American Burying Beetle Conservation Strategy
For the Establishment, Management, and Operations of Mitigation Lands

U.S. Fish and Wildlife Service
Southwest Region

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American Burying Beetle Conservation Strategy and Mitigation Guidance

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Introduction

This document provides guidance for Federal and non-Federal proponents (conservation bankers, sponsors, mitigation landowners, federal agencies) involved in the establishment, management, and operation of American burying beetle (*Nicrophorus americanus*, ABB) mitigation lands in Region 2 of the U.S. Fish and Wildlife Service (Service). This guidance is subject to revision as new ABB-related information becomes available. The Service recommends that mitigation for this species meet the minimum standards described in this document for all mitigation options. The Service has put this guidance together to be transparent about the minimum standards we will likely use to evaluate mitigation options for this species.

The ABB once occurred throughout much of temperate eastern North America, including 35 U.S. states (USFWS 1991). Its absence throughout much of its former range became apparent in the 1980s, and by 1989 the ABB was thought to occur only on Block Island, Rhode Island, and at one location in Oklahoma (Davis 1980; Kozol et al. 1988; USFWS 1991). Currently, the ABB can be found in less than 10% of its historic range, with localized, extant populations discovered in six states (Backlund and Marrone, 1997, Bedick et al. 1993, Godwin 2003, Lomolino et al. 1995, Miller and McDonald 1997, Ratcliffe 1996, Sikes and Raithel 2002, USFWS 2008). These locations include eastern Oklahoma, western Arkansas, northeastern Texas, the Sand Hills and Loess Hills regions in Nebraska, the Chautauqua Hills region of southeastern Kansas, south-central South Dakota, and Block Island off the coast of Rhode Island. Moreover, a reintroduced population on Nantucket Island off the coast of Massachusetts is thought to be stable, and a recent reintroduction attempt in Missouri in 2012 has reported successful brood rearing and overwintering (personal communication with Bob Mertz, St. Louis Zoo, May 30, 2013).

Mitigation and offset programs, including conservation banks, for federally listed species are proving effective at mitigating the effects of take of listed species, including effects from loss of species habitat, in many states (Fox and Nino-Murcia 2005). Most listed species' populations occur on private lands, making public-private sector partnerships an important component of the conservation process. For private, non-Federal entities, the Service provides permits and requires offsets for the effects of take through HCPs (pursuant to section 10(a)(1)(B) of the Endangered Species Act [16 U.S.C. § 1531-1544], as amended [ESA]). Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The Service recommends offsetting the effects of the taking through conservation (protection, preservation, and management) of occupied ABB habitat in perpetuity (referred to herein as "mitigation lands") to assist in recovery efforts of the ABB. The Service believes the ESA provides for habitat offsets by Federal agencies conducting formal Section 7 consultations pursuant to section 7(a)(1) of the ESA, which states that "… *federal agencies shall,… utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of the Act* [ESA]."

Templates and Regional guidance to assist prospective bank owners/sponsors are available from the OKESFO or the RO. For detailed information on conservation bank development please visit our website at ***http://www.fws.gov/southwest/es/Oklahoma/ABB_Add_Info.htm***. General

guidance for the establishment, use, and operation of conservation banks can be found at: ***http://www.fws.gov/southwest/es/Documents/R2ES/2003_fws_cons_bnk_guide.pdf***. Templates to assist prospective mitigation land owners/sponsors are available and can be found at: ***http://www.fws.gov/southwest/es/Oklahoma/ConsBank.htm***.

This document is based on the best scientific and commercial data available at the time of its development. To ensure you have the most recent version, go to ***http://www.fws.gov/southwest/es/Oklahoma/ABB_Add_Info.htm***

General Guidelines for Mitigation Lands

The following sections provide general information for Federal and non-Federal applicants involved in the establishment, management, and operation of mitigation lands. This document was developed to provide guidance for ABB mitigation lands, but other federally-listed species occur within the ABB range and similar guidance would apply to developing mitigation lands for any listed species in Oklahoma. Specific guidance for (ABB) mitigation lands is included in the **American Burying Beetle Mitigation Lands Requirements** section beginning on page 12.

Mitigation Land Options

Three types of mitigation lands are briefly described below. The term "mitigation lands" will be used throughout this document to describe mitigation for all three types. We recommend proposals for any of these options meet the minimum standards and other requirements described in this document. Mitigation lands may be located on-site (i.e., on or adjacent to the project site) or off-site, as long as they meet the minimum standards for the species for which the site is being established. The options below describe potential compensatory mitigation that might be appropriate for their project's impacts to the species; however, some options may not be immediately available or have additional requirements for initial implementation. Project proponents should consult their Incidental Take Permit associated with their approved Habitat Conservation Plan or Incidental Take Statement associated with their Biological Opinion for the correct type and number of credits to purchase, and any restrictions on the area where mitigation can occur.

1. Individual- or permittee-responsible mitigation lands: These mitigation lands are established by the project proponent and should be described in detail and included in the project description. There is no transfer of liability for the success of the mitigation land, and the project proponent maintains responsibility for the mitigation land in perpetuity, even if the project is finite in duration.

2. Conservation banks: Conservation banks are mitigation lands that are established by a party other than the project proponent, referred to as the Bank Sponsor. These sites are established to mitigate multiple projects. By definition, a Service-approved conservation bank meets the minimum standards and other requirements described in these guidelines. Conservation banks are established through a conservation bank agreement with the Service. When a project proponent chooses to mitigate through the purchase of credits in

a Service-approved conservation bank, liability for the success of the mitigation is transferred to the bank sponsor upon sale of the credits. Project proponents can visit ***http://geo.usace.army.mil/ribits/index.html***, the Regulatory In-lieu Fee and Bank Information and Tracking System (RIBITS), for information on Service-approved conservation banks with available credits.

3. Third party mitigation lands: These mitigation lands are usually established for a single project rather than multiple projects. The mitigation land sponsor (landowner or easement holder) assumes liability for the success of the mitigation land with the approval of the Service.

Credits and Credit Stacking

A credit represents the accrual of habitat functions or value at an offset site (the mitigation land). Depending on the target species, credits can be measured in different ways. For example, a credit for impacts to a federally-listed bird's breeding habitat might include conservation of and improvement to off-site breeding habitat that conserves this habitat to offset the effects to the nesting pairs affected by a proposed project. For the ABB, the units of credits are measured in acres of occupied habitat. Due to their life history (they are nocturnal and spend much of their life underground), it is difficult to find individual ABBs and quantify their populations. Therefore, it is more practical to quantify potential take and effects of take on ABBs, and appropriate mitigation (or credits) is measured by using the area (in acres) of habitat affected (or protected). For the ABB, one acre of ABB habitat protected is equal to one credit.

Credit stacking is a term that describes a single unit of land that provides multiple credit types and/or trade-in credits under multiple market-based strategies, where all credits can be sold independently. For example, a mitigation land may have both aquatic endangered species and wetland credits for sale, or be established for both an aquatic endangered species and terrestrial endangered species. Management requirements for these mitigation lands must be unique for each mitigation type (listed species or wetlands) or each species. Properties in which multiple species occur would include delineated habitat areas for each species and a description of how each area would be managed.

There may be situations where other threatened or endangered species co-occur on property that contains ABB. Mitigation credits for all these species on the same acreage could be sold or used for mitigation. However, each acre that supports mitigation credits can be involved in only one transaction. So if ABB and red-cockaded woodpecker habitat occurs on the same acre and the Service approves its use in mitigation for both species, that acre and its credits can only be sold once. For example, if a project proponent needs only ABB credits and that acre is sold for ABB, the red-cockaded woodpecker credit from that acre would no longer be available. An acre that has already been used in mitigation for one species cannot be resold as mitigation for another species. However, if a proponent needs both ABB and red-cockaded woodpecker credits for his project, the proponent can purchase credits for both of the species from that acre in a single transaction.

