ASSISTANCE AGREEMENT AWARD# DAMD 17-01-2-0060

SURVEY FOR NON-INDIGENOUS SPECIES
EGLIN AIR FORCE BASE – YEAR 10

BOB SIKES HIGHWAY SOUTH, EAST OF SR87, EAST OF SR 285
WEST OF SR 85/NORTH OF RR 211, WEST OF SR 85/SOUTH OF RR 211

FINAL REPORT

Brenda Herring

June 2011
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Florida Natural Areas Inventory
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Gary Knight, Program Director
Cover photographs:


Top right: Japanese climbing fern (*Lygodium japonicum*), Bob Sikes Highway South Survey Site, Bear Bay Branch, Brenda Herring (FNAI).

Bottom left: Chinese privet (*Ligustrum sinense*), Bob Sikes Highway South Survey Site, RR 213, Brenda Herring (FNAI).

Bottom right: Peruvian primrosewillow (*Ludwigia peruviana*), East of SR 87 Survey Site, SR 87, Brenda Herring (FNAI).

Recommended citation:

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ACKNOWLEDGMENTS

Florida Natural Areas Inventory (FNAI) conducted the tenth year of a multi-year exotic species survey of Eglin Air Force Base (EAFB). Numerous individuals are thanked for the help and support that they gave to the EAFB invasive species survey. The assistance provided by the Natural Resource Branch of EAFB (Jackson Guard) was instrumental for this project’s success. Steve Sieber, Chief of the Natural Resources Branch, and Bruce Hagedorn, Chief of the Wildlife Section are thanked for their administrative support. Our project leader, Dennis Teague (Endangered Species/Exotic Plants Specialist) of the Natural Resource Branch at EAFB is gratefully acknowledged and thanked for all of his time and effort spent on all phases of this project.

Several members of the FNAI staff deserve thanks for making this project successful. Gary Knight, director of FNAI, had the vision over ten years ago to expand FNAI’s mission to include documenting the exotic species invasion that was taking place in many of Florida’s managed natural areas. EAFB was one of the first public lands that FNAI performed exotic species surveys on. In the ten-year time span since the first Eglin Invasive Species survey began, FNAI has now conducted exotic surveys throughout a large portion of Florida’s managed areas. Gary can be credited with allowing FNAI to enter this most important arena to help preserve biodiversity not only on Eglin, but also throughout Florida.

FNAI Office Managers, Theresa Harrell and Dorothy Gochnauer are acknowledged for handling the budget and processing travel expenditures in the timeliest of fashion. Thanks are extended to Amy Knight (GIS Program Specialist), and Lindsay Horton (former FNAI Data Services Coordinator) for their help and orientation into Arc Map. Data Manager and GIS Analyst – Frank Price, is also thanked for providing information on FNAI’s invasive species database.

FNAI volunteer Don Herring deserves praise for all that he did to aid the EAFB invasive species survey and report. Don provided extensive computer assistance with GIS and data-management software.
EXECUTIVE SUMMARY

The Florida Natural Areas Inventory (FNAI) performed invasive plant and animal surveys during the tenth year of a multi-year project on Eglin Air Force Base (EAFB). Five areas were surveyed during 2010: Bob Sikes Highway South (Management Units N1-N5), an area east of SR 87 (Management Units E14-E19 and F1-F2), an area east of SR 285 (Management Units L1-L11, and L22), an area west of SR 85 and north of RR 211 (Management Units I1-I2, I8-I9, F4, F8, F12, and B-76), and an area west of SR 85 and south of RR 211 (Management Units I3-I4, I13, F15-F23, and B5). Within the five survey sites, all areas that had experienced disturbances were visited. The surveys focused on collecting data on the location, distribution, and disturbances related to the exotic plant species listed by the Florida Exotic Pest Plant Council (FLEPPC). Information on other introduced plants (non-FLEPPC listed species), invasive animal occurrences, and rare species listed at state and federal levels were also collected. Rare species will be entered into FNAI’s Natural Heritage Database. The exotic pest species data will be incorporated into the EAFB’s Invasive Non-native Species Management Program and used to eradicate these invasive species. Invasives occurrence information will also be incorporated into the Florida Invasive Plants Geodatabase (FLINV).

Field surveys were conducted from early September through mid November 2010. The locations and population attributes of the target exotic pest species, non-FLEPPC species, and rare plant and animal species were recorded in each of the field sites with a Global Positioning System (GPS) unit. The data was then incorporated into geographic information system (GIS) files utilizing Arc Map software.

Four hundred and fifty-one occurrences of sixteen FLEPPC ranked exotic plants were documented within five sites on EAFB during the 2010 survey. The observed exotic pest plant species were: camphor tree (*Cinnamomum camphora*), Chinaberry (*Melia azedarach*), Chinese privet (*Ligustrum sinense*), Chinese tallow (*Sapium sebiferum*), Chinese wisteria (*Wisteria sinensis*), cogon grass (*Imperata cylindrica*), common water hyacinth (*Eichhornia crassipes*), golden bamboo (*Phyllostachys aurea*), Japanese climbing fern (*Lygodium japonicum*), Japanese honeysuckle (*Lonicera japonica*), Lantana (*Lantana camara*), Mexican petunia (*Ruellia brittoniana*), mimosa (*Albizia julibrissin*), Peruvian primrosewillow (*Ludwigia peruviana*), taro (*Colocasia esculenta*) and torpedo grass (*Panicum repens*). Fourteen additional occurrences of non-FLEPPC listed introduced plant and species were also documented. Nine new county records of introduced plant species were documented during the 2010 Eglin Invasive Species Survey within Okaloosa, Santa Rosa, and Walton Counties.

The report contains brief and general descriptions of the five survey sites visited on EAFB, reflecting numbers of species and occurrences of invasive plants and animals, and types of disturbances. Fourteen rare (FNAI tracked and state listed) plant and three rare animal species were also documented during the 2010 EAFB Invasive Species Survey. Attribute tables with detailed data on the FLEPPC, non-FLEPPC, and listed species are included as appendices to this report.
INTRODUCTION

Since the Eglin Air Force Base (EAFB) Natural Resources Division implemented an Invasive Non-native Species Program in 1995 (USDOD 2002, SAIC 2007), many sites have now been identified on EAFB as having invasive plants and animals. From 2001-2009, Florida Natural Areas Inventory (FNAI) surveyed and documented exotic species occurring in 49 sites at Eglin Air Force Base. The surveyed sites included many of EAFB’s outstanding natural areas or significant botanical sites, urban interface zones, and areas that had or are currently experiencing significant disturbance. Among the sites surveyed were Alaqua Creek, Alaqua Point, Basin Bayou, Basin Bayou campground, Basin Creek, Boiling Creek, Brier Creek, Cape San Blas, East Bay Flatwoods, East Bay River, Eglin Golf Course, Four Mile Creek, Hicks Prairie, Hurlburt Archery Range Road, Indigo Creek, Joint Strike Fighter Site, Juniper Creek steephead, Lake Pippen, Live Oak Creek, Little Boiling Creek, Little Trout Creek, Management Unit 10, Management Unit 6 Quail Area, Management Unit 6N, Management Unit 7, Management Unit 13B, Mary Ester Sprayfield, Mullet Creek, North East Bay Flatwoods, Patterson Natural Area, Piney Creek Urban Interface, Piney Creek, Rocky Creek, Santa Rosa Island Restricted, Santa Rosa Island Public, Scrub Pond, Shoal and Yellow Rivers, Spencer Flats, Timberlake Pond Recreation Area, Titi Creek, Turkey Creek, Turtle Creek, Weaver Creek, Weaver River, West of SR 87- RR 213 South (including East Bay), Whiskey Head Dove Field, White Point, and Whitmier Island. A summary of areas that have been surveyed for invasive species during the last nine years is presented by each year in Figure 1. Detailed descriptions of each of the 49 invasive species survey sites and the exotic species documented can be found in the following references: Herring et al 2002; Herring 2003, 2004, 2005, 2006a, 2006b, 2006c, 2008, 2009, and 2010.

Some of the EAFB sites have been resurveyed after five years due to treatment of invasive species and also due to natural disturbances to the landscape from hurricanes. Among the resurveyed sites include the public and restricted portions of Santa Rosa Island, White Point, and Whitmier Island.

Seventeen of the EAFB sites were surveyed due to their classification as outstanding natural areas (Kindell et al. 1997) or significant botanical sites (Chafin and Schotz 1995). The 17 outstanding natural areas that were surveyed during the 2001-2009 surveys for invasives included the following: Boiling Creek, Brier Creek, East Bay Flatwoods (includes East Bay River), Hick’s Creek Prairie, Little Boiling Creek, Live Oak Creek, Lower Weaver River, Patterson Natural Area, Piney Creek, Santa Rosa Island (restricted, closed), Santa Rosa Island (public), Scrub Pond, Spencer Flats Wetlands, Titi Creek Wilderness Area, White Point, Whitmier Island, and Yellow River Basin. Sites were also selected for survey based on their connection to outstanding natural areas, such as Cape San Blas, the East Bay River, Indigo Creek, Juniper Creek steephead, North East Bay Flatwoods, Piney Creek Urban Interface, Rocky Creek, Shoal River, Turkey Creek, Turtle Creek, and Weaver Creek.
Figure 1. Eglin Air Force Base Invasive Species Survey Sites 2001 - 2009.
Several sites were chosen as survey areas due to invasive species were already known to be present, the site was bordered by an urban interface, or the site had experienced recent disturbance. Alaqua Creek, Basin Bayou, Basin Bayou Campground, Basin Creek, the Eglin Golf Course, Four-Mile Creek, Hurlburt Archery Range Road area, Joint Strike Fighter Site, Lake Pippen, Little Trout Creek, Management Unit 6 Quail Area, Management Unit 6N, Management Unit 7, Management Unit 10, Mary Ester Sprayfield, Management Unit 13B, Timberlake Pond Recreation Area, West of SR 87- RR 213 South (including East Bay), and the Whiskey Head Dove Field were areas that met the above-mentioned survey criteria (Herring 2010).

Critical data on numbers of exotic pest plant and animal populations, the amount of area that each cover, and the sources of disturbances related to each infestation has now been collected in several of EAFB’s natural areas. Eradication efforts have closely followed the FNAI invasive surveys. Invasive species inventories, monitoring, and eradication are crucial to maintaining the health and well-being of EAFB’s natural areas. EAFB’s biodiversity can best be preserved and protected by early detection and eradication of invasive species.

This report represents the results of the tenth year of the EAFB non-indigenous species survey, a multi-year project that began in 2001. FNAI, which is part of Florida State University’s Institute for Science and Public Affairs, conducted the survey. Five areas were surveyed for invasive plants and animals during 2010: Bob Sikes Highway South (Management Units N1-N5), east of SR 87 (Management Units E14-E19 and F1-F2), east of SR 285 (Management Units L1-L11 and L22), west of SR 85 and north of RR 211 (Management Units I1-I2, I8-I9, F4, F8, F12, and B-76), and west of SR 85 and south of RR 211 (Management Units I3-I4, I13, F15-F23, and B5) (Figure 2). FNAI was contracted to conduct this invasive exotic pest species survey due to its mission to conserve Florida’s biological diversity. FNAI maintains a statewide database on the status, distribution, and management of rare and endangered plant and animal taxa, exemplary natural communities, managed areas, and invasive species.
Figure 2. 2010 Eglin Air Force Base Non-indigenous Species Survey Sites.
METHODS

The tenth year of the Eglin Air Force Base (EAFB) non-indigenous species survey was conducted from September 7 through November 19, 2010. Five areas were surveyed for invasive plants and animals during 2010: Bob Sikes Highway South (Management Units N1-N5), east of SR 87 (Management Units E14-E19 and F1-F2), east of SR 285 (Management Units L1-L11 and L22), west of SR 85 and north of RR 211 (Management Units I1-I2, I8-I9, F4, F8, F12, and B-76), and west of SR 85 and south of RR 211 (Management Units I3-I4, I13, F15-23, and B5) (Figure 2). The sites were chosen for survey based on whether the area was deemed an outstanding natural area (had many element occurrences and had been managed exceptionally well), joined an outstanding natural area, close proximity to urban development/interface, exotic species already known to be present, site had experienced recent (or was going to experience) disturbance, and/or joined already surveyed sites.

Preliminary Methods

Prior to starting the tenth year of the EAFB non-indigenous species survey, information from several different sources was gathered. A list of potential exotic pest plant species for EAFB (Table 1) was compiled using the most current invasive species listing of the Florida Exotic Pest Plant Council (FLEPPC 2009). County distributions of each species on the FLEPPC list were then checked on the Atlas of Florida Vascular Plants web site (http://www.plantatlas.usf.edu, Wunderlin and Hansen 2008). The 2009 FLEPPC list defines Category I and II as follows:

**Category I** - Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.

**Category II** - Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become ranked Category I, if ecological damage is demonstrated.

Additional materials that were obtained before the fieldwork began included numerous electronic shapefiles that contained pertinent data and imagery. Several resources were utilized in setting up a working Arc Map project and include:

- natural community, rare plant, and rare animal element occurrence records from the FNAI database and from earlier EAFB reports
- Digital Ortho Quarter Quads (2004 DOQQs) (FDEP 2003)
- EAFB managed area boundary shapefiles from the FNAI database
- EAFB Range Road information from the 2010-2011 Outdoor Recreation, Hunting, and Freshwater Fishing Map (JGNRB 2010)

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Eglin Air Force Base Counties with Known Occurrences</th>
<th>Florida EPPC Category</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Gulf</td>
<td>Okaloosa</td>
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<tr>
<td>Albizia julibrissin</td>
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<td>Alternanthera philoxeroides</td>
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<td>Sprenger’s asparagus-fern</td>
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<td>Broussonetia papyrifera</td>
<td>paper mulberry</td>
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<td>Cinnamomum camphora</td>
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<td>Clematis terniflora</td>
<td>sweet autumn virginsbower</td>
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### Table 1 (Continued)

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<td>taro</td>
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<td><em>Imperata cylindrica</em></td>
<td>cogon grass</td>
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<td>*Y</td>
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<td><em>Landoltia punctata</em></td>
<td>dotted duckweed</td>
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<td><em>Ligustrum sinense</em></td>
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<td><em>Lygodium japonicum</em></td>
<td>Japanese climbing fern</td>
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<td><em>Melia azedarach</em></td>
<td>Chinaberry</td>
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<td><em>Melinis repens</em> Syn. = <em>Rhynchelytrum repens</em></td>
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<td><em>Panicum repens</em></td>
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<td><em>Pennisetum purpureum</em></td>
<td>napier grass</td>
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<td><em>Phyllostachys aurea</em></td>
<td>golden bamboo</td>
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Table 1 (Continued)

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<td>Okaloosa</td>
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<tr>
<td><em>Pteris vittata</em></td>
<td>Chinese brake fern</td>
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<td><em>Pueraria montana var. lobata</em></td>
<td>kudzu</td>
<td>Y</td>
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<tr>
<td><em>Ruellia brittoniana</em> (R. tweediana misapplied)</td>
<td>Mexican petunia</td>
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<td><em>Sapium sebiferum</em></td>
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<td><em>Sesbania punicea</em></td>
<td>purple sesban</td>
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<td><em>Solanum viarum</em></td>
<td>tropical soda apple</td>
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<tr>
<td><em>Tribulus cistoides</em></td>
<td>burnnut</td>
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<tr>
<td><em>Wisteria sinensis</em></td>
<td>Chinese wisteria</td>
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</tbody>
</table>
Florida National Scenic Trail shapefile

Several botanical and ecological references were also gathered before the invasive species survey began (Chafin 2000; Clewell 1985; Coile and Garland 2003; FNAI 2010; FNAI 2011a, FNAI 2011b; Godfrey and Wooten 1979, 1981; Isely 1990; Langeland and Burks 1998; Nelson 1994; Tobe et al. 1998; and Wunderlin 1998). Natural communities and rare plant and animal occurrence data known from EAFB was also collected prior to fieldwork (Kindell et al. 1997; Chafin and Schotz 1995).

