriate.

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to 10% cover of midstory fire-tolerant hardwoods	4	Rating (1-4): 4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3	
>20 to 25% cover of midstory fire-tolerant hardwoods	2	Raw Value:
>25% cover of midstory fire-tolerant hardwoods	1	4

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points	
<5% cover of fire-intolerant hardwood midstory	4	Rating (1-4): 4
5 to 10% cover of fire-intolerant hardwood midstory	3	
>10 to 20% cover of fire-intolerant hardwood midstory	2	Raw Value:
>20% cover of fire-intolerant hardwood midstory	1	4

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points	
2 to <15% cover of woody midstory	4	Rating (1-4): 4
15 – 25%, or <2% cover of woody midstory	3	
>25 to 35% cover of woody midstory	2	Raw Value:
>35% cover of woody midstory	1	8

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Plot ID: C35 Date: 7/5/18

Midstory Overall Ecological Assessment

comments: Maybe not allow any or 2% for excellent and ~~not~~ use the same cutoffs in Midstory overall as fine tolerant

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points	
Shrubs < 3 feet in height average <25% cover in the assessment area	4	Rating (1-4): 4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3	
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2	Raw Value:
Shrubs < 3 feet in height average >45% cover in the assessment area	1	20

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points	
Shrubs 3-10 feet in height average <10% cover.	4	Rating (1-4): 1
Shrubs 3-10 feet in height average 10 to <20% cover.	3	
Shrubs 3-10 feet in height average 20 to 30% cover.	2	Raw Value:
Shrubs 3-10 feet in height average >30% cover.	1	33

Shrub Overall Ecological Assessment

comments: Lots of tall shrubs. Scores appropriate

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points	
40-100% herbaceous cover	4	Rating (1-4): 4
>25 to <40% herbaceous cover	3	
>15 to 25% herbaceous cover	2	Raw Value:
0-15% herbaceous cover	1	50

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points	
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4	Rating (1-4): 3
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3	
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2	Raw Value:
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1	<1

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: CB 5 Date: 9/5/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 4
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value: 42%
<10% cover of all native warm season grasses	1	

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 4
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value: 40
<2% cover of all wiry graminoids	1	

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value: 0
Invasive nonnative plant species in any stratum common (>10% cover)	1	

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 2
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value: 6
Total cover for herbaceous indicators of soil disturbance >10%	1	

Groundcover Overall Ecological Assessment

comments: good groundcover; scores appropriate

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


CB5_1_090518

State/Prov: FL **Site:** Little Rain Lake **ObsArea Code:** LRL1

ObsArea Name: **Analysis Obs Code:**

Project: FL **County:** **ObsDate:** 2018/09/05 **ObsID:** 9945

Observers: Dan Hipes, Michael Lee, Susan Carr

General Type: Xeric Longleaf Pine Barrens

Protocol: Open Pine 2018 (metrics ver1.9)

	Wt	Field Rating	Field Pts	Calc Pts	Calc Rating
Ecological Integrity				2.70	B-
Rank Factor: CONDITION	0.7			2.70	B-
MEF: VEGETATION	0.55			2.47	C+
Basal Area of Southern Yellow Pine Canopy Trees	1	D	1		
Southern Yellow Pine Canopy Cover	1	D	1		
Southern Yellow Pine Stand Age Structure (12" cutoff)	1	D	1		
Canopy Hardwood Basal Area	1	C	2		
Canopy Hardwood Basal Area - Fire-Intolerant	1	A	4		
Stand Density Index	1				
Canopy Overall Ecological Assessment	1				
Midstory Fire-Tolerant Hardwood Cover	1	B	3		
Midstory Fire-Intolerant Hardwood Cover	1	C	2		
Midstory Overall Woody Cover	1	B	3		
Midstory Overall Ecological Assessment	1				
still possibly allowing too much midstory cover					
Short Shrub (<3 feet tall) Cover	1	A	4		
Tall Shrub (3-10 feet tall) Cover	1	A	4		
Shrub Overall Ecological Assessment	1				
same tall shrub % problem					
Overall Native Herbaceous Ground Cover	1	D	1		
Longleaf Pine Regeneration	1	C	2		
>10" dbh or cone-producing longleaf present					
Native Warm Season Grass Cover	1	C	2		
Native Wiry Graminoid Cover	1	B	3		
Invasive Plant Presence/Distribution	1	A	4		
Groundcover Overall Ecological Assessment	1				
MEF: SOIL	0.1			4.00	A+
Herbaceous Indicators of Soil Disturbance	1	A	4		

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: LRL 1 Date: 9/5/18

Event details

Site Name: Little Rain Lake Team: Hayes, Lee, Carr

GPS Unit: Geo 7

Datum: WGS 84

UTM-E: 29 44 24.23 meters

UTM-N: 81 39 30.15 meters

PDOP: ≠ 60 cm

Number of Satellites: 8

Ecological System: Sandhill

Assessment Area/Site Description: long unburned Sandhill

Directions to plot: East of County Park

Consider for EO (check box)? ☐ EO Comments:

Basal Area of Southern Yellow Pine Canopy Trees	Xeric Longleaf Pine Barrens Rating Points	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	4	Rating (1-4): 1
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	3	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	2	Raw Value: 2.5
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	1	

readings: 0 | 10 | 0 | 0

Southern Yellow Pine Canopy Cover	Xeric Longleaf Pine Barrens Rating Points	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	4	Rating (1-4): 1
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	3	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	2	Raw Value:
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	1	2%

Southern Yellow Pine Stand Age Structure (12" cutoff)	Xeric Longleaf Pine Barrens Rating Points	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present	4	Rating (1-4): 1
Basal area ≥10 ft2/acre of longleaf pine trees ≥ 12" DBH class	3	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	2	Raw Value:
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	1	0

readings: 0 | 0 | 0 | 0 flat-top pine present ☐

Canopy Hardwood Basal Area	Xeric Longleaf Pine Barrens Rating Points	
≤5 ft2/acre basal area of hardwood trees	4	Rating (1-4): 2
>5 to 15 ft2/acre basal area of hardwood trees	3	
>15 to 25 ft2/acre basal area of hardwood trees	2	Raw Value:
>25 ft2/acre basal area of hardwood trees	1	~~2 trees~~

readings: 1 | 20 | 40 | 20 22.5

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: LRL1 Date: 9/5/18

Canopy Hardwood Basal Area - Fire-Intolerant	Xeric Longleaf Pine Barrens Rating Points
≤5 ft2/acre basal area of fire intolerant hardwood trees	4
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	3
>10 to 20 ft2/acre basal area of fire intolerant hardwood trees	2
>20 ft2/acre basal area of fire intolerant hardwood trees	1

Rating (1-4): 4

Raw Value: 0

readings: 0 | 0 | 0 | 0

Stand Density Index	Xeric Longleaf Pine Barrens Rating Points
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	4
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	3
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	2
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	1

Rating (1-4):

Raw Value:

list of DBHs

Canopy Overall Ecological Assessment

comments: Few pines scores appropriate

Midstory Fire-Tolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
2 to 10% cover of midstory fire-tolerant hardwoods	4
10 to 20% cover, or <2% cover of midstory fire-tolerant hardwoods	3
>20 to 25% cover of midstory fire-tolerant hardwoods	2
>25% cover of midstory fire-tolerant hardwoods	1

Rating (1-4): 3

Raw Value: 17

Midstory Fire-Intolerant Hardwood Cover	Xeric Longleaf Pine Barrens Rating Points
<5% cover of fire-intolerant hardwood midstory	4
5 to 10% cover of fire-intolerant hardwood midstory	3
>10 to 20% cover of fire-intolerant hardwood midstory	2
>20% cover of fire-intolerant hardwood midstory	1

Rating (1-4): 2

Raw Value: ~~4~~ 3

Midstory Overall Woody Cover	Xeric Longleaf Pine Barrens Rating Points
2 to <15% cover of woody midstory	4
15 – 25%, or <2% cover of woody midstory	3
>25 to 35% cover of woody midstory	2
>35% cover of woody midstory	1

Rating (1-4): 3

Raw Value: 2.0

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: LRL 1 Date: 9/5/18

Midstory Overall Ecological Assessment

comments: Still possible allowing too much midstory cover

Short Shrub (<3 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs < 3 feet in height average <25% cover in the assessment area	4
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	3
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	2
Shrubs < 3 feet in height average >45% cover in the assessment area	1

Rating (1-4): 4

Raw Value: 6

Tall Shrub (3-10 feet tall) Cover	Xeric Longleaf Pine Barrens Rating Points
Shrubs 3-10 feet in height average <10% cover.	4
Shrubs 3-10 feet in height average 10 to <20% cover.	3
Shrubs 3-10 feet in height average 20 to 30% cover.	2
Shrubs 3-10 feet in height average >30% cover.	1

Rating (1-4): 4

Raw Value: 3

Shrub Overall Ecological Assessment

comments: Some tall shrub % problem

Overall Native Herbaceous Ground Cover	Xeric Longleaf Pine Barrens Rating Points
40-100% herbaceous cover	4
>25 to <40% herbaceous cover	3
>15 to 25% herbaceous cover	2
0-15% herbaceous cover	1

Rating (1-4): 1

Raw Value: 1

Longleaf Pine Regeneration	Rapid Assessment Location Rating Points
Longleaf pine regeneration (<2" DBH) cover is ≥1% at rapid assessment location	4
Longleaf pine regeneration (<2" DBH) cover is <1% at rapid assessment location	3
No Longleaf pine regeneration (<2" DBH) cover seen, but cone producing longleaf pine or longleaf pine >10" DBH are present rapid assessment location	2
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	1

Rating (1-4): 2

Raw Value: 2

>10" DBH or cone-producing longleaf present ☑

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor

Xeric Longleaf Pine Barrens (XLPB) EIA datasheet Open Pine 2018 (metrics ver1.9)

Plot ID: LRL 1 Date: 7/5/18

Longleaf Pine Regeneration	Stand Level Rating Points	
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	4	Rating (1-4):
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	3	Raw Value:
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone producing longleaf pine or longleaf pine >10" DBH are present	2	
Longleaf pine regeneration is apparently absent in stand, and apparently no cone producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	1	

>10" DBH or cone-producing longleaf present ☐

Native Warm Season Grass Cover	Xeric Longleaf Pine Barrens Rating Points	
25-95% cover of all native warm season grasses	4	Rating (1-4): 2
15 to <25% or >95% cover of all native warm season grasses	3	
10 to <15% cover of all native warm season grasses	2	Raw Value: 10
<10% cover of all native warm season grasses	1	

Native Wiry Graminoid Cover	Xeric Longleaf Pine Barrens Rating Points	
20-95% cover of all wiry graminoids	4	Rating (1-4): 3½
10 to <20% or >95% cover of all wiry graminoids	3	
2 to <10% cover of all wiry graminoids	2	Raw Value: 10
<2% cover of all wiry graminoids	1	

Invasive Plant Presence/Distribution	Rating Points	
Invasive nonnative plant species absent	4	Rating (1-4): 4
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	3	
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	2	Raw Value: 0
Invasive nonnative plant species in any stratum common (>10% cover)	1	

Herbaceous Indicators of Soil Disturbance	Rating Points	
Total cover for herbaceous indicators of soil disturbance <2%	4	Rating (1-4): 4
Total cover for herbaceous indicators of soil disturbance 2-5%	3	
Total cover for herbaceous indicators of soil disturbance >5-10%	2	Raw Value: 0
Total cover for herbaceous indicators of soil disturbance >10%	1	

Groundcover Overall Ecological Assessment

comments: Low covers but still good cover of wiregrass. Score is appropriate.