The required components of a mitigation proposal will vary depending upon the type of mitigation land. These components, their contents, and appropriate application are described below.

Habitat Assessments

All proposals for mitigation lands submitted to the Service should include a complete habitat assessment of the proposed property with the following information:

1. A map clearly indicating the location of the property being considered for mitigation lands;
2. A current aerial photo with:
    a. the date the photo was taken, and
    b. the property boundary;
3. Detailed descriptions identifying the vegetation types described as habitat for each species and non-habitat types, and on-the-ground methods used to evaluate the habitat;
4. A map delineating habitat types identified for target species and their buffer areas on the property;
5. Detailed descriptions of species survey methods and results (including relevant GIS data); and
6. Description of current land uses, structures, access management (fences, roads, etc.), known exotic or invasive species, any areas excluded from the mitigation land, and recent and ongoing management actions.

Management Plans

All mitigation lands must have an active management plan that includes goals and objectives specific to maintaining the habitat for the continued use of the target species in perpetuity, as described in the **American Burying Beetle Mitigation Lands Requirements** below. See additional information in the **Development of Mitigation Lands Management Plans** section on page 21.

Real Estate Assurances

A perpetual conservation easement that transfers usage rights creating a legally enforceable land preservation agreement between a landowner (Grantor) and a qualified land protection organization (Grantee), such as a land trust or a governmental agency, is required for all mitigation lands. The easement holder (Grantee) must be qualified pursuant to state laws. The Service and the Grantee must approve the conservation easement. The grantor shall provide the Service with a copy of all easements recorded on the property, and mineral rights through a title report, along with a legal easement. The easement shall contain, among other things, a provision granting to the Service a third party right of enforcement. In the case of land trusts, the organization's Board of Directors should have in its corporate resolutions the adoption of the National Land Trust Alliance's *Statement of Land Trust Standards and Practices* as guiding the practices of the organization. (The Statement is available from LTA (***www.lta.org*** or 202-638-

4725). The Grantee's board of directors, officers, and staff must not have a conflict of interest concerning the mitigation lands or permits issued by the Service or state in which the mitigation land resides. The Service may require written certification that the land trust board of directors, officers, and staff, as holders of conservation easements, will not receive benefit, financial or otherwise, from the issuance by the Service of the underlying permit or incidental take authorization, or approval of a mitigation agreement.

Amendment and Modification

All mitigation agreements may be amended or modified, but only with the written approval of all of the parties. As part of this process, all proposed amendments and modifications must be consistent with current Service banking guidance and guidance for conservation of the species in effect at the time of the amendment. All amendments and modifications shall be fully set forth in a separate document signed by all parties that shall be appended to the mitigation agreement. Modifications resulting in the alteration of the number or type of available credits may result in the temporary suspension of credit sales for the duration of a mitigation agreement re-evaluation process.

Mitigation agreements that have been signed, as of the date this guidance is final, are considered grandfathered and do not need to be amended to conform to this guidance. For any proposal to amend or modify an existing mitigation agreement, other than a minor modification, the Service will re-evaluate the entire agreement to ensure it is consistent with current standards reflected in the most recent version of this guidance. Minor modifications include name changes/updates, address changes/updates, spelling corrections, and grammatical corrections. Major modifications include, but are not limited to, changes in Service area and changes in management.

Standard Conservation Easement Requirements

The following list contains prohibited and allowed activities on lands under conservation easements for ABB mitigation lands.

<u>Prohibited activities</u>

1. Any division, subdivision, or partitioning of the mitigation land.
2. Constructing, erecting, or placing any building, billboard, sign, or any other structure or improvement of any kind, including infrastructure, not already present on the property.
3. Using off-road vehicles or any other motorized vehicles except on existing vehicle roads and established trails identified prior to the conservation easement.
4. Recreational activities that may impact ABB habitat, including, but not limited to, horseback riding, camping, hiking, and biking that are not included in the management plan; except for personal or commercial, recreational activities of the Grantor, so long as such activities are consistent with the purposes of the conservation easement and specifically provided for in the management plan.
5. Depositing or accumulating soil, trash, ashes, refuse, waste, bio-solids, or any other materials.

6. Planting, introducing, or spreading non-native plant or animal species.
7. Unseasonable watering (watering not normal for the typical rainfall pattern); using fertilizers, pesticides, biocides, herbicides, or other agricultural chemicals; and incompatible fire protection activities. Invasive plant and animal control, including the use of herbicides and pesticides, is permitted subject to Service written approval.
8. Agricultural activity of any kind except grazing, which may be approved subject to a grazing plan as specifically provided in the management plan, and food plots, which cannot cover more than one percent of the entire mitigation area.
9. Altering the surface or general topography of the mitigation property, including but not limited to altering habitat, building roads or trails, paving or otherwise covering the mitigation property with concrete, asphalt, or any other impervious material except for those habitat management activities specified in the management plan.
10. Removing, destroying, or cutting trees, shrubs, or other vegetation, except (i) as required by law for fire breaks, (ii) for maintenance of existing foot trails, roads, and established ROWs and easements, or (iii) for prevention or treatment of disease; and (iv) except for ABB habitat management, as specifically provided in the management plan.
11. Manipulating, impounding, or altering any natural water course, body of water or water circulation on the mitigation property, and any activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters.
12. Transferring, encumbering, selling, leasing, or otherwise separating the mineral, air (including wind), or water rights for the mitigation property without the prior written consent of Grantee, which Grantee may withhold.
13. Engaging in any use or activity that may violate, or may fail to comply with, relevant Federal, state, or local laws, regulations, or policies applicable to Grantor, the mitigation property, or the use or activity in question.
14. Any other activity on or use of the mitigation lands that is inconsistent with the purposes of the conservation easement.

<u>Allowed activities</u>

The following activities are allowed and should be listed in the conservation easement for mitigation lands:

1. The right to undertake or continue any activity or use of the property not prohibited by the conservation easement provided such use is consistent with the purpose(s) of the conservation easement. Prior to making any change in use of the property, the landowner shall notify the Grantee and the Service in writing to allow the Service and the Grantee a reasonable opportunity to determine whether such change would violate the terms of the conservation easement.
2. The rights to sell, give, mortgage, lease, or otherwise convey the property subject to the terms of the conservation easement.
3. With the prior written approval of the Grantee and the Service, the right to restore and enhance native plant and wildlife habitat, consistent with approved wildlife management

and soil conservation practices and all applicable laws and regulations governing such practices, provided such restoration does not impair the conservation values for ABB.

4. Reconstruction of existing structures within the original footprint is allowed with no disturbance or removal of existing vegetation.
5. Personal or commercial recreational activities (horseback riding, camping, hiking, and biking) of the Grantor, so long as such activities are consistent with the purposes of the conservation easement and specifically provided for in the management plan. Hunting and fishing are allowed on the parcel provided these activities do not negatively impact habitat areas. Hunting of feral hogs may occur at any time, but will not involve baiting or attracting hogs onto the property.

Financial Assurances

Mitigation lands must identify an adequate funding source to provide for interim and perpetual operation, management, monitoring, and documentation costs. Funding for the start-up and interim management program (e.g., purchase of land, property taxes, initial restoration, or legal fees) should be separate from the requisite endowment for ongoing actions. Letters of credit may be required. A target date and target amount for fully funding the endowment for ongoing actions must be determined. The endowment must be fully funded before all credits are sold, preferably within the first 3-4 years of the mitigation lands operation. Typically 25 – 50 percent of the credits are held in reserve and not released until the endowment is fully funded. A master escrow account should be established concurrent with final approval of mitigation by the Service. All credit sales/trades are deposited into escrow and a portion of each credit sale deposited is used to fund the long-term and interim management account. In the event the long-term fund is not fully funded by the target date, the owner shall immediately convey the remaining amount.

