

ARIZONA GAME AND FISH DEPARTMENT

REGIONAL ELK MANAGEMENT OPERATIONAL PLANS

In the Arizona Game and Fish Department's Strategic Plan *Wildlife 2006*, the Arizona Game and Fish Commission directed the Department to "use Regional Elk Operational Plans ... to direct elk management goals and objectives."

The following operational plans describe how the Department will manage elk in Arizona. The Commission will review these plans annually.

April 5, 2005

INTRODUCTION

The native Merriam's elk is believed to have become extinct in Arizona shortly after 1900. Rocky Mountain elk from Yellowstone National Park were first transplanted into Arizona in 1913. A number of subsequent transplants were made throughout the state. While most transplants were successful, statewide elk numbers and distribution have fluctuated since then. During the 1980s and early 1990s, elk numbers and distribution increased substantially. Subsequent harvest management strategies, combined with dry climatic conditions, led to the reduction of elk populations in some elk herd units, and the stabilization in others. Overall, the elk population in Arizona has been stabilized.

Elk are an important resource to hunters, wildlife photographers, and outdoor enthusiasts. Elk hunters purchase gas, food, lodging, guide services, and trip related equipment. Wildlife viewers also boost the economy by purchasing gas, food, camping equipment, binoculars, and other related items. Elk related activities annually contribute millions of dollars to the Arizona economy. However, elk also use a limited forage base, thereby affecting potential livestock and agricultural production on both public and private lands.

Conflicting demands for forage produced on primarily public lands of the Little Colorado River watershed in Game Management Units (Units) 5A and 5B resulted in the formation in 1991 of a multi-disciplinary group known as the Forage Resource Study Group (FRSG). Members of this group included representatives from the U.S. Forest Service (USFS), State Land Department, U.S. Natural Resources Conservation Service, ranchers, Arizona Game and Fish Department (Department), and various sportsmen groups. The goals of this group were to develop cooperative grazing management plans that address livestock and elk use of forage in areas of concern, to monitor range condition and trend, and to assimilate this information into the annual hunt recommendations.

The Department developed the concept of Elk Habitat Partnership Committees from the FRSG to address local concerns statewide. The intent of these committees was to involve landowners, land management agencies, Department, and sportsmen in various aspects of elk management. Interested parties were encouraged to participate on a local level to formulate goals, objectives, and strategies to reduce real or perceived conflicts and to submit habitat improvement projects to increase the productivity of the land. These committees also review and comment on Department management direction of elk herd unit population objectives. These committees have now evolved into Habitat Partnership Committees (HPC), reducing the focus on single species management.

The Department developed, with substantial public input, a set of recommendations for Commission Rules during 2001-2002. These rules enabled the Department to develop a list of hunter names, a "hunter pool," that may be drawn from for use in population management seasons to meet management objectives that have not or will not be met using standard season structures. New in 2005 is the ability to offer restricted nonpermit tags to permit tag holders in units where population management seasons exactly overlap in open areas and season dates with the permitted hunt.

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The following plans address historical, current, and future perspectives in regards to elk management in Arizona. They serve to identify past and current elk management issues, provide elk population estimates and management objectives, as well as consider management opportunities to address issues on public and private lands.

Goal:

Develop the framework for elk management and issue resolution consistent with the Department's *Wildlife 2006* Strategic Plan and the Species Management Guidelines. Use local HPCs to develop habitat enhancement projects, which are consistent with the committee's goal statement to increase habitat capability or address conflict resolution.

Objectives:

- 1 Identify elk populations exhibiting a relatively high degree of fidelity to home ranges, which encompass both winter and summer ranges.
- 2 Assess current population estimates within each elk herd area. Set population objectives for each elk management unit consistent with habitat capability and management philosophy delineated for the units.
- 3 Use habitat and issue assessment to manage elk populations, prioritize habitat improvements, and achieve forage resource conflict resolution with land management agencies and private landowners.
- 4 Work with the HPCs to formulate habitat improvement recommendations.

Future Management Needs:

Future population objectives will be set in consultation with land management agencies, HPCs, and interested public. These objectives will be consistent with approved planning documents such as the Department's *Wildlife 2006* Strategic Plan. Public input regarding elk management will be documented each year to keep each Regional plan current. These plans will be reviewed annually and submitted with the elk hunt recommendations.

Elk population modeling will be used in making elk hunt recommendations. Additional studies may be conducted to ensure the continued precision of population models. Improved survey monitoring will be implemented as appropriate.

To ensure that the forage monitoring data collection is properly directed, specific objectives and use standards need to be better defined. Forage monitoring data collected to determine elk and livestock use has been used to manage elk herds. The Department is in the process of tailoring the forage-monitoring program to better determine the overall effects elk are having on key areas.

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Population objectives can be further tailored for each herd unit by analyzing: total numbers surveyed during pre- and post-hunt surveys; standardizing aerial flights using Global Positioning System (GPS) technology; using observed pre-hunt calf to cow ratios as an indicator of habitat quality and rate of recruitment; and tailoring forage monitoring to better determine what the wildlife-caused impacts are in key areas on a landscape level.

The HPCs have become an integral step in securing funding for on the ground habitat improvement projects. For sound population management decisions, active and broad-based local committee participation is essential.

Habitat improvement projects will continue to be coordinated with the HPCs to address concerns regarding elk management. To date such projects have included expanded aerial survey efforts, water source maintenance, juniper pushes, salt block supply, elk jumps and fencing, and prescribed burns.

REGION I

Background and History:

Elk management in Region I currently incorporates a wide variety of information and data. Pre-hunt surveys are conducted to evaluate sex ratios, recruitment, and relative abundance. When conditions permit, winter surveys are conducted to determine use areas and to index populations using critical winter areas. Wildlife forage monitoring is conducted to determine annual herbaceous use levels. Relative health and age of harvested elk in specific units is determined through field checks of harvested animals and cementum annuli analysis of hunter submitted elk teeth. Hunter questionnaire data is analyzed to estimate the number of legally harvested animals. Computer population simulation modeling is used to estimate population trends and to predict potential effects on populations from proposed harvest scenarios.

The demand for elk permits exceeds the number issued. On average, in Region I, there are four first choice elk applicants for every permit issued. Hunter demand is greatest for the early bull rifle permits, with 80 to 150 applicants for every permit issued. Archery antlerless permits have the highest draw odds with about two applicants per permit. Hunt success varies by timing of hunts and weapon type. Early bull rifle hunt success averages 90%; late bull rifle hunt success averages 40%. Antlerless elk archery hunt success averages 25%; antlerless rifle hunt success averages 40%.

Teeth are collected during many of the elk hunts in Units 1, 3A, 3C, and 4A. The resulting data helps determine the age structure of bulls harvested during rut hunts and changes in age structures of elk as a result of modifying population objectives.

In most units, forage monitoring is conducted annually to determine wildlife herbaceous forage use levels in key areas. Monitoring of wildlife use on key browse species within the Rodeo-Chedeski burn in Unit 3C is also being conducted. Forage monitoring is an important management tool that enables managers to incorporate habitat-based parameters into annual elk population management objectives.

In 1998, the Commission directed the Department to manage elk populations in Unit 4A consistent with the herbaceous forage distribution between elk and livestock developed by the Department and the Apache-Sitgreaves (A-S) National Forests. Wildlife herbaceous forage use levels in key areas on National Forest System lands are one of the primary factors considered in determining annual elk population management objectives in Unit 4A. In 2001, the Commission directed the Department to manage the Unit 4B and western portion of Unit 3C with the same forage distribution management parameters.

Elk movement studies have been conducted periodically in Arizona for the past 15 years. Locations of radiomarked elk have greatly aided in determining seasonal use areas for specific sub-populations. The most recent study within Region I (Brown 1990) determined that some elk seasonal movements involved larger home ranges than earlier believed. This information was used to modify elk herd units in Units 1 and 27. Those former elk herd units were subsequently

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combined to more accurately define the yearlong home ranges. More precise elk herd unit management has become possible from these movement studies.

The former elk herd boundaries will be maintained as "hunt units" to ensure that hunt management strategies address elk caused habitat and private landowner depredation concerns. The former herd units in Units 1 and 27 are still listed in current tables to emphasize the areas of concern on a hunt unit level within those elk herd units.

The movement studies show seasonal elk movement between the White Mountain Apache Reservation and the A-S from Show Low east and south to Alpine. Elk management information is shared between the White Mountain Apache Game and Fish Department and the Department.

Elk management affects not just sportsmen and their ability to draw an elk permit, but also landowners and livestock operators on public lands. Elk are highly mobile animals and seasonal movements can affect all aspects of land ownership and management. Table 1 shows the area of each herd unit or hunt unit, breakdown of land ownership, and amount of seasonal range. Table 2 shows the relative degree of elk impacts within these herd units.

In 2001, elk population objectives and hunt strategies were modified on and adjacent to private land to address documented elk depredation concerns. Elk have caused marked damage to croplands during the growing season in these areas. It was determined that substantially reducing or eliminating these elk populations is the best approach. New hunting opportunities reduced many of these elk populations with limited opportunity hunts. Starting in 2003, through the modification of department Rules newly designed population management seasons added more flexibility in elk management. These hunts can be implemented in short notice using an established hunter pool to remove specific problem elk that were not harvested with traditional hunt structures. Landowner participation will be a key factor in this process.

A landscape-level wildfire burned the southern portion of Unit 3C in 2002. Elk forage use of herbaceous and browse species will be monitored. The desire is for elk to not inhibit the natural recovery of this area. If it is determined that elk forage use is excessive, then accelerated harvest of the antlerless segment of the population will be recommended. Preliminary data collected in 2003 by Research Branch indicates that wildlife use on key browse species is at acceptable levels. Regional personnel have established monitoring sites to evaluate future wildlife use on mountain mahogany and ceanothus. Two helicopter elk surveys were conducted in the burned portion of Unit 3C (September 2004 and January 2005) using the simultaneous double count method. The population estimate for the portion of Unit 3C south of Highway 260 is approximately 900 elk and 160 mule deer. It is recommended to reduce the elk population at an increased rate to reduce competition between deer and elk.

To address local concerns, HPCs have been formed in the Show Low, Winslow, Springerville, and Alpine areas.

Management Objectives:

Regional elk management objectives are guided by the *Wildlife 2006* Strategic Plan, Hunt Guidelines, and the Species Management Guidelines. The *Wildlife 2006* Strategic Plan's elk management goal is to maintain elk populations at levels that provide diverse recreational opportunities, while avoiding adverse impacts to habitat, and minimizing substantiated depredation complaints.

The objectives tied to the Strategic Plans address statewide elk numbers, harvest objectives, hunter days, and other factors. The Species Management Guidelines and the Hunt Guidelines provide for elk management consistency across the state, while providing management flexibility for the Pinetop Region.

In an effort to determine habitat-based parameters relative to elk population management, from 1990 to 1997, Region I participated in cooperative forage use monitoring with individual Ranger Districts on the A-S. However, data from the cooperative monitoring was not adequate or appropriate for consideration into elk management, as most annual use information represented combined livestock and elk use. Elk use levels could not be determined for incorporation into annual population management objectives.

To address this issue, in 1997 Region I developed the "Herbaceous Forage Production and Use Monitoring Program for Consideration in Elk Management in Region I." The monitoring program provided a consistent, standard approach for incorporating habitat-based parameters into elk management through assessment of herbaceous forage production and use by elk, identification of elk forage use thresholds, and application of management guidelines associated with these thresholds to annual elk population management objective recommendations.

In 1998, in conjunction with allotment management planning efforts for the four allotments in Unit 4A, the Department and A-S established a herbaceous forage distribution agreement for domestic livestock and wild ungulates on National Forest System lands in the unit. The agreement was reached after a series of inter-agency meetings, public meetings, and Commission approval. Through the forage distribution agreement, allowable use levels for livestock and elk were established. The Department's forage monitoring determines annual herbaceous forage use levels by elk in the unit, and annual elk population management objectives are based on annual use levels relative to allowable use levels in the unit. Since the forage distribution agreement was reached in 1998, annual population management objectives for elk in the unit have been to reduce the population, a direct result of the forage monitoring results.

The Department and A-S conducted the public process to analyze forage distribution in Unit 4B and a portion of Unit 3C. In August 2001, the Commission approved of the forage distribution as recommended by the Department and the A-S. This newly adopted forage distribution agreement has been incorporated into annual elk population management objectives in the area.

