



AGENDA – EMERGENCY SPECIAL MEETING

MEETING OF THE MINTURN TOWN COUNCIL
Minturn Town Center
302 Pine Street

Meeting to be held via Zoom Conferencing and call-in.

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Minturn, CO 81645 • (970) 827-5645 Friday April 24, 2020

Regular Session – 1:00pm

Work Session – 1:30pm

(Work Session will follow the meeting, time is approximate)

MAYOR – John Widerman

MAYOR PRO TEM – Earle Bidez

COUNCIL MEMBERS:

Terry Armistead

George Brodin

Brian Eggleton

Eric Gotthelf

Gusty Kanakis

When addressing the Council, please state your name and your address for the record prior to providing your comments. Please address the Council as a whole through the Mayor. All supporting documents are available for public review in the Town Offices – located at 302 Pine Street, Minturn CO 81645 – during regular business hours between 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

Regular Session – 1:00pm

1. Call to Order

- Roll Call
- Pledge of Allegiance

2. Public comments on items which are ON the consent agenda or are otherwise NOT on the agenda as a public hearing or action item. (5-minute time limit per person)

3. Approval of Consent Agenda

A Consent Agenda is contained in this meeting agenda. The consent agenda is designed to assist making the meeting more efficient. Items left on the Consent Agenda may not be discussed when the Consent Agenda comes before the Council. If any Council member wishes to discuss a Consent Agenda item please tell me now and I will remove the item from the Consent Agenda and place it in an appropriate place on the meeting agenda so it can be discussed when that item is taken up by the Board. Do any Council members request removal of a Consent Agenda item?

- North West Colorado Council of Governments letter of support Water Quality/Quantity – Metteer
- Colorado Parks and Wildlife Letter of Support for the proposed Mountain Lion Management Plan – Metteer

4. Approval of Agenda

- Items to be Pulled or Added
- Declaration of Conflicts of Interest

PUBLIC HEARINGS AND/OR ACTION ITEMS

5. Public Hearing/Action Item: Resolution 16 – Series 2020 a Resolution approving a plan to waive Commercial water bills as proposed

COUNCIL INFORMATION / UPDATES

6. Staff Updates

- Manager's Report
- Future Agenda Items

MISCELLANEOUS ITEMS

7. Future Meeting Dates

- a) Council Meetings:
- May 6, 2020
 - May 20, 2020
 - June 3, 2020

8. Other Dates:

9. Adjournment

Work Session – 1:30pm

- **Discussion on proposed Fiscal Year 2020 Budget changes**



To: Mayor and Council

From: Jay Brunvand

Date: April 24, 2020

Agenda Item: Letter of Support – Northwest Colorado Council of Governments Water Quality/Quantity

REQUEST:

Council is asked to approve a letter in support to the Northwest Colorado Council of Governments Water Quality/Quantity referencing subsequent phases of the economic stimulus legislation. NWCCOG-Q/Q has asked for support from our legislators to include in future stimulus legislation funding for water and wastewater systems to take advantage of the backlog of water infrastructure to fund shovel-ready projects.

INTRODUCTION:

NWCCOG-Q/Q and the communities they represent are working to protect our safe and reliable water and wastewater services. However, the reality of the COVID-19 Pandemic has shifted already stretched funding by shifting some funds to fight the effects of the Pandemic. This request is an effort to secure alternative funding sources to fill the hole created by the local funding crisis.

ANALYSIS:

N/A

COMMUNITY INPUT:

BUDGET / STAFF IMPACT:

N/A

STRATEGIC PLAN ALIGNMENT:

In accordance with Strategy #1 to practice fair, transparent and communicative local government.

RECOMMENDED ACTION OR PROPOSED MOTION:

Motion to direct the Mayor to sign the letter of support on behalf of the Council and citizens of the Town of Minturn.

ATTACHMENTS:

- Letter of Support



Town Council
Mayor – John Widerman
Mayor Pro Tem – Earle Bidez
Council Members:
Terry Armistead
George Brodin
Brian Eggleton
Eric Gotthelf
Gusty Kanakis

April 24th, 2020

Dear Representative Joe Neguse:

I am writing on behalf of the Northwest Colorado Council of Governments Water Quality/Quantity Committee (QQ), which includes local governments and water and sanitation districts in Eagle, Grand, Gunnison, Pitkin, and Summit Counties, to request that subsequent phases of economic stimulus legislation address the economic impacts from the coronavirus pandemic on water and wastewater systems and take advantage of the backlog of water infrastructure to fund shovel-ready projects.

As the nation continues to grapple with the increasingly devastating effects from the coronavirus, clean water agencies around the country are working tirelessly to ensure their clients continue to have safe and reliable water services and to protect the health and safety of their workforce. However, the economic impacts of coronavirus are expected to be enormous. Decreased revenue from households less able to pay their bills, as well as the sudden drop-off in industrial and business water usage could lead to billions of dollars in lost revenue for water and wastewater systems nationwide. Water systems will incur additional costs for ongoing emergency operations during the course of the pandemic. Without federal assistance, these costs will need be passed on to local customers through higher water rates.

NWCCOG anticipates a dramatic reduction in regional tourism, the primary economic driver in headwaters counties, due to coronavirus. This will in turn challenge our local budgets, including for water utilities, especially as our region continues to waive water cut offs for lack of payment.

In recognition to this unprecedented situation, we urge you to include the following in coronavirus response legislation:

- Federal assistance to help water and wastewater utilities maintain services to low-income and struggling households during the pandemic;
- Funding for shovel ready water and wastewater infrastructure projects that may provide critical employment and economic stimulus;
- Federal assistance to help mitigate lost utility revenues due to sharply reduced water demand. The National Association of Clean Water Agencies (NACWA) estimates that nationwide, public clean water agencies will face a \$12.5 Billion loss of revenue as a result of the pandemic; and

- Inclusion of strong funding for all utility providers, regardless of ownership, through established water infrastructure investment programs like the SRFs, WIFIA, USDA Rural Development, the Bureau of Reclamation's Title XVI-WIIN Water Reclamation and Reuse Program, and other water infrastructure grant programs to help fuel local economic activity while simultaneously strengthening America's infrastructure.

Across the QQ region, tourism accounts for approximately 48% of the total jobs in the region. Investing in regional water infrastructure would aid in putting people back to work who might otherwise be disadvantaged by the anticipated economic decline from loss of tourism and other local dollars.

Water and wastewater professionals are among the nation's essential critical infrastructure workforce who remain on the job to help fight and bring an end to this pandemic. We ask Congress to recognize the needs of utilities and provide federal assistance to address ratepayer burdens and make utilities whole for doing their part to respond to the coronavirus pandemic.

We thank you for your consideration of the water sectors requests and we appreciate all you are doing to help Americans during these challenging times.

Sincerely,

John Widerman
Mayor
Minturn Town Council



To: Mayor and Council

From: Michelle Metteer

Date: April 24, 2020

Agenda Item: Letter of Support – Colo Dept of Wildlife West Slope Mtn Lion Plan

REQUEST:

Council is asked to approve a letter in support to the Colorado Dept of Wildlife proposed Western Slope Mountain Lion Management Plan.

INTRODUCTION:

The Colorado Dept of Wildlife has proposed a Mountain Lion Management Plan for the western slope of Colorado. This plan seeks to realign unit boundaries as well as lion population management within those boundaries in order to provide a healthy and stable lion population. Minturn lies within this management plan territory range and will be affected by any Plan implementation.

ANALYSIS:

The current CPW Mountain Lion Management Plan is approximately 15 years old and seeks to promote the “highest mountain lion populations possible.” What has been learned from this approach is that “highest populations” vs “stable populations” achieve very different results. Aiming for the “highest” populations possible has resulted in increased mountain lion to human interactions which often leads to the euthenization of the animal. To decrease the lion to human interactions and thus, decrease euthenization, CPW is recommending an updated approach with the goal of “stable” population numbers, not highest population possible. This new approach will allow Colorado Wildlife Managers the ability to adjust hunting tag allocations to better reflect the new goal and subsequently (hopefully) see a decrease in euthenization.

COMMUNITY INPUT:

BUDGET / STAFF IMPACT:

N/A

STRATEGIC PLAN ALIGNMENT:

In accordance with Strategy #1 to practice fair, transparent and communicative local government.

RECOMMENDED ACTION OR PROPOSED MOTION:

Motion to direct the Mayor to sign the letter of support on behalf of the Council and citizens of the Town of Minturn.

ATTACHMENTS:

- Letter of Support
- Draft Colo Dept of Wildlife West Slope Mountain Lion Plan



Town Council
Mayor – John Widerman
Mayor Pro Tem – Earle Bidez
Council Members:
Terry Armistead
George Brodin
Brian Eggleton
Eric Gotthelf
Gusty Kanakis

April 24th, 2020

Colorado Parks and Wildlife
1313 Sherman St.
Denver, CO 80203

Wildlife Commissioners,

The Town of Minturn would like to voice their support of the proposed West Slope Mountain Lion Plan. Minturn and the surrounding areas have seen an increase in human-mountain lion conflict over the last several years and we believe that this updated plan provides the flexibility to more appropriately manage the mountain lion population and any subsequent human-lion conflicts.

The new proposal provides several new management strategies that will allow for a holistic management of lions across the west slope of Colorado. Primary among these is the realignment of management unit boundaries to more accurately reflect the actual home ranges of mountain lions. Along with the realignment of units the decision to manage lions on a harvest limit basis instead of a game management unit quota basis allows more flexibility and allows harvest to occur where necessary.

The general concept of maintaining the mountain lion population at a stable population level throughout most of the west slope is an appropriate management objective. Utilizing both the total mortality indexes and the adult female harvest as parameters to determine that populations are within that stable range is prudent.

Furthermore, The Town of Minturn lies within the Special Management Area described in this plan. We, as a town, recognize that interactions between people and lions have seen a dramatic increase in the last ten years. The safety of the residents of our town remains a priority, and we understand that an update to current lion management is needed.

As presented, the West Slope lion management plan is a significant step in the right direction and will help provide the flexibility in managing towards a more stable and biologically sound lion population in our area.

Sincerely,

John Widerman
Mayor
Minturn Town Council

March 13-April 30, 2020 online review
Colorado Parks and Wildlife DRAFT

COLORADO WEST SLOPE MOUNTAIN LION (*Puma concolor*)
MANAGEMENT PLAN
Northwest and Southwest Regions



Spring 2020

Colorado Parks and Wildlife



**LIVE LIFE
OUTSIDE**

Approved by the Parks and Wildlife Commission on xx

Executive Summary

Colorado Parks and Wildlife's (CPW) aim for mountain lion management on the West Slope of Colorado is to preserve, protect, enhance and manage mountain lions for the use, benefit, and enjoyment of the state's citizens and visitors. CPW strives to ensure that mountain lions continue to exist in relatively stable numbers in western Colorado for current and future generations to enjoy through hunting, occasional observation, and for their scientific, ecological and aesthetic value. This mountain lion management plan provides the framework for how CPW will achieve this goal in the Northwest and Southwest CPW Administrative Regions and replaces all existing West Slope Data Analysis Unit (DAU) lion management plans.

This West Slope Mountain Lion Management Plan operates with the assertion that CPW's thirteen DAU plans in western Colorado, each written in 2004 to describe a single lion population, are too small in spatial scale to properly manage solitary, low-density, wide-ranging carnivores like mountain lions. In many cases, sample sizes of mountain lion mortality data have been too small to reduce uncertainty in management conclusions and have not effectively informed past DAU objectives. This plan increases the size of the management unit at which analysis and evaluation will occur to a more appropriate scale: the CPW Administrative Northwest and Southwest Regions. As under recent lion management, hunter harvest will continue to be allocated across groups of Game Management Units (GMUs), but the size of each of these groups will be increased.

This plan incorporates recent developments in mountain lion research that have been published in the peer-reviewed literature over the last 16 years. Many of these advancements are discussed in this document and some provide integral parts of the framework of this plan. The monitoring thresholds included in this plan are supported by a strong body of research and management citations. In addition, this plan outlines the process of annual review, evaluation, and adjustment to management.

Regional Objectives: The management objective in both Regions is to maintain a relatively *stable* mountain lion population. This replaces current objectives in the thirteen individual DAUs, two of which are managed for suppression of the population. Allocating allowable harvest mortality across the Region provides local managers flexibility in distribution of harvest limits, while Regional thresholds ensure the maintenance of population stability at the larger scale.

Regional Annual Data Collection and Monitoring Thresholds

Two annual monitoring thresholds are established in this plan and will be evaluated independently for each West Slope Region:

- 1) *Adult Female Harvest Composition Threshold:* Adult female composition in total harvest will not exceed 22% in any year in each Region, excluding the Glenwood Special Management Area**

- 2) Total Human-Caused Mortality:** *The 3-year average of total human-caused mortality will not exceed 17% of the extrapolated abundance index from the resource selection function for each Region, excluding the Glenwood Special Management Area*

The following totals do not include the Glenwood Special Management Area

Northwest Region total human-caused mortality threshold: 269 lions

Southwest Region total human-caused mortality threshold: 284 lions

Proposed 2021-2022 Northwest Region harvest objective: 243

Proposed 2021-2022 Southwest Region harvest objective: 185

Historic 2018-2019 Northwest Region harvest limits: 317

Historic 2018-2019 Southwest Region harvest limits: 194

Annual evaluation of adult female harvest composition allows assessment of what the population trajectory might be based on the selective nature of hound hunting and the proportional abundance of each age/sex class on the landscape. Limiting adult female harvest also acts to protect the component of the population responsible for reproduction. Use of a total human-caused mortality threshold acknowledges the biological importance of other human-caused lion mortality factors beyond harvest and sets a ceiling for that maximum acceptable mortality that interacts with information derived from adult female composition evaluations.