Rating Points key: 4=Excellent, 3=Good, 2=Fair, 1=Poor


LR1_1_090518

Appendix B. User Manual for the Sandhill Habitat Quantification Tool (HQT).

Note: The following user manual is for any of the open pine systems described in NatureServe's Field Guide to Southern Open Pine Rapid Assessment Metrics (http://www.natureserve.org/sites/default/files/projects/files/natureserve_field_guide_of_southern_open_pine_rapid_assessment_metrics_v2.0_september_28_2018.pdf).

On-line HQTs are located at https://tranxfer.natureserve.org/download/Longterm/SE_office/EDF/prototype-webcalc/HQT-Menu.html.

Habitat Quantification Tool User Manual

This manual was developed to guide the collection of rapid assessment field data for use with a Habitat Quantification Tool (HQT). The tool uses a series of metrics describing canopy, mid-story, shrub, and ground cover to document the structure and composition of a given stand. This manual describes the plot layout and steps for recording data. Detailed definitions for each metric along with rationale for their inclusion can be found in [NatureServe's Field Guide to Southern Open Pine Rapid Assessment Metrics].

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Before the Field

1. Select a site

Assessment locations should be representative of the stand or unit being evaluated. Plot locations may be chosen in the field at locations that appear to represent the stand. This should be considered acceptable only when the person or team selecting the location is familiar with the entire stand. Alternatively, a series of random locations may be chosen to represent the stand; this method removes any bias (good or bad) from the process. There are a variety of random sampling methods, several of which may be appropriate for a given site. One of these methods to consider is Generalized Random Tessellation Stratified sampling (GRTS), which is a spatially balanced random design that ensures spatial coverage of the entire survey area (i.e. prevents random locations from clustering in one area). The number of plot locations needed to represent or accurately depict the stand will vary from stand to stand depending on the size of and variability within the stand (Guidelines may be presented in later versions of this document).

2. Prepare materials

The equipment needed for rapid assessment can vary, but the recommended equipment is listed to the right. Photos, descriptions, and links for how to use each item are provided at the end of this document.

2.1 Field Data Collection Forms

To print the appropriate field data collection form for your site, you'll need to know the system or natural community type for your site. Refer to NatureServe Field Guide mentioned above or FNAI's Guide to the Natural Communites of Florida. The full set of data forms are located at the HQT development website.

Equipment Checklist

- [ ] Field Data Collection Forms
- [ ] Chaining pins
- [ ] Pin flags and flagging tape
- [ ] 50-meter measuring tapes
- [ ] Compass
- [ ] Basal area prism
- [ ] Diameter (dbh) tape
- [ ] GPS unit
- [ ] Camera
- [ ] Reference materials

Field Assessment Steps

1. Setting up your plot

1.1 Establish a center point

Establish a center point for your plot and place the chaining pin.

1.2 Collect a GPS point

At the center point, collect a GPS point. Ideally you will transfer this point into your GIS system to complete further evaluation of the site and its context. You shoud also manually write down the GPS coordinates in case of data loss.

1.3 Photographs

Take a photgraph in each cardinal direction from the centerpoint. Note the photograph numbers for later achiving.

1.4 Establish the plot layout

From the center chaining pin, pull the measuring tape in each cardinal direction (North, East, South, West), stopping at the suggested 83 feet (25.4 meters) for a 0.5 acre area circle and placing a pin flag, or flagging tape. This creates the boundaries for a circular plot that has a radius of 83 ft (25.4 m) and an area of 0.5 acre (0.2 hectare).

Then measure back 33 feet (10 meters), toward the center chaining pin, and place another pin flag or flagging tape. These are the four locations where basal area is measured for multiple metircs.

Tip: leave 1 or 2 tapes out while working in the plot to stay oriented.

Tip: There are other sizes of circle that can be used: A 1-acre plot has a 118 ft (36 meter) radius; a .25-acre plot has a 59 ft (18 m) radius. The 0.5 acre (0.2 hectare) circles are manageable for a rapid assessment, and large enough to encompass some of the variation typical at small scales in longleaf pine and other southern open pine ecosystems.

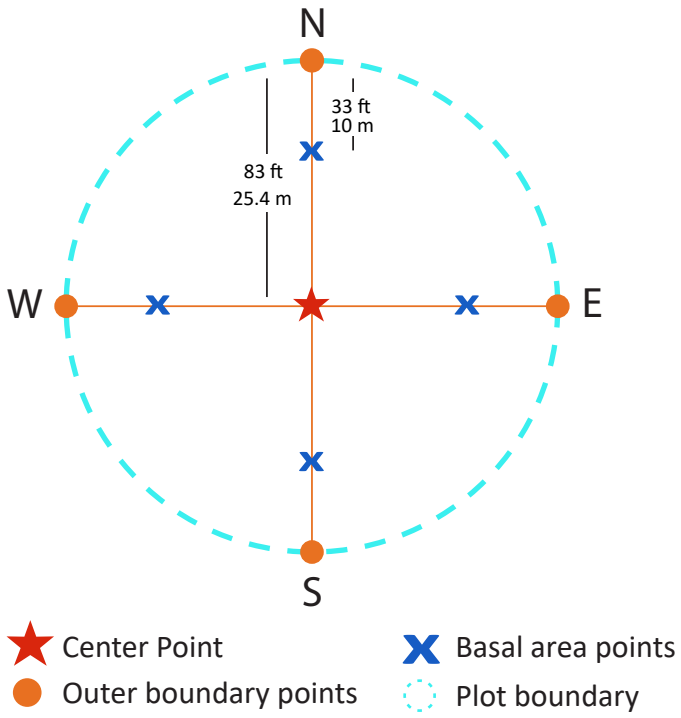

Figure 1. (Above) A sample diagram of a 25.4 m radius plot. The points indicate where pin flags should be placed, and the plot boundary is imagined.

Field Assessment Steps

2. Measuring Basal Area

2.1 Basal area of southern yellow pine canopy trees

Measure basal area of pine >5 in DBH (defined as canopy trees) using a prism positioned over the 4 basal area points (Figure 2). Record each value on the field form. Calculate the average and record it as the raw value, then select the corresponding rating. We recommend a 10 factor prism for most Southeastern U.S. open pine systems.

2.2 Basal area of southern yellow pine canopy trees ≥14" DBH (and ≥12" DBH)

Follow the same procedure for pines greater than 14" DBH and 12" DBH. All of the basal area values are typically done at the same time at each point to save time walking back to the points. It helps to have a second person who can measure trees as needed while the basal area is being recorded.

Note: The 14" DBH cutoff is specified by Americas Longleaf Restoration Initiative. Many sites in Florida cannot achieve this lofty goal. In order to capture sites that have older aged trees, we also include a metric with a 12" DBH cutoff.

2.3 Canopy hardwood basal area

Measure basal area of hardwood trees that reach canopy height as well as the subset of **fire-intolerant hardwoods** by using the same process outlined in 2.1. This can be done at the same time as the pines as long a care is taken to record each value in the correct location.

Fire tolerant hardwoods include turkey oak, sand post oak, bluejack oak, blackjack oak, black oak, post oak, southern red oak, black hickory, and flowering dogwood. Fire-intolerant hardwoods are all others, but typically include sweetgum, water oak, and laurel oak.

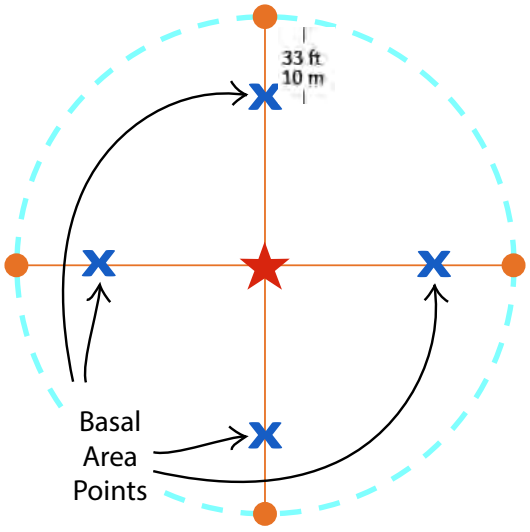

Figure 2. The diagram of a sample plot shows the four inner points where basal area is measured. Those points are indicated by blue X's.

Field Assessment Steps

3. Southern Yellow Pine Canopy Cover

Estimate the percent cover of the canopy. This may be done using a densiometer, ocular estimate, or your organizations' typical protocol.

It may be helpful to know that a 4 m by 5 m box is equal to 1% of the area of the (25.4 m) plot. Walk around the plot and "add up" cover of each yellow pine in the canopy (defined as 5" DBH or greater). Count the entire cover of the tree, not the foliage—the space between leaves and branches counts. There are many metrics that require a percent cover estimation, these should be assigned after exploring the entire plot.

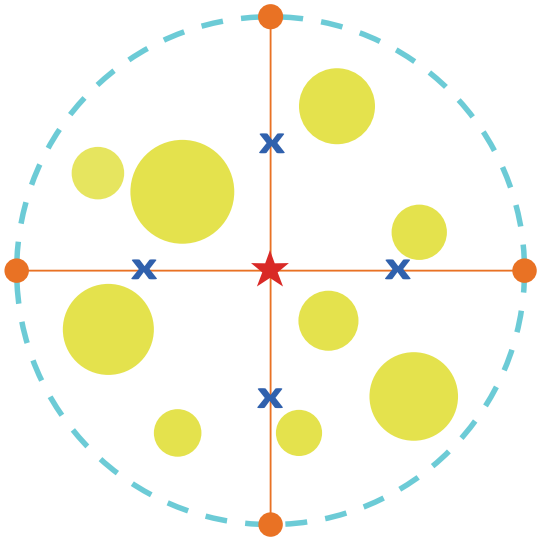

Figure 3. (Above) A plot diagram with yellow circles to represent canopy cover being shown from above.

4. Stand Density Index (SDI) (optional for rapid assessments)

Record the diameter (DBH) of each of the southern yellow pine trees (or species appropriate for the ecosystem), by species in the rapid assessment area. This will typically take 20 minutes for a 0.5 acre rapid assessment area. The calculation for the SDI metric can be done in the office after the site visit. The equation can be found in NatureServe's Field Guide to Southern Open Pine Rapid Assessment Metrics.