Elk populations have the potential to impact habitat for a variety of species, including several special status species. Many of these species, such as Apache trout and Arizona willow, are linked to high elevation riparian corridors. To facilitate rehabilitation of key riparian areas,

livestock exclusion fences have been installed on specific key drainages. The Department funded the construction and maintenance of many of these exclosures, and many have been incorporated into the Department's forage use monitoring program. In addition, aspen regeneration has been negatively impacted by livestock and elk use. Antlerless elk hunts in the Region may reduce negative habitat impacts and facilitate recovery of sensitive habitats such as riparian and aspen areas (Table 2).

In 1993, the Department led the formation of the HPC program. The purpose of the HPC program is to provide a forum for interested parties to work together to identify cooperative habitat projects addressing wildlife and private property or public land conflicts, and to have input into population objectives for elk herd units. Since 1994, habitat improvement projects have been annually submitted by the four Regional HPCs. Most proposed projects have been funded by Special Tag Funds on projects recommended by the Statewide Habitat Partnership Committee. Projects have included burning and pushing pinon-juniper woodland, monitoring naturally occurring fires in the Blue Primitive Area, drilling and re-development of wells, building new water distribution systems, refurbishing existing wildlife waters, applying fertilizer and salt to better disperse elk, and providing elk jumps to reduce fence damage. In addition, all 4 HPCs meet at least annually to discuss elk herd population objectives for their respective elk herd units. See the "Habitat Partnership Committee Comments" section for more information.

Objectives by Management Unit:

Population management objectives for each of the elk herd units have been established. Population simulation modeling was conducted to analyze and evaluate potential effects of proposed hunt recommendations on elk populations. Reported hunter harvest of antlerless elk is compared to predicted harvest of antlerless elk and future survey results to determine if the desired population management objective was achieved.

The decision to implement or modify an antlerless elk hunt is determined by many factors. These factors include: (1) herbaceous forage use monitoring; (2) impacts to special status species and habitats; (3) the degree of verified private land conflicts; (4) pre- and post-hunt survey results; and (5) population modeling. All these factors are considered in determining the degree of antlerless elk harvest.

The following herd unit objectives are set annually. Evaluation and modifications can be made each year based on available information and recommendations of the HPCs.

Units 1 and 2C:

1. Stabilize or slightly reduce the Unit 1 elk herd from pre-hunt 2005 to pre-hunt 2006. Continue to emphasize the harvest of migratory elk (by using late season hunt structures) throughout the winter range.
2. Use specific hunt strategies including Population Management Seasons to address specific concerns of residents within the Round Valley area with elk inside the town(s) limits.

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3. Use all available data (e.g., population surveys, population simulation modeling, forage monitoring, substantiated private land depredation concerns, current and projected long - term climatic predictions) to support overall objectives.

Unit 2B:

Continue to reduce the resident herd. The long-term goal is to have a minimal resident elk herd. Lower resident elk numbers would reduce private land depredation and potential negative impacts to other wildlife species.

Unit 3B:

Woolhouse: Continue to focus harvest on the wintering migratory herd through late season antlerless hunt structures. Continue efforts to complete wildlife-use only forage monitoring sites, which will provide habitat-based data for wild ungulate carrying capacities during both early and late growing seasons. Coordinate with the A-S to increase the number of forage monitoring sites to meet protocol.

3B North: Continue developing and providing a resident elk hunt structure which reduces elk impacts on agricultural lands and addresses private land depredation concerns north of Highway 60 and the U.S. Forest Service boundary. Use all available data (e.g., surveys, depredation complaints, hunter contacts, agricultural and commercial private land issues, and hunter success) to implement hunt structures.

In areas where standard hunts are not or cannot achieve the desired objectives, Population Management Seasons may be used.

Unit 3A:

Reduce the resident herd. The long-term goal is to have a minimal resident elk herd. Lower resident elk numbers would reduce private land depredation and potential negative impacts to other wildlife species.

Aripine-Pinedale: Reduce the population from pre-hunt 2005 to pre-hunt 2006. Manage the bull population below 40:100 bull to cow ratio. Emphasize bull management on maintaining older age classes. Manage population within the Ari-Pine Resource Coalition objectives. Continue to monitor wildlife forage use to help determine future herd unit objectives.

Baca: Reduce the population to lower the monitored elk forage use toward the agreed upon forage distribution. The goal is to balance elk herbaceous use with the current forage capacity distributed to wild ungulates. Manage the bull population to maintain the bull to cow ratio within 40 bulls to 100 cows. Emphasize bull management on maintaining older age classes. Coordinate with the A-S to increase the number of forage monitoring sites to meet protocol. Continue to monitor wildlife forage use to help determine future herd unit objectives.

In areas where standard hunts are not or cannot achieve the desired objectives (e.g., within the Rodeo-Chediski fire or agricultural areas), population management seasons may be used.

Unit 4A:

Chevelon: Reduce the population to lower the monitored elk forage use toward the agreed upon forage distribution. The goal is to balance elk herbaceous forage use with the current forage capacity distributed to wild ungulates. Continue to monitor wildlife forage use to help determine future herd unit objectives.

In areas where standard hunts are not or cannot achieve the desired objectives, Population Management Seasons may be used.

Unit 4B:

Pinto Lake: Stabilize the population and monitor elk forage use toward the agreed upon forage distribution. The goal is to balance elk herbaceous use with the current forage capacity distributed to wild ungulates. Coordinate with the A-S to increase the number of forage monitoring sites to meet protocol. Continue to monitor wildlife forage use to help determine future herd unit objectives.

Unit 4B North: Reduce the resident herd. The long-term goal is to have a minimal resident elk herd. Lower resident elk numbers would reduce private land depredation and potential negative impacts to other wildlife species. Population Management Seasons maybe used to address private land depredation issues.

Unit 27:

Continue to stabilize or slightly reduce the Unit 27 elk herd from pre-hunt 2005 to pre-hunt 2006 through the harvest of antlerless elk. Recommend a Population Management Season in Unit 27 that could be implemented if regular seasons fail, or are expected to fail in achieving the management objectives for the unit. Continue to monitor wildlife forage use to help determine future population objectives.

Habitat Partnership Committee Comments:

The Alpine, Winslow, Show Low, and Springerville HPCs reviewed their respective herd unit population management objective(s). All recommended population objectives were supported by the committees.

At the Show Low HPC there was consensus in adopting the Units 3A, 3C, and 3B population objectives as presented.

At the Winslow meeting, the above listed population objectives were presented for the Chevelon and Pinto Lake elk herd units. Consensus was to accept the proposed elk population objectives as presented.

The Springerville and Alpine HPCs held a joint meeting to discuss Units 1 and 27. They reached consensus on stabilizing or slightly reducing the resident Unit 1 elk population and emphasizing the antlerless harvest on the wintering portion of the herd. They also supported the Unit 2B objective to reduce that resident population. They also concurred to stabilize or slightly reduce

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the Unit 27 elk herd, but some participants were concerned about the number of cow elk recently observed.

Regional Elk Operational Plan – April 4, 2002

Table 1. Region I elk herd units by area, land ownership and winter and summer range areas. Note: Some overlap occurs in summer and winter range areas within each unit.

HERD UNIT	Area (mi ²)	Land Ownership (%)			Seasonal Range Area (mi ²)			
		USFS	State	Private	Summer	(%)	Winter	(%)
Unit 1								
Greer-Greens Peak	293	59	25	9	224	(77)	154	(53)
Escudilla	94	89	1	10	71	(75)	14	(15)*
Milligan Valley	184	84	7	8	125	(68)	62	(34)
Black River	132	92	1	4	120	(91)	69	(52)
Unit 3B								
Woolhouse	242	63	9	24	140	(58)	196	(81)
Unit 3C								
Aripine-Pinedale	471	81	3	15	416	(88)	342	(73)
Unit 3C/4B								
Pinto Lake	648	65	13	21	541	(83)	496	(76)
Unit 4A								
Chevelon	364	83	4	13	361	(99)	226	(62)
Unit 27								
Bear Mountain	160	99	0	1	40	(25)	150	(94)
Hannagan	163	94	1	4	114	(70)	85	(52)
Beaver Creek	81	95	1	4	75	(92)	59	(79)
Campbell Blue	153	90	1	10	103	(67)	115	(75)

* Most winter range in New Mexico

Table 2. Region I elk herd units by relative degree of elk impacts to key areas and forest resources within the herd unit.

Herd Unit	Relative Degree of Elk Impact to Key Areas and Resources (Factors)*
Unit 1	
Greer-Greens Peak	Low (2) Moderate (1) High(3)
Escudilla	Low (2) Moderate (1) High (3)
Milligan Valley	Moderate (1,2) High (3)
Black River	Moderate (2,3) High (1)
Unit 3B	
Woolhouse	Low (3)
Unit 3C	
Aripine-Pinedale	Low
Unit 4B	
Pinto Lake	Moderate (2,3)
Unit 4A	
Chevelon	High (3)
Unit 27	
Bear Mountain	Low
Hannagan	Moderate (1,2,3)
Beaver Creek	Moderate (1,2,3)
Campbell Blue	Moderate (1,2,3)

- (1) Threatened, endangered or sensitive species habitat
- (2) Riparian habitat
- (3) Aspen regeneration

Literature Cited

Brown, R. L. 1990. Elk seasonal ranges and migration. Arizona Game and Fish Department Technical Report 1, Phoenix.

REGION II

Background and History:

The elk populations of Region II's Units 5A, 5B, and 6A on the Coconino National Forest and surrounding state and private lands, have long been the core of the elk population of Arizona. They have contributed at least 70% of the statewide elk hunting opportunity and over 60% of the elk harvest over the past 10 to 15 years. This has not been without some cost. Some units have been chronic points of concern with private landowners and livestock operators who operate under permits from state and federal land management agencies. Elk populations increased in these units following the high precipitation period from 1980-1985. Stabilization of the rate of growth of these elk herds was initiated in 1986. Excellent recruitment persisted until a drought of moderate severity caused range condition deterioration and a decline in calf production or survival during 1988-1991. This decline coincided with increases in antlerless elk harvests.

Within the Coconino National Forest Plan and the Arizona Wildlife and Fisheries Comprehensive Plan, the USFS identified the forage capacity available on the Coconino Forest for elk and livestock. During the 1988-1991 drought period, stocking was below that capacity, but agency personnel and ranchers generally agreed the forage base was being impacted by current grazing pressure. In January 1992, the Department and the Coconino National Forest met to discuss management of drought situations. Elk population objectives were set for each unit with the goal of managing elk populations at levels compatible with drought situations. The date to meet those population objectives was pre-hunt 1997 (August survey period). The standard to measure attainment of these objectives was population estimates from the elk population computer model.

During the 1980s other units of previously low elk population were allowed to expand toward their habitat potential. These areas, most of which are on the Kaibab National Forest (Units 6B, 7, 8, and 9), contained lower quality elk habitat, and were subjected to light hunt pressure. Units 6B and 8 elk populations included a sub-population that was relatively untouchable by the general hunter population due to security and access concerns on Camp Navajo. These elk complicated management. Reduction in numbers has been achieved by issuance of additional antlerless harvest permits on Camp Navajo as well as in the Units 6B and 8 general elk seasons.

In January 1992, the Department also met with the Kaibab National Forest to set elk population objectives. These objectives focused on stabilizing elk populations near 1991 levels. Recreational demand, both for consumptive and non-consumptive activities, has been increasing in relation to the growth of the human population of the state. These demands have not been met in most cases due to the limited high quality elk habitat and competing interests on these lands. Land management agencies such as the USFS are making an effort to balance land uses to accommodate changes in public demands. The Department is attempting to manage elk populations, and the demand for elk related recreation, in a manner consistent with changing land use emphasis and habitat capability on the various lands involved.

In 1991, representatives of the Coconino National Forest, Arizona State Land Department, sportsmen's groups, ranchers and Department began to meet to discuss grazing concerns in the

Little Colorado River drainage (Units 5A and 5B). Subsequently this group was formalized into the FRSG, the first HPC in Region II. In 1993, elk HPCs were formed in Flagstaff and Williams. These HPCs attempted to bring together people from diverse groups to identify and implement projects beneficial to both livestock and wildlife.

Elk Management Background:

Regional elk management strategies have changed along with the evolution of modern game management. The boom and bust cycles of the 1950s have, by and large, been eliminated by the control of hunter numbers through permit-only hunting in all elk units for all weapon types. These management efforts have been applied by the Department over the Region II elk ranges, which include about 1.7 million acres of Coconino and Kaibab National Forest lands, 183,000 acres of Arizona State Trust Lands, and 242,000 acres of privately-owned land. This has resulted in an estimated summer adult herd, which peaked in 1994 at about 22,000-23,000 animals but has now been reduced to about 14,000-15,000 in 2004. The migration of a small portion of these animals to Regions I (Units 4A and 4B), III (Units 10 and 19B), and VI (Units 21, 22, and 23) occurs mainly in the winter.