By complementing different aspects of our understanding of mountain lion population performance in each Region, these monitoring thresholds are designed to interact and modulate each other during annual analysis. If either threshold is exceeded, this plan lays out clear and supportable steps that will be taken with harvest management to return the population trajectory to a stable one. Additionally, as part of the West Slope plan, CPW will begin the initiation of a mark-resight lion density monitoring program. Survey areas on the West Slope would be used to confirm and align observed lion densities with abundance index projections generated from Regional resource selection function output.

Exceptions to Monitoring Thresholds: Retaining viable mountain lion populations for future generations, like with any other big game species, does not require populations to exist at their maximum potential. In GMUs 43, 44, 45 and 444 near Glenwood Springs, human safety and social tolerance levels is a higher management priority than lion abundance. This is balanced with the overarching goal, at the much larger Northwest Regional scale, of maintaining a stable lion population. Consequently, this plan establishes the Glenwood Special Management Area (SMA) with its own management objectives where the Regional monitoring thresholds will not be applied.

Management Plan Public Involvement:

In developing this plan, CPW gathered input from the public through several channels. To inform elements of the plan specific to the Northwest and Southwest Regions, CPW held 12 public meetings on the West Slope and will hold 3 on the Front Range in addition to direct public outreach by staff. This plan was also posted on the CPW webpage for 30 days to collect additional public comments. *Additional meetings and public input are occurring during the time this draft plan is online for review. CPW will update and summarize public input from all aspects of the initial drafting of this plan following the 30 day review period. That will be included as Appendix E of the West Slope plan.*

Appendices to this plan should be referenced for comprehensive explanations on the following topics:

Appendix A: Mountain Lion Life History, Ecology and Monitoring

Appendix B: Mountain Lion Management History in Colorado and the West Slope

Appendix C: Mountain Lion Resource Selection Function model

Appendix D: Literature Cited and References

Appendix E: Public Outreach Process and Results *(to be developed after 30 day review period)*

Acknowledgments: The development of this West Slope Mountain Lion Management Plan involved the active participation of many people, whose professional expertise, knowledge, experience, and perspectives were invaluable for critical review and numerous suggestions to improve the content including Area Wildlife Managers, District Wildlife Managers, Terrestrial Biologists, Regional Managers, Terrestrial Section Staff, Researchers and Human Dimensions Specialists, and many others too numerous to individually mention here. All of the above professionals had many other projects and activities that were shuffled, juggled, shifted and some, perhaps, remained unfinished for the time everyone applied to reviewing and improving this plan. Colorado Parks and Wildlife thanks all of you.

Colorado West Slope Mountain Lion Management Plan

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Appendix A....Mountain Lion Life History, Ecology, and Monitoring

Appendix B....History of Mountain Lion Management in Colorado

Appendix C....Colorado Resource Selection Function

Appendix D....Literature Cited and References

Appendix E....Public Outreach Process and Results

I. West Slope Mountain Lion Management Plan Goal and Strategy

On the West Slope of Colorado, Colorado Parks and Wildlife's (CPW) aim for lion management is to preserve, protect, enhance, and manage mountain lions for the use, benefit, and enjoyment of the citizens of Colorado and its visitors. The broad goal laid forth in this plan by CPW in both the Northwest and Southwest Administrative Regions is to manage for relatively **stable mountain lion populations**, while allowing for management flexibility at smaller scales.

This plan puts forth a strategy to allow management flexibility at smaller geographic scales (harvest limit groups) while managing for viable and stable lion numbers at the larger Regional geographic scale. At small scales, lions experience great variation in rates of abundance, survival, mortality, immigration, and emigration and therefore while management assumptions about those parameters are quite important, they can be inaccurate. At larger scales however, it is more likely that differences in initial population density assumptions result in relatively small changes in population growth rate, and uncertainty about dispersal may not be as influential (Robinson et al. 2015). A review of these and other aspects of lion biology and ecology is provided in Appendix A. With implementation of this plan, we will transition from current lion Data Analysis Units (DAUs) on the West Slope to the CPW Administrative Regions (Southwest and Northwest) as the management unit of interest, analysis and reporting.

The need for this West Slope plan is demonstrated as follows:

- Larger management scales (such as Regions) are most relevant to lion biology and most appropriately support current management inferences from mortality and composition data
- Significant advancements in geographic information systems (GIS) modeling, lion monitoring metrics, density estimation and population trajectory information have been published in the realm of peer-reviewed literature over the last 15 years, and need to be incorporated into current and future management.
- Existing lion management plans are outdated as all but one West Slope lion DAU have plans over 15 years old and this plan will leverage updates into one plan.
- Without updated West Slope lion management plans, managers setting annual harvest limits are challenged with aligning metrics and objectives in historic plans against concerns over various aspects of plans that many have deemed to have lost relevance.

II. Lion Harvest Terminology, Regulations Process and Hunting Seasons

Harvest Limit Groups: The term to describe the pool or grouping of West Slope Game Management Units (GMUs) that are joined together under one harvest limit will be called a "harvest limit group". In the past, harvest limit groups have been as small as one GMU or up to 5 or 6 GMUs. Under this plan, the size of harvest limit groups will increase, as each group will include more GMUs than under past plans.

Regional Harvest Objectives and Harvest Limit: CPW will establish annual “Regional harvest objectives” for the Northwest and Southwest Regions independently. However, the term harvest objective makes less sense and could create confusion at the smaller harvest limit group scale. Therefore, at the harvest limit group scale, we will continue to use the term “harvest limit” to describe the distribution of the Regional harvest objective across smaller geographic areas of the Region on an annual basis. In this context, the sum of the harvest limits within each Region is equal to the Regional harvest objective. Regional summaries included later in this plan provide further discussion on specific recommendations for the first 3 years of the plan.

As with current lion regulations, the annual harvest limit accounting begins on April 1 and ends on March 31 (license year). Only hunter harvest (lions associated with take on a lion license) will be counted and deducted from the harvest limit. During the Regional harvest objective and harvest limit setting process, wildlife managers consider the estimated amount of non-harvest mortality that contributes to total human-caused mortality. While Regional harvest limits and harvest limit group composition are reviewed annually, it is CPW’s intent that both will be largely static for the first 3 years of this plan on the West Slope. An exception to this stability in harvest limits would be if management thresholds are exceeded and management action is needed. Maintaining these new lion harvest limits for periods of ≥ 3 years will allow sufficient time for any management efforts to yield results. For example, if efforts are applied to decrease lion abundance in a local zone, Anderson and Lindzey (2005) suggest that a 3-year period is necessary to detect results. Other studies suggest that a 3-5 year time period is the minimum time for recovery of previously suppressed populations (Logan and Swenor 2001, Anderson and Lindzey 2005, Stoner et al. 2006, Robinson and DeSimone 2011).

Annual Lion Regulations Process: This West Slope Mountain Lion Management Plan continues to follow CPW’s current regulatory process and timeline. The annual regulatory cycle for mountain lions occurs in two stages. The first stage includes regulations related to season dates, open GMUs or harvest limit groups, method of take, and harvest reporting requirements. The second stage involves the establishment of annual harvest limits by harvest limit groups.

Mountain Lion Regulation Development Process for Seasons, Method of Take, Other Provisions:

- July-September: internal considerations, conceptual development, regional review meetings
- October: issues considered at internal regulation review meetings
- November: issues/draft regulations presented for consideration at the Parks and Wildlife Commission meeting
- December: regulation language modified pursuant to November meeting outcomes
- January: final adoption action by the Parks and Wildlife Commission

Mountain Lion Regulation Development Process for **Harvest Limits**:

- June-July: analysis of harvest and total mortality, adult female harvest composition and Glenwood SMA lion management objectives
- September-November: internal development of harvest limit recommendations, regional review meetings, harvest limits by harvest limit group considered at internal regulation review meetings
- January: final adoption action by the Parks and Wildlife Commission on harvest limits along with final approval of all other lion provisions
- February: publication of on-line mountain lion brochure

Every 5 years, CPW's big game season structure is re-evaluated. During this structural review process, public input is solicited, with three hearing stages that include issue identification and examination, drafting of regulations, and final structure and approval by the Parks and Wildlife Commission. The approved 2020-2024 big game season structure is compatible with all aspects of this West Slope Mountain Lion Management Plan.

Lion Hunting Seasons: Currently, two distinct seasons occur during the April 1- March 31 license year. Both seasons will be maintained in this plan. The two seasons have different purposes, but each will operate within the context of a harvest limit system with an additional season in the Glenwood Special Management Area.

1. **April Lion Season:** The season will run from April 1-30 annually. The use of dogs as a hunting aid is allowed. This is primarily an additional opportunity season in locations where harvest limits may not be routinely achieved during the regular season. If conflicts with other resource management issues are anticipated or if harvest opportunity is not compatible with other management considerations, then an April season will not be initiated. The utilization of an April season is determined annually for each harvest limit group.
2. **Regular Lion Season:** Begins the day after the close of 4th rifle deer and elk season through March 31 annually. The use of dogs as a hunting aid is allowed. The bulk of lion harvest is expected during this time and the majority of hunter days will occur in this season. Lion hunting opportunity is unlimited during each license year until harvest limits are reached in each harvest limit group, at which point that harvest limit group will be closed for the remainder of the license year.

Glenwood Special Management Area: A mountain lion season concurrent with regular deer and elk rifle seasons in GMUs 43, 44, 45, and 444 is outlined under the NW Regional plan summary later in this document.

Methods of Take: The use of dogs shall be allowed as an aid to take lions as prescribed within the foregoing seasons. The use of mouth-operated predator calls is allowed. Legal rifles, shotguns, crossbows, handguns, and archery weapons are allowed. Under specific

circumstances, as outlined in the SW and NW Regional summary sections, electronic calls will be legal in certain harvest limit groups.

III. Regional Data Collection Scales and Monitoring Thresholds

Lions occupy large spatial scales in terms of home ranges and dispersal patterns. They regularly live, move, and disperse across previously used DAU boundaries, CPW Administrative Region boundaries and even state lines. Consequently, monitoring mortality and female composition at small scales is hampered by small sample sizes and large amounts of annual variation. At the current DAU scales on the West Slope, the difference between a few animals of different gender or age classes could alter harvest composition and conclusions about management trajectory in some units. For example, from 2016-2018, annual total lion mortality was less than 40 animals for 9 out of 13 previous West Slope DAUs. When samples of each individual DAU's harvest were divided among the four age/gender classes (adult female, subadult female, adult male, and subadult male) the composition of any one class often would be represented by only 4 or 5 individual lions, causing year to year compositional proportions to commonly vary by 20-30%. This amount of variation in harvest composition confounds data interpretation, making it difficult for wildlife managers to evaluate the effects of different harvest levels on mountain lion population trajectories at the previous DAU scale.

Many lion biologists across the West suggest managing lion populations with respect to source-sink dynamics (CMGWG 2005, Cooley et al. 2009a, Robinson and DeSimone 2011, Jenks et al. 2011, Logan 2019). Source areas are managed for the production of dispersers that move to other source areas and into sink areas where management objectives call for greater lion mortality. Thus, source areas retain a capacity for population resiliency region-wide. This approach allows for considerable flexibility in applying variable harvest rates spatially and temporally. This would be in contrast to a management framework with little flexibility where harvest is attempted to be apportioned evenly across the landscape as outlined by Beausoleil et al. (2013). The West Slope plan incorporates source-sink dynamics by allocating lion harvest mortality across the Northwest and Southwest Administrative Regions at a level appropriate for a stable population objective, while allowing harvest pressure to vary within more local areas defined by harvest limit groups.

West Slope Mule Deer Strategy and Lion Plan Relationship

Due to recent declines in mule deer populations across the West Slope, CPW embarked on a comprehensive public engagement and planning effort in 2014 to develop a West Slope Mule Deer Strategy to guide future management actions to help western deer herds increase towards objectives. The goal of the West Slope Mule Deer Strategy states that together with the public and stakeholders, CPW will work to stabilize, sustain and increase mule deer populations in western Colorado and, in turn, increase hunting and wildlife-related recreational opportunities. Relative to mountain lions, one of the seven strategies outlined in the Mule Deer Strategy is to implement lion reductions where predation has been shown to be limiting deer survival. This West Slope lion plan provides the flexibility, if needed, to allocate

lion harvest at the harvest limit group scale within a Region to implement higher local harvest rates consistent with the priorities of the Strategy, while still managing to the Regional objective.

Regional Data Analysis Units

The history of mountain lion management in Colorado, and more specifically on the West Slope, is provided in Appendix B. This appendix includes an overview of harvest management, methods of hunting, game damage, and a human-lion conflict discussion all within the historical DAU-specific management structure. A map showing the 13 historic mountain lion DAUs is also included in Appendix B.

Under this new plan, the West Slope will be comprised of two Data Analysis Units, corresponding to the CPW Northwest and Southwest Administrative Regional boundaries (Figure 1). The Northwest (NW) Region lion DAU is comprised of the previous lion DAUs of L-1, L-2, L-3, L-5, L-6, L-7 along with GMU 40 (previously in L-22) and GMUs 41, 42 and 421 (previously in L-9). The Southwest (SW) Region lion DAU is comprised of the previous lion DAUs of L-20, L-21, L-23, L-24, L-25 along with GMUs 52, 53, 63, 411 and 521 (previously in L-9), GMUs 60, 61, 62, 64, 65 (previously in L-22), GMU 82 (previously in L-16) and GMU 83 (previously in L-19). This West Slope plan will monitor lion populations at the CPW Administrative Region geographic scale (NW DAU and SW DAU) instead of the historic DAU scale.