Some mitigation will also have short-term costs, usually associated with restoration or enhancement of the site, fencing, equipment purchases, or other such start-up costs. An interim management account (i.e., a dedicated, interest bearing account in an amount adequate to cover short-term costs and contingencies) should be established. Other potential assurances may include performance bonds or letters of credit; however, an interim management account is usually preferable. For example, establishment of an interim management account can serve as a contingency fund to manage the property and may not be expended except as agreed to by the Parties; such an account must be replenished if expended. Once an agreed upon target amount is reached, this account may be terminated and all funds (except interest retained by the banker) will be transferred to the endowment fund.

The strategy for long-term funding is normally to establish a non-wasting management endowment (i.e., a fund that generates enough interest each year to cover the costs of the yearly management). This endowment could be established by including the cost of management into the price per credit. As credits are sold, an agreed upon portion of the proceeds can be deposited into a non-wasting endowment fund or escrow. The size of the required endowment will depend on certain factors, including land management activities, rate of inflation, and interest rate, but should always be estimated out for 30 years. The cost of each credit will ultimately be

determined by the owner of the mitigation land and is not the concern of the Service, if the non-wasting endowment has been fully funded.

Reporting

In order to evaluate compliance with the terms of mitigation agreements and associated management plans, the owner/manager of the mitigation lands will prepare an annual report to the Service by February 28th following the calendar year covered by the report. Additionally, the conservation easement holder will complete an annual monitoring report to ensure that incompatible uses are not occurring on the mitigation property and the terms of the conservation easement are upheld. The annual monitoring report prepared by the easement holder should also be included in the bank sponsor/mitigation land owner's annual report. The annual report will contain the following information:

1. A statement of endowment funds received, generated, and expended in the management of the mitigation lands during the year.
2. A general description of the status of the biological resources on the mitigation lands.
3. The results of any biological monitoring or studies conducted on the mitigation lands.
4. A description of all management actions taken on the mitigation lands, including any prescribed grazing that may take place to manage vegetation, and all expected or required management actions not taken with an explanation of why such actions were not taken.
5. A description of any problems encountered in managing the mitigation land.
6. A description of management actions that the mitigation land manager may undertake, according to the management plan, in the coming year and the related annual budget (the "Annual Budget").
7. An inventory of any known threats or impacts to the target species or its habitat, the status of the threat or impact (e.g., cured, ongoing, or uncured), and a summary of actions taken to reduce such threats or impacts, as applicable.
8. Recommended modifications to the management plan as determined by the adaptive management process.
9. Annual monitoring report prepared by the easement holder, as available.
10. Annual and 3-year average ABB capture rate.
11. Other listed species encountered.
12. Digital photo documentation (JPEG format) of habitat management activities (photos should be date stamped).
13. Digital photo documentation (JPEG format) from photographic documenting stations, as described in the management plan (photos should be date stamped).

Permits and Incidental Take

Under section 9 of the ESA, it is unlawful for any person to "take" (see definition in the Introduction) any federally-listed threatened or endangered fish, wildlife, or plant species, without special exemption. Consequently, it is a violation of Federal law to take endangered species without appropriate permits. Take of federally-listed species incidental to a lawful activity may be authorized through section 7 or 10 of the ESA.

It is possible for a mitigation manager to establish and operate mitigation lands without any ESA section 7 or 10 authorization (incidental take permit) or state permits, provided that they do not take listed species. However, we do suggest property owners/managers hold their own permits to cover management activities. We recommend consulting with the state permitting authority and the appropriate Service Field Office to determine necessary permitting requirements.

Emergency Situations

The mitigation land owner/manager will not be held responsible for offsetting acts of nature that are unforeseen, or foreseeable but unpredictable, such as fire, floods, and tornados. The mitigation land owner/manager will notify the Service within 24 hours of occurrence of a catastrophic event, event of force majeure, or unlawful act, and as promptly as reasonably possible, shall meet with the Service to discuss the course of action in response to such an occurrence. In the meantime, mitigation lands will continue to be managed and maintained according to the existing management plan.

Remedial Actions

Mitigation lands must include provisions for a dispute resolution process applicable if the owners of the property fail to meet their obligations under the conservation bank or mitigation agreement. The Service, in consultation with the mitigation land sponsor, will decide on the need for remediation.

American Burying Beetle Mitigation Lands Requirements

At a minimum, proposals must include items described above in the "General Guidelines for Mitigation Lands" section. This includes a Mitigation Land Assessment and Management Plan, described in further detail below.

Mitigation Land Assessment

Proposals for a conservation bank or other mitigation lands submitted to the Service must include a complete assessment of the proposed property. Mitigation land assessments must include the following information:

1. An accurate, current map clearly indicating the location of the property being considered for a conservation bank or mitigation property;
2. A current aerial photo with:
   a. the date the photo was taken, and
   b. the property boundary;
3. Detailed descriptions identifying the vegetation types described as habitat for the ABB and methods used to evaluate the habitat;
4. A map delineating habitat types identified as suitable for ABBs (and buffer areas) on the property;

5. Detailed descriptions of ABB survey methods used and results (including relevant GIS data);
6. Detailed description of soil types and/or soil survey results;
7. Description of current land uses, structures, access management (fences, roads, etc.), any areas excluded from the mitigation land, and recent and ongoing management actions;
8. Description of known exotic or invasive species; and
9. Detailed description of the results of red-imported fire ant (RIFA; *Solenopsis invicta*) inspections and/or surveys on the property.

Minimum Standards

The basic habitat requirements in order to be considered as mitigation lands for ABBs are listed here and explained further in the following sections:

1. The mitigation lands must occur within a Service-identified ABB Conservation Priority Area (CPA), Figure 2 below, or within an area documented to meet the requirements of a CPA (see the American Burying Beetle Range and CPA information at ***http://www.fws.gov/southwest/es/oklahoma/ABB_Add_Info.htm*** for a description of the Service's methodology for designating CPAs);
2. A minimum of 200 hectares (500 acres) of contiguous, suitable ABB habitat for a standalone mitigation land is required;
3. No more than 5% of the proposed mitigation land is comprised of non-habitat (for example, buffer areas, food plots, etc.);
4. Current ABB surveys will be required for each mitigation land and should be no older than the most recent survey season (within a year of the mitigation land proposal date). The minimum capture rate for ABBs within a prospective mitigation land should be 0.37 ABBs per trap night (see below for further information);
5. Sandy loam or silt loam soils for burial of carcasses and ABB reproduction must be present within the mitigation land (USFWS 1991); and
6. Visual inspections/surveys for RIFA colonies are required. RIFA colonies cannot occupy more than 20 mounds per acre over more than 20% of the mitigation land (Smith and Wright 2005).

Property Size

A minimum of 200 hectares (500 acres) of contiguous, suitable ABB habitat for a standalone property is required. In some rare cases, a smaller bank site may be accepted if it has high conservation value. This scenario will be limited to areas that are immediately adjacent to a permanently protected ABB habitat area (i.e., ABB mitigation site or land that has documented ABBs at the level required to establish ABB mitigation land and is already under a conservation easement) and meets all other minimum requirements.

Characteristics of adjacent and nearby habitat will be considered in the mitigation land approval process. For example, proposed mitigation lands located within or near a large residential or developed matrix may have limited habitat management options (e.g., prescribed fire restrictions

due to smoke management concerns). Additionally, mitigation lands developed within these areas may have reduced potential for providing connectivity between ABB populations. If a proposed site cannot successfully meet the requirements to establish, manage, and operate as ABB mitigation lands, the Service will not approve the proposed mitigation land.

