CHAPTER 14

SHARP-TAILED GROUSE (*Tympanuchus phasianellus*)

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I. STATUS –

A. Plains Sharp-tailed Grouse (*Tympanuchus phasianellus jamesi* Ord) –

1. Distribution – Plains sharp-tailed grouse (PSTG) occupy most suitable habitats in eastern Wyoming. Their distribution extends from the eastern slopes of the Bighorn Mountains and Laramie Range to South Dakota and Nebraska. PSTG densities are highest in portions of Sheridan, Johnson, Campbell, Platte, Goshen, and Laramie counties. The distribution and density of PSTG have increased markedly in Wyoming since the Conservation Reserve Program (CRP) was begun in the early 1980s.

2. Principal Habitats – PSTG occupy habitats ranging from lower elevation agricultural lands to mixed mountain shrub communities at mid-elevations. In general, the species is most abundant within open, grass-dominated habitats often lacking shrub cover. In contrast, Columbian sharp-tailed grouse (*T. p. columbianus* Ord) are more abundant in shrub-dominated foothills. PSTG dancing grounds are also found in a variety of habitats ranging from large openings in mountain shrub stands to wheat stubble strips. Many leks in southeast Wyoming are on grazed rangelands near CRP tracts that provide nest and escape cover. Lek sites are typically locations with open visibility, but relatively close to escape cover, and are usually on slight rises.

   Residual herbaceous vegetation is essential cover for successful nesting. Hens tend to select dense cover for nest sites, often in shrub stands that provide overhead concealment. PSTG nests in southeast Wyoming have been found within sand sage (*Artemisia filifolia*) and true mountain mahogany (*Cercocarpus montanus*). Nest sites are also commonly located within dense herbaceous stands such as CRP fields, but may be found in dense alfalfa or tall wheat stubble. Brood rearing habitats are typically dense, herbaceous vegetation associated with little or no shrub cover. These habitats provide escape cover and sustain higher densities of insects, the principal food consumed by young grouse.

   In Wyoming, PSTG are not known to move long distances between seasonal habitats. PSTG tend to occupy similar habitats throughout the year, but may relocate short distances to areas with greater shrub and tree cover during inclement weather. PSTG tend to congregate as mixed flocks in late fall. During winter, PSTG often loaf on open, wind-blown hilltops, probably for visual security.

3. Recent Population Trends and Studies – PSTG have not been studied extensively in Wyoming. Wachob (1997) probably conducted the most thorough investigation of the subspecies' ecology, focusing on use of CRP and associated habitats. The Department does annual surveys to document lek status and attendance. We are not aware of other research that has been conducted in Wyoming. .

4. Historic Data, Reliability of Historic Estimates – Historic data are limited to records of dancing ground locations and harvest reports. Little or no sharp-tailed grouse harvest was recorded within southeastern Wyoming before the CRP was begun.

A. Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus* Ord) –

1. Distribution – Columbian sharp-tailed grouse (CSTG) were historically reported near Pinedale (Fuller and Bole 1930) and more recently in Jackson Hole where the species has wintered on the National Elk Refuge (Igl 2003). Bohne (pers. comm.) also reports Columbian sharp-tailed grouse are occasionally observed in Jackson Hole and are present in the Salt River drainage in Idaho. However, the only breeding population currently known in Wyoming is found in the Baggs-Savery area (Carbon County) in the southcentral portion of the State. This is the northernmost distribution of a larger population inhabiting Northwest Colorado. CSTG are slightly smaller than PSTG and somewhat darker. Male CSTG weigh around 750 grams, females weigh slightly less.

2. Principal Habitats – CSTG occupy mixed shrub communities of mid-elevation foothills along the western slope of the Sierra Madre Mountain Range. The species prefers shrub-dominated habitats with diverse species and structural composition. Dancing grounds (leks) are typically located in mixed shrub stands, usually within small to moderate openings that afford greater visibility between the birds. However, some dancing grounds have been found within comparatively tall (0.5 – 1.5m), dense (30 – 80 percent) shrub cover. CSTG usually nest in dense shrub cover that is often associated with mountain snowberry (*Symphoricarpos oreophilus*). Brood rearing habitats characteristically have a higher composition of grasses and forbs and less total shrub cover than adjacent areas not used by broods.