Elk hunting opportunities in Region II increased dramatically during the early and mid 1990s, with the provision of additional antlerless elk permits to achieve population reduction objectives in various units. Permits were reduced in 1996-98 to stabilize the population, but were increased in 1999-2000 to address habitat concerns Region-wide, elk surveys have classified a healthy sex ratio of 19-31 bulls per 100 cows and a reproductive rate that has varied with precipitation and forage conditions from 24-52 calves per 100 cows. Region II's fawn recruitment has steadily dropped since 1998 and reached an all-time low of 24:100 in 2001. This lower fawn recruitment combined with high harvest levels has caused the overall elk population reduction.

Elk Habitat Background:

Elk habitat management in Region II has been a joint venture involving cooperation between multiple agencies and publics. Elk herds do not recognize administrative boundaries so the same elk herd may inhabit state, private, and USFS lands. Habitat proposals and habitat projects may address either providing more food, water, or other habitat factors for elk, or reducing elk impacts on the habitat of other species. Many habitat changes affecting elk populations in Region II are the indirect result of projects planned for other resources such as management of timber, range, fire, or watershed. Projects planned specifically for elk tend to focus on forage and water, as these factors are relatively easy to improve. Projects directly impacting elk habitat generally stem from planning efforts directed by the land management agencies such as the USFS's Land and Resource Management Plans or Allotment Management Plans. Often, mitigation or habitat improvement measures for elk are included in plans for specific projects, even when the project is primarily designed to manage another resource.

Elk Habitat Management Objectives:

Habitat management functions in support of population objectives. The population objectives are set in Department Strategic Plans and in the Arizona Wildlife and Fisheries Comprehensive Plan jointly developed by the Department and the USFS. The development of both of these plans included public involvement. Habitat objectives are generally set in the form of providing habitat to support a set number of elk. Objectives in the Comprehensive Plan were formed in this manner based on projections in the Coconino and Kaibab Land and Resource Management Plans.

The Kaibab National Forest LMP projected an increasing elk population while the Coconino National Forest LMP projected a stable elk population. Thus, at the LMP level of planning, the USFS provided for the presence of elk on public land. The LMPs did not make site-specific decisions of where and how to provide for the needs of elk. Those decisions were intended to be made when projects, such as timber sales or allotment management plans, were developed. This is the step where the planning process has met with difficulties.

Timber sales have the potential to improve elk habitat where forage is limiting, and to degrade elk habitat effectiveness where cover is limiting. Range management can change both the amount and composition of plant species available as forage. These changes can benefit or harm elk habitat. These factors can change both the density and distribution of elk. Livestock grazing can move elk out of pastures while cattle are present, but attract elk to fresh plant growth in those pastures once livestock leave. Early season grazing of a pasture by elk may reduce the forage available for livestock later in the season. Thus, the temporal and spatial relationship of these 2 large grazers must be incorporated in Allotment Management Plans.

The ultimate resolution of elk-livestock conflicts will require all parties to come to agreement on the density and temporal-spatial distribution of elk and livestock across public and private land. These allocations must be in balance with the capacity of the land to support ungulate grazing.

Herd Unit Approach to Management:

The Department, in the *Wildlife 2006* Strategic Plans, identified an objective for elk "to base management on population targets, herd units, and habitat objectives" by the end of the planning period. However, in Region II the herd unit boundaries, determined by telemetry research, matched poorly with unit boundaries.

Since the 1992-1997 population objectives were based on units, Region II continued to base elk management on units through 1997. Beginning in 1998, Region II began to describe elk populations on a herd basis. Due to the significant interchange between elk in some units, 1 herd included elk in Units 5A, 5B and 6A. A second herd included Units 6B, 8, and Camp Navajo. The third and fourth herds were those animals in Units 7 and 9, respectively.

Hunt permits will continue to be allocated on a unit basis, as in the past. Sub-unit hunts have been used in Units 5A, 5BN, and 5BS to focus harvest on elk living yearlong on areas traditionally used only as winter range. Reduction of these yearlong resident herds (primarily on

State and Private land) allows ranchers more flexibility to manage cattle grazing and provides more forage for the main elk herd which comes to these areas in the winter. These sub-unit hunts will continue.

In 2001, Unit 6A was divided into 6A North, 6A South, and 6A West to better distribute hunting pressure and harvest. One specific objective was to increase harvest of elk in 6A West to lower that portion of the elk population that seasonally migrates across Interstate 17 where elk-auto collisions are a concern.

Elk Population Estimates:

Each year during the hunt recommendation process, an estimate is made of elk numbers in each herd unit. This estimate is made using a computer program that simulates a natural population through the course of a year (or a series of years). Variables such as mortality rates, hunter harvest, and sex-age ratios observed on surveys are entered for a unit's elk population.

The estimates of the number of each sex and age class that are generated with the computer program are compared to the sex and age classes which are observed during annual fall surveys. The more closely these 2 ratios agree, the more closely these values are representative of what is actually present in the herd's elk population.

The computer model population estimates are used as a tool to monitor elk population trends. Other tools used by Wildlife Managers include an assessment of population densities on summer and winter ranges, the assessment of forage condition and trend, and the degree of conflict that results from a given elk population in competition with the domestic livestock numbers allotted to the grazing permit on an area. These items all enter into the development of objectives for population size for each management unit.

Setting of Elk Population Objectives:

Elk population objectives were set in 1992 for 1992-1997 after meetings with Coconino and Kaibab National Forest personnel, ranchers, and sportsmen. Objectives for units on the Coconino National Forest were to reduce most unit populations by 10-50% from the 1991 pre-hunt adult levels. Units on the Kaibab National Forest were to be stabilized or increased slightly. Population targets were to be met with the 1997 pre-hunt adult populations.

All elk population objectives set in 1992 were met by 1997. These included a 50% reduction from 1991 levels in Units 5A and 5B South, a 25% reduction in 6A, a 10% reduction in Unit 5B North, and slight reductions in Units 6B, 7, 8 and 9.

The 1996 drought caused poor elk calf crops in both 1996 and 1997, accelerating the rate of population reduction throughout the Region. The drought also showed that livestock or elk numbers probably needed further reduction to balance habitat capacity. These reductions occurred.

Each spring since 1992, the Department has met with the Coconino and Kaibab National Forests, the FRSG and, since their inception, the Flagstaff and Williams HPCs to review progress toward meeting the elk population objectives and to address other issues related to elk management. Some of the issues identified through this process are listed below with the Department's response:

Issue: The FRSG identified the number of elk living yearlong on traditional winter range (mostly state and private land) as a negative impact to habitat and the rancher's ability to manage grazing.

Response: The Department created sub-unit hunts in Units 5A, 5BN, and 5BS to focus hunting pressure on the yearlong resident herds during the early fall. In 2000, the FRSG proposed further refinement of the subunit boundaries along with a more extensive hunt structure to reduce the yearlong resident elk. Department supported these recommendations for the fall 2001 hunt season and included additional hunts to the FRSG proposal to ensure a significant harvest of elk on the state and private lands.

Issue: The USFS has expressed concerns over road damage during late hunts when roads are often wet.

Response: The Department has moved some antlerless hunts from early December and mid-November to a late September-early October period when roads tend to be drier and vehicle impacts less.

Issue: In 1998 the FRSG identified areas on the State-Private lands where elk numbers were increasing and hunters were not harvesting these animals.

Response: Region II worked with the FRSG to produce maps showing the location of the elk herds, which were sent to hunters who had permits for those areas.

Issue: During 1998-99, the U. S. Fish and Wildlife Service determined that watershed conditions in the upper reaches of the East Clear Creek drainage need to be improved to benefit the endangered Little Colorado River spinedace and other riparian species.

Response: The USFS responded by making adjustments in the livestock-grazing plan and the Department responded by significantly increasing antlerless elk permits to reduce elk grazing impacts.

Issue: Department identified elk grazing of aspen regeneration around the San Francisco Peaks as a concern for maintaining aspen stands into the future.

Response: Department recommended significant increases in antlerless and bull elk permits to reduce the elk population around the Peaks (Unit 7E) to benefit aspen. The Department and USFS will monitor changes in survival of aspen regeneration to determine when elk populations have been sufficiently reduced to accomplish the desired response in the aspen regenerations.

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Issue: In 1999, the AGF Commission directed the Department to allocate 5% of the antlerless elk permits as "juniors-only" permits. Region II complied with this direction offering 825 antlerless "juniors-only" elk permits.

Issue: In 1998, Department identified areas in Unit 9 where browse was being negatively impacted by grazing (both domestic and wild ungulates).

Response: Department has increased antlerless elk harvest in Unit 9 to improve the browse condition.

Issue: In the Strategic Plan, Department was directed to take actions to reduce elk-auto collisions.

Response: Region II recommended creating subunits in Unit 6A and focusing hunting pressure in that part of 6A west of Interstate 17 in December when migrating elk have moved into that area. This action should reduce that portion of the elk herd that seasonally migrates across the Interstate.

Issue: In 2000, the FRSG recommended a further subdivision of the state-private lands in Units 5A and 5BN and an expanded set of hunt seasons to reduce the yearlong herd living on the state-private lands.

Response: Region II recommended the hunts proposed by the FRSG and that hunt structure implemented in 2001 and will again be recommended for 2002.

Between January and March of each year, Region II meets with the USFS, the HPCs and holds other public meetings to gather input to help make hunt recommendations for the upcoming fall. Region II uses that public input, habitat monitoring, and survey data to set elk population goals for the next year.

Issue: In the winter of 2003-04, elk foraging in croplands in Camp Verde became an issue.

Response: The affected area included portions of Regions II, III and VI so these regions worked together to implement a Population Management Hunt to reduce the elk numbers around Camp Verde. Additionally, a Limited Opportunity Hunt Area was established to focus more hunting pressure on elk near Camp Verde in future years.

Issue: The wet fall of 2004 and winter of 2005 renewed the Forest Service concern about road damage.

Response: The Region is recommending more permits in the early fall hunts and fewer in the late season hunts. For next year, we will evaluate elimination of the December hunts.

Issue: The Forest Service has expressed concern for habitat conditions in Units 7W and 9 due to the drought.

Response: The Region has recommended an increase in antlerless permits to accelerate the reduction of elk numbers in these Units.

Current Population Management Objectives:

Unit 5A, 5B, and 6A elk herd: Goal is to continue reducing this herd in response to the drought conditions.

Unit 6B, 8, and Camp Navajo herd: Goal is to continue reducing this herd due to drought conditions.

Unit 7 herd: Goal is to continue reducing elk in both Unit 7W and Unit 7E in response to drought and habitat concerns.

Unit 9 herd: Goal is to continue reducing this herd in response to drought and habitat concerns while maintaining a survey ratio of 40-50 bulls per 100 cows.

Units 12A and 12B: Goal is to maintain elk at a very low level.

Background of the Kaibab Plateau Elk:

The first substantiated incidence of elk occurring on the Kaibab Plateau is recorded in a special report prepared by T. L. Britt (1983) entitled *The Occurrence of Elk in Arizona North of the Colorado River*. Elk were first documented in Unit 12A in 1983 by a USFS employee. Three young bulls were observed. One was known to have been illegally shot; a second may have also been shot illegally, based on local rumor. The remaining animal was observed in 1983 and in 1984. Since then, there have been unsubstantiated reports provided to the Department and the USFS. Some of reports were investigated and were found to be mule deer.

In spring, 1996, USFS personnel observed 3 female elk near Jacob Lake. That summer, National Park Service (NPS) personnel observed elk on the north rim of Grand Canyon National Park (GCNP). For the first time the presence of bulls, cows, and calves was documented.

Based on these observations it is believed at least 15 elk were present on the Kaibab Plateau. During the summer of 1996, most observations of elk were on the GCNP. In November 1996, a deer hunter reported seeing a cow elk near the head of Sowats Canyon. No observations of elk were reported on the Kaibab Plateau during the 1996-1997 winter months.

As a result of the summer observations, a multi-agency meeting was held at Jacob Lake on Sept. 7, 1996. Representatives of the Department, BLM, NPS, the Kaibab National Forest, and Utah Division of Wildlife Resources (UDOW) attended. The purpose of the meeting was to exchange information relative to elk in the area. UDOW personnel believed the Kaibab Plateau elk came from a herd that winters in Johnson Canyon along the Utah-Arizona state line. This observation was consistent with the hypothesized origin of the 3 bulls in 1983. UDOW personnel indicated elk populations are increasing in southern Utah.