The 13 historic DAUs have existing management plans that were written in 2004, with the exception of L-3, which was originally written in 2004 but amended in 2012. Eleven of the 13 plans have DAU population objectives of maintaining a “stable” lion population. Two of the plans, DAUs L-7 (White River) and L-9 (Grand Mesa/ North Fork), have “suppression” objectives that were largely implemented to reduce lion populations due to high rates of game damage (livestock depredation). The new NW and SW Regional management objectives will replace all historic DAU objectives in the areas governed by those 13 historic plans.

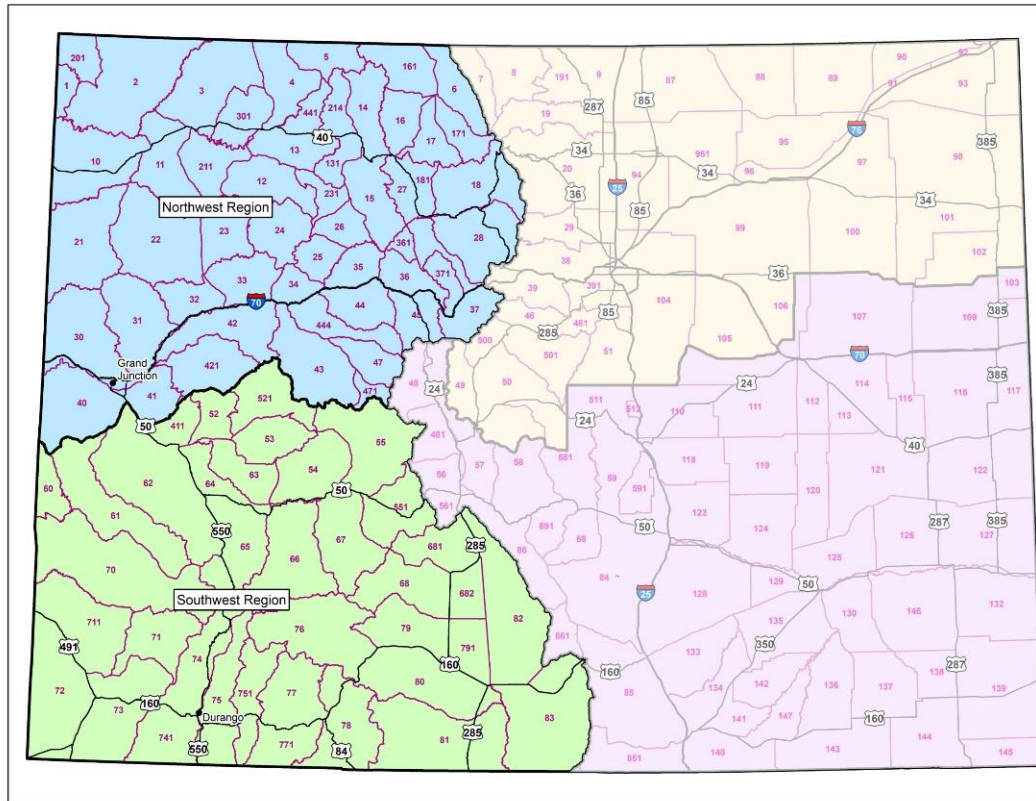


Figure 1. The location of the two West Slope Regional monitoring areas within Colorado.

Annual Data Collection

All known lion mortalities in Colorado are recorded during a mandatory check process. In the case of harvest mortalities, every hunter is required to report their harvest within 48 hours and present the hide and head for inspection within 5 days. During this mandatory check, biological data is collected including sex, evidence of past nursing/breeding status, and age information, including extraction of a premolar for cementum aging (Table 1).

Table 1. Cementum (premolar tooth) aging guidelines

Cementum Age	Age Class
0-12 months	Kitten
1 year or 2 years old	Subadult
3 years and older	Adult
Female of any age that shows evidence of past nursing	Adult

Lion mortality data are used to evaluate age and sex composition of harvest, distribution of harvest and non-harvest lion mortalities, indices of population trajectory, and to account for and set harvest limits. Due to standard time delays in cementum analysis, the current harvest composition analysis is always retrospective information, lagging one harvest year behind regulatory cycles.

Harvest data can be used in many different ways. The age of reproductive females can be useful to examine the reproductive potential of lion populations (Stoner 2004, Anderson and Lindzey 2005). Populations maintaining older-age females have higher reproductive potential, and thus resiliency, than populations where adult female survival is lower.

Additionally, recording the distribution of lion harvest and other human-caused mortalities allows assessment of potential source areas where little or no lion mortality occurs, and sink areas where lion mortalities may be relatively high. This kind of spatial analysis may be used to help inform harvest limits that are established by harvest limit groups.

As recommended by Beausoleil (2017), we approached all demographic metrics referenced in this management plan with standardization in mind. Since most recent literature focuses on metrics defined by “independent” lions, that is the common standard we have used in all data, thresholds, and models presented in this plan. Independent lions are defined as animals that are not dependent on their mother; this includes subadult lions and adult lions. See Appendix A for details on mountain lion life history. Kittens are considered dependent lions, and as such are not legal for harvest and are not included in demographic metrics.

Adult Female Composition Threshold

Both the survival rate and relative abundance of adult female lions, as the reproductive component of a population, are important considerations for managers. Recent research findings are presented below reviewing adult female harvest composition and population trajectory.

Wildlife managers, through the use of hunting harvest, have the ability to limit lion population growth (Robinson and DeSimone 2011). On the Uncompahgre Plateau, Colorado, during the 5-year lion hunting phase of a research project, **adult females** comprised 23% of the total cumulative harvest. In this study, lion harvest was considered additive mortality and lion survival rates and independent lion abundance declined when compared to the preceding reference phase with no lion hunting (Logan 2015, Logan and Runge 2020).

In the Garnet Mountains of Montana, lion hunting harvest was found to be an additive source of mortality, not a compensatory one. During an un-hunted period, 71% of the growth rate in the population was related to reproduction (maternity and kitten survival), while adult female survival accounted for only 22% of the population growth rate. When hunting was added, only 17% of the growth rate in the population was related to reproduction, while adult female survival became more influential and accounted for 40% of the population growth rate. Monitoring and population modeling efforts in this population indicated that when accounting for all forms of known human-caused mortality, **adult female** mortality greater than 20% is likely to cause a decrease in the resident lion population level (Robinson and DeSimone 2011).

In southern Idaho and northern Utah, Laundre et al. (2007) tested the effects of changes in prey abundance on lion population dynamics. Through their monitoring of the change in

population size and social-age class structure, they suggest that an annual harvest of 15 to 20% of *resident (adult) females* would not reduce a population.

Anderson and Lindzey (2005) conducted an experimental population reduction and recovery in the Snowy Range of Wyoming to examine how various gender and age classes are exposed in hunter harvest when a population is increasingly exploited. Because of the differences in daily movement distances it was assumed that under equal gender ratios, males are more vulnerable to hound hunting, which relies on discovery of tracks in snow. Increasing hunting pressure exposes different genders and age classes until they are relatively less available, subsequently exposing the next most vulnerable age class. Sex and age classes of lions exhibit different and relatively predictable movement patterns, where males move longer distances than females and subadults generally move longer distances than adults (Barnhurst 1986, Anderson 2003). Conceptually, the likelihood of a specific sex or age class of lion being harvested would reflect its relative abundance in the population and its relative vulnerability based on daily movement patterns. The least vulnerable individuals (adult females) should become prominent in the harvest only after the population has been reduced in size by removal of more vulnerable/available lions. Harvest progression of a higher density population would be expected to shift from subadults to adult males and finally to adult females as more vulnerable or targeted individuals are removed and the population is reduced in size (Anderson and Lindzey 2005). Selectivity in harvest where hunters select males over females or perhaps subadults is possible from experienced hunters using hounds by examining track characteristics or live animals prior to harvest. Selective harvests may delay or change the order of expected harvest progression, but this relationship should still hold as larger males are removed and the least vulnerable and most biologically important compositional class (adult females) becomes exposed as abundance of other more selected age/sex classes decline. Anderson and Lindzey (2005) tested these predictions by applying varying levels of hunter harvest and found harvest composition to be predominantly subadults for a high-density population with low harvest levels, shifting to adult males as harvest levels increased, and then a shift from adult males to adult females with continued high harvest as the population declined. Likewise, Cooley et al. (2009b) noted that adult females increased in harvest composition when hunting increasingly removed other age/sex classes in a population. When harvest levels were reduced, the composition of the harvest returned to primarily subadults. The male segment of the reduced population recovered within 2 years, primarily due to male immigration from other populations and the female segment within 3 years from an increased number of females producing young within the population (Anderson and Lindzey 2005). They concluded that the population appeared to support a harvest composed of 10-15% adult females. When *adult female* composition in hunter harvest reached approximately 25%, the population declined.

The results of these studies suggesting that setting Regional composition thresholds of between 20-25% adult females in hunter harvest will maintain the Region goals of managing for a stable population. A threshold of 22% adult female harvest composition was selected because it represents a mid-range value based on 4 independent research efforts. Using cementum data and breeding status to classify adult females, we can infer that if our

threshold is exceeded, the population in question would likely begin a decline. Because the goal is to not exceed this threshold and risk moving into a decline phase, adult female harvest composition will be examined annually and management actions will be enacted to reduce female and/or overall harvest if this threshold is exceeded in any single year.

Currently, at our new Regional monitoring scales, the composition of adult females in total harvest over the last 6 years has ranged from 9-20% in the NW Region and 14-18% in the SW Region (Table 2). These statistics suggest that even under increasing harvest levels over this period, neither Regional population has undergone a decline. In accordance with this plan, data will be evaluated annually to inform Regional management, but voluntary female and overall harvest reduction steps will be required only if the monitoring threshold of 22% is exceeded. The Glenwood SMA, described in greater detail in the NW Summary section, is the only area excluded from the annual harvest composition analysis in either Region.

Table 2. Northwest and Southwest Regional adult female harvest composition and sample size of interpreted age class (*N*) for the last 6 years (2013-2018). Data include all legal harvest mortalities for lions of known sex/age for all GMUs in each region.

		2013	2014	2015	2016	2017	2018
Northwest Region	Adult Female Composition in Total Harvest	20%	9%	16%	17%	19%	17%
	<i>N</i>	172	163	172	201	203	205
	Adult Female Composition in Total Harvest	14%	14%	18%	17%	16%	16%
Southwest Region	<i>N</i>	107	118	115	141	125	131

It should also be noted that less selective methods of harvest are likely to result in harvest composition that reflects the relative abundance of the 4 age-gender classes. Consequently, significant use of non-selective methods at any broad scale will confound harvest composition analysis. Hound harvest relies on a portion of hunters selecting against taking females based on track size or identification while bayed, but non-selective methods take lions of each compositional class in the same relative abundance that they are encountered, so much higher rates of female harvest would be expected. Because of this, we conclude that any other season or method of take besides hound hunting (such as electronic calls) that is largely non-selective of age-gender classes should be reserved only for areas where substantially increased harvest and population impact is desired. This would include the Glenwood SMA or areas where control removals are high but hound hunter harvest has not been successful due to limited snow. The use of concurrent deer and elk rifle season hunters in the Glenwood SMA would also likely increase adult female harvest, as this non-selective hunting method has been shown in Oregon and Washington to have higher female harvest rates when compared to hound hunting. A further discussion on these implications is presented in the “Methods of mountain lion hunting” section in Appendix B.

Total Human-Caused Mortality Threshold

Clarification of terminology is an important precursor to the discussion of the total human-caused mortality threshold. Natural forms of mortality (drowning, starvation, disease, intraspecific strife, injury etc.) are sometimes documented by our mandatory check system, but such natural mortality will not be included in the total human-caused mortality analysis. The primary human-caused mortality factors includes hunter harvest, removal of depredating lions by CPW, landowner, and federal Animal and Plant Health Inspections Service/Wildlife Services agents (APHIS/WS), and lions killed by vehicles. The single human-caused mortality exception for inclusion in the summation of mortality is for lions that are killed because they are determined to be dangerous lions pursuant to CPW Administrative Directive W-20. Our reasoning for not including these kills in our calculations related to mortality thresholds is that regardless of lion population trajectory or any other management condition, CPW as a matter of policy would always take lethal action on lions that are determined to be a threat to public safety. Therefore, including them in calculations of total mortality thresholds is irrelevant. Additionally, the number of lions that are killed because they are determined to be dangerous is typically a very small number. For example, from 2016-2018 less than 10 lions annually were reported killed statewide as a result of having attacked or exhibited threatening behavior towards people. Lions removed in accordance with Administrative Directive W-20 are specifically documented as such to ensure conflict lion mortalities with this classification are clearly enumerated, as they will be excluded from analysis in all mortality totals.

Comparing the rate of population growth against population reduction from harvest can give managers information on what mortality levels would maintain a stable population. Recent research findings are presented below that helped inform CPW's total human-caused mortality threshold.

The growth rate for a population, or intrinsic rate of population growth, can be described as the rate biologists expect a population to grow in the absence of additive human-caused mortality. In Washington, the intrinsic growth rate for 3 different lion populations (Selkirk Mountains, Kettle Falls, and Cle Elum) was **14%** (+-2%) (Beausoleil et al. 2013). In Montana, the expected intrinsic growth rate of a modeled population through 2 years was **15%** when the results from a protected area and an adjacent hunted area were combined (Robinson and DiSimone 2011). Laundre et al. (2007) observed a lion population increase **7%** during a growth phase that correlated with an increasing deer population on the border of Idaho and Utah. In New Mexico, Logan and Sweanor (2001) observed population growth rates of **5% and 17%** for two 4-year periods, averaging **11%** for the entire 7-year period for a lion population segment protected from hunting. Furthermore, Logan and Sweanor observed higher growth rates of **21% to 28%** for an experimentally manipulated population segment that was substantially reduced in abundance and then protected to allow it to increase. Their research indicates that lion population growth rates are highly variable and most likely density dependent (Logan and Sweanor 2001).