Cover Type/ABB Habitat

Greater than or equal to 95% of the proposed mitigation land property must be comprised of ABB habitat and within ABB CPAs. ABB habitat is currently described as all native plant communities found within the ABB's range in Oklahoma. This is the area in Oklahoma where potential impacts to ABB will need to be considered. The following site characteristics cannot be included as ABB habitat: wetlands; impervious surfaces; agricultural land that is tilled on a regular basis, planted in monoculture, and does not contain native vegetation; areas maintained at a height of 20 cm (8 inches) or less through frequent mowing or herbicide application or grazing; or areas dominated by non-native and/or invasive plant communities.

American Burying Beetle Baseline Surveys

The ABB baseline on the property will be determined by conducting ABB surveys. ABB surveys should be conducted using the same trap design described in the ABB Oklahoma Presence/Absence Live-trapping Survey Guidance, found on our website at http://www.fws.gov/southwest/es/Oklahoma/ABB_Add_Info.htm . Survey results will be used to establish an ABB baseline in the management plan, which will include a strategy to monitor ABBs. The minimum ABB capture rate to establish mitigation lands is 0.37 beetles per trap night. This capture rate is based on the average catch per unit effort found within all CPAs (including positive and negative surveys) within the last 10 years (2003-2013), excluding surveys conducted at Camp Gruber, which is considered an outlier (exceptionally high ABBs per trap night).

All trapping efforts require a minimum of 3 consecutive trap nights, and sampling design should distribute traps across the property. Traps should be spaced approximately 1.6 km (1 mile) apart (with each trap having a 0.8 km [0.5 mile] effective radius). Because of the circular shape of the "effective survey area" of each trap, the Service realizes that it may be difficult to survey an entire tract of property without overlapping survey areas or creating gaps between the survey areas. Overlapping of effective survey areas should be minimized, and gaps between effective survey areas should equal no more than 25% (Figure 1) of the mitigation lands (i.e., 75% of the mitigation lands should be within an effective survey radius of an ABB trap).

Soils

The land must contain sandy loam or silt loam soils for reproductive habitat. If available, USDA Natural Resources Conservation Service (NRCS) soil surveys can be used to determine soil type. However, prospective mitigation land managers may want to have a professional soil survey conducted to get a more detailed delineation of soil types on a particular mitigation site. If an

approved NRCS soil survey is not available, a soil survey of the prospective mitigation site is required to determine if this soil requirement is met.

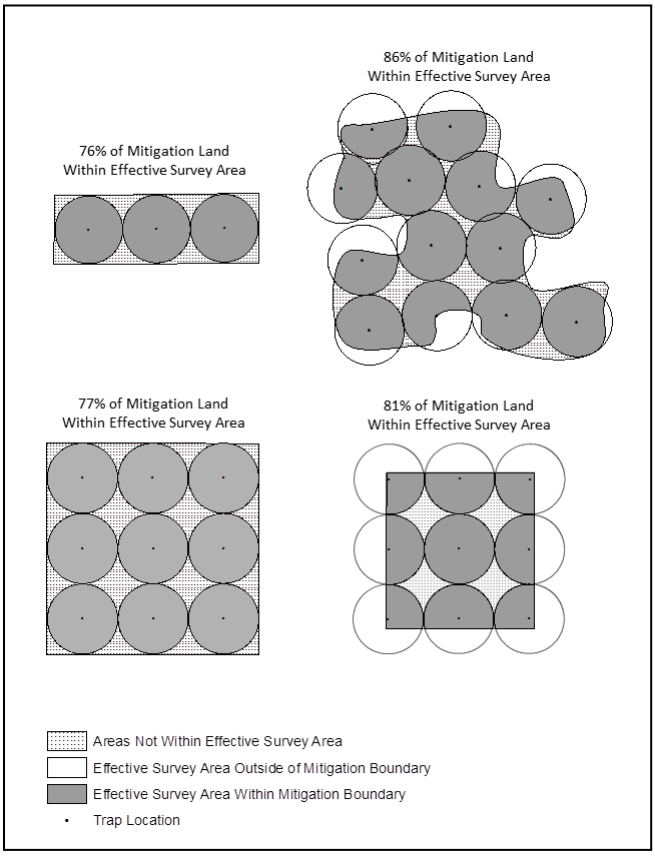


Figure 1. Placement of ABB traps to effectively survey mitigation lands. A minimum of 75% of the property must be within the effective survey area of a trap. Circles represent buffers around traps with radius of 0.8 km.

Red-Imported Fire Ant Surveys

The entire mitigation land should be inspected for RIFA colonies. If evidence of RIFA colonies is detected, additional surveys should be conducted to determine the density of RIFA mounds on the property. Properties with more than 20 RIFA mounds per acre on over 20% of the property may not be eligible as mitigation property without additional RIFA control prior to mitigation land approval.

Habitat Evaluation

ABBs have been successfully live-trapped in several vegetation types including native grassland, grazed pasture, riparian zone, coniferous forest, mature forest, and oak-hickory forest, as well as on a variety of soil types (Creighton et al. 1993; Lomolino and Creighton 1996; Lomolino et al. 1995; USFWS 1991). Ecosystems supporting ABB populations are diverse and include primary

forest, scrub forest, forest edge, grassland prairie, riparian areas, mountain slopes, and maritime scrub communities (Ratcliffe 1996; USFWS 1991). The ABB readily moves between different habitats (Creighton and Schnell 1998, Lomolino et al. 1995) and are considered to be habitat generalists. However, they are believed to have more selective breeding habitat (suitable soils and vegetation layer) compared to their feeding habitat (Anderson 1982).

ABB Habitat Exclusions

While the ABB uses a wide variety of habitats, the Service currently believes that areas exhibiting the following characteristics will not be of conservation value to ABBs and will not be credited as mitigation, except as possible buffer credits described below under the Crediting Method section. Areas exhibiting these characteristics should be excluded from mitigation lands because they are considered *unfavorable* for use by ABBs based on disturbance regime, vegetation structure, unsuitable soil conditions, and carrion availability:

1. Land that is tilled on a regular basis, planted in monoculture, and does not contain native vegetation.
2. Pasture or grassland that has been maintained through frequent mowing, grazing, or herbicide application at a height of 20 cm (8 inches) or less.
3. Land that has already been developed and no longer exhibits topsoil, leaf litter, or vegetation.
4. Urban areas with maintained lawns, paved surfaces, or roadways.
5. Stockpiled soil without vegetation.
6. Wetlands with standing water or saturated soils (defined as sites exhibiting hydric-soils, and vegetation typical of saturated soils, and/or wetland hydrology). Areas adjacent to wetlands and/or riparian areas are not considered unfavorable for the ABB, as they may be important for ABBs seeking moist soils during dry conditions.

NOTE: Areas adjacent to wetlands and/or riparian areas are considered favorable for the ABB, as they may be important for ABBs seeking moist soils during dry conditions.

Additional information regarding ABB biology and habitat can be found on the OKESFO webpages at: ***http://www.fws.gov/southwest/es/Oklahoma/ABB_Add_Info.htm***.

Crediting Method

For the ABB, credits are defined as the area of occupied habitat measured in acres. One ABB "credit" will be generated for each acre of suitable, occupied ABB habitat on the approved mitigation land.

Mitigation credits needed are quantified based on the project-related effects and impacts will be measured in acres; an appropriate number of credits can be assessed for mitigating any impacts. Proposed projects with more impacts have higher mitigation requirements. Additional

information on mitigation ratios is available in the Impact Assessment for Project Reviews document on the OKESFO webpages at: ***http://www.fws.gov/southwest/es/Oklahoma/ABB_Add_Info.htm***.

Preservation Credits

The Service will evaluate mitigation lands under a conservation easement and management in perpetuity for the ABB and will award preservation credits for high quality ABB habitat (1 credit for each acre of ABB habitat). High quality ABB habitat is identified through an appropriate habitat assessment (as described earlier in this guidance) and survey results showing the relative abundance and distribution for ABB on the proposed mitigation lands (as described in the ABB Baseline Survey section above). Preservation credits will be valued at one credit per one acre of suitable habitat provided that all applicable standards identified in this document have been met.