   During fall, CSTG tend to congregate in larger flocks (coveys) and often occupy ridges, hilltops, and steeper slopes that blow free of snow. These habitats are usually open stands of (*Artemisia tridentata*) and antelope bitterbrush (*Purshia tridentata*), but vary in composition. During winter, CSTG often move into wooded, riparian habitats dominated by narrowleaf cottonwood (*Populus angustifolia*) and other deciduous trees and shrubs.

3. Recent Population Trends and Studies – Oedekoven (1985) studied distribution and seasonal habitat use of CSTG in Wyoming. Klott (1987) examined characteristics of sage grouse and CSTG nesting and brood rearing habitats. No other formal research has been done in Wyoming.

. Historic data and reliability of historic estimates – Historic information regarding the distribution and status of CSTG is limited to few isolated observations. No detailed surveys or studies were conducted prior to the 1980s.

II. CENSUS –

A. Dancing Ground (Lek) Surveys and Counts –

1. Rationale – Lek "surveys" are a less intensive form of monitoring done periodically to document status (active/inactive). Lek "counts" are conducted annually to determine peak attendance. Managers interpret both types of data to monitor population trends and assess responses to land use practices and other habitat modifications. Information about lek locations, status and attendance is also essential documentation to support environmental analyses and mitigation recommendations, for example, to assure land use plans adequately protect locations of dancing grounds. Trend data can be helpful to inform the public about population status.

2. Application –

a. Dancing Ground Locations – Plot locations of all permanent dancing grounds (leks) on either 1:24,000 or 1:100,000 USGS maps. Enter records of lek locations and annual count information in the Wildlife Observation System (WOS) database. Individual biologists may consider developing and maintaining an ACCESS database with additional fields to house their own records of dancing ground locations, survey data and other information. A statewide database similar to the one developed for sage grouse is not available specifically for sharp-tailed grouse. However, the Department's primary database is the WOS and all grouse records are to be entered into that system.

Regional databases should contain the following general fields: legal description accurate to quarter/quarter section, UTM location, year of discovery, warden and biologist districts, surface ownership, and a narrative description of the location, including a general description of the terrain, man-made features, and land management practices. The database should also contain fields for date, time of day, number of males and females observed, code for observation of sign only, indication whether ground or aerial observation, observation type (lek count, status survey, lek search, casual observation), observer name, and other comments or notes.

b. Aerial Surveys – Refer to Chapter 12 (Sage-grouse), Sections II.A.1.b.i (Aerial Searches) and II.A.2.b.iii. (Lek Status Surveys) for rationale, objectives and techniques. Plan flights within areas occupied by both sage grouse and sharp-tailed grouse to census leks of both species. Sharp-tailed grouse are more difficult to see from the air because they dance in unison, are smaller and lighter colored than sage grouse. Observers should become familiar with locations of STG leks to aid in their

detection from the air. The sight of grouse flushing can indicate a dancing ground is present within the area.

c. Ground Counts – A representative sample of leks within the range of a population should be counted 3-5 times annually during the breeding season. Data from these counts provide an indication of population size and trend. The remaining leks should be surveyed during the breeding season, at least once every 3 years to confirm location and status. These surveys also have some utility for monitoring general population trends.

STG begin displaying as early as mid-February, however counts and surveys should coincide with the peak of breeding activity between 1 April and 15 May. Begin counts 0.5-hour before sunrise and terminate them 0.5-half hour after sunrise. Some birds may remain on leks up to 2 hours after sunrise, however counts later than 0.5-hour after sunrise produce inconsistent results and may not capture the maximum attendance of that day. Each lek in the annual census should be counted 3-5 times. Allow 7-10 day intervals between counts. Tally numbers of males and females separately. Males have a yellow patch above the eye and pink to violet patches of bare neck skin. They are most easily distinguished as they dance or face off other males. Females typically walk onto leks and may assume a submissive posture on the ground before or during copulation. Establish systematic routes in areas where several leks are within short driving distances. To save time, routes can include both sage grouse and sharp-tailed grouse leks in areas occupied by both species.

Leks selected for the less intensive, status survey should be checked at least once every 3 years. The best time to conduct status surveys is the 7-10 day interval when maximum numbers of females are typically recorded during the annual attendance counts. Observers can also examined the location of a lek for sign of activity (droppings and feathers) anytime during the season to determine its status.