Examined differently in Wyoming, experimental control and recovery of a population determined that a harvest rate of **18%** of independent lions allowed recovery of the population that had been intensively harvested in two previous years (Anderson and Lindzey, 2005). On the Uncompahgre Plateau in Colorado, a lion population that was protected from hunting for five years and subsequently subjected to regulated hunting for five years yielded evidence that the marked lion population grew during the non-hunting period when total human-caused annual mortality was 7% or less and began to decline when total human-caused annual mortality was 27% and continued to decline at rates of 24-29% (Logan and Runge 2020; these are preliminary results and will be finalized at publication). The discrete threshold at which population decline began could not be measured.

Although growth rates and mortality or harvest rates in expanding populations may act as surrogates for determining maximum sustained yield (the highest sustainable annual rate of removal), caution should be applied in this comparison. Stochastic events can change the assumed population size and may result in over-harvest, and thus are falsely assumed to be supported over the longer term (Caughley and Sinclair 1994).

Whether one looks specifically at Colorado data or examines the span of the 6 reported population growth rates and 3 reported mortality thresholds, a 16-17% annual total mortality rate is an appropriate range to manage for population stability. Therefore, this plan will use a maximum human-caused mortality threshold of 17% of Colorado's projection of possible lion abundance. This extrapolated lion abundance index is based on a resource selection function (RSF) model that was applied to each Region (Table 3 and Appendix C) to generate an initial representation of how many lions could be in the population.

Adjustments to this human-caused mortality threshold is informed by the adult female compositional threshold. Direction of population trajectory as indicated by annual compositional evaluation provides a feedback mechanism to modify the common currency of human-caused lion mortality, which are harvest limits.

The RSF model that Colorado has developed provides a probability of lion presence across areas of each Region and allows application of various densities to those probability classes to generate a projection of possible lion abundance. The abundance index extrapolation that is generated is not a representation of actual population size of lions in Colorado, but rather the relative probability of resource selection by a lion population. It provides a method to derive a maximum mortality threshold, which if exceeded, would lead to the reasonable conclusion that lion populations are experiencing a decline in trend at selected monitoring scale. The numerical value that is derived as a threshold from this analysis will not be exceeded on a 3-year running average in either Region. While not necessarily a management target, the total mortality threshold represents the amount of human-caused mortality that should not be exceeded annually in each Region. For more information about the abundance index extrapolation and the supporting RSF model as applied to the NW and SW Regions, see Appendix C.

Table 3. Regional total human-caused mortality thresholds in relation to 2016-2018 total human-caused mortality data. The Regional mortality threshold for the NW Region does not include lion population or mortality contributions from the Glenwood Special Management Area (GMUs 43, 44, 45, 444). Historic mortality data for the SMA is provided on a separate line.

Monitoring Area	17% Annual Total Human-Caused Mortality Threshold	2016 Total Human-Caused Mortality	2017 Total Human-Caused Mortality	2018 Total Human-Caused Mortality	3-year Total Human-Caused Mortality Average
Northwest Region	269	228	232	245	235
Glenwood SMA	NA	27	11	22	20
Southwest Region	284	180	168	184	177

The total mortality thresholds in Table 3 may or may not change over the lifespan of this West Slope Mountain Lion Management Plan. Thresholds may change during the course of revisions based upon new scientific evidence, density estimates that refine the RSF or related updates that may occur during periodic plan review. Colorado Parks and Wildlife hopes to be able to prioritize lion density estimation in future work planning to allow validation and refinement of densities applied to the RSF. The Glenwood SMA, which is described in greater detail in the Northwest Region Summary section, will be the only area excluded from annual threshold requirements in either Region. More specific historic data on harvest and non-harvest mortality is available in the Regional Summary sections of this document and in Appendix B; History of Mountain Lion Management in Colorado.

IV. Annual Management Thresholds

The West Slope Lion Management Plan initiates a new management framework that evaluates annual lion mortality data against selected thresholds that are scientifically supportive of a stable lion population. The NW and SW Administrative Regions will be independently managed, and the Glenwood Special Management Area is excluded from evaluation against the NW thresholds. The following mortality monitoring thresholds will be evaluated in an interactive manner:

1. Proportion of adult female (cementum age of 3 years or older, or any age with evidence of nursing) composition of total hunter harvest will not exceed 22% in any single year.
2. Total human-caused mortality will not exceed 17% of the extrapolated abundance index (see RSF in Appendix C and Table 3) based on a 3-year running average.

3. The adult female composition threshold and total human-caused mortality threshold are intended to interact and inform each other. Therefore:
 - a. If the 22% adult female threshold is exceeded in any single year (suggesting a decline in the population) the Regional harvest limit objective (and mortality threshold) used in that year will be reduced by 1% of the extrapolated abundance index. This represents a decrease from 17% to 16% of the RSF or 16 lions in the NW Region and 17 lions in the SW Region. This is required and implemented in Regional harvest objective setting in the following year.
 - b. If the 22% adult female threshold is exceeded in any single year, CPW will also enact a voluntary female harvest reduction outreach process that includes:
 - i. Publishing a request for hunters to voluntarily reduce female harvest in the CPW Mountain Lion Hunting brochure.
 - ii. Notifying hunters using the online Available Harvest Limit Report to identify harvest limit groups where CPW is voluntarily asking for reductions in female harvest.
 - iii. Contacting lion hunters directly to inform them of the voluntary request.
4. If the total human-caused mortality threshold is exceeded or the 22% compositional threshold (subsequent to steps 3a and 3b the first year) continues to be exceeded, then a 5% reduction in the Regional harvest objective will be implemented the following year. The human-caused mortality threshold continues to be independent of the female composition threshold.
5. Each time a reduction in Regional harvest objective is triggered by exceeding thresholds, the broad intention is that this reduction will be maintained for a minimum of 3 years. In some cases, if the annual female composition or 3-year average total mortality return to levels below the thresholds before that time, increases may be considered.

Annual Regional harvest objectives, explained in the West Slope Regional Summaries section of this plan, incorporate projected non-harvest human-caused mortality using previous 3-year averages in development of acceptable harvest mortality levels so as not to exceed thresholds. As such, Regional harvest objectives will always be lower than total human-caused mortality thresholds and will likely fall in or near the annual harvest range of 12-16%, bracketing the 14% harvest off-take level as recommended by Beausoleil et al. (2013).

Voluntary Female Harvest Reduction Outreach

If the adult female composition threshold of 22% is exceeded, the first action should be to reduce adult female harvest. While differentiating subadult females from adult females before harvest may be difficult, Colorado's lion hunters have a proven track record of being able to decrease harvest pressure on females when CPW has provided the outreach and information accompanying voluntary female reduction requests.

From 2005-2007, CPW, in collaboration with hound hunting groups, conducted training workshops about the biology and life history of mountain lion as well as the importance of females to sustaining populations. The lion regulation brochure also provided similar written information. In the 2007-2008 lion season, CPW implemented a mandatory mountain lion hunter education requirement. This course provides training information to hunters about mountain lion ecology and hunters must pass an exam demonstrating the ability to identify lion gender characteristics. Subsequently, the average total female composition in harvest declined from about 44% in the 10 years before 2005 to about 37% in the 14 years since. It is important to note this was a reduction in all female age classes, not just adults. As part of this West Slope plan, CPW intends to engage with lion hunters via the brochure, the online harvest limit report, and make informal field contacts to request voluntary reductions in female harvest if and when Regional annual adult female composition exceeds the 22% threshold. It would not be practical to ask for reductions just in adult females since age class determination in the field is much more challenging than gender determination. This outreach would likely decrease overall female harvest (all ages), but adult females would be part of that reduction, and we expect this to move composition trajectory in the desired direction.

Harvest Limit Reductions

Harvest limit reductions of 5% will be applied to the Regional harvest objective total in the regulatory cycle immediately following management thresholds being exceeded, as outlined above. Any such reduction in Regional harvest objective due to exceeding either threshold, outside of the Glenwood SMA, is mandatory and is a reduction minimum. Each time a reduction is applied to the Regional harvest objective, it will generally be maintained for 3 years. There may be cases where the 3-year total mortality or annual adult female compositional proportion returns below the management threshold before that time where increases in Regional harvest objectives will be considered. Nothing precludes managers from implementing larger reductions of Regional harvest objectives and limits that are determined desirable or necessary to accelerate the lion population response.

The management steps CPW will take are based on empirical data in previously observed populations and on models developed in Colorado. The following section presents an evaluation quantifying Regional areas of minimal lion mortality and outlining the extent of source areas (Figure 2) and large-scale lion resiliency to harvest. Further, the application of monitoring thresholds is appropriate to guard against longer term impacts to populations on the West Slope and ensure population stability at that scale.

V. Lion Population Resiliency

Resiliency to High Mortality

Mountain lions have biologically hardwired behaviors in dispersal for maximizing genetic interchange that also serve to make populations resilient against high exploitation or rates of removal. Natural replacement of mortalities or otherwise vacated home ranges occurs differently between male and female lions. Vacated ranges of resident females are typically re-occupied by their independent-age daughters, adjacent resident females, and some

immigrant females (Laing and Lindzey 1993, Logan and Sweanor 2001). In contrast, male dispersal from natal areas appears to occur regardless of resident adult male densities (Hemker et al. 1984). Consequently, vacated ranges of resident males are typically re-occupied by immigrant males, some coming from long distances. Logan and Sweanor (2001) noted this in New Mexico and numerous studies have noted the long distances of dispersing lions as well as the sex bias in dispersal distance (Anderson et al. 1992, Ken Logan, CPW, personal communication 2018).

Source Population Refuges

In several studies, lion populations subjected to temporary intensive exploitation by > 40% over 1 to 6 year periods have been demonstrated to recover within 3 to 5 years (Ashman 1976, Logan and Sweanor 2001, Anderson and Lindzey 2005, Robinson et al. 2008, Logan 2015). In two such studies, the lion populations were completely protected from hunting (Logan and Sweanor 2001, Logan 2015). It is also important to understand that in addition to reductions in human-caused mortality, recovery was facilitated by immigrants coming from proximal source areas (Logan and Sweanor 2001, Anderson and Lindzey 2005, Robinson et al. 2008, Cooley et al. 2011). These results confirm that with adequate source populations in sufficient proximity to provide dispersal immigration combined with native recruitment, lion populations can be resilient when localized harvest rates exceed recruitment (Anderson and Lindzey 2005, Robinson et al. 2008, Cooley et al. 2009a, Cooley et al. 2011). These observations about lion resiliency and ability to rely on adjacent source populations are derived from research areas that range in size from the average GMU in Colorado (~1,500 km²) to the largest GMU at about 7,500 km². The management thresholds of this plan will be monitored at a large, regional scale; therefore, if the thresholds are exceeded and are unmitigated, then longer-lasting negative impacts to the lion population should be expected. At this scale, male immigration is likely to be capable of re-occupying vacant habitat. In contrast, female immigration would likely occur initially along the boundary with adjacent Regions or adjacent states if intensive lion mortality is not also occurring in those locations. Some amount of female immigration may occur also from refuge areas within Regions (ie. areas of high quality lion habitat with limited harvest as a result of land ownership or other restrictions of access), but this alone may not be sufficient to support continued mortality in excess of sustainable levels.

The following map of Colorado's West Slope (Figure 2) shows what could be considered refuge zones or source areas where lion harvest is low to non-existent. Using the same RSF (Appendix C) habitat model employed within this document in developing Regional total mortality thresholds, we compared the top 50% of lion habitat in the NW and SW Regions to the most recent 10 years of lion harvest mortality. All lion harvest mortalities from 2009-2018 were mapped and a mortality surface was created using ArcGIS, delineating a surface with more than 3 harvest mortalities per 1,000 km² per year. Areas of the West Slope that fell below this threshold were considered as having no significant level of harvest (0-3 harvested lions/1,000km²/year)(Table 3). For comparison, Wyoming's statewide management plan considers a "source" hunt area to have an annual human-caused mortality level of below 5 lions/1,000 km², and defines a "stable" hunt area as having annual human-caused mortality

between 5-8 lions/1,000 km²(Wyoming Game and Fish Department, 2006). As shown in Figure 2 and Table 4, only a small fraction of lion habitat on the West Slope exceeds an annual harvest of 8 lions/1,000 km². In fact, less than 15% of the high-quality habitat in the NW Region and only 1% of the high-quality habitat in the SW Region meet the qualification that Wyoming uses to classify a population “sink” (>8 lions/1,000 km²/year). Even if this analysis expands to consider all mortality sources beyond harvest, the proportions in each classification do not change significantly.

The 46,844 km² of higher quality lion habitat as generated from the top two strata in the RSF, was overlaid with a harvest mortality surface to evaluate the total amount of quality lion habitat on the West Slope of Colorado where no significant lion harvest occurs. The area of quality habitat with modeled moderate to higher lion densities and yet a low or non-existent level of harvest totaled 22,850 km² or over 5.6 million acres across the NW and SW Regions (Figure 2 and Table 4). This includes high-quality habitat within National Parks and Monuments, Bureau of Land Management Wilderness areas, protected municipality open spaces and natural areas, areas with little significant snowfall making lion harvest difficult, and large tracts of unharvested private land.

