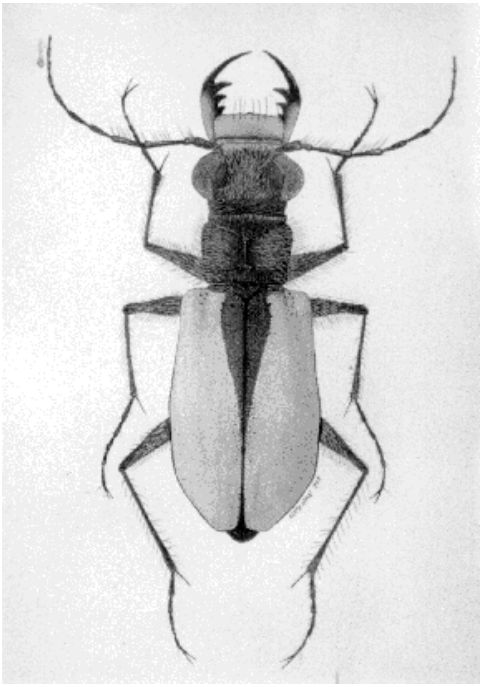
AMENDMENT TO THE 2009

CONSERVATION AGREEMENT AND STRATEGY

FOR THE

CORAL PINK SAND DUNES TIGER BEETLE (*CICINDELA ALBISSIMA*)



March 2013

Prepared by the Conservation Committee for the Coral Pink Sand Dunes Tiger Beetle

BACKGROUND

Initially formalized in 1997 (Conservation Committee 1997, entire), and revised in 2009 (Conservation Committee 2009, entire) , the Conservation Agreement for the Coral Pink Sand Dunes Tiger Beetle (CCA) is a partnership for the development and implementation of conservation measures to protect the tiger beetle and its habitat. The purpose of the partnership is to ensure the long-term persistence of the Coral Pink Sand Dunes tiger beetle within its historic range and provide a framework for future conservation efforts. The Utah Department of Natural Resources, Division of Parks and Recreation, Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and Kane County, Utah, are signatories to these agreements and have implemented conservation actions to benefit the Coral Pink Sand Dunes (CPSD) tiger beetle and its habitat, monitored their effectiveness, and adapted strategies as new information became available. Among other actions, coordination under the CCA resulted in the establishment of two Conservation Areas that protect the Coral Pink Sand Dunes tiger beetle from off-road vehicle (ORV) use—Conservation Areas A and B (77 FR 60208).

This amendment to the 2009 CCA outlines several new conservation actions that will be enacted to address the threats that were identified in the USFWS October 2, 2012 proposed rule (77 FR 60208). This amendment evaluated the most recent tiger beetle survey information (Knisley and Gowan 2013) and concluded that modifications to the boundaries of the Conservation Areas are needed to ensure continued protection of the tiger beetle from ongoing threats (see below description of threats). This amendment enlarges Conservation Area A to 266 acres. The expansion of Conservation Area A protects 88 percent of the species' currently occupied habitat. In addition, this amendment provides protection for islands of habitat, totaling 263 additional acres, between Conservation Areas A and B, with the intent of providing dispersal habitat for the species.

Overall, the CCA amendment addresses the following threats to the CPSD tiger beetle: 1) habitat loss and degradation caused by ORV use; 2) small population effects, such as vulnerability to random chance events; 3) the effects of climate change and drought; and 4) cumulative interaction of individual factors listed above (77 FR 60208, October 2, 2012) (Table 3).

GOAL

The goal of the CCA and this amendment is to ensure the long-term persistence of the CPSD tiger beetle within its historic range, provide a framework for future conservation efforts, and ultimately address the threats presented in the USFWS proposed rule such that listing of the species is no longer necessary because new conservation actions have eliminated the identified threats.

Objectives
The following objectives were described in the 2009 CCA and will continue to be enacted through this amendment:

Objective 1: Effectively manage the species habitat, taking into account environmental changes and research results;

Objective 2: Monitor demography to ensure populations on both BLM and State Park land are demonstrably self-maintaining (within the broad parameters of their known fluctuation) or expanding for at least 10 years;

Objective 3: Effectively monitor population trends, previously identified and new threats, and the performance of protection strategies; and

Objective 4: Ensure effective education and outreach efforts to minimize threats associated with recreation use.

These objectives will be reached through implementation of the CCA and this amendment. The status of CPSD tiger beetle will be evaluated annually to assess program progress and amendments will be added as needed to address recovery issues and ensure program effectiveness. For more specific information see specific conservation actions in the CONSERVATION ACTIONS section below and in Table 1.

OTHER BENEFITS

The CPSD is a recreation destination. People visit from all over the world to see and experience the dunes. This recreation includes riding ORVs, hiking, biking, sightseeing, birding, photography, sledding, video productions and more. These activities all impact on the resources to varying degrees. The CCA and this amendment provide a means to control these activities on CPSD while providing protection for the CPSD tiger beetle, its habitat and other sensitive species. The primary focus of this agreement is the conservation of the CPSD tiger beetle and its habitat; however other species occurring within or adjacent to the tiger beetle's occupied habitat may also benefit. For example, Welsh's milkweed (*Asclepias welshii*) is a plant listed as threatened which also occurs at the CPSD. A recovery plan has been developed for this species and is complemented by the conservation strategy for the CPSD tiger beetle.

INVOLVED PARTIES

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Bureau of Land Management

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AUTHORITY

All parties to the CCA and this amendment recognize that each agency has specific statutory responsibilities that cannot be delegated, particularly with respect to the management and conservation of species and the management and development of public land resources. Nothing in the CCA or this amendment is intended to abrogate any of the parties' respective responsibilities. The CCA and this amendment is also subject to and is intended to be consistent with all applicable Federal and State laws and regulations.

The purpose of the Endangered Species Act (ESA) is to protect and recover imperiled species and the ecosystems upon which they depend. A species listed as threatened or endangered under authority of the ESA receives protection from "take" and is protected from interstate and international trade. In addition, the USFWS, in coordination with Federal, State, Tribal, and local entities, are provided the authority to develop and implement Recovery Plans, purchase important habitats, and ensure Federal aid to State wildlife agencies.