In order to facilitate entering and processing data; data dictionaries were created to capture point and polygon data for invasive exotic and rare plants and animals prior to taking the datalogger into the field. Attributes that were used in the data dictionaries for FLEPPC listed invasive plants and non-FLEPPC listed introduced plants and animals, rare plants, rare animals, and generic (general) points are presented and defined in Appendices 1-4.

Field Survey Methods

The order in which sites were surveyed were based on when access was available. The survey season started and ended east of SR 285. Only a small portion of the 2010 survey sites had restricted access. The eastern side of Field 6, in the west of SR 85/RR 211 South site and Range C-86 east of SR 285 were the only two restricted sites, but road closures were occasional within all of the 2010 survey sites. Timing site visits around archery and muzzle-loading seasons was also factored in to when to visit a site.

Access onto the survey sites was made via paved and unpaved roads, off road vehicle (ORV) and all-terrain vehicle (ATV) trails/roads, fire break/plow lines, powerline clearings, pipeline roads, animal trails, and footpaths/trails. The surveys were conducted on foot, and by a four-wheel drive vehicle.

Field equipment utilized for the invasive species survey included the following:

- Trimble GeoExplorer Recon datalogger/GPS unit
- Garmin GPSmap 76CSx GPS unit (backup GPS)
- paper copies of the exotic species and rare plant and animal data dictionaries in case the datalogger failed
- paper copies of exotic species and rare plant and animal survey forms in case the datalogger failed
- hand lens
- paper maps made from DOQQS (2004 DOQQs) (FDEP 2003)
- paper maps made from USGS 7.5 minute topographic quadrangles – Crestview South, Defuniak Springs West, Floridale, Harold SE, Holly, Holt, Holt SW, Navarre, Niceville, Niceville SE; Mossy Head, and Ward Basin Quads (FDEP 2003)
- plastic bags for collecting plant specimens
- plant press for checking species identity and voucher collection
- digital camera
- flagging tape
- write-in-rain paper materials

Mapping and Reporting Methods

GPS Pathfinder Office software was used to transfer files to and from dataloggers, display and edit collected data, overlay this data onto a background map, and export the point data as Environmental Systems Research Institute (ESRI) shapefiles. Five shapefiles were created from the 2010 EAFB non-indigenous species survey data once the information had been merged into Arc Map: FLEPPC listed invasive plants, non-FLEPPC listed introduced plants and animals, rare plants, rare animals, and generic points. Included within each shapefile are attribute tables with the attributes collected in the field associated with each occurrence. Detailed attribute tables are presented in Appendices 5-8. The above-mentioned shapefiles are also included on a Compact Disk that is presented in the report as Appendix 9. Rank and status definitions of listed species are provided in Appendix 10.

All data were reviewed and corrected for consistency. The projection parameters for all shapefiles are as follows:

Projection: Albers
Datum: HPGN
Units: Meters
Parameters
1st standard parallel: 24 0.000
2nd standard parallel: 31 30.000
central meridian: -84 0.000
latitude of projection's origin: 24 0.000
false easting (meters): 400000.000
false northing (meters): 0.00000

The exotic invasive plant data will be entered into the Florida Invasive Plants Geodatabase (FLINV). All of the rare plant and animal element occurrences will be incorporated into FNAI’s conservation database using proprietary NatureServe software, Biotics 4.
RESULTS

Summary Tables

Four hundred and fifty-one points were collected for sixteen species of Florida Exotic Plant Pest Council (FLEPPC) tracked invasive exotic plants within Bob Sikes Highway South ( Management Units N1-N5), east of SR 87 ( Management Units E14-E19 and F1-F2), east of SR 285 ( Management Units L1-L11 and L22), west of SR 85 and north of RR 211 ( Management Units I1-I2, I8-I9, F4, F8, F12, and B-76), and west of SR 85 and south of RR 211 ( Management Units I3-I4, I13, F15-F23, and B5) during the 2010 non-indigenous exotic species survey. Thirteen of the sixteen species of invasive plants that were documented are listed by FLEPPC as Category I, and three species are ranked as Category II (FLEPPC 2009). Two new county records of FLEPPC listed invasive exotic plant species were documented during the 2010 inventory in Santa Rosa County, golden bamboo (Phyllostachys aurea) and Peruvian primrosewillow (Ludwigia peruviana) (Wunderlin and Hansen 2008). Table 2 presents each exotic pest species observed within the corresponding counties, survey sites, and FLEPPC Category.

In addition to the 451 FLEPPC listed exotic plant occurrences, 154 points were recorded for fourteen non-FLEPPC introduced species. Two introduced and invasive animal species were observed: feral hog and feral hog sign (Sus scrofa) and red imported fire ant (Solenopsis invicta). The occurrences of feral hogs/sign and red imported fire ants were documented within the Okaloosa and Walton County sites. Additional occurrences of twelve non-FLEPPC listed introduced plant species were also documented and include: Asiatic dayflower (Commelina communis), bahiagrass (Paspalum notatum), bordergrass (Liriope spicata), browntop millet (Urochloa ramosa), Canada cockleburr (Xanthium strumarium var. canadense), centipede grass (Eremochloa ophiuroides), Chinese lespedeza (Lespedeza cuneata), crapemyrtle (Lagerstroemia indica), gladiolus (Gladiolus x grandavensis), Japanese privet (Ligustrum japonicum), noyau vine (Merremia dissecta), and southern catalpa (Catalpa bignonioides). Seven of the introduced plant species were new county records for Okaloosa, Santa Rosa, or Walton Counties.

An abundance ranking for each of the 16 FLEPPC exotic species is presented in Table 3. The total number of occurrences per species as well as number of each species per site is listed. Of the 16 FLEPPC listed invasive species, Japanese climbing fern (Lygodium japonicum) represents the species with the greatest number of occurrences with 133 points recorded in all of the five sites. Mimosa (Albizia julibrissin) had the next highest number of occurrences with 93 points documented in four of the five sites. Chinese tallow (Sapium sebiferum) also was documented in all five sites with 91 points. Fifty-two points were collected for Chinese privet (Ligustrum sinense) which occurred in three sites. Japanese honeysuckle (Lonicera japonica) was observed 28 times in all five sites. Torpedo grass (Panicum repens) and cogon grass (Imperata cylindrica) were documented 20 and 14 times in four sites. Camphor tree (Cinnamomum camphora) was noted five times in one site. The remainder of the FLEPPC listed species, Chinaberry (Melia
Table 2. List of Florida Exotic Pest Plant Council (FLEPPC) listed plant and non-FLEPPC listed plant and animal species documented on Eglin Air Force Base (EAFB) during the 2010 Non-indigenous Species Survey.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>EAFB counties with occurrences documented during the 2010 survey (* = new county record documented in 2010).</th>
<th>EAFB Site(s)</th>
<th>Florida Exotic Pest Plant Council (FLEPPC) Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bob Sikes Highway South (BSHS), East of SR 87 (E87), East of SR 285 (E285), West of SR 85/RR 211 North (W85/211N), and West of SR 85/RR 211 South (W85/211S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Okaloosa</td>
<td>Santa Rosa</td>
<td>Walton</td>
</tr>
<tr>
<td><strong>Albizia julibrissin</strong></td>
<td>mimosa</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Catalpa bignonioides</strong></td>
<td>Southern catalpa</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Cinnamomum camphora</strong></td>
<td>camphor tree</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colocasia esculenta</strong></td>
<td>taro</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commelina communis</strong></td>
<td>Asiatic dayflower</td>
<td>*Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eichhornia crassipes</strong></td>
<td>common water-hyacinth</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eremochloa ophiuroides</strong></td>
<td>centipede grass</td>
<td>Y</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td><strong>Gladiolus x gandavensis</strong></td>
<td>gladiolus</td>
<td>*Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>EAFB counties with occurrences documented during the 2010 survey (* = new county record documented in 2010).</td>
<td>EAFB Site(s)</td>
<td>Florida Exotic Pest Plant Council (FLEPPC) Category</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Okaloosa</td>
<td>Santa Rosa</td>
<td>Walton</td>
</tr>
<tr>
<td><em>Imperata cylindrica</em></td>
<td>cogon grass</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><em>Lagerstroemia indica</em></td>
<td>crapemyrtle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lantana camara</td>
<td>Lantana</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lespedeza cuneata</td>
<td>Chinese lespedeza</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><em>Ligustrum japonicum</em></td>
<td>Japanese privet</td>
<td></td>
<td>*Y</td>
<td></td>
</tr>
<tr>
<td>Ligustrum sinense</td>
<td>Chinese privet</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Liriope spicata</td>
<td>bordergrass</td>
<td></td>
<td>*Y</td>
<td></td>
</tr>
<tr>
<td>Lonicera japonica</td>
<td>Japanese honeysuckle</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Ludwigia peruviana</td>
<td>Peruvian primrosewillow</td>
<td></td>
<td></td>
<td>*Y</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>EAFB counties with occurrences documented during the 2010 survey (* = new county record documented in 2010).</th>
<th>EAFB Site(s)</th>
<th>Florida Exotic Pest Plant Council (FLEPPC) Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Okaloosa</td>
<td>Santa Rosa</td>
<td>Walton</td>
</tr>
<tr>
<td>Lygodium japonicum</td>
<td>Japanese climbing fern</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Melia azedarach</td>
<td>Chinaberry</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Merremia dissecta</td>
<td>noyau vine</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Panicum repens</td>
<td>torpedo grass</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Paspalum notatum</td>
<td>bahiagrass</td>
<td>*Y</td>
<td>*Y</td>
<td>*Y</td>
</tr>
<tr>
<td>Phyllostachys aurea</td>
<td>golden bamboo</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Ruellia brittoniana</td>
<td>Mexican petunia</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapium sebiferum</td>
<td>Chinese tallow</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Solenopsis invicta</td>
<td>red imported fire ant</td>
<td>Y</td>
<td></td>
<td>Y</td>
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Table 2 (Continued)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>EAFB counties with occurrences documented during the 2010 survey (* = new county record documented in 2010).</th>
<th>EAFB Site(s)</th>
<th>Florida Exotic Pest Plant Council (FLEPPC) Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Okaloosa</td>
<td>Santa Rosa</td>
<td>Walton</td>
</tr>
<tr>
<td>*Sus scrofa</td>
<td>feral hog</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>*Urochloa ramosa</td>
<td>browntop millet</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Xanthium strumarium var. canadense</td>
<td>Canada cockleburr</td>
<td></td>
<td>*Y</td>
<td></td>
</tr>
<tr>
<td>*Wisteria sinensis</td>
<td>Chinese wisteria</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3. Abundance ranking of the Florida Exotic Pest Plant Council (FLEPPC) ranked plant species (based on number of observed populations) documented during the Eglin Air Force Base 2010 Non-indigenous Species Survey.

<table>
<thead>
<tr>
<th>Species Common name</th>
<th>Total Number of Occurrences Per Species</th>
<th>Bob Sikes Highway South</th>
<th>East of SR 87</th>
<th>East of SR 285</th>
<th>West of SR 85/ RR 211 North</th>
<th>West of SR 85/ RR 211 South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lygodium japonicum</td>
<td>133</td>
<td>94</td>
<td>8</td>
<td>3</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>Japanese climbing fern</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albizia julibrissin</td>
<td>93</td>
<td>4</td>
<td>28</td>
<td>37</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>mimosa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapium sebiferum</td>
<td>91</td>
<td>9</td>
<td>22</td>
<td>52</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Chinese tallow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ligustrum sinense</td>
<td>52</td>
<td>39</td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese privet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lonicera japonica</td>
<td>28</td>
<td>19</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Japanese honeysuckle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panicum repens</td>
<td>20</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>torpedo grass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imperata cylindrica</td>
<td>14</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>cogon grass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cinnamomum camphora</td>
<td>5</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 (Continued)

<table>
<thead>
<tr>
<th>Species Common name</th>
<th>Total Number of Occurrences Per Species</th>
<th>Bob Sikes Highway South</th>
<th>East of SR 87</th>
<th>East of SR 285</th>
<th>West of SR 85/ RR 211 North</th>
<th>West of SR 85/ RR 211 South</th>
</tr>
</thead>
<tbody>
<tr>
<td>camphor tree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Melia azedarach</em></td>
<td>Chinaberry</td>
<td>3</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Wisteria sinensis</td>
<td>Chinese wisteria</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lantana camara</em></td>
<td>Lantana</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ludwigia peruviana</em></td>
<td>Peruvian primrosewillow</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Phyllostachys aurea</em></td>
<td>golden bamboo</td>
<td>2</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Colocasia esculenta</em></td>
<td>taro</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Eichhornia crassipes</em></td>
<td>water hyacinth</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Ruellia brittoniana</em></td>
<td>Mexican petunia</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>16 Species</strong></td>
<td><strong>451</strong></td>
<td><strong>165</strong></td>
<td><strong>101</strong></td>
<td><strong>110</strong></td>
<td><strong>65</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>
azedarach), Chinese wisteria (Wisteria sinensis), lantana (Lantana camara), Peruvian primrosewillow (Ludwigia peruviana), golden bamboo (Phyllostachys aurea), taro (Colocasia esculenta), water hyacinth (Eichhornia crassipes), and Mexican petunia (Ruellia brittoniana) were documented in one or two of the sites and had one to three occurrences.

The greatest numbers of exotic species were documented within the Bob Sikes Highway South survey site with 165 occurrences (Table 3). The second and third highest numbers of invasive occurrences (101 and 110) were noted in the East of SR 87 and East of SR 285 sites. Sixty-five FLEPPC listed invasive plants were noted within the West of SR 85/RR 211 North site. The fewest number of invasive species occurrences (10) was documented West of SR 85/RR 211 South.

In addition to the exotic species, 118 occurrences of 17 species of rare (FNAI tracked) plants and animals were recorded. Ninety-nine points were recorded for the following fourteen rare plant species: Arkansas oak (Quercus arkansana), Ashe’s Magnolia (Magnolia ashei), Baltzell’s sedge (Carex baltzellii), bog spicebush (Lindera subcoriacea), Curtiss’ sandgrass (Calamovilfa curtissii), hairy wild indigo (Baptisia calycosa var. villosa), incised groove-bur (Agrimonia incisa), mountain laurel (Kalmia latifolia), panhandle lily (Lilium iridollae), pineland hoary-pea (Tephrosia mohrii), spoon-leaved sundew (Drosera intermedia), sweet pitcherplant (Sarracenia rubra), white-top pitcherplant (Sarracenia leucophylla), and yellow-root (Xanthorhiza simplicissima). Nineteen occurrences representing three rare animal species were documented during the 2010 invasive species survey: red-cockaded woodpecker (Picoides borealis), gopher tortoise (Gopherus polyphemus), and Florida black bear (Ursus americanus floridanus). Seventeen points were recorded for red-cockaded woodpecker banded longleaf pine (Pinus palustris). A single gopher tortoise burrow was observed East of SR 285. A young Florida black bear adult was observed crossing busy SR 87. Table 4 lists the FNAI, Federal, and State rank and legal status for each rare species.