Table 4. Comparison of high quality lion habitat in each Region and harvest density.

	Total Area	Total High Quality Lion Habitat	Total High Quality Habitat with ≤ 3 harvested lions/1000 km ² /year “source zone”	Total High Quality Habitat with >8 harvested lions/1000 km ² /year “sink zone”
Northwest Region:	58,910 km ²	24,234 km ²	9,265 km ²	3,576 km ²
Southwest Region:	64,678 km ²	22,610 km ²	13,585 km ²	261 km ²

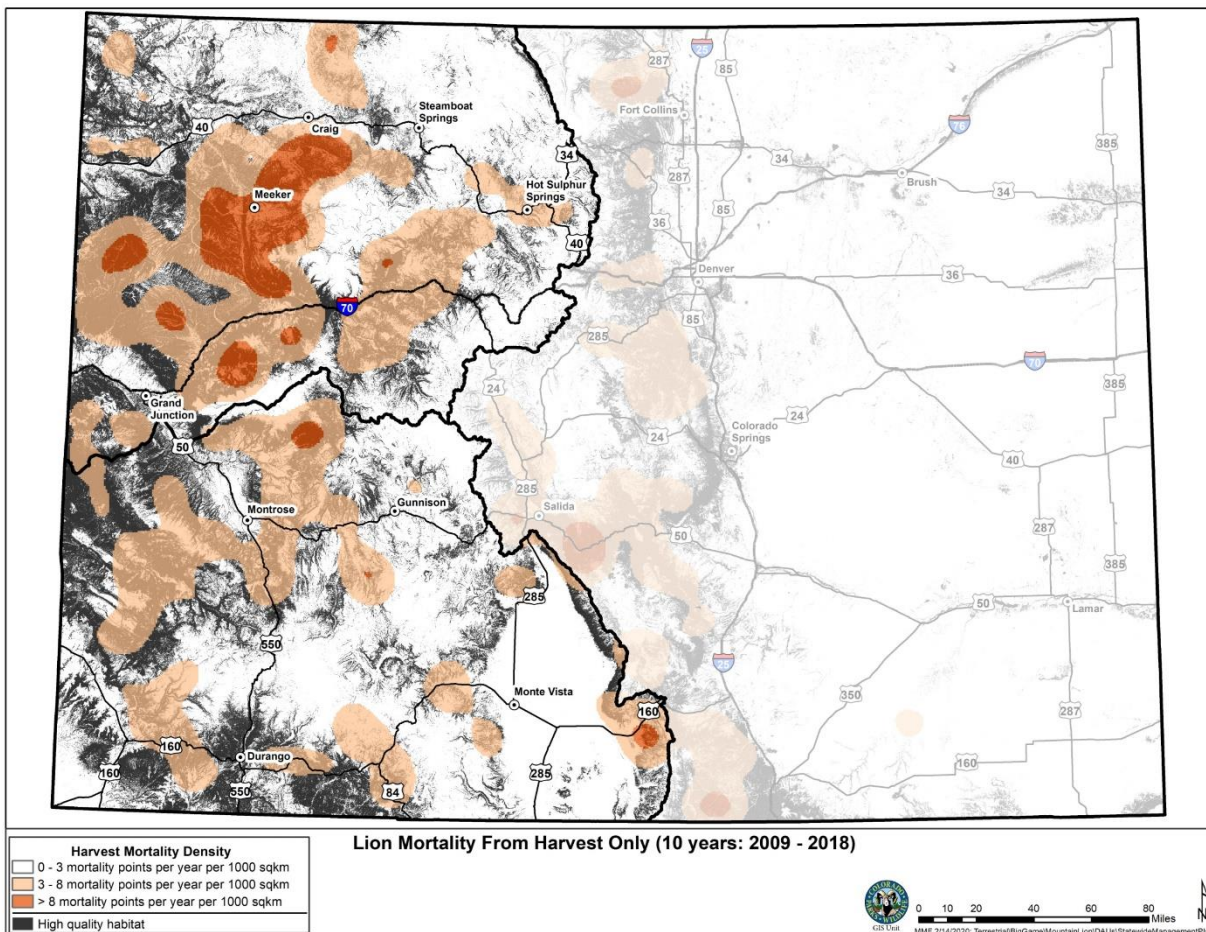


Figure 2. Upper 50%-100% percentile quality lion habitat from Colorado resource selection function model and 2009-2018 lion harvest mortality surface from the West Slope.

Zone Management

While the West Slope lion plan is not explicitly managing for defined source and sink areas or employing “zone” management across the two Regions (Logan 2019), the exercise described above is illuminating. It shows that in addition to monitoring mortality and harvest composition thresholds to ensure viability of Regional lion populations, Colorado’s West Slope lions benefit from 49% of the Northwest and Southwest Regions highest-quality lion habitat having virtually no lion harvest. These zones are functioning as refuges from harvest mortality. The fact that these robust source areas exist in abundance at large spatial scales and are well distributed across the West Slope, affirms an additional safeguard in CPW’s lion management strategy. The source areas promote a supply of immigrant lions and bolster recruitment, supporting population viability and resiliency across the entire landscape. The functional impact of having 49% of the West Slope as a refuge zone, even if those areas are not explicitly defined by this plan or in regulations, cannot be overstated. Significant portions of both Regions are available to lions as “source” zones that offset any “sink” zones that are implemented through management or occur due to hunter harvest patterns. As an example, Robinson and DeSimone’s (2011) initial analysis of the Blackfoot watershed in Montana

suggested that an area as small as 12% of a larger landscape that was without hunting mortality could act as a viable source with increased survival rates and ability to produce emigrants to other, more heavily harvested areas. Logan (2019) advises restrictions on adult female harvest and the maintenance of habitat connectivity to conserve the species at landscape scales.

VI. West Slope Regional Summaries

Northwest Regional Summary

Introduction and History

The Northwest Region contains large areas of highly productive mountain lion habitat. The highest quality mountain lion habitat occurs in western and southern portions of the Region, particularly in areas around Dinosaur National Monument in Moffat County, in the Piceance Basin in Rio Blanco and Garfield Counties, in the Bookcliffs and Roan Plateau in Rio Blanco, Garfield and Mesa Counties, and east into Eagle County. These areas are characterized by rocky terrain and pinyon-juniper woodland vegetation. They overlap the largest, and historically most productive, mule deer herds in Colorado. Lion habitat becomes less productive at higher elevations in the central and northeastern portions of the Region. Mountain lion management plans completed in 2004 call for a management strategy of stable mountain lion numbers throughout most of the Region, with the exception of the White River/Bookcliff and Grand Mesa areas, which were previously managed to suppress mountain lion numbers. The Northwest Region has annually accounted for approximately 40% of statewide mountain lion mortality, with most of that mortality occurring as hunter harvest. Hunter harvest across the entire Northwest Region averaged 228 mountain lions annually in the 2016-2018 time period. Total human-caused mountain lion mortality over the same period averaged 258 lions annually. These recent rates of mountain lion harvest and total human-caused mortality represent historic highs. Non-livestock related lion conflict calls have increased in several areas of the Region within the past several years, particularly in Steamboat Springs, Eagle County and the Roaring Fork Valley (including Aspen). Conflicts include prolonged trail closures due to lion activity, depredation of pets and hobby livestock, and the June, 2016 mauling of a young child by a younger lion near Aspen.

Northwest Regional Monitoring Metrics

Lion populations will be managed for a Regional objective of a stable population. CPW will monitor total human-caused mortality and adult female composition in harvest annually. The two monitoring thresholds are:

- 1) The adult female composition in total hunter harvest at the Regional scale will not exceed 22% in any given year, excluding the Glenwood SMA.
- 2) The total human-caused mortality at the Regional scale will not exceed 17% of the RSF extrapolation, excluding Glenwood SMA, on a 3 year average. In the Northwest Region, this equates to a Regional total human-caused mortality threshold of 269 lions.

Regional Harvest Objective

Evaluation of both monitoring metrics indicates that there is room for a modest increase in mountain lion harvest in the Northwest Region while continuing to manage for a stable mountain lion population consistent with the provisions of the West Slope Mountain Lion Management Plan.

Excluding the Glenwood SMA, mountain lion harvest in the Northwest Region between 2016 and 2018 averaged 212 lions annually. Given the flexibility to achieve a slightly higher harvest rate within the framework on the West Slope plan, the Northwest Region intends to increase the harvest rate of mountain lions above levels achieved in 2016-2018.

It is CPW's intent to maximize the use of licensed hunters in achieving lion management objectives within the Northwest Region. Mountain lion mortality attributed to control actions and other non-harvest events within the Region comprises a small portion of total annual human-caused mortality. Lion management conducted pursuant to this Northwest Regional plan will strive to maintain non-harvest lion mortality at a low level, with the remaining mortality directed toward harvest.

The Northwest Region harvest objective for 2021-2022 in GMUs excluding the Glenwood SMA will equal 243 lions annually (based on 17% of the lion abundance index in those GMUs in the RSF). This Regional harvest objective will be divided among four harvest limit groups, as shown in Table 4. The NW Region harvest objective projects average non-harvest mortality as being similar to the most recent 3-year average.

Human Safety and Conflict

Human populations and lion populations show direct overlap in much of Colorado. In some instances, this overlap occurs in areas of relatively high human densities and development. Lions typically avoid people and are primarily active at times when humans are not. Nevertheless, co-occupancy of habitats may result in conflicts between people and lions. These human-lion incidents vary and run a continuum from mere sightings, depredation of or altercations with pets or hobby livestock, to human attack and injury or fatality. Given the current human population in Colorado and the anticipated population growth in the future, lion conflict levels will likely increase, especially in those areas where people continue expansion of human developments into occupied lion habitat. In addition, as this expansion occurs, the opportunity to effectively harvest lions is reduced because the traditional form of lion hunting (use of hounds) is largely incompatible with increasing human occupancy.

Opinions vary on appropriate lion abundance in suburban and ex-urban communities. Considerable agency effort is directed toward providing people information for managed coexistence with lions and these efforts will be continued for the foreseeable future. Nevertheless, CPW places human safety above lion occupancy, especially in areas of human residential development, where conflict has, or is expected to occur. In areas where conflicts between humans and lions are of increasing concern, special management may be necessary to find an appropriate level of tolerance for lions. CPW proposes the use of a Special

Management Area (SMA) to address primarily non-agricultural issues in ex-urban areas where an increasingly robust lion population is coming in conflict with increasingly high rates of human occupancy and land use. Appendix B provides a broader discussion on human-lion conflicts and human safety. Currently, only one area has been identified on the West Slope for needing a SMA, and that is the community surrounding Glenwood Springs in the NW Region. The need, objectives and monitoring goals in the Glenwood SMA are described later in the NW Regional Summary.

Harvest Limits

Until now, mountain lion seasons and harvest in the Northwest Region was distributed at small scales, predominantly, to individual GMUs. For example, in 2017 and 2018, 33 separate mountain lion hunting harvest limit groups were used. All GMUs in the Northwest Region have been open for mountain lion hunting, except GMU 471, although that unit will be open in the 2020-2021 hunting season. Recent harvest distribution is presented in Table 5. This West Slope Mountain Lion Management Plan aggregates harvest limits into four harvest limit groups that include all GMUs within the Region, except those included within the Glenwood SMA (Figure 3, Table 6).

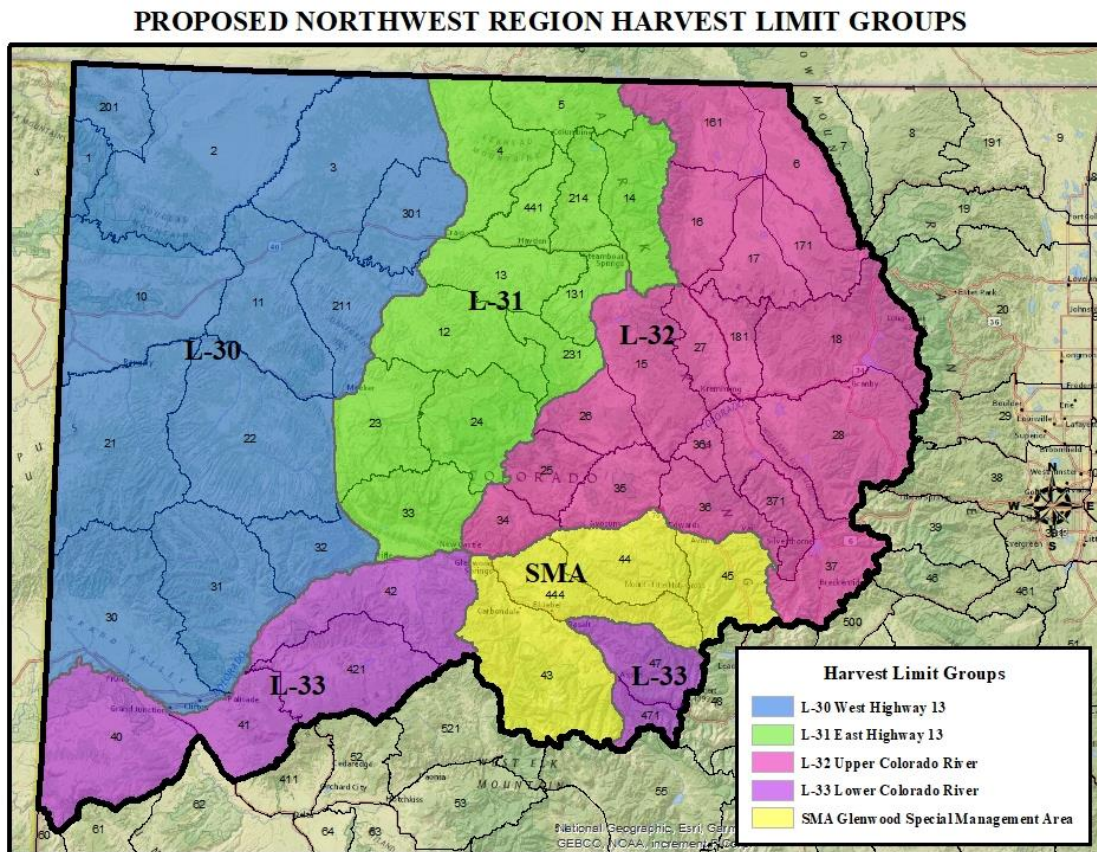


Figure 3. NW Region harvest limit groups for 2021-2022 lion season.

