

DEER MANAGEMENT GUIDELINES

Procedure 1: To determine annual fawn recruitment rates and buck to doe ratios; to note the general condition of deer and their habitat

- A. Field Operations personnel will conduct annual post-hunt deer surveys in designated units having a huntable deer population. Mule deer surveys will be conducted between December 1 and February 15; white-tailed deer will be surveyed between December 15 and February 15. Habitats north of the Colorado River may begin surveys as early as November 15. Surveys should not be conducted at times of high hunter activity. A majority of the surveys should be conducted in the peak of rut, which for white-tailed deer is mid-January, and for mule deer is early December in the north and late December or early January in the south. Observations outside the survey period will not be included as survey data.
- B. Deer surveys should be conducted by the most cost efficient and effective method, which will be helicopter surveys in most units. Fixed-wing surveys will be used where sightability rates and terrain characteristics allow. When annual formalized aerial surveys are established, ground-based surveys will not be conducted. Survey data obtained by different methods will be recorded separately, but combined when calculating ratios and confidence intervals. Ground surveys, if used, must be developed with Game Branch and approved by Executive Staff. Ground surveys will be standardized and mapped so that the same areas are surveyed regularly and continuity is maintained through time. Standard ground routes will be prioritized so that a basic suite of routes is surveyed regularly and additional routes are conducted as needed. Units managed conservatively through hunting, such as those identified in the Alternative Deer Management Plan, have a less pronounced need for annual aerial surveys to determine population demographic data. Alternative Deer Management units have a greater need for data on the age structure of harvest, which may be obtained through cementum aging of teeth from a representative harvest sample.
- C. Aerially surveyed units will be monitored in 1 of 2 ways.
 - 1. Each aerially-surveyed hunt unit will contain at least 3 survey monitoring blocks that can be surveyed in about 30 minutes each. These blocks should be placed in areas generally accessible to the hunting public. If a unit contains more than 1 major vegetation association, monitoring blocks should represent all major associations, unless surveying them is infeasible.
 - 2. The entire unit may be surveyed using a grid and systematically sampled.

Deer surveys should be conducted annually within units that routinely achieve $\pm 10\%$ confidence limits on fawn:doe ratios. In those units where $\pm 10\%$ confidence limits on fawn:doe ratios are not achieved 75% of the time, aerial surveys will be pooled with similar units (i.e, similar vegetation and deer abundance). In low-density units lacking vegetation barriers or topographic barriers, standardized fixed-wing surveys are more appropriate for indexing the population.

- D. Survey data will be recorded as individual observations (i.e., each sighting of a deer or group of deer will be recorded to allow for ratio estimation and calculation of confidence intervals). Mule deer and white-tailed deer observations will be maintained separately.
- E. Each day's survey data will be recorded completely as prescribed on the Deer-Javelina Survey Record Form. If information about relative age structure is desired, the number of antler points should be recorded on all bucks. The number of miles and hours traveled should be recorded. Notes should be taken on abnormal conditions of animals observed, condition of key forage plants, availability and quality of water, evidence of deer predators, predation, and other mortality. Survey flights should be recorded on a GPS unit. The observer should record the survey route and any javelina and deer observations.
- F. Survey sample objectives are to obtain fawn:doe ratios of ± 5 for mule deer and ± 10 for white-tailed deer at the 90% confidence level. Use available computer programs to calculate confidence intervals daily (or more frequently when possible). When confidence intervals are achieved, survey efforts should cease. If confidence intervals are not achieved, data should be pooled with similar units (i.e, similar vegetation and deer abundance). These units will be predetermined and identified in consultation between Regional Game Specialists, Wildlife Managers, and the Game Branch.
- G. Following completion of aerial surveys each year, any adjustments to baseline survey hours will be recommended from the Region to the Game Branch. Additionally, any recommended experimental approaches for the following year should be submitted at this time. Modifications should be submitted during May and Game Branch will forward recommendations to Executive Staff for approval.

Procedure 2: To collect data on hunt success and on the age classes and condition of harvested deer

- A. When the need for biological data is justified, hunt check stations may be established to sample selected populations. Station locations will be determined by the Regional Game Specialist and Big Game Supervisor. Station operation will be the responsibility of the Regional Game Specialist. When needed and possible, assistance will be provided by the Game Branch.
- B. Dressed deer may be weighed, checked for body condition, antler points enumerated, and age determined by tooth replacement and wear according to "Age criteria for Arizona game species." Incisors of animals older than yearlings may be collected. The data from each animal examined will be recorded on a check station data form or a multiple species check station card. Incisors and completed cards (or copies of data) from units and hunt areas where a sufficient sample of data (about 50 teeth per species) have been collected should be forwarded to the Game Branch for age determination by counting the annuli of sectioned teeth. Units managed in a conservative fashion, such as those managed under the Alternative Deer Management Plan, have a greater need to collect these types of data.