The presence of bulls and cows on the Kaibab Plateau suggest the possible establishment of a breeding population. Based on this information Department conducted verbal polls at winter

hunting guideline meetings held throughout the state reference the desirability of establishment of an elk population on the Kaibab Plateau. The results indicated little public support for such a management strategy.

Based on this expression of public opinion, coupled with the importance of the mule deer herd on the Kaibab Plateau, the Department believes elk should be removed from the Kaibab Plateau as soon as possible. The presence of a viable elk population could directly compete with the mule deer herd, especially on winter range. The establishment of even a small population (<300 elk) could impact mule deer winter range.

In 1997 Department offered 20 elk permits for Unit 12A and 15 permits for 12B. At least 2 elk were killed in Unit 12A. During the 1997 deer hunts, Unit 12A hunters coming through the Kaibab check station were asked if they had seen elk while deer hunting. Approximately 1% (10 hunters) said they had observed elk while deer hunting.

In 1998, 20 permits were issued for Units 12A and 12B. At least 1 bull was harvested. At the Kaibab Deer Check Station 9 hunters reported seeing elk while deer hunting. Several of these reports were of a single bull at the same location. Most likely, the 9 reports identified 13 different elk. In 1999, 5 permits were issued with a known harvest of 1 bull. In 2000, permits were increased to 10 and 3 bulls were killed. In 2001, 50 permits were offered in 12A and 25 in 12B. The reported harvest was 4 elk from 12A and 0 from 12B. In 2002, 65 permits were issued but no elk were reported harvested. For 2004, the Region recommended 20 permits in September but no elk were harvested.

Beginning in fall 2005, permitted deer hunters in 12A will have the opportunity to purchase an elk tag valid for the same area and dates of their deer hunt. This may increase the elk harvest slightly.

Region II will continue to monitor this herd and make hunt recommendations aimed at maintaining elk at very low densities on the Kaibab plateau.

REGIONS III AND IV

Background and History:

Elk populations began to increase in northwestern Arizona during the late 1970s. This increase brought elk management in Region III to the attention of land managers, private landowners, ranchers, sportsmen, and wildlife managers.

Ranchers and private landowners became concerned as elk populations began to increase. Within 10 years, portions of Region III began experiencing property damage, crop depredation, and direct competition with livestock on private land as elk populations expanded into new areas. In recent years elk have also expanded into some Region IV areas.

In January 1993, HPCs were established in Prescott and in Williams. Subsequently, other HPCs were started in Kingman (August 1996) and Yuma (January 1998). The Yuma HPC rarely works with elk issues because Region IV includes a very limited amount of elk habitat.

General Management Objectives:

Elk in northwestern Arizona, with the exception of Unit 10, will be managed with the primary emphasis on minimizing conflicts with other wildlife resources, and public and private landholders. Mule deer will be managed as the ungulate species with first priority. Non-consumptive and consumptive recreational opportunities to enjoy elk will be secondary to ensuring populations are maintained at levels that do not negatively impact other natural resources or create significant landowner conflicts.

Multi-Unit Hunt Structure – Units 15A, 15B, 17A, 17B, 18B, 19B, 20A, and 20C:

History:

In 1997, 5 units were combined (17A, 17B, 18A, 18B and 19B) into one hunt area, with the legal animal designated as any elk. Three seasons were opened to the new format, including an archery hunt, an early firearms hunt in October, and a late firearms hunt in November. The objectives of the new hunts were to increase the harvest of elk, to increase hunt success, and to open private lands to access. The ultimate goal was to increase the Department's ability to manage these small elk populations and to reduce private landowner-elk conflicts. Instructions and maps with the names and phone numbers of participating landowners were mailed to all hunters prior to the season. A questionnaire was also included that asked hunters for comments on the new format. The hunt was very successful, resulting in the harvest of 124 elk (most of them bulls) by 220 hunters. Very few negative comments about the new format were received.

The hunts were continued in 1998 with the second firearm hunt split into 30 any elk permits and 70 antlerless permits. In 1999, the southern portion of Unit 17A south of Walnut Creek and Unit 17B were removed from the multi-unit hunt because the desired number of elk to be removed from this area had been achieved in 1997 and 1998. Only an archery hunt was held in these areas in 1999. The 1999 General hunt structure changed to provide 17-day seasons for October, November, and December. For the 2000 season, emphasis was placed on the October season for

harvesting larger numbers of elk, primarily females. Permits were increased, and a large segment of the available tags were issued as antlerless-only tags. A portion of Units 17B, 20A and 20C (the Skull Valley and Kirkland Junction areas) were included in the 2001 early general and early antlerless multi-unit hunts. This structure allows the opportunity to harvest elk in these areas during years when landowners are experiencing elk damage and are willing to allow sportsman access. Units 15A and 15B were added to the 2002 general and archery multi-unit hunts. For the 2004 season, the multi-unit hunt was split to better distribute hunting pressure in areas with chronic elk problems. The Williamson Valley, Skull Valley, Kirkland Junction area was split out of the multi-unit hunt with its own season dates, weapon type, and permit numbers. For 2005, all of 17A and 17B will be included with the rest of the units.

Specific Concerns with Hunt Structure:

Some sportsmen expressed dissatisfaction with the high harvest of bulls during the 1997 multi-unit hunt. Most of these sportsmen expressed a desire to manage the area for trophy bulls.

Solution: Evaluate how the elk population was affected by the multi-unit elk hunt strategies. Maintain the multi-unit hunt structure to continue to hunt the elk in these units.

Management Objectives:

The 2 major management objectives of the multi-unit hunt are to minimize elk damage on private property and to provide recreational hunting with a reasonable expectation of success. Elk damage on croplands, wet meadows, and ranch fencing may be substantial in specific sites such as on K-4 Farms. Alternative methods, such as fencing and use of noise cannons, have been unsuccessful in reducing this problem. The multi-unit hunt structure allows for hunting of elk that seasonally move into problem areas.

Providing recreational hunting opportunities is a part of the Department's Mission. By combining the adjacent units into a single hunt structure, sportsmen are provided a reasonable expectation of hunting success that may not exist within a single unit.

Elk population estimates will continue to be made for each unit and totaled for the multi-unit hunt recommendations. Since formal surveys are not conducted, hunt success and status of landowner complaints will be used to monitor the elk population.

For much of Units 17A and 17B, the elk population should be kept at 1996 levels. Specifically in northern Unit 17A on the Yavapai Ranch, numbers will be managed to be within the agreed range of 50-75 animals. For other areas within Units 17A, 17B, 18A, 18B and 19B elk will be managed to reduce conflicts on private land while limiting elk to about 500 animals.

Elk managers now have the ability to direct harvest at particular areas during the time when elk are present and causing property damage or crop depredation. This newly created tool, known as a population management season, will allow for the designation of hunts in very specific areas with hunters being in the field within a few days notice. Population management seasons will occur outside Commission-authorized elk seasons.

Unit 10:

History:

Unit 10 was first open to elk hunting in the 1940s and early 1950s northwest of Williams. Several elk were reported harvested during this period. Elk hunting was then closed until 1977, when a hunt was opened in combination with Units 7 and 9. Unit 10 continued to be hunted in combination with several other Units (6B and 8) until 1989, when the resident population of elk increased to a size warranting separate hunt unit management. Elk herds probably immigrated from the Hualapai Reservation to the west and from the Williams area to the east. There is now a substantial population of elk throughout Unit 10.

Population Information:

Elk observation data have been gathered in Unit 10 during routine winter wildlife surveys since 1989 in the eastern part of the unit. In 1992, summer fixed-wing aerial surveys for elk were expanded to the western portion of the unit. The following survey data includes observations gathered in August from 1993 to the present.

YEAR	BULLS	COWS	CALVES	TOTAL	BULLS	100 COWS	CALVES
1993	101	226	152	479	45	100	67
1994	95	236	131	462	40	100	56
1995	130	249	151	530	52	100	61
1996	134	264	132	530	51	100	50
1997	186	399	178	763	47	100	45
1998	221	407	255	883	54	100	63
1999	214	301	156	671	71	100	52
2000	176	288	61			100	59
2001	269	482	181	932	56	100	38
2002	255	526	190	971	48	100	36
2003	261	262	106	629	100	100	40
2004	141	398	189	876*	35	100	47

* 2004 total includes 148 unclassified elk

The elk population in Unit 10 was estimated at 1,900 (\pm 200) pre-hunt adults in 2002. In 2004, the Unit 10 elk survey was flown under the simultaneous double count method. Using a density estimate obtained with this technique, the elk population estimate for this unit is about 3,500.

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Hunt and harvest data for Unit 10, 1993 through 2002, are listed in the following table. For simplification, all hunts (archery, firearm, and junior) are combined into bull and antlerless (ALES) categories.

HUNT	YEAR	HUNTERS	BULLS	SPIKES	COWS	CALVES	TOTAL	SUCCESS
BULL	1993	200	65	9			74	37%
ALES	1993	225			87	12	99	44%
BULL	1994	194	61	11			72	36%
ALES	1994	298			102	17	119	40%
BULL	1995	197	76	11			87	44%
ALES	1995	394			102	11	113	29%
BULL	1996	223	88	9			97	43%
ALES	1996	407			114	23	137	34%
BULL	1997	245	107	4			111	45%
ALES	1997	457			107	24	131	29%
BULL	1998	257	135	2			137	53%
ALES	1998	510			162	17	179	35%
BULL	1999	315	120	18			138	45%
ALES	1999	835			237	33	270	33%
BULL	2000	342	140	14			154	45%
ALES	2000	861			289	50	339	39%
BULL	2001	469	212	8			220	47%
ALES	2001	1059			273	19	292	28%
BULL	2002	460	203	18			221	48%
ALES	2002	1072			243	53	296	28%
BULL	2003	456	237				237	52%
ALES	2003	1270			348	40	388	30%
BULL	2004	669	307	25			332	49%
ALES	2004	1399			386	65	451	32%

Specific Concerns:

Managers on both the Boquillas and Babbitt Ranches have expressed concerns that elk numbers could increase to the point where competition for forage with livestock was substantial. Over the past year, the Department has worked with the Navajo Nation and the livestock permittee on the Boquillas ranch to maintain hunting opportunity and control the elk population. As of 2005, managers from both ranches appear pleased with efforts to reduce the elk population through hunting. Both wish to see the hunting program continue.

The Williams Habitat Partnership committee expressed concerns over an increasing elk population in Unit 10.

Management personnel from the Kaibab National Forest expressed a desire to maintain a limit of 400 adult elk on those portions of Unit 10 within the Kaibab National Forest.

Solution: To reduce the population, the harvest of antlerless elk was increased substantially in 1999, 2000, 2003, and 2004.

Management Objectives:

This recommendation includes limiting the elk population to no more than 400 pre-hunt adults on the Kaibab National Forest portion of the unit.

Unit 15:

History:

Elk sightings and elk sign were first documented in 1995 in the upper elevations of the Music Mountains. Elk numbers have been increasing on the west side of the Hualapai Reservation. Trails and fence crossings suggest that Unit 15A elk may be dispersing from the Reservation during drought periods. Since the mid-1980s, elk have occasionally been observed in Hualapai Valley. Other elk sightings have been reported further west in the Cerbat and Black Mountain by hunters, ranchers, and Department personnel.

Population Information:

Currently, no annual elk surveys are conducted in Unit 15. The number of elk in the Music Mountains is currently unknown. Most elk are currently considered to be transient, but some elk may actually be present on a year-round basis. At this time, data are insufficient to support a harvest objective. Elk are presently not a problem in this unit.

Specific Concerns:

In the past, two of the grazing permittees in the Music Mountains have expressed concern over forage competition and fence damage. Additionally, some members of the Kingman Habitat Partnership Committee have expressed concern about the presence of elk populations in non-historic range.

The Hualapai Nation hunts these elk on the adjacent reservation and is the permittee for the Music Mountain Allotment. They have not expressed any concern over the presence of elk on their allotment.

Solution: Provide permittees with elk jumps and monitor herd levels in areas of concern. Units 15A and 15B was added to the multi-hunt structure for 2002.

Management Objectives:

Monitor elk sign by ground or aerial surveys, emphasizing areas of reported sightings. Management emphasis is focused primarily on mule deer and bighorn sheep. Elk numbers are currently low in these units and the primary objective is to manage elk numbers at levels that will minimize conflicts with other wildlife resources, private landowners, and livestock permittees. Adding these units to the multi-unit limited opportunity hunt structure will provide some public hunting opportunity and help maintain elk numbers at an acceptable level.