Table 5. Historic Northwest Region 2018 mountain lion harvest limit groups, harvest limits, and the 2016-2018 average annual harvest (rounded to nearest whole number).

List of GMU(s) in harvest limit group	2018 Harvest Limit	3-year Average Harvest
1, 2	7	4
3, 301	5	1
4, 5, 14, 214, 441	13	14
6, 16, 17, 161, 171	4	3
10	15	6
11	17	8
12	19	16
13, 131, 231	23	11
15	5	5
18, 27, 28, 37, 181, 371	12	10
21	17	14
22	17	17
23	18	14
24	7	6
25, 26, 34	7	6
30	11	6
31	17	11
32	7	4
33	17	7
35, 36, 361	9	9
40	7	7
41	5	3
42	10	8
43	7	5
44	6	6
45	1	0
47	1	1
201	8	4
211	29	7
421	10	10
444	7	5

Table 6. Northwest Region mountain lion harvest limit group name, GMUs and harvest limit for 2021-2022.

Harvest Limit Group Name	GMUs	Harvest Limit
L-30 West Hwy 13	1, 2, 3, 10, 11, 21, 22, 30, 31, 32, 201, 211, 301	91
L-31 East Hwy 13	4, 5, 12, 13, 14, 23, 24, 33, 131, 214, 231, 441	80
L-32 Upper Colorado River	6, 15, 16, 17, 18, 25, 26, 27, 28, 34, 35, 36, 37, 161, 171, 181, 361, 371	38
L-33 Lower Colorado River	40, 41, 42, 421	34
Glenwood Special Management Area (SMA)	43, 44, 45, 444	33

April Season

Historically, the Northwest region has had very limited lion hunting opportunities during the month of April. Typically, most harvest limits were filled during the regular lion season from late November through March. In some areas, April seasons haven't been utilized to minimize impacts on other wildlife such as breeding and nesting sage-grouse and sharp-tailed grouse. The April season will be open for the Glenwood SMA and could be an option for other harvest limit groups in the future if there is a need.

Electronic Calls

CPW will create regulations to make electronic calls legal for mountain lion hunting within the Glenwood SMA (GMUs 43, 44, 45, and 444). Electronic calls have proven to be an effective means in attracting lions to a hunter's location, although harvest from this method is less selective than with hound hunting. By bringing the lion to the hunter through the use of calls, hunters can control where the lion is harvested, thereby allowing hunters to hunt small pieces of private or public property. Electronic calls would also enable hunters who do not have access to hounds the opportunity to harvest a lion. Additionally, the use of electronic calls would better enable CPW to address conflict lions near residential areas and reach harvest goals.

Concurrent Deer/Elk Rifle season lion hunt

To assist with lion harvest in the Glenwood SMA (GMUs 43, 44, 45, and 444), a third mountain lion season will be created that runs concurrently with the four regular deer and elk rifle seasons. Hound hunting will not be legal during this season. Lion hunters will need to adhere to season participation restrictions during this new season so that only hunters already holding deer or elk rifle licenses in those units may hunt lions during the season matching their valid deer or elk license.

Glenwood Special Management Area

The Glenwood SMA is comprised of GMUs 43, 44, 45 and 444 (Figure 3). This area encompasses most of the Roaring Fork valley and portions of the Eagle valley south of Interstate 70. Mountain lions have historically existed in these areas; however field observations and reported incidents over the past decade have all indicated a significant increase in both the number and severity of human-lion conflicts. Managers have become concerned that the frequency of these conflicts is likely to result in human injuries or fatalities. Conflicts are likely high in the Glenwood SMA because local winter ranges occupied by mule deer within these GMUs are located in close proximity to urban and suburban areas, with additional areas containing substantial exurban housing development. Human activity levels within mountain lion habitats are high year-around. The combination of small parcel private land ownership, relatively dense human housing, and high degree of winter recreation all make the GMUs within this SMA difficult to hunt with hounds which in turn limits the impact that lion harvest can make to management.

Lion management within this area will be governed by the management needs, objectives and monitoring metrics stated below. The NW Regional goal of managing for a stable lion population is compatible with the independent objective of reducing human-lion conflict in these 4 GMUs. Harvest, total mortality and adult female composition levels within the Glenwood SMA are therefore exempt from both NW Regional monitoring thresholds. However, the RSF extrapolated abundance index within GMUs 43, 44, 45 and 444 will also be excluded from calculations of the total human-caused mortality threshold for the Region (Table 2). In other words, both lion mortality and contributions to projected Regional abundance index from the Glenwood SMA will be excluded from any calculations or analysis of the Regional monitoring thresholds.

Glenwood SMA Need and Rationale:

Public reports of mountain lions in the Glenwood SMA were rare 10-20 years ago. Now reports number in the hundreds annually and come from a variety of groups and members of the community. Mountain lion reports have also changed in nature during this period from occasional sightings in the backcountry to videos and photos of lions basking on front porches in neighborhoods, roaming between vehicles on highways, and casually walking in the middle of the day down sidewalks. Reports of lions generally increased in winter and early spring when snow concentrated prey species in lower elevations nearer human development, more recently however, reports are now received year-round.

Changes in lion habituation to humans have been reported as well. Many calls report mountain lions that appear to have lost their fear of humans when confronted and exhibit behaviors consistent with being “habituated” to humans. The duration of time that lions have tolerated being close to urban and suburban settings has also increased, now lasting upwards of several weeks in some cases. Hazing efforts by CPW staff, landowners and other agencies

have been largely unsuccessful in displacing lions from these settings most cases, as also experienced by Alldredge et al. (2019).

Recorded game damage in and around the SMA has increased in the last 10 years when compared to the previous decade. Colorado Parks and Wildlife is statutorily liable for damage to livestock and has historically incorporated game damage objectives in lion management plans. From 1998 to 2008, there were 11 mountain lion damage claims paid in the local area, at a cost of \$3,936. From 2009 to 2019, there were 21 mountain lion damage claims paid for a cost of \$38,870. During these same 10 years however, the number of commercial livestock producers has decreased while hobby livestock owners appear to have increased.

Agency staff has increased public awareness to help reduce incidents through posting signs in residential areas, presenting information at homeowners association meetings, coordinating responses with local law enforcement agencies, providing recommendations to planners and developers with measures aimed at protecting residents and pets, providing information through traditional media, posting information on social media and teaching lion safety principles in annual school programs. Despite these efforts, CPW has needed to increase the frequency of use of hazing techniques, in addition to more efforts targeting individual conflict mountain lions for removal.

Glenwood SMA Goals and Objectives:

The goal of the SMA is to address human safety concerns by reducing human-lion conflicts, reduce lion occupancy in developed areas of high human use and to provide maximum hunting opportunity. Hunter harvest will be the primary tool for addressing an increasing mountain lion population and associated increasing conflicts. Harvest management tools such as longer and additional hunting seasons and permitting the use of electronic calls will help increase harvest and may allow for targeted harvest in areas of high conflict. Management tools will also include public education and strategic removal of individual lions that are dangerous by location or behavior. This SMA approach can be evaluated in an adaptive management framework to allow testing of some of the questions surrounding mitigating tools, such as hunting, that will be used to reduce human-lion conflicts (Appendix B).

Harvest: The harvest limit in the four GMUs that comprise the SMA will be established at a level high enough that this SMA harvest limit group offers maximum hunting opportunity throughout the regular and April lion seasons, and concurrent deer/elk rifle seasons (>25% harvest mortality, no human-caused mortality threshold and no adult female threshold).

Public Education: Public education on human wildlife coexistence remains paramount. CPW will continue to build and rely on partnerships with local governments, municipalities and organizations to find additional means of reducing conflicts. CPW continues to use various public information resources to provide information to communities and highlight the importance of living responsibly with wildlife. Common CPW recommendations include bringing pets in at night, not leaving pets unattended or tethered in yards, using fully enclosed outdoor kennels, use of outdoor lights, removing brush and grasses when

landscaping, securing hobby livestock in enclosed barns/sheds and removing deer and elk food sources near homes that may attract prey species.

Individual Conflict: CPW continues to consider removal or translocation of individual lions, based on case-by-case specifics, as a main tool to mitigate human-lion conflict. This is particularly true in developed areas of the SMA where using a licensed hunter to harvest the individual lion is not practical.

SMA Objective Monitoring

Managing for a sustained reduction in human-lion conflicts will be monitored by various mechanisms. Information will be assessed over time to account for variations in external conditions, such as weather, which may alter the number of conflicts but cannot be controlled or replicated by staff. CPW staff collects human-lion incidents and records them in a system that can be referenced to evaluate progress towards the goal of reducing conflicts. CPW will use these records to measure increasing or decreasing trends in mountain lion conflict reports within the SMA.

To further evaluate that CPW is accomplishing the goal of reducing conflicts, staff will monitor the amount of time spent by officers in response to calls specific to lions and measure for increasing or decreasing trends. Management direction will continue towards a decreasing population until social metrics show a multi-year reduction in human mountain lion conflicts.

Southwest Regional Summary

Introduction and History

The Southwest Region has a variety of habitat and mountain lion prey abundance, and therefore a variety of lion densities likely ranging from marginal to very high. The Southwest Region has the lowest human population of CPW's four administrative regions. Much of the Southwest Region is public, agricultural or rural residential land. However, population clusters in the Uncompahgre, Gunnison, Dolores, San Juan and Animas river valleys overlap lion habitat and do experience occasional human-lion conflicts. Urban and exurban developments may provide attractants to lions such as residential deer, dogs at-large, and hobby livestock), as well as refuge areas where traditional hunter harvest is difficult.

Human-mountain lion interactions vary from sightings to encounters, incidents or attacks. Lions involved in these interactions are categorized in agency Directive W-20 as nuisance lions, which are frequently seen near people, kill and cache prey near homes, or as depredating lions which kill livestock, or dangerous lions. Lions may be considered dangerous due to their location or their behavior. The Southwest Region will prioritize human safety when handling potentially dangerous human-lion interactions. Number and locations of nuisance, depredating, or dangerous lions are highly variable from year to year and are unpredictable.

Southwest Regional Monitoring Metrics

Lion populations will be managed for a Regional objective of a stable population. This will maintain viable lion populations and sustainable harvest compatible into the future. We will manage for a relatively stable Regional mountain lion population, and quality hunting opportunities with a diverse age and sex distribution in the harvest. The two monitoring thresholds are:

- 1) The adult female composition in total hunter harvest at the Regional scale will not exceed 22% in any given year.
- 2) The total human-caused mortality at the Regional scale will not exceed 17% of the RSF extrapolation on a 3-year average. In the Southwest Region, this equates to a Regional total human-caused mortality threshold of 284 lions.

Regional Harvest Objective

For the first three years of the Regional plan, the SW Regional hunter harvest objective will be set as 11.1% of the RSF extrapolated. Using this approach, the Regional annual harvest objective is calculated to be 185 lions, and total human-caused mortality is projected to be 219 lions. This is well below the mortality monitoring threshold.

This Regional harvest objective is a decrease from the pooled harvest limit of 194 (Table 7) that existed prior to the development of the West Slope Lion Management Plan. However, due to the great flexibility afforded to hunters by the large geographic harvest limit groups (as opposed to many small GMU-level limits, many of which were never achieved), we expect annual hunter harvest to increase from 147 lions to approximately 185 lions. Harvest limit changes are likely to occur in harvest limit groups that consistently reach harvest limits. In addition, this Regional harvest objective is substantially below the SW maximum total human-caused mortality threshold of 284 lions. This Regional harvest objective may incrementally increase and decrease as the adult female proportion and total human-caused mortality thresholds are monitored after the initial 3 years of implementing this plan.

Hunting opportunity in the Southwest Region is allocated to harvest limit groups (Figure 4 and Table 8) that differ from historic harvest limit groups (Table 7). Harvest limit allocations will be manipulated to create a balance between maintaining a viable lion population and staying below acceptable levels of conflicts with humans and livestock. On the large landscape level of the Southwest Region, harvest limits will be set to provide a broad spectrum of lion ages and densities on the landscape, as well as addressing hunter opportunity and satisfaction.

Harvest Limit

Mountain lion harvest limit groups were delineated according to the need to distribute harvest geographically while recognizing the landscape scale of mountain lion movements. The units are large enough to manage mountain lions on a landscape scale, group Game

Management Units with similar geography, habitat, human cultural use, and regulation (method of take, April season, hunter harvest vs non-harvest mortality). This led to the creation of seven harvest limit groups in the Southwest Region loosely identified as the Dolores Canyon, Uncompahgre, North Fork, Gunnison Basin, San Luis Valley North, San Juan, and San Luis Valley South. Each harvest limit group will initially have a harvest limit greater than the current 3-year average harvest mortality. When summed across the Region, harvest is expected to increase approximately one-third of the difference between the 2019-2020 total harvest and the human-caused mortality threshold. This strategy will be evaluated for several years, at which time harvest limits may be adjusted in order to remain below the adult female monitoring thresholds while strategically maximizing harvest. As necessary, harvest limit groups and harvest limits may be adjusted at any time during the life of this management plan.