Attribute and location information for each FLEPPC listed invasive plant and non-FLEPPC listed introduced plant and animal points are included in Appendix 5; whereas FNAI tracked rare plant species point data are provided in Appendix 6, and rare animal points are included in Appendix 7. Generic points were taken to capture miscellaneous quick information such as exotic species absence and are presented in Appendix 8. The attributes for each species have also been incorporated into Arc Map to produce shapefiles and have been copied onto a CD included in Appendix 9. Rank and status definitions are provided in Appendix 10 for the rare species (FNAI 2011b).
Table 4. Rank and status of rare plant and animal species observed on Eglin Air Force Base during the 2010 Non-indigenous Species Survey.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>FNAI Global Rank</th>
<th>FNAI State Rank</th>
<th>Federal Status</th>
<th>State Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLANTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agrimonia incisa</td>
<td>Incised groove-bur</td>
<td>G3</td>
<td>S2</td>
<td>N</td>
<td>LE</td>
</tr>
<tr>
<td>Baptisia calycosa var. villosa</td>
<td>hairy wild indigo sandgrass</td>
<td>G3T3</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Calamovilfa curtissii</td>
<td>Curtiss’ sandgrass</td>
<td>G3</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Carex baltzellii</td>
<td>Baltzell’s sedge</td>
<td>G3</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Drosera intermedia</td>
<td>Spoon-leaved sundew</td>
<td>G5</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Kalmia latifolia</td>
<td>mountain laurel</td>
<td>G5</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Lilium iridollae</td>
<td>Panhandle lily</td>
<td>G2</td>
<td>S2</td>
<td>N</td>
<td>LE</td>
</tr>
<tr>
<td>Lindera subcoriacea</td>
<td>Bog spicebush</td>
<td>G2G3</td>
<td>S1</td>
<td>N</td>
<td>LE</td>
</tr>
<tr>
<td>Magnolia ashei</td>
<td>Ashe’s Magnolia</td>
<td>G2</td>
<td>S2</td>
<td>N</td>
<td>LE</td>
</tr>
<tr>
<td>Quercus arkansana</td>
<td>Arkansas oak</td>
<td>G3</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Sarracenia leucophylla</td>
<td>white-top pitcherplant</td>
<td>G3</td>
<td>S3</td>
<td>N</td>
<td>LE</td>
</tr>
<tr>
<td>Sarracenia rubra</td>
<td>sweet pitcherplant</td>
<td>G4</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Tephrosia mohrii</td>
<td>pineland hoary-pea</td>
<td>G3</td>
<td>S3</td>
<td>N</td>
<td>LT</td>
</tr>
<tr>
<td>Xanthorhiza simplicissima</td>
<td>yellow-root</td>
<td>G5</td>
<td>S1</td>
<td>N</td>
<td>LE</td>
</tr>
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**MAMMALS**

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<td>S2</td>
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Rankings based on Florida Natural Areas Inventory’s Element Tracking Summary - Tracking List of Rare, Threated, and Endangered Plants and Animals and Exemplary Natural Communities of Florida (FNAI 2011a) and Notes on Florida’s Endangered and Threatened Plants (Coile and Garland 2003).

Definitions of the ranks and statuses are provided in Appendix 10.
Survey Sites

**Bob Sikes Highway South**

Located in central Walton County and in the northeastern portion of EAFB, the Bob Sikes Highway South (BSHS) site consists of Management Units N1-N5 (Figure 3). The BSHS site was selected for invasive species survey based on its close proximity to an urban interface and it was already known to have numerous exotic plants present. The site is diverse in high quality upland and wetland habitats with excellent examples of sandhill, upland hardwood forests, seepage slopes, and seepage streams. Alaqua, Bear Bay Branch, and Bullhide Creeks run throughout the BSHS site. Many rare plant and animal occurrences were also known to occur throughout this site. A large section of the Florida National Scenic Trail transects this portion of EAFB.

The BSHS survey site covers a large area of EAFB. The site is defined by the following roads and boundaries: RR 213 (Bob Sikes Highway) marks the northern extent, EAFB’s eastern boundary delimits the eastern boundary of the survey site; RR 203 represents the southern extent surveyed and RR 212 is the western boundary of the site (Figure 3). Access within the BSHS site included the above-mentioned roads and public roads and numerous other numbered and un-numbered Range Roads, some of which were closed to vehicular traffic. Harrell Road provided access to the northeastern portion of the site. Other Range Roads utilized were RR 210, 325, 327, 329, 334, 336, 342, 368, 381, 389, 399, and 407. Powerlines, old logging roads and portions of the Florida National Scenic Trail also provided access into the BSHS site.

The largest number of FLEPPC listed plant species occurrences were documented within the BSHS area during the 2010 EAFB invasive species survey. One hundred and sixty-five occurrences of five species of FLEPPC ranked exotic pest plants were observed growing within the BSHS site (Table 3, Figure 3).

- Japanese climbing fern (*Lygodium japonicum*) – 94 occurrences
- Chinese privet (*Ligustrum sinense*) – 39 occurrences
- Japanese honeysuckle (*Lonicera japonica*) – 19 occurrences
- Chinese tallow (*Sapium sebiferum*) – 9 occurrences
- mimosa (*Albizia julibrissin*) – 4 occurrences

There were 3 problem areas within the BSHS site, in which FLEPPC-listed exotic plants were documented: Bob Sikes Highway, RR 381 (Bear Bay Branch), and the powerline. The largest covering of invasive species was documented along the north and south sides of Bob Sikes Highway extending from EAFB’s eastern boundary west to RR 382. Japanese climbing fern, Chinese privet, Japanese honeysuckle, Chinese tallow, and mimosa were in great abundance within the ruderal edges of the highway and down into cleared right-of-way paths that border mesic flatwoods, baygall, seepage slope, sandhill, upland hardwood forest, wet flatwoods. A second area that was dense with FLEPPC-
Figure 3. Non-indigenous Species and Rare Plants Documented in the Bob Sikes Highway South Site During 2010.
listed invasive species was along RR 381 at Bear Bay Branch. Japanese climbing fern, Japanese honeysuckle, and Chinese tallow, was documented both along the ruderal edge of the road and also along the edge of Bear Bay Branch stream. A third area where exotic plants were documented in the BSHS site was along the powerline. Japanese climbing fern was observed in several locations under the powerline. Disturbances associated with the presence of exotics within the BSHS site included the urban interface, claypits, excavation, ORV trail, road, road fill, trash dumping, land clearing, ditching/hydrological changes, pine plantation, powerline, and fire-suppression. Only one FLEPPC-listed exotic plant species was documented in a natural area. Mimosa was observed south of Bob Sikes Highway in a sandhill.

Forty-seven occurrences of eight non-FLEPPC listed introduced species were also documented throughout the BSHS site: bahiagrass (*Paspalum notatum*), Canada cocklebur (*Xanthium strumarium var. canadense*), centipede grass (*Eremochloa ophiuroides*), Chinese lespedeza (*Lepeadeza cuneata*), feral hog (*Sus scrofa*) sign, noyau vine (*Merremia dissecta*), red imported fire ants (*Solenopsis invicta*), and southern catalpa (*Catalpa bignonioides*) (Table 2). Some of these introduced non-FLEPPC listed plants (bahiagrass, centipede grass, and Chinese lespedeza) have probably been planted historically along the roadsides and within former roadways as well as under powerlines and claypits to aid in reducing erosion. Both Canada cocklebur and noyau vine were documented in a claypit. Canada cocklebur represents a new record for Walton County. Active and recent hog sign was documented along the lower, wetter sections of the powerline in the seepage slope and seepage stream edges. Southern catalpa was observed in the former Alaqua Tower site and probably arrived via trash dumping. Red imported fire ant mounds were seen along the ruderal edges of Bob Sikes Highway.

Fifteen occurrences of six listed plant species, hairy wild indigo (*Baptisia calycosa* var. *villosa*), incised groove-bur (*Agrimonia incisa*), panhandle lily (*Lilium iridollae*), sweetpitcherplant (*Sarracenia rubra*), white-top pitcherplant (*Sarracenia leucophylla*), and yellow-root (*Xanthorhiza simplicissima*) were recorded occurring within the BSHS site (Figure 3). Three occurrences of hairy wild indigo were documented within the eastern portion of the survey site within sandhill. Prominent disturbances related to the hairy wild indigo populations include roads, powerlines, excavation, land clearing, ORV trail and fire suppression. Two points were recorded for incised groove-bur along the ruderal edge of Bob Sikes Highway. Threats to the incised groove-bur include road, ditching/hydrologic, mowing, land clearing, and exotic plant infestations. Japanese climbing fern and Japanese honeysuckle grow in close proximity. A single population of panhandle lily was growing near the eastern boundary of the BSHS site, south of the Bob Sikes Highway. Growing under a utility line where land has been cleared, the panhandle lily is also in an area where ditching/hydrological disturbances have occurred. Sweet pitcherplants were observed along the north/south portion of the powerline east of RR 210 and also within the northwest/southeast section. The sweet pitcherplants were growing in seepage slope/seepage stream edges that had been cleared/chopped for the powerline and hog digging/rooting was commonplace. Deep ruts remain from vehicle traffic during drier times. Five points were recorded for white-top pitcher plants under the north/south powerline east of RR 210. The white-top pitcher plants were growing in
the same habitat and were experiencing the same disturbances as the sweet pitcherplants. A single population of yellow-root was documented north of Bob Sikes Highway in a ruderal area that is upslope from baygall (upland hardwood forest) that is being invaded by Japanese climbing fern.

**East of SR 87**

A site east of SR 87 (E87) which included Management Units E14-E19, and F1-F2 was surveyed in 2010 (Figure 4). Located in the southeastern portion of Santa Rosa County and the western side of EAFB, E87 was selected for survey due to the growing urban interface on the southern extent of the site and most of the site had not been previously surveyed for invasive species. The site is largely characterized by sandhill, mesic flatwoods, baygall, seepage streams, xeric hammock, and pine plantation. Several creeks or seepage streams occur in the northern and southern extents of the survey site which include Boiling Creek, Moore and Dean Creeks and their associated branches. The Florida National Scenic Trail runs within the southern portion of the site. The Yellow River and adjoining floodplain swamp was surveyed via boat in 2003 and form the northern boundary of the survey site. Atwell Pond, RR 291 and RR 769 represents the eastern-most areas. Boiling Creek and Atwell Pond were surveyed in 2005. SR 87 marks the western and southern boundaries of the survey site.

In addition to SR 87, access within the E87 site included several other numbered and unnumbered Range Roads, powerlines, gas pipeline roads, boat launch roads, and neighborhood roads. River Road, Five Forks Road, Bob Tolbert Road, and Vonnie Tolbert Road provided access to the southern portion of the site. Range Roads utilized were RR 211, 213, 291, 708, 710, 712, 724, 726, 732, 762, 769, and 787.

The second largest number of FLEPPC listed plant species occurrences were documented within the E87 area during the 2010 EAFB invasive species survey. One hundred and one occurrences of eleven species of FLEPPC ranked exotic pest plants were observed growing within the E87 site (Table 3, Figure 4).

- mimosa (*Albizia julibrissin*) – 28 occurrences
- Chinese tallow (*Sapium sebiferum*) – 22 occurrences
- Chinese privet (*Ligustrum sinense*) – 12 occurrences
- cogon grass (*Imperata cylindrica*) – 10 occurrences
- Japanese climbing fern (*Lygodium japonicum*) – 8 occurrences
- torpedo grass (*Panicum repens*) – 8 occurrences
- Japanese honeysuckle (*Lonicera japonica*) – 5 occurrences
- Chinese wisteria (*Wisteria sinensis*) – 3 occurrences
- Chinaberry (*Melia azedarach*) – 2 occurrences
- Peruvian primrosewillow (*Ludwigia peruviana*) – 2 occurrences
- taro (*Colocasia esculenta*) – 1 occurrence
Figure 4. Non-indigenous Species and Rare Plants and Animals Documented in the East of SR 87 Site During 2010.
FLEPPC-listed exotic plants were documented throughout the E87 site, but the heaviest occurrences occurred in the southern and northern-most sections. There were three problem areas within the southern end of the E87 site: north of RR 712 in between the sprayfield and sand mine, north of SR 87 along an un-numbered Range Road east of Dean Creek, and Bob Tolbert Road. Chinaberry, Chinese tallow, cogon grass, mimosa, and torpedo grass were documented in the disturbed areas which included powerline, sprayfield, claypit and sand pit. Disturbances associated with the exotic occurrences were ditching/hydrologic, land clearing, excavation, ORV trail, road, and trash dumping. North of SR 87 and west of Dean Creek along an un-numbered Range Road, occurrences of the FLEPPC-listed plants, Chinaberry, Japanese honeysuckle, mimosa, and wisteria were documented. The non-native plants all occurred within a ruderal area that was experiencing trash dumping, land clearing, and fire-suppression. Old homesites and the urban interface are also possible factors for the exotic plant presence at this site. South of the Eglin south boundary, land was being cleared for a right-of-way while the site was surveyed. North of SR 87, numerous exotic species occurrences were documented in the vicinity of the Bob Tolbert Road. Chinese tallow, cogon grass, mimosa, and torpedo grass occurred in ruderal road edges and ditches of mesic/wet flatwoods, sandhill, and xeric hammock. Disturbances noted within the Bob Tolbert site were development (Holly Ball Field), road, urban interface, trash dumping, land clearing, foot trails, and fire-suppression.

Three sites- gas pipeline road, Yellow River (SR 87) boat launch road and under the Yellow River Bridge, were also problematic with invasive plant species in the northwestern portion of the E87 site. Chinese privet, Chinese wisteria, cogon grass, Japanese climbing fern, Japanese honeysuckle, and mimosa occurred in great abundance between SR 87 and a gas pipeline road that parallels the highway. The invasive plants all occurred within the ruderal edge of mesic flatwoods with the primary disturbances of buried gas line, road, ORV trail, trash dumping, ditching/hydrologic, and fire-suppression. Mimosa and Chinese tallow was observed along the Yellow River boat launch road. The occurrences were along the ruderal edges of mesic flatwoods and upland hardwood forest. Trash dumping, ORV trails, and fire-suppression were the major disturbances noted at this site. The northern-most occurrences of exotic plant species was documented under the SR 87 bridge. Taro, torpedo grass, and Peruvian primrosewillow occurred in the wetter ruderal areas bordering the road. Disturbances associated with the bridge site were ditching/hydrological, trash dumping, and ORV trail. A second population of Peruvian primrosewillow was documented further south along SR 87 in an excavated area that is partially filled in with rocks. The occurrences of Peruvian primrosewillow represent a new County record having not been documented previously in Santa Rosa County.