Note: This step is optional because of the time it takes, but can provide useful timber volume information.

Figure 4. Sandhill, Ocala National Forest.

Field Assessment Steps

Midstory, shrub, and herbaceous cover are calculated in the same way as canopy cover in step 3. Keep in mind that you are measuring aerial cover (as viewed from above). Walk around the plot and estimate cover. The space between stems and leaves counts as cover. It is possible to exceed 100% if adding the canopy, midstory, and shrub layers because of overlap.

5. Midstory Cover

The midstory includes woody stems that are greater than 10 ft (3 m) in height but do not reach canopy height.

5.1 Fire-tolerant hardwood cover

Record the cover values for the midstory fire-tolerant hardwoods (defined on page 4) in box labeled "Raw Value" then circle the rating and enter the appropriate rating score in the rating box.

5.2 Fire-intolerant hardwood cover

Record the cover values for the midstory fire-in-tolerant hardwoods as decribed above.

5.3 Overall Woody Cover

Record the cover values for all midstory woody cover (including pines and vines) as above.

6. Shrub Cover

Shrubs include all woody growth, single- or multi-stemmed, including small broad-leaf trees, woody seedlings, tree saplings, short shrubs, saw palmetto, scrub palmetto and woody vining plants, less than 10 ft (3 m) in height.

6.1 Tall shrub cover (3-10ft height)

Record the cover values for tall shrubs as described above.

6.2 Short shrub cover (<3ft height)

Record the cover values for short shrubs as described above.

6.3 Longleaf Pine regeneration cover (<2 inches DBH)

Record the cover of grass stage longleaf pine and small longleaf pine regeneration less than 2" DBH, the select the appropriate rating.

Figure 5. A grass stage longleaf pine seedling among wiregrass. Small longleaf pines like this are counted in longleaf pine regeneration cover.

Field Assessment Steps

7. Herbaceous Cover

7.1 Overall Native Herbaceous Ground Cover

Visually assess the percentage of the ground within the plot covered by the general extent of native herbaceous plants. Native herbaceous ground cover includes all native non-woody, soft-tissued plants, regardless of height. This includes non-woody vines, legumes, composites, and graminoids (grasses, sedges, and rushes).

7.2 Native Warm Season Grass Cover

This is generally native non-weedy grasses that are considered characteristic of the natural groundcover. If field personnel are unfamiliar with these species, a detailed description of this metric and species list is included in the Field Guide.

7.3 Native Wiry Graminoid Cover

Native wiry graminoids are grasses or grass-like plants that have very narrow, wiry leaves. Native wiry graminoid plants include grasses, and beakrushes that resemble wiregrass.

8. Invasives & Soil Disturbance

8.1 Invasive Plant Presence/Distribution

Select the rating that corresponds to the matching extent and distribution of invasive exotic plants within the site and/or along the perimeter of the site.

When determining invasive species, use Florida EPPC category I and II listed species:

http://www.fleppc.org/list/list.htm

8.2 Herbaceous Indicators of Soil Disturbance

Estimate the total percent cover for herbaceous indicators of soil distrubance. The list of indicator species is in Table 1 to the right. If there are plants that are thought to be indicators of soil disturbance, but are not listed in the metric documentation, note the species and collect separate percent cover estimates for the species.

Herbaceous Indicators of Soil Disturbance	
Scientific Name	Common Name
Bulbostylis barbata	water-grass
Bulbostylis ciliatifolia	capillary hairsedge
Chrysoma pauciflosculosa	woody goldenrod
Cynodon dactylon	bermuda grass
Cyperus croceus	Baldwin's flatsedge
Dichanthelium aciculare	needleleaf witchgrass
Diodia teres	rough buttonweed
Eragrostis curvula	weeping lovegrass
Eragrostis refracta	meadow lovegrass
Eremochloa ophiuroides	centipede grass
Eupatorium capillifolium	dog-fennel thoroughwart
Eupatorium compositifolium	yankeeweed
Froelichia gracilis	slender cottonweed
Haplopappus divaricatus	slender scratch-daisy
Hypericum gentianoides	orange-grass St. John's-wort
Lespedeza cuneata	Chinese bushclover
Liatris elegans	pink-scale gayfeather
Mollugo verticillata	green carpetweed
Panicum verrucosum	warty panicgrass
Paronychia patula	pineland nailwort
Paspalum notatum	Bahia grass
Polypremum procumbens	juniper-leaf
Rubus cuniefolius, Rubus argutus	prickly Florida blackberry
Triplasis purpurea	purple sandgrass

Table 1. List of herbaceous indicators of soil disturbance. Names in bold are exotic species. This list is a work in progress; additions can be made to the list based on the results of fieldwork, literature, or Floristic Quality Assessment plant lists.

Field Assessment Steps

9. Landscape Level Metrics

Landscape level metrics are typically calculated using GIS during or following the field assessment.

9.1 Absolute Patch Size

Absolute size is a measure of the current size of the landcover patch being evaluated, which may be larger than the assessment area. It can be measured in GIS using aerial photographs, International Vegetation Classification, the Florida Land Cover Classification System, or other data layers on which the extent of the site can be identified. Size may also be estimated in the field using 7.5 minute topographic quads or a global positioning system. Delineate the boundary and calculate the size.

9.2 Contiguous Natural Land Cover

Use the most recent aerial photography available of a 500 m radius envelope (~200 acre-circle) of the assessment area. When possible, walk through portions of the 500 m envelope to ground truth the photo. Identify the largest unfragmented block that contains the assessment area and estimate its percentage of the total area within the 500 m envelope.

Note: For this assessment, unfragmented land can have small inclusions of altered areas. Major roads, well-traveled dirt roads, and major canals count as fragmentation, but hiking paths, fire breaks, and small ditches do not.

9.3 Land Use Index

The land use index metric measures the intensity of human dominated land uses in the 500 m radius envelope (~200 acre- circle) of the plot center. This metric relies on a set of standard landuse coeficient values for a given landcover classification. These values (from 1 to 10 or 0 to 1, depending on the system) reflect the degree of natural system function.

The Land Use Index assessment can be done in the office using using the International Vegetation Classification, the Florida Land Cover Classification System or the LANDFIRE Dataset. If not already available, a landuse coeficient will need to be developed for the landcover classification system used. Landuse coeficients used during development of this HQT are based on Faber-Langendoen et al, 2011.

To calculate Land Use Index, estimate the percent of each land use category within the 500 m radius, then calculate the corresponding sub-score for each category using the following equation:

Land Use category score = $\sum$ LU x PC
LU = Land use coefficient for each category
PC = % area of class in each category

Sum each category score to calculate the Total Land Use Index Score.

Example: Figure 6 depicts the delineated lancover types within the 500 m envelope of a plot center. The area and percent of the envelope are shown for each type along with the corresponding land use coeficient and calculated sub-score summed to produce the Land Use Index score.

Field Assessment Steps

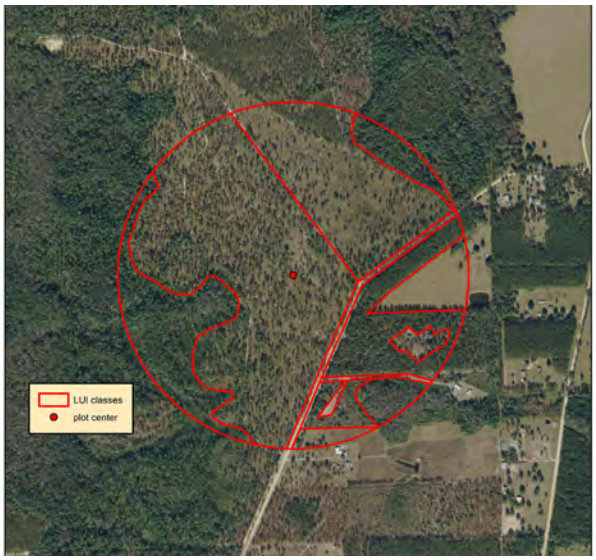

Figure 6. Land Use Index classes witin 500 m of a plot location.

Table 2. Land use sub-score and overall Land Use Index for example site.

landcover	acres	% (PC)	LU	sub-score
baygall	29.53	15%	10.00	1.51
dome swamp	4.51	2%	10.00	0.23
sandhill	121.02	62%	10.00	6.17
clearing	4.69	2%	6.00	0.14
planted pine	18.86	10%	5.00	0.48
pasture	11.09	6%	4.00	0.23
residential	2.41	1%	1.00	0.01
road	4.07	2%	0.00	0.00
		Land Use Index =		8.77

9.4 Perimeter with Natural Buffer

Calculate the total length of the perimeter of the assessment area. Subtract the lenght of the perimeter that is determined to be adjacent (at least within 5 m) to a non-natural system. Divide the result by the the total length to get the percentage of the perimeter buffered by natural area. In the example below there is 3032 meters of natural buffer divided by the 3677 total meters of perimeter resulting in a score of 82%. The portion in red is a road that is greater than 5 m wide and also bordered by non-natural landcover.

Figure 7. An assessment area with the perimeter bordered by natural area depicted in green and the perimeter bordered by non-natural area depicted in red. Perimeter measurements are easily calculated in GIS.

Materials

Basal Area Prism

The basal area prism, or wedge prism, is used to estimate basal area of the plot. It can come in different "factors", shapes. sizes, and colors, so it is best to be familiar with the one you have.

Resources:
https://bit.ly/2FwSHMH

Biltmore Stick

The Biltmore stick can be used to measure the diameter of a tree without having to walk around it. This can be useful for trees that have a vine such as poison ivy growing on it, or for measuring fallen logs.

Resources:
https://bit.ly/2FtfNUg

Chaining Pin

The chaining pin is used to mark the center of the plot. Chaining pins are sturdy enough to secure measuring tape as you layout your plot.

Compass

The compass is used during plot setup to determine each cardinal direction. It can also be used to estimate height if it has a clinometer like the one pictured here.

Calibrated Diameter Tape

Calibrated diameter tape is used to measure the diameter of a tree. The hook in the end allows you to hook it into the tree and walk around it without dropping the tape.

GPS Unit

The GPS unit is used to provide spatial data for your plot. Brand is not important, but should be familiar with device you are using.

Resources:
https://www.fs.fed.us/database/gps/

Pin Flag

Pin flags are used to mark plot points while you are assessing the area, such as the basal area points.

Tape Measure

A large tape measure like the one pictured (right) is essential for accurate plot setup.

Appendix C. Florida Pine Snake Habitat Quantification Tool (HQT) User Manual.

Note: The habitat features supporting essential behavior differentiate the Pine Snake HQT from the Sandhill HQT. The structure and composition metrics are identical to those in the Sandhill HQT Manual.