Unit 16A:

History:

Elk from the original transplant in 1927 increased to harvestable numbers and were hunted for a period in the 1940s and 1960s. The elk population then declined until the early 1990s.

Elk hunts have been conducted sporadically in this unit since 1943. After 23 years of closure, hunting was again opened to 3 archers in 1992. In 1994, a 2-permit muzzleloader hunt was added. Although success varies, most of the archers and muzzleloader hunters have opportunities to harvest bulls each year.

In 1992, several elk were killed on Interstate 40 east of Kingman, suggesting these animals moved north from the Hualapai Mountains. During 1995 through 1998, elk were also observed on Hualapai County Park, Laughlin Ranch, Cane Springs Ranch, Alamo Lake Wildlife Area and Planet Ranch.

An additional muzzleloader tag was added to the unit for the 2002 hunting season.

Population Information:

No formal elk surveys are conducted in Unit 16A. Elk numbers in 1998 in the Hualapai Mountains were estimated at 40-60 adults. This estimate is based upon incidental observations, hunter reports during archery and muzzleloader hunts, and sightings gathered during a 2-year telemetry project conducted during 1996-1998. During this project the Department radio-collared 8 cow elk during the fall of 1996 and one bull in 1997. The project objectives were to examine the seasonal habitat use and population characteristics of elk in the Hualapai Mountains. Current estimates indicate the population may be as high as 100 adults.

Specific Concerns:

Some residents in the Hualapai Mountains prefer to not have an elk hunt in the area because they feed many of the animals daily. Local archery and muzzleloader hunters would like the present hunt to continue.

Ranchers and the Bureau of Land Management have voiced concerns regarding the recent arrival of a group of elk along the Santa Maria River and Alamo Lake.

Solution: Continue to survey and monitor elk numbers and movements. Monitor local opinion regarding elk, while educating Pine residents of potential harm caused by feeding elk and deer.

Continue to monitor elk numbers in southern 16A near Alamo Lake.

Management Objectives:

Initiate late summer or fall ground surveys to gather population data. Continue to request that archery and muzzleloader hunters report their observations of elk.

The Department will continue to seek information about elk in the vicinity of Alamo Lake-Santa Maria-Big Sandy River. Our objective is to reduce elk to the lowest possible number in the Alamo Lake Wildlife Area.

Units 17A and 17B:

History:

Elk were first observed in the Yolo-7Up Ranch area in the 1940s. However, there were no reports of elk observed in this area from the early 1950s until the middle 1970s. In the late 1970s, elk were again sighted in this area and elk herds gradually increased. During 1988, elk were regularly observed in the Juniper Mesa area, and on the Baca Land Grant in Unit 18B.

Population Information:

In the past, multiple methods have been employed to survey the elk in Units 17A and 17B. Some of these methods include helicopter flights, fixed-wing aircraft flights, nighttime spotlighting, and calling (bugling) during the rut. None of these methods provided sufficient numbers, and many were not successful at even finding elk in known use areas. Much of the population information used currently is gained through hunter survey cards, landowner (rancher) input, incidental observation, elk use sign, and Wildlife Manager input.

Specific Concerns for Unit 17A:

The owner of the 7UP Ranch historically expressed concerns about elk using forage on the private meadow at his ranch headquarters. This problem was solved in 1995 when the owner fenced the entire private portion of the meadow (8' vertical). The 7UP Ranch was sold to a new owner in 1998.

The owner of the LO Ranch voiced concern about future elk population growth in Unit 17A.

The owner of the Yavapai Ranch has expressed concerns about the apparent increase in elk numbers during the 1990s. Specifically, the damage caused by elk to fences, and anticipated competition for forage with livestock.

Specific Concerns for Unit 17B:

In 1996, the owner of the Cross U Ranch voiced his concern about elk depredation on his irrigated private land. These pastures are fenced but are not elk proof. The Cross U sold in 2002 and thus far, the new owners have not expressed concern regarding elk. The Old Camp and Las

Vegas Ranches have also voiced their concern about the increased elk populations in the eastern portion of the unit. For the past several years the Las Vegas Ranch has experienced crop depredation on their irrigated private pastures and damage to fence. The current hunt structure has been unable to address this issue.

Private land owners in the Skull Valley and Kirkland areas started voicing concerns about the appearance of elk in the late 1990s.

Solution: The Department obtained an elk-proof electric fence that can be temporarily loaned to ranchers and used on an experimental basis to reduce potential depredations on agricultural crops. The multi-unit elk hunts were initiated in 1997 to reduce elk numbers on private lands in Units 17A and 17B. The Department provided information on sportsman access (including how to contact cooperating landowners) to all hunters. Maps showing potential elk concentration areas were also given to hunters to assist them with locating elk. Continue funding projects such as water tank cleaning, elk jump installation, and chaparral burning on USFS and on private lands. Continue surveys where economically feasible. Modify the multi-unit elk hunts to meet harvest objectives, realizing that these hunts are dynamic and may change from year to year. Maximize hunter access to private lands where elk harvest is most needed. Involve the HPC members in the hunt recommendation process.

Management Objectives for Units 17A and 17B:

Maintain elk populations at or below the 1996 pre-hunt level for Units 17A, and 17B. This will reduce the potential for overuse of the available habitat and conflict between local ranchers and the elk. Attempt to reduce elk numbers as low as possible in conflict areas defined by the southeastern portion of Unit 17A, and the south and eastern portions of Unit 17B. This geographic description defines locales where, until recently, there were no historical records of elk. Adhere to the 50-75 elk population limit on the Yavapai Ranch as agreed to in the Coordinated Resource Management Plan for the Ranch. Since elk depredation problems in these units are difficult to manage with standard hunt structures, a population management hunt is more likely to achieve the objective of reducing crop damage. Continue to provide recreational opportunities for viewing and harvesting elk in the other portions of the units not described above. Continue to survey elk when feasible, or when a method is found that is cost effective.

Unit 18A:

History:

Department personnel first observed elk in this unit in 1985. Elk harvest was initiated in 1991, when hunts were held combined with Unit 10. In 1993, Unit 18A was first hunted as a separate unit. In 1996, Unit 18A was hunted in combination with the Anvil Rock portion of Unit 18B, as there seemed to be a lot of elk movement between the two units in this vicinity. In 1997, the present multi-unit Elk Hunt structure was initiated. Unit 18A was hunted in combination with Units 17A, 17B, 18B and 19B.

Population Information:

Annual aerial surveys have been conducted from 1992 to 2000. Surveys were discontinued in the year 2001 due to a declining elk population. The only are in Unit 18A where elk are still

relatively numerous is on the private land portion of the X-1 Ranch. Elk population modeling data suggests there are about 250 elk in Unit 18A, with less than 200 being adults.

Specific Concerns:

The past owner of the Willows Ranch was very concerned with the elk population in Unit 18A in general and on his ranches in particular. Much of the problem was alleviated during the 1996 drought when nearly 25 elk were killed on Interstate 40 in the vicinity of the irrigated pasture on Willows Ranch. Anderson sold the ranch soon thereafter. The ranch is presently being subdivided and sold in 36-40 acre parcels. The current livestock lessee states that he presently has no elk problems.

The owner of the X-1 Ranch, has expressed concern about elk using forage in privately owned pastures that are being rested from livestock grazing. This rancher has decided not to allow open public access for elk hunting. The owner is advertising guided elk hunting instead. Few hunters, especially antlerless elk hunters, are willing to pay an access fee to hunt antlerless elk.

The Robinson Ranch, composed mostly of public lands managed by the Bureau of Land Management, Crozier Allotment, complained about fence damage by elk. The Department supplied materials and education on how to set up elk jumps to help alleviate damage. The ranch, as of 2002, has not used any of the materials or set up any elk jumps.

Managers of Fort Rock Ranch complained about increasing elk numbers and competition with livestock in years past but presently feel elk populations are acceptable.

Solution: Continue to work with ranch owners to seek solutions to elk issues.

Management Objectives:

Maintain an elk population that continues to provide recreation and minimize elk/landowner conflicts.

Unit 18B:

History:

Elk were first observed in the Yolo-7Up Ranch area in the 1940s. However, there were no reports of elk observed in this area from the early 1950s until the middle 1970s. In the late 1970s, elk were again sighted in this area and elk herds gradually increased. During 1988, elk were regularly observed in the Juniper Mesa area, and on the Baca Land Grant in Unit 18B. During the 2000 season, the elk on the Baca Land Grant and Pine Creek Portions of Unit 18B were found in lower concentrations than the previous years. This suggests that the population has moved east in search of forage.

Population Information:

The majority of elk in Unit 18B inhabit about 300 square miles of pinyon-juniper habitat with open grassland mesas and ponderosa pine. Land ownership is about 80% private, 15% state and 5% Bureau of Land Management. The existing population is currently known to use the east half of the available elk habitat in Unit 18B. Habitat to the west is lower quality, and is isolated

by large open grassland mesas. Due to low population levels, most elk spend a majority of their time in Units 18A, 17A, and 17B border areas.

No successful method of surveying elk in dense pinyon-juniper habitat has been found for these hunt areas. The Unit 18B population estimates are based on hunt success and on elk numbers observed by wildlife managers, hunters and ranchers. The majority of these observations have taken place on the Baca Float and Pine Creek portions of Unit 18B.

Specific Concerns:

The majority of Elk in Unit 18B occur on the ORO Ranch. The ranch is private and the ranch manager charges an access fee to hunters. Currently the ranch manager is content with the number of elk on the ranch and is only offering access to cow elk hunters.

The elk on the ranch have decreased over the last few years because of hunting and poor range conditions. Although the elk population on the ranch is acceptable, the potential exists for the population to increase with improved range conditions.

The ranch also serves as a refuge for elk that are chased out of the adjacent units. This creates problems for the ORO Ranch. Hunters cut fences to access the ranch and trespass in pursuit of elk. To help reduce this problem, patrol efforts along the boundary are enhanced during the elk hunts. These conflicts should be reduced as we get closer to reaching our management objectives

Management Objectives for Unit 18B:

Maintain elk populations at or below the 1996 pre-hunt level for Units 17A, 17B, and 18B. This will reduce the potential for overuse of the available habitat and conflict between local ranchers and the elk.

Unit 19A:

History:

Elk were first observed by the Department in this area in 1985, and likely traveled from Unit 6A to the east or Unit 8 to the north. No formal elk surveys are conducted in this unit. Elk observations are collected as incidental sightings throughout the year and during winter aerial surveys for deer and javelina.

Population Information:

No formal summer surveys for elk are conducted in Unit 19A. The current population estimate of 60-120 adults is based on observations recorded incidental to other surveys and activities. Most elk in this unit are located just north of State Highway 169. Orion Mountain is the center of elk activity in the unit. Two other herds, consisting of 5-12 elk each, are seasonally observed each year at Woodchute Tank and Wildcat Draw. No seasonal movements into or out of Unit 19A have been detected.

Bull archery hunts were initiated in Unit 19A in 1993 when 10 permits were issued. Three hunters harvested bulls. Ten permits were again issued 1994 with the same hunt success. During

1995-1997, 10 permits were issued each year with no elk harvested. Fifteen permits were issued in 1998 and 4 hunters harvested elk. In 2000, a rifle season was recommended to increase the harvest of elk in the unit. For the 2002 season, 15 antlerless rifle permits were added to the unit to manage population structure and provide additional hunting opportunity. For 2004, the cow elk season was split and additional tags were offered. For 2005, some tags will be moved to increase hunt success and there will be a moderate increase in tags. Also, a cow elk and any elk limited opportunity hunt will continue to be offered for units 6A, 19A, and 21.

Specific Concerns:

Some elk hunters expressed concern with the low hunt success during the archery elk season. Elk are also entering a private stand of sweet corn in the Verde Valley.

Solutions: This hunt is now evaluated annually using incidental sightings, winter wildlife surveys, and hunt success data. In the cornfields, a temporary electric fence was loaned to the landowner until he could provide his own fencing. In 2003, a population management hunt was initiated to harvest elk while damage is occurring outside of traditional hunting seasons. To date, this strategy has improved the situation.

Management Objectives:

Continue to collect data on elk population characteristics and distribution in Unit 19A. Obtain information by contacting archery elk hunters. If necessary, initiate a ground survey during the summer. Maximize hunter opportunity to harvest problem elk while maintaining the presence of elk in Unit 19A. Since elk depredation problems in this unit are difficult to manage with standard hunt structures, a population management hunt is more likely to achieve the objective of reducing crop damage. Starting in 2004, Region III will administer any population management hunts in the Verde Valley including those portions of the valley falling in 6A and 21.