Section 4 of the ESA requires species to be listed as endangered or threatened solely on the basis of their biological status and threats to their existence. When evaluating a species for listing, the USFWS considers five factors: 1) damage to, or destruction of, a species' habitat; 2) overutilization of the species for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) inadequacy of existing protection; and 5) other natural or manmade factors that affect the continued existence of the species. When one or more of these factors imperils the survival of a species, the USFWS takes action to protect it.

However, it is easier to conserve species before they need to be listed as endangered or threatened than to try to recover them when they are in danger of extinction or likely to become so. Candidate Conservation Agreements (CCAs) are voluntary agreements between landowners—including federal land management agencies— and one or more other parties to reduce or remove threats to candidate or other at-risk species. Parties to a CCA work with the USFWS to design conservation measures and monitor the effectiveness of plan implementation.

A proposed species is any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under section 4 of the ESA. [50 CFR §402.02]. Proposed critical habitat is habitat proposed in the Federal Register to be designated as critical habitat, or habitat proposed

to be added to an existing critical habitat designation, under section 4 of the ESA for any listed or proposed species [50 CFR §402.02]. The Coral Pink Sand Dunes tiger beetle is currently proposed for listing as threatened with proposed designated critical habitat of 2,276 acres (77 FR 60208). Section 7(a)(4) of the ESA provides a mechanism for identifying and resolving potential conflicts between a proposed action and proposed species or proposed critical habitat at an early planning stage. While consultations are required when the proposed action may affect listed species, a conference is required only when the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. However, federal action agencies may request a conference on any proposed action that may affect proposed species or proposed critical habitat. The Services also can request a conference after reviewing available information suggesting a proposed action is likely to jeopardize proposed species or destroy or adversely modify proposed critical habitat.

The USFWS agrees to promote the conservation of candidate, proposed, and listed species and to informally and formally consult/confer as specified in the Interagency Cooperation Regulations 50 CFR 402 on listed and proposed species, and designated and proposed critical habitat during planning: (1) To assure that activities implemented under these plans minimize or avoid adverse impacts to such species and any critical habitat; (2) to assure that such activities implemented under these plans do not preclude future conservation opportunities; (3) to use, where possible, consultation procedures specified in 50 CFR 402 to avoid conflicts between elements contained in plans and the requirements for conservation of proposed species and proposed critical habitat; and (4) to analyze the effects of the plan on candidate species pursuant to agency planning regulations.

Bureau of Land Management Manual 6840 provides guidance for the management and conservation of Federally Listed and other Special Status Species and the habitats on which they depend. Methods and procedures of conservation include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, and transportation. As applied to special status species, conservation means to use, and the use of, methods and procedures such that there is no longer any threat to their continued existence or need to continue their status as a special status species. More specifically, the BLM Kanab Field Office 2008 Resource Management Plan and Coral Pink Sand Dunes Management plan provide for management of this species.

The national interagency Memorandum of Understanding (MOU) for the conservation of species tending towards federal listing issued on January 25, 1994 (94- SMU-058) provides the general framework for cooperation and participation among cooperators in conservation of these species. This Agreement is consistent with the provisions of the national interagency MOU.

Statutorily, also considered is the Utah Off-Highway Vehicle Act UCA 41-22-1, where in it is stated that: “It is the policy of this State to promote safety and protection for persons, property and the environment connected with the use, operation and equipment of off-highway vehicles” as well as UCA 63-11-19, wherein it states: “the division… is authorized to enter into… agreements with the Government of the United States… for the purposes of causing state parks… to be improved and maintained for any other lawful purpose.”

This agreement is subject to and is intended to be consistent with all applicable Federal and State laws and regulations.

STATUS OF THE SPECIES

As described in the CCA, the USFWS's 90-day petition finding (59 FR 47293, September 15, 1994), concluded the petition presented substantial information in support of listing, and later that year the USFWS changed the CPSD tiger beetle's status from Category 2 to Category 1 (59 FR 58982, November 15, 1994). Category 1 status included those taxa for which the USFWS had sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened species. On December 5, 1996 (61 FR 64481), the USFWS published their decision to discontinue candidate categories and to restrict candidate status to those taxa for which they have sufficient information to support issuance of a proposed rule. As a result, the CPSD tiger beetle remained a candidate species (62 FR 49398, September 19, 1997).

Since the 2009 CCA, the USFWS's 2010 Candidate Notice of Review identified the CPSD tiger beetle as a species for which listing as endangered or threatened was warranted (with a listing priority number of 2) but precluded by work on higher priority listing actions (75 FR 69222, November 10, 2010). In the 2011 Candidate Notice of Review, the USFWS announced that they were not updating their assessment for this species, because they received funding to develop a proposed listing rule (76 FR 66370, October 26, 2011). The CPSD tiger beetle was proposed for listing as threatened with designated critical habitat under the Endangered Species Act of 1973 as amended (ESA), on October 2, 2012 (77 FR 60208).

SPECIES INFORMATION

This section provides an update to the 2009 CCA. In this section we provide the most current biological information of the CPSD tiger beetle, including information from surveys and ongoing researcher of the species since 2009.

Species Description

The CPSD tiger beetle occurs within the CPSD geologic feature located in Kane County, Utah. The high elevation of the dunes (~1820m) is essential for the species survival because the soil moisture required by the beetles is higher than at low altitudes due to increased precipitation. Adult beetles are likely to inhabit the dune slopes and edges of vegetated dune swales where it preys on live and dead invertebrates which live in the vegetation. Larvae are more likely to be observed in the damper, more protected swales (77 FR 60208, October 2, 2012).

Because the dunes and dune swales shift periodically, the location of the species and its habitat changes frequently. The USFWS estimates that the CPSD tiger beetle patchily inhabits less than 20% of the 3500 acre-dune feature, within which there are only two populations (77 FR 60208, October 2, 2012). The central population is considered self-sustaining and occurs within CPSD State Park, managed by the State of Utah. Although larval recruitment is documented each year, the northern population, located on Bureau of Land Management (BLM) land, is not considered self-sustaining and most likely consists of CPSD tiger beetles that disperse from the central population. CPSD tiger beetles also occur in the 3-mile corridor between the northern and

central populations near vegetated dune swales (USFWS, 2008). This area likely serves as a dispersal corridor between the two populations. The geologic feature is assumed to be the historic extent of the species range because of the lack of suitable habitat outside of the Coral Pink Sand Dunes (77 FR 60208, October 2, 2012).