During surveys and counts of known leks, look for new or previously unrecorded leks. Search within suitable habitats by periodically stopping and listening for vocalizations (turn engine off), and by glassing for birds. New dancing grounds may also be discovered during aerial surveys that cover broader regions and more remote locations. If evidence of a lek is observed, record the location and number of birds. Return the following year to confirm the site is a lek before formally designating it such.

d. Lek Routes – Lek routes serve the following major purposes: 1) search for evidence of breeding activity and lek locations; and 2) count attendance at known and newly discovered leks along each route. Lek routes can be effective in locations where road networks provide satisfactory access throughout suitable habitats. However, the technique can require a substantial commitment of personnel depending on the size of the area surveyed and the number of routes. Lek routes have been established to monitor trends and distribution of STG populations in southeast

Wyoming. Indices that were correlated with fall harvest have been developed from lek route data and mid-summer brood surveys.

Attachment 1 is the protocol for lek routes in southeast Wyoming. Standard routes of 20 miles each were established along suitable road networks. The same routes are followed each year. The observer stops for timed observation periods of 2-3 minutes each at ½ mile intervals. All grouse observed or heard are recorded on data sheets (Attachment 2). Procedures are generally the same as described in Section II.A.2.c (Ground Counts). In southeast Wyoming, lek routes are run during the peak of dancing activity, typically the last two weeks of April. Optimum dates can vary with location and climate. If the time when attendance normally peaks is unknown, run lek routes on the dates listed in Section II.A.2.a, until sufficient information has been collected to adjust the dates based on local data. Begin each route at least 45 minutes before official sunrise to ensure the entire route can be completed before birds begin deserting leks. Conduct lek routes annually if trend data are desired.

Attendance is also counted at leks along each route. If a lek is not visible from a ½-mile observation point, the observer should drive to a vantage point from which an accurate count can be made, then resume driving along the established route (stopping at ½-mile intervals). To increase the chance peak attendance is recorded, it is necessary to conduct multiple counts at 7-10 day intervals, as described for regular lek counts (see Section II.A.2.c.). At a minimum, record the following data: 1) time; 2) lek location (indicate whether an ocular or auditory determination was made); 3) number male and female grouse on the lek; and 4) weather conditions (temperature, wind speed, cloud cover). If possible, drive lek routes on calm, clear days. Also indicate if incomplete counts, estimates, or unclassified grouse were recorded. If displaying grouse are heard, indicating a possible lek, estimate the location so the lek can be visually confirmed and counted during subsequent visits.

Maintain data in a permanent file. Permanent records of dancing ground locations are maintained in Biologist's files and the Wildlife Observation System (Refer to Sections II.A 2 and II.B).

3. Analysis of Data – For direction regarding calculation of local population densities, Refer to Chapter 12 (Sage-grouse), Section II.A.2.c (Breeding Surveys).

The sex ration of adults in spring is approximately 52 percent males and 48 percent females (Hillman and Jackson, 1973; Johnson and Henderson, 1965; Grange, 1948; Rokel et al., 1972; and Klett, 1953). Nesting success ranges from 10-80%, depending largely on the amount and quality of residual cover. Residual vegetation from the prior growing season provides concealment from nest predators including various birds and ground squirrels. Typical clutch size is 10-13 eggs. Brood sizes average 2 to 5 chicks in mid-summer, but also depends largely on the quality and quantity of brood rearing habitats (Hart et al. 1950).

4. Disposition of Data – Refer to Chapter 12 (Sage-grouse), Section II.A.2.c (Breeding Surveys).

B. Locating Unrecorded Dancing Grounds –

1. Rationale – Locations of all permanent dancing grounds should be recorded to provide a basis for assessing grouse distribution, local population densities, and responses to long-term habitat changes. These records are essential documentation for environmental impact reviews and for recommending protective measures and other mitigation.

2. Application – Observers can detect lek locations most effectively by listening for auditory cues. On still mornings, the "flutter-jumps" and "cooing" displays of sharp-tailed grouse can be heard up to a mile away. Grouse often dance both morning and evening during the breeding season. Leks can be located visually when birds are seen "flutter-jumping." or by following flying birds as they move toward lek locations in spring. Sharp-tailed grouse have also been observed dancing during a "false breeding cycle" in the fall, triggered by decreasing day length usually from mid-September through late October. Recheck these locations in spring to confirm they are dancing grounds.