Florida Pine Snake Habitat Quantification Tool User Manual

This manual was developed to guide the collection of rapid assessment field data for use with a Habitat Quantification Tool (HQT). The tool uses a series of metrics describing canopy, mid-story, shrub, and ground cover to document the structure and composition of a given stand. This manual describes the plot layout and steps for recording data. Detailed definitions for each metric along with rationale for their inclusion can be found in [NatureServe's Field Guide to Southern Open Pine Rapid Assessment Metrics].

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Florida Natural Areas Inventory

EDF Environmental Defense Fund — Finding the ways that work

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Before the Field

1. Select a site

Assessment locations should be representative of the stand or unit being evaluated. Plot locations may be chosen in the field at locations that appear to represent the stand. This should be considered acceptable only when the person or team selecting the location is familiar with the entire stand. Alternatively, a series of random locations may be chosen to represent the stand; this method removes any bias (good or bad) from the process. There are a variety of random sampling methods, several of which may be appropriate for a given site. One of these methods to consider is Generalized Random Tessellation Stratified sampling (GRTS), which is a spatially balanced random design that ensures spatial coverage of the entire survey area (i.e. prevents random locations from clustering in one area). The number of plot locations needed to represent or accurately depict the stand will vary from stand to stand depending on the size of and variability within the stand (Guidelines may be presented in later versions of this document).

2. Prepare materials

The equipment needed for rapid assessment can vary, but the recommended equipment is listed to the right. Photos, descriptions, and links for how to use each item are provided at the end of this document.

2.1 Field Data Collection Forms

A field data collection form for the Florida pine snake HQT is provided at the back of this document. The latest version of the form can be found at the HQT development website.

Equipment Checklist

- [ ] Field Data Collection Forms
- [ ] Chaining pins
- [ ] Pin flags and flagging tape
- [ ] 50-meter measuring tapes
- [ ] Compass
- [ ] Basal area prism
- [ ] Diameter (dbh) tape
- [ ] GPS unit
- [ ] Camera
- [ ] Reference materials

Field Assessment Steps

1. Setting up your plot

1.1 Establish a center point

Establish a center point for your plot and place the chaining pin.

1.2 Collect a GPS point

At the center point, collect a GPS point. Ideally you will transfer this point into your GIS system to complete further evaluation of the site and its context. You shoud also manually write down the GPS coordinates in case of data loss.

1.3 Photographs

Take a photgraph in each cardinal direction from the centerpoint. Note the photograph numbers for later achiving.

1.4 Establish the plot layout

From the center chaining pin, pull the measuring tape in each cardinal direction (North, East, South, West), stopping at the suggested 83 feet (25.4 meters) for a 0.5 acre area circle and placing a pin flag, or flagging tape. This creates the boundaries for a circular plot that has a radius of 83 ft (25.4 m) and an area of 0.5 acre (0.2 hectare).

Then measure back 33 feet (10 meters), toward the center chaining pin, and place another pin flag or flagging tape. These are the four locations where basal area is recorded for multiple metircs.

Tip: leave 1 or 2 tapes out while working in the plot to stay oriented.

Tip: There are other sizes of circle that can be used: A 1-acre plot has a 118 ft (36 meter) radus; a .25-acre plot has a 59 ft (18 m) radius. The 0.5 acre (0.2 hectare) circles are manageable for a rapid assessment, and large enough to encompass some of the variation typical at small scales in longleaf pine and other southern open pine ecosystems.

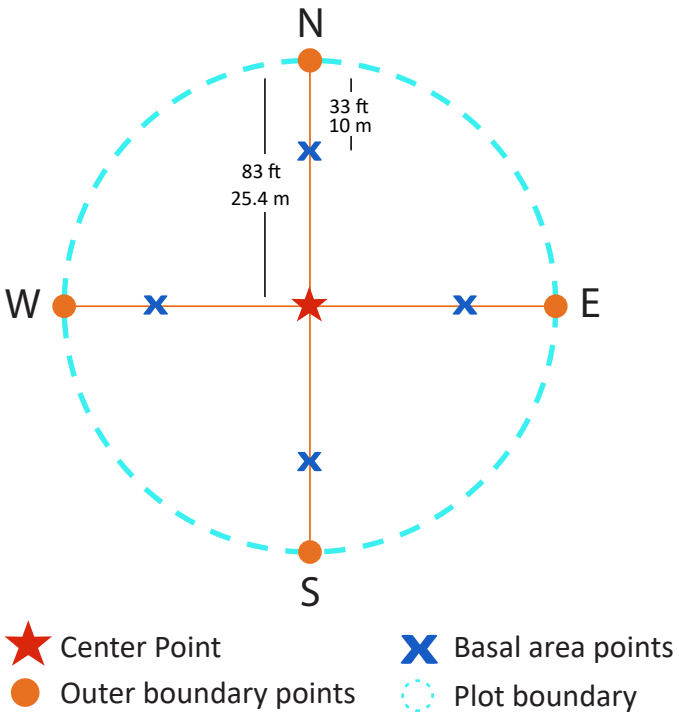

Figure 1. (Above) A sample diagram of a 25.4 m radius plot. The points indicate where pin flags should be placed, and the plot boundary is imagined.

Field Assessment Steps

2. Essential Behavior

2.1 Soil Suitability (based on USDA soil drainage class)

The soil suitability metric includes land outside of the stand being evaluated, likely extending into neighboring ownerships. The most accurate method for determining the extent of excessively drained to well drained soils is using a desktop computer and a GIS program; however it can be estimated in the field if the user does not have access to GIS soil layers and the knowledge to query the data. The NRCS SoilWeb app for mobile devices can be helpful in identifying soil types, but user will still have to estimate acreage based on their knowledge of the site. For those using ArcGIS, the general steps are as follows: Add the NRCS soil data (https://sdmdataaccess.nrcs.usda.gov/) to your project. Zoom to the general extent of the evaluation site. Select the soils that intersect the site boundary. Within that selection and within the "drainage" data field select the "excessively drained" + the "somewhat excessively drained" + the "well drained" soils. Sum the acres field for that selection. Then check the box of the corresponding acreage on the field form.

2.2 Woody above-ground thermo-regulation cover

If you are using a .5 acre plot, simply count the number of coppiced tree resprouts (typically turkey oak) and multiply by two to get the number per acre. Check the box of the corresponding choice.

2.3 Herbaceous above-ground thermoregulation cover

Bunch grasses are the primary herbaceous cover used by pine snakes. Wiregrass and bluestem grasses (including broomsedge) are typical. Estimate the percent of the ground covered by these grasses. One method is to count the number of 4 m x 5m boxes (= 1% of a .5 acre plot) that can be "filled" by the extent of bunch grasses. Select the corresponding box.

2.4 Refugia

Undergound refugia is a stand or site-level metric. They do not have to be observed in the plot, but must be observed on the evaluation site in order to be recorded and thus require knowledge of the larger area. Select all that apply to the site.

Field Assessment Steps

3. Measuring Basal Area

3.1 Basal area of southern yellow pine canopy trees

Measure basal area of pine >5 in DBH (defined as canopy trees) using a prism positioned over the 4 basal area points (Figure 2). Record each value on the field form. Calculate the average and record it as the raw value, then select the corresponding rating. We recommend a 10 factor prism for most Southeastern U.S. open pine systems.

3.2 Basal area of southern yellow pine canopy trees ≥14" DBH (and ≥12" DBH)

Follow the same procedure for pines greater than 14" DBH and 12" DBH. All of the basal area values are typically done at the same time at each point to save time walking back to the points. It helps to have a second person who can measure trees as needed while the basal area is being recorded.

Note: The 14" DBH cutoff is specified by Americas Longleaf Restoration Initiative. Many sites in Florida cannot achieve this lofty goal. In order to capture sites that have older aged trees, we also include a metric with a 12" DBH cutoff.

3.3 Canopy hardwood basal area

Measure basal area of hardwood trees that reach canopy height as well as the subset of **fire-intolerant hardwoods** by using the same process outlined in 2.1. This can be done at the same time as the pines as long a care is taken to record each value in the correct location.

Fire tolerant hardwoods include turkey oak, sand post oak, bluejack oak, blackjack oak, black oak, post oak, southern red oak, black hickory, and flowering dogwood. Fire-intolerant hardwoods are all others, but typically include sweetgum, water oak, and laurel oak.

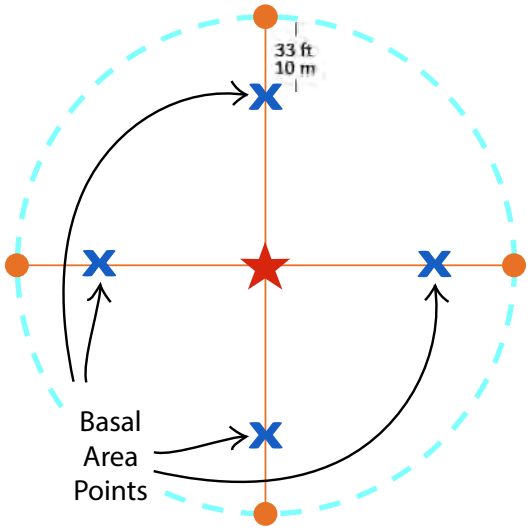

Figure 2. The diagram of a sample plot shows the four inner points where basal area is measured. Those points are indicated by blue X's.

Field Assessment Steps

4. Southern Yellow Pine Canopy Cover

Estimate the percent cover of the canopy. This may be done using a densiometer, ocular estimate, or your organizations' typical protocol.

It may be helpful to know that a 4 m by 5 m box is equal to 1% of the area of the (25.4 m) plot. Walk around the plot and "add up" cover of each yellow pine in the canopy (defined as 5" DBH or greater). Count the entire cover of the tree, not the foliage—the space between leaves and branches counts. There are many metrics that require a percent cover estimation, these should be assigned after exploring the entire plot.

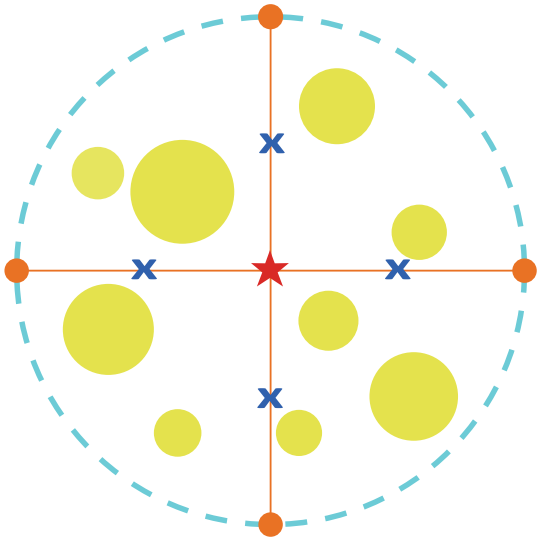

Figure 3. (Above) A plot diagram with yellow circles to represent canopy cover being shown from above.