Additional information on CPSD tiger beetle taxonomy, distribution, adult and larval behavior and ecology, and other species information can be found in the USFWS proposed rule and proposed critical habitat designation (77 FR 60208, October 2, 2012).

Population Dynamics and Status

The Coral Pink Sand Dunes tiger beetle population undergoes substantial year-to-year variation, which is typical of many desert arthropods that are greatly affected by climatic factors, especially rainfall (Knisley and Hill 2001). Populations in 2002 were the highest ever recorded, largely due to very large populations in core habitat swales. One year later in 2003, populations were the lowest ever recorded (Knisley and Gowan, 2005). Population numbers are likely influenced by annual moisture patterns. Rainfall has a positive effect on oviposition (recruitment) and survivorship, based on availability of prey food, and reduced mortality from desiccation and starvation (Knisley and Hill 2001). Soil moisture increases larval activity, attracts adults, and apparently increases oviposition. Watering of natural burrows several times in May and June increased survival of the larvae by 10% (Knisely and Gowan 2006).

The total adult population size estimate for CPSD tiger beetle in 2012 was 1,786 with a 95% confidence range of 1,559 to 2,013 (Knisley and Gowan 2013). This count compares with other recent counts of 1,264 in 2010, 1,131 in 2009, 1,072 in 2008, 700 in 2007 and 1,112 in 2006 (Figure 1). These results indicate a progressive and significant increase in numbers from the population count of 558 in 2003 to 1,786 beetles in 2012. The largest population count of 1,786 beetles occurred in 2012. The 2011 count was likely a significant underestimate because of poor weather conditions during surveys of some key swales (Knisley and Gowan 2013).

Similar to other years of CPSD tiger beetle studies, very few adults (typically zero to 10) were found in Conservation Area B swales at the north end of the dune field. The total counts were 1 adult in 2012, 3 adults in 2011, 4 adults in 2010, and 7 in 2009. Larvae have been much more numerous in this northern area, but have varied significantly over the years (Figure 2; Knisley and Gowan 2013). The number of larvae counted in 2012 was 45, 63 in 2011, 38 in 2010, and 111 in 2009. In all years most of these larvae were in swale AAA-2 (Figure 2), including 37 in 2012. Note that this includes 12 surviving larvae in the translocation transect. The pattern of larval numbers over the years has generally paralleled the total adult counts at CPSD tiger beetle in Conservation Area A, with highest numbers of larvae found in 1998 and 1999 before a decline to very few or none during 2002-2006 when adult numbers were at their lowest (Knisley and Gowan 2013). However, in the past several years adults increased significantly while larval numbers declined. This apparent correlation suggests that when conditions are ideal for population increase, Conservation Area B also experiences higher recruitment of larvae possibly produced by dispersing adults from Conservation Area A or higher recruitment or survival of larvae. Most important about this pattern is that under any conditions, even when there are larger numbers of larvae in the northern area, it has not resulted in a correspondingly higher numbers of adults or the establishment of a viable adult population. Some factor, such as dune characteristics

which cause reduced food supply, lower moisture levels or other factors in this northern area result in high larval mortality so that few complete development to the adult stage (Knisley and Gowan 2013).

In 2012, a total of 16 adults were found singly or in small numbers throughout the area south of Conservation Area A. A total of 13 larvae in two separate patches were also found in this area even though larval survey conditions were poor because of drought conditions. Most of these were within or near interdunal swales where much larger numbers of adults were found in several earlier years (1998-2000) (Knisley and Gowan 2013). In 1999, one of these swales had 50 adults and another 25. Since that time surveys have not been conducted every year, but when they have been done adult numbers were low, and less than 10 (aside from 2012) (Knisley and Gowan 2013). The southern area of the CPSD feature is more dynamic in terms of shifting sand and dune movement as a result of the predominant winds coming from the south. Additionally, the area does not have as clearly defined dune and interdunal swale habitat as is found within Conservation Area A. The dynamic nature of this area and the resulting effect on habitat suitability and availability likely affects CPSD tiger beetle use, and beetles respond based on the conditions in any given year. As an action identified under this amendment, the conservation committee has committed to conducting an on-site review of the area to the south of Conservation Area A in the spring of 2013 to determine to what extent additional protections are necessary (see Table 1).

Figure 1. Total estimate of adult CPSD tiger beetle population size at CPSD using the removal method from 1998 to 2012. Note that the 2011 estimate shown is an underestimate of actual numbers because of unsuitable weather conditions present during surveys (Knisley and Gowan 2013).