3. Disposition of Data – Refer to Chapter 12 (Sage Grouse), Section II.A.1.d (Locating Leks).

C. Production Surveys –

1. Rationale – Managers often use data from brood counts to identify and document important habitats that warrant protection. Brood counts may also indicate the availability of birds during the upcoming hunting season, so the information can be used to develop hunting season forecasts for public distribution. However, the data are not useful for developing harvest management strategies because the harvest mortality of this and most other upland game species is compensatory to natural mortality. In other words, harvest has little or no impact on the number of grouse that survive to the next breeding season and reproduce successfully. Any sharp-tailed grouse observed during the late summer should be recorded and the information entered on the Wildlife Observation System. Grouse are often observed during preseason antelope classifications. If the data will be used to determine average brood size and production, all sharp-tailed grouse must be recorded, not just those with broods. Personnel making observations in late summer should distinguish male and female sharp-tailed grouse. A small area can be sampled adequately if it is searched intensively.

2. Application – Drive or walk slowly through brood rearing habitats to locate grouse. In many areas, sharp-tailed grouse are difficult to observe from roads. Binoculars are useful to spot grouse and identify hens. Once a brood is located, flush the birds to assure they are counted accurately. A well-controlled bird dog can be very helpful

because young birds tend to sit tight. If a dog is used, note this on the data sheet and in any report that summarizes or discusses the results.

3. Analysis of Data – Refer to Chapter 12 (Sage-grouse), Section II.B (Brood Production).

4. Disposition of Data – Refer to Chapter 12 (Sage-grouse), Section II.B (Brood Production).

D. Harvest Surveys –

1. Rationale – Harvest data provide a means to assess population trends, changes in hunting pressure, public interest, and survival of young to fall. The information is used to answer public questions and it can also provide additional documentation for analyzing impacts of proposed developments or land use plans. To some degree, harvest data may be consulted for hunting season recommendations, particularly when dealing with social perceptions and distribution of harvest opportunity. Harvest data are also used to compile economic data for various Department reports.

2. Application –

a. Harvest Mail Survey – This is the best method to obtain a consistently adequate sample of harvest information from large areas. Refer to Appendix III.

b. Field Checks and Check Stations – Field checks and check stations are generally not effective means of collecting harvest data from sharp-tailed grouse hunters. Hunter densities are usually much too sparse to obtain adequate samples. Check stations are also expensive to operate and yield little harvest data because of because of comparatively light hunting pressure and numerous egress roads in the areas where sharp-tailed grouse are hunted. Check stations could be justifiable if an area is being intensively studied. When check stations are operated for big game, pheasants or other species, personnel should record any harvest of sharp-tailed grouse they encounter.

E. Wing Barrels – Although wing barrels have been used extensively in Wyoming to collect blue grouse and sage grouse wings, barrels may not be as efficient for collecting sharp-tailed grouse wings. Considerably more barrels would be needed to adequately cover egress roads from agricultural areas in which most hunting is done. Personnel would also have to travel greater distances and expend more time retrieving wings. However, barrels have been used successfully to collect sharp-tailed grouse wings in northwest Colorado. In some regions, barrels may be placed to collect wings of both sage grouse and sharp-tailed grouse.

1. Application – If wing barrels are used to collect sharp-tailed grouse wings, areas of locally heavy harvest pressure should be targeted to obtain adequate samples. Data from wings can provide additional trend and age information. Place wing barrels at junctions of major egress routes and check them at least weekly.

2. Analysis of Data – On immature birds, appearance of the outer two primaries is rougher, worn and faded by comparison to primaries one through eight. The outer two primaries of adult birds will appear new, dark and rounded on the top.

F. Age and Sex Determinations –

1. Age Determination – Techniques are not as well described for determining ages of juvenile sharp-tailed grouse as they are for aging sage grouse. Ages are roughly classified as juvenile, immature (yearling) and adult based on the rate and pattern of primary molt. Sharp-tailed grouse chicks probably replace juvenile primaries beginning the first month of life and continue at a rate of roughly one feather every five days. The two outermost primaries (#9 and #10) are retained through first winter and replaced during the post-nuptial molt, by the second winter. In the fall, juveniles are separated from adults based on the appearance of the outer 2 primaries (narrower and more sharply pointed than adult primaries). These primaries will be severely faded and worn following the first winter, and this characteristic is used to distinguish yearling birds (Refer to Chapter 12 (Sage-grouse), Section II.B.3 (Wing Collections) and Chapter 12, Appendix A (Key fro Age/Sex Identificatio from Wings of Hunter-harvested Sage-grouse). The post-nuptial molt of juvenile sharp-tailed grouse is similar in rate and pattern to that of other grouse species (Johnsgard 1973). However, the post-nuptial molt is apparently associated with endocrine changes and may be somewhat earlier in males. Some yearling birds harvested in late fall may already have adult plumage.