Other widespread and less dense occurrences of invasive plants were documented throughout the E87 site. Japanese honeysuckle occurred along RR 787 in the vicinity of Boiling Creek in the ruderal edge of xeric hammock where trash dumping, land clearing, and road were dominant disturbances. Torpedo grass was documented along the ruderal edges of Atwell Pond. Ditching/hydrological, excavation, and roads are the main disturbances associated with the Atwell Pond site. Other locations for torpedo grass were
documented along RR 726 and 762 along ruderal edges of sandhill and pine plantation as well as disturbed edges of a seepage stream along Vonnie Tolbert Road. Mimosa were also documented along the ruderal road edges of sandhill and pine plantation, and occurred along RR 211, 213, 710, and Vonnie Tolbert Road. Trash dumping, fire-suppression, land clearing, road fill, roads, and urban interface are probable cause for torpedo grass and mimosa entry. The non-FLEPPC listed introduced species, bahiagrass (*Paspalum notatum*), was also observed within the claypit north of RR 211 and around Atwell Pond.

Nine occurrences of four non-FLEPPC listed introduced species were also noted in the E87 site which included bahia grass (*Paspalum notatum*), border grass (*Liriope spicata*), Japanese privet (*Ligustrum japonicum*), and crapemyrtle (*Lagerstroemia indica*). Bahia grass was observed within the ruderal sites of the claypit north of RR 211, around Atwell Pond, and along Eglin’s southern boundary due north of SR 87. Disturbances associated with the presence of bahia grass include cultivation, ditching/hydrological, excavation, land clearing, and urban interface. Border grass occurred with Japanese privet north of SR 87 and west of Dean Creek along an un-numbered Range Road. Trash dumping, fire-suppression, land clearing, urban interface, and a possible old homesite are disturbances observed at the site. Crapemyrtle was growing east of Bob Tolbert Road along the north edge of the Holley Ball Park. A lot of trash had been dumped north of the ball field, and with the urban interface and land clearing, crapemyrtle was established.

Twelve occurrences of three listed plant species, hairy wild indigo (*Baptisia calycosa* var. *villosa*), pineland hoary-pea (*Tephrosia mohrii*), and white-top pitcherplant (*Sarracenia leucophylla*) were documented within the E87 site (Figure 4). One population of hairy wild indigo was observed within the northern portion of the survey site within a fire-suppressed sandhill. Ten collection points were taken for pineland hoary-pea, all of which were located south of RR 213 and west of RR 291/769. The pineland hoary-pea occurred in sandhill and pine plantations where known disturbances included fire-suppression and ORV trails. A single population of white-topped pitcherplant occurred north of RR 211 along Cherry Branch along an edge of a seepage stream. ORV trails and fire-suppression of the adjoining baygall were the only visible disturbances associated with the white-topped pitcheplant population.

Two rare animal occurrences were also documented in the E87 site: Florida black bear (*Ursus americanus floridanus*), and a red-cockaded woodpecker (*Picoides borealis*) banded longleaf pine (*Pinus palustris*) with an active nesting cavity. The Florida black bear appeared to be a young mature individual and was spotted running across busy SR 87. The bear ran into a fire-suppressed mesic flatwoods by way of the gas pipeline road where exotic plants were numerous. The RCW nesting tree occurred east of RR 787 and south of Cherry Branch. The sandhill was good quality, but needed more prescribed fire.

**East of SR 285**

An area east of SR 285 (E285) which included Management Units L1-L11 and L22 was surveyed (Figure 5). The survey site is located in southeastern Okaloosa and
Figure 5. Non-indigenous Species and Rare Plants and Animals Documented in the East of SR 285 Site During 2010.
southwestern Walton Counties, and is in the south-central portion of EAFB. E285 was chosen for invasive species survey based on its closeness to an urban interface, current land changes occurring, and it had largely not been surveyed for invasive species before. Numerous natural community types occur in this area including sandhill, xeric hammock, baygall, seepage stream, mesic flatwoods, wet flatwoods, upland hardwood forest, and upland pine forest. Many blackwater and seepage streams also occur in the E285 site. Little Rocky Creek, Middle Rocky Creek, Rocky Creek, and Long Creek were included in the area surveyed. Several rare plant and animal occurrences were also known to occur throughout this site.

The E285 survey site is defined by the following roads and boundaries: RR 201 represents the northern boundary, RR 219 and Rocky Creek mark the eastern edge, RR 218 and College Blvd. were the southern limits, and SR 285 is the western boundary of the survey site (Figure 5). Access within the E285 site included the above-mentioned roads and numerous other numbered and un-numbered Range Roads. Other Range Roads utilized were RR 200, 217, 220, 354, 400, 406, 418, 420, 422, 469, 471, 475, 477, 499, 511, 512, 514, 515, 519, and 521. Powerlines, old logging roads, and former railroad beds also provided access into the E285 site.

The largest number of FLEPPC listed plant species and third highest number of occurrences was documented within the E285 site area during the 2010 EAFB invasive species survey. One hundred and ten occurrences of 12 species of FLEPPC ranked exotic pest plants were observed growing within the E285 site (Table 3, Figure 5).

- Chinese tallow (*Sapium sebiferum*) – 52 occurrences
- mimosa (*Albizia julibrissin*) – 37 occurrences
- camphor tree (*Cinnamomum camphora*) – 5 occurrences
- torpedo grass (*Panicum repens*) – 5 occurrences
- Japanese climbing fern (*Lygodium japonicum*) – 3 occurrences
- Lantana (*Lantana camara*) – 2 occurrences
- Chinese privet (*Ligustrum sinense*) – 1 occurrence
- cogon grass (*Imperata cylindrica*) – 1 occurrence
- golden bamboo (*Phyllostachys aurea*) – 1 occurrence
- Japanese honeysuckle (*Lonicera japonica*) – 1 occurrence
- Mexican petunia (*Ruellia brittoniana*) – 1 occurrence
- Water hyacinth (*Eichhornia crassipes*) – 1 occurrence

The largest concentrations of FLEPPC-listed exotic plants were documented along College Blvd., immediately east of SR 285, in the vicinity of the sprayfields, and along the southwestern urban interface, although invasive species were seen throughout the E285 site. Seven species, camphor tree, Chinese privet, Chinese tallow, Japanese climbing fern, Japanese honeysuckle, mimosa, and torpedo grass were documented north of College Blvd. within ruderal edges of baygall, seepage stream, and xeric hammock. Disturbances associated with the exotic species along College Blvd. included ditching/hydrological, urban interface, erosion, trash dumping, ORV trail, mowing, land clearing, and fire-suppression. Six species, Chinese tallow, cogon grass, Japanese...
climbing fern, Lantana, Mexican petunia, and mimosa were recorded along the eastern edge of SR 285 and RR 626. The invasives in the near vicinity of SR 285 occurred in both ruderal edges and natural areas of sandhill and xeric hammock, where land clearing, fire-suppression, ORV trails, road, trash dumping, old railroad bed, urban interface, and a powerline were known disturbances. Another problematic area in the western portion of the E285 site, were the sprayfield edges. The perimeter roads were driven around both sprayfields and numerous occurrences of Chinese tallow were documented in the adjoining sandhill. In addition to the sprayfield, other disturbances associated with the presence of Chinese tallow were land clearing and fire-suppression. One mimosa was spotted at the northwest edge of the eastern sprayfield and is probably there due to trash dumping. The southwestern-urban interface of E285 had five species of FLEPPC-listed invasive species: camphor tree, Chinese tallow, golden bamboo, mimosa, and torpedo grass. The exotic species were documented along the western boundary of a housing sub-division, RR 400, RR 217, and RR 475 in both the ruderal edges and natural communities of xeric hammock, mesic flatwoods, and wet flatwoods. Disturbances included roads, ORV trails, foot trails, land clearing (new toll road), fire-suppression, trash dumping, and ditching/hydrological. Additional occurrences of Chinese tallow and mimosa were observed north and south of RR 200 in ruderal edges of sandhill and xeric hammock where trash dumping, fire-suppression, land clearing, ORV trail, and roads were dominant disturbances. An additional occurrence of Japanese climbing fern was documented in the southeastern portion of the E285 site along RR 219 in the ruderal edge of a mesic flatwoods where the road, land clearing, and fire-suppression were apparent disturbances. A single occurrence of water hyacinth occurred along Long Creek where the banks of the seepage stream was experiencing erosion.

Sixty-four occurrences of six non-FLEPPC listed introduced species were also documented throughout the E285 site: Asiatic dayflower (*Commelina communis*), bahiagrass (*Paspalum notatum*), browntop millet (*Urochloa ramosa*), centipede grass (*Eremochloa ophiuroides*), Chinese lespedeza (*Lespedeza cuneata*), and gladiolus (*Gladiolus x gandavensis*) (Table 2). Some of these introduced non-FLEPPC listed plants (bahia grass, centipede grass, Chinese lespedeza, and browntop millet) have probably been planted historically to aid in reducing erosion. Asiatic dayflower and gladiolus have likely appeared due to trash dumping near the urban interface and both species are new records for Okaloosa County.

Thirty-five occurrences of six listed plant species, Arkansas oak (*Quercus arkansana*), Ashe’s magnolia (*Magnolia ashei*), Baltzell’s sedge (*Carex baltzellii*), hairy wild indigo (*Baptisia calycosa* var. *villosa*), mountain laurel (*Kalmia latifolia*), and pineland hoary-pea (*Tephrosia mohrii*), were recorded occurring within the E285 site (Figure 5). Ten Arkansas oak occurrences were documented in upland pine forest, upland hardwood forest, and xeric hammock south of RR 200. Disturbances associated with the Arkansas oak occurrences were erosion, trash dumping, fire-suppression, ORV trail, and land clearing. Two points were taken for Ashe’s magnolia within the eastern portion of E285 in upland hardwood forest that border Rocky Creek. Three occurrences of Baltzell’s sedge were documented within the southern portion of the E285 site in a xeric hammock steephead that borders Smith Branch. Erosion was the dominant disturbance observed.
Ten occurrences of hairy wild indigo were documented north and south of RR 200 within sandhill with road, ORV trail, fire-suppression, land clearing, introduced species (cogon grass), and old railroad bed disturbances noted. One occurrence of mountain laurel was observed in an upland hardwood forest south of RR 200 along Rocky Creek. Eight occurrences of pineland hoary-pea occurred south of RR 200 in sandhill and xeric hammock where land clearing, fire-suppression, trash dumping, and ORV trail were disturbances seen. One active gopher tortoise (*Gopherus polyphemus*) burrow was also documented in a xeric hammock within the E285 site (Figure 5).

**West of SR 85/RR 211 North**

A large area located west of SR 85 and north of RR 211 (W85/211N) was selected for survey in 2010 based on Eglin’s northern boundary which is the Shoal/Yellow River having the potential to have invasive species enter easily from the urban interface and recreation usage (Figure 6). The Shoal and Yellow Rivers were first surveyed in 2003 via the waterway by boat. Other areas in the W85/211N site that had been previously surveyed were the various boat launches north of RR 211, and RR 717W (Whitmier Island). The previous invasive surveys in the W85/211N site revealed invasive plants. With time since survey and treatment, resurveys were needed to investigate whether any new invasives have been established or if the old occurrences needed re-treatment.

The area surveyed included southeastern Santa Rosa County east through southwestern Okaloosa County. The W85/211N survey site is in the northwestern section of Eglin in Management Units I1-I2, I8-I9, F4, F8, F12, and B-76. Boundaries of the W85/211N site surveyed were the following: Yellow/Shoal Rivers the north border, RR 211 the south limit, RR 717W the western extent, and SR 85 the eastern-most area.

The site is largely characterized by baygall, bottomland forest, dome swamp, floodplain forest/swamp, mesic flatwoods, pine plantation, sandhill, seepage streams, shrub bog, wet flatwoods, wet prairie, and river floodplain lake. Numerous waterways which include the Yellow and Shoal Rivers and named and un-named seepage streams occur in the W85/211N survey site. The seepage streams have a general south/north orientation with their steepheads or point of origin south of RR 211. The streams flow north where they meet the Yellow and Shoal Rivers.

Portions of several seepage streams were surveyed and included Bear Creek, Broxson Branch, Wolf Creek, Crane Branch, Buck Branch, Carroll Creek, Metts Creek, Crain Branch, Turkey Hen Creek, Gopher Creek, Carr Springs Branch, Turkey Gobbler Creek, Middle Creek, Pearly Creek, and Malone Creek. Several boat landings and associated roads and areas were surveyed including Broxson Branch Landing, Mason Landing, Metts Bluff, Carr Landing, Gin Hole Landing, Little Gin Hole Landing, and Piney Bluff Landing. The Florida National Scenic Trail runs within the eastern portion of the site.

In addition to SR 85, access within the W85/211N site included several other numbered and un-numbered Range Roads, boat launch roads (landings mentioned previously), and neighborhood roads. Regan Road, provided access to the northeastern portion of the site.
Figure 6. Non-indigenous Species and Rare Plants Documented in the West of SR 85/RR 211 North Site During 2010.
along the urban interface. Range Roads utilized were RR 211, 236N, 253N, 601, 665, 675, 677, 697N, 717E, 717W, 719N, 723, and 725N.

The third largest number of FLEPPC listed plant species and the fifth in the number of occurrences were documented within the W85/211N area during the 2010 EAFB invasive species survey. Sixty-five occurrences of eight species of FLEPPC ranked exotic pest plants were observed growing within the W85/211N site (Table 3, Figure 6).

- mimosa (*Albizia julibrissin*) – 24 occurrences
- Japanese climbing fern (*Lygodium japonicum*) – 23 occurrences
- Chinese tallow (*Sapium sebiferum*) – 6 occurrences
- torpedo grass (*Panicum repens*) – 6 occurrences
- Japanese honeysuckle (*Lonicera japonica*) – 2 occurrences
- cogon grass (*Imperata cylindrica*) – 2 occurrences
- Chinaberry (*Melia azedarach*) – 1 occurrence
- Golden bamboo (*Phyllostachys aurea*) – 1 occurrence

FLEPPC-listed exotic plants were documented mostly along RR 211 and along some of the smaller range roads. Six species, Chinese tallow, cogon grass, Japanese climbing fern, Japanese honeysuckle, mimosa, and torpedo grass were documented along RR 211 within ruderal edges of baygall, mesic flatwoods, sandhill, upland hardwood forest, wet flatwoods, and xeric hammock. Disturbances associated with the exotic species along RR 211 included fire suppression, trash dumping, road, road fill, ORV trail, and land clearing.