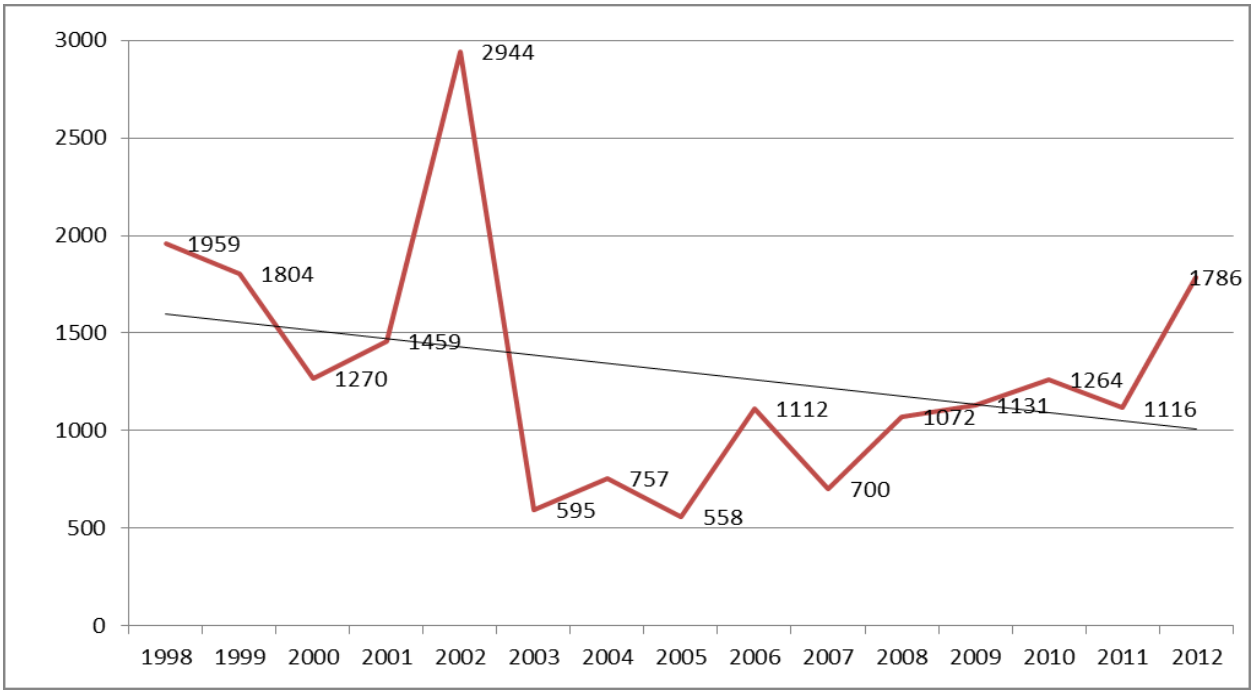
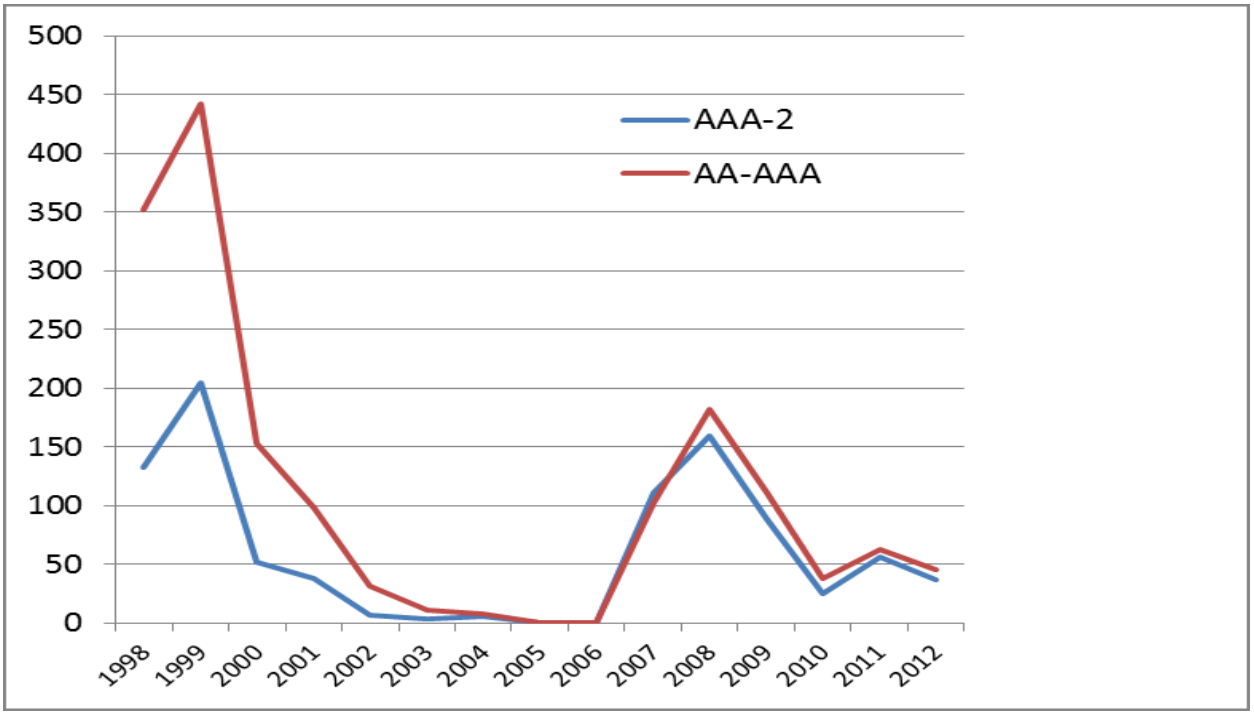


Figure 2. Total numbers of larvae counted in all of the northern swales of Conservation Area B (areas AAA and AA) and in swale AAA-2, 1996-2012.



Threats to the species

CPSD tiger beetle has one of the smallest geographical ranges of any known insect (Romey and Knisley 2002, p. 170). It is restricted to the CPSD geologic feature and occupies only 202 ha (500 ac) (Morgan *et al.* 2000, p. 1109). Within the CPSD, CPSD tiger beetles occur sporadically throughout the dunes, but only consistently exist in two populations that are separated by 4.8 km (3 mi). Although larval recruitment is documented each year, the northern population is not self-sustaining (Knisley 2001, p. 9) and likely persists because of periodic dispersal from the central population. Extremely low numbers and a highly restricted geographic range make CPSD tiger beetle particularly susceptible to becoming in danger of extinction; however, the conservation actions enacted by this document address known threats thus reducing the risk of extinction.

ORV use, inadequacy of existing regulatory mechanisms, and small population effects, in combination with other stressors and threats were identified as threats in the USFWS proposed rule (77 FR 60208, October 2, 2012). Despite these identified threats, the adult CPSD tiger beetle population size has shown a stable or slightly increasing trend since 2003 (see Population Dynamics and Status above for more information). By addressing these threats with the additional conservation measures provided through this amendment (see Table 1), the conservation committee anticipates this trend will continue. For a thorough discussion of threats see the USFWS proposed rule and proposed critical habitat designation (77 FR 60208, October 2, 2012).

CONSERVATION ACTIONS

This section appends the conservation strategy section of the CCA with additional conservation actions, the expansion of Conservation Area A, and the inclusion of habitat patches to support dispersal between Conservation Areas A and B (Figures 3 and 4). The USFWS assesses existing and potential threats facing the species based on the five criteria as required by Section 4(a) (1) of the ESA. Within each of these criteria, several factors which have contributed to the degradation of CPSD tiger beetle habitat and its populations were identified. Threats include: 1) habitat loss and degradation caused by ORV use; 2) small population effects, such as vulnerability to random chance events; 3) the effects of climate change and drought; and 4) cumulative interaction of the individual factors listed above (77 FR 60208, October 2, 2012).

The conservation actions in this amendment were developed to address the threats identified in the USFWS proposed rule. Conservation actions that will be enacted to address identified threats are described in Table 1.

