

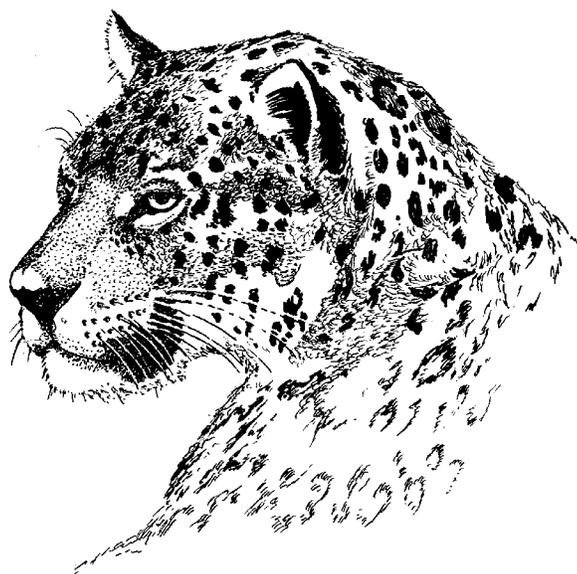
# ANNUAL REPORT ON THE JAGUAR CONSERVATION AGREEMENT FOR ARIZONA AND NEW MEXICO

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William E. Van Pelt and Terry B. Johnson

## INTRODUCTION

In March 1997, the Arizona Game and Fish Department (AGFD) and New Mexico Department of Game and Fish (NMDGF) entered into a Conservation Agreement with other state, local and federal cooperators, with voluntary participation by many private individuals, to conserve the jaguar (*Panthera onca*) along borderlands of Arizona and New Mexico and to stimulate parallel efforts in Mexico (Johnson and Van Pelt 1997). The agencies believed that if strong partnerships could be developed under this approach, it would be a significant step forward in bringing local governments, private landowners, and nongovernmental organizations directly into jaguar management.

The Conservation Agreement has many elements that provide opportunities and incentives for interested and affected parties to become involved with conservation activities. The approaches included in the agreement are: biological information collection (to provide a sound scientific basis for decisions); consideration of relevant cultural, economic, and political factors; design and implementation of a comprehensive approach to conservation (including public education); and monitoring, evaluation, and feedback.

The Conservation Agreement embraces two main components. The first is a Conservation Assessment, which describes the current status of the jaguar in the United States and identifies threats to the jaguar in Arizona and New Mexico. The assessment focuses the second component, the Conservation Strategy, on reducing or eliminating threats in Arizona and New Mexico that might prevent expansion of the current range of the jaguar, and thus contribute to recovery of the species.

Under the Conservation Agreement, an annual evaluation and progress report is submitted to the U.S. Fish and Wildlife Service (USFWS) by the Arizona Game and Fish Department and New Mexico Game and Fish Department directors. This is the first of those reports. Information provided in this report was compiled by AGFD and NMDGF, with considerable assistance from various members of the Jaguar Conservation Team (JAGCT) and Working Group (JAGWG). The JAGCT and JAGWG were established to gather information and promote jaguar conservation and management in Arizona and New Mexico. These annual evaluations will help ensure that objectives outlined in the Conservation Agreement are being accomplished and that any deficiencies identified are addressed and corrective measures are implemented.

## BACKGROUND

Historically, jaguars occurred widely but sparsely in the American Southwest and adjacent Mexico. In Arizona and New Mexico, the number of records indicates the jaguar was probably resident, but evidence of breeding is scant. More recent records (post 1960) are largely, if not entirely, of young

males, suggesting dispersal from a core population persisting in Sonora, Mexico. Through the 1980s, most of the jaguars seen in Arizona-New Mexico were killed.

In August 1992, the USFWS was petitioned by the American Southwest Sierra Institute/Lifenet to list the jaguar as endangered in the United States under the Endangered Species Act of 1973, as amended. In April 1993, the USFWS published a finding that the petition presented sufficient information to warrant the petitioned action and requested public comment and biological data on the status of the jaguar. In July 1994, the USFWS concluded the listing action was warranted and published a proposed rule (USFWS 1994). The USFWS conducted three public hearings in Arizona and Texas to solicit additional comments. Of the 60 people attending the meetings, 21 provided written or oral comment. Before a final decision on listing could be made, Congress enacted a moratorium prohibiting work on listing actions in April 1995 and eliminated funding for the USFWS to conduct final listing activities (Public Law 104-6). In April 1996, the moratorium was lifted by Presidential waiver.

In September 1996, AGFD and Texas Parks and Wildlife Department began discussing the need for a conservation agreement for jaguars. Before anything could be developed, the Southwest Center for Biological Diversity filed a lawsuit and motion for summary judgement for the Secretary of the Interior to finalize listing the jaguar, cactus ferruginous pygmy-owl, and three cienega species occurring in southern Arizona.

On January 15, 1997, AGFD and NMDGF asked USFWS to reopen the public comment period for the jaguar for 70 days so a Jaguar Conservation Agreement could be fully developed with public input. USFWS considered a final Conservation Agreement as new information relevant to the listing determination, and thus reopened the comment period from January 31 to February 14. The completion date for the final listing determination was reassigned to April 1.

AGFD and NMDGF held nine public meetings in Arizona and New Mexico during January, February, and March 1997 to solicit comment and support for a Jaguar Conservation Agreement. On March 27, AGFD submitted a final agreement to USFWS for use in determining the need to list the jaguar in the United States (Johnson and Van Pelt 1997).