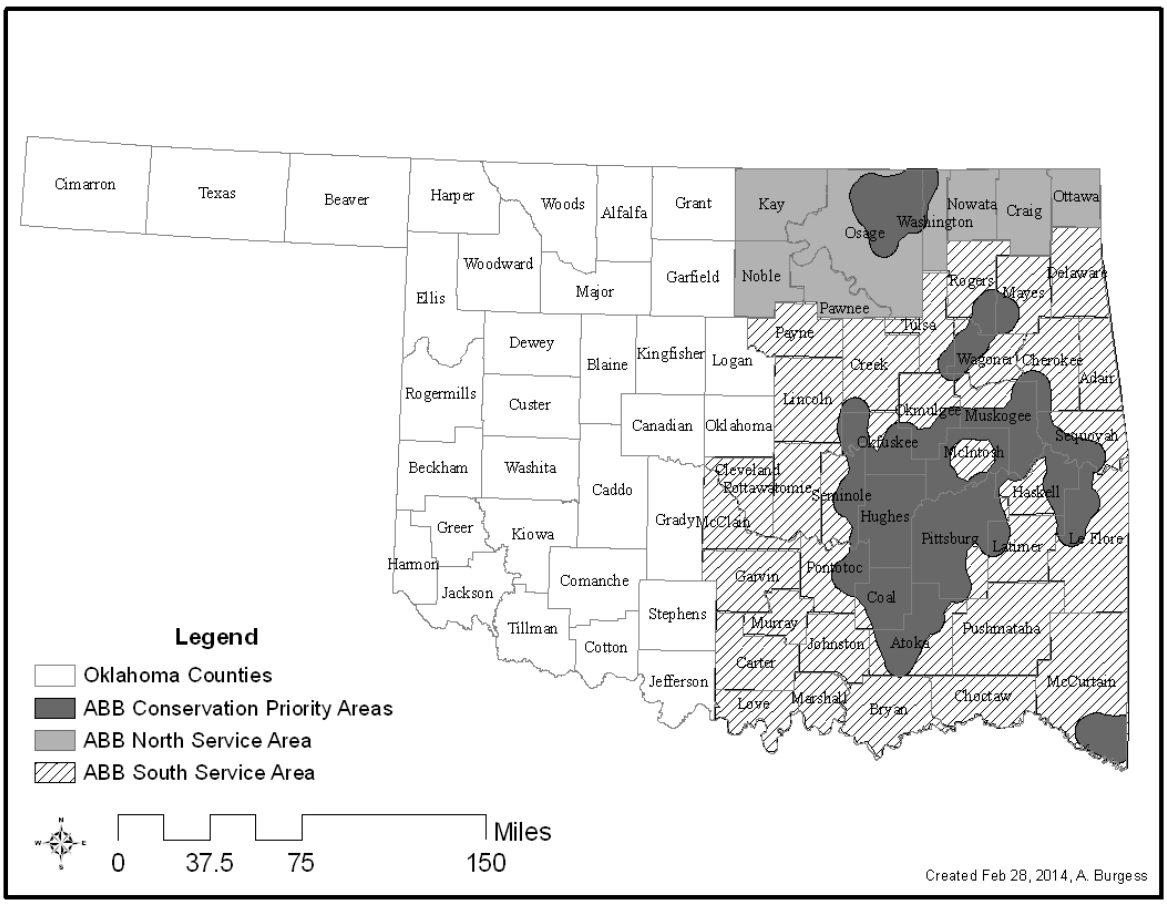
Buffer Credits

Mitigation lands will need to be of sufficient size for ecosystem management in perpetuity. Most properties will likely have areas that do not meet the definition of suitable habitat and are not included in the calculation of preservation credits. These "non-habitat" areas that are included in the easement and are necessary to maintain ecosystem function specific to the target species are considered buffer areas. Additionally, the outer boundaries of the property that 'buffer' against effects from adjacent land use will be considered buffer areas. According to the Service's 2003 *Guidance for the Establishment, Use, and Operation of Conservation Banks*, "…limited credits may be given for the inclusion of these buffer areas only to the degree that such features increase the overall ecological functioning of the bank." Based on the need to maintain the ecological integrity of mitigation lands in perpetuity, the Service will authorize limited ABB buffer credits at the time a mitigation land is approved. If the minimum acreage of habitat is met (500 acres) to qualify as a mitigation land, we will accept a property as mitigation, but will only provide buffer credits for up to 5% of the area of the mitigation property to keep that property continuous. All buffer areas will be evaluated by the Service on a case-by-case basis and if appropriate, will be credited at 0.5 credits per one acre. As 95% of the minimum ABB mitigation site must consist of suitable ABB habitat, the remaining 5% (i.e., "internal buffer credits") of the mitigation site may be credited as buffer areas if these areas increase the overall ecological functioning of the mitigation site. If the mitigation land manager demonstrates that a buffer area within a mitigation area has been converted from buffer to ABB habitat (through ABB survey results during the term of the mitigation land agreement), then the Service shall approve an additional 0.5 credit for each acre meeting these requirements from that point forward in time. Utility rights-of-way are not available for buffer credit in most circumstances.

Service Areas

The Service Area of any mitigation land defines the area in which mitigation credits may be used to offset project impacts. There are two Service Areas within the ABB Range in Oklahoma (Figure 2), dividing the northern and southern portions of the ABB's Oklahoma range. The Service delineated these Service Areas to encourage development of mitigation lands in