2. Sex Determination – External characteristics of male and female sharp-tailed grouse differ only slightly. Sex can be distinguished with about 87 percent accuracy based on the appearance of the two central retrices (tail feathers). The markings on these feathers have a strongly transverse pattern in females. Markings of male grouse are nearly parallel to the rachis (feather shaft).

   Henderson, et al. (1967) also identified differences in crown feather patterns. Individual crown feathers of males are uniformly dark with a buff-colored edge. The crown feathers of females have crossbars with alternating light and dark bands.

   Crown feather markings of males may suggest a light crossbar, particularly at the tip, but in gross aspect, show a V-shaped dark area. Crowns of males are dark and relatively uniform in appearance. Crowns of females appear blotchy and barred. Novices should examine individual feathers on the crown rather than the gross crown patterns. Identification of ovaries and testes is the most reliable method of determining sex. Gonadal location and appearance is the same for all grouse.

G. Mortality Surveys –

1. Rationale – Environmental factors that limit populations of sharp-tailed grouse are undoubtedly the same factors limiting other species of upland game birds. Predominantly, they include quality of nesting habitat, post-hatch weather, and quality

of brood rearing habitat. Cycles in predator/prey populations may also have some bearing, however exposure to predation is largely determined by habitat quality. For example, predation on hens, eggs and young chicks is ever-present and related to the quality of nesting habitat.

Cold, wet weather after hatching is probably the most significant source of chick mortality in any given year. However, the capability of sharp-tailed grouse to survive harsh weather is also influenced by habitat quality. Accidents such as drowning in stock tanks, collisions with fence wires, and accidental harvest are a minor source of mortality, having little or no impact at the population level. The influence of illegal harvest is also believed to be minor, though it is largely unknown. Some hunters within Carbon County (where the season is closed) mistake Columbian sharp-tailed grouse for sage grouse or blue grouse, but it's unlikely this illegal harvest has any significant effect. Parasites of sharp-tailed grouse have been identified and studied, and some related mortality has been documented. However, other grouse species are known to tolerate rather high parasite loads, generally with little outward sign of problems. West Nile Virus has reportedly killed some prairie sharp-tailed grouse in South Dakota.

Annual mortality studies of upland game species are costly and generally do not provide information that is useful for management. Accordingly, the Department does not conduct such studies, except where intensive research involving radio-tagged birds is already underway. For example, West Nile Virus was detected in a sample of radio-tagged sage grouse found dead in northeast Wyoming (Naugle et al. 2006). Mortalities of sharp-tailed grouse should be documented when they are encountered during other activities in the field. If unusually large numbers of dead grouse or other unusual circumstances are observed, some of the birds should be collected, preserved and sent to the Department's Veterinary Lab for necropsy. Sometimes, events such as these are an indication of more serious environmental problems.

2. Application – Record information about grouse mortalities on Wildlife Observation Forms. Include the location, age, sex, apparent cause of death, number of dead and disposition of carcass(es). Photograph carcasses for which the cause of death cannot be readily determined, or appears to be unusual. If the carcass is fresh, deliver it immediately to the Department lab for post-mortem examination.

3. Analysis of Data – In the absence of a structured sampling design, natural mortality data have little value for population analysis. However, information about the relative importance of various mortality factors could help managers identify environmental problems and the need for additional research or special management practices.

4. Disposition of Data – Mortality observations and associated information are entered into the Wildlife Observation System Database. Any significant or unusual mortality should be discussed in the region's small and upland game job completion report (if one is produced), or in a special report. The report should recommend appropriate actions to address significant sources of mortality other than from natural causes.

III. DISTRIBUTION AND MOVEMENT –

A. Field Observations –

1. Rationale – Detailed information about a species' distribution and movements is essential to develop any management program. Grouse distribution and movement data are useful for defining management units and identifying important habitats.

2. Application – Record all observations of sharp-tailed grouse, including dead grouse (see Section II.G., Mortality), on wildlife observation forms. Records of dead grouse are useful distribution data. In addition, age and sex data and food habits information can be obtained from grouse carcasses. Also record observations of sign including tracks, feathers, breeding display sounds, etc. Note on the form these are indirect observations.