5. Stand Density Index (SDI) (optional for rapid assessments)

Record the diameter (DBH) of each of the southern yellow pine trees (or species appropriate for the ecosystem), by species in the rapid assessment area. This will typically take 20 minutes for a 0.5 acre rapid assessment area. The calculation for the SDI metric can be done in the office after the site visit. The equation can be found in NatureServe's Field Guide to Southern Open Pine Rapid Assessment Metrics.

Note: This step is optional because of the time it takes, but can provide useful timber volume information.

Figure 4. Sandhill, Ocala National Forest.

Field Assessment Steps

Midstory, shrub, and herbaceous cover are calculated in the same way as canopy cover in step 3. Keep in mind that you are measuring aerial cover (as viewed from above). Walk around the plot and estimate cover. The space between stems and leaves counts as cover. It is possible to exceed 100% if adding the canopy, midstory, and shrub layers because of overlap.

6. Midstory Cover

The midstory includes woody stems that are greater than 10 ft (3 m) in height but do not reach canopy height.

6.1 Fire-tolerant hardwood cover

Record the cover values for the midstory fire-tolerant hardwoods (defined on page 4) in box labeled “Raw Value” then circle the rating and enter the appropriate score in the rating box.

6.2 Fire-intolerant hardwood cover

Record the cover values for the midstory fire-intolerant hardwoods as decribed above.

6.3 Overall Woody Cover

Record the cover values for all midstory woody cover (including pines and vines) as above.

7. Shrub Cover

Shrubs include all woody growth, single- or multi-stemmed, including small broad-leaf trees, woody seedlings, tree saplings, short shrubs, saw palmetto, scrub palmetto and woody vining plants, less than 10 ft (3 m) in height.

7.1 Tall shrub cover (3-10ft height)

Record the cover values for tall shrubs as described above.

7.2 Short shrub cover (<3ft height)

Record the cover values for short shrubs as described above.

7.3 Longleaf Pine regeneration cover (<2 inches DBH)

Record the cover of grass stage longleaf pine and small longleaf pine regeneration less than 2” DBH, the select the appropriate rating.

Figure 5. A grass stage lonleaf pine seedling among wiregrass. Small longleaf pines like this are counted in longleaf pine regeneration cover.

Field Assessment Steps

8. Herbaceous Cover

8.1 Overall Native Herbaceous Ground Cover

Visually assess the percentage of the ground within the plot covered by the general extent of native herbaceous plants. Native herbaceous ground cover includes all native non-woody, soft-tissued plants, regardless of height. This includes non-woody vines, legumes, composites, and graminoids (grasses, sedges, and rushes).

8.2 Native Warm Season Grass Cover

This is generally native non-weedy grasses that are considered characteristic of the natural groundcover. If field personnel are unfamiliar with these species, a detailed description of this metric and species list is included in the Field Guide.

8.3 Native Wiry Graminoid Cover

Native wiry graminoids are grasses or grass-like plants that have very narrow, wiry leaves. Native wiry graminoid plants include grasses, and beakrushes that resemble wiregrass.

9. Invasives & Soil Disturbance

9.1 Invasive Plant Presence/Distribution

Select the rating that corresponds to the matching extent and distribution of invasive exotic plants within the site and/or along the perimeter of the site.

When determining invasive species, use Florida EPPC category I and II listed species:

http://www.fleppc.org/list/list.htm

9.2 Herbaceous Indicators of Soil Disturbance

Estimate the total percent cover for herbaceous indicators of soil distrubance. The list of indicator species is in Table 1 to the right. If there are plants that are thought to be indicators of soil disturbance, but are not listed in the metric documentation, note the species and collect separate percent cover estimates for the species.

Herbaceous Indicators of Soil Disturbance	
Scientific Name	Common Name
Bulbostylis barbata	water-grass
Bulbostylis ciliatifolia	capillary hairsedge
Chrysoma pauciflosculosa	woody goldenrod
Cynodon dactylon	bermuda grass
Cyperus croceus	Baldwin's flatsedge
Dichanthelium aciculare	needleleaf witchgrass
Diodia teres	rough buttonweed
Eragrostis curvula	weeping lovegrass
Eragrostis refracta	meadow lovegrass
Eremochloa ophiuroides	centipede grass
Eupatorium capillifolium	dog-fennel thoroughwart
Eupatorium compositifolium	yankeeweed
Froelichia gracilis	slender cottonweed
Haplopappus divaricatus	slender scratch-daisy
Hypericum gentianoides	orange-grass St. John's-wort
Lespedeza cuneata	Chinese bushclover
Liatris elegans	pink-scale gayfeather
Mollugo verticillata	green carpetweed
Panicum verrucosum	warty panicgrass
Paronychia patula	pineland nailwort
Paspalum notatum	Bahia grass
Polypremum procumbens	juniper-leaf
Rubus cuniefolius, Rubus argutus	prickly Florida blackberry
Triplasis purpurea	purple sandgrass

Table 1. List of herbaceous indicators of soil disturbance. Names in bold are exotic species. This list is a work in progress; additions can be made to the list based on the results of fieldwork, literature, or Floristic Quality Assessment plant lists.

Field Assessment Steps

10. Landscape Level Metrics

Landscape level metrics are typically calculated using GIS during or following the field assessment.

10.1 Absolute Patch Size

Absolute size is a measure of the current size of the landcover patch being evaluated, which may be larger than the assessment area. It can be measured in GIS using aerial photographs, International Vegetation Classification, the Florida Land Cover Classification System, or other data layers on which the extent of the site can be identified. Size may also be estimated in the field using 7.5 minute topographic quads or a global positioning system. Delineate the boundary and calculate the size.

10.2 Contiguous Natural Land Cover

Use the most recent aerial photography available of a 500 m radius envelope (~200 acre-circle) of the assessment area. When possible, walk through portions of the 500 m envelope to ground truth the photo. Identify the largest unfragmented block that contains the assessment area and estimate its percentage of the total area within the 500 m envelope.

Note: For this assessment, unfragmented land can have small inclusions of altered areas. Major roads, well-traveled dirt roads, and major canals count as fragmentation, but hiking paths, fire breaks, and small ditches do not.

10.3 Land Use Index

The land use index metric measures the intensity of human dominated land uses in the 500 m radius envelope (~200 acre- circle) of the plot center. This metric relies on a set of standard landuse coeficient values for a given landcover classification. These values (from 1 to 10 or 0 to 1, depending on the system) reflect the degree of natural system function.

The Land Use Index assessment can be done in the office using using the International Vegetation Classification, the Florida Land Cover Classification System or the LANDFIRE Dataset. If not already available, a landuse coeficient will need to be developed for the landcover classification system used. Landuse coeficients used during development of this HQT are based on Faber-Langendoen et al, 2011.

To calculate Land Use Index, estimate the percent of each land use category within the 500 m radius, then calculate the corresponding sub-score for each category using the following equation:

Land Use category score = $\sum$ LU x PC
LU = Land use coefficient for each category
PC = % area of class in each category

Sum each category score to calculate the Total Land Use Index Score.

Example: Figure 6 depicts the delineated lancover types within the 500 m envelope of a plot center. The area and percent of the envelope are shown for each type along with the corresponding land use coeficient and calculated sub-score summed to produce the Land Use Index score.

Field Assessment Steps

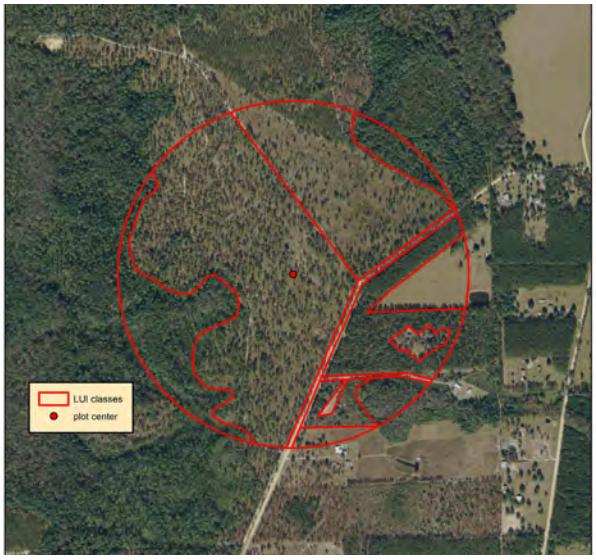

Figure 6. Land Use Index classes witin 500 m of a plot location.

Table 2. Land use sub-score and overall Land Use Index for example site.

landcover	acres	% (PC)	LU	sub-score
baygall	29.53	15%	10.00	1.51
dome swamp	4.51	2%	10.00	0.23
sandhill	121.02	62%	10.00	6.17
clearing	4.69	2%	6.00	0.14
planted pine	18.86	10%	5.00	0.48
pasture	11.09	6%	4.00	0.23
residential	2.41	1%	1.00	0.01
road	4.07	2%	0.00	0.00
		Land Use Index =		8.77

10.4 Perimeter with Natural Buffer

Calculate the total length of the perimeter of the assessment area. Subtract the lenght of the perimeter that is determined to be adjacent (at least within 5 m) to a non-natural system. Divide the result by the the total length to get the percentage of the perimeter buffered by natural area. In the example below there is 3032 meters of natural buffer divided by the 3677 total meters of perimeter resulting in a score of 82%. The portion in red is a road that is greater than 5 m wide and also bordered by non-natural landcover.

Figure 7. An assessment area with the perimeter bordered by natural area depicted in green and the perimeter bordered by non-natural area depicted in red. Perimeter measurements are easily calculated in GIS.

Materials

Basal Area Prism

The basal area prism, or wedge prism, is used to estimate basal area of the plot. It can come in different "factors", shapes. sizes, and colors, so it is best to be familiar with the one you have.

Resources:
https://bit.ly/2FwSHMH

Biltmore Stick

The Biltmore stick can be used to measure the diameter of a tree without having to walk around it. This can be useful for trees that have a vine such as poison ivy growing on it, or for measuring fallen logs.

Resources:
https://bit.ly/2FtfNUg

Chaining Pin

The chaining pin is used to mark the center of the plot. Chaining pins are sturdy enough to secure measuring tape as you layout your plot.

Compass

The compass is used during plot setup to determine each cardinal direction. It can also be used to estimate height if it has a clinometer like the one pictured here.

Calibrated Diameter Tape

Calibrated diameter tape is used to measure the diameter of a tree. The hook in the end allows you to hook it into the tree and walk around it without dropping the tape.

GPS Unit

The GPS unit is used to provide spatial data for your plot. Brand is not important, but should be familiar with device you are using.

Resources:
https://www.fs.fed.us/database/gps/

Pin Flag

Pin flags are used to mark plot points while you are assessing the area, such as the basal area points.

Tape Measure

A large tape measure like the one pictured (right) is essential for accurate plot setup.