appropriate portions of the ABB range in Oklahoma. For example, although the North Service Area appears to include a relatively isolated area of ABB habitat within Oklahoma (based on current survey information); it is contiguous with the Kansas ABB metapopulation and therefore important to ABB recovery. Impacts from within the North Service Area should be mitigated within that Service Area (i.e., at the CPA polygon in Osage and Washington Counties) to reduce further losses and fragmentation of ABB habitat in northern Oklahoma and Kansas. Project impacts must be mitigated within the Service Area in which the impacts occur, except as discussed below. If a project proponent chooses to provide mitigation through the conservation bank option (described below), credits can be purchased at any conservation bank within the Service Area in which the impacts occur. If mitigation is not available within the appropriate Service Area, then impacts may be mitigated in the other Service Area with the Service's approval, if mitigation lands or conservation banks are present. If project impacts occur in more than one Service Area, the Service may require split mitigation, based on the percentage of impacts to each area (e.g., if 70% of the impacts occur within the North Service Area, then 70% of the mitigation should occur within the North Service Area). The Service must approve all mitigation proposals prior to sale.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Adair
Rogermills
Custer
Lincoln
Okmulgee
Muskogee
Canadian
Oklahoma
Okfuskee
McIntosh
Sequoyah
Beckham
Washita
Caddo
Cleveland
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Haskell
Grady
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Hughes
Greer
Kiowa
Pittsburg
Latimer
Le Flore
Harmon
Comanche
Garvin
Pontotoc
Jackson
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Murray
Tillman
Cotton
Johnston
Atoka
Pushmataha
Carter
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Love
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Bryan
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McCurtain
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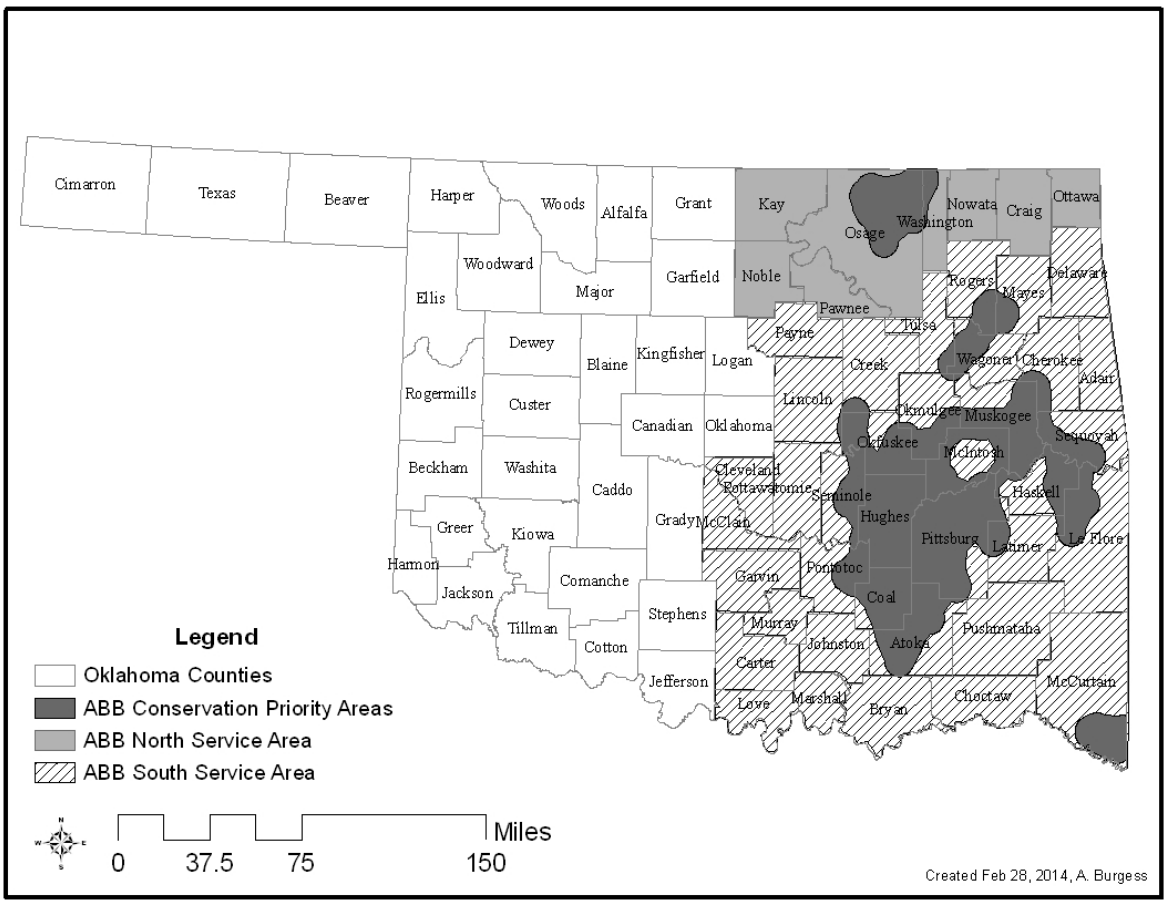

Figure 2. Oklahoma Service Areas for mitigation and Conservation Priority Areas (CPA).

Development of Mitigation Land Management Plans

All mitigation lands must have an active management plan that includes goals and objectives specific to maintaining the habitat for the continued use of the target species in perpetuity. Each plan will also have performance standards, which are measurable attributes used to determine if the management plan meets the agreed upon goals and objectives (see details for ABB described below). In addition, all plans should address the following:

1. Description of biological resources on-site
2. Identification of biological goals and objectives
3. Identification of activities allowed and prohibited
4. Invasive species management plan
5. Grazing plan (where applicable)
6. Monitoring actions
7. Process for adaptive management
8. Line-item proposed costs and funding mechanisms.

In addition to detailed resource management needs of the property, the plan should describe control of public access, monitoring of resources, maintenance of facilities, public uses, and any special management requirements necessary to meet the goals and objectives of the property.

Performance Standards

Each plan must also have performance standards, which are measurable attributes used to determine whether the management plan meets the agreed upon goals and objectives. Examples of a performance measure for an ABB mitigation area include the capture rate of ABBs on the mitigation land property, small mammal densities, and invasive plant species control, which are described in more detail below.

Biological management goals and objectives should be clearly stated. For example:

> Goal: The goal is the general purpose for managing the mitigation land. For example: *Perpetually protect and manage XXX acres of Mitigation Land as forest and grassland habitat to contribute to the conservation of the ABB.*
>
> Objectives:

1. Define the desired conditions of habitat areas to set targets for planning, implementing, monitoring, and evaluating management practices. Desired conditions should be based on ABB populations, carrion availability, and vegetation features of the property. For example*: Maintain XXX acres of oak hickory forest with a minimum basal area of XX and XX% canopy cover.*

2. Identify objectives needed to manage existing impacts and/or uses to minimize the direct and indirect impacts to the ABB and habitat areas. For example: *Within one year, reduce RIFA mound density from XXX to XXX mounds per acre.*

3. Monitor to test whether an objective has been achieved. For example: *Maintain baseline capture rate for ABB to ensure the mitigation land meets established Performance Standards*.

4. Evaluate habitat to ensure management actions are adequate or should be adaptively changed. For example: *Monitor vegetation response to prescribed fire to ensure habitat is maintaining XXX acres (or percent) of forest and XXX acres (or percent) of grassland.*

Development of Management and Monitoring Actions

Management plans should include descriptions of short-term and long-term management actions needed to achieve the objectives and associated monitoring for the mitigation land. Management actions for buffer areas should also be included. In addition, the management plan should include an adaptive management process. All actions described in each mitigation land/conservation bank's management plan must, at a minimum, include information described below.

1) *ABB Monitoring*: Monitoring must include annual ABB surveys at established locations. Annual survey results will be used to determine an annual ABB capture rate. Following the 3rd year of mitigation establishment, the 3-year capture rate average should be calculated. If the 3-year capture rate is below 0.37 ABBs/trapnight (10-year capture rate average for all CPAs, excluding Camp Gruber from 2003-2013), additional coordination with the Service should be conducted to review whether additional management actions are necessary or if the population change is related to regional climate or other uncontrollable factors. If 3-year capture rate average is below 0.37 ABBs/trapnight for 3 consecutive years (the first opportunity for this to occur is 5 years after the mitigation land has been established), the Service may suspend remaining mitigation credits and/or require remedial actions.

2) *Small mammal surveys*: Studies indicate that the biomass, numbers, and species of appropriately sized mammals and the combined biomass of birds and mammals are positively associated with the numbers of ABBs (Holloway and Schnell 1997). Small mammal (e.g. 35-220 g; 1.2-7.8 ounces; Kozol 1992) baseline surveys must be conducted within one year of mitigation land establishment, must conform to guidelines sanctioned by the American Society of Mammalogists, and must be approved by the Service. Small mammal surveys should be conducted annually to allow comparison between small mammal densities and ABB capture rate.

3) *Vegetation Monitoring*: The management plan must contain a description of the mitigation land's suitable ABB habitat baseline and a strategy for monitoring the habitat conditions over time.

    a) The mitigation land manager will record and report tree basal area, tree canopy cover, shrub cover, and herbaceous ground cover in the mitigation land at intervals detailed by the management plan.
        i) Some vegetation sampling efforts, like basal area (BA), and canopy cover, are typically measured at 5 to 10 year intervals, depending on soils and tree growth.
        ii) Shrub and herbaceous cover will require annual monitoring.

    b) Results of vegetation monitoring should be reported in GIS format (UTMs, latitude/longitude, shapefiles, etc.) where applicable.

    c) Mitigation land managers are required to document annual changes in the ecological structure of the mitigation lands by establishing permanent photographic monitoring locations in each habitat type.