Other problem areas within the W85/211N site where FLEPPC listed exotic plants were documented included the west side of SR 85, road to Crain Branch, RR 667N (Carr Landing), RR 697 (Metts Bluff), RR 236N, RR 717E (Piney Bluff Landing), RR 723 (Mason Landing), former RR 211 (Crane Branch), RR 735N (Broxson Landing), and RR 717W (Whitmier Island). Just south of Pearly Creek along the west side of SR 85, two exotic species, mimosa and Chinaberry were documented in a ruderal edge of xeric hammock where fire-suppression, trash dumping, road, and powerline were major disturbances. Also immediately west of SR 85 around the Turkey Hen Creek area, mimosa occurred in the edge of xeric hammock where fire-suppression, trash dumping, and an ORV trail were disturbances. Mimosa and Chinese tallow were observed along the road to Crain Branch. Mimosa occurred along the edge of the road in sandhill. Chinese tallow was documented along the edge of floodplain forest at the Crain Branch boat landing. Both mimosa and Chinese tallow were present likely due to trash dumping, fire-suppression, and the road. Japanese climbing fern and cogon grass was documented along RR 667N enroute to Carr’s Landing in ruderal baygall and mesic flatwoods respectively. The exotics presence could be due to the road, road fill and trash dumping. A patch of torpedo grass was documented along RR 697 near Metts Bluff in the ruderal edge of mesic flatwoods where the road, road fill, and ditching/hydrological disturbances occurred. A single, large and mature mimosa holding numerous fruits occurred along RR 236N in a mesic flatwoods where trash dumping and fire-suppression were disturbances. Torpedo grass and Japanese climbing fern occurred along the Piney Bluff Landing road.
(RR 717E). A patch of torpedo grass was documented along the ruderal edge of xeric hammock where land clearing, the road, and trash dumping occurred. Japanese climbing fern was found along the xeric hammock edges up to the bluffs bordering the river. Erosion, the road, and trash dumping are likely causes for the Japanese climbing fern. Further west, Japanese climbing fern was also documented along RR 723 (Mason Landing) in the ruderal edge of mesic flatwoods where land clearing, the road, and road fill are known disturbances. Several mimosas occurred along the former RR 211 site (Crane Branch) east of the waterway along the road edge of sandhill. The ORV trail, trash dumping, and land clearing were disturbances noted. Japanese climbing fern occurrences were the most abundant along RR 735N (Broxson Branch) and were documented almost the entire length of the road. Almost all of the occurrences were noted on the ruderal edge of mesic flatwoods where the road, road fill, and fire-suppression were prominent disturbances. The two northern-most Japanese climbing fern occurrences were seen along the drier xeric hammock edges near the river.

The last problem area surveyed in the W85/211N site was RR 717W (Whitmier Island). The site had been surveyed in 2005, but was revisited to see if exotic species had returned since treatment. Japanese climbing fern had returned to four of the five original sites. The Japanese climbing fern occurred in ruderal portions of mesic flatwoods where ditching/hydrological changes, road, road fill, fire-suppression, and excavation (from training facilities), had occurred. Golden bamboo was also making a comeback east of the main road in upland hardwood forest. The plants had been treated, but new plants were sprouting up under the dead, treated vegetation. The golden bamboo was possibly planted previously as a source of fishing poles. Chinese tallow and mimosa were documented for the first time near the south end of RR 717W along the ruderal edge of wet and mesic flatwoods where the road, road fill, and fire-suppression were disturbances.

Twenty-one occurrences of five non-FLEPPC listed introduced species were also documented throughout the W85/211N site: bahia grass (Paspalum notatum), centipede grass (Eremochloa ophiuroides), Chinese lespedeza (Lespedeza cuneata), red imported fire ant (Solenopsis invicta), and Southern catalpa (Catalpa bignonioides). Bahia grass was documented seven times and occurred in both Okaloosa and Santa Rosa Counties, representing new county records for both counties. Ten occurrences of centipede grass and two populations of Chinese lespedeza were documented in Okaloosa County. Single populations of red imported fire ant and Southern Catalpa occurred in Okaloosa County. Disturbances associated with the non-FLEPPC listed introduced species included cultivation, ORV trail, road, erosion, ditching and hydrological issues, trash dumping, and land clearing. All of the introduced species were documented in ruderal areas within sandhill, mesic flatwoods, baygall, and xeric hammock (Table 2). Some of these introduced non-FLEPPC listed plants (bahia grass, centipede grass, Chinese lespedeza) have probably been planted historically to aid in reducing erosion. Southern catalpa could have also been planted due to its fruits that attract the “catalpa worms” that are used in fishing.
Eight occurrences of three listed plant species, hairy wild indigo (Baptisia calycosa var. villosa), sweet pitcherplant (Sarracenia rubra), and white-top pitcherplant (Sarracenia leucophylla) were recorded occurring within the W85/211N site (Figure 6). One occurrence of hairy wild indigo was documented in sandhill off of the former RR 211. Disturbances associated with the hairy wild indigo were the ORV trail and fire suppression. Four points were taken for sweet pitcherplant along Wolf, Middle, and Turkey Creek in baygall and seepage stream edges as well as in wet prairie on Whitmier Island. Some of the disturbances noted with the sweet pitcherplant populations were ORV trail, fire suppression, trash dumping, and land clearing. Three points were taken for white-top pitcherplant on Whitmier Island in wet prairie and mesic flatwoods. Disturbances associated with the white-top pitcherplants were ORV trail, fire suppression, and fire break. There were no listed animals documented in the W85/211N site.

**West of SR 85/RR 211 South**

Located in the southwestern portion of Okaloosa County and in the northwestern portion of EAFB, the survey site west of SR 85/RR 211 South (W85/211S) consists of Management Units B5, F15-23, I3-4, and I13 (Figure 7). The W85/211S site was selected for survey based on that area had never had invasive species surveys performed and it provided an opportunity to survey Metts and Malone Creek from their steephead beginnings north to the confluence with the Yellow River. The site is characterized by its high quality sandhill, mesic flatwoods, and seepage streams. Xeric hammock, baygall, and pine plantations also occur throughout the area. Metts and Malone Creeks as well as an un-named creek south of Carr Landing run through the W85/211S site. Prisoner and Pocosin Ponds also occur in the W85/211S site. Many rare plant and animal occurrences were also known to occur throughout this site.

The W85/211S site is defined by the following roads and boundaries: RR 211 forms the northern extent, RR 665 and RR 236 delimits the eastern boundary, RR 213 represents the southern extent surveyed and RR 257 is the western boundary of the site (Figure 7). Access within the W85/211S site included the above-mentioned roads and numerous other numbered and un-numbered range roads, some of which were closed to vehicular traffic. Other range roads utilized were RR 669, 675, 677, 679, 697, 600W, 604W, and 688.

The lowest number of FLEPPC listed plant species and also the lowest number of occurrences was documented within the W85/211S site during the 2010 EAFB invasive species survey. Ten occurrences of five species of FLEPPC ranked exotic pest plants were observed growing within the W85/211S site (Table 3, Figure 7).

- Japanese climbing fern (Lygodium japonicum) – 5 occurrences
- Chinese tallow (Sapium sebiferum) – 2 occurrences
- Japanese honeysuckle (Lonicera japonica) – 1 occurrence
- torpedo grass (Panicum repens) – 1 occurrence
- cogon grass (Imperata cylindrica) – 1 occurrence
Figure 7. Non-indigenous Species and Rare Plants and Animals Documented in the West of SR 85/RR 211 South Site During 2010.
FLEPPC-listed exotic plants were documented in the vicinity of RR 211 and along some of the other range roads. Six points were taken for three species along RR 211, Chinese tallow, Japanese climbing fern, and Japanese honeysuckle. Occurrences of Chinese tallow, Japanese climbing fern, and Japanese honeysuckle were documented west of Malone Creek in a fire-suppressed baygall where ditching and hydrological alterations have occurred in relation to RR 211. Another population of Japanese climbing fern was documented east of Malone Creek in a ruderal edge of mesic flatwoods where clay road fill had been pushed at an angle to help drain the road. Further east, two additional points were taken for Japanese climbing fern along the east and west sides of an unnamed creek south of Carr Landing in fire-suppressed baygall and mesic flatwoods. A fifth point was taken for Japanese climbing fern along RR 697 within a dugout area in a sandhill.

Chinese tallow was documented a second time along the ruderal edge of RR 236 in a fire-suppressed sandhill. East of RR 257 and just north of a west branch of Metts Creek, occurrences of torpedo grass and cogon grass were observed in a claypit where ditching/hydrological changes, erosion, and land clearing had taken place.

Thirteen occurrences of four non-FLEPPC introduced species were documented throughout the W85/211S site: bahia grass (*Paspalum notatum* – 6 points), centipede grass (*Eremochloa ophiuroides* – 2 points), Chinese lespedeza (*Lespedeza cuneata* – 2 points), and feral hog (*Sus scrofa* sign – 3 points) (Table 2). Most of the introduced plant species were probably planted to stabilize soil erosion and were documented in claypits east of RR 257 and north of RR 600W (bordering Metts Creek) and also in ruderal areas and claypits bordering Malone Creek along RR 236, north of RR 600W, and south of RR 688. Feral hog sign was documented in two areas along Metts Creek. South of the RR 236/697 junction and north of the eastern branch of Metts Creek, hog sign was seen very close to the rare plant, bog spicebush (*Lindera subcoriacea*). A hot fire had burned recently into the baygall from the surrounding mesic flatwoods and sandhill and had opened up the thicket which potentially opened up new ground for the hogs. The second feral hog rooting area was seen north of RR 600W and Prisoner Pond.

Ditching/hydrological changes in Metts Creek from the creation of the pond might have led to the presence of hogs. Pocosin Pond was the third site in which feral hog digging was documented. Hog digging was seen along the eastern side of the pond/basin swamp. Pocosin Pond was surveyed during archery hunting season and several hunters were encountered. One hunter claimed that he had killed 3 hogs during that week at Pocosin Pond, so hogs could be a bigger problem than the surveyor observed.

Twenty-nine occurrences of ten listed plant species, Arkansas oak (*Quercus arkansana*), Baltzell’s sedge (*Carex baltzellii*), bog spicebush (*Lindera subcoriacea*), Curtiss’ sandgrass (*Calamovilfa curtissii*), hairy wild indigo (*Baptisia calycosa var. villosa*), panhandle lily (*Lilium iridollae*), pineland hoary-pea (*Tephrosia mohrii*), spoon-leaved sundew (*Drosera intermedia*), sweet pitcherplant (*Sarracenia rubra*), and white-top pitcherplant (*Sarracenia leucophylla*), were recorded occurring within the W85/211S site (Figure 7). Nine occurrences of sweet pitcher plants were documented on Metts and Malone Creeks. The sweet pitcher plants occurred in the baygall edges of the seepage streams. Disturbances observed in the sweet pitcher plant sites included footpaths, erosion, ditching/hydrologic, ORV trails, fire, and fire suppression. One population of
white-top pitcherplants was documented along Metts Creek north of RR 236 in a streamside baygall. Panhandle lily and spoon-leaved sundew were also noted north of RR 236 in a streamside baygall along Metts Creek. Two points were collected for bog spicebush south of RR 236 and north of the eastern branch of Metts Creek. Hog digging and fire suppression were disturbances observed at the bog spicebush sites. A recent hot fire had burned from the mesic flatwoods/sandhill community into the baygall and had opened up the thick vegetation along the eastern side of Metts Creek. Curtiss’ sandgrass occurred in three locations in the W85/211S site: north of RR 236, along RR 688, and south of RR 221. All three of the Curtiss’ sandgrass populations occurred around the outer perimeters of dome swamps that bordered mesic flatwoods. Fire suppression was the only disturbance noted at the Curtiss’ sandgrass sites. Seven occurrences of pineland hoary-pea and three populations of hairy wild indigo were documented throughout the W85/211S site in sandhill. Fire suppression and ORV trails were the only disturbances seen. One population of Arkansas oak was documented along a steephead of Malone Creek in an upland hardwood forest. A single population of Baltzell’s sedge was also documented along a steephead of Middle Creek. Erosion was the only disturbance seen at both of the Malone and Middle Creek steepheads.

Sixteen points were taken to document red-cockaded woodpecker (*Picoides borealis*) nesting trees throughout the W85/211S site. The red-cockaded woodpecker nests were in old growth longleaf pine (*Pinus palustris*) that had been banded with white paint and were located in excellent quality sandhill communities. The only disturbances noted with the red-cockaded woodpecker sites were fire-suppression and the presence of ORV trails.
DISCUSSION

Sixteen Florida Exotic Pest Plant Council (FLEPPC) listed invasive plant species and fourteen introduced non-FLEPPC plants and animal species were documented during the Eglin Air Force Base (EAFB) 2010 non-indigenous species survey and are presented in Table 2. The majority of invasive species were found in ruderal sites that have had major land alteration such as roadways, trails, claypits, land clearing, powerlines, pine plantations, sprayfields, buried utility lines, and urban interface. Sixty-four of the 451 FLEPPC listed invasive plant species occurrences or 14% were observed in natural communities. Exotic species were recorded occurring in natural communities that included basin swamp, baygall, mesic flatwoods, sandhill, seepage stream, upland hardwood forest, and xeric hammock. The ranges of these invasive exotic species are depicted in Figures 3-7. A more in-depth view of all the exotic species occurrences can be examined through the Arc Map FLEPPC listed invasive plants and non-FLEPPC listed introduced plants and animals shapefiles, which are included on a compact disk in Appendix 9. Attributes of each FLEPPC listed invasive plant and non-FLEPPC listed introduced plants and animals are also printed on an attribute table located in Appendix 5.

Of the five sites surveyed during the 2010 exotic plant survey, the area east of SR285 (E285) had the highest number of invasive species and the third highest number of occurrences with 12 species and 110 points documented. Ditching/hydrological, erosion, fire suppression, land clearing (new toll road), mowing, old railroad bed, ORV trails, powerline, roads, sprayfield, trash dumping, and urban interface were thought to be responsible for the large numbers of invasive species within the E285 site. The area east of SR 87 (E87), had the second highest number of exotic species with 11 FLEPPC listed species and 101 occurrences documented. Exotic species in the E87 site could be the result of buried utility lines, clay/sand pits, development, ditching/hydrological, excavation, fire-suppression, land clearing, old home site, ORV trail, powerlines, roads, sprayfield, trash dumping, and urban interface. The site west of SR 85 and north of RR 211 (W85/211N) had the third highest number of FLEPPC listed exotic species with 65 occurrences of eight species. Disturbances noted in the W85/211N area were ditching/hydrological, erosion, excavation, fire suppression, land clearing, ORV trails, powerline, roads, road fill, and trash dumping. The other two sites surveyed during 2010, Bob Sikes Highway South (BSHS) and the area west of SR 85 and south of RR 211 (W85/211S) each had five FLEPPC listed exotic species. The BSHS site had the most occurrences of exotics of all of the sites with 165. The W85/211S site had the fewest with ten FLEPPC listed occurrences. Disturbances with the last two sites included claypits, ditching/hydrological, excavation, fire-suppression, land clearing, ORV trail, pine plantations, powerlines, roads, road fill, trash dumping, and urban interface.