   The best times to observe sharp-tailed grouse are when environmental conditions such as drought or snow cover cause them to concentrate. Grouse also tend to concentrate following storms. The best conditions for making observation are clear, calm days with good visibility.

3. Analysis of Data – Refer to the corresponding sections of Chapter 12 (Sage-grouse), Sections II (Population Monitoring and Assessment) and III (Trapping and Marking).

4. Disposition of Data – Field personnel are responsible for reporting grouse observations. Wildlife Observation System forms (WOS forms) should be forwarded monthly to the area biologist. The area biologist is also responsible for maintaining a permanent file of sharp-tailed grouse observations, and annually reporting information about distribution and numbers of grouse observed.

IV. TRAPPING, MARKING AND TRANSPLANTING –

1. Trapping – The most common reason for trapping sharp-tailed grouse is to mark them for research purposes. Funnel traps and cannon-nets have been used successfully. In South Dakota, yellow ear corn and milo were effective bait to lure birds into traps or within range of cannon nets during winter. Although cannon nets are productive, associated mortality can be high. For this reason, they are not generally recommended. Drift fences and funnel traps can be set up to trap grouse on dancing grounds. Long-handled nets have been used to catch grouse in winter, when they burrow under the snow to roost at night. Net-guns have also been used to catch smaller numbers of grouse in some situations.

2. Marking – The following devices and methods have been used successfully to mark sharp-tailed grouse: Aluminum butt-end leg bands, colored plastic leg bands, poncho markers, and plumage dyes (refer to Appendix VII – Marking Techniques).

3. Transplanting – Prairie sharp-tailed grouse are currently distributed throughout suitable habitats in Wyoming. Populations are apparently at the carrying capacity of the available habitat. Columbian sharp-tailed grouse are also at the limit of their available range.

Accordingly, there is no reason to relocate prairie sharp-tailed grouse. Pending completion of adequate habitat inventories, it may be possible to identify some range expansion opportunities as a conservation measure for Columbian sharp-tailed grouse. However, this is a low priority.

V. HABITAT MANAGEMENT –

Sharp-tailed grouse habitat typically consists of healthy, native grasslands interspersed with brushy cover. However, the species has adapted well to moderate amounts of agricultural conversions, provided sufficient native or tame grass cover remains throughout the area. Optimum habitats include lightly grazed mid- and tall grass prairie interspersed with shrub-lined draws, water sources, and riparian margins in good condition. Since sharp-tailed grouse utilize a variety of food and cover sources, vegetation structure is probably more important that species composition. Although populations of sharp-tailed grouse are most commonly limited by the quantity and quality of suitable nesting habitat and brood rearing cover, other seasonal habitats can be important.

To manage sharp-tailed grouse habitats effectively, managers should first evaluate the quality and availability of seasonal habitats, and then prescribe specific treatments or land management practices that improve conditions thought to limit grouse populations. In general, the most important considerations are sound rangeland management and retention of sufficient permanent cover. Riparian margins of water sources are important sources of food, nesting and escape cover. These areas should be at least partially fenced to prevent excessive trampling and grazing by domestic stock. Food plots, shelterbelts, and agricultural fields can be important sources of food during late summer, fall and winter and are used to a greater extent by grouse if permanent cover is liberally interspersed nearby. Controlled burning and herbicide applications are useful treatments to improve grouse habitats impacted by advanced succession or excessive shrub cover. Shelterbelts and other habitats dominated by trees or tall shrubs can be exceptionally valuable sources of food and shelter during winter.

VI. FOOD HABITS –

Sharp-tailed grouse have a more diverse and adaptable diet than other grouse in Wyoming. This is especially true in winter. However, the composition of sharp-tailed grouse diets in Wyoming has been described only in general terms because of the species' wide distribution and the diversity of habitats it occupies. Because the species' diet is so adaptable, it's questionable whether information from a comprehensive study of food habits would have practical management applications. However, there may be some value in determining regional food preferences to more clearly understand habitat preferences. This information would enable managers to more accurately predict the influences of land use changes, and could improve technical documentation for habitat evaluations and treatment recommendations. Two standard techniques that can be applied to study food habits of sharp-tailed grouse are:

1. Crop analysis
2. Fecal analysis

Personnel from the Department's Laboratory should be involved with all phases of analysis after samples have been collected and grossly examined. Various adaptations of the laboratory techniques are described by Litvaitis et al. (1994:266) and in references cited by the authors. Whenever food habits are studied, the project should span at least three years and employ both techniques (crop and fecal analysis). Habitats, including agricultural crops and cover types, should be accurately mapped each year of the study. Voucher collections of seasonally available plant species are also necessary (a separate collection should be assembled representing plants available each season of the annual cycle). Finally, an accurate map and record of sample locations should be maintained.