4) *Vegetation maintenance*: Service-approved vegetation maintenance practices may be needed to maintain ABB habitat on ABB mitigation lands in perpetuity. The Service's current requirements, suggested practices, and restrictions for vegetation maintenance on ABB mitigation lands include:

a) Prescribed fire
   i) Prescribed fire must be conducted over the entire property once every 3-5 years with no more than 40% burned each year.
   ii) Prescribed burns will be conducted outside of the ABB's active season (active season is approximately mid-May through mid-September) unless authorized by the Service.

b) Removal of trees/shrubs
   i) When necessary, vegetation removal must be conducted outside of the ABB active season unless Service-approved.
   ii) Hand vegetation removal techniques should be used. Any exceptions to this (where vegetation removal techniques would require use of large equipment) must be Service-approved within the management plan.
   iii) With the Service's approval, limited brush piles from removed trees/shrubs may be left within mitigation lands to provide habitat for small mammals and birds.

c) Grazing
   i) If the Service authorizes grazing, some species of grazing animals (species and stocking rate subject to Service approval) may be allowed on mitigation lands, provided grazing does not compromise the conservation values of the mitigation property.
   ii) Any livestock grazing must comply with a Service-approved grazing plan designed to meet habitat management goals.
   If non-Service approved non-native grazing animals exist on the property, management should call for removal of such animals from mitigation lands.

d) Herbicides
   i) Herbicides may be required to control invasive plant species, but must be Service-approved and limited in use.

e) Use of Food Plots
   i) Small "food plots" of non-native, non-invasive species (e.g., clover, cowpea, soybeans, wheat, oats, sunflower, rye, and corn) may only occupy 1% total of the mitigation land area (e.g., if the mitigation land is 500 acres, only 5 acres (1%) may be used as a food plot).
   ii) We prefer that food plots be placed in areas with the least suitable ABB habitat (unsuitable soils for reproduction, existing non-native vegetation).
   iii) Areas that are managed as a food plot may be used as buffer credits with the Service's approval.

5) *Invasive Species Control and Monitoring*: To successfully maintain habitat for ABBs, invasive species must be monitored and potentially controlled. The goal for invasive species control should be to eliminate issues in occupied habitat or reduce abundance such that effects to ABB and occupied habitat are negligible.

a) Management plans must aim to eliminate all invasive, non-native plant species. Mitigation land managers must conduct invasive plant species surveys and submit an invasive species management plan for Service approval within the first year after mitigation land establishment. A list of invasive plant species in Oklahoma can be found on the Oklahoma Invasive Plant Council's website (***http://ok-invasive-plant-council.org/***).

b) The management plan must also aim to eliminate non-native animals and describe the process for removal of non-native animals. If non-native game species occur on the parcel, recreational hunting should be used to remove these species, unless it can be demonstrated that these species do not impact ABBs and can be properly managed. Feral hogs must be controlled year-round using hunting or non-attracting removal techniques (large pen trapping, helicopter animal control).

c) RIFA have been shown to be detrimental to ABBs (Bauer and Abbott 2010). Therefore, reduction of RIFA may be necessary to enhance the reproductive success of ABBs. Specific management needs for fire ant suppression will vary for each mitigation area and should be outlined in the mitigation area's management plan. RIFA survey efforts and implemented control measures should be reported to the Service annually.
   i) All RIFA mounds on mitigation land should be treated when identified using non-pesticide methods. The Service prefers the boiling water technique described by Drees and Vinson (2012) over chemical control.
   ii) High density (35 or more mounds per acre over 20% of the property) of RIFA may require broadcast chemical suppression, but will require Service authorization.

6) *Threats monitoring*: Monitoring of potential new and existing threats should generally be conducted annually, but some specific surveys may be conducted on alternative timeframes approved by the Service. This should include, but is not limited to, surveys to monitor browsing pressure conducted at least every five years.

7) *Unauthorized Access Monitoring*: Unauthorized access to mitigation lands must be controlled. At a minimum, all property boundaries must be securely fenced (minimum 5 strand barb wire fence in good condition), patrolled on a regularly occurring basis (minimum of once a month), and damage must be immediately repaired. Issues related to the management and control of access to mitigation lands should be clearly identified in the Mitigation Lands Assessment document submitted for initial review, and reported in the annual report.

8) *Adaptive Management*: The management plan should include an adaptive management section to identify areas of uncertainty, develop alternative strategies, integrate a monitoring program to evaluate effectiveness, and incorporate feedback loops that link implementation and monitoring to the decision-making process. Adaptive management allows mitigation land managers to change management practices that are not achieving the biological goals and objectives of the mitigation lands.

Locations of Photographic Documenting Stations

The management plan should locate the GPS coordinates of fixed "photographic documenting stations," set across the mitigation land area to document vegetation type, structure, and community. Number and locations of the stations should be coordinated with the Service. Four photographs, one facing each of the cardinal directions, will be taken during the same month annually during the ABB active season at each of the photographic documenting stations.

Line-item Proposed Costs and Funding Mechanisms

The management plan should include estimated line-item proposed costs and funding mechanisms associated with each of the monitoring and management activities described in the plan. This includes any short-term costs, usually associated with restoration or enhancement of the mitigation site, fencing, equipment purchases or other such start-up costs. These estimates should be used to describe the endowment necessary to carry out management of the property in perpetuity, including Adaptive Management.

All *interim* management costs will be borne by the mitigation/bank Sponsor (applies to permittee-responsible, third party, and conservation bank mitigation options). For conservation banks, an interim management plan and interim endowment will be required unless the bank sponsor fully funds the long-term endowment upon bank establishment.

Management Activities Schedule

A management activities schedule must be included in all management plans. A suggested example is found in Table 2.

Table 2. Suggested schedule of management actions required within a mitigation area.

Management Actions	**Annually**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Every 5 Years**
Habitat Enhancement/Vegetation Maintenance		X	X				As needed
ABB Surveys	X						
Small Mammal Surveys	X						
Avian Surveys				X			
Carrion Surveys	X						
Prescribed Burn Planning	X						

Management Actions	**Annually**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Every 5 Years**
Prescribed burn implementation				X			
RIFA Control	X						
RIFA Monitoring		X		X		X	X
Feral Hog Control & Monitoring	X						
Invasive Plant Control	X						
Invasive Plant Monitoring		X		X		X	X
Habitat Baseline Monitoring		X		X		X	X
5-year Monitoring Plan Re-evaluation							X
Initial Project Management (Initial restoration or enhancement actions, fencing, etc.)		X	X	X	X	X	
Adaptive Management	X						

The Service's staff, along with appropriate state biologists and/or other members of a recovery team, may visit the mitigation land to inspect the progress of the conservation activities at the mitigation land. The Service must be allowed access to the property for these inspections, with a 14-calendar day notice.

For additional information regarding the ABB in Oklahoma, please go to ***http://www.fws.gov/southwest/es/oklahoma/ABB_Add_Info.htm*** or contact the Oklahoma Ecological Services Field Office, 9014 East 21st Street, Tulsa, Oklahoma 74070; 918-581-7458.

Literature Cited

Amaral, M., A.J. Kozol, and T. French. 1997. Conservation strategy and reintroduction of the endangered American burying beetle. Northeastern Naturalist 4(3):121-132.

Anderson, R.S. 1982. On the decreasing abundance of *Nicrophorus americanus* Olivier (Coleoptera: Silphidae) in eastern North America. The Coleopterists Bulletin 36:362-365.

Backlund, D. C., and G.M. Marrone. 1997. New records of the endangered American burying beetle, *Nicrophorus americanus* Olivier, (Coleoptera: Silphidae) in South Dakota. Coleopterists Bulletin 51(1):53-58.

Bauer, K.K. and J.C. Abbott. 2010. The Affect of the Red Imported Fire Ant (*Solenopsis invicta*) on the Endangered American Burying Beetle (Nicrophorus americanus). 2010 Annual Report for Permit TE172278-1 and Texas Army National Guard Contract Tx08-ENV-01.