Unit 19B:

History:

Elk were seen occasionally in the unit in the early 1980s. By the early 1990s, elk began to use irrigated croplands north of Chino Valley at the K-4 Farms. Occasionally, elk have been sighted during winter wildlife surveys in December and during June pronghorn surveys. Elk have also been observed crossing Highway 89 south of Ash Fork. Elk hunts were initiated in 1994, primarily in response to depredation complaints at the K-4 Farms. Hunt success in this unit was low as many different early hunt formats were tried. Elk that caused crop damage were often chased to adjacent units and became unavailable to sportsmen. Hunt success improved with the initiation of the multi-unit hunt in 1997.

Population Information:

Formal elk surveys are not economically feasible because of the low density, widely dispersed population. Population estimates are based on incidental observations. Elk seasonally move to adjacent units, mainly Units 8 and 17A, so the number of elk within Unit 19B varies throughout the year. In general, about 12-30 elk seasonally use the juniper woodlands south of Ash Fork. The K-4 Farms and west half of Unit 19B typically contain an additional 20-40 elk.

Specific Concerns:

Elk are impacting the irrigated alfalfa, wheat and cornfields at K-4 Farms in Chino Valley. Elk crossing Highway 89 may be a traffic hazard.

Solutions: Continue to use hunting to remove elk from the K-4 Farms area. Provide support to the landowner through use of noise devices and by providing technical information on exclusion fencing. Encourage sportsmen to hunt in the area. On Highway 89, determine vehicle-elk collision sites and recommend locations for elk crossing signs.

Evaluate the multi-unit elk hunt strategy to determine if it has increased the harvest of elk on the K-4. Consider new hunt strategies for Unit 19B that will increase both the harvests of elk on private lands and hunt success. In 2003, a population management hunt was initiated to harvest elk while damage is occurring outside of traditional hunting seasons.

Management Objectives:

Minimize depredation on K-4 Farm cornfields. Obtain information on elk crossing areas on Highway 89 to improve public safety. Since elk depredation problems in this unit are difficult to manage with standard hunt structures, a population management hunt is more likely to achieve the objective of reducing crop damage.

Unit 20A:

History:

In 1984 and 1985, archery deer hunters on Big Bug Mesa observed 8 cow elk. Three cows were the only elk observed in 1986. Two bulls were observed fighting on George Lees' Ranch in the Sierra Prieta Mountains in 1987. Presently, there are 12 elk along Kirkland Creek, and 15 elk in Skull Valley. These 27 elk exist entirely on private land. A special any-elk hunt with 24 permits, 6 each for the months of September, October, November and December, was initiated in 1998. This hunt combined parts of Units 17B, 20A, and 20C in the Skull Valley-Kirkland Valley area for the purpose of reducing elk numbers on private lands. In 1998, during the 17B, 20A, and 20C combined hunt, 24 hunters harvested a total of 18 elk. Six hunters were unable to hunt because they were denied access or refused to pay an access fee.

Population Information:

A rough population estimate based on information gathered on the Unit 17B, 20A, and 20C combined unit indicates a resident elk population of about 28 animals.

Specific Concerns:

Private land owners in Skull Valley and Kirkland Creek expressed concern that elk competed with livestock for forage on private lands and caused fence damage. At the same time, landowners have expressed a desire to retain a limited population of elk, about 6 in Skull Valley and 12 in Kirkland.

Solution: The Department initiated, and monitoring a special 4-month, 24-permit hunt designed to reduce elk numbers. Eighteen elk were taken. The hunt was not determined to be necessary for 1999, or 2000.

Portions of Units 20A and 20C were included with the Region III limited opportunity multi-unit hunt in 2001.

Continue to consider alternative hunt structures as means to achieve population objectives.

Management Objectives:

Use hunting to reduce elk numbers. Minimize landowner-elk conflicts in the Skull Valley area while maintaining less than 50 elk unit wide. Since elk depredation problems in this unit are difficult to manage with standard hunt structures, a population management hunt is more likely to achieve the objective of reducing crop damage.

Unit 20C:

History:

This unit is located in Region IV but shares its only elk with Region III along the unit boundary. The first reports of elk in Unit 20C occurred in 1985 in the Kirkland Valley area. Elk have periodically been reported and documented since then, in and around Kirkland Valley, with a group of 17 being seen during the summer of 1998. In 1997 and 1998 these elk were recognized as permanent residents, and portions of Unit 20C were included in a 17B, 20A special hunt (i.e., Skull Valley area) designed to remove up to 24 animals. This hunt attained its goal with a harvest of 18 elk and so was not continued in 1999 or 2000. Since 2001, Unit 20C has been included in Region III's multi-unit Limited Opportunity hunts.

Population Information:

There has been no specific effort to survey Unit 20C or Kirkland Valley for elk. Incidental observations suggest that about 20 elk occur in the area.

Specific Concerns:

The Rigden Ranch has reported that elk routinely break their water gaps in Kirkland Creek. The small ranch adjacent to Rigden's has also expressed concern with elk feeding in their irrigated pasture. These elk are feeding most of the time on private property along Kirkland Creek.

Solution: The Department will continue to gather elk observations and comments from landowners and residents in the area. In January 1998, the Department held a public meeting to seek input from the community. This meeting resulted in strong public support for a hunt in the Skull Valley and Kirkland Valley areas. A variety of hunting seasons has since been used to help control this elk herd. For 2004, a new Williamson Valley/Skull Valley/Kirkland Junction hunt area was proposed that had several limited opportunity hunts. Population Management Seasons have also been proposed so that hunters can be directed to depredation problems when and where they occur.

Management Objectives:

Monitor concerns of Kirkland Valley residents regarding the presence of elk. Use this input to determine future management. Currently, the objective is to reduce or eliminate this small elk population.

Unit 44A

History:

This unit is in Region IV. Elk were first reported in 1994 by eagle watchers at Alamo Lake. Since then, elk sign has been seen above Alamo Lake (upper Bill Williams River) and along the lower portions of the Big Sandy and Santa Maria rivers in Unit 44A and the adjoining Unit 16A. Several cow and bull elk have been sighted by hikers, and by ranchers gathering cattle. All observations have been within the Alamo Wildlife Area. For the past several years, during annual late winter or spring vegetation surveys, significant bark-stripping of willow and cottonwood trees by elk has been documented in the area of the confluence of Date Creek and the lower Santa Maria.

A 3-month, any-elk hunt with 15 permits was initiated in 1997, and resulted in the harvest of 1 bull elk. No elk were harvested in 1998 and the hunt was not continued due to the low success rate.

Population Information:

Elk have not been surveyed in the Alamo Wildlife Area. Initial population estimates indicated 2-3 cows and 2-3 bulls, though recent reports have indicated that the population may be higher.

Specific Concerns:

The Department has received no complaints from landowners or grazing permittees in the area. However, the Bureau of Land Management and Game and Fish personnel have expressed concern over the damage caused by elk to riparian vegetation.

Solution: A 3-month long any-elk hunting season, with 15 permits, was tried as a control technique during 1997 and 1998 with poor results. A population management hunt is now in place. This hunt can be held anytime between August 1 2005 and February 15 2006. Up to 15 non-permit tags can be issued.

Management Objectives:

The lower Sonoran habitat that occurs at the confluence of the Santa Maria and Big Sandy rivers is an area of critical environmental importance to many species of plants and wildlife. In order to prevent deterioration of this habitat, the objective in the Alamo Wildlife Area will be to reduce the elk population to as low as possible. We will consider using population management hunts as a method to remove elk from this unit.

REGION V

History and Background:

Elk did not occur in southeastern Arizona historically and are an unplanned addition to the native wildlife found there. Early elk sources such as Murie's 1951 "*Elk of North America*" correctly noted that elk were not native to southeastern Arizona. However, later sources (Bryant and Maser 1982 – *Elk of North America*) erroneously extended the historic range of elk far in to Mexico based on unsubstantiated rumors, a report of a pictograph, and a report by Edgar Mearns' camp cook of 2 "large deer" crossing the border into Mexico. Historical and archaeological evidence fails to provide any evidence elk were ever in Region V in historic times. No evidence exists of elk remains in the fauna lists at Native American sites in southeastern Arizona.

Another large herbivore grazing on the region's arid and fragile desert ecosystems would probably come to the detriment of other native wildlife. Elk currently occur in Units 28 and 31 and can live quite well among mesquite and prickly pear. There is no doubt they would become established in many areas of southeastern Arizona and have the potential to greatly impact other native wildlife such as desert mule deer, pronghorn, and many grassland and riparian obligate species.

Unit 28:

History:

Elk did not historically occur in Unit 28, but they have been reported in the Mule Creek Pass area (extreme northeastern corner of the unit) intermittently for years. These animals were transient individuals from Unit 27 that never established themselves in the Unit 28. A cow elk was killed by a vehicle on Interstate 10 in 1990 near Bowie, AZ. In the early 1990s, the Region started to receive reports of elk in the agricultural fields along the Gila River north of Safford. In June of 1994 we received reports of elk in a cotton field near Pima, AZ (near Safford). In August of that year, the Region conducted a short aerial flight along the river in an attempt to document these elk. The Region flew about 16 miles of the Gila River near Pima, searching the dense salt cedar and did not see any elk. Later that month, Region V received their first elk depredation complaint from a farmer in Pima who observed elk feeding in his cotton fields. More recently, the Region started to receive reports in the Gila Mountains near the San Carlos Reservation boundary. In 2000, there was an upsurge of interest in these elk because a few large bulls had been sighted in the Gila Mountains.

A meeting was held in mid-February 2001 between the Arizona Game and Fish regional personnel, Game Branch, and Safford Area BLM staff to address elk management possibilities. It was jointly decided that an elk hunt could be used as a good management tool in this area and that there would be a possibility of some sportsmen harvesting elk in these two units.

In 2001, the Department initiated 2 small, permitted hunts in Units 31 and 28 (combined). The first hunt was a 5-permit archery hunt September 14 - 27, 2001 and the second was a 15-permit

general hunt October 5-21, 2001. Legal wildlife in both seasons were any elk. Although temperatures during this September season are still high at this elevation, we believed it was more important to allow hunt opportunity commensurate with the time elk are accessible to hunters. In fall 2002, we continued with the 5-permit archery hunt with the same season dates, but moved the general hunt to a later date (September 22, 2002 to December 8, 2002) to coincide with cooler weather. We also reduced the permit level of that hunt to 10 because of hunter crowding concerns. This format was continued in the fall of 2003. During the 2004 seasons we expanded the hunt to consist of two 6-week antlerless seasons to allow a better opportunity to harvest females in this population.

Population Information:

Reports of elk along the Gila River have subsided, but still occur sporadically. Those near the Mule Creek Pass area will continue to be seen occasionally, but represent mere transients.

The San Carlos Reservation conducted an aerial survey flight to tally the elk along the border with Unit 28 in January 2001 and counted 85 cows and 10 bulls (9 spikes and a 4-point). The biologist for the tribe, Russ Richards, acknowledged that they did not see a few large bulls that were known to be there. Mr. Richards believes the elk originally came from the Dry Lake herd. The high number of yearling bulls in this population indicates a rapidly increasing population.

Department conducted a similar aerial survey in Unit 28 along the reservation boundary on February 21, 2001 to determine distribution and abundance of elk in this area of Unit 28. During the survey, 5 groups of elk were observed in the Gila Mountains along the San Carlos Apache Reservation boundary. These five groups consisted of about 116 animals. Ten branch- antlered bulls were observed along with about 106 cows and spikes. It was difficult to get an exact number of cows, calves and spikes because of the limitations of a fixed-wing aircraft in such rough terrain. These animals are not surveyed every year.

Specific Concerns:

The elk currently residing along the Gila River are seen in the agricultural fields periodically; apparently living in the tamarisk bottoms near the river. The elk herd in the Gila Mountains has been more noticeable in recent years and has the potential to expand to a greater extent into the agricultural Gila Valley. We will not be able to exterminate the Gila Mountain herd because they spend a certain amount of time on the San Carlos Reservation, but we certainly don't want to let them spread further. There is also a portion of the local communities that are in favor of a sustained elk hunting opportunity near Safford.