Though untested on sharp-tailed grouse in Wyoming, the two standard techniques have been successfully applied to study food habits of grouse in other states:

VI. DEPREDATION CONTROL – Sharp-tailed grouse are not known to depredate crops or cause other damage in Wyoming. Therefore, depredation control is not necessary.

VII. BIBLIOGRAPHY –

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ATTACHMENT 1

Sampling Protocol for Sharp-tailed Grouse Lek Surveys.

Thank you for volunteering to assist with the annual sharp-tailed grouse survey in eastern Wyoming. This survey gathers data to monitor sharp-tailed grouse abundance, trends, and distribution. The past surveys have been extremely successful, and have yielded much needed information regarding the effects of the CRP program on prairie dependent species.

Materials Necessary

- Vehicle (Department Vehicles)
- Binoculars (if you don't have these, see the Survey Coordinator)
- Data sheets and clipboard (sheets provided)
- Copy of your route map (provided)
- Dress appropriately (you will be standing outside your vehicle for 2 minute intervals).

Routes are approximately 20 miles and are set up to sample varying densities of CRP (Conservation Reserve Program) lands. Copies of route maps and sampling protocol will be distributed to all personnel conducting surveys.

Survey Period – Conduct all surveys between April 8th and April 26th. Monitor the weather and select "calm" mornings if possible to run survey routes. Our objective is to obtain at least one good run of each route. Lek attendance will be greatest on days of fair weather, and the observer's ability to detect leks will also be greater.

Survey Time – You should arrive at the starting point of your route no less than 45 minutes before sunrise. Sunrise tables will be provided. On average, the sun will rise at approximately 0610 during April in eastern Wyoming. This means you have to be on site, ready to begin *no later than 0525.* It is critical that you begin your route at this time. The grouse are active by then, and they disperse around 0730.

Methods – Stop the vehicle at ½ mile intervals, on topographic rises or "hill tops" if possible. Shut off the engine, get out, and scan the surrounding land 360° with your binoculars. Look for concentrations of dancing males. Leks are often found by listening for the birds. Listen for the distinctive sounds made by dancing male sharp-tails (the Survey Coordinator has a tape of these sounds). Remain at each stop no more than 2-3 minutes. *If you remain longer, you will not complete your route in the allotted time.*

Count the total number of grouse in attendance, and then attempt to classify and count each sex. Determination of sex can be difficult. Birds seen dancing are always males. The grouse that are not dancing may be females, or inactive males. Unless you can positively identify the sex of each bird, record these as unclassified. Mark the location of the lek on your map (be especially careful to do this as accurately as possible).

ATTACHMENT 2

DATA FORM

SHARP-TAILED GROUSE LEK SURVEYS Date 1: _____ Date 2: _____

Instructions: Record only sharp-tailed grouse observations. Enter each individual observation on a separate line. Record numbers and locations of all grouse observed, including those seen away from leks. Record all times using military (24-hour) notation. Example – First observation. Assign OBS # 1 (then 2, 3, and so on). Identify the location of each observation by marking dots and corresponding observation numbers on the route map. Fill in the necessary information (with the OBS #) on your data sheet. Make sure your map locations are correct. *All recorded observations must correspond (OBS #) to a MARKED location on your route map, or they are of no value*. This system eliminates the need to determine legal descriptions or UTMs in the field, thereby helping the observer stay on schedule.

OBS #	TIME	MALES	FEMALES	UNCLASS	HABITAT*	ANIMAL ACTIVITY	NOTES
1	0632	7		5	AGR	COURTSHIP	BIRDS FLUSHED BY NORTHERN HARRIER
2	0636			2	RNG	LOAFING	

Habitat Codes:

(CRP) – Conservation Reserve Program lands
(AGR) – Agricultural lands (wheat fields, etc.)
(RNG) – Rangelands (pastures)