Four of the sixteen FLEPPC listed exotic species documented during the 2010 survey, stand out as being worse than the others in terms of numbers of occurrences. Japanese climbing fern (*Lygodium japonicum*) was documented the most frequently with 133 occurrences found in all five of the survey sites. Primarily observed in ruderal habitats such as in buried cable line clearings, ditches, old clay pits, road edges, under powerlines, and urban interfaces. Japanese climbing fern was also documented creeping (from
ruderal edges) into moist and dry areas such as baygall, mesic flatwoods, sandhill, seepage slope, upland hardwood forest, wet flatwoods, and xeric hammock. Mimosa (*Albizia julibrissin*) ranked the second highest in number of FLEPPC listed invasive species occurrences with 93 points recorded in four of the five sites. Most of the mimosa occurred in ruderal, roadside edges of baygall, mesic flatwoods, sandhill, and xeric hammock. Ditching/hydrological, erosion, fire suppression, land clearing, ORV trails, powerline, road, road fill, sprayfield, trash dumping, and urban interfaces were all likely causes of the presence of mimosa. Chinese tallow (*Sapium sebiferum*) had the third highest number of occurrences with 91 points recorded. Chinese tallow was observed in all five of the sites. Chinese tallow were documented within ruderal sites such as edges of roads, ORV trails, and sprayfields that joined baygall, mesic flatwoods, sandhill, seepage stream, and xeric hammock where ditching/hydrological, fire suppression, land clearing, and trash dumping had occurred. Other disturbances observed with the Chinese tallow were road fill, and urban interface. Chinese privet (*Ligustrum sinense*) had the fourth highest number of occurrences with 52 points taken in three of the five sites during the 2010 survey. Documented in mostly ruderal, roadsides bordering baygall, mesic flatwoods, sandhill, upland hardwood forest, and xeric hammock. Chinese privet was thought to be present due to disturbances associated with buried cable lines, ditching/hydrological, fire suppression, land clearing, ORV trails, powerlines, roads, trash dumping, and urban interface.

During the 2010 EAFB Invasive Species Survey, several problematic sites were revealed and warrant eradication and monitoring quickly. The Bob Sikes Highway South (BSHS) site had several areas that need to be treated as soon as possible. The heaviest occurrences of exotics were documented along the north and south sides of Bob Sikes Highway (RR 213). A good portion of the BSHS site exotics that occur along the highway are within the Walton County right-of-way. It would be prudent to enlist the help of County officials to assist in the eradication of the exotics along the highway and to coordinate mowing schedules after the invasives have been treated. A second area where exotics were observed to be a bad problem were along RR 381 at Bear Bay Branch. The exotics were growing from the road edge into the natural communities and bordering the seepage stream. The stream could possibly transport seeds and fern spores downstream allowing for more infestation. Exotic plants were also spotted under the powerline in several different locations and could spread rapidly given that the site is open and moist.

Within the east of SR 87 (E87) site, there were also several areas that should receive herbicide treatment soon and continuous monitoring. The southern and northern-most portions of E87 had numerous occurrences of exotic plants. Within the southern areas (between the sprayfield and sand/clay pits, an unnumbered range road east of Dean Creek, and along Bob Tolbert Road), numerous exotic plants occurred. Three sites- gas pipeline road, Yellow River (SR 87) boat launch road, and under the Yellow River Bridge, were also loaded with invasive plants in the northwestern portion of the E87 site. During the 2010 survey, major right of way clearing work was occurring in the vicinity of Bob Tolbert Road and SR 87. It is recommended that the edges of the clearing and the adjoining natural communities be monitored for incoming invasive species.
The area surveyed east of SR 285 (E285) had several exotic plant infested spots, primarily north of College Blvd., immediately east of SR 285, in the vicinity of the sprayfields, and along the southwestern urban interface. During the 2010 survey, SR 85 was resurfaced and the right-of-way of the highway was utilized by heavy equipment. Large dump trucks drove on and deposited road fill materials on the road edge. It will be important to monitor the road right-of-way for any incoming new exotic species that might result from the recent disturbances associated with the SR 85 resurfacing. Additionally, the construction of the new toll road was in process during the 2010 survey in which there was major land clearing in the southwestern portion of the E285 site. It will be equally important to monitor the recently disturbed area bordering the toll road once construction has been completed.

There were several exotic plant problem sites documented west of SR 85 which should receive treatment soon. Most of the invasive plant occurrences occurred north of RR 211, but a few were located south of RR 211. In the west of SR 85 and north of RR 211 (W85/211N) site, the worst exotic plant infestations were observed along RR 211, the west side of SR 85, road to Crain Branch, RR 667N (Carr Landing), RR 697 (Metts Bluff), RR 236N, RR 717E (Piney Bluff Landing), RR 723 (Mason Landing), former RR 211 (Crane Branch), RR 735N (Broxson Landing), and RR 717W (Whitmier Island). RR 717W had been surveyed in 2005, but was revisited to see if exotic species had returned since treatment. Japanese climbing fern had returned to four of the five original sites. Golden bamboo was also making a comeback east of the main road in upland hardwood forest. Most of the exotic plants documented south of RR 211 were located next to RR 211. Given that the vast majority of the exotic plant occurrences in the W85/211N and W85/211S sites occurred along roads, the invasives should be easily accessible to treat and to monitor.
FUTURE INVASIVE SPECIES SURVEY RECOMMENDATIONS

Eglin Air Force Base (EAFB) will stay ahead of the exotics war with continued survey efforts and a quick turn around time of eradicating the invasives. Key to the success of keeping EAFB’s invasive species numbers and coverage low is monitoring problem sites, and visiting new locations.

Some areas that would be good candidates to survey for upcoming invasive species survey work include some of Eglin's "Outstanding Natural Areas" (Kindell at al. 1997) or “Significant Botanical Sites” (Chafin and Schotz 1995). The following outstanding natural areas have not been surveyed for exotic species: 1. Hickory Branch Hardwood Forest; 2. Alaqua/Blount Creek convergence (hardwood forest); 3. Prairie Creek Sandhill (A-78); and 4. Alice Creek.

Although many of EAFB’s waterways have been surveyed for exotic species, there are still numerous creeks and their associated steepheads and ponds that have not been surveyed. Some of the creeks connect to sites that were previously surveyed and some of the creeks bear surveying based on the presence of rare plants and/or due to the high quality of the stream. Among those creeks that have not been surveyed in their entirety for invasive species include Holly Creek, Hicks Creek, Linton Spring Branch, Oakie Creek, Rocky Creek, Juniper Creek, Turkey Hen Creek, Turkey Gobbler Creek, Middle Creek, Milligan Creek, Wolf Creek, and Bear Creek.

As EAFB grows in having more military mission activities, more infrastructures or developments will need to be built to support the missions. It would be beneficial to survey sites before and after development to see if any exotic species were introduced. Other areas that are near to an urban interface should also be factored into any future EAFB invasive species survey efforts. Places like Main Base, landfills (such as the one that borders RR 211 and Titi Creek), sprayfields, storage facilities, powerlines, campsites, recreation areas, claypits, airport perimeters, main Range Roads, and sites where road fill is distributed and trash dumping occurs should be visited.

Many sites have been surveyed during the ten years of invasive species surveys of EAFB. Most of EAFB’s perimeters have been surveyed either by land or water. However, there still remains some large gaps of unsurveyed areas on Eglin which include the following mostly open areas:

1. Eastern section
   a. From RR 200/201 north to RR 335, east to RR 208 and west to RR 381. Management Units N7-N8.
   b. From RR 370 south to RR 218, west to RR 212, and east to RR 208. Management Units M2-M4, M7-M8, M11-M12, and M17.

2. Northeastern section
   a. From SR 285 east to EAFB eastern boundary, north to EAFB northern boundary, south to RR 213. Management Units C-87, J21-J30.

3. North section
b. SR 85 west to RR 665, north to RR 211, south to RR 213. Management Units I5-I6, I10-I13, I23-I32.
c. RR 257 west to RR 253, north to RR 211, and south to RR 604W. Management Units F13-F14, F33 and F36.
d. RR 253 west to RR 735, north to RR 211 and south to RR 730. Management Units F9-F11.

3. Northwestern section
   a. RR 211 east to RR 735 and south to RR 213. Management Units F3, F5-F7.

4. Central section
   a. SR 85 east to SR 285, north to RR 213, south to RR 537. Management Units K1-K3, K6-K17.
   b. Lighter Knot Creek area – from RR 236 west to RR 250, north to RR 230, and south to RR 234. Management Units G2, G7-8, and G13-G14.

5. Southwestern section
   a. Area north of East Bay River. From the river north to RR 712, west to EAFB’s western boundary, and east to RR 735. Management Units H1-H2.

6. Southern section
   a. Main Base
   b. Camp Pinchot area
   c. Area southeast of Main Base – Ben’s Lake, Upper and Lower Memorial Lakes, Jack’s Lake, Bayshore

7. Southeastern section
   a. SR 20 north to powerline (RR 218), from RR 214 east to Linton Spring Branch. Management Units L20-L21, M5 and M9.
   b. Powerline (RR 218) south to SR 20, west to Basin Creek/Bayou and east to EAFB’s eastern boundary. Management Units M13 and M15.
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Herring, B.J. 2010. Survey for non-indigenous species of Eglin Air Force Base – Year 9: Alaqua Creek, Four Mile Creek, Scrub Pond, Joint Strike Fighter Site,


APPENDIX 1. DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR THE EGLIN AIR FORCE BASE FLEPPC LISTED INVASIVE PLANTS AND NON-FLEPPC LISTED INTRODUCED PLANT AND ANIMAL POINTS, LINES, AND POLYGONS DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

<table>
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<th>ATTRIBUTES</th>
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<td>LONGITUDE</td>
<td>Numeric, up to six decimal places.</td>
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<tr>
<td>LATITUDE</td>
<td>Numeric, up to six decimal places.</td>
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<tr>
<td>FID/POINT ID</td>
<td>Numeric, unique number assigned to each point.</td>
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<tr>
<td>SHAPE</td>
<td>Menu, Points, Polygons, or Linear.</td>
</tr>
<tr>
<td>FIELD ID</td>
<td>Numeric, Field id number assigned to this point by the FNAI scientist during fieldwork.</td>
</tr>
<tr>
<td>SURVEY DATE</td>
<td>Numeric, Date of data collection.</td>
</tr>
<tr>
<td>SURVEYOR</td>
<td>Menu, FNAI scientist conducting fieldwork.</td>
</tr>
<tr>
<td>SITE NAME</td>
<td>Menu, Name of the managed area or a specific site within a managed area. 2010 Eglin Air Force Base survey sites included: Bob Sikes Highway South East of SR 87 East of SR 285 West of SR 85/north of RR 211 West of SR 85/south of RR 211</td>
</tr>
<tr>
<td>DIRECTIONS</td>
<td>Text, General directions to population.</td>
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<td>RESURVEY</td>
<td>Menu, Was site previously surveyed for exotic species?</td>
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<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>SPECIES/PLANT NAME</td>
<td>Menu, Scientific name of exotic species occurring at that point. If there are more than one exotic species, create a separate data record. Source for all correct plant names and spellings is <a href="http://www.plantatlas.usf.edu">www.plantatlas.usf.edu</a> (Wunderlin and Hansen 2008). The Florida Exotic Pest Plant Council (FLEPPC) 2009</td>
</tr>
</tbody>
</table>
list was followed for invasive plants. See Table 1 for complete list of potential exotic plant species scientific names.

<table>
<thead>
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<th>COMMON NAME</th>
<th>Menu, Common name of exotic species occurring at that point. Source for all plant common names is the same as for SPECIES names.</th>
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<td>Text, Other introduced species that are not ranked by FLEPPC.</td>
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<td>COMMON NAME</td>
<td>Menu, Non-FLEPPC introduced species, See prior COMMON NAME comments.</td>
</tr>
<tr>
<td>TALLY</td>
<td>Numeric, When possible to count individuals.</td>
</tr>
<tr>
<td>HEIGHT</td>
<td>Numeric, Mostly used for woody species of plants. Measured in inches or feet.</td>
</tr>
<tr>
<td>DIAMETER</td>
<td>Numeric, Mostly used for woody species of plants. Measured in inches.</td>
</tr>
<tr>
<td>PHENOLOGY</td>
<td>Menu, Characteristic phenology of the plants. Phenology values are: Flower/bud Flower/fruit Fruit Spore Vegetative (in leaf) Dormant</td>
</tr>
<tr>
<td>MATURITY</td>
<td>Menu, Stage of plant development for the recorded infestation; useful in estimating control/treatment costs, particularly of trees and large shrubs. Values are: Immature Mature Both</td>
</tr>
<tr>
<td>WIDTH</td>
<td>Numeric, When exotic species are recorded as occurring in a line, the width of the line is measured in feet.</td>
</tr>
<tr>
<td>DISTRIBUTION (DENSITY)</td>
<td>Menu, Pattern or arrangement of the plants within the infested acreage. Values are: Single plant/clump Scattered plants Linearly scattered Scattered dense patches</td>
</tr>
</tbody>
</table>
Dominant cover
Dense monoculture

AREA OF COVERAGE Numeric, Estimated area that the population occupies in square feet.

GROSS ACRES Menu, Estimated number of acres an exotic plant/population covers that are in the following categories:
0.01
0.1
0.25
0.50
1
Whole numbers for acreages greater than 1

ACRES INFESTED Points- Estimated acreage for each exotic species occurrence is determined by dividing 43,560 into the square feet coverage. Polygons- Acreage for the polygon as calculated by the ArcMap Xtools extension.

AREA DEFINED Menu, Area defined in which the exotic species occurs. Recorded as either:
Approximate Area
True Extent (Measured)

PERCENT COVER Menu, A visual estimate of the percentage of the gross acre(s) infested that is covered by a given exotic species occurrence. Values are:
<5%
5-25%
26-50%
51-75%
>75%

OTHER DATA Text, Other exotic species data including any observations on the status, management needs, and viability of the population.

DISTURBANCE TYPE 1 Menu, Describes the primary disturbances, if any, in the vicinity of the exotic species occurrence. If there is no disturbance, none will be entered by default. If there is more than one type of disturbance, the most prevalent form of disturbance is entered here and the lesser disturbances are entered in Disturbance Type 2 and/or 3. Disturbance values are:
None
Agriculture/cropland
ATV trail (All terrain vehicle trail)
Beach driving
Buried cable/gas line
Cattle disturbance
Cemetary
Ditching/hydrologic (ditch/canal/levee)
Dredging
Erosion
Excavation
Exotics
Fence/boundary
Fire (burned too hot)
Firebreak
Fire suppression
Flooding
Foot path
Forestry operations (includes bedding, clear-cuts, land clearing, logging trails/roads, loading areas, pine plantations, rutting, selective logging, slash piles; stumps/stump holes)- does not include thinning, burning, or other practices intended to improve the community.
Golf course
Herbicide damage
Hog digging/rooting
Hurricane storm surge (salt overwash)
Hurricane (trees down)
Impoundment (includes artificial ponds and lakes, dams, retention ponds and dikes)
Land clearing (includes dove fields, old fields, and food plots that are less than 0.5 acre, i.e. that are not delineated as ruderal polygons
Landfill
Mining
Mowing
Natural
Old homesite
ORV trail (off-road trail)
Other introduced species present
Powerline
Railroad
Restoration
Road
Road fill
Spoil pile
Sprayfield
DISTURBANCE
TYPE 2
Menu, Describes the secondary disturbance, if any, in the vicinity of the exotic species population. Disturbance values are the same as DISTURBANCE 1.

DISTURBANCE
TYPE 3
Menu, Describes the tertiary disturbance, if any, in the vicinity of the exotic species population. Disturbance values are the same as DISTURBANCE 1.