On March 14, the U.S. District Court for the District including Arizona ordered USFWS to list the jaguar as endangered no later than 120 days from the date of the order. On July 3, the court issued a clarification merely requiring USFWS to make a decision as to whether or not to extend endangered status for the jaguar in the United States. On July 22, USFWS published a final rule in the Federal Register extending endangered status to the jaguar in the United States, with an effective date of August 21 (USFWS 1997).

Despite not yet having a final decision on federal listing of the jaguar, in April 1997 the cooperators in the Jaguar Conservation Agreement began implementing the conservation activities outlined in the agreement. Late that month, the Jaguar Conservation Team (JAGCT) held its first meeting in Douglas, Arizona. Additional meetings in the first year of JAGCT activities were held meetings in July and October 1997 and January 1998.

### CONSERVATION OBJECTIVES, STRATEGIES, AND OBJECTIVES

The Jaguar Conservation Agreement has eight main objectives, with a varying number of activities under each objective, for conserving jaguars in Arizona and New Mexico. They are:

1. Implement the Conservation Agreement
2. Establish a Jaguar Conservation Team (JAGCT) and an Arizona-New Mexico Working Group (JAGWG).
3. Determine species distribution and status.
4. Cooperate with Mexico.
5. Identify, maintain, and promote existing and other suitable jaguar habitats.
6. Promote scientific jaguar management and public education.
7. Increase legal protection.
8. Evaluate progress and accomplishments.

The various activities implemented this year were accomplished in cooperation with members of the JAGCT or JAGWG.

### RESULTS

#### IMPLEMENTATION OF THE CONSERVATION AGREEMENT

The Conservation Agreement was implemented through a Memorandum of Agreement (MOA) on March 26, 1997. Signatures or letters of intent were received from 16 entities representing state and federal agencies and local governments with land management responsibilities in southeastern Arizona and southwestern New Mexico.

The 16 signatories to the MOA are:

Arizona Game and Fish Department  
Arizona Department of Agriculture  
Arizona State Land Department  
Cochise County, Arizona  
Pima County, Arizona  
Santa Cruz County, Arizona  
U.S. Forest Service, Southwestern Region  
Bureau of Land Management, Arizona

New Mexico Department of Game and Fish  
New Mexico Department of Agriculture  
New Mexico State Land Office  
Hidalgo Soil and Conservation District  
Otero County, New Mexico  
U.S. Department Of Agriculture, Wildlife Services  
National Park Service, Intermountain Region  
Bureau of Land Management, New Mexico

Hidalgo County, New Mexico also signed the Conservation Agreement. However, on December 9, 1997, the County submitted a letter notifying the JAGCT of its intent to withdraw from the agreement to maintain sovereignty over its affairs. Per the agreement, the JAGCT gave the County 60 days to rescind its withdrawal letter. The County did not, and the withdrawal took effect on February 9, 1998.

Before signing on as a cooperator, USFWS requested that the agreement be amended to recognize the federal status of the jaguar. The proposed amendments were sent to the signatories for review and the JAGCT Chair requested comment back by January 28, 1998. At the January 22, 1998 JAGCT meeting, a verbal vote was taken. Participants at the meeting voted to accept the amendments proposed by USFWS. To comply with the Conservation Agreement procedures, written votes were requested. As of the April 23, 1998 JAGCT meeting, all letters received by the JAGCT Chair were in favor of amending the agreement as requested by USFWS.

#### ESTABLISHMENT OF JAGCT AND JAGWG

On April 30, 1997, the first meeting establishing the JAGCT and JAGWG was held in Douglas, Arizona. Terry B. Johnson, AGFD, was elected Chair. Additional JAGCT/JAGWG meetings were held in Lordsburg (July 30, 1997) and Animas (October 15, 1997), New Mexico and again in Douglas on January 22, 1998, respectively.

Activities in the JAGCT/JAGWG meetings include subcommittee reports, discussions of action items, and task assignments. Summary notes of the meetings were distributed to the Jaguar Mailing List, which now totals 450 entries. In addition, final summary notes are posted on the AGFD Website ([www.gf.state.az.us](http://www.gf.state.az.us)).

To accomplish some of the tasks outlined in the Conservation Agreement, subcommittees were formed (Appendix I). Subcommittee chairs give briefings at JAGCT meetings.

#### SPECIES DISTRIBUTION AND STATUS

To determine the jaguar's distribution and status, four tasks were identified in the Conservation Agreement: 1) collect and compile jaguar distribution and occurrence information by the second JAGCT meeting and submit the results to three experts in the field; 2) establish a protocol for handling jaguars; 3) establish a sighting report procedure; and 4) within one year (April 1998), draft a report on the current status of the jaguar in Arizona-New Mexico. Progress on these tasks is as follows:

Task 1: Collect and compile jaguar distribution and occurrence information by the second JAGCT meeting and submit the results to three experts in the field. AGFD and NMDGF compiled occurrence records and distributed the information at the July 1997 JAGCT meeting for comment. Corrections were made and the information was redistributed at the October 1997 meeting. The information has now been sent to the Jaguar Scientific Advisory Group for review.

Task 2: Establish a protocol for handling jaguars. At the July meeting a subcommittee was established to draft a handling protocol. Information was collected from AGFD, USDA APHIS Wildlife Services, and The Phoenix Zoo. The final handling protocol (Appendix II) was distributed at the October 1997 JAGCT meeting. It was in place when members of the JAGCT and JAGWG pursued a suspected jaguar in south-central Arizona on October 18, 1997. The animal was not captured, but hair samples were collected by JAGWG team members. The samples are being analyzed to confirm the sighting.

In May 1998, members of the JAGWG will travel to Brazil to collect additional handling information. After the trip, the handling protocol will be reviewed to see if it needs to be modified from the October 1997 version.

Task 3: Establish a sighting report procedure. At the July 1997 JAGCT meeting, a rating system for jaguar sightings was distributed for comment. Corrections were made and the rating system and report form were redistributed. Additional suggestions for modifications were received in January 1998, and the ranking system and form for sightings was redrafted (Appendix III).

Three sightings were documented and ranked by AGFD during 1997. The sightings are classified as two class IIs and one class I.

Task 4: Within one year (April 1998) the JAGCT would draft a report on the current status of the jaguar in Arizona-New Mexico. No progress has been made on this task.

#### COOPERATION WITH MEXICO

To encourage cooperation with Mexico to conserve jaguars, two tasks were identified in the conservation agreement: 1) coordinate jaguar activities at the annual Trilateral Commission meeting and 2) encourage Mexico to determine the present distribution of jaguars and identify travel corridors. Progress on these tasks is as follows:

Task 1: Coordinate jaguar activities at the annual Trilateral Commission meeting. In 1997, the Trilateral meeting was held in Toronto, Canada. Participants exchanged information about jaguar management activities in their countries. AGFD represented JAGCT interests. The Mexican Conservation Fund is now soliciting proposals from Mexican entities for endangered species work in Mexico (Mexico also classifies the jaguar as endangered [Johnson and Van Pelt 1997]). Various jaguar proposals will be submitted by JAGWG cooperators.

Task 2: Encourage Mexico to determine the present distribution of jaguars and identify travel corridors. JAGCT encouraged jaguar conservation work in Mexico in an invited presentation to an international conference of mammalogists in Acapulco, Mexico, in September 1997. In May 1998, Dr. Raul Valdez, New Mexico State University, will initiate jaguar surveys along the international border, similar to work he is conducting in southern Sonora, Mexico. Carlos Lopez, Instituto de Ecologia, A.C., continues to work on ocelot and jaguars in Jalisco, Mexico. Both scientists are members of the Jaguar Scientific Advisory Group.

IDENTIFY, MAINTAIN, AND PROMOTE EXISTING AND OTHER SUITABLE JAGUAR HABITATS

To identify, maintain, and promote existing and other suitable jaguar habitats, eight tasks were outlined in the Conservation Agreement: 1) review relevant scientific literature to identify habitat use patterns and develop range-wide habitat suitability criteria applicable to habitats in Mexico, Arizona, and New Mexico; 2) review proposed and on-going projects and activities for potential impacts on jaguars and jaguar habitats; 3) beginning 12 months after establishment of JAGCT (April 1998), AGFD and NMDGF would coordinate with land management agencies, state lands, and private landowners to inventory jaguar habitat; 4) in 24 months (April 1999), AGFD and NMDGF will produce maps delineating jaguar habitat and land ownership patterns; 5) encourage protection and enhancement of jaguar habitat and travel corridors; 6) AGFD and NMDGF will pursue protection and enhancement agreements for suitable jaguar habitat; 7) monitor and identify new, continued, and diminishing threats to jaguar population expansion; and 8) identify livestock depredation and control measures. Progress on these tasks is as follows:

Task 1: Review relevant scientific literature to identify habitat use patterns and develop range-wide habitat suitability criteria applicable to habitats in Mexico, Arizona, and New Mexico. In May 1997, a literature review began. Bibliographies were presented at all JAGCT meetings. Additional entries were added to the bibliography after each meeting. At the October 1997 meeting, a technical committee was appointed to begin reviewing the 400 jaguar articles for habitat information.

Task 2: Review proposed and on-going projects and activities for potential impacts on jaguars and jaguar habitats. The Habitat Subcommittee has not developed guidelines for land management agencies to use to evaluate proposed and existing projects. The subcommittee will have its information to the JAGCT for distribution during the 1998 reporting period.

Task 3: Beginning 12 months after establishment of JAGCT (April 1998), AGFD and NMDGF would coordinate with land management agencies, state lands, and private landowners to inventory jaguar habitat. Because Task 2 has not been completed, no progress has been made on Task 3. Once the habitat guidelines are established, JAGCT cooperators will begin to inventory potential jaguar habitat.

Task 4: In 24 months (April 1999), AGFD and NMDGF will produce maps delineating jaguar habitat and land ownership patterns. This task is not due during this reporting period.

Task 5: Encourage protection and enhancement of jaguar habitat and travel corridors. No progress was made on this task during this reporting period. As inventories for potential habitat are completed and important use areas are identified, JAGCT will work to ensure their protection and enhancement.

Task 6: AGFD and NMDGF will pursue protection and enhancement agreements for suitable jaguar habitat. In 1997, AGFD's Heritage granting program solicited proposals for habitat protection and enhancement projects in Arizona. JAGCT were reminded of the program at various meetings.

Another funding mechanism for habitat enhancements is available through the Wildlife Habitat Incentive Program in the 1996 USDA Farm Bill.

Task 7: Monitor and identify new, continued, and diminishing threats to jaguar population expansion. USDA APHIS Wildlife Services provided JAGCT with an assessment of the use of M-44s (Appendix IV), indicating no felids were killed by M-44s in Arizona or New Mexico.

Task 8: Identify livestock depredation and control measures. A depredation subcommittee was established at the April 1997 JAGCT meeting. The subcommittee established and distributed kill verification procedures (Appendix V) and compensation values (Appendix VI) at the July and October JAGCT meetings. No depredations were attributable to jaguars during this reporting period.

In regard to another depredation control measure, USDA APHIS Wildlife Services agreed to restrict its use of leghold traps to rubber-padded (or functionally equivalent) traps with a jaw spread equivalent to a #3N or smaller in occupied jaguar range.

#### PROMOTE SCIENTIFIC JAGUAR MANAGEMENT AND PUBLIC EDUCATION

Two tasks were identified in the Conservation Agreement to promote sound scientific decisions regarding jaguar management and public education: 1) establish a Jaguar Scientific Advisory Group, and 2) promote public support through the development and distribution of informational and educational material. Progress on these tasks is as follows:

Task 1: Establish a Jaguar Scientific Advisory Group. At the January 1998 JAGCT meeting, it was announced that all scientists who had been asked to sit on the Jaguar Scientific Advisory Group (JAGSAG) had accepted their nominations. The six scientist are: Alan Rabinowitz of the Wildlife Conservation Society, Brian Miller of the Denver Zoo, Michael Tewes of Texas A&M University, Howard Quigley of Hornocker Wildlife Institute, Raul Valdez of New Mexico State University, and Carlos Lopez of Instituto de Ecologia, A.C.

Task 2: Promote public support through the development and distribution of informational and educational material. Various strategies were implemented in 1997 to educate the public about jaguar conservation efforts. AGFD placed an advisory in its 1998 hunt regulations booklet to announce a jaguar page on the AGFD Website. The Arizona Houndsmen posted a \$5000 reward for information leading to the arrest and conviction of any person intentionally killing a jaguar while it is federally listed as an endangered species. In addition, JAGCT formed an education subcommittee to develop an education program. An outline for the program was distributed at the January 1998 JAGCT meeting. Work will continue on the program through 1998.

#### INCREASE LEGAL PROTECTION

To increase legal protection for jaguars in Arizona and New Mexico, three tasks were identified in the Conservation Agreement: 1) within one year (April 1998), AGFD and NMDGF would attempt to increase state legal disincentives for unlawful take of jaguars; 2) AGFD would consider whether if

changes are needed in A.R.S. 17.239 to preclude legal killing of jaguars as stock-killers; and 3) USFWS will consider whether listing the jaguar under the "similarity of appearance" clause is appropriate. Progress on these tasks is as follows:

Task 1: Within one year (April 1998), AGFD and NMDGF would attempt to increase state legal disincentives for unlawful take of jaguars. In 1997, NMDGF could not introduce legislation because the New Mexico legislature only handled budgets during that legislative cycle. NMDGF will advocate appropriate legislation during the 1998 legislative session.

In Arizona, AGFD successfully advocated legislation (Senate Bill 1106) imposing a \$2,500 criminal penalty (Class 2 Misdemeanor) and up to \$72,500 in civil penalties for unlawful take of a jaguar. These fines are commensurate with the federal penalties. However, Senate Bill 1106 only becomes law if the jaguar is removed from the federal endangered species list. The legislation was signed into law by the Governor of Arizona on May 7, 1998.

Task 2: AGFD would consider whether if changes are needed in A.R.S. 17.239 to preclude legal killing of jaguars as stock-killers. After reviewing A.R.S. 17.239, AGFD determined that no changes were needed in the law; since the jaguar is federally listed as endangered, it cannot be legally killed as a stock-killer.

Task 3: USFWS will consider whether listing the jaguar under the "similarity of appearance" clause is appropriate. To address inadequate penalties for take of a non-listed jaguar in the United States, USFWS considered listing the jaguar under the "Similarity of Appearance" provision of the Endangered Species Act. This provision affords protection to a species only from take, based on an inability to distinguish the non-listed species from a similar listed entity (species or population). The Act's civil and criminal penalties would apply in the United States for take of jaguars of unknown origin and those known to be from Mexico (a previously fully listed population). However, those penalties would not apply to jaguars which were known to be taken from within the United States. After evaluating this information, the USFWS decided not to pursue the "Similarity of Appearance" provision.

#### EVALUATION OF PROGRESS

Each January, AGFD and NMDGF are to report to USFWS on progress on tasks identified in the Conservation Agreement. This report is the evaluation for 1997.

#### DISCUSSION

During its first year of existence, the JAGCT and JAGWG have completed three of the eight main objectives identified in the Conservation Agreement. Of the 28 tasks identified under the remaining five objectives, eight have been completed and 11 have been initiated. Public support generated by the Conservation Agreement has forged an alliance with local communities that has opened constructive dialogue and cooperation promoting jaguar conservation in Arizona and New Mexico.

We do not believe this would have occurred with a traditional approach to jaguar recovery under the Endangered Species Act.

#### LITERATURE CITED

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U.S. Fish and Wildlife Service. 1997. Endangered and threatened wildlife and plants; Final rule to extend endangered status for the jaguar in the United States. Federal Register Vol. 62 No. 140, Tues. July 22. pp. 39147-39157.

APPENDIXES

Appendix I. Subcommittees assembled by the JAGCT in 1997.

KILL VERIFICATION\DEPREDATION SUBCOMMITTEE MEMBERS: Warner Glenn, Chairperson. Members: Kelly Glenn-Kimbro, Jack Childs, Chas Erickson, Levi Klump, Mike Pruss, Steve Fairaizl, Brandon Jones, Paul Pirtle, Matt Colvin, Craig Miller, Keel Price, Gabriel Paz

COMPENSATION SUBCOMMITTEE: Ed Sanchez, Chairperson. Members: Warner Glenn, Bill Moore, Levi Klump, Ron Bemis, Chuck Chambers.

HABITAT SUBCOMMITTEE: Mike Pruss, Chairperson. Members: Bill Moore, Lee Benson, Don Cullum, Ron Bemis.

EDUCATION SUBCOMMITTEE: Sue Krentz, Chairperson. Members: Don Cullum, Karen Kay Husted, Rod Mondt, Craig Miller.

Appendix II. Jaguar handling protocol established by the JAGCT in 1997.

Policy: State wildlife agency representatives on the conservation team or designees will respond to all jaguar calls, including stock killers, in accordance with procedures prescribed in this protocol.

Procedures:

- A. The purpose of these procedures is to create a situation where jaguars and humans can co-exist. In dealing with jaguars, there are a number of factors that must be considered. These factors may include the individual jaguar's physical condition, damage of personal property, and public safety. We must be aware of the effects jaguars may have on landowners and government agencies, and be sensitive to what people and agencies feel their role is when we handle jaguars.
- B. During normal working hours, reports of jaguars that may need to be handled, should be reported to the conservation team's state wildlife agency representative. Handling requirements of jaguars are outlined below by category. Each agency will have its own policy of how to route information on a jaguar that must be handled, but the end results should be the same, involvement of all affected parties and timely resolution of any situation.
- C. The conservation team member receiving the call will determine if the jaguar call requires an immediate response (Appropriate response for each category are described below in Section D).
  1. Category 1: Jaguar which is considered to be in immediate danger because:
    - a. the jaguar is injured;
    - b. the jaguar is confined or restrained and unable to leave the area, i.e. foot snare
  2. Category 2: Jaguar which is not considered in immediate danger, but is of special interest to the Conservation Team or may be in danger in the future because:
    - a. the jaguar is defending a kill, or has been involved in a depredation;
    - b. the jaguar is uncollared and/or marked and is temporarily confined or restrained, i.e. treed by dogs
  3. Category 3: Jaguar is not in immediate danger, nor is there reason to believe that it will become one because:
    - a. the jaguar is only observed traveling through or resting, and is uninjured and posing no threat to personal property;
- D. As soon as the category has been determined, the conservation team member responding to

the call will follow the procedure for the appropriate category listed below.

1. Category I situations require an immediate response by a state wildlife agency representative of the conservation team or their designee. If a depredation is involved, a depredation team member should also respond.
  - a. The reporting party will be advised that the jaguar poses a threat to public safety and that all people should keep out of the area where the jaguar is located. The reporting party will also be told not to do anything that might cause the animal to injure itself.
  - b. The conservation team member or their qualified designee will travel to the site and assess the situation as soon as possible.
  - c. The safety of the jaguar and any people present are the most important aspect of handling. If for any reason, any of the actions below would imperil the jaguar or the people present, those actions should not take place, and the jaguar should be released immediately.
  - d. Injured jaguars will be anesthetized and the extent of injuries evaluated. Non-debilitating injuries that can be treated on-site, will be treated and the animal will be processed and released, if appropriate. Debilitating injuries will be treated on-site, as best possible. Then the jaguar will be transported to a veterinarian experienced in working with large carnivores and/or wild animals for treatment, and if necessary, to an appropriate holding facility for rehabilitation. Rehabilitated jaguars will be released as soon as possible at or near the capture site. Non-releasible, rehabilitated jaguars will be placed at a captive facility.
  - e. Jaguars that are handled will be anesthetized, processed and released on-site. Recommended anesthesia is Telezol at a dose of 5 mg/kg (2.3 mg/lb) [Schobert 1987, Kock et. al. 1989, Barnett and Lewis 1990] administered by experienced personnel only, with a jab stick or dart pistol or rifle (long range only). Processing includes taking standard physical measurements (weight, length, girth, pad sizes, skull and tooth dimensions); estimating age; assessing physical condition; taking blood samples for genetics evaluation; assessing physical parameters and parasites/disease testing; photographing; ear-tagging and radio collaring. Ear-tags should be numbered and non-protruding; round plastic tags are preferred.
  - f. When a Category I jaguar is captured on private property and the landowner does not want it released on-site, the jaguar will be moved to and released at a pre-approved release site. Both state wildlife agencies will pre-determine at least one release site where jaguars can be relocated. If a jaguar is moved to

the release site, and remains in the area, a second site must also be identified for the release of a second jaguar, if needed. If the jaguar does not remain in the vicinity of the release site, successive jaguars can also be released there until one does occupy the area. In the case of depredation, the landowner will be offered fair compensation for the loss, after verification by a depredation team member that the depredation was by a jaguar.

2. If a Category II jaguar is on a natural kill, the location of the kill will be visited, the kill verified and documented, and habitat data recorded. If the kill is a depredation, the landowner will be offered fair compensation for the loss, after verification by a depredation team member that the depredation was by a jaguar. The conservation team's checklist for suspected predator kills and the track documentation guide should be used.
3. If a Category III jaguar is reported, the reporting party will be asked to describe the animal, and a record of the date, time, location and circumstances of the observation will be recorded on a jaguar sighting form. The reporting party will be encouraged to photo-document the animal when possible. No action is required for this category; however, if tracks are present, a qualified conservation team member should attempt to verify the sighting by track identification as soon as possible.

Appendix III. Ranking system and sighting form for jaguar sightings established by the JAGCT in 1997.

### **Ranking Criteria**

Class I-some sort of physical evidence is provided for verification

- 10 A jaguar is in the possession of the observer, via trapping, hunting, treeing by hounds, or a road-kill, and visual evidence of the sighting can be provided for verification. Examples of evidence are: photographs, videos, pelage or hair follicle, skull, or carcass.
- 9 Verifiable jaguar sign is presented for evaluation. Examples of sign are: tracks (measurable or plaster casts), scat, kill verification, or hair follicles.
- 8 A jaguar is observed, and reported separately, by two reliable individuals. Inconclusive physical evidence is provided. Examples of inconclusive evidence is shadowy photographs or incomplete measurements of tracks or scats.

Class II-Detailed information of sighting is provided. Attempts to verify the sighting will be made by the state wildlife agencies.

- 7 An experienced observer, who is familiar with wildlife in the area and spends long hours in the field reports a jaguar sighting. No physical evidence is provided. Examples of an experienced observer are: biologist, trapper, hunting guide, and naturalist.
- 6 An observer accustomed to looking for details and spending long hours in the field provides an accurate description of a jaguar. Examples of a detailed observer include bird watchers, rock collectors, and ranch hands.
- 5 An observer is not "experienced in the outdoors" but seems reliable. Examples of reliable observers include college professors, and zoo keepers.

Class III-Information of a cat sighting is provided. No follow-up will be attempted.

- 4 Details of observer are vague and not specific or account is inconsistent.
- 3 Observer seems to have questionable credibility and exaggerates other events.
- 2 Observer describes a cat-like sighting.
- 1 Observer describes something besides a jaguar or provides information of no value.

**Jaguar Sighting Form**

Interviewer \_\_\_\_\_ Date \_\_\_\_\_ Class/# \_\_\_\_\_  
Observer: Name \_\_\_\_\_ (H) Telephone \_\_\_\_\_  
Address \_\_\_\_\_  
Occupation \_\_\_\_\_ (W) Telephone \_\_\_\_\_  
Recreational/Outdoor Experience \_\_\_\_\_  
2nd Observer: Name \_\_\_\_\_ (H) Telephone \_\_\_\_\_  
Address \_\_\_\_\_  
Occupation \_\_\_\_\_ (W) Telephone \_\_\_\_\_  
Recreational/Outdoor Experience \_\_\_\_\_  
Other Observers \_\_\_\_\_  
Original report date \_\_\_\_\_ via phone \_\_\_\_\_ via letter \_\_\_\_\_ in person \_\_\_\_\_  
Sighting date \_\_\_\_\_ Report received by \_\_\_\_\_  
Agency \_\_\_\_\_ Address \_\_\_\_\_ Telephone \_\_\_\_\_  
Second report date \_\_\_\_\_ via phone \_\_\_\_\_ via letter \_\_\_\_\_ in person \_\_\_\_\_  
Report received by \_\_\_\_\_  
Agency \_\_\_\_\_ Address \_\_\_\_\_ Telephone \_\_\_\_\_  
Time of day and duration of sighting: \_\_\_\_\_  
Location of sun to observer: \_\_\_\_\_  
Location: (state, county, landmarks & legal description) \_\_\_\_\_  
\_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ Other \_\_\_\_\_  
Describe site: (habitat type, land use, visibility, etc.) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Description of animal: (color, markings, etc.) \_\_\_\_\_  
Body length \_\_\_\_\_ Legs and Feet \_\_\_\_\_  
Tail length \_\_\_\_\_ Head and Face \_\_\_\_\_  
Other comments: \_\_\_\_\_  
Number of animals seen \_\_\_\_\_ Distance of observation \_\_\_\_\_  
Optical aids used \_\_\_\_\_ Photograph taken \_\_\_\_\_  
Occurrence description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Behavior: (Describe in observer's words) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Jaguar sign (evidence) observed in area: (tracks, scat, prey remains) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Appendix IV. Assessment of the use of M-44s in Arizona and New Mexico.

As part of the Jaguar Conservation Agreement (JAGCA), which was finalized and submitted to the U.S. Fish and Wildlife Service in March 1997, USDA APHIS ADC (now Wildlife Services) agreed to conduct an assessment of the risk of accidental killing of a jaguar in Arizona and New Mexico from use of M-44 devices<sup>1</sup>. These devices are used routinely to take coyotes suspected of preying on livestock. M-44 devices are currently registered for use by ADC personnel in Arizona and New Mexico and by private applicators in New Mexico. Private applicator use in New Mexico is regulated by the New Mexico Department of Agriculture. M-44s have not been nor are they currently registered for private applicator use in Arizona. Since Proposition 201 became effective July 1, 1995, M-44 use in Arizona has been prohibited on public land.

The Conservation Assessment and Strategy in the JAGCA called for an analysis of M-44 use in Cochise, Pima, and Santa Cruz Counties in Arizona and Hidalgo County in New Mexico for the previous five years. It called for determination of (1) the number and species of felids taken by such methods; (2) the amount of area worked in the above counties; and (3) expert opinion on baits that would be least likely to attract jaguars while still allowing for effective M-44 use.

Data for conducting the assessment were generated from the ADC Management Information Systems in the Arizona and New Mexico ADC programs, and using records from Federal Fiscal Years 92-93, 93-94, 94-95, 95-96, and year-to-date 96-97. These were the latest years that have been maintained in the current MIS systems and for which data were retrievable at the ADC state offices. Each fiscal year begins October 1 and ends the following September 30. Information on private applicator use and species take was obtained from the New Mexico Department of Agriculture.

The maximum potential number of M-44 devices in use by ADC personnel in the five counties at any one time during each of the five fiscal years was retrieved from the MIS records. Each number represents the sum of the maximum number of M-44s that were in the field on each cooperating property under agreement on which ADC used M-44s during each fiscal year. The actual time or number of days that each M-44 was in the field is not retrievable from the MIS system. Therefore, it must be emphasized that the numbers of M-44s shown are not the *actual* number that were present at any one time, but represent the maximum number that *could have been* present at some time during the fiscal year.

New Mexico Department of Agriculture records of private applicator M-44 use in Hidalgo County show no take of felids has ever occurred by private applicator use of this method (B. Moore, Wildlife Specialist, NMDA, pers. comm.). Currently, six private applicators are licensed to use M-44s in the county, three of which live on the same ranch. No data are available on the sizes of the ranches where private M-44 use could occur. Collectively, the six applicators have a total of 59 M-

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<sup>1</sup>The M-44 device is a spring-loaded cyanide ejector mechanism that is anchored in the ground and which uses a felid bait to attract coyotes. When a coyote pulls up on the baited top of the device, the spring-loaded plunger is triggered so it pops upward, through a small plastic capsule containing a small (0.8 g) amount of powdered/granular sodium cyanide, into the coyote's mouth. The coyote is generally killed within seconds.

44 devices in possession. Use records indicate that about 30 of the devices may be set at any one time. BLM and USFS policies do not allow private use of M-44 devices on federal public lands. Therefore, the only land status areas on which private use of M-44 devices is allowed are private and State Trust lands in Hidalgo County.

#### M-44 BAITS TO AVOID OR MINIMIZE FELID TAKE

In general, members of the cat family are not attracted to the most commonly used M-44 baits because such baits contain fetid or rotten scented meat as the base material. Also, ADC personnel frequently incorporate glandular lures containing coyote pheromone in M-44 baits which greatly enhances species specific attraction and lessening the attractiveness to felids. When setting M-44 devices, ADC Specialists avoid techniques such as sight attractants which would make the devices more attractive to felids. These canid-specific use patterns serve to greatly reduce the risk of taking felids. Table 1 suggests that M-44 use by ADC over the past five years has been successful in avoiding nontarget felid take. Nevertheless, opinions of ADC personnel experienced with M-44 use and baits indicate that the risks to felids (members of the cat family) could be further minimized by avoiding use of any fresh meat baits, avoiding baits that rely on fresh fish as the base, and to avoid using anise oil as a bait ingredient (B. Fletcher, ADC Specialist, Hope, NM).

#### CONCLUSIONS

The above information indicates that M-44 devices have not resulted in the mortality of any felids in the affected area in the last five years despite use of these devices by ADC personnel in Arizona and New Mexico and by private applicators in Hidalgo County, New Mexico. ADC M-44 use has not been widespread in the area. It is estimated the areas with M-44 use totaled no more than about one-half of 1% of the area of the four counties in any one year. No use has occurred on National Forest lands which are presumed to encompass the majority of the habitat most likely to be used by jaguars. Although M-44 use on the New Mexico portion of the Coronado National Forest could occur, it is expected to be relatively infrequent and of low intensity. M-44 use in Arizona is only allowed on private land. In general, M-44 devices are not attractive to felids because fetid or rotten scented bait materials and, in many cases, canid specific gland lures, are used as the attractive agents. Cats generally prefer fresh meat and are not generally attracted to bait materials that are composed of animal flesh that is in an advanced state of decomposition, and are not generally attracted to coyote pheromone. This assessment indicates accidental or incidental take of a jaguar by M-44 use is highly unlikely to occur.

## RECOMMENDED MITIGATION MEASURES

Because the risk to jaguars from M-44 use is exceedingly small, the mitigation measures currently established in the Jaguar Conservation Assessment and Strategy (dated March 24, 1997) should be adequate to minimize risk. Those measures cover M-44 use by ADC and are:

In the event that APHIS-ADC agents kill, or cause debilitating injury that precludes successful release of, a jaguar during lawfully authorized predator control activities, the incident shall immediately be reported to the primary cooperators; the capture method resulting in such take will cease immediately within five miles of the take location and within five miles of any other location of a confirmed reliable jaguar occurrence within the preceding six months; and APHIS-ADC will consult with the primary cooperators to determine how to proceed and whether additional guidelines and/or mitigation measures should be established for use of such methods in Cochise, Pima, Santa Cruz, and Hidalgo counties.

If requested by the Jaguar Conservation Team, ADC will instruct personnel working in areas suspected to be inhabited by one or more jaguars to avoid using M-44 baits that have fresh meat or fish or anise oil as ingredients.

Appendix V. Reporting form for suspected predator kill and track measurements established by the JAGCT in 1997.

### Checklist for Suspected Predator Kill

**Date Inspected:** \_\_\_\_\_ How located: found by AGFD personnel, reported by  
rancher, forester, hunter, other? Note which.

**Note:** Look for tracks prior to inspection and follow track documentation guide.  
Gather feces and hair samples if available. Make a extensive photographic record of the site and carcass.  
Notify Depredation Committee Leader-Warner Glenn (520) 558-2470

**Species:** \_\_\_\_\_

**Location:** \_\_\_\_\_

**Estimated time since death:** \_\_\_\_\_

**Kill site description:**

Slope direction \_\_\_\_\_ Percent \_\_\_\_\_

Cover vegetation type \_\_\_\_\_

Tree or shrub species where kill is stashed \_\_\_\_\_

**General Appearance:**

Drag marks present \_\_\_\_\_ How far dragged \_\_\_\_\_

Predator tracks present \_\_\_\_\_ Species \_\_\_\_\_ Msmts \_\_\_\_\_

Kill covered \_\_\_\_\_ Type of debris \_\_\_\_\_

Has kill been moved \_\_\_\_\_ How many times \_\_\_\_\_

Number of burial sites \_\_\_\_\_

**Carcass Characteristics**

Carcass fed upon \_\_\_\_\_ Percent consumed \_\_\_\_\_

Position of carcass (*on side, extended, curled up, other*) \_\_\_\_\_

Point of first feeding (*rib cage, hind quarters, front quarters, other*) \_\_\_\_\_

Use of entails (*parts missing, parts present, percent consumed*) \_\_\_\_\_

Use of muscle and fat (*front and hind quarters, neck etc. Percent consumed*) \_\_\_\_\_

**Signs of predator damage on carcass:**

Tooth marks-location \_\_\_\_\_ Claw marks-location \_\_\_\_\_

Msmts (*between canines, claws etc.*) \_\_\_\_\_

Blood on ground or carcass-describe \_\_\_\_\_

Signs of subcutaneous or internal bleeding-describe location \_\_\_\_\_

Probable means of kill (*choked, broken neck or vertebrae, other*) \_\_\_\_\_

Teeth marks on vertebrae \_\_\_\_\_ Signs of struggle or chase at kill site \_\_\_\_\_

**Assessment of predator involvement**

Certain \_\_\_\_\_ High Probability \_\_\_\_\_ Possible \_\_\_\_\_ Predator not cause of death \_\_\_\_\_ Other \_\_\_\_\_

**Condition of prey prior to death:**

Sex \_\_\_\_\_ Age \_\_\_\_\_ Antlers or horns \_\_\_\_\_ Lactating \_\_\_\_\_ Unborn young present \_\_\_\_\_

Fat present on: intestines, liver, kidneys, heart, saddle, hips, ribs brisket. Note parts not present for examination.

Femur marrow (circle): solid or gelatinous color (circle): red, yellow, white, spotted pink, dark pink

Parasites present: Ticks \_\_\_\_\_ Load (circle): heavy, medium, light nose bots \_\_\_\_\_ other parasites \_\_\_\_\_

**Evidence of old injuries or disease:** \_\_\_\_\_

**Notes** (continue on back if necessary): \_\_\_\_\_

Appendix V. Continued.

### Track Documentation Guide

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Investigator: \_\_\_\_\_  
Prevailing conditions (circle): windy, cloudy, dry still, rainy, other \_\_\_\_\_

#### Track Media:

Snow (circle): wet, dry    Dry (circle): hard, soft    Mud (circle) soft, dry    Sand    Other  
\_\_\_\_\_

Please sketch track and mark measurements as described below. Make all measurements in millimeters. Toes are numbered from left to right.

- Measurement 1: From top of the second and third toes to bottom of the lowest point of pad: \_\_\_\_\_  
Measurement 2: From the outer edge of first toe to the outer edge of the fourth toe: \_\_\_\_\_  
Measurement 3: From the left outer edge of the pad to the right outer edge of pad: \_\_\_\_\_  
Measurement 4: From the top edge of the pad to bottom of the lowest point of the pad:

Each toe should be measured and there are three measurements per toe.

Toe 1:

Sketch track below:

- Measurement 1: Width of toe one third distance down from top of toe: \_\_\_\_\_  
Measurement 2: Width of toe two third distance down from top of toe: \_\_\_\_\_  
Measurement 3: Length of toe from top to bottom: \_\_\_\_\_

Toe 2:

- Measurement 1: Width of toe one third distance down from top of toe: \_\_\_\_\_  
Measurement 2: Width of toe two third distance down from top of toe: \_\_\_\_\_  
Measurement 3: Length of toe from top to bottom: \_\_\_\_\_

Toe 3:

- Measurement 1: Width of toe one third distance down from top of toe: \_\_\_\_\_  
Measurement 2: Width of toe two third distance down from top of toe: \_\_\_\_\_  
Measurement 3: Length of toe from top to bottom: \_\_\_\_\_

Toe 4:

- Measurement 1: Width of toe one third distance down from top of toe: \_\_\_\_\_  
Measurement 2: Width of toe two third distance down from top of toe: \_\_\_\_\_  
Measurement 3: Length of toe from top to bottom: \_\_\_\_\_

If track is suspected to be a jaguar take pictures with scale indication.

Comments: \_\_\_\_\_

Appendix VI. Compensation criteria and values established by the JAGCT in 1997.

Five items pertain to compensating livestock owners for losses attributed to jaguars:

1. Notification of depredation committee member-the kill site needs to be examined by someone knowledgeable about jaguar sign. The Depredation Subcommittee needs to notify the livestock associations in Arizona and New Mexico about who to notify if a jaguar is suspected of making a kill.
2. Examination of the kill site must occur within two or three days. Verification of a predator can only be successful on fresh kills. If it is impossible to tell, it may be necessary to trail with hounds until treed or bayed. This has to be done with extreme caution and as a last resort.
3. Values placed on livestock killed by jaguars needs to be reasonable (market value) but enough to fully compensate the owner for the loss. Although prices may seem high, livestock owners must feel they are being compensated fairly, causing them to want to leave the jaguar alive. The suggested values for 1997 are as follows:

|           |           |
|-----------|-----------|
| Calf:     | \$400.00  |
| Yearling: | \$500.00  |
| Cow:      | \$600.00  |
| Horse:    | \$1500.00 |
| Sheep:    | \$200.00  |
| Goat:     | \$200.00  |

4. Notification of compensation fund. For as long as it lasts, the Malpai Borderlands Group has funds set aside to pay for confirmed jaguar kills. Payments can be made immediately if the need arises.
5. Upon verification, make payment to owner. Payments to owners must be made as quickly as possible by check from the fund holder.