Bedick, J. C., B. C. Ratcliffe, W. W. Hyatt, and L. G. Higley. 1993. Distribution, ecology, and population dynamics of the American burying beetle [*Nicrophorus americanus*, Olivier (Coleoptera, Silphidae)] in south-central Nebraska, U.S.A. Journal of Insect Conservation 3:171-181.

Bedick, J.C., Brett C. Ratcliffe, W. Wyatt Hoback, and Leon G. Higley. 1999. Distribution, ecology and population dynamics of the American burying beetle *Nicrophorus americanus* Olivier (Coleoptera, Silphidae)] in South-central Nebraska, USA. Journal of Insect Conservation 3(3):171-181.

Creighton, J.C., C.C. Vaughn, and B.R. Chapman. 1993. Habitat preference of the endangered American burying beetle (*Nicrophorus americanus*) in Oklahoma. The Southwestern Naturalist

Creighton, J.C. and G. Schnell. 1998. Short-term movement patterns of the endangered American burying beetle *Nicrophorus americanus*. Biological Conservation 86:281-287.

Davis, L.R. 1980. Notes on beetle distributions with a discussion of Nicrophorus americanus Olivier and its abundance in collections. (Coleoptera: Scarabeidae, Lampyridae and Silphidae). Coleopterist Bulletin 34:245-25.

Drees, B.M. and S.B. Vinson. 2012. Fire Ants and their management. Texas Agricultural Extension Service. B-1536. http://posc.tamu.edu/files/2012/08/B-15361.pdf

Godwin, W. 2003. Unpubished report of the discovery of the American burying beetle at the Texas Army National Guard facility Camp Maxey, Lamar County, Texas. Stephen F. Austin State University.

Fox, J., and A. Nino-Murcia. 2005 Status of Species Conservation Banking in the United States. Conservation Biology 996-1007.

Holloway, A.K., and G.D. Schnell. 1997. Relationship between numbers of the endangered American burying beetle *Nicrophorus americanus* Olivier (Coleoptera: Silphidae) and available food resources. Biological Conservation 81:145-152.

Kozol, A.J., M.P. Scott, and F.F.A. Traniello. 1988. The American burying beetle, Nicrophorus americanus: Studies on the natural history of a declining species. Psyche 95:167-176.

Kozol, A.J. 1992. A guide to rearing the American burying beetle, *Nicrophorus americanus*, in captivity. Department of Biology, Boston University, submitted to U.S. Fish and Wildlife Service, Concord, New Hampshire P.O. 53410-1-5486.

Kozol, A.J. 1995. Ecology and population genetics of the endangered American burying beetle, *Nicrophorus americanus*. Dissertation, Boston University, Massachusetts.

Lomolino, M.V., J.C. Creighton, G.D. Schnell, and D.L. Certain. 1995. Ecology and conservation of the endangered American burying beetle, Nicrophorus americanus. Conservation Biology 9:605-614.

Lomolino, M.V., and J.C. Creighton. 1996. Habitat selection, breeding success and conservation of the endangered American burying beetle *Nicrophorus americanus*. Biological Conservation 77:235-241.

Marvier, M., P. Kareiva, M.G. Neubert. 2004. Habitat Destruction, Fragmentation, and Disturbance Promote Invasion by Habitat Generalists in a Multispecies Metapopulation. Risk Analysis 24:869–878.

Miller, E.J., and L. McDonald. 1997. Rediscovery of *Nicrophorus americanus* Olivier (Coleoptera: Silphidae) in Kansas. *Coleopterists Bulletin* 51:22.

Oxley, D.J., M.B. Fenton, and G.R. Carmody. 1974. The effects of roads on populations of small mammals. Journal of Applied Ecology 11:51-59.

Ratcliffe, B.C. 1996. The carrion beetles (Coleoptera: Silphidae) of Nebraska. Bulletin of the Nebraska State Museum Vol. 13.

Sikes, D.S., and Christopher J. Raithel. 2002. A review of hypotheses of decline of the endangered American burying beetle (Silphidae: *Nicrophorus americanus* Olivier). Journal of Insect Conservation 6:103-113.

Smith, W. and Wright, R. 2005. Treatment Options for Controlling Red Imported Fire Ants. Oklahoma Extension Service. CR-7309.

Trumbo, S.T. and P.L. Bloch. 2000. Habitat fragmentation and burying beetle abundance and success. Journal of Insect Conservation 4(4):245-252.

U.S. Fish and Wildlife Service. 1991. American Burying Beetle *Nicrophorus americanus* Recovery Plan. Newton Comer, Massachusetts. 62 pp.

U.S. Fish and Wildlife Service. 2003. Guidance for the Establishment, Use, and Operation of Conservation Banks. Washington, D.C.

U.S. Fish and Wildlife Service. 2008. American burying beetle (*Nicrophorus americanus*) 5-year review: Summary and evaluation. Newton Corner, MA.

Checklist for Mitigation Land Proposals

Note: the requirements listed below are for a Proposal. Additional requirements must be met in the conservation bank agreement or the Section 7 or Section 10 documents.

Please provide the following information and checklist with the submittal of a Final Proposal:

- ☐ Proposed Bank/Mitigation Lands Name – Use a short name based on a geographic feature if possible and include "Conservation Bank" in the name for Conservation Banks; note: name changes may be requested by an agency if the name has been used for another bank or mitigation lands (including Wetland/Stream Mitigation Banks);
- ☐ Bank Contacts – include the name, address, phone, fax, email, and role in project for: Bank Sponsor, Land Owner, Consultants, Prospective Land Manager, Real Estate Assurance, and Endowment Holder etc (if known);
- ☐ The qualifications of the Bank Sponsor/Mitigation sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the Bank Sponsor/Mitigation sponsor;
- ☐ General location map and address of the proposed Bank or Mitigation Lands; if no street address is available, then please include a written description of the location;
- ☐ Accurate current map of the proposed Bank or Mitigation Lands boundaries using a 7.5 minute USGS topographic quadrangle map as a base; if the map will be cropped, include the name of the quadrangle;
- ☐ Aerial photo(s) of the proposed Bank or Mitigation Lands and surrounding properties;
- ☐ The objectives of the proposed Conservation Bank/Mitigation Lands;
- ☐ How the Conservation Bank/Mitigation Lands will be established and operated;
- ☐ The general need for and technical feasibility of the proposed Conservation Bank/Mitigation Lands;
- ☐ The proposed ownership arrangements and long-term management strategy for the Conservation Bank/Mitigation Lands;
- ☐ Site conditions description. This must describe the ecological suitability of the site to achieve the objectives of the proposed Conservation Bank/Mitigation Lands, including the physical, chemical, and biological characteristics of the site and how that site will support the target endangered species and their habitats, and should include: site conditions and habitats, photos of the site, description of wetlands and waters present (if

applicable), what is proposed for creation, enhancement, etc., site history including past land uses, surrounding land uses and zoning along with the anticipated future development in the area;

☐ Assurance of sufficient water rights to support the long-term sustainability of the Conservation Bank/Mitigation Lands (if applicable);

☐ Proposed number and kinds of Credits (and acres) on the property;

☐ Biological resource survey report (an inventory of all biological resources onsite);

☐ If needed, Corps-verified map of on-site jurisdictional wetlands and waters, if a Corps permit will be required because of impacts to wetlands or waters of the U. S.(if verification is scheduled but not completed, please note);

☐ Preliminary Title Report indicating any easements or other encumbrances. Note, any liens and easements on the property that may affect a site's viability will need to be resolved before a site can be approved. Provide a written assessment of all easements and encumbrances describing the easement and how it may affect bank/mitigation site operation or habitat values;

☐ Any other restrictions on the property;

☐ An affirmative statement that a Conservation Easement covering the property, or fee title transfer of the property, will occur as part of Bank/Mitigation Lands Establishment. Include number of acres of Bank/Mitigation Lands area based on exclusion of any easement areas that allow uses incompatible with conservation.