Table 1. Threats to the Coral Pink Sand Dunes tiger beetle as identified in the October 2, 2012, proposed listing decision and proposed designation of critical habitat, and planned actions to address those threats through this amendment to the 2009 CCA.

Threat	Planned Action
Habitat loss/degradation and mortality associated with ORV use	• Utah Department of Natural Resources, Division of Parks and Recreation agrees to expand the boundary of Conservation Area A to protect additional habitat while addressing diversity in recreation and maintaining safety standards for dune visitors. This area will be expanded in the 2013 field season from 207 acres (ac) to 266 ac (Figure 3), thus increasing protection of tiger beetle occupied swales from 48 percent to 88 percent. All new or expanded habitat areas will be demarcated with carsonite marking posts to facilitate compliance by Park visitors. • Utah Department of Natural Resources, Division of Parks and Recreation and the BLM will protect vegetated habitat islands of connectivity between the southern and northern conservation areas and monitor to ensure compliance. This action will occur in 2013 and will protect 263 ac of additional sand dune habitat comprised of 14 individual habitat patches (Figure 4) which range in size from 2.6 to 37.1 ac each. All new or expanded habitat areas will be demarcated with carsonite marking posts to facilitate compliance by Park visitors. • Tiger beetle adults and larvae were found to the south of Conservation Area A in 2012. The

	conservation committee will visit this area in spring of 2013 to determine any additional habitats that should be protected to support the tiger beetle. The size and configuration of any protected areas will be determined during the 2013 field season with input from all members of the conservation committee. All new or expanded habitat areas will be demarcated with carsonite posts to facilitate compliance by Park visitors. • The conservation committee will analyze available historic aerial imagery, and other data, to better understand dune movement and associated vegetation changes as they relate to beetle occupation and suitable habitat over time. Knowledge of dune movement patterns will be used in adaptive management planning to accommodate dune changes and the need to alter conservation area boundaries. • The conservation committee will conduct experimental vegetation treatments within existing conservation areas to determine if this could be an effective mechanism to increase suitable habitat. • The conservation committee will revisit conservation area boundaries on a routine cycle (every 3 years) and make necessary adjustments as a result of shifting dunes, vegetation changes, population increase and decreases, and resulting changes to suitable habitat. • Utah Department of Natural Resources, Division of Parks and Recreation and the BLM will continue efforts in law enforcement, education, and outreach.
Vulnerability to stochastic events due to small population size	• We are not aware of any additional populations of CPSD tiger beetle outside of the CPSD. However, the conservation committee believes it is appropriate to continue surveys for this species in the area. The conservation committee will identify potential habitat within a 50 mile radius of the Coral Pink Sand Dunes using aerial imagery, and survey for tiger beetle presence and habitat suitability. If appropriate habitat is found the area will be considered for experimental introduction.

	• The conservation committee will increase research effort in experimental translocations in Conservation Area B and evaluate new habitat islands for appropriateness for reintroduction efforts. • The conservation committee will introduce individuals into suitable habitats (potential sites have been identified), monitor these sites, and revise translocation activities via an adaptive management process.
Inadequacy of existing regulatory mechanisms	• The Utah Department of Natural Resources, Division of Parks and Recreation and the BLM have done a creditable job of enforcing the protection boundaries of Conservation Areas A and B for approximately the last 15 years. This amendment increases the size of Conservation Area A by 59 acres, and the conservation committee will consider further protection of habitats to the south of Conservation Area A (see Habitat loss/degradation and mortality associated with ORV use, above). In addition, the amendment establishes 14 habitat patches to support dispersal of tiger beetles between Conservation Areas A and B, increasing the total protected area by an additional 263 ac. Because these signatory agencies have complied with the Conservation Agreement and Strategy for the last 15 years, it can reasonably be concluded that the BLM and Utah Department of Natural Resources, Division of Parks and Recreation will continue to properly enforce the boundaries of all protected areas.
Climate change and drought	• The BLM is installing a weather station on-site in spring 2013 to better correlate weather patterns with beetle abundance. Understanding the effects of weather patterns on CPSD tiger beetle populations may help us develop adaptive management strategies by identifying important habitat use area during particularly dry or warm years. • The establishment of 14 additional habitat patches totaling 263 ac will occur at higher elevations in the sand dune area, and at locations that provide significant vegetated habitat. This

	has the potential to offset the drying and warming effects of climate change and drought on CPSD tiger beetle habitat. In addition these habitat polygons will provide dispersal habitat and connectivity between Conservation Areas A and B. This will better allow the tiger beetle to disperse to potentially cooler and wetter habitat that occurs in Conservation Area B.
Cumulative effects of the above	• Addressing the threats listed above independently will prevent these threats from acting cumulatively.

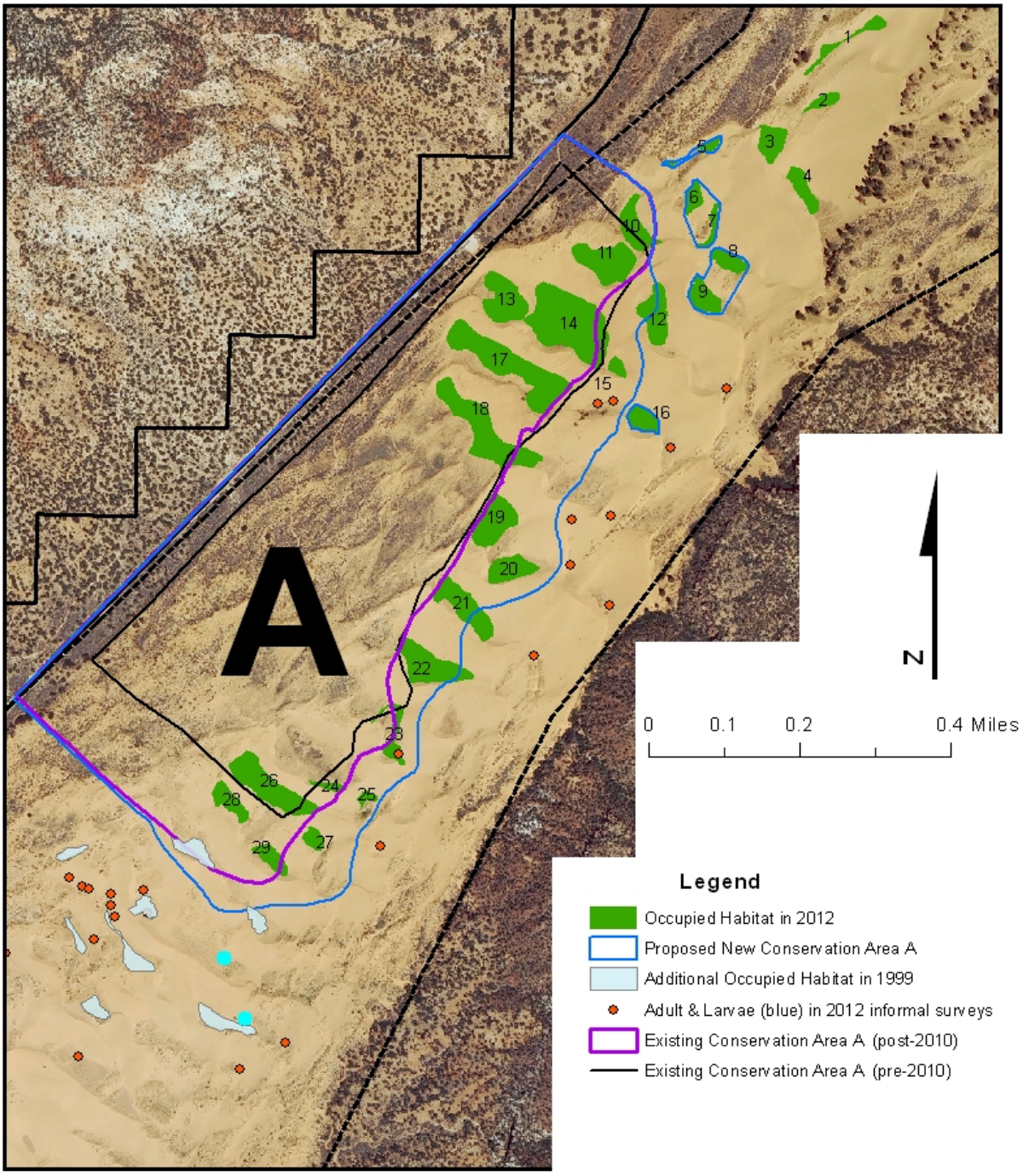


Figure 3. Boundary of Conservation Area A over the duration of the CCA and adjustments made in 2010 and as per this amendment to the 2009 CCA.

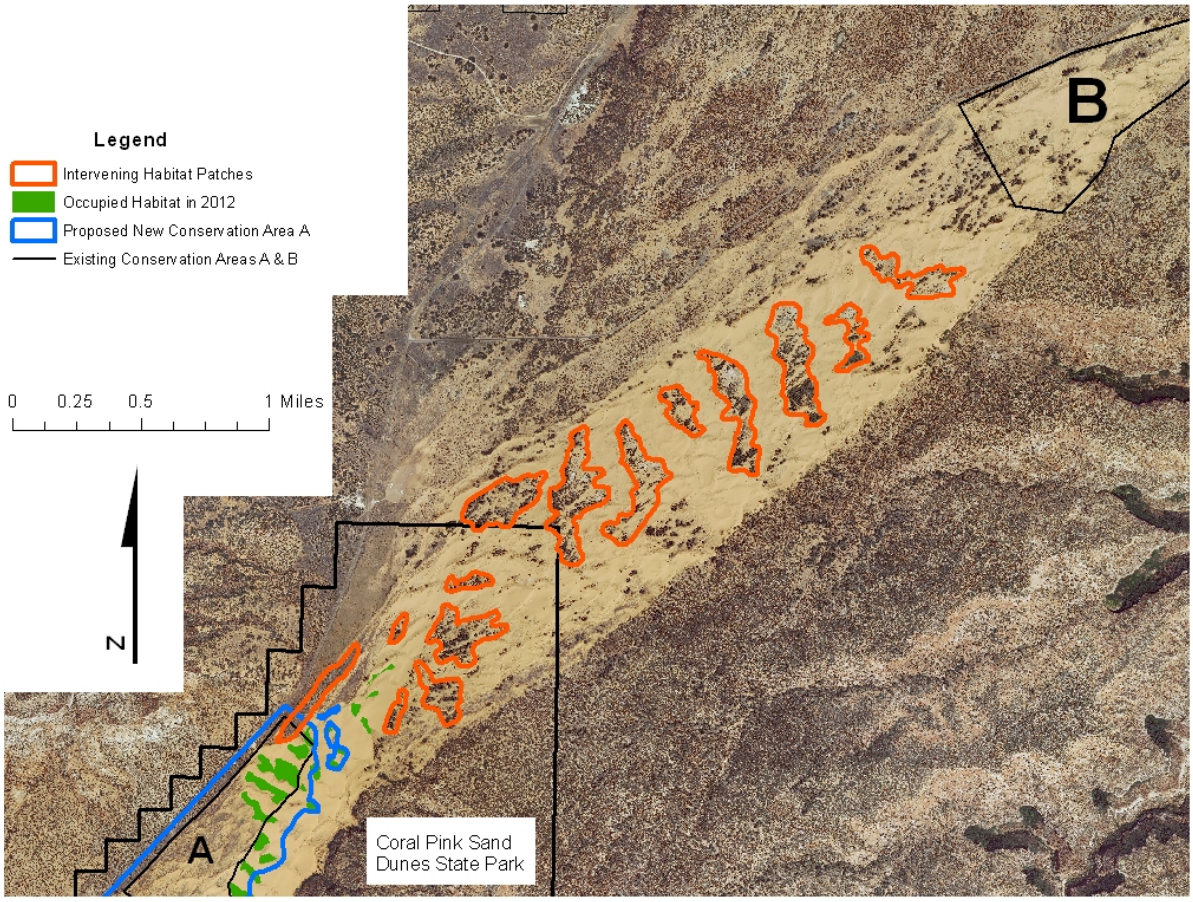


Figure 4. Location of newly created individual habitat patches between Conservation Area A and Conservation Area B.

MONITORING AND ADAPTIVE MANAGEMENT

CPSD tiger beetle conservation includes four levels of monitoring: 1) population assessment and environmental correlates (habitat); 2) effectiveness of conservation actions; 3) adaptive management; and, 4) compliance with regulatory mechanisms.

1) *Population Assessment and Environmental Correlates*. Population assessment monitoring for CPSD tiger beetle has been ongoing under the CCA. Habitat condition and adult and larval abundance (breeding success) and distribution within the CPSD dune field are monitored annually and there is a commitment through this amendment to continue monitoring into the foreseeable future (see Table 1).

As a result of their long-term monitoring and research efforts, Knisley and Gowan (2012) indicate that rainfall is likely the primary factor controlling population size in CPSD tiger beetle.

However, for a number of reasons including the complex life cycle of CPSD tiger beetle, variable effects of rainfall on parameters which affect population numbers, and the distance to the nearest weather station, direct correlations with rainfall, both timing and amount, and population numbers are not clear cut (Knisley and Gowan 2012). As a commitment under this amendment, the Bureau of Land Management has purchased a self-contained climate monitoring station which will be installed on site in the spring of 2013. The monitoring station will continuously record temperature, wind speed and direction, humidity, and precipitation and will have a satellite uplink so that data is available in real time. Understanding the effects of weather patterns on CPSD tiger beetle populations may help us develop adaptive management strategies by identifying important habitat use areas during particularly dry or warm years.

Within the conservation areas and habitat patches, habitat distribution, condition, and availability over time are primarily a function of dune movement. Swale-specific population declines have been documented and are believed to be influenced by dune movement which deposits loose sand over otherwise suitable larval habitat (Knisley and Gowan 2012). Conversely, surveys in 2011 and 2012 detected larval presence returning to a patch after being absent for a few years due to sand coverage, apparently because of new exposure of the favorable substrate (Knisley and Gowan). Monitoring of dune movement was initiated in 2000 and will continue as a commitment under this amendment to the 2009 CCA. Knowledge of dune movement patterns will be used in adaptive management planning to accommodate dune changes and the need to alter conservation area boundaries.

2) *Effectiveness of Conservation Actions*. Initially formalized in 1997, and revised in 2009, the CCA is an established and ongoing partnership for collaboration and implementation of conservation measures to protect the beetle and its habitat under an adaptive management framework. Actions intended to promote the conservation of CPSD tiger beetle have been implemented under the CCA.

A summary of accomplishments under the CCA include:

a) The establishment of two conservation areas where Off Highway Vehicle (OHV) use is prohibited has protected beetles from this threat. OHVs are not allowed in these areas and State Park and BLM staff enforce this restriction. The conservation areas protect the majority of beetles from OHV impacts.
b) Annual monitoring of the population status and habitat and population response to conservation actions has continued.
c) Research efforts have clearly defined the CPSD tiger beetle lifecycle and indicate that fluctuations in rainfall are primarily responsible for observed population fluctuations.
d) A two-year field study was completed that indicates supplemental watering has a significant and positive effect on recruitment of new larvae, their survival and apparently their speed of development.
e) Genetic studies were conducted and demonstrate that CPSD is an independent species, rather than the sub-species it was considered when the original CCA partnership was established.

f) A population viability analysis was developed to determine the likelihood of extinction and the range of habitat required for the species to persist. The population viability model will serve as a useful tool to evaluate, adapt and prioritize conservation strategies.
g) Tiger beetle conservation and protection is enforced at Coral Pink Sand Dunes, and recreational users have demonstrated compliance with these protection measures.
h) Educational materials have been developed and are displayed and distributed at the State Park and BLM office.
i) A protocol for translocation was developed and beetles have been translocated in a pilot effort to establish a more secure population at Conservation Area B.
j) The BLM Kanab Field Office revised their land use plan and included direction on CPSD tiger beetle management to continue to implement measures identified in the CCA.

The list above demonstrates that the partnership established under the CCA is committed to and has been successful at implementing conservation measures to protect the CPSD tiger beetle. This demonstrated track record provides a high level of certainty that conservation efforts will continue and the conservation actions identified in this amendment (see Table 1) will be implemented. Some of these actions, such as the expansion of Conservation Area A, will reduce the target threat immediately. For instance, Conservation Area A was expanded in 2010 to provide additional protection from OHV use at the request of conservation committee. In 2011, the tiger beetle density more than doubled on the newly protected swale. This action provides an example of how the conservation committee has used adaptive management to benefit the CPSD tiger beetle and also demonstrates how rapidly the species can respond when this threat is addressed (77 FR 60208, October 2, 2012).

Based on results such as this, the conservation committee anticipates a positive population response to additional protections provided through this amendment to the 2009 CCA (see Table 1). Effectiveness monitoring will be conducted to determine whether the intended objectives of the conservation action are achieved; and, if not, information learned from effectiveness monitoring will be used to adapt conservation strategies thereby improving the effectiveness of future conservation actions.

3) *Adaptive Management*. The U.S. Department of the Interior defines adaptive management as a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals; increases scientific knowledge; and reduces tensions among stakeholders.

Recreational use, weather conditions, dune movement, and other factors are dynamic and interacting players that continually affect CPSD tiger beetles and their habitat. Because of

uncertainties associated with future conditions, or the effectiveness of conservation actions, conservation strategies need to be adaptable to address habitat changes and emerging threats and to take advantage of new information based on research findings and the results of prior conservation efforts. Successful conservation requires flexibility to adapt strategies based on lessons learned and to accommodate habitat shifts associated with this changing environment. Whether responding to the dynamics of the dune system it occupies, or based on population responses to conservation actions, adaptive management as it pertains to CPSD tiger beetle conservation is an ongoing activity at many levels. As an example, on a routine basis carsonite posts demarcating the boundaries of conservation areas off limits to ORV use are checked and moved, often weekly, to accommodate shifting sand that can bury posts and eliminate the boundary markers from recreational user's view. As another example, the CPSD tiger beetle conservation committee has used adaptive management to benefit the tiger beetle by expanding the boundary of Conservation Area A as recently as 2010 (and again as committed to under this amendment), and the population has demonstrated a positive response (Knisley and Gowan 2011; 77 FR 60208, October 2, 2012).

Operating under an adaptive management framework is essential for CPSD tiger beetle conservation to be successful. The dynamic nature of the dune environment will require routine monitoring and adjustments to conservation area boundaries to ensure appropriate habitat is protected as sands shift and dunes migrate. Information gained from monitoring and research efforts will be reviewed by the conservation committee on an annual basis and conservation planning and actions will be adjusted accordingly.

4) *Compliance with Regulatory Mechanisms*. In addition to monitoring population status, habitat and effectiveness of conservation actions, compliance monitoring associated with ORV restrictions in protected conservation areas has been implemented under the existing conservation agreement and will continue under this amendment. Both state and federal regulations restrict ORV use in these protected areas. Park officials patrol the dune field daily and their presence and enforcement ensures compliance with ORV restrictions. Monitoring has demonstrated ORV users comply with regulations and signage and stay out of protected areas.

COORDINATING CONSERVATION ACTIVITIES

The CPSD tiger beetle conservation committee will consist of a designated representative from each signatory to this agreement, and technical advisors (i.e. species experts, recreational planners, and others as deemed necessary by the conservation committee). The conservation committee will meet at least once annually to review the status of the beetle, develop yearly conservation action schedules, review the conservation strategy, and modify the strategy as appropriate. Annual reports will be prepared to ensure that research and monitoring results are evaluated and conservation strategies and actions are implemented and modified, as needed. Summaries of discussions held by the conservation team will be prepared and available to all interested parties.

FUNDING CONSERVATION ACTIONS

From the time of the signing of the 1997 Conservation Agreement and Strategy through 2012, funding and in-kind services to enact conservation actions have been provided by a variety of sources including the BLM, the USFWS, and the Utah Department of Natural Resources, Division of State Parks and Recreation and Endangered Species Mitigation Fund. Funding has been made available on an annual basis to monitor the status of CPSD tiger beetle population, conduct research, implement conservation actions and monitor results, provide protection, enforce compliance with regulations and off-road vehicle restrictions, maintain conservation area boundaries, and develop and distribute educational materials (Table 2). In-kind contributions in the form of personnel, field equipment, and supplies have also been provided by participants. While it is understood that all funding and other agency resource commitments made under this Amendment are contingent upon appropriations by the respective entities, through this amendment, partners anticipate maintaining prior and ongoing funding levels and in-kind contributions into the foreseeable future.

Specifically, the Bureau of Land Management is committed to continue to fund protection, monitoring, research, education and public safety efforts. The Department of Natural Resources, through its Endangered Species Mitigation Fund, anticipates funding surveys of potential habitat to locate additional CPSD tiger beetle populations and/or identify areas suitable for translocations, and to fund experimental translocation efforts. CPSD State Park staff commit to continued monitoring, maintenance and protection of CPSD tiger beetle conservation areas and public education and outreach.

Table 2. Prior costs demonstrating a track record for funding commitment and implementation of CPSD tiger beetle conservation actions under the Conservation Agreement, and anticipated future expenditures to enact the conservation actions in this amendment.

Year	BLM	State Parks	USFWS	DNR	Kane County
1997	40,500		10,000		
1998	40,500		10,000		
1999	40,500		10,000		
2000	40,500	62,749			
2001	40,500	74,501			
2002	40,500	74,500		1,000	
2003	40,500	72,200	14,000		
2004	40,500	72,322			
2005	40,500	75,500			
2006	40,500	72,400			
2007	40,500	73,600			
2008	40,500	65,700			
2009	63,000	70,978			
2010	89,000	67,700			
2011	68,000	62,290		22,650	
2012	63,000	74,890	5,000		
2013	60,000	79,100	5,000		
Anticipated Future Expenditures					
2014	48,000	70,000		50,000	
2015	48,000	70,000			
2016	48,000	82,000			
2017	48,000	70,000			
2018	48,000	70,000			
2019	48,000	70,000			
2020	48,000	70,000			

DURATION OF AGREEMENT

This Agreement shall be effective as of the date of the last signature and shall remain in force for a period of ten years or until such time as the participating parties agree to terminate this Agreement. Any party may withdraw from this Agreement on ninety days written notice to the other parties. The original conservation agreement and strategy was signed in March 1997. A five year review was completed in 2003 and concluded that the agreement was beneficial. The Conservation Agreement and Strategy was updated and resigned in 2009. This document updates the 2009 document.

NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

This Conservation Agreement is being developed for planning purposes. Before any on-the-ground actions can occur on federally managed lands, a determination must be made whether or not the conservation actions are consistent with the applicable agency's land use or land management plan and whether or not additional NEPA analysis is required. If conservation actions are determined not to be consistent with a land management plan, then these actions must be incorporated into the applicable agency's land use or land management plan through an amendment or maintenance process before they can be implemented. Actions on lands administered by the State or private lands may not be subject to NEPA analysis.

FEDERAL AGENCY COMPLIANCE

During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11246 on non-discrimination and will not discriminate against any person because of race, color, religion, sex, or national origin.

No member of delegate to Congress or resident commissioner shall be admitted to any share or part of this agreement, or to any benefit that may arise there from, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

AGREEMENT MODIFICATION

Modification of this agreement requires written consent off all involved parties.

If theses measures prove inadequate for species conservation, the USFWS reserves all obligations required by, and options offered by the Endangered Species Act of 1973, as amended, including listing under the provisions of Section 4 of the Act.

PRINCIPAL CONTACTS

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Kane County Commissioner
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Utah Department of Natural Resources
Endangered Species Mitigation Fund
Chris Keleher
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Salt Lake City, Utah 84114-5610

SIGNATURES

In Witness whereof, the parties have caused this Coral Pink Sand Dunes tiger beetle Conservation Agreement amendment to be executed as of the date of last signature below:

APPROVED:

3.21.2013

Fred Hayes, Director
Utah Department of Parks and Recreation
Salt Lake City, Utah

Date

3-20-2013

Juan Palma, State Director
USDOI, Utah State Office, Bureau of Land Management,
Salt Lake City, Utah

Date

3-21-2013

Larry Crist, Field Office Supervisor
USDOI, Utah Field Office, Fish and Wildlife Service
West Valley City, Utah

Date

FOR 3-18-13

Dirk Clayson, County Commissioner
Kane County
Kanab, UT

Date

LITERATURE CITED

A complete list of all references we cited in the proposed rule and in this document is available by contacting the U.S. Fish and Wildlife Service, Utah Ecological Services Office at 801-975-3330, or by mail at 2369 West Orton Circle, Suite 50, West Valley City, Utah 44119.