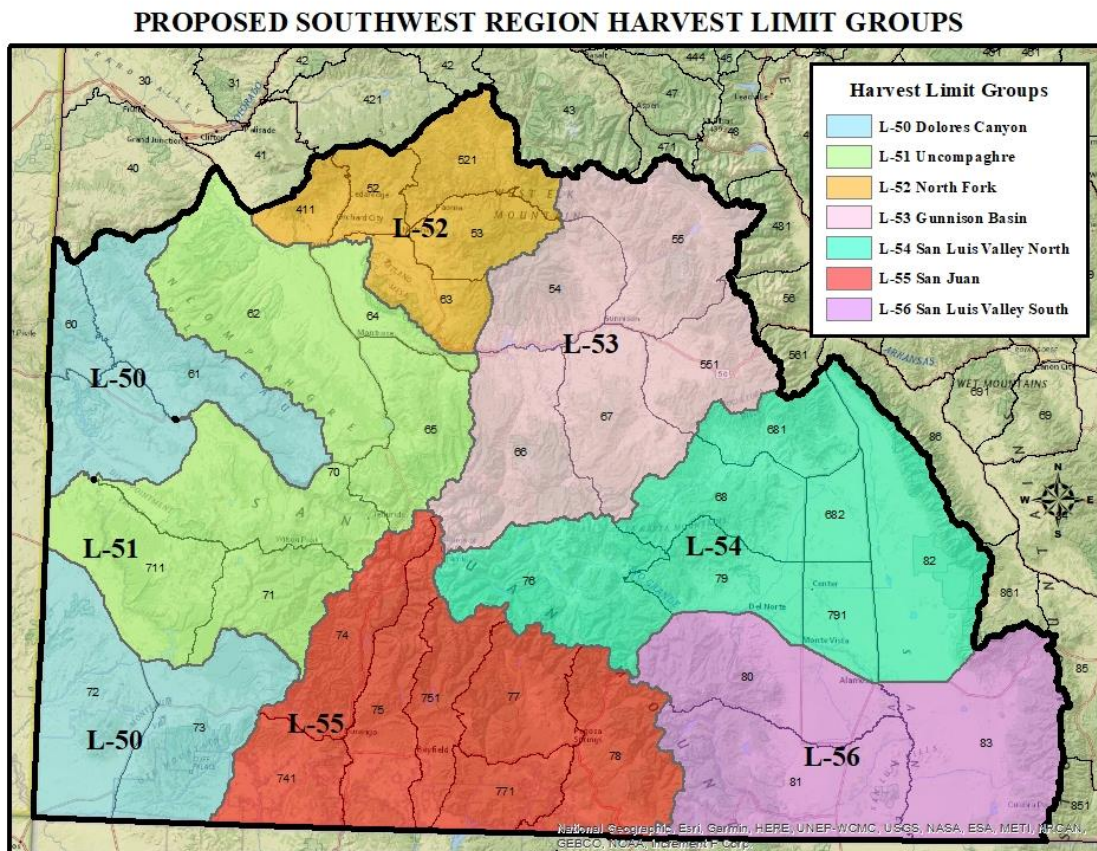


Figure 4. SW Region harvest limit groups for 2021-2022 lion season.

Table 7. Historic Southwest Region 2018 mountain lion harvest limit groups, harvest limits, and the 2016-2018 average annual harvest (rounded to nearest whole number).

GMU	2018 Harvest Limit	3- year Average Harvest
52,411	10	6
53,63	10	10
54,55,551	7	8
60	5	1
61	10	10
62	9	9
64	5	2
65	7	6
66,67	8	9
68,681,682	7	5
70 East	11	6
70 West	11	6
71,711	10	9
72	7	3
73	14	6
74,741	6	5
75	4	2
76,79,791	5	5
77	6	7
78	5	5
80	5	5
81	5	2
82	6	3
83	10	9
521	6	6
751,771	5	3

Table 8. Southwest Region mountain lion harvest limit group name, GMUs and harvest limits for 2021-2022.

Harvest Limit Group Name	GMUs	Harvest Limit
L-50 Dolores Canyon	60, 61, 70W, 72, 73	31
L-51 Uncompahgre	62, 64, 65, 70E, 71, 711	48
L-52 North Fork	411, 52, 53, 63, 521	31
L-53 Gunnison Basin	54, 55, 66, 67, 551	18
L-54 San Luis Valley North	68, 76, 79, 82, 681, 682, 791	16
L-55 San Juan	74, 75, 77, 78, 741, 751, 771	23
L-56 San Luis Valley South	80, 81, 83	18

April Season

The Southwest Region will initially close all harvest limit groups during the April hunting season each year. In 2020, there are several GMUs open for hunting in April including 70, 71, 72, 73, and 711. Several of these are proposed to have expanded opportunity (see below), while others are included in L-51 which has typically achieved harvest limits during the November-March period. The remaining GMUs in the Southwest Region have traditionally not had an April season because the units have met the harvest objective in the November-March time period or wildlife managers recognize potential conflict with Gunnison sage-grouse during a critical period of their breeding season.

Electronic Calls

Colorado Parks and Wildlife will create regulations to make electronic calls legal for mountain lion hunting in harvest limit group L-50 (GMUs 60, 61, 70W, 72, and 73). Although large portions of the Region are comprised of public property, mountain lion hunting with hounds is difficult in areas of small property ownership patterns in Montezuma, Dolores, and Montrose Counties. Much of the low elevation country that constitutes deer and elk winter range has poor or non-existent snow-tracking conditions in most winters, and is therefore very difficult to hunt with hounds, though it is still excellent lion habitat. L-50 is made up of a checkerboard pattern of public and private land; this can make accessing some of the public land difficult without permission from a landowner. Keeping hound pursuits only on the property hunters have permission to hunt can also become quite challenging due to the smaller parcel size of both private and public property. Consequently, there is a limited amount of opportunity for lion hound hunting in these areas. Most of these GMUs rarely, if ever, meet their harvest limit. The result has been an increase in lion sightings and conflicts.

There is an interest in the hunting public to harvest these lions; hunters just need a method that would give them an opportunity that currently does not exist.

Electronic calls have proven to be an effective means in attracting lions to a hunter's location, although harvest from this method is less selective than with hound hunting. By bringing the lion to the hunter through the use of calls, hunters can control where the lion is harvested, thereby allowing hunters to hunt small pieces of private or public property. Electronic calls would also enable hunters who do not have access to hounds the opportunity to harvest a lion. Additionally, the use of electronic calls would better enable CPW to address conflict lions near residential areas and reach harvest goals. We can measure success by identifying electronic call-assisted harvest locations closer to suburban/urban areas, increased harvest, and a reduction in conflicts. Adult female harvest composition in these units will be monitored to see if harvest proportions increase above 22% in any year; harvest limits and methods will be reevaluated if this threshold is exceeded.

VII. Management Plan Update & Revision Process

As is appropriate with lions, this plan initiates a long-term management framework for the entire West Slope. Colorado Parks and Wildlife's management plans should be based on credible scientific information, informed by and responsive to the diversity of public interests and concerns, and readily available to the public. Management plans provide an accountability mechanism for agencies that manage lions as a public trust resource. However, management plans that persist over long time periods risk becoming unresponsive to new scientific evidence or may outlast changing perspectives of citizens or resource management demands. A common criticism of management plans is that they are overly restrictive and unresponsive to either changing management conditions or to newer information. The challenge is to create guidance that is firm enough to truly guide management but that is also adaptive to new scientific information, new opportunities to test management applications, and new demands placed upon the agency. Periodic review and examination of new scientific information relevant to the management assumptions contained in this plan should be conducted as needed.

VIII. Lion Density Monitoring and Future Research Needs

Lion Density Monitoring

Developing robust estimates of lion density in survey areas on the West Slope will help improve and refine assumptions made in the RSF model. Empirically-derived estimates will also serve to confirm projected abundances in the range of 2-3 independent lions/100 km² that are being applied as part of the West Slope plan to generate the total human-caused mortality threshold. Colorado Parks and Wildlife expects to identify multiple survey areas on the West Slope that are representative of quality lion habitat and that reflects a gradient of lion hunting pressure. Estimated densities of independent lions on winter range would be produced, similar to the techniques and procedures currently being employed in the Upper Arkansas research project. These densities will serve to support and align CPW's RSF

modeling process and its' resulting abundance projection outputs to accurately reflect lion population status currently in the field.

Future Research Needs

Numerous avenues of potential research exist into the future in Colorado. Some are already underway, others require commitment of significant resources that are outside the framework of this plan, and others may be best evaluated after several years of implementing this West Slope Mountain Lion Management Plan. Below are several topics that have been identified as future research needs.

- Investigate and update research on public perceptions and opinions about lion management in Colorado.
- Further evaluate the hypothesis that the social disruption caused by intensive lion harvest or removal of adult males is related to increases in human-lion conflicts.
- Evaluate presumed source and sink locations to determine if predictions reflect functionality.

DRAFT



To: Mayor and Council
From: Michelle Metteer
Date: April 24, 2020
Agenda Item: Resolution 16 – Series 2020

REQUEST:

Council is asked to approve Resolution 16 – Series 2020. This Resolution waives water service fees for Minturn brick and mortar businesses that were negatively affected by the novel Coronavirus, COVID-19, Executive and Public Health Orders requiring reduction in services.

INTRODUCTION:

As a result of the COVID-19 world-wide Pandemic, Council created an Ad Hoc committee to study and bring forth options for providing relief for local businesses affected by the Pandemic. During the current on-going COVID-19 economic reductions and closures many of our business in town have been desperately affected. This Resolution will waive water service fees for identified businesses accrued during the months of April, May, and June 2020.

ANALYSIS:

Because sales tax for the town of Minturn is collected by the State of Colorado, we do not have the data needed to properly understand the effects of COVID-19 on the Town's General Fund budget (this discussion is scheduled for a work session at the April 24 Special Council meeting and is expected to come back to Council later in May for additional review). Therefore, although requests have been made for allocation of General Fund budget monies (Community Food Bank request), Minturn is not able to fulfill such requests until a better understanding of 2020 budget impacts is obtained or Council commits to taking money directly out of reserves for such contributions.

Although relief from the General Fund is not yet available, there is an opportunity to support sections of the local community through adjustments in the Enterprise Fund. The Town has not yet accrued debt toward the \$17M 2019 Capital Improvement Plan for water infrastructure, which allows Council the ability to provide support through this Fund. The Ad Hoc Emergency Funding Committee has identified many businesses in town which have been forced to close or drastically reduce their services in response to the COVID-19 pandemic. The result of these closures results in many Minturn businesses having a monthly water bill but are not open to utilize the water/water service they are paying for. Resolution 16 – Series 2020 will waive the monthly water bill fees for these businesses over a three-month period.

COMMUNITY INPUT:

Ongoing

BUDGET / STAFF IMPACT:

Approximately \$15,000/mo. or \$45,000 total from the Enterprise Fund

STRATEGIC PLAN ALIGNMENT:

In accordance with Strategy #1 to practice fair, transparent and communicative local government.

RECOMMENDED ACTION OR PROPOSED MOTION:

Motion to approve Resolution 16 – Series 2020 a resolution approving a plan to waive Commercial water bills as proposed as presented.

ATTACHMENTS:

- Resolution 16 – Series 2020

**TOWN OF MINTURN, COLORADO
RESOLUTION NO. 16 – SERIES 2020**

**A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN
OF MINTURN, COLORADO, PROVIDING FOR A WAIVER
OF WATER SERVICE FEES DUE FROM BUSINESSES
REQUIRED TO CLOSE OR REDUCE SERVICES IN
RESPONSE TO THE COVID-19 PANDEMIC AND VARIOUS
GOVERNMENTAL ORDERS.**

WHEREAS, the Town of Minturn (“Minturn” or the “Town”) is a home-rule municipality organized under Article XX of the Colorado Constitution and with the authority of the Minturn Home Rule Charter (the “Charter”); and

WHEREAS, the Novel Coronavirus (“COVID-19”) pandemic has spread and infected populations throughout the United States, the State of Colorado, and the western slope of Colorado; and

WHEREAS, the Governor of Colorado and Colorado Department of Public Health and Environment have issued various Executive Orders and Public Health Orders, which effect has been the closing and reduction in available goods and services of restaurants, retail stores, bars, and other small businesses critical to the Town’s economy and sales tax base; and

WHEREAS, pursuant to C.R.S. § 24-33.5-709, the Town Council declared a local disaster emergency in Minturn on March 16, 2020 in order to protect the life, health and safety of the citizens of Minturn; and

WHEREAS, the Town has established a Water and Sanitation Activities Enterprise that owns, operates, and collects fees from a water service utility for which the Town Council serves as the governing body; and

WHEREAS, operation of the Town’s water service utility is governed by Chapter 13 of the Minturn Municipal Code (the “Code”); and

WHEREAS, Section 13-2-20 of the Code requires payment of a monthly water service fee, which is set annually by resolution of the Town Council; and

WHEREAS, the Town Council possesses the inherent powers to waive payment of water service fees in its discretion; and

WHEREAS, the Town Council finds that it is necessary and proper and in the best interest of the welfare of the residents of Minturn to waive water service payments due from businesses that have been forced to close or reduce available services or goods as a result of governmental orders relating to the COVID-19 pandemic.

NOW THEREFORE, IT IS RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF MINTURN, COLORADO, THAT:

Section 1. The above recitals are hereby incorporated as findings by the Town Council of the Town of Minturn.