At least one local rancher feels he is being impacted by the newly arrived herbivores sharing his BLM grazing allotment. The Day Mine Allotment was forced to reduce his stocking rate a few years ago and they believed the elk were impacting the range condition and prohibiting range recovery efforts. Elk have also been seen as far east as Bonita Creek to the Indian corner on the Diamond Bar Allotment but not in the numbers as have been seen on the Day Mine Allotment. We want to be responsive to those constituents who want more elk hunting opportunity and also those who do not want elk interfering with range recovery or feeding in alfalfa and cotton fields.

Solution: Continue to consider alternative hunt structures as means to achieve the objectives below. The limited opportunity general elk hunt will be for antlerless elk rather than any elk. This hunt was originally established to provide some level of harvest pressure on these elk to prevent their expansion into agricultural areas and natural areas where they never occurred historically. However, the any elk structure in the past resulted in almost all bulls being harvested. This gender composition was not achieving our objective of limiting further population growth and expansion. Our intent was not to provide a trophy season, but to apply harvest pressure on this small nucleus of elk to keep their numbers in check and discourage their spread into the Safford Valley. To further encourage the harvest of more females from the population, we instituted two 6-week seasons having 10 permits each for antlerless only. This allowed hunters to return several times during the season and relocate elk that may scatter after opening day. This time period also allows harvest of females at a cooler time of the year and will eliminate the perception this is a trophy bull hunt. In 2003, we also added Units 28 and 31 to Commission Order 1 as Population Management Seasons and used that option in December 2003. We are not recommending over the counter tags in 28 because of expressed concerns by the landowners that a large number of deer hunters will buy elk tags and swamp the small area elk inhabit. This would also create a safety concern because the area occupied by elk is scattered with dispersed houses. We are recommending the following in order to accomplish our objectives:

General Elk

Units 28 and 31 for Antlerless Elk 10 permits October 7 thru November 17, 2005

Units 28 and 31 for Antlerless Elk 10 permits November 18 thru December 31, 2005

Archery Elk

Units 28 and 31 for Any Elk 5 permits during regular archery elk season

Management Objectives:

Use hunting to maintain the current low levels of elk in the Gila Mountains and not allow for an increase in this elk population. Minimize landowner-elk conflicts in the Gila Mountains and along the agricultural fields bordering the Gila River. Continue to allow hunters to take animals from this population through the current hunt in conjunction with Unit 31.

Because of the limited distribution and density of elk in these units, it should continue to be offered as an alternative hunt opportunity because elk may be extremely difficult to locate. The hunt takes place in very rough terrain with few roads accessing the area. The elevation in these 2 units is also much lower than what hunters usually expect for an elk hunt and the weather can be warmer than expected.

Unit 31:

History:

In 1918, 22 elk were released in the Pinaleno Mountains from Yellowstone National Park. The immediate fate of this translocation is unclear, but ultimately they disappeared entirely. Although records are scanty, they did not appear to persist for very long.

In summer of 1991, elk were photographed on the Spring Valley Farms near Bonita, AZ (northwest of Willcox). Over the ensuing decade small groups of elk (some resightings of the same elk) were reported from around the Pinalenos, Galiuros, and intervening Sulphur Springs Valley (O Bar O Ranch, Ash Creek Black Hills, West Peak, Grant Creek, Hospital Flat, High Creek, intersection of I-10 and Highway 191, Redfield Canyon, and Seeps Tank.) The owner of Fortman's Orchard north of Willcox picked up a pair of 5x5 shed antlers in his orchard in March of 1997.

In 2001, the Department initiated 2 small, permitted hunts in Units 31 and 28 (combined). The first hunt was a 5-permit archery hunt September 14 - 27, 2001 and the second was a 15-permit general hunt October 5 - 21, 2001. Both were "Any Elk" seasons. Although temperatures during this September season are still high at this elevation, we felt it was more important to allow hunt opportunity commensurate with the time elk are accessible to hunters. In fall of 2002, we continued with the 5-permit archery hunt with the same season dates, but moved the general hunt to a later date (November 22, 2002 to December 8, 2002) to coincide with cooler weather. We also reduced the permit level of that hunt to 10 because of hunter crowding concerns. This format was continued in the fall of 2003, but during the 2004 seasons we expanded the hunt to consist of two 6-week antlerless seasons to allow a better opportunity to harvest females in this population.

Population Information:

Elk are frequenting the higher elevations in the warm summer months and the southwest corner of the unit near the Fortman's Orchard and the O-Bar-O Ranch. There are probably less than 60 elk in this area. Ground observations indicate there may be more elk in this area than previously thought, but sightings and movements are too sporadic to obtain a better population estimate.

Specific Concerns:

Solution: Continue to consider alternative hunt structures as means to achieve the objectives below. The limited opportunity general elk hunt will be for antlerless elk rather than any elk. This hunt was originally established to provide some level of harvest pressure on these elk to prevent their expansion into agricultural areas and natural areas where they never occurred historically. However, the any elk structure in the past resulted in mostly bulls harvested. This was not achieving our objective of limiting further population growth and expansion. Our intent was not to provide a trophy season, but to apply a little harvest pressure on this small nucleus of elk to keep their numbers in check and discourage their spread into the Safford Valley. Designating two general hunts as antlerless elk with 10 permits will allow us to focus the harvest on females at a cooler time of the year and eliminate the perception this is a trophy bull hunt. We also are retaining Units 28 and 31 in Commission Order 26 as potential Population Management Hunts. We are not recommending over the counter tags in 28 because of expressed concerns by the landowners that a large number of deer hunters will buy elk tags and swamp the small area elk inhabit. This would also create a safety concern because the area occupied by elk is scattered with dispersed houses. We are recommending the following in order to accomplish our objectives:

Regional Elk Operational Plan – April 5, 2005

General Elk

Units 28 and 31 for Antlerless Elk 10 permits October 7 thru November 17, 2005

Units 28 and 31 for Antlerless Elk 10 permits November 18 thru December 31, 2005

Archery Elk

Units 28 and 31 for Any Elk 5 permits during regular archery elk season

Management Objectives:

Use hunting to maintain the current low levels of elk in the Pinaleno Mountains and not allow for an increase in this elk population. Minimize landowner-elk conflicts around the base of the Pinalenos. Continue to allow hunters to take animals from this population through the current hunt in conjunction with Unit 28.

REGION VI

Background and History:

Compared to Regions I and II, Region VI has a relatively small number of elk.

Region VI's elk management efforts are mainly confined to the northern portions of Units 22 and 23. This range is also used by elk from Regions I and II, as well as from the Fort Apache Indian Reservation. This complicates elk management efforts below the Mogollon Rim. Information gathered from the Elk Seasonal Ranges and Migrations in Arizona final report by R. L. Brown, 1994 has helped understanding some of these complexities. Excluding some minor range extension, the winter elk range completely overlaps the summer and yearlong elk range. The Region will continue to monitor the expansion of elk range southward in Units 22 and 23. For current management, we are primarily considering the resident elk population below the Mogollon Rim.

Elk have been observed in Unit 21 since the mid- to early-1980s. Sightings were rare and it was uncertain if the elk were residents of the district or just a wintering population. By 1990, hunter reported sightings were on the increase. Elk were seen year-round. It was determined that Unit 21 should be surveyed to determine the number of elk in the district and their distribution. The first surveys were conducted in the winter with little success. Elk sightings continued to increase and hunters inquired if the Unit 21 elk herd was sufficient to support a bull elk hunt. A helicopter survey was flown in the fall of 1996. From that survey it was determined that the unit 21 elk population could support a bull elk hunt. In the mid-80s, a hunter shot a bull elk believing it was a large mule deer buck. Two bulls were known to be poached in Unit 21 during 1997.

In Unit 24A, elk occur in two locations. Periodic observations of elk in and around the Timber Camp Mountains in the northern portion of the unit indicate presence of pioneering bulls and seasonal use by some cow elk. There is also a small number of elk in the Pinal Mountains but the elk habitat is poor. The Pinal Mountain elk are most likely remnants of the Cutter herd. Periodic observations of elk have been made within these areas of Unit 24A for several decades. Population levels seem to be remaining stable, at low densities, with no complaints from landowners or lessees. Proximity of these areas to the San Carlos Reservation may complicate management of elk in Unit 24A.

Elk range in Region VI is primarily comprised of USFS land, with only 7% private land (Table 5). Due to the minimal amount of private lands within elk range, Region VI has had few conflicts with elk on private properties (Table 6). In Unit 23, elk are impacting isolated riparian areas such as Canyon and Mule Creek. Three riparian exclosures were constructed in April 2002 with coordination from the Payson Natural Resource Committee (PNRC) to mitigate the impacts of elk on the Mule Creek riparian vegetation. In addition, there is one other exclosure on Canyon Creek and one more planned to be constructed by 2005 to help rehabilitate the fishery in Canyon Creek after the Rodeo-Chediski Fire of 2002. There is some concern that the high elk use in the area of the Dude Fire could eventually cause negative impacts to the associated riparian areas and overall watershed condition. Increasing elk use in upland key areas has been of some concern across the northern half of the Region. To address these issues a forage monitoring strategy is being developed by the U.S. Forest Service and AGFD with input from

the PNR. Some upland cover plots have also been established within the Dude Fire area by the U.S. Forest Service and may yield information on wildlife use over time.

Population Trends:

In the late 1970s and early 1980's there were about 250 resident elk occupying units 22 and 23. In the mid-80s, the population began increasing and by 1987 the population estimate was 550 resident elk. In 1991, about 235 elk in Units 22 and 23 were observed from the ground during the fall survey and estimated total pre-hunt population was between 843 and 1,265 elk. For the winter period it is estimated that the Unit 22 elk numbers double and the Unit 23 elk numbers increase by about 50%, due to migration from areas outside Region VI. This increase is variable from year to year, dependent on winter snowfall. Table 7 reflects the elk population status for Region VI from 1988 to 2005.

The Tonto National Forest LMP, as well as the Comprehensive Plan, allows for the increase of the elk population below the Rim, in both numbers and distribution. In looking at the population estimate over the last three years it appears that the cow segment of the population has increased by 7% this year for Unit 22 and decrease by 8% this year for Unit 23. The largest population annual increase of 52% appears to have occurred between 1990 and 1991 for Unit 22, and can be attributed to the positive impacts of the Dude Fire relative to elk.

Insufficient information is available to provide a realistic population estimate for Units 21 and 24A; however previous survey information for Unit 21 indicates that this elk herd remains stable at a low population level. The Wildlife Manager of Unit 24A estimates the population at 25 elk that fluctuates due to a herd of 21 that travels back and forth between 24A and the San Carlos Reservation. It is yet undetermined if elk occur in Unit 24A year-round but they have been observed from August to late December. Due to the low number of elk that occur in Unit 24A, data is insignificant to determine population trend.

Surveys, permits, and history:

Efforts will be made to survey at least 1/3 of the total population in order to gather a better population estimate, to determine bull:cow:calf ratios, and to accurately determine changes in the population. The population estimate will be derived from surveys, hunt data, and population modeling.

It is speculated that much of the increase in Region VI's elk population has been due to increases in their yearlong range. There is potential for overpopulation in the northern portions of these units that may occur prior to or in place of range expansion.

In order to provide the best assessment of the resident elk herd in Units 22 and 23, Region VI constructed an elk distribution map in 1991 to provide a reference point for population models. Based on this mapping technique, survey data, harvest estimates, and a 5% annual mortality rate, Region VI resident elk have increased from a mean of 660 in 1988 to a predicted mean of 1,417 in 2005 (Table 7). Over the same time period permits have increased from 85 to 1,407. Hunt recommendations are directed at stabilizing this population and reducing the bull ratio.

During 1998, Unit 22 was split into 22 North and 22 South elk hunts. Ten permits were issued with a harvest success of 100%. During 1997, Unit 23 was split into 23 North and 23 South elk hunt. Based on reports of elk observed and elk sign, an elk population between 150–200 is estimated in the southern portion of Unit 23. A two-hour helicopter survey was conducted in 2003 with 109 elk observed (32 bulls, 52 cows, 25 calves).

Four limited opportunity hunts were completed in the Canyon Creek Hunt Area of Unit 23 surrounding the OW Ranch area. Thirty-two antlerless permits were issued over four hunts. These hunts are to address elk overuse on riparian resources in the Canyon Creek area. The predicted combined harvest from the four hunts is 20-25 antlerless elk.

Unit 21 was also included as an elk hunt unit in 1997. Helicopter survey data from fall 1996 determined that the Unit 21 elk population could support a bull elk hunt. Five permits were issued with a hunt success of 80%. A one-hour helicopter survey was conducted in 2002 with 16 elk observed (5 bulls, 11 cows, 4 calves).