Florida pine snake HQT datasheet (metrics ver2.0)

Plot ID: Date:

Event details

Site Name: Team:

GPS Unit:

Latitude: decimal degrees

Longitude: decimal degrees

Accuracy:

Ecological System:

Assessment Area/Site Description:

Directions to plot:

Consider for EO (check box)? ☐ EO Comments:

Essential Behavior

Soil Suitability (based on USDA soil drainage class)	Check boxes
Excessively drained to well drained soils cover more than 500 acres	☐
Excessively drained to well drained soils cover 200 to 500 acres	☐
Excessively drained to well drained soils cover 100 to 200 acres	☐
Excessively drained to well drained soils cover 1 to 100 acres	☐
Excessively drained to well drained soils absent	☐

Woody Above-Ground Thermoregulation Cover	Check boxes
Two or more coppiced tree resprouts per acre	☐
Coppiced tree resprouts present, but less than two per acre	☐
Coppiced tree resprouts absent	☐

Herbaceous Above-Ground Thermoregulation Cover	Check boxes
Bunch grasses covering more than 10 percent of the ground	☐
Bunch grasses present but less than 10 percent of the ground	☐
Bunch grasses absent	☐

Refugia	Check boxes
Pocket gophers burrows	☐
Other mammal burrows	☐
Gopher tortoise burrows	☐
Cut tree stumps or standing snags	☐

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID:

Date:

Basal Area of Southern Yellow Pine Canopy Trees	**Rating**	
25-80 ft2/acre basal area of longleaf pine (Pinus palustris)	**A**	Raw Value:
>15 to <25 or >80 to 90 ft2/acre basal area of longleaf pine (Pinus palustris)	**B**	
10 to 15 or > 90 to <100 ft2/acre basal area of longleaf pine (Pinus palustris)	**C**	Rating: →
<10 or ≥100 ft2/acre basal area of longleaf pine (Pinus palustris)	**D**	

readings

Southern Yellow Pine Stand Age Structure (14" cutoff)	**Rating**	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 14" DBH class or flat-top longleaf pine is present in plot	**A**	Raw Value:
Basal area ≥10 to <20 ft2/acre of longleaf pine trees ≥ 14" DBH class	**B**	
Longleaf pine trees ≥14" DBH class are present, but <10 ft2/acre basal area of those large trees	**C**	Rating: →
No longleaf pine trees ≥14" DBH nor flat-top longleaf pine are present	**D**	

readings flat-top pine present

Southern Yellow Pine Stand Age Structure (12" cutoff)	**Rating**	
Basal area ≥20 ft2/acre of longleaf pine trees ≥ 12" DBH class or flat-top longleaf pine is present in plot	**A**	Raw Value:
Basal area ≥10 to <20 ft2/acre of longleaf pine trees ≥ 12" DBH class	**B**	
Longleaf pine trees ≥12" DBH class are present, but <10 ft2/acre basal area of those large trees	**C**	Rating: →
No longleaf pine trees ≥12" DBH nor flat-top longleaf pine are present	**D**	

readings flat-top pine present

Canopy Hardwood Basal Area	**Rating**	
≤5 ft2/acre basal area of hardwood trees	**A**	Raw Value:
>5 to 15 ft2/acre basal area of hardwood trees	**B**	
>15 to 25 ft2/acre basal area of hardwood trees	**C**	Rating: →
>25 ft2/acre basal area of hardwood trees	**D**	

readings

Canopy Hardwood Basal Area - Fire-Intolerant	**Rating**	
0 ft2/acre basal area of fire intolerant hardwood trees	**A**	Raw Value:
>0 to 5 ft2/acre basal area of fire intolerant hardwood trees	**B**	
>5 to 10 ft2/acre basal area of fire intolerant hardwood trees	**C**	Rating: →
>10 ft2/acre basal area of fire intolerant hardwood trees	**D**	

readings

Southern Yellow Pine Canopy Cover	**Rating**	
>20 to 55% canopy cover of longleaf pine (Pinus palustris)	**A**	Raw Value:
>15 to 20% canopy cover or >55 to 70% canopy cover of longleaf pine (Pinus palustris)	**B**	
5-15% canopy cover or >70 to 80% canopy cover of longleaf pine (Pinus palustris)	**C**	Rating: →
<5% canopy cover or >80% canopy cover of longleaf pine (Pinus palustris)	**D**	

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID: _____

Date:

Stand Density Index	Rating
SDI = 50 – 120 (13-30% of Maximum SDI of 400)	A
SDI = 30 – 50 or 120 -160 (8-13% or 30-40% of Maximum SDI of 400, 35 – 40% SDI is near maximum of stand growth)	B
SDI = 20 – 30 or 160 - 180 (5-8% or 40-45% of Maximum SDI, 240 is 60% of Maximum SD of 400, which is the onset of self-thinning)	C
SDI <20 or >180 (<5% or > 45%, 240 is 60% of Maximum SD of 400, the onset of self-thinning)	D

Raw Value:

Rating: →

list of DBHs

Canopy Overall Ecological Assessment

comments

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID: _____

Date:

Midstory

Midstory Fire-Tolerant Hardwood Cover	Rating
2 to 5% cover of midstory fire-tolerant hardwoods	A
5 to 15% cover, or <2% cover of midstory fire-tolerant hardwoods	B
>15 to 25% cover of midstory fire-tolerant hardwoods	C
>25% cover of midstory fire-tolerant hardwoods	D

Raw Value:

Rating: →

Midstory Fire-Intolerant Hardwood Cover	Rating
0% cover of fire-intolerant hardwood midstory	A
>0 to 5% cover of fire-intolerant hardwood midstory	B
>5 to 15% cover of fire-intolerant hardwood midstory	C
>15% cover of fire-intolerant hardwood midstory	D

Raw Value:

Rating: →

Midstory Overall Woody Cover	Rating
2 to <15% cover of woody midstory	A
15 – 25%, or <2% cover of woody midstory	B
>25 to 35% cover of woody midstory	C
>35% cover of woody midstory	D

Raw Value:

Rating: →

Midstory Overall Ecological Assessment

comments

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID:

Date:

Tall Shrub (3-10 feet tall) Cover	Rating
Shrubs 3-10 feet in height average <5% cover.	A
Shrubs 3-10 feet in height average 5 to <15% cover.	B
Shrubs 3-10 feet in height average 15 to <30% cover.	C
Shrubs 3-10 feet in height average ≥30% cover.	D

Raw Value:

Rating: →

Short Shrub (<3 feet tall) Cover	Rating
Shrubs < 3 feet in height average <25% cover in the assessment area	A
Shrubs < 3 feet in height average 25 to 35% cover in the assessment area	B
Shrubs < 3 feet in height average >35 to 45% cover in the assessment area	C
Shrubs < 3 feet in height average >45% cover in the assessment area	D

Raw Value:

Rating: →

Longleaf Pine Regeneration	Rating
Longleaf pine regeneration (<2" DBH) cover is ≥1% at the rapid assessment location	A
Longleaf pine regeneration (<2" DBH) cover is <1% at the rapid assessment location	B
No Longleaf pine regeneration (<2" DBH) cover seen, but cone-producing longleaf pine or longleaf pine >10" DBH are present at the rapid assessment location	C
Longleaf pine regeneration (<2" DBH) cover is apparently absent, and no cone-producing longleaf pine or any mature longleaf pine >10" DBH are present at the rapid assessment location	D

Raw Value:

Rating: →

>10" DBH or cone-producing longleaf present ☐

Longleaf Pine Regeneration *Stand Level (optional)*	Rating
Longleaf pine regeneration is present in patches across the stand, these patches are 5-15 % of the stand (about 1/20 to 1/6 of the stand)	A
Longleaf pine regeneration is present in patches across the stand, these patches are 1-5 % of the stand or >15% of the stand (less than 1/20 or more than 1/6 of the stand)	B
Longleaf pine regeneration is very sparse across stand, patches of longleaf pine regeneration are <1% of stand, or cone-producing longleaf pine or longleaf pine >10" DBH are present	C
Longleaf pine regeneration is apparently absent in stand, and apparently no cone-producing longleaf pine or any mature longleaf pine >10" DBH are present in the stand	D

Raw Value:

Rating: →

>10" DBH or cone-producing longleaf present ☐

Shrub Overall Ecological Assessment

comments

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID: _____

Date:

Ground

Overall Native Herbaceous Ground Cover	Rating
40-100% herbaceous cover	A
>25 to <40% herbaceous cover	B
>15 to 25% herbaceous cover	C
0-15% herbaceous cover	D

Raw Value:

Rating: →

Native Warm Season Grass Cover	Rating
25-95% cover of all native warm season grasses	A
15 to <25% or >95% cover of all native warm season grasses	B
10 to <15% cover of all native warm season grasses	C
<10% cover of all native warm season grasses	D

Raw Value:

Rating: →

Native Wiry Graminoid Cover	Rating
20-95% cover of all wiry graminoids	A
10 to <20% or >95% cover of all wiry graminoids	B
2 to <10% cover of all wiry graminoids	C
<2% cover of all wiry graminoids	D

Raw Value:

Rating: →

Invasive Plant Presence/Distribution	Rating
Invasive nonnative plant species absent	A
Invasive nonnative plant species present in any stratum but sporadic (<5% cover)	B
Invasive nonnative plant species in any stratum uncommon (5-10% cover)	C
Invasive nonnative plant species in any stratum common (>10% cover)	D

Raw Value:

Rating: →

Herbaceous Indicators of Soil Disturbance	Rating
Total cover for herbaceous indicators of soil disturbance <2%	A
Total cover for herbaceous indicators of soil disturbance 2-5%	B
Total cover for herbaceous indicators of soil disturbance >5-10%	C
Total cover for herbaceous indicators of soil disturbance >10%	D

Raw Value:

Rating: →

Groundcover Overall Ecological Assessment

comments

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Florida pine snake HQT datasheet (metrics ver2.0) Plot ID: _____

Date:

Landscape

Absolute Patch Size	**Rating**	**SIZ1**
≥10000 acres	**A**	Raw Value:
≥2000 - <10000 acres	**B**	
≥500 - <2000 acres	**C**	Rating: →
<500 acres	**D**	

Contiguous Natural Land Cover	**Rating**	**LAN1**
Intact: Embedded in 90-100% natural habitat around Assessment Area.	**A**	Raw Value:
Variegated: Embedded in 60-<90% natural habitat.	**B**	
Fragmented: Embedded in 20-<60% natural habitat.	**C**	Rating: →
Relictual: Embedded in <20% natural habitat.	**D**	

Land Use Index	**Rating**	**LAN2**
Average Land Use Score = 9.5-10	**A**	Raw Value:
Average Land Use Score = 8.0-9.4	**B**	
Average Land Use Score = 4.0-7.9	**C**	Rating: →
Average Land Use Score < 4.0	**D**	

Perimeter with Natural Buffer	**Rating**	**BUF1**
Natural buffer is 100% of perimeter	**A**	Raw Value:
Buffer is 75-99% of perimeter	**B**	
Buffer is 25–<75% of perimeter	**C**	Rating: →
Buffer is <25% of perimeter	**D**	

Rating Points key: A=Excellent, B=Good, C=Fair, D=Poor

Appendix D. Florida Pine Snake HQT test site summarized output.

Note: These data can also be viewed at the Florida pine snake HQT by selecting one of the sites in the "select example site" menu. Users can add or adjust the "dummy data" for the essential behaviors to see the current functionality.

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Camp Blanding 1

Overall Score: 0.902 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **1** **excellent**	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.664 good	Basal Area of Southern Yellow Pine Canopy Trees	30	1 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	0	0.35 poor
	Southern Yellow Pine Stand Age Structure (12" cutoff)	0	0.35 poor
	Canopy Hardwood Basal Area	15	0.615 fair
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	15	0.67 good
	Stand Density Index		
Midstory 0.851 good	Midstory Fire-Tolerant Hardwood Cover	3	1 excellent
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	3	0.943 excellent
	Tall Shrub (3-10 feet tall) Cover	4	0.91 excellent
	Short Shrub (<3 feet tall) Cover	35	0.625 good
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.981 excellent	Overall Native Herbaceous Ground Cover	65	1 excellent
	Native Warm Season Grass Cover	63	1 excellent
	Native Wiry Graminoid Cover	60	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	1	0.907 excellent
Landscape 0.761 good	Absolute Patch Size (acres)	577.18	0.374 poor
	Contiguous Natural Land Cover	80.67	0.886 excellent
	Land Use Index	8.5	0.785 good
	Perimeter with Natural Buffer	100	1 excellent

Florida Pine Snake Habitat Quantification Tool

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Camp Blanding 3

Overall Score: 0.772 good			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 1 excellent	Soil Suitability (based on USDA soil drainage class)	◉ Excessively drained to well drained soils cover more than 500 acres ○ Excessively drained to well drained soils cover 200 to 500 acres ○ Excessively drained to well drained soils cover 100 to 200 acres ○ Excessively drained to well drained soils cover 1 to 100 acres ○ Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.319 poor	Basal Area of Southern Yellow Pine Canopy Trees	7.5	0.315 poor
	Southern Yellow Pine Stand Age Structure (14" cutoff)	5	0.485 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	5	0.485 fair
	Canopy Hardwood Basal Area	40	0.141 poor
	Canopy Hardwood Basal Area - Fire-Intolerant	40	0.02 poor
	Southern Yellow Pine Canopy Cover	9	0.468 fair
	Stand Density Index		
Midstory 0.718 good	Midstory Fire-Tolerant Hardwood Cover	1	0.794 good
	Midstory Fire-Intolerant Hardwood Cover	3	0.757 good
	Midstory Overall Woody Cover	4	0.997 excellent
	Tall Shrub (3-10 feet tall) Cover	1	0.981 excellent
	Short Shrub (<3 feet tall) Cover	34.5	0.638 good
	Longleaf Pine Regeneration (Rapid Assessment)	0.2	0.14 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.722 good	Overall Native Herbaceous Ground Cover	15	0.383 fair
	Native Warm Season Grass Cover	14	0.554 fair
	Native Wiry Graminoid Cover	13	0.676 good
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0	0.999 excellent
Landscape 0.628 good	Absolute Patch Size (acres)	76.49	0 poor
	Contiguous Natural Land Cover	57.22	0.611 fair
	Land Use Index	9.2	0.899 excellent
	Perimeter with Natural Buffer	100	1 excellent

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Camp Blanding 5

Overall Score: 0.809 good			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 0.906 excellent	Soil Suitability (based on USDA soil drainage class)	◉ Excessively drained to well drained soils cover more than 500 acres ○ Excessively drained to well drained soils cover 200 to 500 acres ○ Excessively drained to well drained soils cover 100 to 200 acres ○ Excessively drained to well drained soils cover 1 to 100 acres ○ Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	○ Two or more coppiced tree resprouts per acre ◉ Coppiced tree resprouts present but less than two per acre ○ Coppiced tree resprouts absent	0.625 good
	Herbaceous Above-Ground Thermoregulation Cover	◉ Bunch grasses covering more than 10 percent of the ground ○ Bunch grasses present but less than 10 percent of the ground ○ Bunch grasses absent	1 excellent
	Refugia	☑ Pocket gophers burrows ☐ Other mammal burrows ☑ Gopher tortoise burrows ☐ Cut tree stumps or standing snags ☐ None of the above present	1 excellent
Canopy 0.616 fair	Basal Area of Southern Yellow Pine Canopy Trees	7.5	0.315 poor
	Southern Yellow Pine Stand Age Structure (14" cutoff)	5	0.485 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	5	0.485 fair
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	7	0.408 fair
	Stand Density Index		
Midstory 0.768 good	Midstory Fire-Tolerant Hardwood Cover	4	1 excellent
	Midstory Fire-Intolerant Hardwood Cover	4	0.689 good
	Midstory Overall Woody Cover	8	1 excellent
	Tall Shrub (3-10 feet tall) Cover	33	0.33 poor
	Short Shrub (<3 feet tall) Cover	20	0.96 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.912 excellent	Overall Native Herbaceous Ground Cover	50	1 excellent
	Native Warm Season Grass Cover	42	1 excellent
	Native Wiry Graminoid Cover	40	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	6	0.558 fair
Landscape 0.595 fair	Absolute Patch Size (acres)	25.44	0 poor
	Contiguous Natural Land Cover	55.36	0.594 fair
	Land Use Index	8.5	0.785 good
	Perimeter with Natural Buffer	100	1 excellent

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Fort White 1

Overall Score: 0.827 good			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 1 excellent	Soil Suitability (based on USDA soil drainage class)	(•) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[ ] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.561 fair	Basal Area of Southern Yellow Pine Canopy Trees	25	1 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	0	0.35 poor
	Southern Yellow Pine Stand Age Structure (12" cutoff)	0	0.35 poor
	Canopy Hardwood Basal Area	25	0.375 fair
	Canopy Hardwood Basal Area - Fire-Intolerant	2.5	0.788 good
	Southern Yellow Pine Canopy Cover	10	0.5 fair
	Stand Density Index		
Midstory 0.71 good	Midstory Fire-Tolerant Hardwood Cover	5	0.922 excellent
	Midstory Fire-Intolerant Hardwood Cover	10	0.479 fair
	Midstory Overall Woody Cover	15	0.958 excellent
	Tall Shrub (3-10 feet tall) Cover	10	0.759 good
	Short Shrub (<3 feet tall) Cover	10	1 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.2	0.14 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.731 good	Overall Native Herbaceous Ground Cover	25	0.619 fair
	Native Warm Season Grass Cover	22	0.797 good
	Native Wiry Graminoid Cover	15	0.734 good
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	7	0.507 fair
Landscape 0.733 good	Absolute Patch Size (acres)	548.43	0.362 poor
	Contiguous Natural Land Cover	74.52	0.804 good
	Land Use Index	9	0.865 good
	Perimeter with Natural Buffer	91.2	0.903 excellent

Florida Pine Snake Habitat Quantification Tool

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Goldhead Branch 3

Overall Score: 0 poor			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **0** **poor**	Soil Suitability (based on USDA soil drainage class)	◉ Excessively drained to well drained soils cover more than 500 acres ○ Excessively drained to well drained soils cover 200 to 500 acres ○ Excessively drained to well drained soils cover 100 to 200 acres ○ Excessively drained to well drained soils cover 1 to 100 acres ○ Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	○ Two or more coppiced tree resprouts per acre ○ Coppiced tree resprouts present but less than two per acre ◉ Coppiced tree resprouts absent	0 poor
	Herbaceous Above-Ground Thermoregulation Cover	○ Bunch grasses covering more than 10 percent of the ground ○ Bunch grasses present but less than 10 percent of the ground ◉ Bunch grasses absent	0 poor
	Refugia	☐ Pocket gophers burrows ☐ Other mammal burrows ☐ Gopher tortoise burrows ☑ Cut tree stumps or standing snags ☐ None of the above present	0.375 fair
Canopy 0.423 fair	Basal Area of Southern Yellow Pine Canopy Trees	10	0.397 fair
	Southern Yellow Pine Stand Age Structure (14" cutoff)	10	0.62 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	10	0.62 fair
	Canopy Hardwood Basal Area	37.5	0.17 poor
	Canopy Hardwood Basal Area - Fire-Intolerant	37.5	0.026 poor
	Southern Yellow Pine Canopy Cover	16	0.706 good
	Stand Density Index		
Midstory 0.626 good	Midstory Fire-Tolerant Hardwood Cover	0	0.629 good
	Midstory Fire-Intolerant Hardwood Cover	18	0.308 poor
	Midstory Overall Woody Cover	18	0.87 good
	Tall Shrub (3-10 feet tall) Cover	8	0.81 good
	Short Shrub (<3 feet tall) Cover	7	1 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.2	0.14 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.474 fair	Overall Native Herbaceous Ground Cover	0	0 poor
	Native Warm Season Grass Cover	0	0.019 poor
	Native Wiry Graminoid Cover	0	0.353 poor
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0	0.999 excellent
Landscape 0.494 fair	Absolute Patch Size (acres)	1.52	0 poor
	Contiguous Natural Land Cover	62.19	0.661 good
	Land Use Index	7.3	0.622 fair
	Perimeter with Natural Buffer	73.5	0.693 good

Florida Pine Snake Habitat Quantification Tool

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Goldhead Branch 4

Overall Score: 0.875 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **1** **excellent**	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.766 good	Basal Area of Southern Yellow Pine Canopy Trees	20	0.888 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	7.5	0.553 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	7.5	0.553 fair
	Canopy Hardwood Basal Area	10	0.751 good
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	20	0.848 good
	Stand Density Index		
Midstory 0.931 excellent	Midstory Fire-Tolerant Hardwood Cover	4	1 excellent
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	4	0.997 excellent
	Tall Shrub (3-10 feet tall) Cover	0	1 excellent
	Short Shrub (<3 feet tall) Cover	20	0.96 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.934 excellent	Overall Native Herbaceous Ground Cover	30	0.722 good
	Native Warm Season Grass Cover	28	0.949 excellent
	Native Wiry Graminoid Cover	25	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0	0.999 excellent
Landscape 0.432 fair	Absolute Patch Size (acres)	20.54	0 poor
	Contiguous Natural Land Cover	17.87	0.328 poor
	Land Use Index	7.9	0.698 good
	Perimeter with Natural Buffer	74.5	0.703 good

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Goldhead Branch 5

Overall Score: 0.917 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **1** **excellent**	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.846 good	Basal Area of Southern Yellow Pine Canopy Trees	20	0.888 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	10.5	0.634 good
	Southern Yellow Pine Stand Age Structure (12" cutoff)	10.5	0.634 good
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	22	0.917 excellent
	Stand Density Index		
Midstory 0.923 excellent	Midstory Fire-Tolerant Hardwood Cover	4	1 excellent
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	4	0.997 excellent
	Tall Shrub (3-10 feet tall) Cover	4	0.91 excellent
	Short Shrub (<3 feet tall) Cover	17	0.998 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 1 excellent	Overall Native Herbaceous Ground Cover	70	1 excellent
	Native Warm Season Grass Cover	68	1 excellent
	Native Wiry Graminoid Cover	68	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0	0.999 excellent
Landscape 0.593 fair	Absolute Patch Size (acres)	69.66	0 poor
	Contiguous Natural Land Cover	60.21	0.641 good
	Land Use Index	9.1	0.882 excellent
	Perimeter with Natural Buffer	86.9	0.847 good

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Jennings SF 1

Overall Score: 0.897 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **1** **excellent**	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[ ] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.663 good	Basal Area of Southern Yellow Pine Canopy Trees	15	0.609 fair
	Southern Yellow Pine Stand Age Structure (14" cutoff)	0	0.35 poor
	Southern Yellow Pine Stand Age Structure (12" cutoff)	2.5	0.418 fair
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	13	0.6 fair
	Stand Density Index		
Midstory 0.902 excellent	Midstory Fire-Tolerant Hardwood Cover	5	0.922 excellent
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	5	1 excellent
	Tall Shrub (3-10 feet tall) Cover	6	0.861 good
	Short Shrub (<3 feet tall) Cover	7	1 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.99 excellent	Overall Native Herbaceous Ground Cover	85	1 excellent
	Native Warm Season Grass Cover	83	1 excellent
	Native Wiry Graminoid Cover	80	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0.5	0.952 excellent
Landscape 0.66 good	Absolute Patch Size (acres)	28.89	0 poor
	Contiguous Natural Land Cover	59.93	0.638 good
	Land Use Index	10	1 excellent
	Perimeter with Natural Buffer	100	1 excellent

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Ocala NF 2

Overall Score: 0.93 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 1 excellent	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent
	Woody Above-Ground Thermoregulation Cover	(●) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent

	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.896 excellent	Basal Area of Southern Yellow Pine Canopy Trees	30	1 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	15	0.755 good
	Southern Yellow Pine Stand Age Structure (12" cutoff)	10	0.62 fair
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	26	1 excellent
	Stand Density Index		
Midstory 0.882 excellent	Midstory Fire-Tolerant Hardwood Cover	1	0.794 good
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	2	0.881 excellent
	Tall Shrub (3-10 feet tall) Cover	0	1 excellent
	Short Shrub (<3 feet tall) Cover	18	0.987 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.981 excellent	Overall Native Herbaceous Ground Cover	60	1 excellent
	Native Warm Season Grass Cover	55	1 excellent
	Native Wiry Graminoid Cover	50	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	1	0.907 excellent
Landscape 0.7 good	Absolute Patch Size (acres)	603.45	0.384 fair
	Contiguous Natural Land Cover	69.18	0.739 good
	Land Use Index	9.2	0.899 excellent
	Perimeter with Natural Buffer	81.2	0.777 good

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Ocala NF 3

Overall Score: 0.816 good			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 0.906 excellent	Soil Suitability (based on USDA soil drainage class)	(•) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent
	Woody Above-Ground Thermoregulation Cover	( ) Two or more coppiced tree resprouts per acre (•) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	0.625 good

	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [x] Other mammal burrows [x] Gopher tortoise burrows [ ] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.752 good	Basal Area of Southern Yellow Pine Canopy Trees	22.5	1 excellent
	Southern Yellow Pine Stand Age Structure (14" cutoff)	0	0.35 poor
	Southern Yellow Pine Stand Age Structure (12" cutoff)	0	0.35 poor
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	19	0.813 good
	Stand Density Index		
Midstory 0.771 good	Midstory Fire-Tolerant Hardwood Cover	0	0.629 good
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	18	0.87 good
	Tall Shrub (3-10 feet tall) Cover	0	1 excellent
	Short Shrub (<3 feet tall) Cover	40	0.496 fair
	Longleaf Pine Regeneration (Rapid Assessment)	0.9	0.63 good
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.829 good	Overall Native Herbaceous Ground Cover	55	1 excellent
	Native Warm Season Grass Cover	35	1 excellent
	Native Wiry Graminoid Cover	30	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	20	0.144 poor
Landscape 0.589 fair	Absolute Patch Size (acres)	18.17	0 poor
	Contiguous Natural Land Cover	92.81	1 excellent
	Land Use Index	9.1	0.882 excellent
	Perimeter with Natural Buffer	48	0.473 fair

Florida Pine Snake Habitat Quantification Tool

version 2.4 2019-06-03.

Simmons SF 1

Overall Score: 0.874 good			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 1 excellent	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.56 fair	Basal Area of Southern Yellow Pine Canopy Trees	15	0.609 fair
	Southern Yellow Pine Stand Age Structure (14" cutoff)	2.5	0.418 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	5	0.485 fair
	Canopy Hardwood Basal Area	30	0.28 poor
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	12	0.566 fair
	Stand Density Index		
Midstory 0.849 good	Midstory Fire-Tolerant Hardwood Cover	3	1 excellent
	Midstory Fire-Intolerant Hardwood Cover	0	1 excellent
	Midstory Overall Woody Cover	4	0.997 excellent
	Tall Shrub (3-10 feet tall) Cover	2	0.958 excellent
	Short Shrub (<3 feet tall) Cover	5	0.998 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.2	0.14 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.961 excellent	Overall Native Herbaceous Ground Cover	40	0.898 excellent
	Native Warm Season Grass Cover	35	1 excellent
	Native Wiry Graminoid Cover	34	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	1	0.907 excellent
Landscape 0.687 good	Absolute Patch Size (acres)	47.93	0 poor
	Contiguous Natural Land Cover	98.28	1 excellent
	Land Use Index	8.7	0.816 good
	Perimeter with Natural Buffer	93.3	0.932 excellent

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Simmons SF 2

Overall Score: 0.876 excellent			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) 1 excellent	Soil Suitability (based on USDA soil drainage class)	○ Excessively drained to well drained soils cover more than 500 acres ◉ Excessively drained to well drained soils cover 200 to 500 acres ○ Excessively drained to well drained soils cover 100 to 200 acres ○ Excessively drained to well drained soils cover 1 to 100 acres ○ Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	(•) Two or more coppiced tree resprouts per acre ( ) Coppiced tree resprouts present but less than two per acre ( ) Coppiced tree resprouts absent	1 excellent
	Herbaceous Above-Ground Thermoregulation Cover	(•) Bunch grasses covering more than 10 percent of the ground ( ) Bunch grasses present but less than 10 percent of the ground ( ) Bunch grasses absent	1 excellent
	Refugia	[x] Pocket gophers burrows [ ] Other mammal burrows [x] Gopher tortoise burrows [x] Cut tree stumps or standing snags [ ] None of the above present	1 excellent
Canopy 0.639 good	Basal Area of Southern Yellow Pine Canopy Trees	12.5	0.495 fair
	Southern Yellow Pine Stand Age Structure (14" cutoff)	7.5	0.553 fair
	Southern Yellow Pine Stand Age Structure (12" cutoff)	7.5	0.553 fair
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	0	0.234 poor
	Stand Density Index		
Midstory 0.841 good	Midstory Fire-Tolerant Hardwood Cover	1	0.794 good
	Midstory Fire-Intolerant Hardwood Cover	1	0.911 excellent
	Midstory Overall Woody Cover	12	1 excellent
	Tall Shrub (3-10 feet tall) Cover	0.5	0.992 excellent
	Short Shrub (<3 feet tall) Cover	12	1 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.5	0.35 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.981 excellent	Overall Native Herbaceous Ground Cover	55	1 excellent
	Native Warm Season Grass Cover	50	1 excellent
	Native Wiry Graminoid Cover	40	1 excellent
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	1	0.907 excellent
Landscape 0.607 fair	Absolute Patch Size (acres)	49.41	0 poor
	Contiguous Natural Land Cover	68.42	0.73 good
	Land Use Index	7.9	0.698 good
	Perimeter with Natural Buffer	100	1 excellent

Florida Pine Snake Habitat Quantification Tool

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Simmons SF 3

Overall Score: 0 poor			
Category	**Parameters, Metrics**	**Field Data**	**Functional Value**
Essential Behaviors (required) **0** **poor**	Soil Suitability (based on USDA soil drainage class)	(●) Excessively drained to well drained soils cover more than 500 acres ( ) Excessively drained to well drained soils cover 200 to 500 acres ( ) Excessively drained to well drained soils cover 100 to 200 acres ( ) Excessively drained to well drained soils cover 1 to 100 acres ( ) Excessively drained to well drained soils absent	1 excellent

	Woody Above-Ground Thermoregulation Cover	○ Two or more coppiced tree resprouts per acre ○ Coppiced tree resprouts present but less than two per acre ◉ Coppiced tree resprouts absent	0 poor
	Herbaceous Above-Ground Thermoregulation Cover	○ Bunch grasses covering more than 10 percent of the ground ◉ Bunch grasses present but less than 10 percent of the ground ○ Bunch grasses absent	0.625 good
	Refugia	☑ Pocket gophers burrows ☐ Other mammal burrows ☑ Gopher tortoise burrows ☐ Cut tree stumps or standing snags ☐ None of the above present	1 excellent
Canopy 0.692 good	Basal Area of Southern Yellow Pine Canopy Trees	12.5	0.495 fair
	Southern Yellow Pine Stand Age Structure (14" cutoff)	0	0.35 poor
	Southern Yellow Pine Stand Age Structure (12" cutoff)	0	0.35 poor
	Canopy Hardwood Basal Area	0	1 excellent
	Canopy Hardwood Basal Area - Fire-Intolerant	0	1 excellent
	Southern Yellow Pine Canopy Cover	50	0.96 excellent
	Stand Density Index		
Midstory 0.795 good	Midstory Fire-Tolerant Hardwood Cover	1	0.794 good
	Midstory Fire-Intolerant Hardwood Cover	1	0.911 excellent
	Midstory Overall Woody Cover	2	0.881 excellent
	Tall Shrub (3-10 feet tall) Cover	7	0.836 good
	Short Shrub (<3 feet tall) Cover	10	1 excellent
	Longleaf Pine Regeneration (Rapid Assessment)	0.5	0.35 poor
	Longleaf Pine Regeneration (Stand Level)		
Ground 0.494 fair	Overall Native Herbaceous Ground Cover	4	0.078 poor
	Native Warm Season Grass Cover	0.5	0.04 poor
	Native Wiry Graminoid Cover	0	0.353 poor
	Invasive Plant Presence/Distribution	0	1 excellent
	Herbaceous Indicators of Soil Disturbance	0	0.999 excellent
Landscape 0.477 fair	Absolute Patch Size (acres)	6.99	0 poor
	Contiguous Natural Land Cover	56.66	0.606 fair
	Land Use Index	5.5	0.438 fair
	Perimeter with Natural Buffer	88.2	0.864 good