DISTURBANCE SEVERITY
Menu, Severity of the disturbance(s). Disturbance severity values are:
None
Light
Moderate
Heavy
Severe

FNAI NATURAL COMMUNITY 1 (PRIMARY)
Menu, Type of natural community affected, using the FNAI classification system plus: “pine plantation,” “pasture-improved,” “pasture- semi-improved,” and “ruderal”. Potential natural community types to occur on Eglin include:
Ruderal (default)
Basin marsh
Basin swamp
Baygall
Beach dune
Blackwater stream
Bog
Bottomland forest
Coastal grassland
Coastal interdunal swale
Coastal strand
Depression marsh
Dome swamp
Floodplain forest
Floodplain marsh
Floodplain swamp
Freshwater tidal swamp

Trail (pedestrian, animal)
Trash dumping
Treated sewage effluent
Urban interface
Wildlife food plot
Woody encroachment
Cause unknown
Other (details provided in the COMMENTS field)
<table>
<thead>
<tr>
<th>Natural Community Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric hammock</td>
</tr>
<tr>
<td>Lake</td>
</tr>
<tr>
<td>Marine</td>
</tr>
<tr>
<td>Maritime hammock</td>
</tr>
<tr>
<td>Mesic flatwoods</td>
</tr>
<tr>
<td>Pond</td>
</tr>
<tr>
<td>River</td>
</tr>
<tr>
<td>River floodplain lake</td>
</tr>
<tr>
<td>Sandhill</td>
</tr>
<tr>
<td>Sandhill upland lake</td>
</tr>
<tr>
<td>Scrub</td>
</tr>
<tr>
<td>Scrubby flatwoods</td>
</tr>
<tr>
<td>Seepage slope</td>
</tr>
<tr>
<td>Seepage stream</td>
</tr>
<tr>
<td>Shell mound</td>
</tr>
<tr>
<td>Sinkhole/cave</td>
</tr>
<tr>
<td>Slope forest</td>
</tr>
<tr>
<td>Spring-run stream</td>
</tr>
<tr>
<td>Swamp lake</td>
</tr>
<tr>
<td>Tidal marsh</td>
</tr>
<tr>
<td>Upland hardwood forest</td>
</tr>
<tr>
<td>Upland mixed forest</td>
</tr>
<tr>
<td>Upland pine forest</td>
</tr>
<tr>
<td>Wet flatwoods</td>
</tr>
<tr>
<td>Wet prairie</td>
</tr>
<tr>
<td>Xeric hammock</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

**FNAI NATURAL COMMUNITY 2**

Menu, Same natural community types as Primary Natural Community.

**FNAI NATURAL COMMUNITY 3**

Menu, Same natural community types as Primary Natural Community.

**RUDERAL NATURAL COMMUNITY**

Menu, Whether the natural community is ruderal.
Yes
No

**NATURAL COMMUNITY QUALITY**

Menu, Natural community condition.
A - Excellent estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity
MANAGEMENT Menu, Recommendations include the following:
RECOMMENDATIONS
Control exotics ASAP (as soon as possible)
Avoid any ground disturbance
Avoid plowing/mowing
Avoid using heavy equipment
Continue prescribed fire
Introduce prescribed fire
Keep vehicles from driving off-road
Limit access to occasional foot traffic
Limit firebreaks
Monitor for erosion
Monitor for introduced species
Monitor for trash dumping
Maintain water quality
Remove feral hogs
Restore hydrology
Use native plants for soil erosion control

FIRE STATUS Menu, Fire status of natural community include the following:
Needs fire again
Fire long-suppressed
Burned recently
Remove exotics first
Non-fire adapted NC
Not known

ACCESS Menu, Describes the ability to reach the infestation, which is useful in estimating treatment costs. Values are:
Easy- near access
Easy- roadside (by vehicle or foot)
Medium- some walk-in
Medium- thick veg
Difficult- deep H20
Difficult- need boat
Difficult- need 4WD
Difficult- remote
Difficult- thick veg

HERBARIUM VOUCHER Menu, Was there a herbarium voucher made of the exotic plant?
Yes
No
| HABITAT TYPE | Menu, Refers to a distinguishing feature within a natural community or a natural community type or major disturbance type. Habitat types include the following:
|             | Barrier Island |
|             | Bayshore       |
|             | Campground     |
|             | Claypit        |
|             | Clearing       |
|             | Coastal scrub/dune |
|             | Cultivated     |
|             | Development    |
|             | Dove field     |
|             | Flatwoods      |
|             | Golf course    |
|             | Housing area   |
|             | Landfill       |
|             | Line of sight  |
|             | Office areas   |
|             | Pine plantation|
|             | Powerline      |
|             | Reservoir      |
|             | Riverside/stream side/pond side |
|             | Roadside       |
|             | Ruderal        |
|             | Sandhill       |
|             | Seepage stream |
|             | Sewage treatment plant |
|             | Slope forest   |
|             | Steephead      |
|             | Sprayfield     |
|             | State right-of-way |
|             | Test range/area |
|             | Trail side     |
|             | Upland mixed forest |
|             | Wetland        |
|             | Wildlife food plot |
|             | Xeric hammock  |
| TREATED B4? | Menu, Has the exotic species been treated or not? |
|             | Yes            |
|             | No             |
|             | Not known      |
| COMMENTS   | Text, Comments is an optional field used by the surveyor to provide additional information about the exotic species |
population, the habitat, threats, management needs, and disturbances.

*FLEPPC CATEGORY Florida Exotic Pest Plant Council Category; not entered in field.

*NOTE: See Table 1 and Methods for definition of FLEPPC Categories
APPENDIX 2. DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR THE EGLIN AIR FORCE BASE RARE PLANT POINTS DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

<table>
<thead>
<tr>
<th>ATTRIBUTES</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONGITUDE</td>
<td>Numeric, up to six decimal places.</td>
</tr>
<tr>
<td>LATITUDE</td>
<td>Numeric, up to six decimal places.</td>
</tr>
<tr>
<td>FID/POINT ID</td>
<td>Numeric, unique number assigned to each point.</td>
</tr>
<tr>
<td>SHAPE</td>
<td>Menu, Points, Polygons, or Linear.</td>
</tr>
<tr>
<td>FIELD ID</td>
<td>Numeric, Field id number assigned to this point by the FNAI scientist during fieldwork.</td>
</tr>
<tr>
<td>SURVEY DATE</td>
<td>Numeric, Date of data collection.</td>
</tr>
<tr>
<td>SURVEYOR</td>
<td>Menu, FNAI scientist conducting fieldwork.</td>
</tr>
<tr>
<td>SITE NAME</td>
<td>Menu, Name of the managed area or a specific site within a managed area. 2010 Eglin Air Force Base survey sites included: Bob Sikes Highway South East of SR 87 East of SR 285 West of SR 85/north of RR 211 West of SR 85/south of RR 211</td>
</tr>
<tr>
<td>DIRECTIONS</td>
<td>Text, General directions to population.</td>
</tr>
<tr>
<td>SPECIES/PLANT NAME</td>
<td>Menu, Scientific name of rare species occurring at that point. If there are more than one rare species, create a separate data record. Source for all correct plant names and spellings is <a href="http://www.plantatlas.usf.edu">www.plantatlas.usf.edu</a> (Wunderlin and Hansen 2008). Source for correct names and spellings of rare species is the FNAI tracking list (FNAI 2011a) and the Florida Department of Agriculture and Consumer Services (FDACS) Regulated Plant Index (Coile and Garland 2003).</td>
</tr>
<tr>
<td>COMMON NAME</td>
<td>Menu, Common name of rare species occurring at that point. Source for all plant common names is</td>
</tr>
</tbody>
</table>
the same as for SPECIES names.

<table>
<thead>
<tr>
<th>IDENTIFICATION CONFIRMED</th>
<th>Menu, Were rare plant species identified positively?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTENT KNOWN?</th>
<th>Menu, Is the full extent of the rare plant known?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COUNT</th>
<th>Menu, Estimated number of individuals in the rare plant population that are in the following categories:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-10</td>
</tr>
<tr>
<td></td>
<td>11-50</td>
</tr>
<tr>
<td></td>
<td>51-100</td>
</tr>
<tr>
<td></td>
<td>101-1000</td>
</tr>
<tr>
<td></td>
<td>&gt;1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TALLY</th>
<th>Numeric, When possible to count individuals.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HEIGHT</th>
<th>Numeric, Mostly used for woody species of plants. Measured in inches or feet.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>Numeric, Mostly used for woody species of plants. Measured in inches.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PHENOLOGY</th>
<th>Menu, Characteristic phenology of the plants. Phenology values are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flower/bud</td>
</tr>
<tr>
<td></td>
<td>Flower/fruit</td>
</tr>
<tr>
<td></td>
<td>Fruit</td>
</tr>
<tr>
<td></td>
<td>Spore</td>
</tr>
<tr>
<td></td>
<td>Vegetative (in leaf)</td>
</tr>
<tr>
<td></td>
<td>Dormant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISTRIBUTION (DENSITY)</th>
<th>Menu, Pattern or arrangement of the plants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single plant/clump</td>
</tr>
<tr>
<td></td>
<td>Scattered plants</td>
</tr>
<tr>
<td></td>
<td>Linearly scattered</td>
</tr>
<tr>
<td></td>
<td>Scattered dense patches</td>
</tr>
<tr>
<td></td>
<td>Dominant cover</td>
</tr>
<tr>
<td></td>
<td>Dense monoculture</td>
</tr>
</tbody>
</table>
AREA OF COVERAGE: Numeric, Estimated area that the population occupies in square feet.

AREA DEFINED: Menu, Area defined in which the rare species occurs. Recorded as either:
- Approximate Area
- True Extent (Measured)

OTHER EODATA: Text, Other element occurrence (EO) data including any observations on the status, management needs, and viability of the population.

DISTURBANCE TYPE 1: Menu, Describes the primary disturbances, if any, in the vicinity of the rare species occurrence. If there is no disturbance, none will be entered by default. If there is more than one type of disturbance, the most prevalent form of disturbance is entered here and the lesser disturbances are entered in Disturbance Type 2 and/or 3. Disturbance values are:
- None
- Agriculture/cropland
- ATV trail (All terrain vehicle trail)
- Beach driving
- Buried cable/gas line
- Cattle disturbance
- Cemetery
- Ditching/hydrologic (ditch/canal/levee)
- Dredging
- Erosion
- Excavation
- Exotics
- Fence/boundary
- Fire (burned too hot)
- Firebreak
- Fire suppression
- Flooding
- Foot path
- Forestry operations (includes bedding, clear-cuts, land clearing, logging trails/roads, loading areas, pine plantations, rutting, selective logging, slash piles; stumps/stump holes)- does not include thinning, burning, or other practices intended to improve the community.
- Golf course
- Herbicide damage
- Hog digging/rooting
- Hurricane storm surge (salt overwash)
Hurricane (trees down)
Impoundment (includes artificial ponds and lakes, dams, retention ponds and dikes)
Land clearing (includes dove fields, old fields, and food plots that are less than 0.5 acre, i.e. that are not delineated as ruderal polygons
Landfill
Mining
Mowing
Natural
Old homesite
ORV trail (off-road trail)
Other introduced species present
Powerline
Railroad
Restoration
Road
Road fill
Spoil pile
Sprayfield
Trail (pedestrian, animal)
Trash dumping
Treated sewage effluent
Urban interface
Wildlife food plot
Woody encroachment
Cause unknown
Other (details provided in the COMMENTS field)

DISTURBANCE 2  **Menu**, Describes the secondary disturbance, if any, in the vicinity of the rare plant population. Disturbance values are the same as DISTURBANCE 1.

DISTURBANCE 3  **Menu**, Describes the tertiary disturbance, if any, in the vicinity of the rare plant population. Disturbance values are the same as DISTURBANCE 1.

DISTURBANCE SEVERITY  **Menu**, Severity of the disturbance(s). Disturbance severity values are:
None
Light
Moderate
Heavy
Severe
Text, Additional information is entered here for rare plants.

Menu, Type of natural community, using the FNAI classification system plus: “pine plantation,” “pasture-improved,” “pasture-semi-improved,” and “ruderal”. Potential natural community types to occur on Eglin include:
Ruderal
Basin marsh
Basin swamp
Baygall
Beach dune
Blackwater stream
Bog
Bottomland forest
Coastal grassland
Coastal interdunal swale
Coastal strand
Depression marsh
Dome swamp
Floodplain forest
Floodplain swamp
Freshwater marsh
Freshwater tidal swamp
Hydric hammock
Lake
Marine
Maritime hammock
Mesic flatwoods
Pond
River
River floodplain lake
Sandhill
Sandhill upland lake
Scrub
Scrubby flatwoods
Seepage slope
Seepage stream
Shell mound
Sinkhole/cave
Slope forest
Spring-run stream
Swamp lake
Tidal marsh
Upland hardwood forest
Upland mixed forest
Upland pine forest
Wet flatwoods
Wet prairie
Xeric hammock
Unknown

FNAI NATURAL COMMUNITY 2 Menu, Same natural community types as Primary Natural Community.
(SECONDARY)

RUDERAL Menu, Whether the natural community is ruderal.
NATURAL Yes
COMMUNITY No

NATURAL Menu, Natural community condition.
COMMUNITY QUALITY
A - Excellent estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity

MANAGEMENT Menu, Recommendations include the following:
RECOMMENDATIONS
Control exotics ASAP (as soon as possible)
Avoid any ground disturbance
Avoid plowing/mowing
Avoid using heavy equipment
Continue prescribed fire
Introduce prescribed fire
Keep vehicles from driving off-road
Limit access to occasional foot traffic
Limit firebreaks
Monitor for erosion
Monitor for introduced species
Monitor for trash dumping
Maintain water quality
Remove feral hogs
Restore hydrology
Use native plants for soil erosion control

SURVEY Menu, How well were the element occurrences surveyed for?
EFFICIENCY
Thorough survey
Quick survey
Observed from a distance

ADDITIONAL Menu, Were there additional surveys made for the given element occurrences?
Yes
No

FIRE STATUS
Menu, Fire status of natural community include the following:
Needs fire again
Fire long-suppressed
Burned recently
Remove exotics first
Non-fire adapted NC
Not known

EO UPDATE
Text, Is element occurrence new or an update?

EO STATUS
Menu, If status of element occurrence is an update, select one of the following:
Extant
Failed to find
Extirpated
Possibly extirpated

EO STATUS
Text, Comments on element occurrence status.

ACCESS
Menu, Access issues associated with a site include:
Easy- near access
Easy- roadside (by vehicle or foot)
Medium- some walk-in
Medium- thick veg
Difficult- deep H2O
Difficult- need boat
Difficult- need 4WD
Difficult- remote
Difficult- thick veg

HABITAT
Menu, Refers to a distinguishing feature within a natural community or a natural community type or major disturbance type. Habitat types include the following:
Barrier Island
Bayshore
Campground
Claypit
Clearing
Coastal scrub/dune
Cultivated
Development
Dove field
Flatwoods
Golf course
Housing area
Landfill
Line of sight
Office areas
Pine plantation
Powerline
Reservoir
Riverside/stream side/pond side
Roadside
Ruderal
Sandhill
Seepage stream
Sewage treatment plant
Slope forest
Sprayfield
State right-of-way
Steephead
Test range/area
Trail side
Upland mixed forest
Wetland
Wildlife food plot
Xeric hammock

HERBARIUM

VOUCHER

Menu, Was there a herbarium voucher made of the rare plant?
Yes
No

COMMENTS

Text, Comments is an optional field used by the surveyor to provide additional information about the rare species population, the habitat, threats, management needs, and disturbances.

*FNAI GLOBAL

RANK

Global rank of the rare plant; not entered in field.