Specific Concerns of HPC:

The Payson Natural Resource Committee holds about five meetings annually. The Committee submitted twenty projects this year. Ten of these projects were improvement of water catchments, five were grassland improvement (juniper removal), three for fencing, and two for helicopter survey hours.

Objectives by Unit:

Unit 21:

Continue to monitor the elk population through annual surveys and hunter harvest. Unit 21 will be split with a portion of the unit being managed as Standard Population Management Zone, and a portion of the unit being managed as a Limited Population Management Zone. The boundary that divides the Standard Population Management and Limited Population Management zones for Unit 21 is as follows:

From where Interstate Highway 17 crosses the Verde River, south along I-17 to the Bloody Basin Road exit, then easterly along the Bloody Basin Road (USFS Road 269) to the Verde River.

The portion of Unit 21 lying north of the above-described boundary will be managed as a Standard Population Management Zone. That portion of Unit 21 lying south of the above-described boundary will be managed as a Limited Population Management Zone.

Unit 22:

Annually adjust the harvest of resident adult elk to maintain population growth per agreement with the Payson Natural Resource Committee. Continue to monitor elk impact and/or forage use in key areas (e.g., riparian areas associated with the Dude Fire). Monitor the elk population

through annual surveys. Obtain habitat conditions from the U.S. Forest Service. Harvest bull and cow elk in accordance with AGFD elk management guidelines. Increase or decrease the elk population based on general habitat conditions and manage for a bull:cow ratio of 50:100. Increase survey efforts in the southern portion of the unit for a more thorough survey and elk population estimate.

After taking public input, the Region recommended Unit 22 be split with a portion of the unit being managed as Standard Population Management Zone, and a portion of the unit being managed as a Limited Population Management Zone. The boundary that divides the Standard Population Management and Limited Population Management zones for unit 22 is as follows:

On a line beginning at Tonto Creek directly east of the intersection of State Highway 188 and the El Oso Rd (Forest Road 422); westerly on the El Oso Road to Forest Road 143; westerly on Forest Road 143 to State Route 87. Northerly on State Route 87 to the Junction with Old State Route 87 (toward Sunflower); northerly on old State Route 87 to the junction with the 500kV power line (Forest Road 393); westerly on Forest Road 393 to the Verde River below Bartlett Lake.

The portion of Unit 22 lying north of the above-described boundary will be managed as a Standard Population Management Zone. That portion of Unit 22 lying south of the above-described boundary will be managed as a Limited Population Management Zone.

Conflicts in Unit 22 between elk and other uses of the land exist. First, the urban interface areas around the communities in northern Unit 22 experience regular incursions by elk. Conflicts resulting from these incursions include damage to ornamental plants, fruit trees, and residential and commercial lawns, and use of forage on private pastures intended for private livestock. Golf courses at the Rim Club, Chaparral Pines, and Payson Municipal Golf Course experience seasonal damage from elk including dents in the greens and fairways from hoof action, urine stains on the greens and fairways, and elk pellets. Second, potential exists for overuse of forage resources on public lands by elk.

Strategies for resolving conflicts around the urban interface include educating residential and commercial property owners about ways to discourage elk from causing damage. Some methodologies for discouraging elk include visual, auditory, or olfactory deterrents, permanent elk proof fencing (the most effective method), and hazing. Other tools include implementation of stewardship agreements with private property owners, the temporary loaning of Department-owned elk proof fence material, adjusting elk permit levels to address elk population levels, and use of the Department's population management hunts to address specific population management concerns in the unit. Strategies for addressing potential conflicts involving overuse of the forage resources on public lands include cooperative biannual monitoring of elk forage use, implementation of habitat improvement projects through the HPC process, annually adjusting permit levels, and use of the Department's population management hunts.

Population Management Hunts: Population management hunts starting and ending anytime between August 1, 2005 and February 15, 2006 may be used to address problems associated with

elk depredation on private and/or public lands in Unit 22. Twenty-five population management permits will be recommended to alleviate any human-elk conflicts that might occur.

Unit 23:

Annually adjust the harvest of resident adult elk to stabilize the population per agreement with the Payson Natural Resources Committee. Continue to monitor elk impact and forage use in key areas. Reduce the population of resident elk in the Canyon Creek area through the use of Limited Opportunity Hunts which should decrease use in key riparian areas along with the monitoring and maintenance of the elk-proof exclosures. Manage for a narrow bull:cow ratio of 50:100. Monitor the elk population through annual surveys. The population of elk in Unit 23 appears to be on a downward trend due primarily to low calf:cow ratios for the last eight years.

In 2003 the Region generated an aggressive hunt package to address documented overuse by elk on riparian vegetation near Mule Creek during calendar year 2000. The proposal would create a special hunt unit in Canyon Creek to remove the elk responsible for the damage. The Region has recommended that the hunt package be tabled for a second year, after considering forage monitoring data, and input from the USFS, PNRC, and the affected permittee. The hunt package will be retained as an option for consideration in future hunts packages.

In 2003 the Region accepted public input regarding management of elk in Unit 23. The Region recommended to the Commission that a portion of Unit 23 be managed as a Standard Population Management Zone, and a portion be managed as a Limited Population Management Zone. The boundary that divides Standard Population Management and Limited Population Management zones within Unit 23 is as follows:

Beginning at the junction of Forest Service R. 96 and the Fort Apache Indian Reservation; west on Forest Service R. 96 to its intersection with Forest Service Rd. 203 (Cherry Creek Rd.); southwesterly on Forest Service Rd. 203 to its junction with state Highway 288 (Young Highway); northerly on State Highway 288 to its junction with Forest Service Trail 284; west on Trail 284 to its junction with Workman Creek; westerly on Workman Creek to its confluence with Salome Creek. Northerly along Salome Creek to its confluence with Dupont Canyon; westerly in Dupont Canyon to Forest Service Rd. 236 at Dupont Cabin; westerly on Forest Service Rd. 236 to Forest Service Rd. 71; westerly on Forest Service Rd. 71 to Tonto Creek.

The portion of Unit 23 lying north of the above-described boundary will be managed as a Standard Population Management Zone. That portion of Unit 23 lying south of the above-described boundary will be managed as a Limited Population Management Zone.

Conflicts between elk and other uses of the land exist in unit 23. First, the urban interface areas around Young and Colcord Estates, and Christopher Creek experience seasonal incursions by elk. Conflicts resulting from these incursions include damage to ornamental plants, fruit trees, and residential and commercial lawns, and use of forage on private pastures intended for private livestock. Second, potential exists for overuse of forage resources on public lands by elk. Specifically, the areas around Canyon Creek and Mule Creek have experienced documented overuse of riparian vegetation attributable to elk. This area represents an even more important

management challenge now due to the fragile nature of the ecosystem left by the Rodeo-Chediski Fire.

Strategies for resolving conflicts around the urban interface include educating residential and commercial property owners about ways to discourage elk from causing unwanted damage. Some methodologies for discouraging elk include visual, auditory, or olfactory deterrents, permanent elk proof fencing (the most effective method), and hazing. Other tools include implementation of stewardship agreements with private property owners, the temporary loaning of Department-owned elk proof fence material, adjusting elk permit levels to address elk population levels, and use of the Department's population management hunts to address specific population management concerns in the Unit. Strategies for addressing potential conflicts involving overuse of the forage resources on public lands include cooperative biannual monitoring of elk forage use, implementation of habitat improvement projects through the HPC process, annually adjusting permit levels, and use of the Department's population management hunts.

Population Management Hunts: Population management hunts starting and ending anytime between August 1, 2005 and February 15, 2006 may be used to address problems associated with elk depredation on private and/or public lands in Unit 23. The need for population management hunts in Unit 23 would most likely occur in two areas as evidenced by historic elk depredation problems; Canyon Creek riparian area and/or in the vicinity of the town of Young. One hundred permits will be recommended to address these issues. These permits are expected to relieve depredation problems in the Canyon Creek area and the vicinity of Young.

Unit 24A:

The Region recommended to the Commission for Unit 24A to be managed entirely as a Limited Population Management Zone. Currently occupied elk habitat and potential elk habitat in the unit is not contiguous, and is relatively small in terms of land area. The Region recommends that the unit be managed for minimal levels of conflict with elk so other management objectives, such as enhancing mule deer and whitetail deer populations, can be the primary focus. The first elk hunt in Unit 24 in over 25 years was held in the fall of 2003. Three of the five hunters were successful in harvesting bulls although this was an Any Elk hunt.

The Region will continue to monitor the elk population while completing other tasks in the area. Because it is a Limited Population Management Zone, elk surveys will not be conducted on an annual basis. If observations of elk increase in the future, elk survey time may be requested in order to more accurately estimate population levels in the unit.

Because of the relatively low elk population levels in Unit 24A at this time, there have not been documented complaints about overuse of forage by elk on public lands, and there have not been complaints about conflicts with elk in the urban interface in the unit. There was one complaint in 2002 regarding elk damage to fences associated with livestock operations on public land near the Timber Camp Mountains in the northern portion of the unit. There were no complaints of elk depredation in 2004.

Habitat Management:

Elk forage monitoring continues in accordance with the Draft Region VI Elk Forage Monitoring Protocol in units 22 and 23 in key areas where elk are known to feed and congregate. In Unit 22, early monitoring of 10 sites were in light category for elk use of 30% or less, with the exception of Bonita Creek. Bonita Creek has orchard grass, which ends up in moderate to heavy use. In fall of 2004, readings were light as well. In Unit 23, early monitoring was light use. Late monitoring showed light use at all sites except for Thirteen Ranch, which was moderate.

Regional personnel will continue to coordinate on wildlife and related habitat management issues with the USFS through their various scoping and planning processes. Regional personnel will also coordinate with the Payson HPC on development and funding of habitat enhancement projects. Use plots will continue to be monitored.

A variety of strategies are being implemented to improve habitat conditions for the mutual benefit of elk and livestock throughout Units 22 and 23. Through the annual HPC process projects are proposed and receive consideration for funding through the Department’s Special Tag Funds. Habitat enhancement project proposals include but are not limited to prescribed burns, livestock tank clean out projects, contract maintenance of existing Forest Service guzzlers, grassland maintenance projects highlighting thinning of juniper trees using an agra axe, livestock and/or elk exclusion fencing to protect sensitive or overused areas, and spring redevelopments. Department Habitat Stewardship proposals can be used on private property to improve forage availability on private property. A habitat stewardship project typically involves state purchase of seed and fertilizer for application to a private pasture to improve forage quality for wildlife and livestock.

Table 5. Region VI Elk Management Units by area, land ownership, and winter and summer range area^a. Note: Except for some minor expansion of range during the winter, summer, and winter ranges completely overlap in Region VI.

Unit	Area (mi ²)	Land Ownership (%)		Seasonal Range (mi ²)	
		USFS	Private	Summer (%)	Winter(%)
Unit 21	144	99	01	144 (100)	
Unit 24A				Undetermined	
Unit 22	260	97	03	210 (81)	260 (100)
Unit 23	235	96	04	200 (85)	235 (100)

^a Does not include areas in the Mazatzals and Sierra Anchas where elk are in limited numbers.

Table 6. Region VI Elk Management Units by relative degree of elk depredation on private lands.

Unit	Relative Degree of Elk Depredation on Private Lands
Unit 21	None
Unit 24A	Low
Unit 22	Low
Unit 23	Low

Table 7. Pre-hunt Elk Population Estimate and Harvest Information for units 22 and 23 in Region VI.

YEAR	MEAN POPULATION ESTIMATE	% CHANGE	PERMIT NUMBERS	BULL HARVEST	ANTLERLESS HARVEST	TOTAL HARVEST
1988	660	-	85	68	-	68
1989	710	+0 8	95	52	-	52
1990	785	+ 11	135	87	-	87
1991	1054	+ 34	185	75	-	75
1992	1260	+ 20	335	135	22	157
1993	1380	+ 10	485	129	45	174
1994	1547	+ 12	965	164	140	304
1995	1668	+ 08	1145	250	201	451
1996	1553	- 07	1145	190	183	373
1997 ^a	1547	+ 00	1040	259	171	430
1998	1459	- 06	1160	265	251	516
1999	1647 ^a	+ 11	995	230	128	358
2000 ^a	2208	+34	1320	293	167	460
2001	1922	-15	1215	259	163	422
2002	1889	-02	960	204	141	345
2003	1815	-04	1035	232	141	373
2004	1471	-19	1172	274	155	429
2005 ^b	1417	-04	1407	379	154	533
2006 ^b	1338	-06				

^aadjusted mean from revised population model estimate

^bprojected values