- C. Hunt questionnaires will be sent to deer hunt permittees within 2 weeks of the last day of their season. The number of questionnaires sent will be designed to obtain statistically valid hunt success data for hunt units.
- D. Harvest and hunt success information will be tabulated, summarized, and sent to Regional Game Specialists within 60 days of the final mailing. The design, collection, and distribution of these data will be the responsibility of the Game Branch. Game Branch and Regional personnel may conduct additional data analysis.

Procedure 3: To index changes in abundance in mule deer and white-tailed deer population levels and estimate the size of individual populations

- A. Regional personnel will use a Department approved computer model to simulate population trends and provide deer population estimates. When survey and harvest data for a hunt unit are too erratic, multiple hunt units will be pooled to obtain a population estimate or simulation with reasonably small confidence intervals.
- B. Indices to deer abundance such as deer per hour of helicopter survey from monitoring blocks, trends in standardized ground surveys, hunt success, and computer population simulations will be used to complement population composition counts and determine population trends. Simultaneous double-count survey methodologies may be employed to determine density and estimate populations.

Procedure 4: To use survey and hunt data to determine an appropriate level of deer harvest in each hunt unit and formulate hunt regulations to accomplish that harvest

- A. It will be the responsibility of the Wildlife Manager and the Regional Game Specialist to analyze survey and hunt data to determine whether a huntable deer population exists in each unit and make recommendations for hunt structure and permit numbers. Annual survey and hunt data will be summarized by entry into the appropriate database files. These database files will be summarized on the Deer Management Summary Form and forwarded to the Game Branch in accordance with the Hunt Recommendation Schedule.
- B. Hunt recommendations will be made by applying survey data (Fawns:100 does and bucks:100 does) and harvest data (hunt success) to the guidelines below. Since survey ratios may not reflect changes in deer population levels, indices to deer abundance will be used when formulating hunt recommendations. Extreme weather events such as drought or heavy snow may modify management decisions. For hunt units where reasonable survey data precision cannot be obtained, hunt recommendations will be based on past hunt success and pooled population trends.
- C. For mule deer, permits should be prescribed according to the table below. Confidence intervals, rather than point estimates, will be used when evaluating these parameters. Three-year trends in indices to deer abundance will be used to determine if changes in

permit numbers are appropriate. Emphasis will be placed on the current year’s fawn:doe ratio, but hunt success and buck:doe ratios will be evaluated as trends. Buck:doe ratios will receive less emphasis. Hunting opportunities should be maximized.

| Permits should | Decrease | Stay the Same | Increase |
|------------------|-----------|---------------|------------|
| Fawns:100 Does | Below 40 | 40 to 50 | Above 50 |
| Bucks:100 Does | Below 20 | 20 to 30 | Above 30 |
| Hunt Success | Below 15% | 15 to 20% | Above 20% |
| Population Trend | Declining | Stable | Increasing |

- D. For white-tailed deer, permits should be prescribed according to the table below. Confidence intervals, rather than point estimates, will be used when evaluating these parameters. Three-year trends in indices to deer abundance will be used to determine if changes in permit numbers are appropriate. Emphasis will be placed on the current year’s fawn:doe ratio, but hunt success and buck:doe ratios will be evaluated as trends. Buck:doe ratios will receive less emphasis. Hunting opportunities should be maximized.

| Permits should | Decrease | Stay the Same | Increase |
|------------------|-----------|---------------|------------|
| Fawns:100 Does | Below 30 | 30 to 40 | Above 40 |
| Bucks:100 Does | Below 20 | 20 to 30 | Above 30 |
| Hunt Success | Below 15% | 15 to 20% | Above 20% |
| Population Trend | Declining | Stable | Increasing |

- E. Where standard management procedures will not, have not, or are not likely to meet population management objectives, population management hunts may be authorized.

Procedure 5: To improve and enhance deer habitat

- A. Protect and maintain current water sources. Where water is lacking and the distribution and abundance of deer can be influenced, develop new water sources.
- B. Plan and coordinate with land management agencies to implement prescribed fires where important browse will be rejuvenated. Provide input for rehabilitation efforts after wild fires to assure habitat needs of deer are considered.
- C. Work in cooperation with land management agencies to assure forage use levels are appropriate and provide for the habitat structure and nutritional needs of deer.
- D. Work with land management agencies and private landowners to protect and enhance key deer habitat. Encourage the maintenance of deer migration corridors or other key habitats, including during planning for roadways and developments, as well as for standard land management activities. Reference the document "Habitat guidelines for mule deer: southwest deserts ecoregion" by the Mule Deer Working Group of the Western Association of the Fish and Wildlife Agencies.

Procedure 6. Forage monitoring

- A. Forage monitoring may be conducted when prescribed in the Alternative Deer Management Plan or other approved management document. Monitoring protocols will follow established standards and will be revised when standards are updated. Specific actions (e.g., antlerless harvest, habitat improvement) will be prescribed in the protocol. Forage monitoring protocols must be developed with the Game Branch and approved by Executive Staff.

Procedure 7. Predation management

- A. When a deer population declines below management objectives and predation is implicated as a cause, evaluate the influence of predation on the deer population. Predator management activities may be implemented following the guidance within the Commission's Predation Management Policy (DOM A2.31).