*FNAI STATE

RANK

State rank of the rare plant; not entered in field.

*FEDERAL RANK

Federal legal status; not entered in field.

*STATE RANK

State legal status; not entered in field.
<table>
<thead>
<tr>
<th>SENSITIVE Menu</th>
<th>Whether data pertaining to an element occurrence is Sensitive?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

*NOTE: See Appendix 10 for definitions of FNAI global rank, FNAI state rank, federal legal status and state legal status.*
APPENDIX 3. DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR THE EGLIN AIR FORCE BASE RARE ANIMAL POINTS DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

<table>
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<tbody>
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<tr>
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<tr>
<td>SHAPE</td>
<td>Menu, Points, Polygons, or Linear.</td>
</tr>
<tr>
<td>FIELD ID</td>
<td>Numeric, Field id number assigned to this point by the FNAI scientist during fieldwork.</td>
</tr>
<tr>
<td>SURVEY DATE</td>
<td>Numeric, Date of data collection.</td>
</tr>
<tr>
<td>SURVEYOR</td>
<td>Menu, FNAI scientist conducting fieldwork.</td>
</tr>
<tr>
<td>SITE NAME</td>
<td>Menu, Name of the managed area or a specific site within a managed area. 2010 Eglin Air Force Base survey sites included: Bob Sikes Highway South East of SR 87 East of SR 285 West of SR 85/north of RR 211 West of SR 85/south of RR 211</td>
</tr>
<tr>
<td>DIRECTIONS</td>
<td>Text, General directions to population.</td>
</tr>
<tr>
<td>SPECIES/PLANT NAME</td>
<td>Menu, Scientific name of rare animal species occurring at that point. If there are more than one rare species, create a separate data record. Source for correct names and spellings of rare species is the FNAI tracking list (FNAI 2011a).</td>
</tr>
<tr>
<td>COMMON NAME</td>
<td>Menu, Common name of rare animal species occurring at that point. Source for all plant common names is the same as for SPECIES names.</td>
</tr>
<tr>
<td>IDENTIFICATION CONFIRMED</td>
<td>Menu, Were rare animal species identified positively?</td>
</tr>
</tbody>
</table>
EXTENT KNOWN?  
Yes
No

Menu, Is the full extent of the rare animal known?
Yes
No
Uncertain

COUNT  
Menu, Estimated number of individuals in the rare animal population that are in the following categories:
1-10
11-50
51-100
101-1000
>1000

EO TYPE  
Menu, Describes the activity of the rare animal. If the animal is doing more than one thing, describe it in COMMENTS.
nesting
foraging
loafing
commuting
other

OTHER EODATA  
Text, Other element occurrence (EO) data including any observations on the status, management needs, and viability of the population.

DISTURBANCE TYPE 1  
Menu, Describes the primary disturbances, if any, in the vicinity of the rare species occurrence. If there is no disturbance, none will be entered by default. If there is more than one type of disturbance, the most prevalent form of disturbance is entered here and the lesser disturbances are entered in Disturbance Type 2. Disturbance values are:
None
Agriculture/cropland
ATV trail (All terrain vehicle trail)
Beach driving
Buried cable/gas line
Cattle disturbance
Cemetary
Ditching/hydrologic (ditch/canal/levee)
Dredging
Erosion
Excavation
Exotics
Fence/boundary
Fire (burned too hot)
Firebreak
Fire suppression
Flooding
Foot path
Forestry operations (includes bedding, clear-cuts, land clearing, logging trails/roads, loading areas, pine plantations, rutting, selective logging, slash piles; stumps/stump holes)- does not include thinning, burning, or other practices intended to improve the community.
Golf course
Herbicide damage
Hog digging/rooting
Hurricane storm surge (salt overwash)
Hurricane (trees down)
Impoundment (includes artificial ponds and lakes, dams, retention ponds and dikes)
Land clearing (includes dove fields, old fields, and food plots that are less than 0.5 acre, i.e. that are not delineated as ruderal polygons
Landfill
Mining
Mowing
Natural
Old homesite
ORV trail (off-road trail)
Other introduced species present
Powerline
Railroad
Restoration
Road
Road fill
Spoil pile
Sprayfield
Trail (pedestrian, animal)
Trash dumping
Treated sewage effluent
Urban interface
Wildlife food plot
Woody encroachment
Cause unknown
Other (details provided in the COMMENTS field)

DISTURBANCE 2 Menu, Describes the secondary disturbance, if any, in the vicinity of the rare plant population. Disturbance values are
the same as DISTURBANCE 1.

<table>
<thead>
<tr>
<th><strong>DISTURBANCE SEVERITY</strong></th>
<th><strong>Menu</strong>, Severity of the disturbance(s). Disturbance severity values are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Light</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Heavy</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>FNAI NATURAL COMMUNITY 1 (PRIMARY)</strong></th>
<th><strong>Menu</strong>, Type of natural community, using the FNAI classification system plus:“pine plantation,” “pasture-improved,” “pasture-semi-improved,” and “ruderal”. Potential natural community types to occur on Eglin include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rudearl</td>
<td>Basin marsh</td>
</tr>
<tr>
<td>Basin marsh</td>
<td>Basin swamp</td>
</tr>
<tr>
<td>Baygall</td>
<td>Beach dune</td>
</tr>
<tr>
<td>Beach dune</td>
<td>Blackwater stream</td>
</tr>
<tr>
<td>Blackwater stream</td>
<td>Bog</td>
</tr>
<tr>
<td>Bog</td>
<td>Bottomland forest</td>
</tr>
<tr>
<td>Bottomland forest</td>
<td>Coastal grassland</td>
</tr>
<tr>
<td>Coastal grassland</td>
<td>Coastal interdunal swale</td>
</tr>
<tr>
<td>Coastal interdunal swale</td>
<td>Coastal strand</td>
</tr>
<tr>
<td>Coastal strand</td>
<td>Depression marsh</td>
</tr>
<tr>
<td>Depression marsh</td>
<td>Dome swamp</td>
</tr>
<tr>
<td>Dome swamp</td>
<td>Floodplain forest</td>
</tr>
<tr>
<td>Floodplain forest</td>
<td>Floodplain marsh</td>
</tr>
<tr>
<td>Floodplain marsh</td>
<td>Floodplain swamp</td>
</tr>
<tr>
<td>Floodplain swamp</td>
<td>Freshwater tidal swamp</td>
</tr>
<tr>
<td>Freshwater tidal swamp</td>
<td>Hydric hammock</td>
</tr>
<tr>
<td>Hydric hammock</td>
<td>Lake</td>
</tr>
<tr>
<td>Lake</td>
<td>Marine</td>
</tr>
<tr>
<td>Maritime hammock</td>
<td>Mesic flatwoods</td>
</tr>
<tr>
<td>Mesic flatwoods</td>
<td>Pond</td>
</tr>
<tr>
<td>Pond</td>
<td>River</td>
</tr>
<tr>
<td>River</td>
<td>River floodplain lake</td>
</tr>
<tr>
<td>River floodplain lake</td>
<td>Sandhill</td>
</tr>
<tr>
<td>Sandhill</td>
<td>Sandhill upland lake</td>
</tr>
<tr>
<td>Sandhill upland lake</td>
<td>Scrub</td>
</tr>
<tr>
<td>Scrub</td>
<td>Scrubby flatwoods</td>
</tr>
<tr>
<td>Scrubby flatwoods</td>
<td>Seepage slope</td>
</tr>
<tr>
<td>Seepage slope</td>
<td>Seepage stream</td>
</tr>
<tr>
<td>Seepage stream</td>
<td>Shell mound</td>
</tr>
</tbody>
</table>
Sinkhole/cave
Slope forest
Spring-run stream
Swamp lake
Tidal marsh
Upland hardwood forest
Upland mixed forest
Upland pine forest
Wet flatwoods
Wet prairie
Xeric hammock
Unknown

FNAI NATURAL COMMUNITY 2 (SECONDARY) Menu, Same natural community types as Primary Natural Community.

RUDERAL Menu, Whether the natural community is ruderal.

NATURAL COMMUNITY Yes
No

NATURAL COMMUNITY QUALITY Menu, Natural community condition.
A - Excellent estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity

SURVEY EFFICIENCY Menu, How well were the element occurrences surveyed for?
Thorough survey
Quick survey
Observed from a distance

ADDITIONAL SURVEY Menu, Were there additional surveys made for the given element occurrences?
Yes
No

EO UPDATE Text, Is element occurrence new or an update?

EO STATUS Menu, If status of element occurrence is an update, select one of the following:
Extant
Failed to find
Extirpated
Possibly extirpated
EO STATUS
Text, Comments on element occurrence status.

COMMENTS

MANAGEMENT
Menu, Recommendations include the following:

RECOMMENDATIONS
Control exotics ASAP (as soon as possible)
Avoid any ground disturbance
Avoid plowing/mowing
Avoid using heavy equipment
Continue prescribed fire
Introduce prescribed fire
Keep vehicles from driving off-road
Limit access to occasional foot traffic
Limit firebreaks
Monitor for erosion
Monitor for introduced species
Monitor for trash dumping
Maintain water quality
Remove feral hogs
Restore hydrology
Use native plants for soil erosion control

FIRE STATUS
Menu, Fire status of natural community include the following:

Needs fire again
Fire long-suppressed
Burned recently
Remove exotics first
Non-fire adapted NC
Not known

ACCESS
Menu, Access issues associated with a site include:

ISSUES
Easy- near access
Easy- roadside (by vehicle or foot)
Medium- some walk-in
Medium- thick veg
Difficult- deep H20
Difficult- need boat
Difficult- need 4WD
Difficult- remote
Difficult- thick veg

HABITAT
Menu, Refers to a distinguishing feature within a natural community or a natural community type or major disturbance type. Habitat types include the following:

TYPE
Barrier Island
Bayshore
Campground
Claypit
Clearing
Coastal scrub/dune
Cultivated
Development
Dove field
Flatwoods
Golf course
Housing area
Landfill
Line of sight
Office areas
Pine plantation
Powerline
Reservoir
Riverside/stream side/pond side
Roadside
Ruderal
Sandhill
Seepage stream
Sewage treatment plant
Slope forest
Sprayfield
State right-of-way
Steephead
Test range/area
Trail side
Upland mixed forest
Wetland
Wildlife food plot
Xeric hammock

**COMMENTS**

*Text.* Comments is an optional field used by the surveyor to provide additional information about the rare species population, the habitat, threats, management needs, and disturbances.

*FNAI GLOBAL RANK*  
Global rank of the rare animal; not entered in field.

*FNAI STATE RANK*  
State rank of the rare animal; not entered in field.

*FEDERAL RANK*  
Federal legal status; not entered in field.
**STATE RANK**  State legal status; not entered in field.

**SENSITIVE**  Menu, Whether data pertaining to an element occurrence is Sensitive?
Yes
No

*NOTE: See Appendix 10 for definitions of FNAI global rank, FNAI state rank, federal legal status and state legal status*
APPENDIX 4. DATA ATTRIBUTES, DEFINITIONS, AND VALUES FOR THE EGLIN AIR FORCE BASE GENERIC POINTS DURING THE 2010 NON-INNOCENT SPECIES SURVEY

<table>
<thead>
<tr>
<th>ATTRIBUTES</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONGITUDE</td>
<td><strong>Numeric</strong>, up to six decimal places.</td>
</tr>
<tr>
<td>LATITUDE</td>
<td><strong>Numeric</strong>, up to six decimal places.</td>
</tr>
<tr>
<td>FID/POINT ID</td>
<td><strong>Numeric</strong>, unique number assigned to each point.</td>
</tr>
<tr>
<td>FIELD ID</td>
<td><strong>Numeric</strong>, Field id number assigned to this point by the FNAI scientist during fieldwork.</td>
</tr>
<tr>
<td>SURVEY DATE</td>
<td><strong>Numeric</strong>, Date of data collection.</td>
</tr>
<tr>
<td>SURVEYOR</td>
<td><strong>Menu</strong>, FNAI scientist conducting fieldwork.</td>
</tr>
</tbody>
</table>
| SITE NAME        | **Menu**, Name of the managed area or a specific site within a managed area. 2010 Eglin Air Force Base survey sites included:  
  Bob Sikes Highway South  
  East of SR 87  
  East of SR 285  
  West of SR 85/north of RR 211  
  West of SR 85/south of RR 211 |
| DIRECTIONS       | **Text**, General directions to population.                             |
| COMMENTS         | **Text**, Comments is an optional field used by the surveyor to provide general information. |
APPENDIX 5. FLEPPC LISTED INVASIVE PLANTS AND NON-FLEPPC LISTED INTRODUCED PLANTS AND ANIMALS DOCUMENTED AT EGLIN AIR FORCE BASE DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

(PROVIDED SEPARATELY)
APPENDIX 6. RARE PLANTS DOCUMENTED AT EGLIN AIR FORCE BASE DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

(PROVIDED SEPARATELY)
APPENDIX 7. RARE ANIMALS DOCUMENTED AT EGLIN AIR FORCE BASE
DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

(PROVIDED SEPARATELY)
APPENDIX 8. GENERIC POINTS DOCUMENTED AT EGLIN AIR FORCE BASE DURING THE 2010 NON-INDIGENOUS SPECIES SURVEY

(PROVIDED SEPARATELY)
APPENDIX 9. CD CONTAINING PROJECT FILES

(PROVIDED SEPARATELY)
APPENDIX 10. FLORIDA NATURAL AREAS INVENTORY EXPLANATIONS AND DEFINITIONS OF ELEMENT RANK AND STATUS
(Based on http://fnai.org/ranks.cfm, 2011-06 version)

ELEMENT RANKING AND LEGAL STATUS

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL RANK DEFINITIONS

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.
**FNAI STATE RANK DEFINITIONS**

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

S4 = Apparently secure in Florida (may be rare in parts of range).

S5 = Demonstrably secure in Florida.

SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).

SX = Believed to be extirpated throughout Florida.

SU = Unrankable; due to a lack of information no rank or range can be assigned.

SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).

SNR = Element not yet ranked (temporary).

**FEDERAL LEGAL STATUS**

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.
Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.

LE = Endangered: species in danger of extinction throughout all or a significant portion of its range.

LE, LT = Species currently listed endangered in a portion of its range but only listed as threatened in other areas.

LE, PDL = Species currently listed endangered but has been proposed for delisting.

LE, PT = Species currently listed endangered but has been proposed for listing as threatened.

LE, XN = Species currently listed endangered but tracked population is a non-essential experimental population.

LT = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.

SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a “species of concern” to USFWS.

**STATE LEGAL STATUS**

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

**Animals:** Definitions derived from “Florida’s Endangered Species and Species of Special Concern, Official Lists” published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

**FE** = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service.

**FT** = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service.

**F(XN)** = Federal listed as an experimental population in Florida.

**FT(S/A)** = Federal Threatened due to similarity of appearance.

**ST** = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. (ST* for Ursus americanus floridanus (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for Neovison vison pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.)

**SSC** = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)

**N** = Not currently listed, nor currently being considered for listing.

**Plants:** Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: [http://www.doacs.state.fl.us/pi/](http://www.doacs.state.fl.us/pi/).

**LE** = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.

**LT** = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.

**N** = Not currently listed, nor currently being considered for listing.