Section 2. The Town Council hereby waives payments due pursuant to Minturn Municipal Code § 13-2-20(e) for water service fees accrued during the month of April, May and June 2020 by any commercial entity with a physical location within the Town that is deemed noncritical, required to close for business or reduce available services, and unable to perform work remotely, as a result of any order of the Governor of Colorado or the Colorado Department of Public Health and Environment Public Health as a result of the COVID-19 pandemic.

INTRODUCED, READ AND PASSED THIS 24th DAY OF APRIL 2020.

TOWN OF MINTURN, COLORADO

John Widerman IV, Mayor

ATTEST:

Jay Brunvand, Town Clerk



To: Mayor and Council
From: Michelle Metteer, Town Manager
Jay Brunvand, Town Treasurer
Brian Eggleton & John Widerman, Emergency Funding Ad Hoc Committee
Date: April 20, 2020
Agenda Item: Budgetary impacts of COVID-19 and Revised Budget Projections

REQUEST:

Review budget analysis with revised 2020 projections.

INTRODUCTION:

On March 16, 2020, in alignment with the local, state, national and world-wide response to the novel Coronavirus COVID-19 pandemic, The Minturn Town Council unanimously approved Resolution 13 – Series 2020, A Resolution Declaring a Local State of Emergency. COVID-19 has affected all aspects of government operation, including the budget. This memo is an analysis of anticipated 2020 budget impacts and options for addressing anticipated shortfalls.

Minturn's General Fund relies primarily on tax revenue generation which comprises 71% of the General Fund revenues (with sales and property tax contributing 95% of the tax revenue generation). In the Council-approved 2020 town budget, **staff forecasted sales tax revenues to be down 14% from the 2019 total of \$719,201**. With Public Health Orders temporarily shuttering many (if not most) sales tax generating businesses within Minturn, a new budget forecast for town revenues and expenses at this time, early in the budget year, is recommended.

Staff and the Emergency Funding Ad-hoc Committee have reviewed the 2020 budget and provided adjustments based on new forecast models. These changes will have impacts to Town services, employees and local vendors. The observations, forecasts, and recommendations are not made lightly but are factors in achieving the goal of reducing the budget to represent anticipated/forecast changes in collected revenue for Town of Minturn FY 2020.

ANALYSIS:

General Fund Revenue Projections: Actual COVID-19 budgetary impacts are unknown at this time.

Communities throughout Eagle County are anticipating sales tax revenue shortfalls anywhere from 20% (Basalt, CO) to 50% (Gypsum, CO) in sales tax for 2020. Avon sales tax revenue for March 2020 was down 35% compared to their approved budget. Because Avon collects their own sales tax, their March sales tax data is already known. Avon expects their lodging tax revenue will be down 60-70% compared to their budget for the remainder of 2020.

An article in the Colorado Springs Gazette from April 19th referenced the state of Colorado expecting to make a \$2bn - \$3bn decrease in the state budget for July 2020 - June 2021. The 2019-2020 Colorado state budget was \$30.669bn, and that reduction represents 5.45% to 8.17% reduction in next year's state budget from the 19-20 budget. From the same article, the City of Denver has directed city departments to reduce their current year budget expenses by 3%.

Minturn contracts the state to collect city sales tax, so Minturn’s March 2020 sales tax revenue data will be available on or around May 12th, 2020. Minturn’s April 2020 sales tax data will be available on or around June 12th, 2020. Staff expects impacts of COVID-19 to first represent in the March sales tax revenue # and continue for the remainder of 2020.

Eagle County won’t consider any adjustments in their current budget until after the March and April #s are available, so Minturn’s work to understand impacts to the budget without those March and April #s is ahead of other local governments evaluating and presenting information.

After working multiple sales- and lodging tax- reduction forecasts, the Ad-hoc committee anticipates, at this time, that **Minturn can expect anywhere from a .05% to 5.1% reduction in overall General Fund revenues for the 2020 budget year.**

Revenue reductions are anticipated in 3 areas of the General Fund: traditional brick and mortar sales tax, lodging tax, and interest earned on reserve account balances due to reductions in interest rates.

Increased revenue is anticipated in online sales tax revenue for 2020, the first year for which sales tax revenue will be represented in each month of the year.

Scenario A: .05% Revenue Reduction Forecast

GENERAL FUND REVENUE	2020 BUDGET	2020 FORECAST	\$ CHANGE	% CHANGE
Sales Tax	\$ 620,000	\$ 526,918	\$ -93,082	-15%
Online Sales Tax		121,391	+121,391	
Property Tax	543,637	543,637	0	0%
Lodging Tax	17,000	12,750	-4,250	-25%
Real Estate Transfer Tax (RETT)	100,000	100,000	0	0%
Land Lease Revenue	146,353	146,353	0	0%
Interest Earned	67,500	42,500	-25,000	-37%
Miscellaneous Revenue (Other)	344,697	344,697	0	0%
TOTAL REVENUE	\$ 1,839,187	1,838,246	\$ -941	-.05%

Scenario A contemplates a straight 15% reduction in “traditional, brick & mortar” town sales tax revenue across the entire year from the approved 2020 Budget sales tax # of \$620,000. The \$620,000 sales tax # for the 2020 Budget was based on the 2018 actual sales tax revenue #, and therefore does not represent any online sales tax revenue. Online sales tax revenue was first collected for March 2019. Hence the breakout of Online Sales Tax to its own line in this forecast (see table below for online sales tax revenue explanation)

Scenario B: 5.2% Revenue Reduction Forecast

GENERAL FUND REVENUE	2020 BUDGET	2020 FORECAST	\$ CHANGE	% CHANGE
Sales Tax	\$ 620,000	\$ 433,912	\$ -189,072	-30%
Online Sales Tax		121,391	+121,391	
Property Tax	543,637	543,637	0	0%
Lodging Tax	17,000	12,750	-4,250	-25%
Real Estate Transfer Tax (RETT)	100,000	100,000	0	0%.
Land Lease Revenue	146,353	146,353	0	0%

Interest Earned	67,500	42,500	-25,000	-37%
Miscellaneous Revenue (Other)	344,697	344,697	0	0%
TOTAL REVENUE	\$ 1,839,187	\$ 1,745,240	\$ -96,931	-5.2%

Scenario B contemplates a nuanced approach to recalculation of “[traditional, brick & mortar](#)” town sales tax revenue from the as-approved 2020 Budget sales tax revenue# of \$620,000:

January + February: actual town sales tax revenue collected, not including online sales tax revenue
 March - June: 60% reduction in town sales tax revenue from the as-approved 2020 budget
 July - August: 40% reduction in town sales tax revenue from the as-approved 2020 budget
 September - December: 20% reduction in town sales tax revenue from the as-approved 2020 budget

The as-approved 2020 Budget was based on the 2018 actual town sales tax revenue #, and therefore does not represent any [online sales tax revenue](#). Hence the breakout of [Online Sales Tax](#) to its own line in the forecasts in this memo (see [Online Sales Tax calculation table](#) below for online sales tax revenue explanation).

Minturn Sales Tax Revenue 2008 - 2014: For historical context to both Scenario A and Scenario B as outlined above, the table immediately below presents annual [Minturn Town Sales Tax Revenue](#) #s for the most recent economic downturn in 2008 - 2014:

Minturn Town Sales Tax Annual Revenue

Year	2008	2009	2010	2011	2012	2013	2014
Sales Tax Revenue	\$505,101	\$452,327	\$424,064	\$464,033	\$467,311	\$521,573	\$536,735

Online Sales Tax Revenue Calculation Data: [Online sales tax](#) was first collected in March 2019, so there is less than 1-year of data for this new source of sales tax revenue for the Town.

Minturn’s 2020 as-approved budget was based on [2018 town sales tax revenue #s](#), so [online sales tax](#) is **an entirely new sales tax revenue stream** this updated 2020 Budget Forecast Memo contemplates for the first time.

The Town showed solid [online sales tax revenue](#) in January and February 2020 of just over \$40,000.

The Ad-hoc Committee suspects the addition of online sales tax revenue to be a contributing factor in the Town’s ability to make up for declines in “[traditional brick & mortar sales tax revenue](#)” during 2020 and into the future.

Minturn Online Sales Tax Revenue

	2019 Online Sales Tax Revenue (all #s are actual)	2020 Online Sales Tax Revenue Forecast	Notes for 2020 #s
January	0	\$30,362	<i>Jan 2020 # is actual</i>
February	0	\$9,731	<i>Feb 2020 # is actual</i>
March	\$3,220	\$2,737	2020 # is 85% of 2019 #
April	\$3,683	\$3,131	2020 # is 85% of 2019 #
May	\$4,917	\$4,179	2020 # is 85% of 2019 #
June	\$10,151	\$8,628	2020 # is 85% of 2019 #
July	\$8,324	\$7,075	2020 # is 85% of 2019 #
August	\$9,799	\$8,329	2020 # is 85% of 2019 #
September	\$12,818	\$10,895	2020 # is 85% of 2019 #
October	\$8,612	\$7,320	2020 # is 85% of 2019 #
November	\$19,535	\$16,605	2020 # is 85% of 2019 #
December	\$14,586	\$12,398	2020 # is 85% of 2019 #
Totals	\$95,645	\$121,391	

General Fund Projected Budget Reductions: The Ad-hoc committee has developed a list of proposed expense reductions to allow the Council options for addressing 2020 budget revenue shortfalls.

Scenario A and B: 5% General Fund Reduction = \$97,775

DESCRIPTION	ACCOUNT #	2020 BUDGET	2020 FORECAST	\$ DECREASE	% DECREASE
Council-Supplies	01-01-5100	2,750	1,000	-1,750	-36%
Council-Meeting Food	01-01-5270	5,000	1,500	-3,500	-70%
Gen Gov-Supplies	01-01-5110	27,500	25,000	-2,500	-9%
Gen Gov-Computer Support	01-01-5120	42,000	39,000	-3,000	-7%
Gen Gov-Legal and Eng Fees	01-01-5220	184,000	156,500	-27,500	-15%
Gen Gov-Dues and Fees	01-01-5235	42,500	40,375	-2,125	-5%
Gen Gov-Computer R&M	01-01-5292	5,500	3,000	-2,500	-4.5%
Planning-Meetings	01-02-5216	10,800	9,900	-900	-8%
Planning Fees & Training	01-02-5235	1000	500	-500	-50%
Court-Attorney	01-03-5216	10,000	8,000	-2,000	-20%
Police-Training	01-04-5265	1,000	500	-500	-50%
Pub Wks - Overtime	01-06-5011	10,000	6000	-4,000	-40%
Pub Wks - Tools	01-06-5120	5,000	2000	-3,000	-60%
Pub Wks-Public Blding R&M	01-06-5290	15,000	11,000	-4,000	-27%
PW-Streets/Sidewalks & Maint	01-06-5352	40,000	20,000	-20,000	-50%
Employee Bonus & Raise Pool				-20,000	
Total				97,775	

Notes:

- 1) No wages would be cut at this point. This is to include the already cut Town Manager wage, it is to be put back at whole
- 2) Events Dept - to be reviewed for reallocations that will help Minturn residents and businesses. Ideas include programs reduced such as 4th of July and Concert Series would be reallocated to a "town event" once able and to mitigate the losses the Market might experience by cutting market days
- 3) Pub Wks - Reduction in available overtime payroll to be mitigated through scheduling adjustments
- 4) Pub Wks Street/Sidewalk - \$20,000 cut from Gen Fund to be spent from Capital Fund
- 5) Minturn Market to be reviewed at Staff level for cuts to days, income, and expenses

The Scenario A and Scenario B forecasts represent two revenue reduction scenarios in Minturn's sales tax for 2020.

Although the methodology for the scenarios is different, both represent that Minturn's as-approved 2020 Budget can absorb some level of decrease in town sales tax revenue in the traditional, and considered-for-2020, "brick & mortar town sales tax" revenue amount. Possible/likely resilience in the town sales tax revenue for 2020 is due to the addition of the online sales tax revenue as forecasted in this memo. Online sales tax is an additional, and new revenue stream for the Town, and is therefore considered separate from the "traditional town sales tax" historical revenue #s.

It is acceptable to include the online sales tax as a separate line from the traditional brick & mortar city sales tax revenue because the majority of online shopping will not offset the majority of in-town sales tax revenue generating business activity (what residents are shipping into town from online purchases is likely primarily for products not available for sale in-town at the time of this memo).

With a possible \$97,775 in reduced budgeted expenses as identified in this memo, Minturn can absorb up to a net decrease in the 2020 General Fund revenues of about 5% for the year (see Scenario B) with no further budget reductions beyond the \$97,775 in expense reductions proposed in this memo. This is dependent upon "Scenario B" being the reality in terms of General Fund Revenue.

With March town sales tax #s for both "traditional brick & mortar" and online revenue streams available on or around May 12, the Town will be able to, in mid-May, further update these forecasts with the first round of real #s representing economic activity during the COVID-19 stay at home order. On or around June 12th, the April #s will become available, and another update will be possible. Real March #s and real April #s will be extremely helpful in knowing the new economic course post-COVID-19.

As Minturn is so early in FY 2020, there is ample opportunity for Minturn to identify areas where Town expenses can be deferred or re-assigned to accommodate expense reduction to plan for an overall reduction in town sales tax revenue compared to the as-approved 2020 Budget from October and November 2019.

COMMUNITY INPUT:

Public hearings forthcoming

BUDGET / STAFF IMPACT:

TbD

STRATEGIC PLAN ALIGNMENT:

Advance decisions/projects/initiatives that expand future opportunity and viability for Minturn

RECOMMENDED ACTION OR PROPOSED MOTION:

None - work session discussion only

ATTACHMENTS: